Common Council Meeting Agenda

May 13, 2025 - 6:05 PM
(Following the Committee of the Whole Meeting)
City Hall Council Chambers

Published: 5/9/2025

AGENDA

1. **PRIVILEGE OF THE FLOOR**
   Each speaker is limited to 3 minutes. The session will conclude at 6:30 pm.
2. **CALL TO ORDER, PLEDGE OF ALLEGIANCE**
3. **ROLL CALL; DECLARATION OF QUORUM; PUBLIC NOTICE**
4. **APPROVAL OF MINUTES**
   - **A.** April 22, 2025, Common Council Meeting Minutes
   - **B.** April 28, 2025, Special Common Council Meeting Minutes
5. **REPORTS**
   - **A.** City Clerk
   - **B.** Council President
   - **C.** Mayor
6. **COMMUNICATIONS**
   - **A.** Lassa Claim: Received by the City Clerk and forwarded to the City Attorney for review
7. **PLAN COMMISSION**
   - **A.** Discussion and possible action to recommend to Common Council approval of (7) KH PK-2200053 - Approval of the contracts for the 2025 Malone Park Improvement Project.
   - **B.** Discussion and possible action to recommend to Common Council approval of (3) KH PK-2500161 Lions Park - Approval of selected consultant for the design of Lions Park.
   - **C.** (7) KW LD-2500450 Frank Grotkiewicz - 19300 W. Observatory Rd - Discussion and possible action to recommend to Common Council approval of a 2-Lot Certified Survey Map.
   - **D.** (7) NJ LD-2500487 Dave Merrick with Luther Group on behalf of New Berlin Fabrication Building located at - 16230 W. Beloit Road and 16100 W. Beloit Road. Discussion and possible action to recommend to Common Council approval of a 2-Lot Certified Survey Map.
8. **BOARD OF PUBLIC WORKS**
   - **A.** Discussion and possible action to recommend to Common Council approval of the revised Relocation Order for Sunny Slope Road by resolution and place on file with the County Clerk.
9. **MAYORAL APPOINTMENTS**

A. Discussion and Possible Action to approve the Mayoral Appointments per the list as presented

10. DEFERRED, REFERRED & TABLED ITEMS

11. ITEMS REMOVED FROM CONSENT AGENDA, if any

12. CONSENT AGENDA----------

Items under the Consent Agenda have passed unanimously by the Committee of the Whole. Items not passed by a unanimous vote will be removed from consent agenda and will be considered separately.

13. MINUTES

A. April 22, 2025, Committee of the Whole Meeting Minutes

14. UTILITY & FINANCE

A. Discussion and possible action to recommend to the Common Council approval of the May 14th, 2025, Water Utility claims in the amount of $129,142.71. Sewer Utility claims in the amount of $17,681.88 and General City claims in the amount of $831,129.63. US Bank VISA EFT of $28,774.34, and Tax Overpayment checks totaling $69.28 were also generated

15. LICENSES & PERMITS

A. Discussion and possible action to approve the renewal of alcohol licenses, designated agents, and corresponding premise descriptions as outlined in the attached list, for the license year July 1, 2025, through June 30, 2026, contingent upon the satisfaction of all City requirements, including but not limited to the completion of all required inspections and full payment of applicable fees

16. END CONSENT AGENDA----------

17. CLOSED SESSION

A. *The Common Council may convene into closed session pursuant to Wisconsin Statutes § 19.85(1)(e) for the purpose of deliberating or negotiating the lease of public property whenever competitive or bargaining reasons require a closed session, specifically regarding:*

B. Discussion regarding the New Berlin Food Pantry lease agreement for the Community Center at Hickory Grove

C. *The Council may also convene into closed session pursuant to Wisconsin Statutes § 19.85(1)(g) to confer with legal counsel for the City who is rendering oral or written advice concerning strategy to be adopted with respect to litigation or potential litigation in which the City is or is likely to become involved, specifically regarding:*

D. Discussion regarding possible legal action against Muhammed Jaraba for the clear-cutting of property located at 6035 S. Karrington Lane within the C-1 Zoning District

E. Discussion regarding the Klein Claim

18. RECONVENE TO OPEN SESSION

A. Discussion and possible action regarding the New Berlin Food Pantry lease agreement for the Community Center at Hickory Grove

B. Discussion and possible action regarding legal action against Muhammed Jaraba for the clear-cutting of property located at 6035 S. Karrington Lane within the C-1 Zoning District

C. Discussion and possible action regarding the Klein Claim

19. ADJOURN

Additional Information

- The agenda packet with supplemental information related to the agenda items is available online at www.NewBerlinWi.gov. Once finalized by the governing body, approved meeting minutes are also posted online.
- The governing body may consider agenda items out of order
- Members, and potentially a quorum of other governmental bodies of the municipality, may be present at the meeting to gather information. No action will be taken by any governmental body other than the one referenced in this notice.
- With reasonable notice, accommodations will be provided under the Americans with Disabilities Act to meet the needs of individuals with disabilities through appropriate aids and services. For more information or to request assistance, please contact the Office of the City Clerk at (262) 786-8610.

Common Council
MEETING MINUTES

April 22, 2025 - 6:05 PM
City Hall Council Chambers

MINUTES

1. PRIVILEGE OF THE FLOOR

Each speaker is limited to 3 minutes. The session will conclude at 6:30 pm.
No members of the public (or attendees) spoke during this portion of the meeting.

2. CALL TO ORDER, PLEDGE OF ALLEGIANCE

Council President Harenda called the meeting to order at 06:52 PM and led the Pledge of Allegiance.

3. ROLL CALL; DECLARATION OF QUORUM; PUBLIC NOTICE

Deputy City Clerk Megan Godshall took the roll call as follows:
Present: Alderperson Hopkins, Alderperson Maxey, Alderperson Harenda, Alderperson Stribl, Alderperson Horbinski, Alderperson Kroupa
Excused: Alderperson Scott La Fever, Mayor Dave Ament

Staff Present: City Attorney Thomas Schmitzer, Deputy City Clerk Megan Godshall

The Deputy City Clerk confirmed that a quorum was present and that the meeting was properly posted in compliance with open meetings law.

4. APPROVAL OF MINUTES

A. April 8th, 2025, Common Council Meeting Minutes

MOTION: Motion to approve

VOTE: Motion by: Alderperson Stribl
Second by: Alderperson Kroupa
Motion Passed 6-0

5. REPORTS

A. City Clerk

No report

B. Council President

No report

C. Mayor

No report

6. COMMUNICATIONS

None

7. UTILITY COMMITTEE

A. UT 07-25 Recommend to Common Council to amend Sections 267-8 and 267-9 to reflect current Wisconsin legislation statutes.

MOTION: Motion to approve

VOTE: Motion by: Alderperson Harenda
Second by: Alderperson Maxey
Motion Passed 6-0

B. UT 08-25 Recommend to the Common Council the awarding of a Professional Services contract to Clark Dietz, Inc., for consulting services related to the plan, design and bidding phase of the Jacobs Ridge Lift Station Upgrade for an amount not to exceed $81,000.00, pending final approval from the City Attorney.

MOTION: Motion to approve

VOTE: Motion by: Alderperson Harenda
Second by: Alderperson Kroupa
Motion Passed 6-0

C. UT 10-25 Recommend to the Common Council to award the construction contract for 2025 Private Property I/I Dye Water Testing Project to the lowest responsive bidder, Visu-Sewer, Inc., in the amount of $394,520.08. Total project cost not to exceed $394,520.08.

8. COMMUNITY DEVELOPMENT AUTHORITY

A. (2) NJ LD-2500304 Josh Pudelko with Trio Engineering on behalf of Drexel Building Supply - 3370 S. Calhoun Rd. Discussion and possible action to recommend to Common Council approval of a 2-Lot Certified Survey Map.

MOTION: Motion to approve

VOTE: Motion by: Alderperson Horbinski
Second by: Alderperson Stribl
Motion Passed 6-0

9. MAYORAL APPOINTMENTS

A. Discussion and Possible Action to approve the Mayoral Appointments per the list as presented

MOTION: Motion to approve

VOTE: Motion by: Alderperson Stribl
Second by: Alderperson Kroupa
Motion Passed 6-0

10. DEFERRED, REFERRED & TABLED ITEMS

None

11. ITEMS REMOVED FROM CONSENT AGENDA, if any

None

12. CONSENT AGENDA----------

Items under the Consent Agenda have passed unanimously by the Committee of the Whole. Items not passed by a unanimous vote will be removed from consent agenda and will be considered separately.

MOTION: Motion to approve

VOTE: Motion by: Alderperson Horbinski
Second by: Alderperson Maxey
Motion Passed 6-0

13. MINUTES

A. April 8, 2025, Committee of the Whole Meeting Minutes

14. UTILITY & FINANCE

A. Discussion and possible action to recommend to the Common Council approval of the April 23rd, 2025, Water Utility claims in the amount of $141,227.91. Sewer Utility claims in the amount of $829,739.11 and General City claims in the amount of $1,397,556.58. City Water Usage EFT OF $17,297.57 and WE Energies EFT of $90,204.84

15. LICENSES & PERMITS

A. Discussion and possible action to recommend to Common Council approval of Kowalske Brewing, doing business as Component Brewing, to sell beer at Malone Park for the Malone Park Beer Gardens to be held on May 24th, June 14th, July 12th, September 6th, and October 11th, 2025 from 12:00 pm to 6:00 pm, as outlined in Form AB-105. The application, along with the Council's recommendation, will be forwarded to the Wisconsin DOR, Division of Alcohol Beverages, for final approval and issuance.

B. Discussion and possible action to recommend to Common Council approval of Kowalske Brewing, doing business as Component Brewing, to sell beer at the New Berlin Historical Society for the Historical Park Beer Gardens to be held on June 15th, July 13th, September 7th and October 12th, 2025 from 1:00 pm to 4:00 pm, as outlined in Form AB-105. The application, along with the Council's recommendation, will be forwarded to the Wisconsin DOR, Division of Alcohol Beverages, for final approval and issuance.

C. Discussion and possible action to recommend to Common Council approval of Kowalske Brewing, doing business as Component Brewing, to sell beer at the New Berlin Public Library for the Public Library Beer Garden event to be held on August 16th, 2025 from 12:00 pm to 6:00 pm, as outlined in Form AB-105. The application, along with the Council's recommendation, will be forwarded to the Wisconsin DOR, Division of Alcohol Beverages, for final approval and issuance.

D. Discussion and possible action to recommend to the Common Council approval of LaMarvon J. Jackson as the new alcohol license agent of Family Entertainment LLC dba Marcus Ridge Cinema for the current license year, which expires on June 30, 2025

16. MISCELLANEOUS

A. Fire Department Update

B. Election of Alderperson to Serve on the Plan Commission - Pursuant to Section 275-15(B)(1), one alderperson shall be elected to serve on the Plan Commission by a two-thirds vote of the Common Council

C. Recommend to the Common Council that a public hearing be set for June 2, 2025 at 6:00 p.m. to be held before the Plan Commission to rescind PUD Overlay Ordinance # 2679 – Mandel Neighborhood Development Plan PUD (also amended by Ordinance # 2688) and adoption of Planned Unit Development Ordinance # 2701 that approves the rezoning of the properties from B-1/PUD (Shopping Center District), Rm-1/PUD (Multiple-Family Residential District:), I-1/PUD (Institutional District) / C-2/PUD (Shoreland-Wetland Holding District) to Rm-1/PUD and C-2/PUD as The Conservancy Neighborhood Development PUD Ordinance for the parcels located at 1640 S. Moorland Road (includes Tax Keys #'s 1158.989.001, 1158.989.002 & 1158.989.003).

D. Recommend to the Common Council that a joint public hearing be set for June 2, 2025 at 6:01 p.m. to be held before the Plan Commission to amend the Future Land Use Map within the City's Comprehensive Plan (Chapter 10 – Land Use and Chapter 19 – "Neighborhood I" National Avenue West) for the properties located at 16370 W. Small Road (Tax Key #: 1285.994.003) and 16380 W. Small Road (Tax Key #: 1285.994.002) from Residential Estate to Suburban Commercial with a PUD overlay and to rezone the properties located at 16370 W. Small Road (Tax Key #: 1285.994.003) and 16380 W. Small Road (Tax Key #: 1285.994.002) from B-2 and R-3 to B-2/PUD.

17. END CONSENT AGENDA----------

18. CLOSED SESSION

19. RECONVENE TO OPEN SESSION

20. ADJOURN

MOTION: Motion to adjourn at 6:58 PM

VOTE: Motion by: Alderperson Stribl
Second by: Alderperson Kroupa
Motion Passed 6-0

Respectfully Submitted,
Megan Godshall, Deputy City Clerk

Special Common Council
MEETING MINUTES

April 28, 2025 - 5:00 PM
City Hall Council Chambers

MINUTES

1. CALL TO ORDER, PLEDGE OF ALLEGIANCE

Council President Harenda called the meeting to order at 5:00 pm and led the Pledge of Allegiance.

2. ROLL CALL; DECLARATION OF QUORUM; PUBLIC NOTICE

City Clerk Rubina R. Medina took the roll call as follows:
Present: Alderperson Hopkins, Alderperson Maxey, Alderperson La Fever, Alderperson Harenda, Alderperson Horbinski, Alderperson Kroupa
Excused: Alderperson Joseph Stribl, Mayor Dave Ament

Staff Present: City Attorney Thomas Schmitzer, City Clerk Rubina R. Medina, Fire Chief Mark Polzin

The City Clerk confirmed that a quorum was present and that the meeting was properly posted in compliance with open meetings law.

3. NEW BUSINESS

A. Discussion and possible action to authorize the New Berlin Fire Department (NBFD) to enter into a contract with First Due for the implementation and use of its Records Management System (RMS), as outlined in the Requested Action Statement and reviewed by the City Attorney

MOTION: Motion to approve

VOTE: Motion by: Hopkins
Second by: Horbinski
Motion 6-0

4. ADJOURN

MOTION: Motion to adjourn at 5:15 pm

VOTE: Motion by: Kroupa
Second by: La Fever
Motion 6-0

Respectfully Submitted,
Rubina R. Medina, City Clerk

MOTION SHEET

TO: Common Council
Mayor Ament
Ald. Stribl

FROM: Plan Commission

DATE: May 13, 2025

RE: May 5, 2025, Plan Commission items requiring Common Council action

A.	Discussion and possible action to recommend to Common Council approval of PK-2200053 - Approval of the contracts for the 2025 Malone Park Improvement Project.
Council Motion:	
	This item was considered at the Plan Commission meeting on May 5, 2025. It was recommended to the Common Council by a unanimous vote. I do hereby make a motion to recommend to the Common Council the approval of the contracts for the 2025 Malone Park Improvement Project , subject to the application, plans on file, and staff report.

B.	Discussion and possible action to recommend to Common Council approval of PK-2500161 Lions Park - Approval of selected consultant for the design of Lions Park.
Council Motion:	
	This item was considered at the Plan Commission meeting on May 5, 2025. It was recommended to the Common Council by a unanimous vote. I do hereby make a motion to recommend to the Common Council the awarding of a Professional Services Design Contract to the most responsive, qualified consultant, raSmith Inc., for the design of Lions Park in an amount of $29,200 with contingencies the not-to-exceed total project cost are $60,000 from account 04252900 61136 C2025.

C.	LD-2500450 Frank Grotkiewicz - 19300 W. Observatory Rd - Discussion and possible action to recommend to Common Council approval of a 2-Lot Certified Survey Map.
Council Motion:	
	This item was considered at the Plan Commission meeting on May 5, 2025. It was recommended to the Common Council by a unanimous vote. I do hereby make a motion to recommend to Common Council approval of the 2-Lot Certified Survey Map for the property located at 19300 W. Observatory Road (Tax Key # 1229.994.003), subject to the application, plans on file, and the staff report.

D.	LD-2500487 Dave Merrick with Luther Group on behalf of New Berlin Fabrication Building located at 16230 W. Beloit Road and 16100 W. Beloit Road. Discussion and possible action to recommend to Common Council approval of a 2-Lot Certified Survey Map.
Council Motion:	
	This item was considered at the Plan Commission meeting on May 5, 2025. It was recommended to the Common Council by a unanimous vote. I do hereby make a motion to recommend to Common Council approval of a 2-Lot Certified Survey Map for the properties located at 16100 W. Beloit Road and 16230 W. Beloit Road, subject to the application, plans on file, and the staff report.

STAFF REPORT
EXECUTIVE SUMMARY

APPLICANT/PROJECT:	**City of New Berlin / Malone Park Improvement Project**
LOCATION:	**16400 Al Stigler Pkwy**
REQUEST:	**Approval of the Contract for Construction Management Services, awarding of the Site Utilities Contract, and awarding of the Park Structures Contract for the Malone Park Improvement Project.**
D.C.D. RECOMMENDATION:	**Recommend to the Common Council:** • **Approval of the Construction Management Services Contract with VJS Construction for the Malone Park Improvement Project in an amount of $182,612.33 from account 04252900 61118 C2025.** • **Awarding of the Site Utilities Contract for the Malone Park Improvement Project to the lowest responsive, responsible bidder WIL-Surge Electric, Inc. for the base bid, alternate bid #1, alternate bid #2, and alternate bid #3 in an amount of $1,075,909.96 from account 04252900 61118 C2025.** • **Awarding of the Park Structures Contract for the Malone Park Improvement Project to the lowest responsive, responsible bidder Level Up Construction, Inc. for the base bid, alternate bid #1, and alternate bid #2 in an amount of $1,394,380.00 from account 04252900 61118 C2025.** **With contingencies and available funding, the not-to-exceed total project cost is $3,990,000.00.**

1. The City of New Berlin solicited proposals for Construction Management Services to oversee the construction of the project.
    a. The City of New Berlin received 2 proposals for Construction Management Services for the Malone Park Improvement Project. The selected consultant is VJS Construction Services.
    b. Total Cost: $182,612.33
2. The scope of work outlined in the site work contract will include furnishing all labor, equipment, and materials necessary for grading, utilities, paved surfaces and restoration.
    a. On April 30, 2025, the City of New Berlin received 1 bid for the site work portion of the Malone Park Improvement Project. The apparent low bidder is WIL-Surge Electric, Inc. The bid was below the engineer's estimate and the bidder has satisfied the bidder's prequalification requirements.
    b. Base Bid: $832,820.96

c. Alternate #1: $17,425.00

d. Alternate #2: $8,830.00

e. Alternate #3: $216,834.00

f. Total Bid Amount: $1,075,909.96

3. The scope of work outlined in the buildings contract will include furnishing all labor, equipment, and materials necessary for demolition of the existing park structures and construction of the new park structures.

   a. On April 30, 2025, the City of New Berlin received 2 bids for the buildings portion of the Malone Park Improvement Project. The apparent low bidder is Level Up Construction, Inc. The bid was below the engineer's estimate and the bidder has satisfied the bidder's prequalification requirements.

   b. Base Bid: $1,013,750.00

   c. Alternate #1: $298,330.00

   d. Alternate #2: $82,300.00

   e. Total Bid Amount: $1,394,380.00

DETAILS IN ATTACHED STAFF REPORT

CITY OF NEW BERLIN
DEPARTMENT OF COMMUNITY DEVELOPMENT
PLAN COMMISSION STAFF REPORT

Meeting of May 5, 2025

City of New Berlin / Malone Park Improvements
16400 Al Stigler Pkwy

DATE STAFF REPORT CREATED: April 21, 2025

APPLICANT: City of New Berlin

REQUEST / DESCRIPTION OF PROJECT: This project consists of the removal of the existing structures and the installation of new structure(s) within Malone Park to comply with ADA standards. Associated site work includes utility upgrades and trail reconstruction to comply with ADA standards and to connect to park amenities.

PROPOSALS RECEIVED: 2

SELECTED CONSULTANT: VJS Construction

FISCAL IMPACT: Excluding contingencies, the total project cost is $2,652,902.29. With contingencies and available funding, the not-to-exceed total project cost is $3,990,000.00.

VJS Construction	$182,612.33
WIL-Surge Electric, Inc.	$1,075,909.96
Level Up Construction, Inc.	$1,394,380.00

SOURCE OF FUNDS: 04252900 61118 C2025 Malone Park

D.C.D. RECOMMENDATION: Recommend to the Common Council:

- Approval of the Construction Management Services Contract with VJS Construction for the Malone Park Improvement Project in an amount of $182,612.33 from account 04252900 61118 C2025.
- Awarding of the Site Utilities Contract for the Malone Park Improvement Project to the lowest responsive, responsible bidder WIL-Surge Electric, Inc. for the base bid, alternate bid #1, alternate bid #2, and alternate bid #3 in an amount of $1,075,909.96 from account 04252900 61118 C2025.
- Awarding of the Park Structures Contract for the Malone Park Improvement Project to the lowest responsive, responsible bidder Level Up Construction, Inc. for the base bid, alternate bid #1, and alternate bid #2 in an amount of $1,394,380.00 from account 04252900 61118 C2025.

With contingencies and available funding, the not-to-exceed total project cost is $3,990,000.00. **See Executive Summary.**

Attachments:
Proposal for Construction Management Services
Construction Management Services Contract
Summary of Bids Received
Contract Specifications & Plan Set

VJS CONSTRUCTION SERVICES

QUALIFICATIONS PROPOSAL - MALONE PARK IMPROVEMENTS PROJECT

CITY OF NEW BERLIN

City of New Berlin

VJS CONSTRUCTION SERVICES | FEBRUARY 3, 2025

ABOUT VJS

JOURNEY21 - ENRICHMENT CENTER

WE DEVOTE TALENT AND CREATIVITY TO BUILD PLACES THAT TRANSFORM LIFE AND WORK.

Delivering exceptional client experiences requires precision, proactiveness, and expertise that spans the spectrum of a project.

VJS Construction Services is not just building buildings; we're making big ideas come to life.

SELF-PERFORM SERVICES

VJS is extremely competitive and successful in self-performing work on many of our current projects and even on some of our competitors projects.

Our ability to self-perform enables us to control the schedule, quality, and budget.

Self-Perform Services Include:

- Selective Demolition
- Concrete
- Drywall
- Carpentry

PAST EXPERIENCE

- Children's Hospital of Wisconsin (Concrete)
- Discovery World (Concrete)
- Marriott Autograph Hotel (Concrete)
- Von Maur (Concrete & Carpentry)
- 333 N. Water St. (Concrete)
- Nova Apartments (Concrete)
- St. Camillus (Carpentry)

RECENT PROJECT AWARDS

JOURNEY21 - ENRICHMENT CENTER
Judges Choice, WCREW Impact Awards (2024)
Top Project Award, The Daily Reporter (2023)

AUGUSTINE PREP - NEW PRIMARY SCHOOL
Thrive Award, NAIOP (2023)
Top Project Award, The Daily Reporter (2023)

MSOE - UNIVERSITY TERRACE
Mayor's Design Award (2023), Real Estate Award, Milwaukee Business Journal (2023)

STAIR CREST - NEW SENIOR LIVING FACILITY
Top Project Award, The Daily Reporter (2023)

AVENIR APARTMENTS
Top Project Award, The Daily Reporter (2023)

TRINITY WOODS - INTERGENERATIONAL HOUSING
Best New Development - Residential, Real Estate Award, Milwaukee Business Journal (2022) Yearbook of Engineering Achievement Awards, Civil + Structural Engineering Magazine (2021)

THE DEN AT FOX RUN
Concrete Design Award, Wisconsin Ready Mixed Concrete Association (2022)

WAUWATOSA SCHOOL DISTRICT - MCKINLEY ELEMENTARY SCHOOL
Award of Excellence, International Interior Design Association (IIDA) Wisconsin (2022)
Gold Design Award - K-12 Category, American Society of Interior Designers (ASID) Wisconsin (2022)

MSOE - VIETS TOWER DORMITORY
Top Project Award, The Daily Reporter (2022)
Real Estate Award, Milwaukee Business Journal (2022)

HMONG AMERICAN PEACE ACADEMY (HAPA) - HIGH SCHOOL AND GYM
Top Project Award, The Daily Reporter (2022)
Best Public/Private Partnership, Real Estate Award, The Milwaukee Business Journal (2022)
Real Estate Award, Milwaukee Business Journal (2022)

UNITED COMMUNITY CENTER (UCC) - RICARDO DIAZ EARLY LEARNING ACADEMY
Real Estate Award, Milwaukee Business Journal (2022)
Top Project Award, The Daily Reporter (2021)

RELEVANT EXPERIENCE

THRIVING COMMUNITIES ARE ONES THAT CAN ATTRACT FAMILIES AND BUSINESSES WITH RECREATIONAL AND PURPOSEFUL SPACES TO LIVE, WORK, AND ENJOY.

From baseball fields for the Boys and Girls Clubs to Urban Treehouses to complex theaters such as the Sharon Lynne Wilson Center for the Arts, VJS Construction Services has had the honor of working on multiple unique projects that benefit the communities where we are privileged to live and work.

With a proven track record of delivering high-quality construction and renovation projects, our team brings expertise in executing complex developments with precision and care. Our experience spans diverse sectors, incorporating both structural and aesthetic elements that enhance functionality and design.

Our relevant experience includes:

FOUNDATION & STRUCTURAL WORK
Expertly executed footings, foundations, and structural components for a variety of buildings and outdoor features.

FACILITY RENOVATIONS & EXPANSIONS
Transforming existing buildings into modern, multi-functional spaces through thoughtful renovations and strategic additions.

SPECIALTY & THEMATIC INSTALLATIONS
Creation of immersive environments with unique architectural and landscape elements.

RECREATIONAL & COMMUNITY SPACES
Development and enhancement of public and private facilities, including concessions, restrooms, and gathering areas.

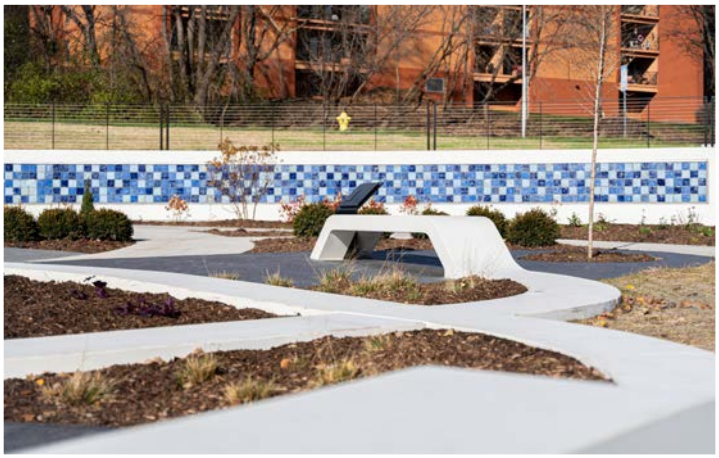
PAVILION & EVENT SPACES
Construction of reception and gathering spaces designed to integrate natural beauty with sustainable building practices.

SITE IMPROVEMENTS & INFRASTRUCTURE
Comprehensive upgrades including paving, parking, lighting, and landscaping to enhance accessibility and aesthetics.

MILWAUKEE PUBLIC SCHOOLS - ROOSEVELT

THREE PILLARS SENIOR LIVING COMMUNITIES

> With a commitment to craftsmanship, innovation, and seamless project execution, we specialize in bringing ambitious visions to life while ensuring quality, sustainability, and long-term value.



WAUKESHA COUNTY - WAUKESHA PARADE MEMORIAL AT GREDE PARK

WAUKESHA, WISCONSIN

PROJECT DETAILS

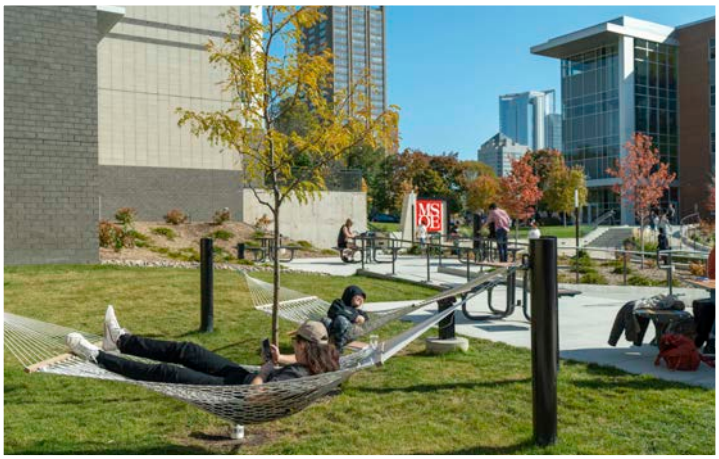
Size:	7,000 square feet
Cost:	$1,067,000
Self-Perform:	Concrete
Start - End:	April 2024 - November 2024
Architect:	Thrive Architects

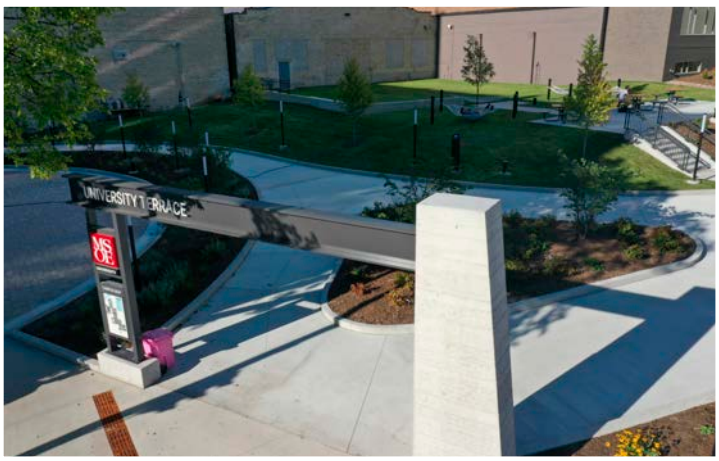
PROJECT SCOPE

Leveraging our strong local relationships, VJS coordinated with subcontractors and suppliers to secure generous donations of services and materials, enabling the project to come to life while minimizing costs.

- Six concrete ribbons forming a heart sculpture
- Walking paths, garden, benches
- Tile wall with community-created tiles
- Memorials for six victims of the 2021 tragedy
- Lighting for ambiance and reflection

> *"Your company's generosity toward this project has not gone unnoticed. Our community **truly appreciates** the beautiful memorial you have helped us to create. It stands as a **testament to the care and commitment** you have poured into this effort."* — Rebecca Pederson, Communications & Engagement Manager, City of Waukesha





MILWAUKEE SCHOOL OF ENGINEERING (MSOE) - UNIVERSITY TERRACE

MILWAUKEE, WISCONSIN

PROJECT DETAILS

Size:	49,000 square feet
Cost:	$2,258,771
Self-Perform:	Concrete
Start - End:	September 2021 - May 2020
Architect:	Ramlow/Stein Architecture

PROJECT SCOPE

- Demolition of Viets Tower campus parking lot to create space for new walking paths, stairs, landscaping, and common space
- Renovation of Diercks Hall's parking lot included milling and repaving, making the parking lot, and transition to the city sidewalk ADA compliant
- Concrete paving, stairs, and brick pavers to create multiple patios and walkways
- New landscaping, irrigation, hammocks, and site railings.
- Snowmelt system under portions of the site paving, ramp, and concrete stairs to reduce maintenance and salting.
- ADA-compliant concrete ramp to allow students access to North Broadway Street
- Installation of MSOE signs and structures

BOERNER BOTANICAL GARDEN - MARGIES GARDEN (CONCRETE)

HALES CORNERS, WISCONSIN

PROJECT DETAILS

Size: 2.0 acres

Cost: $265,000

Self-Perform: Concrete

Start - End: August 2021 - June 2022

Architect: New Eden Landscape Architecture

PROJECT SCOPE

- Footing and foundations for osprey shade area, entry gate, planters, twig hut, potting shed, enchanted cottage, piers, sign base, pavilion slab, and boardwalk
- Features include an “enchanted village” complete with a playhouse, fiddlehead path, twig hut and mushroom chair rings; a bug garden with interactive, friendly bug sculptures; and a stone and wood “troll bridge” over a dry stream bed

ROGERS BEHAVIORAL HEALTH - OCONOMOWOC COURTYARD RENOVATION

OCONOMOWOC, WISCONSIN

PROJECT DETAILS

Cost: $415,000

Self-Perform: Selective Demolition, Concrete

Start - End: May 2024 - June 2024

Architect: raSmith

PROJECT SCOPE

The scope consisted of relocation of existing gazebo, installation of brick wall, and landscaping.

CHALLENGE

An interesting challenge we faced was the relocation of an existing gazebo to make room for the new wall. This wasn't just any gazebo—it exceeded 5,000 lbs! Moving such a large structure out of a congested courtyard presented significant logistical hurdles.

SOLUTION

However, our team successfully navigated these challenges, ensuring the gazebo found a new home elsewhere on campus.

MILWAUKEE PUBLIC SCHOOLS (MPS) - ESSER III, ATHLETIC RENOVATION PROJECTS

MILWAUKEE, WISCONSIN

PROJECT DETAILS

Cost: $56,674,000

Self-Perform: Selective Demolition, Concrete, Carpentry, Drywall

Start - End: August 2024 - September 2024

Architect: Quorum Architects

PROJECT SCOPE

The ESSER III project focused on interior and athletic renovations across 56 schools and included many outdoor including:

- Installation of durable turf surfaces for baseball and softball fields
- New dugouts, bullpens, and batting cages
- Modern LED lighting for energy efficiency and better visibility
- Renovated tennis courts
- Renovated office and bathroom facilities for players and visitors

SHARON LYNNE WILSON CENTER FOR THE ARTS - RECEPTION PAVILION

BROOKFIELD, WISCONSIN

PROJECT DETAILS

Size:	4,000 square feet
Cost:	$450,000
Self-Perform:	Concrete, Carpentry
Start - End:	2017
Architect:	WholeTrees

PROJECT SCOPE

- Permanent 32’ x 100’ exterior reception pavilion
- Built adjacent to the Kuttemperoor Grand Hall
- Designed to combine the beauty of nature with sustainable state-of-the-art technology
- Made from north woods timber
- Seating for up to 200 guests

SCHOOL DISTRICT OF NEW BERLIN - WEST HIGH SCHOOL RESTROOM AND CONCESSIONS

NEW BERLIN, WISCONSIN

PROJECT DETAILS

Size:	4,416 square feet
Cost:	$1,166,000
Self-Perform:	Concrete, Carpentry, Drywall
Start - End:	April 2024 - September 2024
Architect:	Patera

PROJECT SCOPE

- Demolition of existing concession building
- Team room with exposed ceilings
- Men’s and women’s restrooms, team room and restrooms
- Concessions featuring three 8’x4’8’’ serving windows, warming kitchen, coolers, refrigerators, five sinks
- Concession storage and additional storage room
- Building consists of five overhead doors (three 12’x8’ and two 8’x8’)

URBAN ECOLOGY CENTER - WASHINGTON PARK RENOVATION & EXPANSION

MILWAUKEE, WISCONSIN

PROJECT DETAILS

Size: 33,000 square feet

Cost: $13,120,000

Self-Perform: Selective Demolition, Concrete, Carpentry

Start - End: September 2023 - January 2025

Architect: Quorum Architects

- Land Stewardship Storage Building – 850 square foot storage shed
- Service Yard – Fenced 10,000 SF area
- Site development in conjunction with the UEC
- Parking lot renovation of existing lot into approximately 118-stall green parking lot

PROJECT SCOPE

- Renovation and expansion of existing 15,125 square foot facility, resulting in a 33,000 square foot facility
- The existing training academy was converted into two classrooms and now includes a larger animal room on the first floor
- The existing lobby has been dramatically transformed into a multi-level mezzanine with a large tree in the middle
- The addition includes restrooms, and open office spaces on each floor, storage, an assembly hall, multiple classrooms including a solarium classrooms, library, employee breakroom, a green roof, and roof deck

MILWAUKEE COUNTY ZOO - ADVENTURE AFRICA ELEPHANT EXHIBIT

MILWAUKEE, WISCONSIN

PROJECT DETAILS

Size: 20,000 square feet

Cost: $14,178,000

Self-Perform: Concrete, Carpentry

Start - End: September 2017 - November 2018

Architect: HGA

PROJECT SCOPE

- The five-acre exhibit
- 12,000-15,000 square foot elephant barn
- Outdoor exhibit with bleachers
- Large outdoor elephant habitat including a pool
- The space includes mixed-species exhibit featuring a new species to the Zoo, yellow-backed duikers (medium-sized African antelope) and the current herds for zebra, impala, and bongo will be expanded.

IN PRECONSTRUCTION

BOYS & GIRLS CLUB OF GREATER MILWAUKEE - MARY RYAN SHERMAN PARK EXTERIOR IMPROVEMENTS PROJECT

MILWAUKEE, WISCONSIN

PROJECT DETAILS

Cost: $1,800,000

Self-Perform: TBD

Start - End: TBD (Awaiting Funding)

Architect: VJS Construction Services

PROJECT SCOPE

- Asphalt repaving of side walk
- Addition of new parking lot
- Renovation of splash pad
- New site lighting

PRECONSTRUCTION SERVICES QUALIFICATIONS

MILWAUKEE SCHOOL OF ENGINEERING (MSOE) - UNIVERSITY TERRACE

VJS CONSTRUCTION SERVICES IS COMMITTED TO EXCELLENCE AT EVERY STAGE OF YOUR PROJECT.

As a trusted general contractor, we are committed to delivering exceptional results and ensuring a smooth and successful construction process from start to finish. Let us partner with you to bring your vision to life with our suite of services.

PROJECT PHASING & WORK PLAN DEVELOPMENT

Thorough project phasing and work plan development is a critical step involves defining project stages and outlining specific tasks to establish a clear road map for project success.

CONSTRUCTABILITY REVIEWS

We conduct detailed constructability reviews early on, identifying potential challenges and offering proactive solutions.

SCHEDULING & SCHEDULE MANAGEMENT

We plan and monitor project timelines and long-lead materials optimizing resource allocation and mitigating potential delays to deliver our projects on time.

VALUE ENGINEERING & OPTIMIZATION OPTIONS

Through value engineering and optimization options, we strive to maximize your projects value while maintaining quality standards.

PROJECT ESTIMATES & BUDGET MANAGEMENT

Our detailed project estimates and budget management services provide transparency and control, aligning project goals with your budget.

APPROVALS & PERMITTING

Our team handles the approvals and permitting processes tasks diligently, ensuring compliance with regulatory requirements and expediting approvals.

SAFETY

Safety is paramount in all our projects, and we prioritize the development of a robust Safety Plan to protect our workers and stakeholders. *Please see Section 10.0: Safety to learn more.*

PROJECT PHASING & WORK PLAN DEVELOPMENT

OUR TEAM WILL COMMUNICATE PROACTIVELY AND FACILITATE AN INCLUSIVE ATMOSPHERE WITH APPROPRIATE STAFF AND PROJECT REPRESENTATIVES TO ENSURE ALL PROJECT ACTIVITIES AND SEQUENCING PROCEED SMOOTHLY.

WORK PLAN DEVELOPMENT

We will work collaboratively with all stakeholders throughout the development of the work plan. The work plan aspects include (but are not limited to):

1. KICKOFF MEETING WITH STAKEHOLDERS

Kick off meeting with stakeholders to review and understand the needs and desires from an operations standpoint.

2. REVIEW SITE ANALYSIS

Review the site analysis plan to understand the key areas surrounding the project site.

3. PHASING & SEQUENCING DEVELOPMENT

Develop overall project phasing and sequencing based on feedback from the kickoff meeting, integrating architectural design stages and construction phases.

4. PRELIMINARY SCHEDULE DEVELOPMENT

Begin preliminary schedule development as design documents progress, reflecting both architectural and construction phases.

5. DD SCHEDULE REVIEW & REVISION

Review the “DD Schedule” with phasing prior to issuing Construction Documents, incorporating both the Architect and VJS Construction Services perspectives.

6. FINAL APPROVAL

Ensure comprehensive review and approval of all aspects by stakeholders.

SELIG-JOSEPH-FOLZ AMPHITHEATER IN KADISH PARK

FULL TEAM CONSTRUCTABILITY REVIEW

CONSTRUCTIBILITY REVIEWS

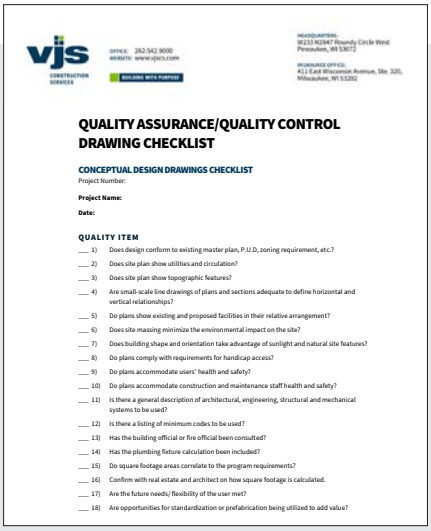
OUR APPROACH INTEGRATES VALUE ENGINEERING FROM THE START, PROVIDING CONSTRUCTIBILITY INSIGHTS FOR INFORMED DECISION-MAKING.

Our detailed review of drawings ensures smooth construction commencement. After our initial meeting with the appropriate stakeholders, our internal team will refine the scope of work, analyze methods and systems to ensure functionality and operational efficiency, and check material turnaround times for timely availability with the entire project team (Estimator, Project Management team, and the Superintendent).

The construction team will meet the Architect to identify possible:

- Missing details
- Incomplete details
- Construction efficiency - a better way to build
- Impact on schedule
- Bidding/procurement clarifications
- Weather-related installations
- Past lessons learned to implement on next project

To ensure a throughout review of drawings during each phase, we utilize our 19-page Quality Assurance/ Quality Control Drawing Checklist.



vjs CONSTRUCTION SERVICES

QUALITY ASSURANCE/QUALITY CONTROL DRAWING CHECKLIST

CONCEPTUAL DESIGN DRAWINGS CHECKLIST

Project Number:

Project Name:

Date:

QUALITY ITEM

___ 1) Does design conform to existing master plan, P.U.D, zoning requirement, etc.?
___ 2) Does site plan show utilities and circulation?
___ 3) Does site plan show topographic features?
___ 4) Are small-scale line drawings of plans and sections adequate to define horizontal and vertical relationships?
___ 5) Do plans show existing and proposed facilities in their relative arrangement?
___ 6) Does site massing minimize the environmental impact on the site?
___ 7) Does building shape and orientation take advantage of sunlight and natural site features?
___ 8) Do plans comply with requirements for handicap access?
___ 9) Do plans accommodate users' health and safety?
___ 10) Do plans accommodate construction and maintenance staff health and safety?
___ 11) Is there a general description of architectural, engineering, structural and mechanical systems to be used?
___ 12) Is there a listing of minimum codes to be used?
___ 13) Has the building official or fire official been consulted?
___ 14) Has the plumbing fixture calculation been included?
___ 15) Do square footage areas correlate to the program requirements?
___ 16) Confirm with real estate and architect on how square footage is calculated.
___ 17) Are the future needs/ flexibility of the user met?
___ 18) Are opportunities for standardization or prefabrication being utilized to add value?

> *"Your teams DD estimate for the new Schulte project is really well done. There is **great detail and backup** on your assumptions that really helps us get **confident that you are truly reviewing the documents**."*
>
> — Matt Wolfert, President/Architect, Bray

SCHEDULING & SCHEDULE MANAGEMENT

SUBCONTRACTOR MEETING AND SCHEDULE PULL PLANNING

EACH PROJECT REQUIRES CONSTANT REVIEW AND TRANSPARENCY OF THE SCHEDULE. WE MAKE THIS PART OF EACH MEETING AND MANAGE ALL ACTIVITIES TO FORECAST OUR OBJECTIVES.

Proactive schedule management includes adjusting to meet critical milestones, which involves an in-depth look at labor availability, owner/contractor coordination, flexible scheduling, and material acquisition. Our team has the experience and will work collaboratively with you to create solutions that will keep the project on schedule.

LABOR AVAILABILITY	OWNER / CONTRACTOR COORDINATION	FLEXIBLE SCHEDULING	MATERIAL ACQUISITION & LONG LEAD INVESTIGATION
Labor availability is a discussion we have with our subcontractors well before we even receive a quotation from them.	Our Superintendents have the experience and expertise in coordinating manpower successfully.	Our preliminary schedule will utilize currently available information. This schedule is a living document and will continue to evolve.	Early review of material suppliers' commitment has proven successful in the past, and we will utilize these lessons learned for your project's success.

VALUE ENGINEERING & OPTIMIZATION OPTIONS

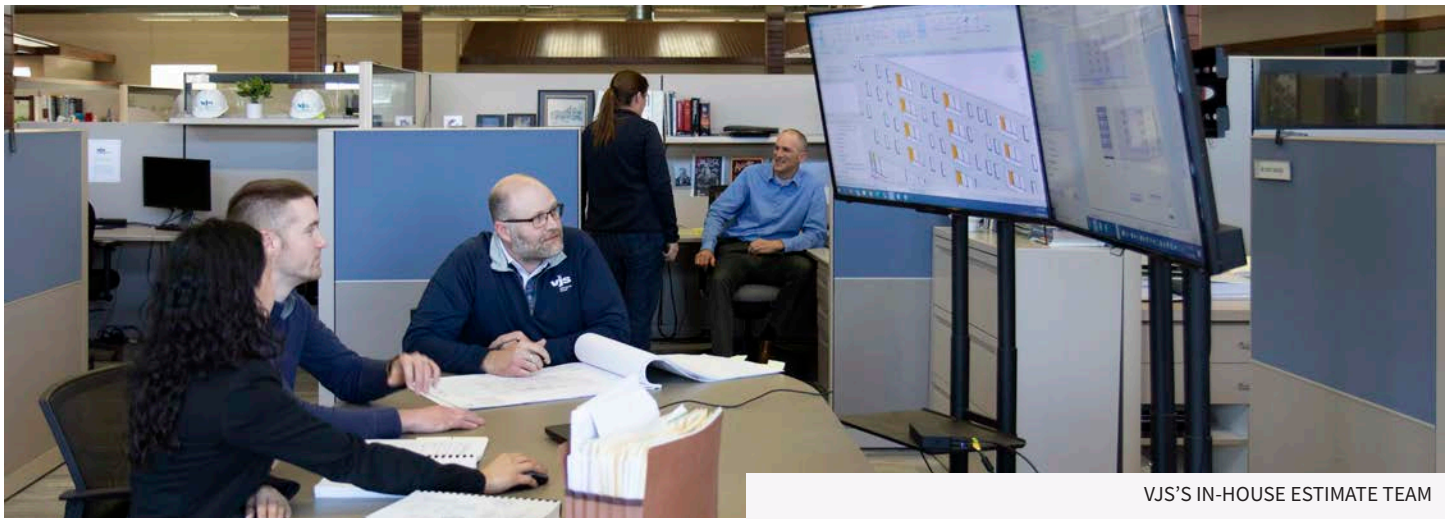
VJS WILL COLLABORATE WITH THE CITY OF NEW BERLIN TO OPTIMIZE YOUR BUDGET THROUGHOUT ALL PROJECT PHASES.

SERVICES THAT OPTIMIZE YOUR VALUE:

ANALYSIS OF SYSTEMS	VJS will work with your team to conduct a thorough analysis of systems to ensure optimal use of your buildings systems.
ESTIMATING SERVICES & BUDGET MANAGEMENT	Following the initial meeting, our estimating team will prepare a complete construction budget. The team then reviews the costs and compares them against the goals established in preconstruction.
VALUE ENGINEERING	Our role is to investigate and suggest construction alternatives that will avoid unnecessary expenditures and provide improved value and economy, while maintaining the design intent and owner goals.
WORKING WITH TRADE PARTNERS	We involve our trade partners early in the estimating process so they target your project for bidding in their backlog of work.

MILWAUKEE COUNTY ZOO - ADVENTURE AFRICA ELEPHANT EXHIBIT

PROJECT ESTIMATES & BUDGET MANAGEMENT



VJS'S IN-HOUSE ESTIMATE TEAM

OUR PROCESS RELATED TO PROJECT FINANCIALS IS COMPLETELY OPEN AND TRANSPARENT.

DEVELOPING ACCURATE ESTIMATES

Our extensive experience as well as current and ongoing projects allows us to provide you with detailed, historic early stage estimates.

1. UNDERSTANDING THE OWNER'S AND THE PROJECT REQUIREMENTS

- Develop phasing plans and develop a preliminary construction schedule
- Identifying long lead times before the project starts allows us to assign resources accurately.

2. PROVIDE ACCURATE AND CLEAR COMMUNICATION WITH OUR SUBCONTRACTORS

- Rapidly distributing project information through Building Connected allows us to reach more subcontractors and communicate information quickly
- Review construction details with subcontractors to identify and resolve constructability issues, ensuring bid coverage on all work packages
- Issues work package description to all bidders
- Work with subcontractors to engineer cost-effective solutions

3. REVIEW AND ANALYZE BIDS

- Review and interview low bidders
- Review self-perform work with the project management team and review take-offs to ensure construction durations align with our historical production rates
- Use the overall project historical cost database to ensure project cost aligns with similar previous projects
- Review estimates with the architecture team to ensure their design vision is met

4. CREATE ESTIMATE BOOK

- A detailed estimate is broken down per work package and accompanied by a scope description. The scope of work provides a comprehensive overview of everything included in the estimate.

PRECONSTRUCTION SERVICES QUALIFICATIONS

TRADE PARTNER / SUBCONTRACTOR BIDDING

Our extensive scoping process enables us to meet with the best-qualified contractors to ensure schedule, quality, and budget compliance in relation to the project scope. We showcase our post scope review and fully-scoped bid results forms to present suggestions from our trade partners. VJS trusts, respects, and values our trade partner relationships and involve them early in the estimating process, utilizing their expertise to build your project more efficiently.

POST SCOPE REVIEW SAMPLE

		Contractor A Submitted by XXXX	Contractor B Submitted by XXXX	Contractor C Submitted by XXXX	Contractor D Submitted by XXXX
	BREAKOUTS AND UNIT COSTS	Total Cost	Total Cost	Total Cost	Total Cost
	Labor and Incidental Materials	$477,066.00	$910,000.00	$894,000.00	$1,075,000.00
	Materials	$181,436.00	$1.00	$.00	$.00
	Tax on Materials	$.00	$.00	$.00	$.00
	Payment and Performance Bond	$.00	$10,000.00	$.00	$8,000.00
	Total Bid Day Bid	INITIAL LOW BID $658,502	$920,001	$894,000	$1,083,000
	SCOPING ADJUSTMENTS SUBTOTAL	**$467,738**	**$253,024**	**$272,000**	**$24,000**
1	Trucking	$110,738	$250,000	Included	Included
2	Site Logistics Plan	$75,000	Included	$273,500	-$48,000
3	Erosion Control Permit	Included	Included	Excluded	Excluded
4	Erosion Control Maintenance Until Landscaping	Included	Included	Excluded	Included
5	Includes removing spoils from other trades	Included	Included	Excluded	Included
6	Includes stone base for concrete curbs	Included	Included	Excluded	Included
7	DNR requirements at wetlands includes	Included	Included	Excluded	Included
8	Geotech Recommendations Followed Explicitly	Included	Included	Excluded	Included
9	Temporary seeding of stockpile	Included	Included	Excluded	Included
10	Draintile at Foundation	Included	$11,424	$22,500	$16,000
11	Coordinate Crushing & Hauling Requirements of Blasting	Included	Included	Excluded	Included
12	Includes Rerouting of Existing Utilities for new Const	Included	Included	Excluded	Included
13	Forced Sanitary Main Tanks & Pumps	Included	Included	Included	Excluded
14	Blasting of Utility Lines	$250,000	Included	Included	$66,000
15	Reduce blasting from 2' below to bottom of footing	Included	Included	Included	Included
16	Eliminate Interim Grading Plan	Included	Included	-$12,000	Included
17	Combined Excavation & Site Utilities	N/A	N/A	-$12,000	N/A
18	1,500 ton of stone - Use Crushed Stone From Site	Not included	-$26,400	Included	-$30,000
19	Phase 2 blasting and grading	$32,000	$18,000	Included	$20,000
	Revised Total Bid w/ Scoping Adjustments	$1,126,240	$1,173,025	$1,166,000	$1,107,000

LOW BID AFTER SCOPE REVIEW

> *"**VJS's commitment to providing clear scopes of work, accurate schedules, and on-time payments is unparalleled**. I never have to worry about misunderstandings or delays, allowing me to focus on delivering quality work. The transparent **communication and collaborative problem-solving make me feel like a valued partner** rather than just a subcontractor. It's refreshing to work with a contractor who truly understands the importance of a strong and reliable working relationship."*
>
> — Gerry Tetzlaff, Vice President, Bohmann & Vick, Inc.

PRECONSTRUCTION SERVICES QUALIFICATIONS

MANAGING YOUR BUDGET

THE GOAL FOR EVERY PROJECT IS TO NEVER LOSE SIGHT OF THE BUDGET BY CONSTANTLY AND EFFECTIVELY MONITORING THE PROJECT COSTS, ISSUES, CHANGES, AND CONTINGENCY ON A PROJECT WHILE BEING 100% OPEN BOOK WITH YOU.

Contingency dollars are identified at the start of the project, shown on the Project Balance Sheet, and tracked using a Project Contingency and Change Order Log (CCOL).

The CCOL tracks all potential project cost impacts including pending change orders, executed change orders, and change events not approved.

Each month, we will provide you with the following project documentation:

- Change Order Log
- Progress Photos
- Schedule Update
- Submittal Log
- Request for Information (RFI) Log

PROJECT CONTINGENCY AND CHANGE ORDER LOG (CCOL) SAMPLE

CHANGE ORDER LOG
May 10, 2021

#	Description	COR #	Pending	Approved	Not Approved	Comments
1	Subcontractor bonding after subcontract awards	001	$ -	$ 38,871	$ -	Submitted 4/2/20; Approved 4/6/20
2	RFI #14 - Ceiling mounted speaker revisions	003	$ -	$ 5,467	$ -	Submitted 4/23/20; Approved 5/6/2020
3	Construction Bulletin #2	004	$ -	$ 35,272	$ -	Submitted 5/06/20; Approved 5/6/2020
4	RFI #20 - Area A Subgrade Lift	005	$ -	$ (1,342)	$ -	Submitted 5/06/20; Approved 5/6/2020
5	Construction Bulletin #3	006	$ -	$ 89,595	$ -	Submitted 7/08/2020; Approved 7/10/2020
6	RFI #36 - Existing West Stair Demo	007	$ -	$ 10,710	$ -	Submitted 6/26/2020; Approved 7/10/2020
7	Repairs to existing concrete columns/beams per site reports	015	$ -	$ 3,628	$ -	Submitted 10/02/2020, Approved 10/15/20
8	Construction Bulletin #5 - plenum revisions, irrgation addition (elec & plumbing only)	016	$ -	$ 38,863	$ -	Submitted 10/02/2020, Approved 11/05/20
9	Construction Bulletin #6 - civil, electrical, HVAC, architectural revisions	017	$ -	$ 18,807	$ -	Submitted 10/02/2020, Approved 11/05/20
10	Construction Bulletin #7 - Arch, structural, electrical revisions	018	$ -	$ 23,629	$ -	Submitted 10/02/2020, Approved 11/05/20
11	Design Build Drip Irrigation	019	$ -	$ 11,950	$ -	Submitted 10/02/2020, Approved 10/15/20
12	Construction Bulletin #8	020	$ -	$ 29,566	$ -	Submitted 10/02/2020, Approved 10/15/20
13	Construction Bulletin #9	021	$ -	$ 6,735	$ -	Submitted 11/04/2020, Approved 11/05/2020
14	Construction Bulletin #10 - HVAC, Structural, Architectural Revisions	022	$ -	$ 1,200	$ -	Submitted 11/30/2020, Approved 12/01/2020
15	Unsuitable Soils	023	$ -	$ 27,571	$ -	Submitted 11/30/2020, Approved 12/08/2020
16	Construction Bulletin #11 - Arch., Structural, MEP revisions	024	$ -	$ 23,922	$ -	Submitted 1/26/2021, Approved 02/03/2021
17	Construction Bulletin #12 - Civil revisions integrating final playground design	025	$ -	$ 50,901	$ -	Submitted 1/26/2021, Approved 02/03/2021
18	Added Storefront Head Receptors (Deflection)	026	$ -	$ 10,295	$ -	Submitted 1/26/2021, Approved 02/03/2021
19	Band Storage Allowance Credit	027	$ -	$ (60,000)	$ -	Submitted 1/26/2021, Approved 02/03/2021
20	Per WSD Request - Revise Phase 2 Clocks From 24V to 120V	028	$ -	$ (10,166)	$ -	Submitted 2/15/2021, Approved 02/15/2021
21	Construction Bulletin #15 - 2nd Level WSTEM Classroom Revisions	029	$ -	$ 18,901	$ -	Submitted 2/15/2021, Approved 02/15/2021
22	Construction Bulletin #13 - Sample Avenue City Coordination (SCOPE DEDUCT)	030	$ -	$ (84,855)	$ -	R1 -3/17/2021, R-2 3/24/2021, Approved 3/24/2021
23	Construction Bulletin #14	N/A	$ -	$ -	$ -	No Contingency Request - 3/2/2021
24	Phase 2 Temp AC Units - Installation & Removal		$ 1,200	$ -		
	Sub Total		$ 1,200	$ 289,520	$ -	

Contingency Summary

Project Contingency	$ 989,000
Approved Changes	$ 289,520
Remaining Project Contingency	$ 699,480
Pending/Proposed Changes	$ 1,200
Remaining Project Contingency	$ 698,280

*"VJS delivered an expansion to our school **on time and on budget**. Recommendations along the way from the VJS team's leader provided us **incredible value for the money**. This was the school leadership's first major construction project and **VJS kept us informed the entire way about the schedule, budget, and required paperwork**. Loved working with the professionals at VJS and would do it again."* — Brenda Zellmer, Head of School, Montessori School of Waukesha

PROJECT TEAM MEETING

APPROVALS & PERMITTING

VJS HAS ALWAYS MAINTAINED A PROACTIVE APPROACH IN WORKING WITH LOCAL AND STATE AGENCIES AND PERSONNEL.

Proactive communication, early scheduling, and direct communication with department heads, and then the respective front-line individual(s), has proven to be an effective method for our projects. We will provide all authorities having jurisdiction with a solid understanding of the project scope, where and when they fit into the process/schedule, and discuss process and communication for working with each respective agency and will identify our point of contact for each agency/department that we work with.

PERMITTING PROCESS

Initial Assessment & Planning
- Review project plans and permit requirements and timelines.
- Develop a permit strategy outlining priorities and key milestones.

Prepare Applications
- Coordinate with project teams to gather required documentation for applications.
- Ensure permit completeness and accuracy.

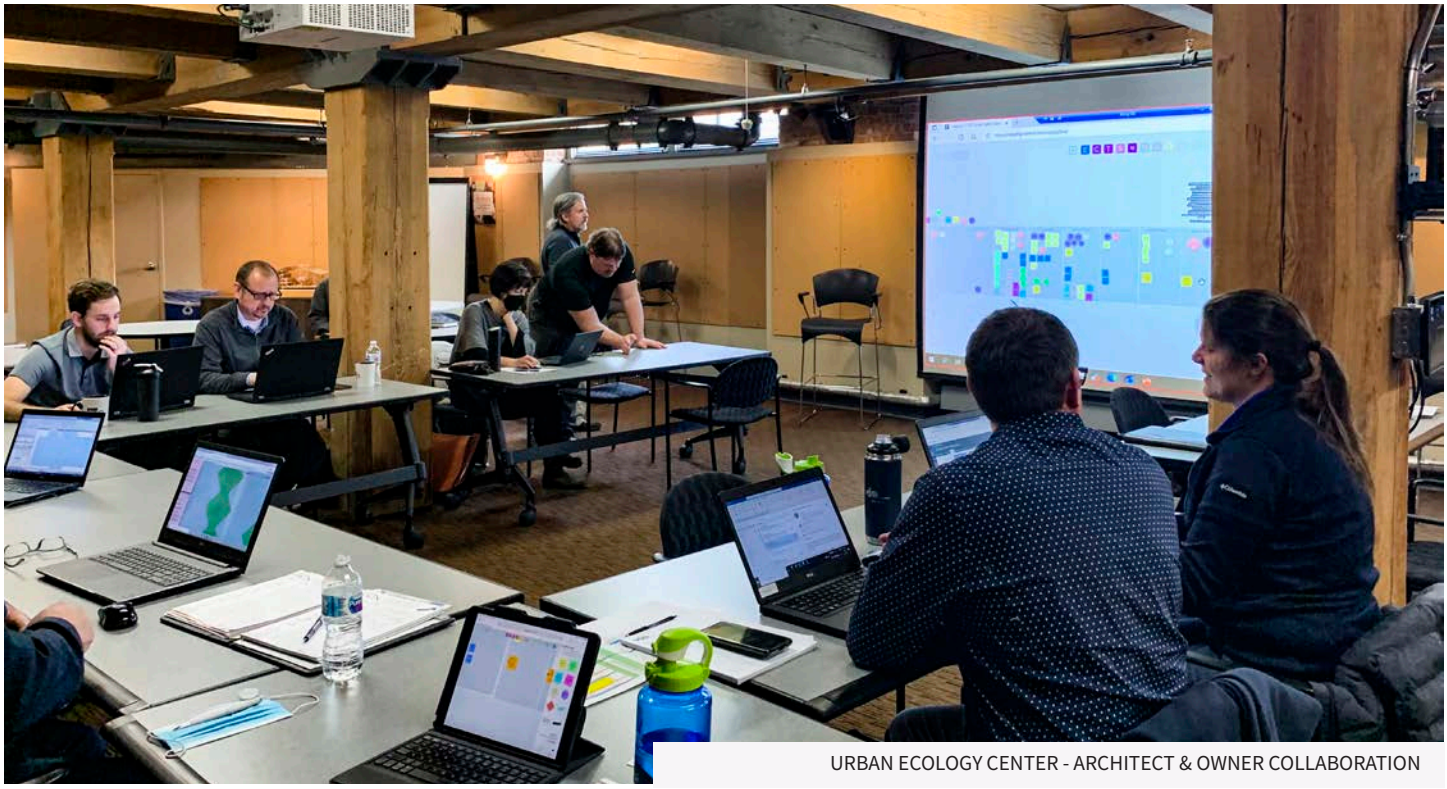
Submission & Follow-Up
- Submit within established timeline.
- Address inquiries as needed.
- Monitor review process.

Compliance & Documentation
- Track and document permit approvals and conditions.
- Ensure that permits are displayed correctly.

Post-Approval Support & Reporting
- Provide updates to stakeholders on permit status and compliance efforts.
- Document lessons learned.

This approach focuses on essential tasks and processes to effectively manage the permit application process, from initial planning to post-approval support, ensuring project compliance and timely delivery.

COMMUNICATION & INFORMATION MANAGEMENT



URBAN ECOLOGY CENTER - ARCHITECT & OWNER COLLABORATION

COMMUNICATION & COLLABORATION

WE WILL WORK CLOSELY WITH THE CITY OF NEW BERLIN AND THE ARCHITECT, ENGAGING IN OPEN COMMUNICATION AND COLLABORATION IN ALL ASPECTS OF DESIGN, PROCESSES, AND AFFORDABILITY.

The team assigned to your project is dedicated to achieving your goals by fostering transparent communication, collaboration, and innovative solutions that minimize your risk while maximizing your investment—both in the short term and long term.

To ensure clarity and confidence, we will implement clear and consistent communication procedures. You will always be informed about the project's status regarding cost, schedule, and quality. Our team will provide regular updates, detailed reports, and the necessary insights to help you make informed decisions that positively impact the budget and timeline, resulting in a seamless, efficient facility development process.

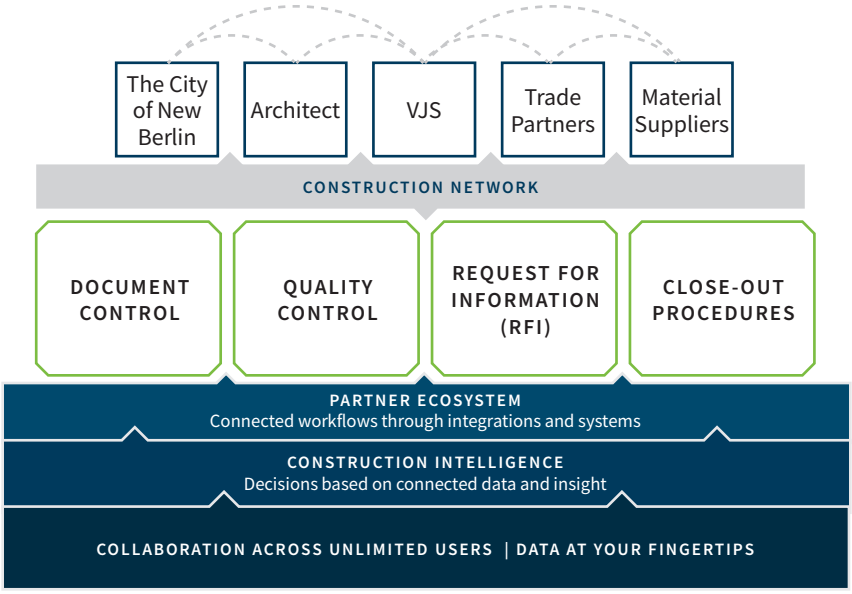
> *"I felt very comfortable working with VJS, and they **always kept communication with us as a top priority**. As in any project, unknowns do pop us, but **VJS was able to work with these changes and kept impact on the completion of the project at a minimum.** We have used VJS for all our major projects and **will continue to utilize them**."*
>
> — Dennis Ferger, President/CEO, Clement Manor

DOCUMENT MANAGEMENT SERVICES

During the duration of the project, we utilize Procore™ to create and track all of our meetings and project information.

Procore™ houses all project document control including:

- Daily reports
- Project photos
- Daily logs
- Project directory
- Field inspections
- Project meeting minutes
- Project observations
- Punch list
- RFIs
- Construction bulletins
- Project submittals



AVENIR APARTMENTS (MILWAUKEE)

AIA® Document C132® – 2019

Standard Form of Agreement Between Owner and Construction Manager as Adviser

AGREEMENT made as of the 14th day of April in the year 2025
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address, and other information)

City of New Berlin
3805 S Casper Drive
New Berlin, WI 53151

and the Construction Manager:
(Name, legal status, address, and other information)

VJS Construction Services, Inc.
W233 N2847 Roundy Circle West
Pewaukee, WI 53072

for the following Project:
(Name, location, and detailed description)

Malone Park Improvements
16400 W Al Stigler Parkway
New Berlin, WI 53151

The Architect:
(Name, legal status, address, and other information)

Ayres Associates
20975 Swenson Drive, Suite 200
Waukesha, WI 53186

The Owner and Construction Manager agree as follows.

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition; and B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition. AIA Document A232™–2019 is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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ARTICLE 1 INITIAL INFORMATION

§ 1.1 This Agreement is based on the Initial Information set forth in this Section 1.1.
(For each item in this section, insert the information or a statement such as "not applicable" or "unknown at time of execution.")

§ 1.1.1 The Owner's program for the Project:
(Insert the Owner's program, identify documentation that establishes the Owner's program, or state the manner in which the program will be developed.)

Demo Shelter #1, gazebo, concessions and Diamond #3 storage building.
New utilities and empty conduit.

§ 1.1.2 The Project's physical characteristics:
(Identify or describe pertinent information about the Project's physical characteristics, such as size; location; dimensions; geotechnical reports; site boundaries; topographic surveys; traffic and utility studies; availability of public and private utilities and services; legal description of the site, etc.)

Malone Park
16400 W Al Stigler Parkway
New Berlin, WI 53151

§ 1.1.3 The Owner's budget for the Cost of the Work, as defined in Section 6.1:
(Provide total and, if known, a line item breakdown.)

§ 1.1.4 The Owner's anticipated design and construction milestone dates:

.1 Design phase milestone dates, if any:

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4/9/25 - Posting to Quest
4/16/25 - Posting to Quest

.2 Construction commencement date:

7/28/25 - Construction begins

.3 Substantial Completion date or dates:

April 2026 (prior to 2026 baseball season)

.4 Other milestone dates:

Buildings weather tight before winter 2025; work continues through Spring 2026

§ 1.1.5 The Owner intends the following procurement method for the Project:
(Identify method such as competitive bid or negotiated contract.)

Competitive bid.

§ 1.1.6 The Owner's requirements for accelerated or fast-track design and construction, multiple bid packages, or phased construction are set forth below:
(Identify any requirements for fast-track scheduling or phased construction and, if applicable, list number and type of bid/procurement packages.)

N/A

§ 1.1.7 The Owner's anticipated Sustainable Objective for the Project:
(Identify and describe the Owner's Sustainable Objective for the Project, if any.)

N/A

§ 1.1.7.1 If the Owner identifies a Sustainable Objective, the Owner and Construction Manager shall complete and incorporate AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, into this Agreement to define the terms, conditions and services related to the Owner's Sustainable Objective. If E235–2019 is incorporated into this Agreement, the Owner and Construction Manager shall incorporate the completed E235–2019 into the agreements with the consultants and contractors performing services or Work in any way associated with the Sustainable Objective.

§ 1.1.8 Other Project information:
(Identify special characteristics or needs of the Project not provided elsewhere.)

N/A

§ 1.1.9 The Owner identifies the following representative in accordance with Section 5.5:
(List name, address, and other contact information.)

Kristen Hogan, Principal Planner
City of New Berlin
3805 S Casper Drive
New Berlin, WI 53151

§ 1.1.10 The persons or entities, in addition to the Owner's representative, who are required to review the Construction Manager's submittals to the Owner are as follows:
(List name, address, and other contact information.)

Ben Bergles, Director of Preconstruction

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VJS Construction Services, Inc.
W233 N2847 Roundy Circle West
Pewaukee, WI 53072

c: (414) 303-5285
e: bbergles@vjscs.com

§ 1.1.11 The Owner shall retain the following consultants and Contractors:
(List name, legal status, address, and other contact information.)

.1 Land Surveyor:

Ayres Associates

.2 Geotechnical Engineer:

Ayres Associates

.3 Civil Engineer:

Ayres Associates

.4 Contractors, as defined in Section 1.4:

N/A

.5 Separate Contractors, as defined in Section 1.4:

N/A

.6 Other, if any:
(List any other consultants retained by the Owner.)

§ 1.1.12 The Construction Manager identifies the following representative in accordance with Section 2.5:
(List name, address, and other contact information.)

Ben Bergles, Director of Preconstruction
VJS Construction Services, Inc.
W233 N2847 Roundy Circle West
Pewaukee, WI 53072

c: (414) 303-5285
e: bbergles@vjscs.com

§ 1.1.13 The Construction Manager's staffing plan as required under Section 3.3.3 shall include:
(List any specific requirements and personnel to be included in the staffing plan, if known.)

Attend meetings, coordinate submittals, shop drawings

§ 1.1.14 The Construction Manager's consultants retained under Basic Services, if any:
(List name, legal status, address, and other contact information of any consultants.)

N/A

§ 1.1.15 The Construction Manager's consultants retained under Supplemental Services:

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N/A

§ 1.1.16 Other Initial Information on which this Agreement is based:

§ 1.2 The Owner and Construction Manager may rely on the Initial Information. Both parties, however, recognize that the Initial Information may materially change and, in that event, the Owner and the Construction Manager shall appropriately adjust the Construction Manager's services, schedule for the Construction Manager's services, and the Construction Manager's compensation. The Owner shall adjust the Owner's budget for the Cost of the Work and the Owner's anticipated design and construction milestones, as necessary, to accommodate material changes in the Initial Information. Any such modifications shall only be effective if agreed upon by both parties in writing through an addendum to this agreement.

§ 1.3 The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.3.1 Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

§ 1.4 The term "Contractors" refers to persons or entities who perform Work under contracts with the Owner that are administered by the Construction Manager and Architect. The term "Contractors" is used to refer to such persons or entities, whether singular or plural. The term does not include the Owner's own forces, or Separate Contractors, which are persons or entities who perform construction under separate contracts with the Owner not administered by the Construction Manager and Architect.

ARTICLE 2 CONSTRUCTION MANAGER'S RESPONSIBILITIES

§ 2.1 The Construction Manager shall provide the services as set forth in this Agreement.

§ 2.2 The Construction Manager shall perform its services consistent with the skill and care ordinarily provided by construction managers practicing in the same or similar locality under the same or similar circumstances. The Construction Manager shall perform its services as expeditiously as is consistent with such skill and care and the orderly progress of the Project.

§ 2.3 The Construction Manager shall provide its services in conjunction with the services of an Architect as described in AIA Document B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition. The Construction Manager shall not be responsible for actions taken by the Architect.

§ 2.4 The Construction Manager shall coordinate its services with those services provided by the Owner, the Architect, the Contractors, and the Owner's other consultants and Separate Contractors. The Construction Manager shall be entitled to rely on, and shall not be responsible for, the accuracy and completeness of services and information furnished by the Owner, the Architect, and the Owner's other consultants and Separate Contractors. The Construction Manager shall provide prompt written notice to the Owner if the Construction Manager becomes aware of any error, omission, or inconsistency in such services or information.

§ 2.5 The Construction Manager shall identify a representative authorized to act on behalf of the Construction Manager with respect to the Project.

§ 2.6 The Construction Manager, as soon as practicable after execution of the Agreement, shall notify the Owner in writing of the names and qualifications of its proposed key staff members. Within 14 days of receipt of the names and qualifications of the Construction Manager's proposed key staff members, the Owner may reply to the Construction Manager in writing, stating (1) whether the Owner has reasonable objection to a proposed key staff member or (2) that the Owner requires additional time to review. Failure of the Owner to reply within the 14-day period shall constitute notice of no reasonable objection. The Construction Manager shall not staff any employees on the Project to whom the

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Owner has made reasonable and timely objection. The Construction Manager shall not change its key staff members without the Owner's consent, which shall not be unreasonably withheld or delayed.

§ 2.7 Except with the Owner's knowledge and consent, the Construction Manager shall not engage in any activity, or accept any employment, interest or contribution that would reasonably appear to compromise the Construction Manager's judgment with respect to this Project.

§ 2.8 The Construction Manager shall maintain the following insurance until termination of this Agreement. If any of the requirements set forth below are in addition to the types and limits the Construction Manager normally maintains, the Owner shall pay the Construction Manager as set forth in section 11.7.

§ 2.8.1 Commercial General Liability with policy limits of not less than Two Million Dollars ($2,000,000) for each occurrence and Tw0 Million Dollars ($2,000,000) in the aggregate for bodily injury and property damage.

§ 2.8.2 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Construction Manager with policy limits of not less than One Million Dollars ($1,000,000) per accident for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles, along with any other statutorily required automobile coverage.

§ 2.8.3 The Construction Manager may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella liability insurance policies result in the same or greater coverage as the coverages required under Sections 2.8.1 and 2.8.2, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ 2.8.4 Workers' Compensation at statutory limits and Employers Liability with policy limits not less than Five Hundred Thousand Dollars ($500,000) each accident, Five Hundred Thousand Dollars ($500,000) each employee, and One Million Dollars ($1,000,000) policy limit.

§ 2.8.5 Professional Liability covering negligent acts, errors and omissions in the performance of professional services with policy limits of not less than $1MM ($ 1MM) per claim and 2MM ($ 2MM) in the aggregate.

§ 2.8.6 Additional Insured Obligations. To the fullest extent permitted by law, the Construction Manager shall cause the primary and excess or umbrella policies for Commercial General Liability and Automobile Liability to include the Owner as an additional insured for claims caused in whole or in part by the Construction Manager's negligent acts or omissions. The additional insured coverage shall be primary and non-contributory to any of the Owner's insurance policies and shall apply to both ongoing and completed operations, such coverage shall be evidenced by a policy endorsement in a form acceptable to the Owner.

§ 2.8.7 The Construction Manager shall provide certificates of insurance to the Owner that evidence compliance with the requirements in this Section 2.8.

§ 2.9 The Construction Manager shall assist the Owner, Architect, and other Project participants in establishing written protocols for the development, use, transmission, reliance, and exchange of digital data, including building information models for the Project.

§ 2.10 A centralized electronic document management system will be used on the Project, and the Construction Manager shall be responsible for managing and maintaining the centralized electronic document management system. The centralized electronic document management system shall include the following:
(*List any items that are to be included in the centralized electronic management system.)*

§ 2.11 The Construction Manager shall retain all Project related documents and information it receives, and the Owner and Architect shall have access to the documents and information. The Construction Manager shall transmit the documents and information to the Owner at final completion.

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ARTICLE 3 SCOPE OF CONSTRUCTION MANAGER'S BASIC SERVICES

§ 3.1 Definition

The Construction Manager's Basic Services consist of those described in this Article 3, and include usual and customary Preconstruction and Construction Phase Services. Services not set forth in this Article 3 are Supplemental or Additional Services. The Owner, Construction Manager, and Contractors may agree, in consultation with the Architect, for the Construction Phase to commence prior to completion of the Preconstruction Phase, in which case, both phases will proceed concurrently.

§ 3.2 Preconstruction Phase

§ 3.2.1 The Construction Manager shall review the program furnished by the Owner and any evaluation of the Owner's program provided by the Architect, to ascertain the requirements of the Project and shall arrive at a mutual understanding of such requirements with the Owner and Architect.

§ 3.2.2 The Construction Manager shall provide a preliminary evaluation of the Owner's program, schedule and construction budget requirements, each in terms of the other.

§ 3.2.3 The Construction Manager shall prepare, and deliver to the Owner, for the Owner's approval, a written Construction Management Plan that includes, at a minimum, the following: (1) preliminary evaluations required in Section 3.2.2, (2) a Project schedule, (3) cost estimates, (4) recommendations for Project delivery method, and (5) Contractors' scopes of Work. The Construction Manager shall periodically update the Construction Management Plan, for the Owner's approval, over the course of the Project.

§ 3.2.4 The Construction Manager shall prepare and periodically update the Project schedule included in the Construction Management Plan for the Architect's review and the Owner's acceptance. The Construction Manager shall obtain the Architect's approval for the portion of the Project schedule relating to the performance of the Architect's services. The Project schedule shall coordinate and integrate the Construction Manager's services, the Architect's services, other Owner consultants' services, and the Owner's responsibilities and highlight items that affect the Project's timely completion.

§ 3.2.5 The Construction Manager shall update the Project schedule to include the components of the Work, including phasing of construction, times of commencement and completion required of each Contractor, ordering and delivery of products, including those that must be ordered in advance of construction, obtaining the required reviews and approvals of authorities having jurisdiction over the Project, and the occupancy requirements of the Owner.

§ 3.2.6 Based on the preliminary design and information prepared or provided by the Architect and other Owner consultants, the Construction Manager shall prepare, for the Architect's review and Owner's approval, preliminary estimates of the Cost of the Work or the cost of program requirements using area, volume or similar conceptual estimating techniques, including the establishment of sufficient contingency to reasonably anticipate the development of the Project's design documents.

§ 3.2.7 The Construction Manager shall review design documents during their development and advise the Owner and Architect on proposed site use and improvements, selection of materials, building systems, and equipment. The Construction Manager shall also provide recommendations to the Owner and Architect, consistent with the Project requirements, on constructability; availability of materials and labor; sequencing for phased construction; time requirements for procurement, installation and construction; and factors related to construction cost including, but not limited to, costs of alternative designs or materials, preliminary budgets, life-cycle data, and possible cost reductions.

§ 3.2.8 The Construction Manager shall review recommendations for systems, materials, or equipment for the impact upon cost, schedule, sequencing, constructability, and coordination among the Contractors. The Construction Manager shall discuss its findings with the Owner and the Architect, and coordinate resolution, as necessary, of any such impacts.

§ 3.2.9 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall prepare and update, at appropriate intervals agreed to by the Owner, Construction Manager and Architect, an estimate of the Cost of the Work with increasing detail and refinement. The Construction Manager shall include in the estimate those costs to allow for further development of the

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design, bidding or negotiating, price escalation, and market conditions. The estimate shall be provided for the Architect's review and the Owner's approval. The Construction Manager shall inform the Owner and Architect in the event that the estimate of Cost of the Work exceeds the latest approved Project budget, and make recommendations for corrective action.

§ 3.2.10 As the Architect progresses with the preparation of the Schematic Design, Design Development and Construction Documents, the Construction Manager shall consult with the Owner and Architect and make recommendations whenever the Construction Manager determines that the design, or details, adversely affect cost, scope, schedule, constructability, or quality of the Project.

§ 3.2.11 The Construction Manager shall provide recommendations and information to the Owner and Architect regarding the assignment of responsibilities for temporary Project facilities and equipment, materials and services for common use of the Contractors. The Construction Manager shall verify that such requirements and assignment of responsibilities are included in the proposed Contract Documents.

§ 3.2.12 The Construction Manager shall provide recommendations and information to the Owner regarding the allocation of responsibilities for safety programs among the Contractors.

§ 3.2.13 The Construction Manager shall provide recommendations to the Owner on the division of the Project into individual contracts for the construction of various categories of Work, including the method to be used for selecting Contractors and awarding Contracts for Construction. Notwithstanding the foregoing the Owner is a municipal entity and therefore the project specifications developed by the Construction Manager must be noticed to the public. The bids received shall be opened concurrently on a date and time established in the notice and the Construction Manager shall review the bids and the qualifications of the bidding contractors. The awarding of the contract must be to the lowest responsive, responsible bidder in accordance with the WI public bidding law though the Owner retains the right to reject any and all bids. The Construction Manager shall review the Drawings and Specifications and make recommendations as required to provide that (1) the Work of the Contractors is coordinated, (2) all requirements for the Project are assigned to the appropriate Contract, (3) the likelihood of jurisdictional disputes is minimized, and (4) proper coordination is provided for phased construction.

§ 3.2.14 The Construction Manager shall make recommendations about, and coordinate the ordering and delivery of, materials in support of the schedule, including those that must be ordered in advance of construction.

§ 3.2.15 The Construction Manager shall assist the Owner in selecting, retaining, and coordinating the professional services of surveyors, geotechnical engineers, special consultants, and construction materials testing required for the Project.

§ 3.2.16 The Construction Manager shall provide an analysis of the types and quantities of labor required for the Project and review the availability of appropriate categories of labor required for critical phases. The Construction Manager shall make recommendations for actions designed to minimize adverse effects of labor shortages.

§ 3.2.17 The Construction Manager shall assist the Owner in obtaining information regarding applicable requirements for equal employment opportunity programs, and other programs as may be required by governmental and quasi-governmental authorities for inclusion in the Contract Documents.

§ 3.2.18 Following the Owner's approval of the Drawings and Specifications, the Construction Manager shall update and submit the latest estimate of the Cost of the Work and the Project schedule for the Architect's review and the Owner's approval.

§ 3.2.19 The Construction Manager, in consultation with the Owner, shall develop bidders' interest in the Project and establish bidding schedules. The Construction Manager shall assist the Owner and the Architect with the development of the Bidding Documents, which consist of bidding requirements and proposed Contract Documents in accordance with the requirements of the WI public bidding laws. The Construction Manager, with the assistance of the Architect, shall issue Bidding Documents to bidders and conduct pre-bid conferences with prospective bidders. The Construction Manager shall issue the current Project schedule with each set of Bidding Documents. The Construction Manager shall assist the Architect with regard to questions from bidders and with the issuance of addenda.

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§ 3.2.20

§ 3.2.21 The Construction Manager, with the assistance of the Architect, shall review bids, and prepare bid analyses, and make recommendations to the Owner for the Owner's award of Contracts for Construction or rejection of bids, again solely in accordance with the requirements of the WI public bidding law.

§ 3.2.22 The Construction Manager, with the assistance of the Architect, shall assist the Owner in preparing Contracts for Construction. The Construction Manager shall advise the Owner on the acceptability of Subcontractors and material suppliers proposed by Contractors. The contract shall be in a form acceptable to the owner and shall contain a requirement that the successful bidder must provide payment and performance bonds in the amount of 100% of the contract cost.

§ 3.2.23 The Construction Manager shall assist the Owner in obtaining building permits and special permits for permanent improvements, except for permits required to be obtained directly by the Contractors. The Construction Manager shall verify that the Owner has paid applicable fees and assessments. The Construction Manager shall assist the Owner and Architect in connection with the Owner's responsibility for filing documents required for the approvals of governmental authorities having jurisdiction over the Project.

§ 3.2.24 If the Owner identified a Sustainable Objective in Article 1, the Construction Manager shall fulfill its Preconstruction Phase responsibilities as required in AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, attached to this Agreement.

§ 3.3 Construction Phase

§ 3.3.1 The Construction Manager shall provide on-site administration of the Contracts for Construction in cooperation with the Architect as set forth below and in AIA Document A232™–2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition. If the Owner and Contractor modify AIA Document A232–2019, those modifications shall not affect the Construction Manager's services under this Agreement unless the Owner and the Construction Manager amend this Agreement.

§ 3.3.2 Subject to Section 4.2 and except as provided in Section 3.3.30, the Construction Manager's responsibility to provide Construction Phase Services commences with the award of the initial Contract for Construction and terminates on the date the Architect issues the final Certificate for Payment.

§ 3.3.3 The Construction Manager shall provide a staffing plan to include one or more representatives who shall be in attendance at the Project site whenever the Work is being performed.

§ 3.3.4 The Construction Manager shall provide administrative, management and related services to coordinate scheduled activities and responsibilities of the Contractors with each other and with those of the Construction Manager, the Owner and the Architect. The Construction Manager shall coordinate the activities of the Contractors in accordance with the latest approved Project schedule and the Contract Documents.

§ 3.3.5 The Construction Manager shall review and analyze the construction schedules provided by the Contractors to update the Project schedule, incorporating the activities of the Owner, Architect, and Contractors on the Project, including activity sequences and durations, allocation of labor and materials, processing of Shop Drawings, Product Data and Samples, and delivery and procurement of products, including those that must be ordered in advance of construction. The Project schedule shall include the Owner's occupancy requirements showing portions of the Project having occupancy priority. The Construction Manager shall update and reissue the Project schedule as required to show current conditions. If an update indicates that the previously approved Project schedule may not be met, the Construction Manager shall recommend corrective action to the Owner and Architect.

§ 3.3.6 The Construction Manager shall schedule and conduct meetings to discuss matters such as procedures, progress, coordination, and scheduling of the Work, and to develop solutions to issues identified. The Construction Manager shall prepare and promptly distribute minutes to the Owner, Architect and Contractors.

§ 3.3.7 In accordance with the Contract Documents and the latest approved Project schedule, and utilizing information from the Contractors, the Construction Manager shall review, analyze, schedule and coordinate the overall sequence of construction and assignment of space in areas where the Contractors are performing Work.

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§ 3.3.8 The Construction Manager shall coordinate all tests and inspections required by the Contract Documents or governmental authorities, observe the on-site testing and inspections, and arrange for the delivery of test and inspection reports to the Owner and Architect.

§ 3.3.9 The Construction Manager shall endeavor to obtain satisfactory performance from each of the Contractors. The Construction Manager shall recommend courses of action to the Owner when requirements of a Contract are not being fulfilled.

§ 3.3.10 The Construction Manager shall monitor and evaluate actual costs for activities in progress and estimates for uncompleted tasks and advise the Owner and Architect as to variances between actual costs and budgeted or estimated costs. If a Contractor is required to submit a Control Estimate, the Construction Manager shall meet with the Owner and Contractor to review the Control Estimate. The Construction Manager shall promptly notify the Contractor if there are any inconsistencies or inaccuracies in the information presented. The Construction Manager shall also report the Contractor's cost control information to the Owner.

§ 3.3.11 The Construction Manager shall develop cash flow reports and forecasts for the Project and include them in the Construction Manager's progress reports.

§ 3.3.12 The Construction Manager shall maintain accounting records on authorized Work performed under unit costs, additional Work performed on the basis of actual costs of labor and materials, and other Work requiring accounting records.

§ 3.3.12.1 The Construction Manager shall develop and implement procedures for the review and processing of Applications for Payment by Contractors for progress and final payments.

§ 3.3.12.2 Not more frequently than monthly, the Construction Manager shall review and certify the amounts due the respective Contractors as follows:

.1 Where there is only one Contractor responsible for performing the Work, the Construction Manager shall, within seven days after the Construction Manager receives the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect.

.2 Where there is more than one Contractor responsible for performing different portions of the Project, the Construction Manager shall, within seven days after the Construction Manager receives each Contractor's Application for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each Contractor; (2) prepare a Summary of Contractors' Applications for Payment by summarizing information from each Contractor's Application for Payment; (3) prepare a Project Application and Certificate for Payment; (4) certify the total amount the Construction Manager determines is due all Contractors collectively; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 3.3.12.3 The Construction Manager's certification for payment shall constitute a representation to the Owner, based on the Construction Manager's evaluations of the Work and on the data comprising the Contractors' Applications for Payment, that, to the best of the Construction Manager's knowledge, information and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractors are entitled to payment in the amount certified. The foregoing representations are subject to (1) an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion; (2) results of subsequent tests and inspections; (3) correction of minor deviations from the Contract Documents prior to completion; and (4) specific qualifications expressed by the Construction Manager. The issuance of a Certificate for Payment shall further constitute a recommendation to the Architect and Owner that the Contractor be paid the amount certified.

§ 3.3.12.4 The certification of an Application for Payment or a Project Application for Payment by the Construction Manager shall not be a representation that the Construction Manager has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, procedures, or sequences for a Contractor's own Work; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate each Contractor's right to

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payment; or (4) ascertained how or for what purpose that Contractor has used money previously paid on account of the Contract Sum.

§ 3.3.13 The Construction Manager shall obtain and review the safety programs developed by each Contractor solely and exclusively for purposes of coordinating the safety programs with those of the other Contractors and for making recommendations for any additional safety measures to be considered in the Work of the Contractors. The Construction Manager's responsibilities for coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 3.3.14 The Construction Manager shall determine in general that the Work of each Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. The Construction Manager shall have the authority to reject Work that does not conform to the Contract Documents and shall notify the Architect about the rejection. The failure of the Construction Manager to reject Work shall not constitute acceptance of the Work. The Construction Manager shall record any rejection of Work in its daily log and include information regarding the rejected Work in its progress reports to the Architect and Owner pursuant to Section 3.3.22.1. Upon written authorization from the Owner, the Construction Manager may require and make arrangements for additional inspection or testing of the Work in accordance with the provisions of the Contract Documents, whether or not the Work is fabricated, installed or completed, and the Construction Manager shall give timely notice to the Architect of when and where the tests and inspections are to be made so that the Architect may be present for such procedures.

§ 3.3.15 The Construction Manager shall advise and consult with the Owner and Architect during the performance of its Construction Phase Services. The Construction Manager shall have authority to act on behalf of the Owner only to the extent provided in this Agreement. The Construction Manager shall not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work of each of the Contractors, since these are solely the Contractor's rights and responsibilities under the Contract Documents. The Construction Manager shall not be responsible for a Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Construction Manager shall be responsible for the Construction Manager's negligent acts or omissions, but shall not have control over or charge of, and shall not be responsible for, acts or omissions of the Contractors, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 3.3.16 The Construction Manager shall transmit to the Architect requests for interpretations, and requests for information of the meaning and intent of the Drawings and Specifications, and provide its written recommendation. The Construction Manager shall assist in the resolution of questions that may arise.

§ 3.3.17 The Construction Manager shall review requests for changes, assist in negotiating Contractors' proposals, submit recommendations to the Architect and Owner, and, if the proposed changes are accepted or required by the Owner, prepare Change Orders or Construction Change Directives that incorporate the Architect's modifications to the Contract Documents.

§ 3.3.18 The Construction Manager shall assist the Initial Decision Maker in the review, evaluation and documentation of Claims, subject to Section 4.2.2.7.

§ 3.3.19 Utilizing the submittal schedules provided by each Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 3.3.20 The Construction Manager shall promptly review all Shop Drawings, Product Data, Samples, and other submittals from the Contractors for compliance with the submittal requirements of the Contract, coordinate submittals with information contained in related documents, and transmit to the Architect those that the Construction Manager recommends for approval. **T**he Construction Manager's actions shall be taken in accordance with the Project submittal

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schedule approved by the Architect, or in the absence of an approved Project submittal schedule, with such reasonable promptness as to cause no delay in the Work or in the activities of the Contractors, the Owner, or the Architect.

§ 3.3.20.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractors by the Contract Documents, the Construction Manager shall review those submittals for sequencing, constructability, and coordination impacts on the other Contractors. The Construction Manager shall discuss its findings with the Owner and the Architect, and coordinate resolution, as necessary, of any such impacts.

§ 3.3.21 The Construction Manager shall keep a daily log containing a record of weather, each Contractor's Work on the site, number of workers, identification of equipment, Work accomplished, problems encountered, and other similar relevant data as the Owner may require.

§ 3.3.21.1 The Construction Manager shall collect, review for accuracy, and compile the Contractors' daily logs; and include them in the Construction Manager's reports prepared and submitted in accordance with section 3.3.21.2.

§ 3.3.21.2 The Construction Manager shall record the progress of the Project. On a monthly basis, or otherwise as agreed to by the Owner, the Construction Manager shall submit written progress reports to the Owner and Architect, showing percentages of completion and other information identified below:

.1 Work completed for the period;
.2 Project schedule status;
.3 Submittal schedule and status report, including a summary of remaining and outstanding submittals;
.4 Request for information, Change Order, and Construction Change Directive status reports;
.5 Tests and inspection reports;
.6 Status report of nonconforming and rejected Work;
.7 Summary of all Contractors' Applications for Payment;
.8 Cumulative total of the Cost of the Work to date including the Construction Manager's compensation and reimbursable expenses at the job site, if any;

(Paragraph deleted)

.9 Photographs to document the progress of the Project;
.10 Status reports on permits and approvals of authorities having jurisdiction; and

(Paragraphs deleted)

§ 3.3.22 Utilizing the documents provided by the Contractors, the Construction Manager shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Owner, Architect, and Contractors. Upon completion of the Project, the Construction Manager shall deliver them to the Owner.

§ 3.3.23 The Construction Manager shall arrange for the delivery, storage, protection and security of Owner-purchased materials, systems and equipment that are a part of the Project until such items are incorporated into the Work.

§ 3.3.24 With the Owner's maintenance personnel, the Construction Manager shall observe the Contractors' final testing and start-up of utilities, operational systems and equipment and observe any commissioning as the Contract Documents may require.

§ 3.3.25 When the Construction Manager considers each Contractor's Work or a designated portion thereof substantially complete, the Construction Manager shall, jointly with that Contractor, prepare for the Architect a list of incomplete or unsatisfactory items and a schedule for their completion. The Construction Manager shall assist the Architect in conducting inspections to determine whether the Work or designated portion thereof is substantially complete.

§ 3.3.26 When the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager shall prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion. The Construction Manager shall submit the executed Certificate to the Owner and

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Contractors. The Construction Manager shall coordinate the correction and completion of the Work. Following issuance of a Certificate of Substantial Completion of the Work or a designated portion thereof, the Construction Manager shall perform an inspection to confirm the completion of the Work of the Contractors and make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection. The Construction Manager shall assist the Architect in conducting the final inspection.

§ 3.3.27 The Construction Manager shall forward to the Owner, with a copy to the Architect, the following information received from the Contractors: (1) certificates of insurance ; (2) consent of surety or sureties, if any, to reduction in or partial release of retainage or the making of final payment; (3) affidavits, receipts, releases and waivers of liens or bonds indemnifying the Owner against liens; and (4) any other documentation required of the Contractors under the Contract Documents, including warranties and similar submittals.

§ 3.3.28 The Construction Manager shall coordinate receipt, and delivery to the Owner, of other items provided by the Contractors, such as keys, manuals, and record drawings. The Construction Manager shall forward to the Architect a final Project Application for Payment and Project Certificate for Payment, or a final Application for Payment and final Certificate for Payment, upon the Contractors' compliance with the requirements of the Contract Documents.

§ 3.3.29 Duties, responsibilities and limitations of authority of the Construction Manager as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Construction Manager, Architect, and Contractors. Consent shall not be unreasonably withheld.

§ 3.3.30 Upon request of the Owner, and prior to the expiration of one year from the date of Substantial Completion, the Construction Manager shall, without additional compensation, conduct a meeting with the Owner and Architect to review the facility operations and performance.

ARTICLE 4 SUPPLEMENTAL AND ADDITIONAL SERVICES

§ 4.1 Supplemental Services

§ 4.1.1 The services listed below are not included in Basic Services but may be required for the Project. The Construction Manager shall provide the listed Supplemental Services only if specifically designated in the table below as the Construction Manager's responsibility, and the Owner shall compensate the Construction Manager as provided in Section 11.2. Unless otherwise specifically addressed in this Agreement, if neither the Owner nor the Construction Manager is designated, the parties agree that the listed Supplemental Service is not being provided for the Project. *(Designate the Construction Manager's Supplemental Services and the Owner's Supplemental Services required for the Project by indicating whether the Construction Manager or Owner shall be responsible for providing the identified Supplemental Service. Insert a description of the Supplemental Services in Section 4.1.2 below or attach the description of services as an exhibit to this Agreement.)*

Supplemental Services	Responsibility *(Construction Manager, Owner or not provided)*
§ 4.1.1.1 Measured drawings	Owner
§ 4.1.1.2 Tenant-related services	Owner
§ 4.1.1.3 Commissioning	Owner
§ 4.1.1.4 Development of a commissioning plan	Construction Manager
§ 4.1.1.5 Sustainable Project Services pursuant to Section 4.1.3	Not provided
§ 4.1.1.6 Furniture, furnishings and equipment delivery, and installation coordination	Construction Manager
§ 4.1.1.7 Furniture, furnishings and equipment procurement assistance	Construction Manager
§ 4.1.1.8 Assistance with site selection	Owner
§ 4.1.1.9 Assistance with selection of the Architect	Owner
§ 4.1.1.10 Furnish land survey	Owner
§ 4.1.1.11 Furnish geotechnical engineering services	Owner
§ 4.1.1.12 Provide insurance advice	Construction Manager
§ 4.1.1.13 Provide supplemental Project risk analysis and mitigation strategies	Construction Manager
§ 4.1.1.14 Stakeholder relationships management	Construction Manager

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§ 4.1.1.15 Owner moving coordination	Owner
§ 4.1.1.16 Coordination of Owner's Separate Contractors	Construction Manager
§ 4.1.1.17 Other Supplemental Services	Not provided

(Row deleted)

§ 4.1.2 Description of Supplemental Services

§ 4.1.2.1 A description of each Supplemental Service identified in Section 4.1.1 as the Construction Manager's responsibility is provided below.

(Describe in detail the Construction Manager's Supplemental Services identified in Section 4.1.1 or, if set forth in an exhibit, identify the exhibit.)

§ 4.1.2.2 A description of each Supplemental Service identified in Section 4.1.1 as the Owner's responsibility is provided below.

(Describe in detail the Owner's Supplemental Services identified in Section 4.1.1 or, if set forth in an exhibit, identify the exhibit.)

§ 4.1.3 If the Owner identified a Sustainable Objective in Article 1, the Construction Manager shall provide, as a Supplemental Service, the Sustainability Services required in AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, attached to this Agreement. The Owner shall compensate the Construction Manager as provided in Section 11.2.

§ 4.2 Construction Manager's Additional Services

§ 4.2.1 The Construction Manager may provide Additional Services after execution of this Agreement, without invalidating this Agreement. Except for services required due to the fault of the Construction Manager, any Additional Services provided in accordance with this Section 4.2 shall entitle the Construction Manager to compensation pursuant to Section 11.3.

§ 4.2.2 Upon recognizing the need to perform the following Additional Services, the Construction Manager shall notify the Owner with reasonable promptness and explain the facts and circumstances giving rise to the need. The Construction Manager shall not proceed to provide the following Additional Services until the Construction Manager receives the Owner's written authorization:

.1 Services necessitated by a change in the Initial Information, previous instructions or approvals given by the Owner, or a material change in the Project including size, quality, complexity, the Owner's schedule or budget for Cost of the Work, or procurement or delivery method, or bid packages in addition to those listed in Section 1.1.6. Services necessitated by sections 6.4 and 6.6 shall not be considered additional services;

.2 Services necessitated by the enactment or revision of codes, laws, regulations or official interpretations after the date of this Agreement;

.3 Services necessitated by decisions of the Owner not rendered in a timely manner or any other failure of performance on the part of the Owner or the Owner's other consultants or contractors;

.4 Preparation of documentation for alternate bid or proposal requests proposed by the Owner;

.5 Preparation for, and attendance at, a public presentation, meeting or hearing;

.6 Preparation for, and attendance at, a dispute resolution proceeding or legal proceeding, except where the Construction Manager is party thereto;

.7 Consultation concerning replacement of Work resulting from fire or other cause during construction and furnishing services required in connection with the replacement of such Work; or

.8 Assistance to the Initial Decision Maker.

§ 4.2.3 To avoid delay in the Construction Phase, the Construction Manager shall provide the following Additional Services, notify the Owner with reasonable promptness, and explain the facts and circumstances giving rise to the need. If, upon receipt of the Construction Manager's notice, the Owner determines that all or parts of the services are not required, the Owner shall give prompt written notice to the Construction Manager of the Owner's determination. The Owner shall compensate the Construction Manager for the services provided prior to the Construction Manager's receipt of the Owner's notice:

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.1 Providing assistance to the Initial Decision Maker in evaluating an extensive number of Claims submitted by a Contractor or others in connection with the Work.

.2 Services required in an emergency to coordinate the activities of a Contractor or Contractors in the event of risk of personal injury or serious property damage, consistent with Section 3.3.15.

§ 4.2.4 Except for services required under Section 3.3.30, Construction Phase Services provided more than 60 days after (1) the date of Substantial Completion of the Work, or (2) the anticipated date of Substantial Completion identified in the Initial Information, whichever is earlier, shall be compensated as Additional Services to the extent the Construction Manager incurs additional cost in providing those Construction Phase Services.

§ 4.2.5 If the services covered by this Agreement have not been completed within twelve (12) months of the date of this Agreement, through no fault of the Construction Manager, extension of the Construction Manager's services beyond that time shall be compensated as Additional Services.

ARTICLE 5 OWNER'S RESPONSIBILITIES

§ 5.1 Unless otherwise provided for under this Agreement, the Owner shall provide information in a timely manner regarding requirements for and limitations on the Project, including a written program, which shall set forth the Owner's objectives; schedule; constraints and criteria; special equipment; systems; and site requirements.

§ 5.2 The Owner shall establish the Owner's budget for the Project, including (1) the budget for the Cost of the Work as defined in Section 6.1; (2) the Owner's other costs; and (3) reasonable contingencies related to all of these costs. The Owner shall update the Owner's budget for the Project as necessary throughout the duration of the Project until final completion. If the Owner significantly increases or decreases the Owner's budget for the Cost of the Work, the Owner shall notify the Construction Manager and Architect. The Owner and the Architect, in consultation with the Construction Manager, shall thereafter agree to a corresponding change in the Project's scope and quality.

§ 5.3 The Owner acknowledges that accelerated, phased, or fast-track design and construction provides a benefit, but also carries with it the risk of additional costs. If the Owner selects accelerated, phased or fast-track scheduling, the Owner agrees to include in the budget for the Project sufficient contingencies to cover such costs.

§ 5.4 The Owner shall retain an Architect to provide services, duties and responsibilities as described in AIA Document B132–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition. The Owner shall provide the Construction Manager with a copy of the scope of services in the agreement executed between the Owner and Architect, and any further modifications to the Architect's scope of services in the agreement.

§ 5.5 The Owner shall identify a representative authorized to act on the Owner's behalf with respect to the Project. The Owner shall render decisions pertaining to documents the Construction Manager submits in a timely manner in order to avoid unreasonable delay in the orderly and sequential progress of the Construction Manager's services.

§ 5.6 Unless provided by the Construction Manager, the Owner shall furnish surveys to describe physical characteristics, legal limitations and utility locations for the site of the Project, and a written legal description of the site. The surveys and legal information shall include, as applicable, grades and lines of streets, alleys, pavements and adjoining property and structures; designated wetlands; adjacent drainage; rights-of-way, restrictions, easements, encroachments, zoning, deed restrictions, boundaries, and contours of the site; locations, dimensions, and other necessary data with respect to existing buildings, other improvements and trees; and information concerning available utility services and lines, both public and private, above and below grade, including inverts and depths. All the information on the survey shall be referenced to a Project benchmark.

§ 5.7 Unless provided by the Construction Manager, the Owner shall furnish services of geotechnical engineers, which may include test borings, test pits, determinations of soil bearing values, percolation tests, evaluations of hazardous materials, seismic evaluation, ground corrosion tests and resistivity tests, including necessary operations for anticipating subsoil conditions, with written reports and appropriate recommendations.

§ 5.8 The Owner shall provide the Supplemental Services designated as the Owner's responsibility in Section 4.1.1.

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§ 5.9 If the Owner identified a Sustainable Objective in Article 1, the Owner shall fulfill its responsibilities as required in AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, attached to this Agreement.

§ 5.10 The Owner shall coordinate the services of its own consultants with those services provided by the Construction Manager. Upon the Construction Manager's request, the Owner shall furnish copies of the scope of services in the contracts between the Owner and the Owner's consultants. The Owner shall furnish the services of consultants other than those designated as the responsibility of the Construction Manager in this Agreement, or authorize the Construction Manager to furnish them as an Additional Service, when the Construction Manager requests such services and demonstrates that they are reasonably required by the scope of the Project. The Owner shall require that its consultants and contractors maintain insurance, including professional liability insurance, as appropriate to the services or work provided.

§ 5.11 The Owner shall furnish tests, inspections and reports required by law or the Contract Documents, such as structural, mechanical, and chemical tests, tests for air and water pollution, and tests for hazardous materials.

§ 5.12 The Owner shall furnish all legal, insurance and accounting services, including auditing services, that may be reasonably necessary at any time for the Project to meet the Owner's needs and interests.

§ 5.13 The Owner shall provide prompt written notice to the Construction Manager and Architect if the Owner becomes aware of any fault or defect in the Project, including errors, omissions or inconsistencies in the Architect's Instruments of Service or any fault or defect in the Construction Manager's services.

§ 5.14 The Owner reserves the right to perform construction and operations related to the Project with the Owner's own forces, and to award contracts in connection with the Project which are not part of the Construction Manager's responsibilities under this Agreement. The Construction Manager shall notify the Owner if any such independent action will interfere with the Construction Manager's ability to perform the Construction Manager's responsibilities under this Agreement. When performing construction or operations related to the Project, the Owner agrees to be subject to the same obligations and to have the same rights as the Contractors.

§ 5.15 The Owner shall communicate with the Contractors and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect.

§ 5.16 Before executing the Contracts for Construction, the Owner shall coordinate the Construction Manager's duties and responsibilities set forth in the Contracts for Construction with the Construction Manager's services set forth in this Agreement. The Owner shall provide the Construction Manager a copy of the executed agreements between the Owner and Contractors, including the General Conditions of the Contracts for Construction.

§ 5.17 The Owner shall provide the Construction Manager access to the Project site prior to commencement of the Work and shall obligate the Contractors to provide the Construction Manager access to the Work wherever it is in preparation or progress.

§ 5.18 Within 15 days after receipt of a written request from the Construction Manager, the Owner shall furnish the requested information as necessary and relevant for the Construction Manager to evaluate, give notice of, or enforce lien rights.

ARTICLE 6 COST OF THE WORK

§ 6.1 For purposes of this Agreement, the Cost of the Work shall be the total cost to the Owner to construct all elements of the Project designed or specified by the Architect and shall include the Contractors' general conditions costs, overhead and profit but solely under the terms and conditions of the approved bid package by the lowest responsive and responsible bidder. The Cost of the Work also includes the reasonable value of labor, materials, and equipment, donated to, or otherwise furnished by, the Owner. The Cost of the Work includes the compensation of the Construction Manager and Construction Manager's Consultants during the Construction Phase only, including

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compensation for reimbursable expenses at the job site, if any. The Cost of the Work does not include the compensation of the Architect; the costs of the land, rights-of-way, financing, or contingencies for changes in the Work; or other costs that are the responsibility of the Owner.

§ 6.2 The Owner's budget for the Cost of the Work is provided in Initial Information, and shall be adjusted throughout the Project as required under Sections 5.2 and 6.4. Evaluations of the Owner's budget for the Cost of the Work, and the estimates of the Cost of the Work prepared by the Construction Manager, represent the Construction Manager's judgment as a person or entity familiar with the construction industry. It is recognized, however, that neither the Construction Manager nor the Owner has control over the cost of labor, materials; or equipment; the Contractors' methods of determining bid prices; or competitive bidding, market, or negotiating conditions. Accordingly, the Construction Manager cannot and does not warrant or represent that bids or negotiated prices will not vary from the Owner's budget for the Cost of the Work, or from any estimate of the Cost of the Work, or evaluation, prepared or agreed to by the Construction Manager.

§ 6.3 If the Architect is providing cost estimating services as a Supplemental Service, and a discrepancy exists between the Construction Manager's cost estimates and the Architect's cost estimates, the Construction Manager and the Architect shall work together to reconcile the cost estimates.

§ 6.4 If the Construction Manager's estimate of the Cost of the Work exceeds the Owner's budget for the Cost of the Work, the Construction Manager, in consultation with the Architect, shall make appropriate recommendations to the Owner to adjust the Project's size, quality, or budget for the Cost of the Work, and the Owner shall cooperate with the Construction Manager and Architect in making such adjustments.

§ 6.5 If the Construction Manager's estimate of the Cost of the Work exceeds the Owner's budget for the Cost of the Work, the Owner shall

.1 give written approval of an increase in the budget for the Cost of the Work;
.2 terminate in accordance with Section 9.5;
.3 in consultation with the Construction Manager and Architect, revise the Project program, scope, or quality as required to reduce the Cost of the Work; or
.4 implement any other mutually acceptable alternative.

§ 6.6 If the Owner chooses to revise the Project program, scope, or quality to reduce the Cost of the Work pursuant to Section 6.5.3, or if the bids or proposals received from the prospective Contractors, in the aggregate, exceed the Owner's budget for the Cost of the Work, and the Owner chooses to revise the Project program, scope, or quality to reduce the Cost of the Work , the Construction Manager shall cooperate with the Owner and Architect to develop the necessary revisions, update the cost estimate, and obtain additional bids. The Construction Manager will perform the services described in Sections 6.4 and 6.6 without additional compensation.

ARTICLE 7 COPYRIGHTS AND LICENSES

The Construction Manager and the Construction Manager's consultants, if any, shall not own or claim a copyright in the Instruments of Service. The Construction Manager, the Construction Manager's consultants, if any, and the Owner warrant that in transmitting Instruments of Service, or any other information, the transmitting party is the copyright owner of such information or has permission from the copyright owner to transmit such information for its use on the Project.

ARTICLE 8 CLAIMS AND DISPUTES

§ 8.1 General

§ 8.1.1 The Owner and Construction Manager shall commence all claims and causes of action against the other and arising out of or related to this Agreement, whether in contract, tort, or otherwise, in accordance with the requirements of the binding dispute resolution method selected in this Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Construction Manager waive all claims and causes of action not commenced in accordance with this Section 8.1.1.

§ 8.1.2 To the extent damages are covered by property insurance, the Owner and Construction Manager waive all rights against each other and against the contractors, consultants, agents, and employees of the other for damages, except such rights as they may have to the proceeds of such insurance as set forth in AIA Document A232–2019, General Conditions of the Contract for Construction. The Owner or the Construction Manager, as appropriate, shall

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require of the contractors, consultants, agents, and employees of any of them, similar waivers in favor of the other parties enumerated herein.

§ 8.1.3 The Construction Manager shall indemnify and hold the Owner and the Owner's officers and employees harmless from and against damages, losses and judgments arising from claims by third parties, including reasonable attorneys' fees and expenses recoverable under applicable law, but only to the extent they are caused by the negligent acts or omissions of the Construction Manager, its employees and its consultants in the performance of professional services under this Agreement.

§ 8.1.4

§ 8.1.5 The Construction Manager and Owner waive consequential damages for claims, disputes, or other matters in question, arising out of or relating to this Agreement. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination of this Agreement, except as specifically provided in Section 9.7.

§ 8.2 Mediation

§ 8.2.1 Any claim, dispute or other matter in question arising out of or related to this Agreement shall be subject to mediation. Any dispute not resolved through mediation to be resolved through litigation in The Circuit Court for Waukesha County, Wisconsin. If such matter relates to or is the subject of a lien arising out of the Construction Manager's services, the Construction Manager may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the matter by mediation or by binding dispute resolution.

§ 8.2.2 The Owner and Construction Manager shall endeavor to resolve claims, disputes and other matters in question between them by mediation. A request for mediation shall be made in writing, delivered to the other party to this Agreement, and filed with the person or entity administering the mediation.

§ 8.2.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 8.2.4 If the parties do not resolve a dispute through mediation pursuant to this Section 8.2, the method of binding dispute resolution shall be the following:
(Check the appropriate box.)

[ ] Arbitration pursuant to Section 8.3 of this Agreement

[**X**] Litigation in a court of competent jurisdiction

[ ] Other: *(Specify)*

If the Owner and Construction Manager do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, the dispute will be resolved in a court of competent jurisdiction.

§ 8.3 The provisions of this Article 8 shall survive the termination of this Agreement.

(Paragraphs deleted)

ARTICLE 9 TERMINATION OR SUSPENSION

§ 9.1 If the Owner fails to make payments to the Construction Manager in accordance with this Agreement, such failure shall be considered substantial nonperformance and cause for termination or, at the Construction Manager's option, cause for suspension of performance of services under this Agreement. If the Construction Manager elects to suspend services, the Construction Manager shall give seven days' written notice to the Owner before suspending services. In the event of a suspension of services, the Construction Manager shall have no liability to the Owner for delay or damage caused the Owner because of such suspension of services. Before resuming services, the Owner shall

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pay the Construction Manager all sums due prior to suspension and any expenses incurred in the interruption and resumption of the Construction Manager's services. The Construction Manager's fees for the remaining services and the time schedules shall be equitably adjusted.

§ 9.2 If the Owner suspends the Project, the Construction Manager shall be compensated for services performed prior to notice of such suspension. When the Project is resumed, the Construction Manager shall be compensated for expenses incurred in the interruption and resumption of the Construction Manager's services. The Construction Manager's fees for the remaining services and the time schedules shall be equitably adjusted.

§ 9.3 If the Owner suspends the Project for more than 90 cumulative days for reasons other than the fault of the Construction Manager, the Construction Manager may terminate this Agreement by giving not less than seven days' written notice.

§ 9.4 Either party may terminate this Agreement upon not less than seven days' written notice should the other party fail substantially to perform in accordance with the terms of this Agreement through no fault of the party initiating the termination.

§ 9.5 The Owner may terminate this Agreement upon not less than seven days' written notice to the Construction Manager for the Owner's convenience and without cause.

§ 9.6 If the Owner terminates this Agreement for its convenience pursuant to Section 9.5, or the Construction Manager terminates this Agreement pursuant to Section 9.3, the Owner shall compensate the Construction Manager for services performed prior to termination, Reimbursable Expenses incurred, and costs attributable to termination, including the costs attributable to the Construction Manager's termination of consultant agreements.

§ 9.7 In addition to any amounts paid under Section 9.6, if the Owner terminates this Agreement for its convenience pursuant to Section 9.5, or the Construction Manager terminates this Agreement pursuant to Section 9.3, the Owner shall pay to the Construction Manager the following termination fee:
(Set forth below the amount of any termination fee, or the method for determining any termination fee.)

§ 9.8 Except as otherwise expressly provided herein, this Agreement shall terminate one year from the date of Substantial Completion.

ARTICLE 10 MISCELLANEOUS PROVISIONS

§ 10.1 This Agreement shall be governed by the laws of the State of Wisconsin excluding that jurisdiction's choice of law rules.

§ 10.2 Terms in this Agreement shall have the same meaning as those in AIA Document A232–2019, General Conditions of the Contract for Construction, except for purposes of this Agreement, the term "Work" shall include the work of all Contractors under the administration of the Construction Manager and the Architect.

§ 10.3 The Owner and Construction Manager, respectively, bind themselves, their agents, successors, assigns, and legal representatives to this Agreement. Neither the Owner nor the Construction Manager shall assign this Agreement without the written consent of the other, except that the Owner may assign this Agreement to a lender providing financing for the Project if the lender agrees to assume the Owner's rights and obligations under this Agreement, including any payments due to the Construction Manager by the Owner prior to the assignment.

§ 10.4 If the Owner requests the Construction Manager to execute certificates, the proposed language of such certificates shall be submitted to the Construction Manager for review at least 14 days prior to the requested dates of execution. If the Owner requests the Construction Manager to execute consents reasonably required to facilitate assignment to a lender, the Construction Manager shall execute all such consents that are consistent with this Agreement, provided the proposed consent is submitted to the Construction Manager for review at least 14 days prior to execution. The Construction Manager shall not be required to execute certificates or consents that would require knowledge, services, or responsibilities beyond the scope of this Agreement.

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§ 10.5 Nothing contained in this Agreement shall create a contractual relationship with, or a cause of action in favor of, a third party against either the Owner or Construction Manager.

§ 10.6 Unless otherwise required in this Agreement, the Construction Manager shall have no responsibility for the discovery, presence, handling, removal or disposal of, or exposure of persons to, hazardous materials or toxic substances in any form at the Project site.

§ 10.7 The Construction Manager shall have the right to include photographic or artistic representations of the design of the Project among the Construction Manager's promotional and professional materials. The Construction Manager shall provide professional credit for the Architect and the Contractors in the Construction Manager's promotional materials for the Project. However, the Construction Manager may not include the logo of the Owner in its promotional materials without the owner's expressed written permission. The Construction Manager shall be given reasonable access to the completed Project to make such representations. However, the Construction Manager's materials shall not include the Owner's confidential or proprietary information if the Owner has previously advised the Construction Manager in writing of the specific information considered by the Owner to be confidential or proprietary. The Owner shall provide professional credit for the Construction Manager in the Owner's promotional materials for the Project. This Section 10.7 shall survive the termination of this Agreement unless the Owner terminates this Agreement for cause pursuant to Section 9.4.

§ 10.8 If the Construction Manager or Owner receives information specifically designated as "confidential" or "business proprietary," the receiving party shall keep such information strictly confidential and shall not disclose it to any other person except as set forth in Section 10.8.1. This Section 10.8 shall survive the termination of this Agreement.

§ 10.8.1 The receiving party may disclose "confidential" or "business proprietary" information after 7 days' notice to the other party, when required by law, arbitrator's order, or court order, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or to the extent such information is reasonably necessary for the receiving party to defend itself in any dispute. The receiving party may also disclose such information to its employees, consultants, or contractors in order to perform services or work solely and exclusively for the Project, provided those employees, consultants and contractors are subject to the restrictions on the disclosure and use of such information as set forth in this Section 10.8.

§ 10.9 The invalidity of any provision of the Agreement shall not invalidate the Agreement or its remaining provisions. If it is determined that any provision of the Agreement violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Agreement shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Agreement.

10.10 The parties acknowledge that the City of New Berlin as a Wisconsin municipal corporation, is subject to the requirements of the Wisconsin Public Bid Law, including but not limited to Wis Stat Sec 62.15. As a result, this project will need to be publicly bid following the requirements of the Wisconsin Public Bid Law. The parties further acknowledge that to the extent that the terms of this Contract are inconsistent with the requirements of the Wisconsin Public Bid Law, the terms of the Wisconsin Public Bid Law will control and will be applicable to the performance of this contract.

10.11 The Construction Manager shall keep full and detailed records and accounts related to the cost of the work and exercise such controls a may be necessary for proper financial management under this Contract and to substantiate all costs incurred. The accounting and control systems shall be satisfactory to t, he Owner. The Owner and the Owner's auditors shall during regular business hours and upon reasonable notice be afforded access to and shall be permitted to audit and copy the Construction Manger's records and accounts, including complete documentation supporting accounting records. The Construction Manager shall preserve these records for a period of seven years after final payment or for such longer periods as may be required by law.

10.12 The Construction Manager understands and agrees that the City is a municipal entity and therefore, is subject to the Wisconsin Public Records law, Wis Stat Sec 19.36(3) requires governmental entities to make available for inspection a copy of any records produced or collected under a contract entered into by the City to the same extent as if the record were maintained by the City. Therefore, in the event that there is a request for any other documentation

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pertaining to this agreement. The Construction Manager shall provide the information as requested and charge no more than the cost to copy said information. The parties agree that upon completion or termination of this contract all project contract documents or instruments of service including electronic files of computer aided record drawings, reports, etc. may be used without restriction by the City for any public purpose and to implement construction and use of the project. Amy such use or reuse of these documents outside the scope of the project shall be without compensation for liability to the Construction Manager, excepting for errors and omission associated with completed project, services and documents performed under this agreement.

ARTICLE 11 COMPENSATION

§ 11.1 For the Construction Manager's Basic Services described under Article 3, the Owner shall compensate the Construction Manager as follows: Payments for services shall be made monthly in proportion to the services performed. Payments are due and payable upon presentation of an invoice. Payments shall be made within 45 days after the invoice date.

§ 11.1.1 For Preconstruction Phase Services in Section 3.2:
(Insert amount of, or basis for, compensation, including stipulated sums, multiples or percentages.)

Alt. Agreement already executed.

§ 11.1.2 For Construction Phase Services in Section 3.3:
(Insert amount of, or basis for, compensation, including stipulated sums, multiples or percentages.)

General Conditions cost of $75,000 + 0.75% insurance, 3.5% Cost of Construction

§ 11.2 For the Construction Manager's Supplemental Services designated in Section 4.1.1, and for any Sustainability Services required pursuant to Section 4.1.3, the Owner shall compensate the Construction Manager as follows:
(Insert amount of, or basis for, compensation. If necessary, list specific services to which particular methods of compensation apply.)

§ 11.3 For Additional Services that may arise during the course of the Project, including those under Section 4.2, the Owner shall compensate the Construction Manager as follows:
(Insert amount of, or basis for, compensation.)

Labor per Section 11.5 + 5% fee, 0.75% insurance

§ 11.4 Compensation for Supplemental and Additional Services of the Construction Manager's consultants when not included in Sections 11.2 or 11.3, shall be the amount invoiced to the Construction Manager plus percent (%), or as follows:
(Insert amount of, or basis for computing, Construction Manager's consultants' compensation for Supplemental or Additional Services.)

N/A

§ 11.5 The hourly billing rates for services of the Construction Manager and the Construction Manager's consultants are set forth below. The rates shall be adjusted in accordance with the Construction Manager's and Construction Manager's consultants' normal review practices.
(If applicable, attach an exhibit of hourly billing rates or insert them below.)

Exhibit C – Hourly Rates

Employee or Category	Rate ($0.00)

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§ 11.6 Compensation for Reimbursable Expenses

§ 11.6.1 Reimbursable Expenses are in addition to compensation for Basic, Supplemental, and Additional Services and include expenses incurred by the Construction Manager and the Construction Manager's consultants directly related to the Project, as follows:

.1 Transportation and authorized out-of-town travel and subsistence;
.2 Long distance services, dedicated data and communication services, teleconferences, Project web sites, and extranets;
.3 Permitting and other fees required by authorities having jurisdiction over the Project;
.4 Printing, reproductions, plots, and standard form documents;
.5 Postage, handling, and delivery;
.6 Expense of overtime work requiring higher than regular rates, if authorized in advance by the Owner;
.7 Professional photography, and presentation materials requested by the Owner;
.8 If required by the Owner, and with the Owner's prior written approval, the Construction Manager's consultants' expenses of professional liability insurance dedicated exclusively to this Project, or the expense of additional insurance coverage or limits in excess of that normally maintained by the Construction Manager's consultants;
.9 All taxes levied on professional services and on reimbursable expenses;
.10 Site office expenses; and
.11 Other similar Project-related expenditures.

§ 11.6.2 For Reimbursable Expenses the compensation shall be the expenses incurred by the Construction Manager and the Construction Manager's consultants plus five percent (5%) of the expenses incurred.

§ 11.7 Construction Manager's Insurance. If the types and limits of coverage required in Section 2.8 are in addition to the types and limits the Construction Manager normally maintains, the Owner shall pay the Construction Manager for the additional costs incurred by the Construction Manager for the additional coverages as set forth below.
(Insert the additional coverages the Construction Manager is required to obtain in order to satisfy the requirements set forth in Section 2.8, and for which the Owner shall reimburse the Construction Manager.)

§ 11.8 Payments to the Construction Manager

§ 11.8.1 Initial Payment

§ 11.8.1.1 An initial payment of zero dollars ($0) shall be made upon execution of this Agreement and is the minimum payment under this Agreement. It shall be credited to the Owner's account in the final invoice.

§ 11.8.2 Progress Payments

§ 11.8.2.1 Unless otherwise agreed, payments for services shall be made monthly in proportion to services performed. Payments are due and payable upon presentation of the Construction Manager's invoice. Amounts unpaid forty-five (45) days after the invoice date shall bear interest at the rate entered below, or in the absence thereof at the legal rate prevailing from time to time at the principal place of business of the Construction Manager.
(Insert rate of monthly or annual interest agreed upon.)

1.5% per annum

§ 11.8.2.2 The Owner shall not withhold amounts from the Construction Manager's compensation to impose a penalty or liquidated damages on the Construction Manager, or to offset sums requested by or paid to Contractors for the cost of changes in the Work, unless the Construction Manager agrees or has been found liable for the amounts in a binding dispute resolution proceeding.

§ 11.8.2.3 Records of Reimbursable Expenses, expenses pertaining to Supplemental and Additional Services, and services performed on the basis of hourly rates shall be available to the Owner at mutually convenient times.

ARTICLE 12 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Agreement are as follows:
(Include other terms and conditions applicable to this Agreement.)

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§ 12.1 ELECTRONIC CONTRACTS
Owner acknowledges and agrees that in lieu of originals, Contractor may maintain electronic copies of relevant contract documents following completion of the Project. If Owner requires the original version of any contract documents, then at or before the time of final completion of the Work, Owner shall advise Contractor of which particular original documents Owner requires.

§12.2 The Contract Sum is based on prices for materials and supplies current as the date of the Agreement. The prices of certain materials and supplies, including, but not limited to, gypsum wallboard, copper, petroleum, etc., may be subject to escalation faster than the general rate of inflation. If at any time during the course of performing the Work, the cost of materials and/or supplies to be incorporated or used in the Work increases by more than [5%] of the price for same as of the date of the Agreement, then the Contract Sum [i.e., either the guaranteed maximum price if compensation is based on the cost of the work plus a fee or the fixed price amount if compensation is based on a lump sum] shall be increased to account for such escalation above the [5%] threshold price. [For example, if at the time Contractor purchases gypsum wall board for the Project the price for the wallboard is 20% more than the price for the same as of the date of the Agreement, then the Contract Sum shall be increased in an amount equal to the 15% price increase for the wallboard above the prices for the same as of the date of the Agreement plus 5%.]Notwithstanding the foregoing the cost of the project will be directly related to the costs of the work established through the amounts bid in the contract which is approved by the City.

§12.2.1 Notwithstanding any indicated in this agreement, the amount of this contract shall not increase above the amount originally approved by the City, without the City's written consent.

§

ARTICLE 13 SCOPE OF THE AGREEMENT
§ 13.1 This Agreement represents the entire and integrated agreement between the Owner and the Construction Manager and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both the Owner and Construction Manager.

§ 13.2 This Agreement is comprised of the following documents identified below:

.1 AIA Document C132™–2019, Standard Form Agreement Between Owner and Construction Manager as Adviser

.2 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

.3 Exhibits:
(Check the appropriate box for any exhibits incorporated into this Agreement.)

[ ] AIA Document E235™–2019, Sustainable Projects Exhibit, Construction Manager as Adviser Edition, dated as indicated below:
(Insert the date of the E235-2019 incorporated into this agreement.)

[ ] Other Exhibits incorporated into this Agreement:
(Clearly identify any other exhibits incorporated into this Agreement, including any exhibits identified in Section 4.1.2.)

.4 Other documents:
(List other documents, if any, forming part of the Agreement.)

Exhibit A - Rider

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Exhibit B - Certificate of Insurance
Exhibit C - Hourly Rates

This Agreement is entered into as of the day and year first written above.

CITY OF NEW BERLIN	**VJS CONSTRUCTION SERVICES, INC.**
OWNER *(Signature)*	**CONSTRUCTION MANAGER** *(Signature)*
(Printed name and title)	David Jorgensen, Executive Vice President *(Printed name and title)*

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VJS CONSTRUCTION SERVICES, INC.

EXHIBIT "A"
RIDER

AIA C132-2019 STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONSTRUCTION MANAGER AS ADVISER

CITY OF NEW BERLIN - MALONE PARK DEVELOPMENT
VJS PROJECT NUMBER 1171492

APRIL 14, 2025

RIDER

This Rider ("Rider") is attached to and incorporated by reference into the modified AIA Document C132-2019 Standard Form of Agreement Between City of New Berlin ("Owner") and VJS Construction Services, Inc. ("Construction Manager as Adviser"), dated April 14, 2025 ("Agreement"). The Agreement and this Rider shall constitute and be construed as a single instrument. Any terms herein that are not specifically defined in the Rider shall have the definitions given to in the Agreement. In the event any provision of this Rider conflicts with or contradicts any provision of the Agreement or any other Contract Document, then the provision in this Rider shall control.

The Agreement is modified as follows:

1. Microorganisms, including, but not limited to, mold, mildew, spores, any other form of fungi or bacteria, and any toxin secreted therefrom, ("Microorganisms"), require moisture to grow, occur naturally in the environment, are necessary for the natural decomposition of plant and other organic material, and are found everywhere life can support it. Consequently, Construction Manager cannot eliminate the possibility that Microorganisms may grow in, on, or about the building that is the subject to the Agreement (the "Building"). Microorganisms may be present before, during or after construction, in the indoor air of the Building, on the interior surfaces of the Building including, without limitation to, wall cavities, attics, windows, basements, and/or on the exterior surfaces of the Building, or any part thereof.

2. If moisture is allowed to remain on a growth medium (e.g., fabric, carpet, wallpaper, building materials, drywall, tiles, wood, insulation), Microorganisms can develop within 24 to 48 hours. Moisture in the Building may result from, among other things: maintenance of the Building; humidity level inside the Building and/or the outside atmosphere; leaky pipes; water infiltration, seepage, or leakage from windows, the basement, or roof; and/or the design, construction means and methods, and/or the building materials used in the construction of the Building. This moisture may cause the growth, release, discharge, dispersal, or presence of Microorganisms which, at certain levels, may cause, contribute to, or exacerbate: deterioration of building materials; damage to real or personal property, including, without limitation to, diminution or loss of use thereof; health hazards, bodily injuries, personal injuries and/or other irritant effects such as, without limitation to, skin irritation, respiratory problems and/or allergic reactions. Owner may minimize these risks by minimizing moisture, including, but not limited to: proper utilization and maintenance of plumbing, heating, cooling, dehumidification, and/or ventilation equipment; routine interior inspection, maintenance, and cleaning; and routine exterior inspection and maintenance such as, but not limited to, proper grading, proper gutters, landscaping, painting, and caulking. OWNER ACKNOWLEDGES THAT OWNER HAS BEEN INFORMED OF SUCH EFFECTS AND, SUBJECT TO PARAGRAPH 3 OF THIS RIDER, OWNER ASSUMES ALL RISKS OF DAMAGE, DESTRUCTION OF, OR INJURY TO PERSON OR PROPERTY THAT MAY ARISE AS A RESULT OF OR IN ANY WAY CONNECTED WITH THE INDOOR AIR QUALITY OF THE BUILDING OR THE PRESENCE OF MICROORGANISMS IN, ON, OR ABOUT THE INTERIOR OR EXTERIOR OF THE BUILDING.

3. Notwithstanding anything to the contrary in the Contract Documents, and to the fullest extent permitted by law, Owner fully, finally, and forever releases and discharges, and further agrees to indemnify and defend, Construction Manager, its successors and assigns, subcontractors, material suppliers and the officers, employees, and agents of each of them, from and against any and all claims, obligations, demands, damages, causes of action, liabilities, losses, costs, and expenses, including, without limitation to, attorneys' fees, expert fees, and Microorganism investigation, testing, consultation, and/or remediation fees and costs, whether now known or hereafter known, foreseen or unforeseen, that Owner or any occupant of the Building had, has, or may have in the future, in law or in equity (the "Claim") that are attributable to (1) bodily injury, sickness, emotional distress, disease, death, or any other personal injury or adverse health effects, or (2) injury to or destruction of tangible real or personal property, including, without limitation to, diminution or loss of use thereof, arising out of, relating to, or in any way connected with: the indoor air quality of the Building, moisture in or about the Building, or the presence, growth, release, discharge, or dispersal of any Microorganism in, on, or about the interior or exterior of the Building, provided, however, that such Claim is caused, in whole or in part, by Owner's or its Architect's specification or use of an exterior insulation and finish system, i.e., EIFS, or similar system, or the Owner's or its occupant's failure to maintain the Building and/or the equipment, appliances, or systems in the Building in such a manner to prevent moisture, including, but not limited to, those suggested means and methods prescribed in Paragraph 2 of this Rider. The foregoing release, defense, indemnity, and hold harmless obligations shall not apply if the Claim is caused solely by Construction Manager's breach of contract or any act or omission of Construction Manager's its subcontractors or material suppliers in their performance under the Contract Documents.

4. NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THE CONTRACT DOCUMENTS, CONSTRUCTION MANAGER MAKES NO EXPRESS OR IMPLIED WARRANTY OF HABITABILITY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR GOOD WORKMANSHIP AS TO BUILDING MATERIALS AND/OR CONSTRUCTION MEANS AND METHODS WITH REGARD TO INDOOR AIR QUALITY OF THE BUILDING OR THE PRESENCE OF MICROORGANISMS IN, ON, OR ABOUT THE INTERIOR OR EXTERIOR OF THE BUILDING.

5. Notwithstanding anything to the contrary in the Contract Documents, any claim, demand, cause of action, or dispute arising out of, related to, or in any way connected with the indoor air quality of the Building, the presence, growth, release, discharge, or dispersal of any Microorganism in, on, or about the interior or exterior of the Building or any bodily injury, personal injury, or property damage caused, in whole or in part, by such presence, growth, release, discharge, or dispersal (the "Dispute"), shall, at Construction Manager's sole option, be settled by binding arbitration. If Construction Manager elects to arbitrate the Dispute, then such arbitration shall, at Construction Manager's sole option, be governed by and held in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then currently in effect or with Wisconsin Statutes Chapter 788.

6. The arbitration conducted in accordance with Paragraph 5 shall include, at Construction Manager's sole option, any Construction Manager's subcontractor, Construction Manager's supplier, or any other person or entity substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in such arbitration, and Owner hereby consents to the presence and participation of such subcontractor, supplier, person or entity in such arbitration. The award rendered by the arbitrator shall be final, and judgment may be entered upon it in accordance with the applicable law in any court having jurisdiction thereof. At Construction Manager's sole option, the forum and venue of any litigation or arbitration of any dispute shall be Milwaukee, Wisconsin.

7. If any provision of this Rider shall be invalid or unenforceable, such invalidity or unenforceability shall not invalidate or render unenforceable this entire Rider or any of its provisions, but rather this entire Rider shall be construed as if not containing the particular invalid or unenforceable provision or provisions, and the rights and obligations of the parties shall be construed and enforced accordingly.

CONSTRUCTION MANAGER AS ADVISER: VJS CONSTRUCTION SERVICES, INC.

By: _____
Its: David Jorgensen, Executive Vice President

Dated: 4/15/25

OWNER: CITY OF NEW BERLIN

By: _____
Its:

Dated: _____

EXHIBIT C

HOURLY RATES

DESCRIPTION	Through 05-31-25	Through 05-31-26
FIELD SERVICES		
Laborer-Foreman	$ 95.78	$ 98.65
Laborer -Journeyman	$ 92.34	$ 95.11
Carpenter-Foreman	$ 119.99	$ 123.59
Carpenter-Journeyman	$ 111.34	$ 114.68
Cement Mason-Foreman	$ 110.53	$ 113.84
Cement Mason -Journeyman	$ 100.32	$ 103.33
Truck Driver	$ 79.57	$ 81.95
Superintendent	$ 136.58	$ 140.68
General Superintendent	$ 140.90	$ 145.13
EXEC. / PM / ADMIN AND SUPPORT SERVICES		
Principal in Charge	$ 228.09	$ 239.49
Project Executive / Senior Project Manager	$ 163.04	$ 171.19
Project Manager	$ 143.13	$ 150.29
Assistant PM	$ 100.03	$ 105.03
Project Engineer	$ 85.99	$ 90.29
Project Coordinator	$ 83.49	$ 87.67
PM Intern	$ 43.90	$ 46.10
Administrative	$ 62.76	$ 65.90
ACCOUNTING SERVICES		
Accounting Supervisor	$ 124.95	$ 131.19
Accounting	$ 80.67	$ 84.71
PRECONSTRUCTION SERVICES		
Chief Estimator/Pre Construction	$ 174.38	$ 183.10
Sr. Estimator	$ 128.66	$ 135.09
Estimator	$ 124.24	$ 130.45
INFORMATION SERVICES		
BIM Manager	$ 146.79	$ 154.13
IT Manager	$ 148.19	$ 155.60
SAFETY SERVICES		
Sr. Safety Manager	$ 115.79	$ 118.81
Safety Engineer	$ 78.95	$ 81.00

AIA® Document A232® – 2019

General Conditions of the Contract for Construction, *Construction Manager as Adviser Edition*

for the following PROJECT:
(Name, and location or address)

Malone Park Improvements
16400 W Al Stigler Parkway
New Berlin, WI 53151

THE CONSTRUCTION MANAGER:
(Name, legal status, and address)

VJS Construction Services, Inc.
W233 N2847 Roundy Circle West
Pewaukee, WI 53072

THE OWNER:
(Name, legal status, and address)

City of New Berlin
3805 S Casper Drive
New Berlin, WI 53151

THE ARCHITECT:
(Name, legal status, and address)

Ayres Associates
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Waukesha, WI 53186

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.

§ 1.1.3 The Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Contractors, and by the Owner's own forces and Separate Contractors.

§ 1.1.5 Contractors. Contractors are persons or entities, other than the Contractor or Separate Contractors, who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

§ 1.1.6 Separate Contractors. Separate Contractors are persons or entities who perform construction under separate contracts with the Owner not administered by the Architect and Construction Manager.

§ 1.1.7 The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.8 The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.9 Instruments of Service. Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.10 Initial Decision Maker. The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Contractor, Subcontractors, sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

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ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work, and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 The Owner shall retain a construction manager adviser lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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§ 2.3.4 If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 2.3.5 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.6 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.7 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3.8 The Owner shall forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect, and the Construction Manager or Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

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§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. The Construction Manager shall review the proposed alternative for sequencing, constructability, and coordination impacts on the other Contractors. Unless the Architect or the Construction Manager objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

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§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

For One (1) year after Substantial Completion, the Contractor warrants to the Owner and Architect that: (1) materials and equipment furnished under the Contract will be new and of good quality unless otherwise required or permitted by the Contract Documents; (2) the Work will be free from defects not inherent in the quality required or permitted; and (3) the Work will conform to the requirements of the Contract Documents. Any material or equipment warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor, stating the reasons. If the Owner or Contractor disputes the Architect's determination or recommendation, either party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do

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not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces or Separate Contractors.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

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§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Construction Manager, Architect, and Owner, and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data, and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.10 through 4.2.12. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the Project submittal schedule approved by the Construction Manager and Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been reviewed and approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

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§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner, the Architect, and the Construction Manager shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Construction Manager shall review submittals for sequencing, constructability, and coordination impacts on other Contractors.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Construction Manager and Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner, Separate Contractors, or of other Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner, Separate Contractors, or by other Contractors except with written consent of the Construction Manager, Owner, and such other Contractors or Separate Contractors. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Separate Contractors, other Contractors, or the Owner, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner, Construction Manager, and Architect with access to the Work in preparation and progress wherever located.

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§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager, and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner, Architect, or Construction Manager. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 The Construction Manager is the person or entity retained by the Owner pursuant to Section 2.3.3 and identified as such in the Agreement.

§ 4.1.3 Duties, responsibilities, and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Construction Manager, Architect, and Contractor. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager known deviations from the Contract Documents and defects and deficiencies observed in the Work.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work.

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§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Contractors in accordance with the latest approved Project schedule.

§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of, or be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

§ 4.2.6 Communications. The Owner shall communicate with the Contractor and the Construction Manager's consultants through the Construction Manager about matters arising out of or relating to the Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with other Contractors shall be through the Construction Manager. Communications by and with the Owner's own forces and Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents, and will notify each other about the rejection. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, upon written authorization of the Owner, whether or not the Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 Utilizing the submittal schedule provided by the Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from other Contractors, the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 4.2.10 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are other Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.11 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the

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Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.13 The Construction Manager will prepare Change Orders and Construction Change Directives.

§ 4.2.14 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.15 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples, and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.16 The Construction Manager will assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.17 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.18 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of the Construction Manager, Owner, or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.19 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.20 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.21 The Construction Manager will receive and review requests for information from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include other Contractors or Separate Contractors or the subcontractors of other Contractors or Separate Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

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§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor's obligations under the subcontract.

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ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces or Separate Contractors, the Owner shall provide for coordination of such forces and Separate Contractors with the Work of the Contractor, who shall cooperate with them.

§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner's own forces, Separate Contractors, Construction Manager and other Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractors or other Contractors that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractors or to other Contractors, because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces, Separate Contractors, or other Contractors.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or other Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner, Separate Contractors, and other Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, other Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Construction Manager, with notice to the Architect, will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor. A Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

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§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

A Change Order is a written instrument prepared by the Construction Manager and signed by the Owner, Construction Manager, Architect, and Contractor, stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Construction Manager and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Construction Manager and Architect. When both additions and credits

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covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Construction Manager and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Construction Manager that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner, Architect, Construction Manager, or an employee of any of them, or of the Owner's own forces, Separate Contractors, or other Contractors; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts and the Architect, based on the recommendation of the Construction Manager, determines justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

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§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. This schedule, unless objected to by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and unless objected to by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, and releases of waivers of lien from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 Where there is only one Contractor, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Certificate for Payment, in the full amount of the Application for Payment, with a copy to the

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Construction Manager; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

§ 9.4.2 Where there is more than one Contractor performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives all of the Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Contractor's application with information from similar applications for progress payments from the other Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect.

§ 9.4.2.1 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Project Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Project Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.

§ 9.4.3 The Construction Manager's certification of an Application for Payment or, in the case of more than one Contractor, a Project Application and Certificate for Payment, shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.4 The Architect's issuance of a Certificate for Payment or, in the case of more than one Contractor, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.5 The representations made pursuant to Sections 9.4.3 and 9.4.4 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.6 The issuance of a Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment or Project Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.3 and 9.4.4 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 and 9.4.2. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment or a Project Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment

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previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

.1 defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor or other Contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment or Project Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Construction Manager and Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Construction Manager will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising

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out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect, then the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine Substantial Completion.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

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§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon completion of the Work, the Contractor shall forward to the Construction Manager a notice that the Work is ready for final inspection and acceptance, and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager shall perform an inspection to confirm the completion of Work of the Contractor. The Construction Manager shall make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection, and shall then forward the Contractors' notices and Application for Payment or Project Application for Payment, to the Architect, who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project Certificate for Payment stating that to the best of their knowledge, information and belief, and on the basis of their on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors,

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Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor;

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and

.4 construction or operations by the Owner, Separate Contractors, or other Contractors.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner, Construction Manager and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to

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cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Construction Manager and Construction Manager's consultants, and the Architect and Architect's consultants, shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in

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coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 The Owner shall provide Owner's Liability and Owner's Property Insurance as follows:
(Insert specific insurance furnished by the Owner.)

During all phases of the project, the Owner shall purchase and maintain General Liability and Property/Builder's Risk Insurance, including waivers of subrogation.

If Owner does not obtain proper insurance, does not maintain the insurance, or does not provide a copy of the policy when and as requested, Owner may be deemed in breach of contract.

Such insurance shall be written with the following minimum limits, or limits acceptable to VJS:

General Liability Insurance Requirements:
$1,000,000 Each Occurrence Limit
$2,000,000 General Aggregate Limit
$2,000,000 Products/Completed Operations Aggregate
$1,000,000 Personal & Advertising Limit

Builder's Risk Insurance Requirements

Owner will purchase and provide proof of Builder's Risk Insurance for the appropriate coverage amount to VJS Construction Services. Owner is responsible for payment of deductible on Builder's Risk Insurance. Upon review of the policy, VJS may require coverage changes which they feel are appropriate. The following minimum coverages will be required.

.1 VJS and all subcontractors shall be named as additional insureds on the Owner's Builder's Risk policy. The policy shall also include an endorsement which waives subrogation against VJS and all subcontractors.

.2 Coverage should be written on an "All Risk Coverage" basis including collapse, flood and water damage, earthquake and windstorm damage.

.3 The policy should include replacement cost coverage, adequate debris removal coverage, theft of building materials, property in transit, temporary off-site storage coverage, and appropriate soft costs coverage. The policy shall also not have a testing exclusion.

§ 11.2.3 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform both the Contractor and the Construction Manager, separately and in writing, prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

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§ 11.2.4 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice directly to the Contractor, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants; (4) other Contractors and any of their subcontractors, sub- subcontractors, agents, and employees; and (5) Separate Contractors, if any, and any of their subcontractors, sub- subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, other Contractors, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor, Architect, and Construction Manager for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Construction Manager, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Construction Manager, Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any

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dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

§ 11.5.3 Certificates of insurance shall be provided by each party showing their respective coverages prior to commencement of the Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Construction Manager or Architect has not specifically requested to examine prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner, Separate Contractors, or other Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the

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Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Construction Manager, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, shall be at the Contractor's expense.

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§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.4.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments shall be made in accordance with statutory requirements and interest will be paid as required by statute definitions and requirements.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

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§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent:

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of this Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

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§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- **.1** damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- **.2** damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

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§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties, the Construction Manager, and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days of receipt thereof, then both parties waive their rights to mediate with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation.

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§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, commence litigation in the Circuit Court for Waukesha County, Wisconsin.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

(Paragraphs deleted)

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EXHIBIT D:
Contract Package Scope of Work

BID PACKAGE - RESULTS

Project: City of New Berlin Malone Park
Job Number: 1171492
Date: 5/1/2025

Base Bid Total	$	2,188,399
Alternate #1 Total	$	360,833
Alternate #2 Total	$	104,140
Alternate #3 Total	$	247,790
TOTAL	**$**	**2,901,162**

CONTRACT PACKAGE #	STATUS	DESCRIPTION / BIDDERS	Base Bid (Items 1-61)	Restroom Building Alternate Bid No. 1 (Items 62-67)	Shelter Building Alternate Bid No. 2 (Items 68-77)	Diamonds 4, 5, 6 Alternate Bid No. 3 (Items 78-80)
0000		VJS GENERAL CONDITIONS				
			$ 75,000.00			
			$ -			
			$ -			
			$ -			
			$ -			
			$ -			
Site Utilities		Base Bid	Items 1-60	Items 63-67	Items 69-77	Items 78-80
		WIL-Surge Electric, Inc.	$ 832,820.96	$ 17,425.00	$ 8,830.00	$ 216,834.00
		Contractor 2	$ -	$ -	$ -	$ -
		Contractor 3	$ -	$ -	$ -	$ -
		Contractor 4	$ -	$ -	$ -	$ -
		Contractor 5	$ -	$ -	$ -	$ -
		Contractor 6	$ -	$ -	$ -	$ -
		Lowest Responsible Bidder - Wil-Surge Electric, Inc.	$ 832,820.96	$ 17,425.00	$ 8,830.00	$ 216,834.00
Park Structures		Base Bid	Item 61	Item 62	Item 68	
		Level Up Construction, Inc.	$ 1,013,750.00	$ 298,330.00	$ 82,300.00	
		Ray Stadler Construction Company, Inc.	$ 1,163,000.00	$ 310,000.00	$ 108,000.00	
		Contractor 3	$ -	$ -	$ -	
		Contractor 4	$ -	$ -	$ -	
		Contractor 5	$ -	$ -	$ -	
		Contractor 6	$ -	$ -	$ -	
		Lowest Responsible Bidder - Level Up Construction, Inc.	$ 1,013,750.00	$ 298,330.00	$ 82,300.00	
9600		Comprehensive Insurance	$ 14,411.78	$ 2,368.16	$ 683.48	$ 1,626.26
9650		VJS Fee	$ 67,759.40	$ 11,134.31	$ 3,213.47	$ 7,646.11
9000		Owner Contingency	$ 184,657.10	$ 31,575.50	$ 9,113.00	$ 21,683.40
		Totals	**$ 2,188,399.23**	**$ 360,832.97**	**$ 104,139.95**	**$ 247,789.76**

Project Manual

for

Project:

City of New Berlin
Malone Park
Improvements

15321 W. National Ave.
New Berlin, WI 53151

April 9, 2025

Architect:

Ayres Associates, Inc.
20975 Swenson Dr
Suite 200
Waukesha, WI 53186

Owner's Construction
Advisor/Manager:

VJS Construction Services, Inc.
W233 N2847 Roundy Circle
Pewaukee, WI 53072

PROJECT MANUAL

FOR

MALONE PARK IMPROVEMENTS

CITY OF NEW BERLIN

April 2025

MALONE PARK IMPROVEMENTS
CITY OF NEW BERLIN
April 2025

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PROJECT DIRECTORY

PROJECT: Malone Park Improvements
City of New Berlin
April 2025

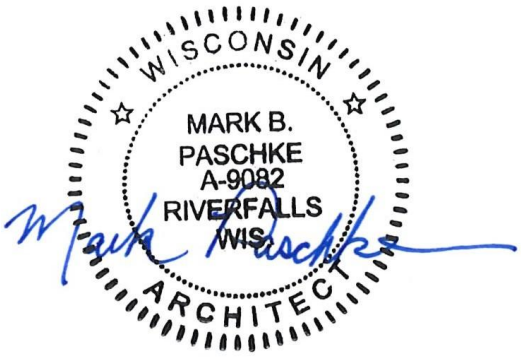
Owner:	City of New Berlin 3805 South Casper Drive New Berlin, WI 53151 Contact: Kristen Hogan Phone: (262)-797-2445 E-mail: KHogan@newberlin.org
Owner's Construction Advisor / Manager:	VJS Construction Services, Inc. W233 N2847 Roundy Circle West Pewaukee, WI 53072 Contact: Ben Bergles Phone: (414)-303-5285 E-mail: BBergles@vjscs.com
Lead Engineer:	Ayres Associates 20975 Swenson Drive, Suite 200 Waukesha, WI 53186 Contact: Austin Johrendt Phone: (262)-523-4488 E-mail: JohrendtA@ayresassociates.com
Architect:	Ayres Associates 20975 Swenson Drive, Suite 200 Waukesha, WI 53186 Contact: Mark Paschke Phone: (715)-426-4908 E-mail: PaschkeM@ayresassociates.com
Structural:	Ayres Associates 3433 Oakwood Hills Parkway Eau Claire, WI 54701 Contact: Jacob Zander Phone: (715)-831-7572 E-mail: JacobZ@AyresAssociates.com
Mechanical/Plumbing:	Ayres Associates 1700 Highway 36 W Ste 700 St Paul, MN 55113 Contact: Licia Oligmueller Phone: (651)-604-3106 E-mail: OligmuellerL@AyresAssociates.com
Electrical:	Ayres Associates 1700 Highway 36 W Ste 700 St Paul, MN 55113 Contact: Tibebu Ogeto Phone: (651)-639-9606 E-mail: OgetoT@AyresAssociates.com

CERTIFICATIONS PAGE

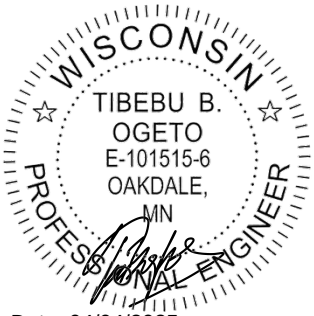
PROJECT: Malone Park Improvements
City of New Berlin
April 9, 2025

Site Civil
Austin Johrendt, PE

Mechanical and Plumbing
Licia Oligmueller, PE



Architecture
Mark Paschke, NCARB, LEED AP



Date: 04/04/2025

Electrical
Tibebu Ogeto, PE

04/07/2025

Structural
Jacob Zander, PE

Bidding Requirements

ADVERTISEMENT FOR BIDS

PROJECT: Malone Park Improvements
City of New Berlin
April 2025

BID DEADLINE: April 30, 2025
10:00 a.m., Local Time

NOTICE

Sealed bids for the above project will be received by Kristen Hogan, Principal Planner at New Berlin City Hall until the Bid Deadline. Bids shall be submitted in electronic format through Quest vBid. Immediately thereafter, the bids will be publicly opened and read aloud at City Hall, located at 3805 South Casper Drive, New Berlin, WI.

In general, the project consists of the demolition of 4 existing structures, the construction of 1 building, approximately 4,200 square yards of asphalt path replacement, 270 linear feet of concrete curb & gutter and 150 square yards of concrete sidewalk replacement, and approximately 1,000 linear feet of 6” water service, 200 linear feet of 1 ½” water services, and 1,150 linear feet of 2” sanitary services.

Two prime bids will be received for the work.

BID SECURITY

Bids must be accompanied by bid security in the amount of 5% of the maximum bid amount. Bid and bid security may not be withdrawn for a period of 45 days after the Bid Deadline.

Bid security will be retained if the Bidder is awarded the Work and fails to execute the Agreement and furnish 100% Performance and Payment Bonds.

QUALIFICATIONS

Bidders shall submit a Statement of Bidder's Qualifications with their bid.

RIGHTS RESERVED

Owner reserves the right to reject any or all bids and to waive informalities in any bid.

BIDDING DOCUMENTS

Bidding documents may be obtained in PDF electronic format by download from the Quest Construction Data Network website, accessible via by clicking on the "Bidding" link, for a non-refundable fee of $64.00.

Published by authority of: City of New Berlin

INSTRUCTIONS TO BIDDERS

1. SUMMARY

A. The following documents shall be completed and submitted with each bid:

1. Bid Form (uploaded in PDF format)
2. Quest vBid “Bid Worksheet” (completed online)
3. Bid Bond (uploaded in PDF format)
4. Statement of Bidders Qualifications (uploaded in PDF format)

2. PREPARATION OF BIDS

A. Electronic Format Bids Through Quest vBid:

1. To obtain bidding documents from QuestCDN and participate in electronic bidding through Quest vBid, bidder must have a QuestCDN account.
2. From the QuestCDN project advertisement page, click on the "On-Line Bid" button to go to Quest vBid.
3. A detailed description of the required steps to submit an online bid can be found in Appendix A of this Project Manual.

B. Bids may be rejected for the following reasons: alterations of the form, additions to the form, alternates not specified, incomplete bids, erasures, unbalanced prices, and irregularities of any kind. The term "unbalanced prices" shall mean the use of one or more unit prices that do not reflect the reasonable actual costs of labor, equipment, materials, profit, overhead costs, and indirect costs of the bidder for the item(s).

C. Bids shall be in the form of lump sum values to be represented on the bid form. In the event portions of the contract are based on a given unit of measure, the lump sum value shall not be exceeded without an approved change order.

3. FAX TRANSMISSION AND E-MAIL

A. Fax transmission or e-mailing of Bid Form or required supporting documents to individual designated to receive bids will not be acceptable.

4. WITHDRAWAL OR MODIFICATION OF BID

A. Withdrawal of Bid: A bid may be withdrawn at any time prior to the Bid Deadline by clicking the "Unsubmit Bid" button at Quest vBid.

B. Modification of Bid: If a bidder wishes to modify its bid prior to the Bid Deadline, bidder must withdraw its initial bid in the manner specified above and submit a new bid prior to the Bid Deadline.

C. After the Bid Deadline, a bid may not be withdrawn or modified during the bid holding period specified in the Advertisement for Bids.

5. BID SECURITY

A. Form of Bid Security: Bid shall be accompanied by a scanned PDF copy of a bid bond. Upon request after the Bid Deadline, the apparent low bidder shall submit the original signed copy of the bid bond to Owner.

B. Bid security shall be in the amount specified in the Advertisement for Bids made payable to Owner as a guarantee that the bidder will enter into a contract and furnish bonds. Bid bonds shall be executed by the bidder and by a surety corporation licensed to transact business in the state where the project is located. Bidders shall require Attorneys-in-fact who execute bid bonds to affix thereto a certified and current copy of their power of attorney.

C. Bid security of the three lowest bidders will be released when the contract has been executed or, if no award has been made within the specified bid holding period, upon demand of the bidder at any time thereafter so long as bidder has not been notified of acceptance of its bid. All other bid securities will be released within 10 days after the opening of bids.

6. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

A. The successful bidder, upon failure or refusal to execute and deliver the contract and bonds required within 10 days after receiving Notice of Award, shall forfeit the bid security to Owner as liquidated damages for such failure or refusal.

7. QUALIFICATIONS OF BIDDER

A. Bidder shall submit a Statement of Bidder's Qualifications to the Owner with its bid on the form contained in this Project Manual (or a similar form containing the same information).

B. Before the award of any contract, the Owner shall be satisfied that the bidder, (a) maintains a permanent place of business, (b) has adequate equipment to do the work properly and expeditiously, (c) has a suitable financial status to meet obligations incident to the work, (d) has appropriate technical experience, and (e) has satisfactorily completed contracts of similar nature and magnitude.

8. ADDENDA AND INTERPRETATIONS

A. No binding interpretation of the meaning or intent of the drawings, specifications, or other bidding documents will be made to any bidder orally. Requests for such interpretation shall be made to Ayres in writing. Requests received less than 7 days prior to the Bid Deadline may not be answered. Interpretations or clarifications considered necessary by A/E in response to such requests will be issued by addenda mailed or delivered to all parties recorded by A/E as having received the bidding documents. All addenda so issued shall become part of the bidding documents and shall be acknowledged with the bid. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under this bid as submitted.

B. Contact Kristen Hogan KHogan@newberlin.org with questions.

9. SUBSTITUTIONS (BID PHASE)

A. Bids shall be based on those products, materials, and equipment specified or described in the bidding documents, or those substitute or "or equal" items approved by addendum.

B. Products, materials, and equipment identified in the bidding documents by reference to a manufacturer's name, catalog number, or model are identified for the purpose of establishing a standard of type, function, appearance, and quality. Bidders desiring to submit bids for manufacturers or products not previously named shall submit a substitution request for approval not later than 10 days prior to the Bid Deadline.

C. Requests for substitution of alternate products or use of "or equal" items shall be submitted with complete references to manufacturer's product identification and specification data indicating composition, guarantee, availability, applicable standards or agency approvals met or exceeded, restrictions imposed on product, and manufacturer's recommended method of application or installation. A substitution or an "or equal" item will be considered acceptable if the product will perform adequately the duties imposed by the general design and, in the opinion of the A/E, is of equal substance, quality, appearance, and function, unless the named item is necessary for interchangeability or if the named product has been demonstrated to be most cost-effective. If approved by addendum, the requested substitution or "or equal" item may be included in the Contract Bid amount.

D. All prices that bidder sets forth in its bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-bid approvals of "or-equal" or substitution requests are made at bidder's sole risk.

10. ALTERNATE BIDS

A. If alternate bids are requested, bidder shall state the amount to be added to or deducted from the base bid for making the changes required under each alternate. The stated amount shall include all incidental work and adjustments as may be necessary or required to fully complete the alternate work. If there is no price change, the bidder shall state "NO CHANGE."

11. LIST OF SUBCONTRACTORS

A. Bidders are required to submit, with the Bid Form, a list of subcontractors. Failure to complete this list may be considered cause to recommend rejection of the bid.

B. Bidders are specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must be acceptable to Owner. If Owner, after due investigation, has reasonable objection to any proposed subcontractor or supplier, Owner may, before the Notice of Award is given, request apparent successful bidder to submit a substitute without an increase in the bid. If apparent successful bidder declines to make any such substitution, Owner may award the Contract to the next lowest bidder that proposes to use acceptable subcontractors and suppliers. Declining to make requested substitutions will not constitute grounds for forfeiture of the bid security of any bidder.

12. AWARD OF CONTRACT

A. Two prime contracts, Site Utilities and Park Structures, will be awarded on the basis of lowest responsible, responsive total bid amount in the Owner's best interests. The awarded Site Utilities and Park Structures bidders shall cooperate fully with Owner’s other contractors, local government officials, and others as directed by the Owner.

- Site Utilities bidders shall be responsible for the following line items of the Bid Schedule: 1-60, 63-67, and 69-80. Site Utilities bidders shall also be responsible for bringing all site utilities 5’ - 0” within Park Structures where required.
- Park Structures bidders shall be responsible for the following line items of the Bid Schedule: 61-62, and 68.

B. The Owner reserves the right to reject any or all bids, including bids which, in the opinion of Owner, are excessive or not sufficient to properly carry out the work. The Owner reserves the right to reject the bid of bidders who have previously failed to properly perform or complete on time contracts of similar nature.

C. Bidder shall, if awarded a contract, deliver executed agreement forms within 10 days of the date of the Notice of Award, including satisfactory bonds which shall remain in effect for one year after acceptance of the work and component parts by the Owner. Said bonds shall be 100% Performance Bond and 100% Labor and Material Payment Bond in the amount of Bid and on forms furnished by Owner.

13. GEOTECHNICAL DATA

A. Subsurface investigations have been performed pertaining to this project site. A copy of the geotechnical report is contained in Appendix B of this Project Manual.

B. The cover page to the geotechnical report indicates the extent to which information on existing physical conditions can be relied upon for bidding purposes.

BID FORM

PROJECT: Malone Park Improvements
City of New Berlin
April 2025

BID DEADLINE: April 30, 2025
(10:00 am), Local Time

To: City of New Berlin

We _____(Name of Bidder) acknowledge that we have received the Contract Documents, prepared by Ayres and dated April 2025, that are listed in the Project Manual Table of Contents and Drawing Sheet Index. We hereby agree to provide all labor, materials, equipment, and services required to complete the work in strict accordance with the Contract Documents for the following stated amount(s).

BID SCHEDULE

[Submit prices by completing the online Quest vBid "Bid Worksheet".]

BID SECURITY

Accompanying this bid is bid security payable to Owner in the form stipulated in the Instructions to Bidders, which is at least 5% of the maximum bid amount, and will be retained by Owner as liquidated damages if the undersigned fails to execute agreements and furnish bonds (if specified) within 10 days after Notice of Award.

WITHDRAWAL OF BID

It is agreed that this bid and any required bid security may not be withdrawn for a period of 45 days after the Bid Deadline.

TIME OF COMPLETION

The undersigned agrees, if awarded the contract, to start work after "Notice to Proceed" and to substantially complete the work on or before April 30, 2026.

Failure to substantially complete the work within the stated time will result in liquidated damages of $250 per calendar day thereafter until substantial completion.

BIDDER'S WARRANTY

By the act of submitting a bid for the proposed work, the bidder warrants that:

1. Bidder and its subcontractors have carefully and thoroughly reviewed the Contract Documents and have found them complete, free of ambiguities, and sufficient for the purpose intended; further that,

2. Bidder and all workers, employees, and subcontractors are skilled and experienced in the type of work represented by the Contract Documents; further that,

3. Bid is based solely upon the Contract Documents and properly issued written addenda and not upon any other representation; further that,

4. Bidder has carefully examined the site of the work and from its investigations is satisfied as to the nature and location of work, the character, quality, quantities of materials, and difficulties to be encountered, the kind and extent of equipment and other facilities needed for performance of the work, the general and local conditions, and other items which may, in any way, affect the work or its performance; and further that,

5. Neither the bidder nor its employees, agents, prospective suppliers, or subcontractors have relied upon any verbal representations allegedly authorized or unauthorized from the Owner, its employees or agents, including architects, engineers, and consultants, in assembling the bid.

LIST OF SUBCONTRACTORS

The following is a list of subcontractors whose bids were used in this bid. It is agreed that after submission of this list, no change may be made in subcontractors as listed without submitting change for Owner review in accordance with the conditions of the contract. If there are no subcontractors, state "None."

Subcontract:	Subcontractor:

ADDENDA

The undersigned acknowledges receipt of addenda _____ to _____ inclusive.

ORGANIZATION AND AUTHORITY

The undersigned hereby certifies that the bidder is organized as indicated below and that all statements herein are made on behalf of such bidder.

Business Name _____

Business Address _____

_____

Telephone Number _____

Fax Number _____

E-Mail Address _____

State Contractor Registration/License No. (if applicable) _____

(Complete applicable paragraph 1, 2, 3, or 4.)

1. Corporation. Bidder is a corporation organized under the laws of the state of _____. Its corporate president is _____ and its corporate secretary is _____. The _____ is authorized to submit bids and sign construction contracts for the bidder by action of the board of directors.

2. Limited Liability Corporation. Bidder is a limited liability corporation organized under the laws of the state of _____. Its members are _____ _____. The _____ is authorized to submit bids and sign construction contracts for the bidder.

3. Partnership. Bidder is a partnership consisting of partners _____ _____ and _____.

4. Sole Trader. Bidder is an individual doing business as _____ _____.

SWORN STATEMENT

I, being duly sworn, hereby certify that I have examined and carefully prepared this bid from the Contract Documents and have checked the same in detail before submitting this bid; that I have full authority to make such statements and submit this bid on behalf of the above bidder; and that said statements are true and correct.

Bidder's Signature _____

NOTARY CERTIFICATE
I hereby certify that _____(name and title)

appeared before me on _____ (date)

SEAL

_____ (Notary signature)

_____(Notary printed name)

My Commission expires _____(date)

Malone Park Improvements

BID SCHEDULE

NAME OF BIDDER: _____

LINE ITEM	ITEM CODE	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	EXTENSION
Water Main						
1	1	6" Water Service	LF	953		
2	2	6" Water Service Directionally Drilled	LF	72		
3	3	1 1/4" Water Service	LF	571		
4	4	1 1/2" Water Service	LF	46		
5	5	Connect to Existing Irrigation Service	EA	1		
6	6	6" Ductile Iron Hydrant Lead	LF	5		
7	7	Hydrant Assembly and 6" Valve	EA	1		
8	8	6" Gate Valve	EA	2		
9	9	Connect to Existing Water Main	EA	1		
10	10	Abandon Existing Water Service and Curb Stop	LS	1		
11	11	1 1/2" Water Valve	EA	1		
12	12	Site Water Spigot	EA	4		
		Subtotal for Water Main				
Sanitary Sewer						
13	13	2" Sanitary Lateral - Forcemain	LF	1150		
14	14	4-FT DIA. Sanitary Manhole	EA	1		
15	15	Sanitary Sewer Neenah R-1660 Frame w/ Solid Cover (New Berlin Standard)	EA	1		
16	16	Sanitary Forcemain Valve	EA	1		
17	17	Forcemain Cleanout	EA	2		
18	18	Connect to Existing Sanitary Sewer	EA	1		
19	19	Abandon Existing Sanitary Service	LS	1		
		Subtotal for Sanitary Sewer				
Storm Sewer						
20	20	12" Storm Sewer RCP	LF	224		
21	21	12" Storm Sewer HDPE	LF	38		
22	22	12" Storm Sewer End Section Concrete	EA	6		
23	23	12" Storm Sewer End Section HDPE	EA	4		
24	24	Manhole 4-FT Diameter	EA	3		
25	25	Storm Sewer Neenah R-1661 Frame w/ Solid Cover	EA	1		
26	26	Storm Sewer Neenah R-2577-1 Frame w/ Open Grate Cover	EA	2		
27	27	Adjust Existing Storm Sewer Inlet Casting	EA	1		
		Subtotal for Storm Sewer				
Sitework						
28	28	24" Concrete Curb and Gutter (Includes Base Course)	LF	300		
29	29	Temporary Asphalt	TON	160		

Malone Park Improvements

BID SCHEDULE

NAME OF BIDDER: _____

LINE ITEM	ITEM CODE	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	EXTENSION
30	30	Asphalt Pavement Surface - 4LT 58-28 S	TON	800		
31	31	Asphalt Pavement Binder - 3MT 58-28 H	TON	130		
32	32	Aggregate Base Course - 1 1/4"	CY	800		
33	33	Pavement Saw Cutting	LF	400		
34	34	Concrete Sidewalk - 5"	SF	1450		
35	35	Detectable Warning Field	SF	122		
36	36	Site Grading	LS	1		
37	37	ADA Pavement Marking	EA	6		
38	38	Accessible Parking Sign and Post	EA	6		
39	39	No Motor Vehicles Sign and Post	EA	6		
40	40	4" Painted Pavement Marking	LF	100		
41	41	Hatched ADA Unloading Zone Pavement Marking	EA	3		
42	42	Relocate Existng Electrical System - Site	LS	1		
43	43	Relocate Existing Site Lighting Fixtures and Conduit	LS	1		
44	44	2" Conduit - Site	LF	146		
45	45	Pull Box - Site	EA	1		
46	46	Remove Existing Buildings and Foundations	LS	1		
47	47	Remove Existing Curb and Gutter	LF	550		
48	48	Remove Existing Concrete Pavement	SY	30		
49	49	Remove Existing Asphalt Pavement	SY	3300		
		Subtotal for Sitework				
Miscellaneous						
50	50	Lawn Restoration	LS	1		
51	51	Mobilization	LS	1		
52	52	Traffic Control/Pedestrian Safety Items	LS	1		
53	53	Silt Fence	LF	800		
54	54	Inlet Protection	EA	9		
55	55	Culvert Pipe Ditch Check	EA	8		
56	56	Chain Link Fence - 6 Gauge, 8 FT Height	LF	457		
57	57	Chain Link Fence - 9 Gauge, 8 FT Height	LF	981		
58	58	8' X 4' Gate - 6 Gauge	EA	2		
59	59	8' X 6' Gate - 9 Guage	EA	2		
60	60	32' Netting	LF	353		
		Subtotal for Miscellaneous				
Structures						
61	61	Concessions Building	LS	1		

Malone Park Improvements

BID SCHEDULE

NAME OF BIDDER: _____

LINE ITEM	ITEM CODE	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	EXTENSION
		Subtotal for Structures				
		TOTAL BASE BID AMOUNT (LINE ITEMS 1 THRU 61)				
		Alternate Bid No. 1 (Restroom Building)				
62	A1-1	Restroom Building	LS	1		
63	A1-2	Concrete Sidewalk - 5"	SF	100		
64	A1-3	Site Grading	LS	1		
65	A1-4	Relocate Existing Electrical and Lighting System	LS	1		
66	A1-5	Aggregate Base Course - 1 1/4"	CY	5		
67	A1-6	Lawn Restoration	LS	1		
		Total Alternate Bid No.1 Amount, the Net Sum of Line Items 62 thru 67:				
		Alternate Bid No. 2 (Shelter Building)				
68	A2-1	Shelter Building	LS	1		
69	A2-2	Site Grading	LS	1		
70	A2-3	Concrete Sidewalk - 5"	SF	50		
71	A2-4	Pavement Saw Cutting	LF	10		
72	A2-5	24" Concrete Curb and Gutter (Includes Base Course)	LF	10		
73	A2-6	Inlet Protection	EA	2		
74	A2-7	Detectable Warning Field	SF	10		
75	A2-8	Relocate Existing Electrical System	LS	1		
76	A1-7	Aggregate Base Course - 1 1/4"	CY	5		
77	A2-9	Lawn Restoration	LS	1		
		Total Alternate Bid No.2 Amount, the Net Sum of Line Items 68 thru 77:				
		Alternate Bid No. 3 (Fencing Improvements, Diamonds 4, 5, and 6)				
78	A3-1	Chain Link Fence - 9 Gauge, 6 FT Height	LF	274		
79	A3-2	Chain Link Fence - 6 Gauge, 10 FT Height	LF	828		
80	A3-3	Chain Link Fence - 9 Gauge, 20 FT Height	LF	828		
		Total Alternate Bid No.3 Amount, the Net Sum of Line Items 78 thru 80:				

BID BOND (DAMAGES FORM)

Bidder Name: Address *(principal place of business)*:	**Surety** Name: Address *(principal place of business)*:
Owner Name: Address *(principal place of business)*:	**Bid** Project *(name and location)*: Bid Due Date:
Bond Bond Amount: Date of Bond:	

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

Bidder	Surety
_____ *(Full formal name of Bidder)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature) (Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.

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1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder any difference between the total amount of Bidder's Bid and the total amount of the Bid of the next lowest, responsible Bidder that submitted a responsive Bid, as determined by Owner, for the work required by the Contract Documents, provided that:

   1.1. If there is no such next Bidder, and Owner does not abandon the Project, then Bidder and Surety shall pay to Owner the bond amount set forth on the face of this Bond, and

   1.2. In no event will Bidder's and Surety's obligation hereunder exceed the bond amount set forth on the face of this Bond.

   1.3. Recovery under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation will be null and void if:

   3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

   3.2. All Bids are rejected by Owner, or

   3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions will not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond must be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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BIDDER'S QUALIFICATION STATEMENT - CONFIDENTIAL

Submitted to: **City of New Berlin**

Date: _____

RE: SUBMISSION OF PREQUALIFICATION FORMS FOR THE YEAR

Gentlemen & Ladies:

Submitted herewith please find our statement for your consideration in determining whether our firm is qualified and capable to bid, perform and furnish the necessary labor, materials and skill on the basis of our work record, experience, equipment and staff as required to enter upon and complete those. various types of projects indicated below as may be awarded by the municipality during the current year.

It is understood that the determination and decisions of the Municipality with regard to qualifications shall be final, and further, that the information herein **will** be considered confidential. A finding of "Qualified" for one project does not bind the Municipality on other projects, and that the Municipality expressly reserves the right to review and reserve its findings on later projects.

Sincerely,

_____
Signature

_____
Printed Name

CITY OF NEW BERLIN
PRE-QUALIFICATION STATEMENT
IDENTIFICATION SECTION

PRE-QUALIFICATION STATEMENT- **CONFIDENTIAL DATA**

TO: **CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN**

There is submitted herewith for your consideration, pursuant to Section 66.29, Wisconsin Statutes, a Statement of Qualifications of the undersigned to furnish the necessary labor, materials, equipment and skills required to enter upon the complete public works contract to be let by the Municipality through its several departments.

IDENTIFICATION

Official Firm Name _____

Mailing Address: _____

_____

_____

Telephone No. (_____)_____

Fax No. (_____) _____

Number of Years in Business under Present Firm Name: _____

Classification of Work for Which Your Firm is seeking Qualification:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

CITY OF NEW BERLIN
PRE-QUALIFICATION STATEMENT
IDENTIFICATION SECTION

Please CHECK Type of Firm Organization:

- ☐ Corporation
- ☐ Partnership
- ☐ Individual
- ☐ Joint – Venture

List Principle Individual Names:

(IF Individual, Answer Below)

Sole Trader _____

(IF Partnership, Answer Below)

Partner _____

Partner _____

(IF Corporation, Answer Below)

President _____

Vice-President _____

Secretary _____

Treasurer _____

Licensed to do business in Wisconsin on _____

In what State Incorporated _____ When _____

CITY OF NEW BERLIN
PRE-QUALIFICATION STATEMENT
CONTRACTUAL RESPONSIBILITY SECTION

EXPERIENCE

Tabulation of Major Contracts (over $25,000) which the Firm has completed during past 5 Years

Year	Class of Work	Amount	Location of Work	For Whom Performed & Contact Name/Phone

Tabulation of Construction Experience of Principle Individuals in Organization

Individual's Name	Title or Present Position	Years of Experience	Class of Work

List Below Major Pieces of Equipment Owned (or Leased) and Available when needed for the Proposed Work

Item Description	Qty	Size/ Capacity/ Etc	Condition (Good or Fair)	Years of Service

CONTRACTUAL RESPONSIBILITY

List the trade and percentage of work normally performed with your own work force

Trade	Percentage of Work

Have you (or your Firm) ever failed to complete any work awarded to you?

☐ Yes

☐ No

If so, state: when, where, and why:

When	Where	Why

Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete on time a construction contract?

☐ Yes

☐ No

If so, state: firm name(s), when, where, and why:

Firm Name(s)	When	Where	Why

CITY OF NEW BERLIN
PRE-QUALIFICATION STATEMENT
CONTRACTUAL RESPONSIBILITY SECTION

Have you (or firm) asked to be relieved from a bid submitted by it to a public awarding authority during the past ten years?

☐ Yes

☐ No

If so, state: when, where, and why:

When	Where	Why

Have you (firm) been charged with or convicted of a violation of any wage schedule?

☐ Yes

☐ No

If so, state: when, where, and why:

When	Where	Why

List those projects that you (or firm) expect to have in progress at the time of the major performance period for this project:

Project	Location

Has the bidder been found in breach of any construction contract within the past five years?

☐ Yes

☐ No

If so, state: when, where, and why:

When	Where	Why

Has the contractor been disqualified from bidding any municipal entity within the past five years?

☐ Yes

☐ No

If so, state: when, where, and why:

When	Where	Why

BONDING RESPONSIBILITY

Name(s) and address of bonding company(ies) which generally execute Bid and Surety bonds:

Name	Address

Name(s) and addresses of all bonding companies other than those listed above, which have written Bid and Surety bonds for your firm during the last five (5) years:

Name	Address

Has any bonding company ever taken over a contract or make any payments, because of your firm's failure to carry out a contract?

☐ Yes

☐ No

If so, state: when, where, and why.

When	Where	Why

List current limits of bonding capacity: _____

List your current average bond premium cost: _____ %

CONTRACTOR'S FINANCIAL STATEMENT

Attach your Statement of Financial Conditions, including the latest regular dated financial statement or balance sheet, which must contain the following items:

1. Current Assets: Cash joint-venture accounts, accounts receivable, notes receivable, accrued interest on notes, deposits, materials, and prepaid expenses, net fixed assets, and other assets.

2. Current Liabilities: Accounts payable, notes payable, accrued interest on notes, provision for income taxes, advances received from owner, accrued salaries, accrued payroll taxes, other liabilities, and capital (stock, authorized and outstanding shares par values, and earned surplus).

Name of firm preparing statement:_____

Are any of the firm's assets assigned?

☐ Yes

☐ No

If so, state which are assigned and for what purpose they are assigned:

Assigned Asset	Purpose

GENERAL DATA

List below all previous work experience with the City of New Berlin:

Project	Trade	Year

Are you familiar with the provisions of the Agreement Form used by the City's?

☐ Yes

☐ No

Are you familiar with its terms and conditions?

☐ Yes

☐ No

Are you familiar with the City's specifications?

☐ Yes

☐ No

Are you familiar with the regulations of the City relating to bidding and awarding of contracts'?

☐ Yes

☐ No

AFFIDAVIT

STATE OF WISCONSIN
} ss
_____ County

_____, being duly sworn, deposes and says that he is the _____ (Official capacity/title) of the firm _____ and that the answers to the foregoing questions and all statements therein contained are true and correct, and that any Owner, Bonding Company, or other agency herein named is hereby authorized to supply the City of New Berlin with any information deemed necessary to verify this statement.

Subscribed and sworn to before me
This ___ day of _____, 20__
_____Notary Public
_____County, Wisconsin

My Commission Expires: _____

ATTACH
STATEMENT OF FINANCIAL CONDITIONS

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is dated as of the _____ day of _____ in the year _____ by and between

_____ ("Owner") and

_____ ("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1—WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

ARTICLE 2—THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

ARTICLE 3—ENGINEER

3.01 The Owner has retained _____ ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

ARTICLE 4—CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. The Work will be substantially complete on or before _____, ____, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before _____, ____.

4.02 *Contract Times: Days*

A. The Work will be substantially complete within _____ days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and

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completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within _____ days after the date when the Contract Times commence to run.

4.03 *Milestones*

A. Parts of the Work must be substantially completed on or before the following Milestone(s):

1. Milestone 1:

2. Milestone 2:

4.04 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $_____ for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $_____ for each day that expires after such time until the Work is completed and ready for final payment.

3. *Milestone 1:* Contractor shall pay Owner $_____ for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved, or until the time specified for Substantial Completion is reached, at which time the rate indicated in Paragraph 4.05.A.1 will apply, rather than the Milestone rate.

4. *Milestone 2:* Contractor shall pay Owner $_____ for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 2, until Milestone 2 is achieved, or until the time specified for Substantial Completion is reached, at which time the rate indicated in Paragraph 4.05.A.1 will apply, rather than the Milestone rate.

5. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

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ARTICLE 5—CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

A. For all Work other than Unit Price Work, a lump sum of:

All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item). **The extended prices are as indicated in Contractor's Bid, attached hereto as an exhibit. The estimated total of all extended prices for Unit Price Work is:**

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

ARTICLE 6—PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment ~~on or about the ____ day of~~ **once** each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

a. **95** percent of the value of the Work completed (with the balance being retainage); and

b. **95** percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

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c. At 50 percent completion, no additional amounts will be retained unless Engineer certifies that the Work is not proceeding satisfactorily, but amounts previously retained will not be paid to Contractor. At 50 percent completion or any time thereafter when the progress of the Work is not satisfactory, additional amounts may be retained but in no event will total retainage be more than 10 percent of the Work completed and materials and equipment delivered, suitably stored, and accompanied by required documentation.

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to **98** percent of the ~~Work completed~~ **Contract Price (with the balance being retainage)**, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less ~~_____ percent of~~ Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

A. Owner will not make final payment~~, or return or release retainage at Substantial Completion or any other time,~~ unless Contractor submits written consent of the surety to such payment~~, return, or release~~.

6.05 *Interest*

A. All amounts not paid when due will bear interest at the rate of **12** percent per annum.

ARTICLE 7—CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.
2. Bonds:
   a. Performance bond (together with power of attorney).
   b. Payment bond (together with power of attorney).
3. General Conditions.
4. Supplementary Conditions.
5. Specifications as listed in the Project Manual Table of Contents.
6. Drawings (not attached but incorporated by reference) consisting of _____ sheets as listed on the Drawing Sheet Index.
7. Addenda (numbers _____ to _____, inclusive).
8. Exhibits to this Agreement (enumerated as follows):
   a. Contractor's Bid, marked Exhibit _____.

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9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8—REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.

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7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

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[Remainder of Page Intentionally Left Blank]

To Be Completed Upon Contract Award

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IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective **as of the date first written on Page 1 of the Agreement** (which is the Effective Date of the Contract).

Owner:

_____
(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Contractor:

_____
(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

License No.: _____
(where applicable)

State: _____

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PERFORMANCE BOND

Contractor	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Contract**
Name:	Description *(name and location)*:
Mailing address *(principal place of business)*:	Contract Price: Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____	_____
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature)(Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

   3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

   3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

   3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

   5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

   5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

   5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

   5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

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5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

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statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

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PAYMENT BOND

Contractor	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Contract**
Name:	Description *(name and location)*:
Mailing address *(principal place of business)*:	Contract Price:
	Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____	_____
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature)(Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
    5.1. Claimants who do not have a direct contract with the Contractor
        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
    7.2. Pay or arrange for payment of any undisputed amounts.
    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

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8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1. *Claim*—A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

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16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: **[Describe modification or enter "None"]**

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a

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Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.

23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

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a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

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38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

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c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

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E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of Owner's Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

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2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software

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application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

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3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to

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provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes

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or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected

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by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused

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directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

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2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

   a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

   b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

   c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

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2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

   b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

   c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

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5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

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G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

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C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any),

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including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

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6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until

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the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

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C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

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7.03 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that the proposed item:

1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

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2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) has a proven record of performance and availability of responsive service; and

4) is not objectionable to Owner.

b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

a. will certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design;

2) be similar in substance to the item specified; and

3) be suited to the same use as the item specified.

b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

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2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from the item specified; and

2) available engineering, sales, maintenance, repair, and replacement services.

d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

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D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all

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fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

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7.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

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I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

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B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

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D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

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C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

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7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with

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Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

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B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

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C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On

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the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and

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programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

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B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

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11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

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11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

   a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

   b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

   The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

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C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal

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and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

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2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

        1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

    c. *Construction Equipment Rental*

        1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

        2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

        3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

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d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

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b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

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C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

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2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final

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payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

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C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of

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the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work;

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

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D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

   a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

   b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

   c. Contractor has failed to provide and maintain required bonds or insurance;

   d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

   e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

   f. The Work is defective, requiring correction or replacement;

   g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   h. The Contract Price has been reduced by Change Orders;

   i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

   j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

   k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

   l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

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15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that

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can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all duly pending Change Proposals and Claims; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in

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liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and

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4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

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B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

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16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

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18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, “Paragraph SC-4.05.”

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

SC-1.01.A.37 Add the following language at the end of Paragraph 1.01.A.37:

The term Shop Drawings, and the procedures related to Shop Drawings, also includes Submittals identified as "product data" in the Specifications.

SC-1.01.A.51 Add the following new paragraph immediately after Paragraph 1.01.A.50:

51. *Project Manual* - The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

ARTICLE 2 – PRELIMINARY MATTERS

2.02 *Copies of Documents*

SC-2.02.A Amend the first sentence of Paragraph 2.02.A to read as follows:

Owner shall furnish to Contractor 3 printed copies of the Contract Documents (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF).

2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

B. *Electronic Documents Protocol:* The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol (“EDP” or “Protocol”) for exchange of electronic transmittals.

1. *Basic Requirements*

a. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

b. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party’s use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.

c. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements.

b. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.

c. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP.

d. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.

C. *Software Requirements for Electronic Document Exchange*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party, using the software formats required in this section of the EDP. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.

2. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth below.

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
3	Contractor's Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other	Email w/ Attachment or LFE	PDF	

	Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.			
5	Correspondence, reports and Specifications to be submitted to Owner for future word processing use and modification.	Email w/ Attachment or LFE	DOC	
6	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	

Notes	
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.

Key	
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)
PDF	Portable Document Format readable by Adobe® Acrobat Reader Version 11 or later
DOC	Microsoft® Word .docx format Version 2016
EXC	Microsoft® Excel .xls or .xml format Version 2016

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

SC-4.01.A Delete Paragraph 4.01.A in its entirety and insert the following in its place:

A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement, unless otherwise stated in the Agreement.

ARTICLE 5 – SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 *Subsurface and Physical Conditions*

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

E. The following lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

1. Report dated August 4, 2022 prepared by Terracon Consultants, Inc., entitled Geotechnical Engineering Report. The Technical Data contained in such report on which Contractor may rely is as indicated in the definition of Technical Data in the General Conditions.

F. The following lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

1. None.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01.C Add the following language at the end of Paragraph 6.01.C:

The performance and payment bonds furnished for the project are for a public improvement contract. The bonds shall be construed to comply with Wis. Stats., s. 779.14.

6.02 *Insurance – General Provisions*

SC-6.01.C Add the following language at the end of Paragraph 6.02.A:

The City must be identified as an additional insured on a primary and noncontributory basis and that the city must be provided with a policy endorsement satisfactory to it evidencing such coverage

6.03 *Contractor's Insurance*

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. *Supplement to Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, and (if applicable) pollution liability policies must include as additional insureds the following:

1. Owner: City of New Berlin
2. Engineer: Ayres Associates Inc
3. Other: None

E. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act coverage.

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Employer's Liability	
Each accident	$500,000
Disease, each employee	$500,000
Disease, policy limit	$1,000,000

F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,

2. damages insured by reasonably available personal injury liability coverage, and

3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.

    a. Such insurance must be maintained for three years after final payment.

    b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Severability of interests and no insured-versus-insured or cross-liability exclusions.

4. Underground, explosion, and collapse coverage.

5. Personal injury coverage.

6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.

7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).

2. Any exclusion for water intrusion or water damage.

3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.

4. Any exclusion of coverage relating to earth subsidence or movement.

5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).

6. Any limitation or exclusion based on the nature of Contractor's work.

7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	**Policy limits of not less than:**
General Aggregate	$2,000,000
Products—Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Bodily Injury and Property Damage—Each Occurrence	$1,000,000
Medical Expensive (Any One Person)	$5,000
Fire Damage (Any One Fire)	$50,000
Watercraft Liability	

J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	$1,000,000
Bodily Injury (Per accident)	$1,000,000
Property Damage (Per accident)	$1,000,000

K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Umbrella Liability	Policy limits of not less than:
Umbrella Form - Each Occurrence	$2,000,000
Umbrella Form - Aggregate	$2,000,000
Self-Insured Retention	$10,000

L. *Contractor's Pollution Liability Insurance:* This insurance is not required under this Contract.

M. *Contractor's Professional Liability Insurance:* This insurance is not required under this Contract.

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

F. *Builder's Risk Requirements:* The builder's risk insurance must:

1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).

    a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.

    b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.

2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract;

and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).

4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

5. extend to cover damage or loss to insured property while in transit.

6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.

7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.

8. include performance/hot testing and start-up, if applicable.

9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.

10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds."

SC-6.04 Delete Paragraph 6.04.A of the General Conditions and substitute the following in its place:

A. *Installation Floater*

1. Contractor shall provide and maintain installation floater insurance on a broad form or "all risk" policy providing coverage for materials, supplies, machinery, fixtures, and equipment that will be incorporated into the Work ("Covered Property"). Coverage under the Contractor's installation floater will include loss from covered "all risk" causes (perils) to Covered Property:

   a. of the Contractor, and Covered Property of others that is in Contractor's care, custody, and control;

   b. while in transit to the Site, including while at temporary storage sites;

   c. while at the Site awaiting and during installation, erection, and testing;

   d. continuing at least until the installation or erection of the Covered Property is completed, and the Work into which it is incorporated is accepted by Owner.

2. The installation floater coverage cannot be contingent on an external cause or risk, or limited to property for which the Contractor is legally liable.

3. The installation floater coverage will be in an amount sufficient to protect Contractor's interest in the Covered Property. The Contractor will be solely responsible for any deductible carried under this coverage.

4. This policy will include a waiver of subrogation applicable to Owner, Contractor, Engineer, all Subcontractors, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them.

SC-6.05 Delete Paragraph 6.05 in its entirety and insert the following in its place:

[Deleted]

SC-6.06 Delete Paragraph 6.06 in its entirety and insert the following in its place:

[Deleted]

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.05 *"Or Equals"*

SC-7.05 Add the following new paragraph immediately after Paragraph 7.05.E:

F. "Or equal" items proposed after Contract award are subject to the restrictions, if any, specified in Section 01 01 00 / 01 60 00.

7.06 *Substitutes*

SC-7.06 Add the following new paragraph immediately after Paragraph 7.06.F:

G. Substitutions proposed after Contract award are subject to the restrictions, if any, specified in Section 01 01 00 / 01 60 00.

7.07 *Concerning Subcontractors and Suppliers*

SC-7.07.A Add the following new paragraphs immediately after Paragraph 7.07.A:

1. Contractor shall submit a list of subcontractors as indicated on the Bid Form.

2. In accordance with Wis. Stats., s. 779.14, Contractor agrees, to the extent practicable, to maintain a list of all subcontractors and suppliers performing labor or furnishing materials to Contractor for the project.

7.20 *Nonresident Contractors*

SC-7.20 Add the following new paragraph after Paragraph 7.19:

7.20 *Nonresident Contractors*

A. The State of Wisconsin requires nonresident persons, whether incorporated or not, engaging in construction contracting in the State as a contractor or subcontractor to file a surety bond with the Wis. Dept. of Revenue or (if approved) a cash deposit with the Wis. Dept. of Administration to guarantee the payment of certain taxes. The bond or deposit is required where the amount of the contract or subcontract (or the aggregate amount of two or more contracts or subcontracts in one year) is $50,000 or more. The bond or deposit must be filed within 60 days after construction is begun. Refer to Wis. Stats., s. 71.80(16), for complete requirements.

B. Nonresident contractors and subcontractors are responsible for making their own arrangements to meet this requirement.

ARTICLE 8 – OTHER WORK AT THE SITE (NOT USED)

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Delete Paragraph 10.03 in its entirety and insert the following in its place:

[Deleted]

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.03 *Unit Price Work*

SC-13.03.E.1.b Add the following language at the end of Paragraph 13.03.E.1.b:

"Materially and significantly" shall be defined in accordance with the provisions of Section 01 01 00 / 01 22 50.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

SC-15.01.B.1 Amend the first sentence of Paragraph 15.01.B.1 by changing "20 days" to "30 days."

SC-15.01.B.4 Delete Paragraph 15.01.B.4 in its entirety and insert the following new paragraphs in its place:

4. Retainage shall be accumulated at 5% of the value of the Work completed, and 5% of the value of materials and equipment delivered and suitably stored, until 50% completion. At 50% completion, no additional amounts shall be retained unless Engineer certifies that the Work is not proceeding satisfactorily, but amounts previously retained shall not be paid to Contractor. At 50% completion or any time thereafter when the progress of the Work is not satisfactory, additional amounts may be retained but in no event shall total retainage be more than 10% of the value of the Work completed and material and equipment delivered and suitably stored.

5. Upon Substantial Completion, payments shall be increased to 98% of the Contract Price (i.e. retainage will be reduced to 2% of the Contract Price), less an allowance for incomplete Work and other amounts that may be withheld in accordance with the General Conditions.

SC-15.01.D.1 Delete Paragraph 15.01.D.1 and insert the following in its place:

Twenty days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

SC-15.01.E.4 Add the following new paragraph immediately after Paragraph 15.01.E.3:

4. In the event Owner receives notice from any person, subcontractor, supplier, or other third party, that Contractor has failed to pay such party for Work performed in accordance with the Contract Documents, Contractor shall, at request of Owner, and in no more than 10 calendar days, provide all documentation Owner believes necessary to determine whether such payment is due, or reasons for non-payment of disputed amounts. In the event Owner determines a claim to be valid, Owner may withhold from Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay such claim until satisfactory documentation is furnished that the liability has been fully discharged or reasons for non-payment of disputed amounts are provided by Contractor. In the event a claim is valid and payment is due, or in the absence of the requested documentation, Owner may authorize direct or two-party payment of any unpaid bills. In no event shall this provision be construed

to impose any obligations upon Owner or Engineer to either Contractor or Contractor's surety (if any).

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES (NOT USED)

Specifications

SECTION 01 01 00

GENERAL REQUIREMENTS

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

A. In general, the project consists of the demolition of 4 existing structures, the construction of 1 building, approximately 4,200 square yards of asphalt path replacement, 270 linear feet of concrete curb & gutter and 150 square yards of concrete sidewalk replacement, and approximately 1,000 linear feet of 6" water service, 200 linear feet of 1 ½" water services, and 1,150 linear feet of 2" sanitary services.

1.02 WORK BY OTHERS

A. City of New Berlin to complete tree removals.

B. City of New Berlin to remove any salvageable items prior to structure demolition.

1.03 OWNER-FURNISHED PRODUCTS

A. Building appliances.

1.04 WORK SEQUENCE

A. The work shall be performed in accordance with general sequence or phasing outlined below. Contractor shall be responsible of the specific sequence of work within this general outline.

1. Mobilization, erosion control, traffic control
2. Building demolition
3. Site grading
4. Utilities: sanitary sewer, water main, storm sewer, electrical
5. Building construction
6. Trail reconstruction and ADA parking improvements
7. Restoration

B. Work is expected to be substantially completed by April 30, 2026. The contractor must complete all work and necessary coordination with the City of New Berlin outlined in the drawings and specifications by the completion date.

C. The contractor shall fence off and barricade all work areas within the limits of disturbance to prevent access from the public.

D. Contractor shall not work during the City of New Berlin's 4th of July Festival set up and Festival activities from June 24-July 6, dates inclusive. Work can be resumed on July 7th.

1.05 SUSPENSION OF CONTRACT TIME

A. No suspension of contract time is anticipated.

1.06 MEASUREMENT AND PAYMENT

A. Work required by the Contract Documents but not included in the Bid Schedule will be considered incidental to the Contract.

B. Owner reserves the right to alter Drawings, modify incidental work as may be necessary, and increase or decrease quantities of work to be performed, including deduction or cancellation of any one or more bid items. Changes in the Work shall not be considered as a waiver of

any conditions of the Contract nor invalidate any provisions thereof. When changes in the Work result in revised quantities of work to be performed, Contractor shall accept payment according to unit prices appearing in original Contract. A supplemental agreement between Contractor and Owner may be requested by either party when cumulative changes involve a net increase or decrease of more than 20% in total contract amount.

C. Final measured quantities determined in field by A/E at time of construction shall govern over approximate quantities shown on the Bid Schedule, unless otherwise noted.

D. When a bid item for MOBILIZATION is included in Bid Schedule, Contractor will be paid 60% of amount for mobilization when 5% of the Work has been accomplished, and remainder of amount for demobilization when the Work is substantially complete.

1.07 PROJECT MEETINGS

A. A preconstruction conference will be scheduled after award of contract and prior to beginning work. This meeting shall be attended by A/E, Construction Manager, Owner, and an authorized representative of Contractor.

B. Periodic progress meetings will be held at project site at times designated by Owner, Construction Manager or A/E.
A responsible representative of Contractor who can bind Contractor to decisions shall attend.

1.08 NOTIFICATIONS

A. Notify Owner and A/E five working days prior to beginning the Work.

B. Notify applicable agencies before closing or restricting public thoroughfares as specified in "Traffic Control" article.

C. Notify A/E two working days prior to conducting tests on in place piping.

D. Notify A/E one working day prior to placing concrete for pavement or curb and gutter so that stringline (or forms) can be reviewed.

E. Notify A/E prior to backfilling items being abandoned so that abandonment procedure can be verified.

F. Notify City of New Berlin in accordance with the requirements of its permit to Owner.

1.09 UTILITY COORDINATION

A. General: Utility companies have facilities at varying locations along the project corridor. Prior to beginning work, notify all utilities and complete utility locates in accordance with the General Conditions and the requirements of Section 31 05 10.

1.10 WORK HOURS

A. Work shall be conducted between the hours of 7:00 a.m. to 6:00 p.m. on normal work days, unless approved for unusual circumstances.

B. Give written notice to A/E whenever it is desired to perform work at night, or on a Saturday, Sunday, or holiday, or to vary period of hours during which work is carried on each day. If approved, such work shall be subject to requirements furnished in writing by A/E, and no extra compensation will be allowed.

1.11 SUBMITTAL PROCEDURES

A. See Section 01 33 00.

1.12 PERMITS AND CODES

A. Owner will obtain the following permits, licenses, and approvals:

1. WDNR water main construction approval.
2. WDNR sanitary sewer construction approval.
3. WDNR construction site storm water discharge permit (see Section 01 57 19).
4. City of New Berlin right-of-way opening permit.
5. Building permits.

B. Contractor shall comply with the requirements of the above permits, licenses, and approvals. If a copy of a permit, license, or approval is not available for review prior to the Bid Deadline, and if it contains a requirement not covered by the Contract Documents, such a requirement will be considered extra work if Contractor makes a claim under the terms of the General Conditions. Work shall not begin on items applicable to the above until the required permit, license, or approval is received.

C. Contractor shall provide all other necessary permits and licenses and pay all fees, taxes, and royalties, unless otherwise indicated.

D. Comply with local and municipal ordinances and applicable state and national codes.

1.13 QUALITY CONTROL TESTING

A. Contractor shall arrange and pay for testing for soils, subbase course, breaker run, base course, asphaltic paving, and concrete as indicated in individual specification sections. Payment for this testing work will be made at the contract lump sum price for SOIL, PAVEMENT, AND CONCRETE TESTING. Sections containing testing requirements include, but may not be limited to, the following:

1. 03 30 00 Cast-in-Place Concrete.
2. 31 23 33 Trenching and Backfilling.
3. 32 12 16 Asphalt Paving.
4. 32 12 22 Concrete Paving.

B. Contractor shall arrange and pay for testing of pipelines and other items as required by individual specification sections. The cost of this testing work shall be included in the price of the applicable bid items.

1.14 PAYMENT FOR WORK REQUIRING TESTING

A. Where Contractor is responsible for testing, payment for the item requiring testing, or subsequent work placed on or over the item requiring testing, will not be made until satisfactory test results are submitted to A/E.

1.15 TEMPORARY UTILITIES

A. Contractor shall be responsible for providing electric power as required for construction purposes. Provide portable power supply or make arrangements with local utility company.

B. Owner will furnish water for construction purposes from existing municipal system at no charge to Contractor. Contractor shall obtain temporary water meter from Owner and shall furnish hoses and fixtures for transmitting and distributing water to points of use. Prevent waste of water and maintain valves, connections, and hoses in sound condition.

C. Contractor shall provide temporary outside toilets sufficient for construction workers. Toilets shall be self-contained chemical type and shall comply with applicable Codes. Maintain sanitary facilities in a clean and sanitary condition; supply toilet paper until completion of project.

1.16 PROTECTION

A. Furnish and maintain proper barricades, fences, signal lights, warning signs, and personnel as required to properly protect and safeguard the work, persons, animals, and property against injury.

1.17 WATER AND SEWER SERVICE INTERRUPTIONS

A. Water and sanitary sewer services to buildings may be interrupted temporarily to make required reconnections to new mains, but any interrupted services shall be reconnected at end of each working day. Businesses shall not be interrupted for more than 4 consecutive hours.

B. Notify users a minimum of 24 hours prior to interrupting services.

C. If longer service interruptions than allowed above are required, provide alternative arrangements to maintain services as specified below.

D. For Water Services:

1. Provide temporary piping or other approved arrangements.
2. Submit and obtain A/E's approval of temporary service plan before proceeding. Plan shall describe proposed components and layout, planned temporary service duration, disinfection methods, system protection measures, and contact information for person responsible for routine maintenance and emergency response.
3. Disinfect all temporary pipe and components and obtain documentation of at least one safe-water sample before connecting any users to temporary water service.
4. Payment will be incidental to the project construction

E. For Sanitary Service:

1. Provide bypass pumping of affected area(s).
2. Submit and obtain A/E's approval of temporary bypass plan before proceeding. Plan shall describe proposed components and layout, planned bypass duration, power source for pump(s), and contact information for person responsible for routine maintenance and emergency response.
3. Provide one pump for each bypass location of sufficient size to handle peak daily flow. In addition, have on site a back-up pump of sufficient size to handle peak daily flow at any bypass location.
4. Restore all sewer lines to gravity flow at the completion of the work day. No bypass pumping shall occur when Contractor is not on site unless approved by A/E.
5. Payment will be incidental to the project construction.

1.18 ENVIRONMENTAL CONTROLS

A. See Section 01 57 19.

1.19 TRAFFIC CONTROL

A. Schedule work so as to minimize inconvenience to businesses and residences located adjacent to project.

B. Maintain traffic as follows:

1. Keep at least two lanes of vehicular traffic open at all times on S Casper Drive and W Al Stigler Pkwy.
2. Keep pedestrian access open to park amenities that are not being disturbed as part of construction at all times.

C. Notify businesses and residents and allow adequate time to remove vehicles prior to obstructing driveways and street access. Notify businesses and residents a minimum of 24 hours in advance if they will not have vehicular access to their properties at end of each working day.

D. Furnish Owner and A/E with a telephone number or numbers where a person can be reached at all times for maintenance of traffic control devices.

1.20 ROAD MAINTENANCE

A. Contractor shall be responsible for maintaining those roadways that are open to local or through traffic but which have not yet received the final surfacing required under the contract.

B. Maintain roadways in a safe and adequate condition for automobile traffic.

C. Furnish the Owner with the name and telephone number of a person to contact should roadways need maintenance.

1.21 PRODUCT REQUIREMENTS

A. General: Provide new products manufactured and conditioned for the particular application as recommended by manufacturer, unless otherwise noted. Transport, handle, store, and protect products as specified and in accordance with manufacturer's recommendations.

B. Acceptable Manufacturers: Products, materials, and equipment identified by reference to a manufacturer's name, catalog number, or model are identified for the purpose of establishing a standard of type, function, appearance, and quality. Unless otherwise noted, any other product, material, or equipment which will perform adequately the duties imposed by the general design will be considered for substitution in accordance with the provisions below.

C. Bid Phase Substitutions: Substitutions and "or equal" items proposed prior to the Bid Deadline shall be submitted in accordance with the Instructions to Bidders.

D. Construction Phase Substitutions: Substitutions and "or equal" items proposed after Contract has been awarded shall be submitted for approval prior to their use. Consideration will be given only to proposed substitutions and "or equal" items where:

1. The products named in the Contract Documents are no longer available or cannot be provided within the Contract Time.
2. The manufacturers' standard products are no longer in conformance with the specified requirements.
3. Owner's interests may be adversely affected.

E. Substitution Procedures: Requests for substitution of alternate products or use of "or equal" items shall be submitted with complete references to manufacturer's product identification and product data indicating composition, guarantee, availability, applicable standards or agency approvals met or exceeded, restrictions imposed on product, and manufacturer's recommended method of application or installation. A substitution or an "or equal" item will be considered acceptable if the product will perform adequately the duties imposed by the general design and, in opinion of A/E, is of equal substance, quality, appearance, and function, unless the named item is necessary for interchangeability or if the named product has been demonstrated to be most cost-effective.

1.22 SURVEYS, STAKING, LINE AND GRADE

A. Owner will provide baseline reference points and benchmarks as indicated on Drawings. Contractor shall provide all other survey staking and layout as required to complete the Work.

1.23 CONSTRUCTION CLEANING

A. Keep work area free of accumulations of surplus materials, rubbish, and debris. Pick-up materials and debris left on haul roads due to construction activities.

B. At completion of each segment of project, sweep pavements that are part of or adjacent to finished work to remove construction debris and dust.

1.24 PUNCH LIST

A. A "punch list" will be prepared and distributed to Contractor at Substantial Completion. Items on punch list shall be completed within 30 days. Required submittals (see below) shall be completed prior to or when requesting final payment.

1.25 CLOSEOUT SUBMITTALS

A. Submit the following items to A/E prior to or with final Application for Payment:

1. Project record drawings marked to show all changes made during construction. Dimension underground and concealed work and utilities from permanent reference points; record vertical distances. Make and record measurements to the nearest 0.5 ft on a clean drawing set.
2. Evidence of continuing insurance coverage complying with insurance requirements (see Conditions of the Contract).
3. Contractor's affidavit, along with final releases and waivers of liens as required by Owner, indicating that all debts and claims against project (less amounts withheld by Owner) have been paid in full or otherwise satisfied.
4. Consent of surety company to final payment.

1.26 DEFINITIONS

A. Dimensions on drawings and details are subject to field measurements.

B. The term "working days" shall exclude weekends (Saturday and Sunday) and holidays.

C. References to "Division 00" shall mean the Bidding Requirements and Contracting Requirements.

D. References to "WDNR" shall mean Wisconsin Department of Natural Resources.

E. References to "WisDOT Std. Spec." shall mean Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, latest edition.

F. References to "A/E", "Architect", or "Engineer" shall mean Ayres.

G. References to "Owner" shall mean City of New Berlin.

PART 2 (NOT USED)

PART 3 (NOT USED)

END OF SECTION

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, and Contractor's construction schedule.
2. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.

3. Format: Arrange the following information in a tabular format:

a. Scheduled date for first submittal.
b. Specification Section number and title.
c. Submittal Category: Action; informational.
d. Name of subcontractor.
e. Description of the Work covered.
f. Scheduled date for Architect's and Construction Manager's final release or approval.

1.5 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Construction Manager.
5. Name of Contractor.
6. Name of firm or entity that prepared submittal.
7. Names of subcontractor, manufacturer, and supplier.
8. Category and type of submittal.
9. Submittal purpose and description.
10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Other necessary identification.
15. Remarks.
16. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.6 SUBMITTAL PROCEDURES

A. All submittals must be reviewed and approved by the Contractor and Construction Manager, as indicated by an approval marking on the submittal, prior to the submittal being submitted to the Architect or the Architect’s Consultants.

B. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line.

a. Architect, through Construction Manager, will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.

a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

D. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect or Construction Manager will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is required, allow 21 days for initial review of each submittal.

E. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's and Construction Manager's action stamp.

F. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

G. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's and Construction Manager's action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's catalog cuts.
    b. Manufacturer's product specifications.
    c. Standard color charts.
    d. When color selection are requested, actual material color samples shall be submitted.
    e. Statement of compliance with specified referenced standards.
    f. Testing by recognized testing agency.
    g. Application of testing agency labels and seals.
    h. Notation of coordination requirements.
    i. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

    a. Wiring diagrams that show factory-installed wiring.
    b. Printed performance curves.
    c. Operational range diagrams.
    d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Identification of products.
    b. Schedules.
    c. Compliance with specified standards.
    d. Notation of coordination requirements.

e. Notation of dimensions established by field measurement.
f. Relationship and attachment to adjoining construction clearly indicated.
g. Seal and signature of professional engineer if required.

C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

a. Project name and submittal number.
b. Generic description of Sample.
c. Product name and name of manufacturer.
d. Sample source.
e. Number and title of applicable Specification Section.
f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality- control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.

   a. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect, through Construction Manager, will return submittal with options selected.

6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

   a. Number of Samples: Submit three sets of Samples. Architect and Construction Manager will retain two Sample sets; remainder will be returned.

      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:

1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:

1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.

2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

    a. Name of evaluation organization.
    b. Date of evaluation.
    c. Time period when report is in effect.
    d. Product and manufacturers' names.
    e. Description of product.
    f. Test procedures and results.
    g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are required of Contractor, provide products and systems complying with specific performance and design criteria indicated.

    1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit PDF file copies of certificate, signed and sealed by the responsible design professional, for each product and system assigned to Contractor to be designed or certified by a design professional.

    1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.9 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents.

Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and Construction Manager.

B. Contractor's Approval: Indicate Contractor's and Construction Manager's approval for each submittal with an approval stamp. Include name of reviewer, date of Contractor's and Construction Manager's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Architect will not review submittals received from Contractor that do not have Contractor's and Construction Manager's review and approval.

1.10 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.

1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will return without review submittals received from sources other than the Construction Manager.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.

1. Mockups are used for one or more of the following:

a. Verify selections made under Sample submittals.
b. Demonstrate aesthetic effects.
c. Demonstrate the qualities of products and workmanship.
d. Demonstrate successful installation of interfaces between components and systems.
e. Perform preconstruction testing to determine system performance.

2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate the actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Construction Manager.

1.4 DELEGATED DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.5 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 ACTION SUBMITTALS

A. Mockup Shop Drawings (if requested in the Contract Documents):

1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
2. Indicate manufacturer and model number of individual components.
3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Contractor's quality-control personnel.

B. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

C. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

D. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Entity responsible for performing tests and inspections.
3. Description of test and inspection.
4. Identification of applicable standards.
5. Identification of test and inspection methods.
6. Number of tests and inspections required.
7. Time schedule or time span for tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

E. Reports: Prepare and submit certified written reports and documents as specified.

F. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.8 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of technical representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement of whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Name, address, telephone number, and email address of factory-authorized service representative making report.
2. Statement that equipment complies with requirements.
3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.9 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.

1. Requirements of authorities having jurisdiction supersede requirements for specialists.

G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following Contractor's responsibilities, including the following:

1. Provide test specimens representative of proposed products and construction.
2. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
3. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
4. Build site-assembled test assemblies and mockups, using installers who will perform same tasks for Project.
5. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.
6. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, through Construction Manager, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

K. Mockups: If mockups are requested, before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Construction Manager.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.

4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's and Construction Manager's approval of mockups before starting corresponding Work, fabrication, or construction.

    a. Allow seven days for initial review and each re-review of each mockup.

7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

1.10 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.

B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
2. Engage a qualified testing agency to perform quality-control services.

    a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.

3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with Architect, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect, Construction Manager, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in "Submittal Procedures."

F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.

1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
2. Distribution: Distribute schedule to Owner, Architect, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: If special inspections are required by the authority having jurisdiction, the Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Construction Manager and authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as

possible. Comply with the Contract Document requirements for cutting and patching in "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 TEMPORARY ELECTRICAL SERVICE

A. Contractor shall provide temporary electric service facilities for construction purposes. Make arrangements with local utility company for temporary service. Initial service fees and transformer charges and service removal costs at completion of project shall be paid for by Contractor and shall be included in its Bid.

B. Meter shall be taken out in name of Contractor. Pay for electrical energy consumed for construction purposes.

C. Electrical energy consumed for construction purposes shall include that used for all trades, temporary offices, lighting, cold weather protection, operation of ventilating equipment, electrical energy consumed for heating, and current used in testing and operating of equipment after permanent wiring has been installed, until Substantial Completion.

1.02 TEMPORARY ELECTRICAL DISTRIBUTION SYSTEM

A. Contractor shall install and maintain temporary electrical distribution facilities. Distribution facilities shall be in accordance with OSHA regulations for construction and as required to prevent injury or damage to persons, equipment, or construction. Facilities exposed to moisture or weather shall be weatherproof type. Electrical equipment enclosures shall be locked to prevent access.

B. Connect to utility service and run 1 ph wiring of adequate size to a central location on site. Provide service disconnect, panels, and switches as required.

C. Temporary electrical circuits shall be equipped with combination ground fault interrupter and circuit breaker meeting requirements of UL for Class A, Group 1 devices.

D. Provide wiring, switches, sockets, and similar equipment required for small power tools, for temporary lighting, and for portable, temporary, or permanent heating and ventilating units until Substantial Completion. Provide at least one temporary 120-volt, 1 ph outlet for small power tools and one outlet for lighting (200 watt) for each 1000 sq ft of floor space. Circuits shall be 20 amp., single pole, No. 12 wire. Circuit length shall not exceed 200 ft.

E. At completion of work, remove temporary electrical distribution system and restore all surfaces.

F. Permanent electrical system and building wiring may be used during finishing work but this wiring shall not be used for motors larger than 1/2 hp or for welding equipment. Circuits for larger motors and welding equipment shall be provided by special circuits at expense of Contractor requiring them, provided that permission is obtained from Owner.

H. Use of permanent electrical system during construction shall in no way waive any part of the one year correction period.

1.03 TEMPORARY LIGHTING

A. Contractor shall provide temporary lighting, including lamps, sufficient to enable all trades to complete work and to enable inspectors to check work, as required. Not less than 5 foot-candles illumination shall be provided. Illumination in all areas shall meet or exceed OSHA regulations for construction.

1.04 COLD WEATHER PROTECTION

A. All temporary provisions for heating required prior to enclosure of building(s) shall be classified as "Cold Weather Protection". Contractor shall furnish and pay for Cold Weather Protection to protect work and materials. Electrical power used for cold weather protection may be taken from power sources as defined above.

B. Temporary heating units shall be of types approved for the intended purpose and shall meet requirements as specified below.

1.05 TEMPORARY HEATING AND VENTILATING

A. All heating required after enclosure of building until Substantial Completion shall be classified as "Temporary Heating". Building will be certified to be enclosed when all roofing and flashing is completed as specified and all doorways, windows, and other openings are covered to provide reasonable heat retention. See below.

B. After building is enclosed, provide temporary heat and adequate ventilation to protect building and work therein from damage due to cold or dampness.

C. Pay for all fuel for temporary heat. Electrical energy for temporary heat shall be paid for as specified above.

D. Provide electrical wiring to temporary heating units. Electrical current required for temporary heating may be taken from temporary electrical service if units are compatible with electrical power supplied.

E. Unless otherwise approved, temporary heating units shall be portable hot air type with electric blowers and automatic controls. Use of coke, oil, or open salamanders as portable heating units is prohibited. Provide proper ventilation to prevent combustion gases from remaining in heated area. Keep equipment in a clean and safe condition; carefully guard against fire. Protect units and switches with safety devices. Temporary heating equipment shall be relocated as required during construction to prevent interference with new construction.

F. Supervise, maintain, and operate temporary heating system as required by weather and building conditions during regular working hours. Supervision shall also include periodic checking of operation each day and night as long as temporary heat is required.

G. Maintain the following temperatures and conditions during the temporary heating period unless otherwise specified in individual specification sections:

1. General construction work: 45 deg F to 65 deg F.
2. Finish construction work such as painting, ceramic tile, resilient flooring, etc.: 70 deg F to 80 deg F.

H. Preheat spaces and vent access moisture and fumes as required to insure proper environment for each type of work. See that all concrete, plaster, tile, masonry, and other wet work is sufficiently dry and properly conditioned before installation of millwork and trim, and other finish items.

I. When permanent heating system is operational, Contractor may use this system to provide temporary heat during construction until Substantial Completion. Provide heating coils, convectors, temporary filters, controls, and temporary heat shields to protect adjacent work; coordinate all utilities or services to supply fuel to permanent heating system and instruct operators in correct operation of system and its components.

J. At completion or when temporary heat is no longer required, repair damage to permanent equipment during temporary heating period, clean ducts, equipment, and permanent filters and replace all temporary and throw-away filters. One year correction period required for

permanent heating and air handling units used during temporary heating period shall commence with certification of Substantial Completion.

1.06 TEMPORARY TELEPHONE

A. Contractor's superintendent shall have a cellular phone for their use and to allow A/E to contact superintendent.

1.07 TEMPORARY WATER

A. Contractor shall be responsible for obtaining water for its needs. Pay cost of water used and meter rental, if applicable.

1.08 TEMPORARY SANITARY FACILITIES

A. Contractor shall provide temporary outside toilets sufficient for all trades. Toilets shall be self-contained chemical type and shall comply with International Building Code, Chapter 29. Maintain sanitary facilities in a clean and sanitary condition; supply toilet paper until completion of project.

1.09 TEMPORARY FIRE PROTECTION

A. Contractor shall provide and maintain at site of work during entire construction period, fire extinguishers on each floor or level and other fire protection equipment as necessary and suitable for all possible classes and types of fires. Extinguishers shall be non-freeze type such as A-B-C dry chemical extinguishers of not less than 10 lb capacity each.

B. In addition, provide one non-freezing type fire extinguisher for each field office and enclosed storage shed at site.

C. Provide a portable fire extinguisher or water hose in readiness adjacent to welding equipment at all times welding is being performed.

1.10 ACCESS FACILITIES

A. Furnish and maintain temporary stairs, fixed ladders, ramps, and runways as required for proper execution of work. Provide planking under interior scaffolds to prevent uprights from resting directly on finished surfaces.

1.11 FROST PROTECTION

A. Provide loose hay or other ground protection to reduce frost penetration until building enclosure; immediately thereafter, remove and dispose of protection.

1.12 TEMPORARY ENCLOSURES

A. Provide temporary weathertight enclosures for exterior openings as soon as permanent exterior walls and roofs are built. Construct temporary walls to protect contents and to separate enclosed sections from open sections of building during construction. Provide exterior doors with hinges, self-closing hardware, and locks. Make suitable provisions for ventilation to permit proper drying of building.

B. Temporary enclosures and walls shall consist of plywood panels, at least 3/8 in. thick, fastened to wood framework of 2 x 4 studs spaced 24 in. o.c., securely spiked to wood plates top and bottom. Provide intermediate girts between studs as required for fastening of plywood. Temporary enclosures and walls shall provide protection from dirt, dust, water, and drafts.

C. Supervise effectiveness of enclosures and secure enclosures at end of each day.

1.13 TEMPORARY FENCE

A. Provide a neat appearing protective fence to exclude unauthorized personnel.

B. Line posts shall be standard studded T-posts of sufficient length, spaced not to exceed 8 ft-0 in. apart. Corner posts and gate posts shall be galvanized steel pipe of not less than 2-1/2 in. O.D. and shall be properly braced.

C. A 4-foot high construction or snow fence shall be securely fastened to supports. Fence shall project 4 in. above fence posts.

D. Install fence where shown on Drawings, or if not shown, where required to secure work and staging areas. Maintain for duration of project. Provide gates properly constructed, anchored, and braced, complete with hinges, hasps, and padlocks in number and location required for proper control, delivery, and distribution of material and equipment.

1.14 SITE SECURITY

A. Coordinate activities with Owner to maintain security at project site.

1.15 PROTECTION OF WORK AND PROPERTY

A. Observe safety provisions of applicable laws and regulations.

B. Erect and maintain all required planking, barricades, guard rails, fences, safety lanterns, and temporary walkways of sufficient size, strength, and type necessary for protection of material storage, adjacent property, and new construction, as well as to prevent accidents to public and workers at job site. Execute work in a manner to avoid interference with use of adjacent facilities.

C. Notify Owner if existing property interferes with work so that arrangements for proper protection can be made.

D. Protect all work, materials, apparatus, and fixtures incorporated in work or stored on site against damage. At end of day, cover all new work likely to be damaged.

E. Protect all finished construction until acceptance by Owner. Repair damage to finished work to satisfaction of Owner.

1.16 ENVIRONMENTAL CONTROLS

A. See Section 01 57 19.

1.17 TRAFFIC CONTROL

A. Conduct operations to ensure minimum interference with streets, walks, and adjacent facilities not part of construction project.

B. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

1.18 SIGNS

A. No individual advertising signs, plaques, or credits, temporary or permanent, will be permitted on project site, except name of each contractor on its office or material shed.

B. Within 15 days after Notice to Proceed, furnish, erect where directed, and maintain job sign for duration of project. Construct sign of 3/4 in. waterproof plywood and support as required.

Sign shall name the project and identify Owner, Contractor, and A/E. Paints shall be exterior grade enamel in colors indicated. See Details.

C. Remove signs at completion of work.

1.19 FIELD OFFICES

A. Contractor's Office:

1. Contractor shall provide and maintain a temporary office where directed for itself and its subcontractors.
2. Office shall have a large meeting room for holding construction project meetings. Meeting will be attended by representatives of Contractor, A/E, Owner, and each subcontractor actively working on site.

B. A/E's Office:

1. Contractor shall provide and maintain a temporary office for use by A/E. Office may be in same mobile trailer as Contractor's office provided it is of adequate size and has a separate entrance.
2. Provide the following equipment in A/E office: Plan rack, drafting-size table suitable for examination of drawings, standard desk, chairs, four-drawer lockable legal-size file cabinet, first aid kit, telephone with automatic answering machine, facsimile machine, and copy machine.
3. Contractor shall arrange and pay for the following services: Power, heating, air conditioning, (local) telephone, facsimile hook-up, trash cans, and weekly trash pick-up service. A/E will pay for its own long-distance telephone calls.
4. When directed, move A/E's office into a suitable area in building.

C. Internet Access:

1. Contractor shall arrange and pay for a wireless internet access point in the Contractor’s or A/E’s temporary office.

    a. The access point shall allow dynamic IP addresses (DHCP) and be able to accommodate IPSec based VPN products.
    b. The wireless internet access speed shall be a minimum of 10 Mbps download and 3 Mbps upload such as provided through a 4G LTE cellular connection.
    c. The wireless service shall be secured with a password. Password shall be provided to A/E.
    d. The wireless router shall have sufficient capacity to handle at least four computers operating simultaneously and accessing the internet simultaneously. A/E could have two wireless devices simultaneously accessing the internet.

PART 2 (NOT USED)

PART 3 (NOT USED)

END OF SECTION

SECTION 01 57 19

TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Provide temporary environmental controls as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 MEASUREMENT AND PAYMENT

A. Environmental control items will be considered incidental to construction and the cost of such work incidental to unit bid items, unless Bid Schedule includes separate pay items.

B. When Bid Schedule includes a unit price for SILT FENCE, payment will be made at the contract unit price per linear foot. Measurement will be along base of fence, center to center of end posts, for each section of fence. Unit price shall be full compensation for furnishing, delivering, installing, maintaining, and removing silt fence and for removal and disposal of sediment deposits.

C. When Bid Schedule includes a unit price for INLET PROTECTION, payment will be made at the contract unit price for each inlet protected. Unit price shall be full compensation for furnishing, delivering, installing, maintaining, and removing inlet protection and for removal and disposal of sediment deposits.

1.03 DEFINITIONS

A. References to "WDNR Technical Standards" shall mean Wisconsin Department of Natural Resources Conservation Practice Standards (available on the WDNR web site at http://dnr.wi.gov/topic/stormwater/standards/const_standards.html).

1.04 SUBMITTALS

A. Inspection Reports: Submit one copy of weekly inspection reports for erosion and sediment controls.

1.05 PERMITS

A. Owner will:

1. File WPDES Construction Site Storm Water Runoff General Permit Notice of Intent Application at least 14 working days prior to the start of construction.
2. Provide Contractor with a copy of the notice of General Permit coverage and the site erosion control and storm water management plan.
3. File Notice of Termination after construction site has undergone final stabilization.

B. Contractor shall:

1. Comply with the requirements of the General Permit and the site erosion control and storm water management plan and keep a copy of these documents at project site during construction.
2. Post a copy of the Certificate of Permit Coverage in a conspicuous place on the construction site.

PART 2 PRODUCTS

2.01 SILT FENCE

A. Geotextile fabric and support system complying with the requirements of WisDOT Std. Spec., Subsection 628.2.6, except geotextile fabric shall have a maximum flow rate of 10 gal/minute/sq ft at 50 mm constant head as determined by multiplying permittivity in 1/second as determined by ASTM D4491 by a conversion factor of 74.

2.02 INLET PROTECTION FABRIC

A. Woven polypropylene material complying with the requirements of WisDOT Std. Spec., Subsection 628.2.12.

2.03 PERMANENT SEED

A. See Section 32 99 10.

2.04 EROSION MAT

A. See Section 32 99 10.

PART 3 EXECUTION

3.01 EROSION CONTROL

A. General: Maintain erosion control measures to protect the project site and prevent sediment pollution of adjacent water courses and properties. At a minimum, provide erosion control measures as indicated on the Drawings.

B. Applicable Standards: Unless otherwise shown or specified, erosion control measures shall comply with:

1. "General Permit to Discharge Under the Wisconsin Pollutant Discharge Elimination System (WPDES)" for storm water discharges associated with construction activities.
2. WDNR Technical Standards.

C. Time Period: Install erosion control measures prior to start of construction and maintain them until final completion of work. Unless otherwise instructed, remove temporary erosion control measures prior to final application for payment.

D. Stripping: Strive to limit stripping of sod and vegetation to a period that will expose bare soil to the least possibility of erosion that construction requirements will allow.

E. Diversions: Construct and maintain dams, channels, flumes, sumps, surface roughening, and other temporary diversion and protective works to divert streamflow and other surface water through or around construction site and away from work while construction is in progress. Unless otherwise specified, a diversion must discharge into the same natural drainageway in which its head waters are located.

F. Sediment Barriers: Construct and maintain one or more sediment barriers to receive runoff leaving site.

1. Affix silt fence to ground and maintain in suitable structural condition to last until vegetation establishes.
2. Affix sediment logs to ground, either by wood stakes (recommended method) or by equivalent anchorage if frozen winter subgrade prevents driving stakes. Equivalent anchorages include using steel posts (removed after vegetation establishes) or erosion

bales spaced at same intervals as planned stakes or other approved equivalent method.

G. Storm Drain Protection: Protect storm drain inlets by using inlet protection of the type shown on the Drawings. If not shown, use inlet protection fabric, silt fence barriers, erosion bale barriers, or equivalent.

H. Trackout Control: Prevent tracking of soils and sediments onto public and private streets by constructing and maintaining stabilized work surfaces and trackout controls in accordance with WDNR Technical Standards. Check dual tire vehicles for picked up tracking pad materials prior to leaving site. Refresh and loosen tracking pad as needed to allow stones to contact full tire tread (at least up to start of sidewall) of exiting vehicles. If a vehicle or tire washing station is established, water from washing shall drain into a suitable sediment trap or settling device. Remove at the end of each work day soils and sediment reaching public and private streets not part of the construction site.

I. Re-establishment of Vegetation: Re-establish temporary or permanent vegetation on disturbed areas within the time limits allowed by applicable standards.

J. Sediment Deposits: Remove and dispose of sediment deposits when deposits reach one-half the volume capacity of sediment barrier, unless otherwise indicated.

3.02 EROSION CONTROL MONITORING AND REPORTING

A. Contractor shall conduct the following inspections:

1. Weekly inspections of implemented erosion and sediment controls.
2. Inspections of erosion and sediment controls within 24 hours after a precipitation event that produces 0.5 in. of rain or more during a 24 hour period.

B. Contractor shall prepare weekly written reports of all inspections that include:

1. Date, time, and exact place of inspection.
2. Name of individual who performed inspection.
3. An assessment of condition of erosion and sediment controls.
4. A description of any erosion and sediment control implementation and maintenance performed.
5. A description of the present phase of construction at site.

3.03 DUST CONTROL

A. Minimize dispersion of dust from construction operations by application of water or other dust control materials. Controls shall confine dust and dirt within the immediate area of project. Masonry and debris shall be thoroughly soaked during demolition and loading operations.

3.04 NOISE CONTROL

A. Provide noise control measures to limit the amount of noise and prevent nuisance. Properly equip all equipment with mufflers. Limit construction activities generating significant noise to normal working hours.

3.05 MATERIAL HANDLING AND SPILL PREVENTION

A. Hazardous materials shall be handled and stored in accordance with the recommendations of the manufacturer and Material Safety Data Sheets (MSDS). Containers or equipment leaking any contaminants shall be repaired, removed from the site, or utilize drip pans for containment purposes.

B. Spills of any contaminants shall be immediately reported to the WDNR Hazardous Waste Substance Spill Hotline at 800.943.0003. Contractor shall maintain an emergency spill kit at

the project site containing contaminant containment products and absorbent materials (inlet socks, dry absorbent materials, and similar products).

3.06 HAZARDOUS ENVIRONMENTAL CONDITIONS

A. If underground petroleum storage tanks, petroleum contaminated soils, or other hazardous environmental conditions are encountered, and are not identified to be part of the work, Contractor shall immediately stop all work in connection with the hazardous condition and shall notify Owner and A/E. (See the General Conditions of the Contract for specific procedures that may apply.)

END OF SECTION

SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

A. Provide demolition work as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 RELATED SECTIONS

31 05 10 Site Preparation.

1.03 PRE-DEMOLITION CONFERENCE

A. Contractor shall schedule a pre-demolition conference prior to beginning demolition to be attended by authorized representatives of A/E, Owner, and Contractor and by interested agencies.

B. Contractor shall give notice of conference to agencies listed under "Permits and Notification of Agencies" article, below.

1.04 SUBMITTALS

A. Demolition Work Plan: Submit a demolition work plan for A/E's information at least one week prior to start of work. Work plan shall include:

1. Work Sequence: Sequence of operation for demolition and removal work.
2. Noise and Dust Control Plan: Planned measures to minimize noise levels and control dust emissions from demolition activities.
3. Material Disposal Plan: Planned material disposal/recycling locations.

B. Permits: Submit copy of each application to and permit received from agencies having jurisdiction.

C. Disposal/Recycling Documentation: Submit copy of each disposal manifest or letter of acceptance for all disposed and recycled materials.

D. Make submittals in accordance with Section 01 33 00.

1.05 PERMITS AND NOTIFICATION OF AGENCIES

A. Demolition Permit: Obtain and pay for demolition permit from local jurisdiction.

B. WDNR and WDHS Notification: Submit and pay for WDNR Form 4500-113 "Notification of Demolition and/or Renovation and Application for Permit Exemption" to Wis. Dept. of Natural Resources (WDNR) and (if applicable) Wis. Dept. of Health Services (WDHS) 10 working days prior to demolition. See "Known Asbestos Containing Materials and Other Substances" article, below, for information on asbestos at the site.

C. Utility and Agency Notifications: Make arrangements with the following utilities and agencies so that work may proceed with least disruption of traffic and services in area. Notify Owner, A/E, adjacent property owners, and each of the following agencies having jurisdiction three days prior to beginning work.

1. Department of Public Works
2. Police Department

3. Fire Department
4. Power Company
5. Gas Company
6. Telephone Company
7. Cable Company
8. Electric Company

1.06 WORKER QUALIFICATIONS

A. Contractor is responsible for health and safety of its personnel during all demolition and construction work, including hazardous materials training, if required, in accordance with applicable laws and regulations.

1.07 EXISTING CONDITIONS

A. Prior to bidding, thoroughly inspect existing conditions.

B. Conditions existing at time of inspection for bidding purposes will be maintained by Owner in so far as practicable. However, variations within facilities may occur by Owner's removal and salvage operations prior to start of demolition work.

C. Items to be demolished shall be kept in service until new facilities are ready.

1.08 KNOWN ASBESTOS CONTAINING MATERIALS AND OTHER SUBSTANCES

A. None.

1.09 EXPLOSIVES

A. Use of explosives will not be permitted.

PART 2 PRODUCTS

2.01 FILL MATERIAL

A. Comply with the requirements of Section 31 20 00.

PART 3 EXECUTION

3.01 PROTECTION OF EXISTING IMPROVEMENTS

A. Comply with requirements of Section 01 01 00 / 01 50 00 and governing regulations.

B. Provide warning signs and lights, covered passageways, fences, and barricades to ensure safe passage of pedestrians and motor traffic around area of demolition.

C. Conduct operations to prevent damage to adjacent facilities. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of adjacent facilities to remain and to prevent premature collapse of structures to be demolished. Maintain work and site in orderly condition to prevent accidents.

D. Provide standby fire fighting equipment as required by governing authorities to guard against fire in structures to be demolished.

3.02 DISCONNECTION OF UTILITIES

A. Before commencing demolition work, arrange with each affected utility company to discontinue service and provide for capped terminations and permanent shut offs at property

line, unless otherwise noted or as directed by authorities having jurisdiction. Cut off pipes and conduits to a minimum of 24 in. below finished grade, unless otherwise indicated.

B. Preserve in operating condition active utilities and drainage traversing project site including but not limited to mains, sewers, manholes, catch basins, valve boxes, poles, guys, and other appurtenances.

C. Previously abandoned buried lines need not be removed, unless noted. Seal existing and abandoned pipes with concrete plugs.

3.03 SALVAGE

A. Owner will remove any items deemed salvageable prior to demolition.

3.04 DEMOLITION

A. See Drawings for specific areas, depths, and limits of demolition, removal, salvage, and disposal. Restrict demolition activities to project limits.

B. Minimize dispersion of dust from demolition operations and dust generated by equipment traffic by application of water or other dust control materials. Controls shall confine dust and dirt within immediate area of demolition. Thoroughly soak masonry and debris during demolition and loading operations.

C. Crushing of concrete, brick, and other masonry materials will not be allowed on site.

3.05 BELOW-GRADE STRUCTURES

A. Demolish and remove all foundations, footings, concrete slabs-on-ground, and all other below-grade construction within construction limits.

3.06 WALKS, DRIVES, AND CURBS

A. Remove existing walks, drives, and curbs as indicated within site work limits. Sawcut adjacent asphaltic and concrete pavements that are to be left in place to provide a smooth straight joint.

3.07 FILLING EXCAVATIONS AND VOIDS

A. Completely fill below-grade areas and voids resulting from demolition in accordance with the requirements of Section 31 20 00.

3.08 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from site and legally dispose of all debris, rubbish, and other materials resulting from demolition operations. Storage or sale of removed materials will not be permitted on site.

B. Keep all haul roads clean and free of debris. Take measures to avoid littering waste materials.

3.09 RESTORATION

A. Repair adjacent improvements damaged by demolition operations. Clean adjacent areas of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.

B. Topsoil, fertilize, seed, and mulch exposed soils in accordance with Section 32 99 10, except areas designated to receive new construction.

3.10 CLOSEOUT

A. Deliver to Owner all designated salvage items; obtain receipts from Owner for materials delivered.

END OF SECTION

SECTION 03 10 00
CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in-place concrete, with shoring, bracing and anchorage.

B. Form accessories.

C. Form stripping.

1.02 RELATED REQUIREMENTS

A. Section 03 20 00 - Concrete Reinforcing.

B. Section 03 30 00 - Cast-in-Place Concrete.

C. Section 05 12 00 - Structural Steel Framing: Placement of embedded steel anchors and plates in cast-in-place concrete.

1.03 REFERENCE STANDARDS

A. ACI 117 - Specification for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).

B. ACI 301 - Specifications for Concrete Construction 2020.

C. ACI 318 - Building Code Requirements for Structural Concrete 2019, with Errata (2021).

D. ACI 347R - Guide to Formwork for Concrete 2014 (Reapproved 2021).

E. PS 1 - Structural Plywood 2009 (Revised 2019).

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide data on void form materials and installation requirements.

C. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

D. Samples: Submit two, 12 inch long samples of construction joint devices.

E. Designer's Qualification Statement.

F. Design Data: As required by authorities having jurisdiction.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Design formwork under direct supervision of a Professional Structural Engineer experienced in design of concrete formwork and licensed in the State in which the Project is located.

B. Maintain one copy of each installation standard on site throughout the duration of concrete work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.

B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.

C. Protect plastic foam products from damage and exposure to sunlight.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.

C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

D. Comply with relevant portions of ACI 347R, ACI 301, and ACI 318.

2.02 WOOD FORM MATERIALS

A. Softwood Plywood: PS 1, C Grade, Group 2.

B. Lumber: Spruce-Pine-Fur species; Construction grade; with grade stamp clearly visible.

2.03 REMOVABLE PREFABRICATED FORMS

A. Manufacturers:

1. Molded Fiber Glass Construction Products Co: www.mfgcp.com/#sle.
2. S-Form: www.s-form.us/#sle.
3. SureVoid Products, Inc: www.surevoid.com/#sle.

B. Preformed Steel Forms: Minimum 16 gauge, 0.0598 inch thick, matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

C. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.

D. Tubular Column Type: Round, spirally wound laminated fiber material, surface treated with release agent, non-reusable, of sizes indicated.

E. Void Forms: Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set; 2 inches thick.

2.04 FORMWORK ACCESSORIES

A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.

B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.

1. Do not use materials containing diesel oil or petroleum-based compounds.
2. Composition: Colorless, reactive, water-based compound.
3. Products:
   a. Nox-Crete Inc; BIO-NOX: www.nox-crete.com/#sle.
   b. SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com/#sle.
   c. W. R. Meadows, Inc; Duogard II (water-based): www.wrmeadows.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.

E. Coordinate this section with other sections of work that require attachment of components to formwork.

F. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect and Structural Engineer before proceeding.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

3.05 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.06 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.

3.07 FIELD QUALITY CONTROL

A. An independent testing agency, selected by Owner, will perform field quality control tests.

B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.

C. Do not reuse wood formwork more than 3 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.08 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

SECTION 03 20 00
CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 30 00 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Concrete Construction 2020.

B. ACI SP-66 - ACI Detailing Manual 2004.

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2022.

D. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars 2019.

E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.

F. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars 2021.

G. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification 2021.

H. AWS D1.4/D1.4M - Structural Welding Code - Steel Reinforcing Bars 2018, with Amendment (2020).

I. CRSI (DA4) - Manual of Standard Practice 2009.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

1. Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in the State in which the Project is located.

C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

E. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301.

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.4/D1.4M and no more than 12 months before start of scheduled welding work.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M and ASTM A775, Grade 60 (60,000 psi).

1. Plain deformed bars.
2. Epoxy coated in accordance with ASTM A775/A775M.

B. Steel Welded Wire Reinforcement (WWR): Galvanized, deformed type; ASTM A1064/A1064M.

C. Reinforcement Accessories:

1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
3. Provide stainless steel or galvanized components for placement within 1-1/2 inches of weathering surfaces.

2.02 RE-BAR SPLICING:

A. Coupler Systems: Mechanical devices for splicing reinforcing bars; capable of developing full steel reinforcing design strength in tension and compression.

1. Products:
   a. Dayton Superior Corporation: www.daytonsuperior.com/#sle.

B. Dowel Bar Splicer with Dowel-Ins: Mechanical devices for connecting dowels; capable of developing full steel reinforcing design strength in tension and compression.

1. Products:
   a. Dayton Superior Corporation: www.daytonsuperior.com/#sle.

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Welding of reinforcement is permitted only with the specific approval of Architect and Structural Engineer of record. Perform welding in accordance with AWS D1.4/D1.4M.

C. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.

D. Locate reinforcing splices not indicated on drawings at point of minimum stress.

1. Review locations of splices with Architect and Structural Engineed of record.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Do not displace or damage vapor barrier.

C. Maintain concrete cover around reinforcing as indicated on Drawings.

D. Comply with applicable code for concrete cover over reinforcement.

3.02 FIELD QUALITY CONTROL

A. An independent testing agency, as selected by Owner, will inspect installed reinforcement for compliance with contract documents before concrete placement.

END OF SECTION

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SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Floors and slabs on grade.

B. Wood column concrete base walls, foundation walls and footings.

C. Joint devices associated with concrete work.

D. Underslab vapor retarder.

E. Concrete curing.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 03 35 11 - Concrete Floor Finishes: Densifiers, hardeners, applied coatings, and polishing.

D. Section 07 92 00 - Joint Sealants: Products and installation for sealants and joint fillers for saw cut joints and isolation joints in slabs.

E. Section 09 05 61 - Common Work Results for Flooring Preparation: for concrete slab moisture and Ph testing and remediation requirements.

1.03 REFERENCE STANDARDS

A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).

B. ACI 301 - Specifications for Concrete Construction 2020.

C. ACI 302.1R - Guide to Concrete Floor and Slab Construction 2015.

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).

E. ACI 305R - Guide to Hot Weather Concreting 2020.

F. ACI 306R - Guide to Cold Weather Concreting 2016.

G. ACI 308R - Guide to External Curing of Concrete 2016.

H. ACI 318 - Building Code Requirements for Structural Concrete 2019, with Errata (2021).

I. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.

J. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2021.

K. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2022.

L. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens) 2021.

M. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.

N. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete 2020.

O. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.

P. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).

Q. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete 2017a.

R. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2022.

S. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures 2016.

T. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete 2020a.

U. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete 2021.

V. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2020.

W. ASTM C1582/C1582M - Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete 2011, with Editorial Revision (2017).

X. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2018.

Y. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs 2018a.

Z. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs 2017.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.

C. Mix Design: Submit proposed concrete mix design.

1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.

D. Samples: Submit two, 12-inch square samples of underslab vapor retarder to be used.

E. Samples: Submit two, 12 inch long samples of construction joint devices and contraction joint device.

F. Samples: Submit two, 12-inch square samples of moisture-retaining sheet to be used.

G. Test Reports: Submit report for each test or series of tests specified.

H. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

I. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Comply with requirements of Section 03 10 00.

2.02 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 20 00.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.

1. Acquire cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C33/C33M.

1. Acquire aggregates for entire project from same source.

C. Lightweight Aggregate: ASTM C330/C330M.

D. Fly Ash: ASTM C618, Class C or F.

E. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260/C260M.

C. Corrosion Inhibiting Admixture:

1. ASTM C1582/C1582M.
2. Products:
   a. GCP Applied Technologies; DCI S: www.gcpat.com/#sle.
   b. Hycrete, Inc; W1000: www.hycrete.com/#sle.

2.05 ACCESSORY MATERIALS

A. Underslab Vapor Retarder: Under Picnic Pavilion floor slab and under Restroom Pavilion floor slab at Room No. 101 Men's, No. 102 Utility and No. 103 Women's concrete floor slab.

1. Sheet Material: ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single-ply polyethylene is prohibited.
2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
3. Products:
   a. Fortifiber Building Systems Group®; Moistop Ultra® 15: www.fortifiber.com.
   b. Henry Company; Henry® Moistop® Ultra 15: www.henry.com/#sle.
   c. Stego Industries, LLC; Stego® Wrap 15-Mil Vapor Barrier: www.stegoindustries.com/#sle.
   d. Raven Industries; VaporBlock® VB 15: www.ravenfd.com.
   e. Reef Industries; Griffolyn Type 105: www.reefindustries.com.

B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.

1. Grout: Comply with ASTM C1107/C1107M.
2. Height Change, Plastic State; when tested in accordance with ASTM C827/C827M:
   a. Maximum: Plus 4 percent.
   b. Minimum: Plus 1 percent.
3. Minimum Compressive Strength at 48 Hours, ASTM C109/C109M: 2,000 pounds per square inch.
4. Minimum Compressive Strength at 28 Days, ASTM C109/C109M: 7,000 pounds per square inch.
5. Products containing aluminum powder are not permitted.
6. Flowable Products:
   a. Euclid Chemical Company; NS GROUT: www.euclidchemical.com/#sle.
   b. Five Star Products, Inc; Five Star Fluid Grout 100: www.fivestarproducts.com/#sle.
   c. Kaufman Products Inc; SureGrout: www.kaufmanproducts.net/#sle.
   d. W. R. Meadows, Inc; CG-86: www.wrmeadows.com/#sle.
7. Low-Slump, Dry Pack Products:
   a. Euclid Chemical Company; DRY PACK GROUT: www.euclidchemical.com/#sle.
   b. Five Star Products, Inc; Five Star Grout: www.fivestarproducts.com/#sle.
   c. SpecChem, LLC; SC Multipurpose Grout: www.specchemllc.com/#sle.

2.06 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.

1. Products:
   a. Euclid Chemical Company; AKKRO-7T: www.euclidchemical.com/#sle.
   b. Kaufman Products Inc; SureBond: www.kaufmanproducts.net/#sle.
   c. SpecChem, LLC; Strong Bond Acrylic Bonder: www.specchemllc.com/#sle.
   d. W. R. Meadows, Inc; ACRY-LOK-: www.wrmeadows.com/#sle.

B. Epoxy Bonding System:

1. Complying with ASTM C881/C881M and of Type required for specific application.
2. Products:
   a. Adhesives Technology Corporation: www.atcepoxy.com/#sle.
   b. CTS Cement Manufacturing Corporation; Fast Anchoring and Repair Adhesive: www.CTScement.com/#sle.
   c. Euclid Chemical Company; DURAL FAST SET LV: www.euclidchemical.com/#sle.
   d. Kaufman Products Inc; SurePoxy HM Class B: www.kaufmanproducts.net/#sle.
   e. SpecChem, LLC; SpecPoxy 1000, SpecPoxy 2000, SpecPoxy 3000, or SpecPoxy 3000FS: www.specchemllc.com/#sle.
   f. W. R. Meadows, Inc; Rezi-Weld Gel Paste, Rezi-Weld Gel Paste State, Rezi-Weld 1000: www.wrmeadows.com/#sle.
   g. Substitutions: See Section 01 60 00 - Product Requirements.

C. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.

1. Material: Closed-cell, non-absorbent, compressible polymer foam in sheet form.
2. Products:
   a. Nomaco, Inc; Fastflex Slab Isolation Joint Filler with Tear-Off Strip: www.nomaco.com/#sle.
   b. W. R. Meadows, Inc; Deck-O-Foam Joint Filler with pre-scored top strip: www.wrmeadows.com/#sle.

D. Slab Contraction Joint Device: Preformed linear strip intended for pressing into wet concrete to provide straight route for shrinkage cracking.

1. Products:
   a. W. R. Meadows, Inc; Speed-E-Joint: www.wrmeadows.com/#sle.

E. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with rectangular or round knockout holes for conduit or rebar to pass through joint form at 6 inches on center; ribbed steel stakes for setting.

1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
2. Height: To suit slab thickness.
3. Manufacturers:
   a. BoMetals, Inc: www.bometals.com/#sle.

2.07 CURING MATERIALS

A. Moisture-Retaining Sheet: ASTM C171.

1. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard.
2. Products:
   a. Transhield, Inc; Topcure: www.transhield-usa.com/#sle.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

B. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.

1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.

D. Normal Weight Concrete:

1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 4,000 pounds per square inch.
2. Water-Cement Ratio: Maximum 35 percent by weight.
3. Total Air Content: 4 percent, determined in accordance with ASTM C173/C173M.
4. Maximum Slump: 4 inches.
5. Maximum Aggregate Size: 3/4 inch.

2.09 MIXING

A. Transit Mixers: Comply with ASTM C94/C94M.

B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Verify that forms are clean and free of rust before applying release agent.

B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

C. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.

1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
2. Use latex bonding agent only for non-load-bearing applications.

D. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.

1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

3.03 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

D. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

E. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.04 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

1. Install wherever necessary to separate slab from other building members, including columns, walls, footings, and drains.

D. Contraction Joint Devices: Use preformed joint device, with top set flush with top of slab.

E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant.

3.05 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:

1. Exposed Concrete Floors: 1/4 inch in 10 feet.
2. Under Seamless Resilient Flooring: 1/4 inch in 10 feet.
3. Under Carpeting: 1/4 inch in 10 feet.

B. Correct the slab surface if tolerances are less than specified.

C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.06 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:

1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:

1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include resilient flooring, thin set quarry tile, and thin set ceramic tile.

2. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

3.07 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

1. Normal concrete: Not less than seven days.

C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.

D. Surfaces Not in Contact with Forms:

1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-fog spray, or moisture-retaining sheet.
   a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 4 days.
   b. Spraying: Spray water over floor slab areas and maintain wet.
2. Final Curing: Begin after initial curing but before surface is dry.
   a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.

3.08 FIELD QUALITY CONTROL

A. An independent testing agency, selected by Owner, will perform field quality control tests.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.

D. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

E. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.09 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect and Structural Engineer for each individual area.

3.10 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

3.11 SCHEDULE - CONCRETE TYPES AND FINISHES

A. Refer to Schedule on Structural Drawings.

END OF SECTION

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SECTION 03 35 11
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Liquid densifiers and hardeners.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

B. Section 09 96 00 - High-Performance Coatings.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with concrete floor placement and concrete floor curing.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.

C. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

D. Warranty Documentation: Manufacturer warranty; ensure that forms have been completed in Owner's name and registered with manufacturer.

E. Specimen Warranty: Manufacturer warranty.

1.05 MOCK-UP

A. For coatings, construct mock-up area under conditions similar to those that will exist during application, with coatings applied.

B. Mock-Up Size: 10 feet square.

C. Locate where directed.

D. Mock-up may remain as part of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's sealed packaging, including application instructions.

1.07 FIELD CONDITIONS

A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.

B. Maintain ambient temperature of 50 degrees F minimum.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide one-year manufacturer warranty for manufacturing defects commencing on the Date of Substantial Completion.

PART 2 PRODUCTS

2.01 CONCRETE FLOOR FINISH APPLICATIONS

A. Liquid Densifier and Hardener:

1. Use at the following locations; all locations indicated to receive concrete sealer listed in the Room Finish Schedule on the Drawings.

2.02 DENSIFIERS AND HARDENERS

A. Liquid Densifier and Hardener: Penetrating chemical compound that reacts with concrete, filling the pores, hardening, and dustproofing.

1. Composition: Lithium silicate.
2. Products:
   a. Dayton Superior Corporation; PENTRA-HARD® Densifier: www.daytonsuperior.com/#sle.
   b. Euclid Chemical Company; EUCO DIAMOND HARD: www.euclidchemical.com/#sle.
   c. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc; LiON HARD: www.lmcc.com/#sle.
   d. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that floor surfaces are acceptable to receive the work of this section.

B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

3.02 GENERAL

A. Apply materials in accordance with manufacturer's instructions.

3.03 COATING APPLICATION

A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.

B. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.

C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.

D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

3.04 APPLYING LIQUID FLOOR TREATMENT SEALING COAT

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions. Apply liquid floor treatment to all floor slabs, except floors indicated to receive epoxy floor coating and as follows:

1. Sealing Coat: Upon completion of the final Project cleaning in the respective areas, uniformly apply a continuous sealing coat of penetrating liquid floor treatment to hardened concrete by power spray or roller according to manufacturer's written instructions.

END OF SECTION

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SECTION 04 05 11
MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar for masonry.

B. Grout for masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 20 00 - Unit Masonry: Installation of mortar and grout.

B. Section 04 72 00 - Cast Stone Masonry: Installation of mortar.

C. Section 04 73 00 - Manufactured Stone Veneer: Installation of mortar.

1.03 REFERENCE STANDARDS

A. ASTM C5 - Standard Specification for Quicklime for Structural Purposes 2018.

B. ASTM C91/C91M - Standard Specification for Masonry Cement 2018.

C. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2022.

D. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.

E. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2018.

F. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.

G. ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2018.

H. ASTM C476 - Standard Specification for Grout for Masonry 2020.

I. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry 2020.

J. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.

K. ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry 2020.

L. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength 2019.

M. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms 2022.

N. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry 2019a.

O. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry 2020.

P. ASTM E518/E518M - Standard Test Methods for Flexural Bond Strength of Masonry 2021.

Q. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used.

1. Include product data on water-repellant admixture.

C. Samples: Submit two samples of mortar, illustrating mortar color and color range.

D. Reports: Submit reports on mortar indicating compliance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.

E. Reports: Submit reports on grout indicating compliance of component grout materials to requirements of ASTM C476 and test and evaluation reports to requirements of ASTM C1019.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Manufacturer's Installation Instructions: Submit packaged dry mortar manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. Source Limitations for Mortar and Grout Materials: Obtain mortar and grout ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.

1.06 PRECONSTRUCTION TESTING

A. Testing will be conducted by an independent test agency, in accordance with provisions of Section 01 40 00 - Quality Requirements.

B. Mortar Mixes: Test mortars prebatched by weight in accordance with ASTM C780 recommendations for preconstruction testing.

1. Test results will be used to establish optimum mortar proportions and establish quality control values for construction testing.

C. Grout Mixes: Test grout batches in accordance with ASTM C1019 procedures.

1. Test results will be used to establish optimum grout proportions and establish quality control values for construction testing.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver preblended, dry mortar and grout mix in moisture-resistant containers designed for lifting and emptying into dspensing silo. Store preblended, dry mortar and grout mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

B. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.08 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS

A. At Contractor's option, mortar and grout may be field-mixed from packaged dry materials, made from factory premixed dry materials with addition of water only, or ready-mixed.

B. Mortar Color: Natural gray unless otherwise indicated.

C. Mortar Mix Designs: ASTM C270, Property Specification.

1. Masonry below grade and in contact with earth: Type S.
2. Exterior Masonry Veneer: Type S.
3. Engineered Masonry: Type S.
4. Exterior, Loadbearing Masonry: Type S.
5. Exterior, Non-loadbearing Masonry: Type N.
6. Interior, Loadbearing Masonry: Type N.
7. Interior, Non-loadbearing Masonry: Type N.

D. Grout Mix Designs:

1. Bond Beams and Lintels: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
   a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
   b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
2. Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
   a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
   b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.02 MATERIALS

A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.

1. Type: Types as scheduled in this section.
2. Color: As selected by Architect from manufacturer's full range of available standard and custom colors.
3. Water repellent mortar for use with water repellent masonry units.
4. Mortar Manufacturers:
   a. Amerimix Repellent Mortar AMX 410 WRM with RainBloc® GP: www.Amerimix.com/#sle.
   b. Spec Mix® IWR Mortar with Integral Water Repellent: www.specmix.com/#sle.
   c. Spec Mix® Portland Lime & Sand Masonry Mortar: specmix.com/#sle.

B. Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, hydrated lime, and graded sand; capable of producing Type O mortar in accordance with ASTM C270 with the addition of water only.

1. Color: Mineral pigments added as required to produce color as selected by Architect.

C. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.

1. Type: Fine or Coarse.
2. Manufacturers:
   a. Amerimix™ Preblended Core Fill Grout - Fine AMX 600 FG: www.Amerimix.com/#sle.
   b. Amerimix™ Preblended Core Fill Grout - Coarse AMX 600 CG: www.Amerimix.com/#sle.

D. Portland Cement: ASTM C150/C150M.

1. Type: Type I - Normal; ASTM C150/C150M.
2. Color: Color as selected by Architect from manufacturer's full range of standard and custom colors.
3. Manufacturers:
   a. Solomon Colors; Solomon Colors Concentrated A, H, and X Series: www.solomoncolors.com/#sle.

E. Hydrated Lime: ASTM C207, Type S.

F. Quicklime: ASTM C5, non-hydraulic type.

G. Mortar Aggregate: ASTM C144.

H. Grout Aggregate: ASTM C404.

I. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.

1. Color(s): As selected by Architect from manufacturer's full range.

J. Water: Clean and potable.

K. Bonding Agent: Latex or epoxy type.

L. Integral Water Repellent Admixture: Polymeric liquid admixture added to mortar at the time of manufacture.

1. Performance of Mortar with Integral Water Repellent:
   a. Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours:
      1) No water visible on back of wall above flashing at the end of 24 hours.
      2) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
      3) No more than 25 percent of wall area above flashing visibly damp at end of test.
   b. Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
   c. Compressive Strength: ASTM C1314; maximum 5 percent decrease.
2. Use only in combination with masonry units produced with integral water repellent admixture.
3. Manufacturers:
   a. Hycrete, Inc: www.hycrete.com/#sle.
   b. GCP Applied Technologies DRY-BLOCK® Mortar Admixture: gcpat.com/#sle.
   c. Master® Builders MasterPel® 235 Water-Repellent Admixture: www.gcpat.com/#sle.
   d. Master® Builders MasterPel® 240 Water repellent and efforescence control admixture: www.master-builders-solutions.com/en-us/#sle.

2.03 MORTAR MIXING

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.

B. Maintain sand uniformly damp immediately before the mixing process.

C. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.

D. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

E. Do not use anti-freeze compounds to lower the freezing point of mortar.

F. If water is lost by evaporation, re-temper only within two hours of mixing.

G. Use mortar within two hours after mixing at temperatures of 90-degrees F, or two-and-one-half hours at temperatures under 40-degrees F.

2.04 GROUT MIXING

A. Mix grout in accordance with ASTM C94/C94M.

B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C476 for fine and coarse grout.

C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

D. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 PREPARATION

A. Apply bonding agent to existing concrete surfaces.

B. Plug clean-out holes for grouted masonry with brick masonry units. Brace masonry to resist wet grout pressure.

3.02 INSTALLATION

A. Install mortar and grout to requirements of section(s) in which masonry is specified.

B. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

3.03 GROUTING

A. Use either high-lift or low-lift grouting techniques, at Contractor's option, subject to other limitations of Contract Documents.

B. Low-Lift Grouting:

1. Limit height of pours to 12 inches.
2. Limit height of masonry to 16 inches above each pour.
3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

C. High-Lift Grouting:

1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.
2. Hollow Masonry: Limit lifts to maximum 4 feet and pours to maximum height of 24 feet.
3. Place grout for spanning elements in single, continuous pour.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency, selected by Owner, will perform field tests.

B. Test and evaluate mortar in accordance with ASTM C780 procedures.

1. Test with same frequency as specified for masonry units.

C. Test and evaluate grout in accordance with ASTM C1019 procedures.

1. Test with same frequency as specified for masonry units.

D. Prism Tests: Test masonry and mortar panels for compressive strength in accordance with ASTM C1314, and for flexural bond strength in accordance with ASTM C1072 or ASTM E518/E518M; perform tests and evaluate results as specified in individual masonry sections.

END OF SECTION

SECTION 04 20 00
UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Reinforcement and anchorage.

C. Flashings.

D. Lintels.

E. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 20 00 - Concrete Reinforcing: Reinforcing steel for grouted masonry.

B. Section 04 05 11 - Masonry Mortaring and Grouting.

C. Section 05 50 00 - Metal Fabrications: Loose steel lintels.

D. Section 06 10 00 - Rough Carpentry: Nailing strips at face of exterior unit masonry.

E. Section 07 25 00 - Weather Barriers: Air and water-resistive barrier applied to exterior face of backing sheathing or unit masonry substrate.

F. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.

B. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement 2016, with Editorial Revision (2018).

C. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.

D. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units 2022.

E. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units 2017.

F. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units 2022b.

G. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry 2020.

H. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength 2019.

I. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms 2021.

J. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing 2017.

K. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry 2020.

L. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing 2017.

M. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, masonry accessories, and integral water repellent.

C. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

D. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.

E. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.

F. Designer's Qualification Statement.

G. Manufacturer's Qualification Statement.

H. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

C. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum five years of documented experience.

D. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.

1.07 MOCK-UPS

A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar, accessories, reinforcement, wall openings, flashings (with lap joint, corner, and end dam), weather barrier, wall insulation, treated wood furring strips and composite siding in mock-up.

B. Locate where directed.

C. Demolish mock-up, remove from site and legally dispose of material when directed by Architect.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.09 PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

1. Extend cover a minimum of 24 inches (600 mm) down both sides and hold cover securely in place.

B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to receive air and moisture barrier coating. Immediately remove grout, mortar, and soil that come in contact with such masonry.

1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
2. Protect sills, ledges, and projections from mortar droppings.
3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

C. Cold and Hot Weather Requirements: Comply with requirements of ACI 530.1/ASCE 6/TMS 602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:

1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
2. Special Shapes: Provide nonstandard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
3. Load-Bearing Units: ASTM C90, normal weight.
    a. Both hollow and solid block.
    b. Exposed Faces: Manufacturer's standard color and texture.
    c. Pattern: Manufacturer's standard.
4. Nonloadbearing Units: ASTM C129.
    a. Both hollow and solid block, as indicated.
    b. Normal weight.
5. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
    a. Performance of Units with Integral Water Repellent:
        1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
            (a) No water visible on back of wall above flashing at the end of 24 hours.

(b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.

(c) No more than 25 percent of wall area above flashing visibly damp at end of test.

2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.

b. Use only in combination with mortar that also has integral water repellent admixture.
c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.
d. Manufacturers:
1) GCP, Applied Technologies; product Dry-Block: www.gcpat.com/#sle.
2) Master Builders, Inc; Product MasterPel® 235 Water-Repellent Admixture: www.master-builders-solutions.com/en-us.
3) Master Builders, Inc; Product MasterPel® 240 Water Repellent and Efforescence Control Admixture: www.master-builders-solutions.com/en-us.

6. Standard Units with Factory-Installed Insulation Inserts: ASTM C90, normal weight.
a. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
b. Insulation Type: Manufacturer's standard expanded polystyrene (XPS).
c. Pattern: Manufacturer's standard.
d. Exposed Faces: Color and texture to be selected from manufacturer's standard range.

2.02 MORTAR AND GROUT MATERIALS

A. Mortar and Grout: As specified in Section 04 05 11.

2.03 REINFORCEMENT AND ANCHORAGE

A. Manufacturers:

1. Blok-Lok Limited: www.blok-lok.com/#sle.
2. Hohmann & Barnard, Inc: www.h-b.com/#sle.
3. WIRE-BONDwww.wirebond.com/#sle.

B. Reinforcing Steel: Type specified in Section 03 20 00; size as indicated on drawings; uncoated finish.

C. Single Wythe Joint Reinforcement: ASTM A951/A951M.

1. Type: Truss or ladder.
2. Material: ASTM A1064/A1064M steel wire, mill to ASTM A641/A641M Class 3.
3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.

D. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not less than 5/8 inch of mortar coverage from masonry face.

2.04 FLASHINGS

A. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from high-density polyethylene incorporating chemical stabilizers that prevent UV degradation. Cell flashing pans have integral weep spouts that are designed to be built into mortar bed joints and weep collected moisture to the exterior of CMU walls and that extend into the cell to prevent clogging with mortar.

1. Manufacturers: Subject to compliance with requirements, available manufacturers that may be incorporated into the Work include, but are not limited to the following:
   a. Advanced Building Products Inc; product "Blok-Flash".
2. Substitutions: See Section01 60 00-Product Requirements.

2.05 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.

1. Manufacturers:
   a. Blok-Lok Limited: www.blok-lok.com/#sle.
   b. Hohmann & Barnard, Inc: www.h-b.com/#sle.
   c. WIRE-BOND: www.wirebond.com/#sle.

B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; ¾-inch wide by maximum lengths available.

1. Manufacturers:
   a. Hohmann & Barnard, Inc: www.h-b.com/#sle.
   b. WIRE-BOND: www.wirebond.com/#sle.

C. Building Paper: ASTM D226/D226M, Type I ("No.15") asphalt felt.

D. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 06 10 00.

E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.06 LINTELS

A. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam concrete masonry units with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

B. Steel Lintels: Refer to Structural Drawings.

2.07 REPAIR OF DAMAGED MASONRY

A. Masonry Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching masonry.

1. Products: Subject to compliance with requirements, available manufacturer's that may be incorporated into the Work include, but are not limited to, the following:
   a. Rosendale Natural Cement Products.
   b. Substitutions: See Section01 60 00 - Product Requirements.
2. Use formulation that is vapor- and water permeable (equal to or more than the masonry unit), exhibits low shrinkage, has lower modulus of elasticity than the masonry units being repaired, and develops high bond strength to all types of masonry.
3. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary.
4. Formulate patching compound used for patching existing masonry in colors and textures to match each masonry unit being patched.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:

1. Bond: Running.
2. Coursing: One unit and one mortar joint to equal 8 inches.
3. Mortar Joints: Concave, except as follows:
    a. Flush mortar joints at exterior face of walls to receive air and moisture barrier coating.

3.05 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. Remove excess mortar and mortar smears as work progresses.

E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

F. Interlock intersections and external corners, except for units laid in stack bond.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

I. Cut mortar joints flush where exterior face of masonry walls to receive air and moisture barrier.

J. Isolate masonry partitions from vertical structural framing members with a control joint as indicated.

K. Isolate top joint of masonry partitions from horizontal structural framing members with compressible joint filler.

3.06 REINFORCEMENT AND ANCHORAGE - GENERAL AND SINGLE WYTHE MASONRY

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.

E. Lap joint reinforcement ends minimum 6 inches.

F. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

G. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.

3.07 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 1 inch, minimum, to form watertight pan at nonmasonry construction.

B. Install flashing in accordance with manufacturer's instructions.

3.08 LINTELS

A. Install loose steel lintels over openings.

B. Install reinforced unit masonry lintels over openings where steel or precast concrete lintels are not scheduled. unless noted otherwise on Drawings.

1. Openings to 42 inches: Place two, No. 3 reinforcing bars 1 inch from bottom web.
2. Openings from 42 inches to 78 inches: Place two, No. 5 reinforcing bars 1 inch from bottom web.
3. Openings over 78 inches: Reinforce openings as detailed on Structural Drawings.
4. Do not splice reinforcing bars.
5. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
6. Place and consolidate grout fill without displacing reinforcing.
7. Allow masonry lintels to attain specified strength before removing temporary supports.

C. Maintain minimum 8 inch bearing on each side of opening and fill 2 block courses below lintel bearing with grout.

3.09 GROUTED COMPONENTS

A. Reinforce bond beams with 2, No. 5 bars, 1 inch from bottom web.

B. Reinforce columns and pilasters with four, No. 4 bars and 1/4-inch ties at 8-inches on center.

C. Lap splices minimum 24 bar diameters.

D. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

E. Place and consolidate grout fill without displacing reinforcing.

F. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

3.10 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

C. Size control joints as indicated on drawings; if not indicated, 3/4 inch wide and deep.

D. Form expansion joint as detailed on drawings.

3.11 BUILT-IN WORK

A. As work progresses, install built-in metal door frames and glazed frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.

1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.12 TOLERANCES

A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

E. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

F. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.13 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.14 DAMAGED MASONRY REPAIR

A. Patching Masonry Units:

1. Remove loose material from masonry surface. Carefully remove additional material so patch will not have feathered edges but will have square or slightly undercut edges on area to be patched and will be at least 1/4 inch thick, but not less than recommended by patching compound manufacturer.
2. Mask adjacent mortar joint or rake out for repointing if patch will extend to edge of masonry unit.
3. Rinse surface to be patched and leave damp, but without standing water.
4. Brush-coat surfaces with slurry coat of patching compound according to manufacturer's written instructions.
5. Place patching compound in layers as recommended by patching compound manufacturer, but not less than 1/4 inch or more than 2 inches thick. Roughen surface of each layer to provide a key for next layer.
6. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of the masonry unit. Shape and finish surface before or after curing, as determined by testing, to best match existing masonry unit.
7. Keep each layer damp for 72 hours or until patching compound has set.

3.15 FIELD QUALITY CONTROL

A. An independent testing agency, selected by Owner, will perform field quality control tests.

B. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for compliance with requirements of this specification.

C. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.16 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

D. Use non-metallic tools in cleaning operations.

3.17 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

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SECTION 04 72 00
CAST STONE MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Architectural cast stone.

B. Units required, including but not limited to, are:

1. Exterior wall units, including wall caps and sills.
2. Other items indicated on drawings as Architectural Cast Stone or Architectural Precast.

1.02 RELATED REQUIREMENTS

A. Section 04 05 11 - Masonry Mortaring and Grouting: Mortar for setting cast stone.

B. Section 04 20 00 - Unit Masonry: Installation of cast stone in conjunction with masonry.

C. Section 07 92 00 - Joint Sealants: Sealing joints indicated to be left open for sealant.

1.03 REFERENCE STANDARDS

A. ACI 318 - Building Code Requirements for Structural Concrete 2019, with Errata (2021).

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2022.

D. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement 2019.

E. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement 2019, with Editorial Revision (2020).

F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.

G. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.

H. ASTM C150/C150M - Standard Specification for Portland Cement 2022.

I. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.

J. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2019, with Editorial Revision (2022).

K. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete 2021.

L. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.

M. ASTM C1364 - Standard Specification for Architectural Cast Stone 2019.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Manufacturer's information on accessory products, including pigments, admixtures, inserts, plates, etc. Test results of cast stone components made previously by the manufacturer.

1. Include one copy of ASTM C1364 for Architect's use.

C. Shop Drawings: Include elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, piece numbers and relationship to adjacent materials.

1. Include details of mix design.

D. Mortar Color Selection Samples.

E. Verification Samples: Pieces of actual cast stone components not less than 6 inches square, illustrating range of color and texture to be anticipated in components furnished for the project.

F. Full-Size Samples, For Review:

1. Basic Shapes: One of each.

G. Source Quality Control Test Reports.

H. Manufacturer's/Fabricator's Qualification Data: Documentation showing compliance with specified requirements.

I. Maintenance Data: Indicate surface cleaning instructions.

1.05 QUALITY ASSURANCE

A. Manufacturer/Fabricato Qualifications:

1. A firm with a minimum of 5 years experience producing cast stone of types required for project.
2. Current producer member of the Cast Stone Institute or the Architectural Precast Association.
3. Manufacturer's/Fabricator's production facility currently holds a Plant Certification from the Cast Stone Institute or the Architectural Precast Association.
4. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least 5 years of documented experience and approved by manufacturer / fabricator.

1.06 MOCK-UP

A. Provide full size cast stone components for installation in mock-up of exterior wall.

B. Approved mock-up will become standard for appearance and workmanship.

C. Mock-up may remain as part of the completed work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.

B. Number each piece individually to match shop drawings and schedule.

C. Store cast stone components and installation materials in accordance with manufacturer's instructions.

D. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.

E. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.

F. Store mortar materials where contamination can be avoided.

G. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the work.

PART 2 PRODUCTS

2.01 MANUFACTURERS / FABRICATORS

A. Architectural Cast Stone:

1. County Materials Corporation: www.countymaterials.com.
2. Molin Concrete Products Company: www.molin.com.
3. Hanson Spancrete Midwest, Inc: www.hansonpipeandprecast.com.

2.02 ARCHITECTURAL CAST STONE

A. Cast Stone: Architectural concrete product manufactured to simulate appearance of natural limestone, complying with ASTM C1364.

1. Compressive Strength: As specified in ASTM C1364; calculate strength of pieces to be field cut at 80 percent of uncut piece.
2. Freeze-Thaw Resistance: Demonstrated by laboratory testing in accordance with ASTM C1364.
3. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 5 feet.
4. Color: Selected by Architect from manufacturer's full range.
5. Remove cement film from exposed surfaces before packaging for shipment.

B. Shapes: Provide shapes indicated on drawings.

1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch or length divided by 360, whichever is greater, but not more than 1/4 inch.
2. Unless otherwise indicated on drawings, provide:
   a. Wash or slope of 1:12 on exterior horizontal surfaces.
   b. Drips on projecting components, wherever possible.
   c. Raised fillets at back of sills and at ends to be built in.

C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI 318.

1. Pieces More than 24 inches in Any Dimension: Provide full length two-way reinforcement of cross-sectional area not less than 0.25 percent of unit cross-sectional area.

2.03 MATERIALS

A. Portland Cement: ASTM C150/C150M.

1. For Units: Type I, white or gray as required.
2. For Mortar: Type I or II, except Type III may be used in cold weather.

B. Coarse Aggregate: ASTM C33/C33M, except for gradation; granite, quartz, or limestone.

C. Fine Aggregate: ASTM C33/C33M, except for gradation; natural or manufactured sands.

D. Pigments: ASTM C979, inorganic iron oxides; do not use carbon black.

E. Admixtures: ASTM C494/C494M.

F. Water: Potable.

G. Grout: Non-shrink, non-metallic, minimum 10,000 psi, 28 day strength.

H. Reinforcing Bars: ASTM A615/A615M, Grade 40 (40,000 psi), deformed bars, galvanized.

1. Galvanized in accordance with ASTM A767/A767M, Class I.

I. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, galvanized or ASTM A884/A884M, epoxy coated.

J. Embedded Anchors, Dowels, and Inserts: Type 304 stainless steel, of type and size as required for conditions.

K. Shelf Angles and Similar Structural Items: Hot-dip galvanized steel per ASTM A123/A123M, of shapes and sizes as required for conditions.

L. Mortar: Portland cement-lime, as specified in Section 04 05 11; do not use masonry cement.

M. Cleaner: General-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.

2.04 FORM LINERS

A. Material: Glass fiber reinforced polyester.

2.05 ACCESSORIES

A. Sealant: Single or multi-component polyurethane type specfied in Section 07 92 00 - Joint Sealants.

2.06 FABRICATION

A. Fabricate in conformance with PCI MNL-117 and PCI MNL-135.

B. Use rigid molds, constructed to maintain cast stone masonry unit uniform in shape, size and finish.

1. Fabricate cast stone units in size and shape as indicated on Drawings.

C. Use form liners in accordance with manufacturer's / fabricator's instructions.

D. Maintain consistant quality during manufacturer.

E. Cure units to develop concrete quality and to minimize appearance blemishes such as non-uniformity, staining or surface cracking.

F. Minor patching in plant is acceptable, providing structural adequacy and appearance of units is not impaired.

2.07 SOURCE QUALITY CONTROL

A. Test compressive strength and absorption of specimens selected at random from plant production.

1. Test in accordance with ASTM C642.
2. Select specimens at rate of 3 per 500 cubic feet, with a minimum of 3 per production week.
3. Submit reports of tests by independent testing agency, showing compliance with requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine construction to receive cast stone components. Notify Architect if construction is not acceptable.

B. Verify that building structure, anchors, devices and openings are ready to receive work of this section.

C. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

A. Install in accordance with manufacturer's / fabricator's instructions.

B. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 20 00.

C. Mechanically anchor cast stone units indicated; set remainder in mortar.

D. Setting:

1. Install units without damage to shape or finish. Replace or repair damaged units.
2. Install units level and plumb within allowable tolerances.
3. Align and maintain uniform horizontal and vertical joints as erection progresses.
4. Drench cast stone components with clear, running water immediately before installation.
5. Fasten units in place with mechanical connections or set units in a full bed of mortar as indicated, or if not indicated, as directed by Architect.
6. Fill vertical joints with mortar.
7. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
8. Seal perimeter and intermediate joints in accordance with Section 07 92 00.

3.03 TOLERANCES

A. Joints: Make all joints 3/8 inch, except as otherwise detailed.

1. Rake mortar joints 3/4 inch for pointing.
2. Remove excess mortar from face of stone before pointing joints.

3. Point joints with mortar in layers 3/8 inch thick and tool to a slight concave profile.
4. Leave the following joints open for sealant:
    a. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
    b. Joints in projecting units.
    c. Joints between rigidly anchored units, including soffits, panels, and column covers.
    d. Joints below lugged sills and stair treads.
    e. Joints below ledge and relieving angles.
    f. Joints labeled "expansion joint".

B. Installation Tolerances:

1. Variation from Plumb: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet or more.
2. Variation from Level: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet, or 3/8 inch maximum.
3. Variation in Joint Width: Not more than 1/8 inch in 36 inches or 1/4 of nominal joint width, whichever is less.
4. Variation in Plane Between Adjacent Surfaces (Lipping): Not more than 1/16 inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

C. Set members level and plumb within allowable tolerances. Conform to PCI MNL-135.

3.04 REPAIR

A. Repair chips and other surface damage noticeable when viewed in direct daylight at 5 feet.

B. Repair with matching touch-up material provided by the manufacturer and in accordance with manufacturer's instructions.

C. Repair methods and results subject to Architect 's approval.

3.05 CLEANING

A. Clean completed exposed cast stone after mortar is thoroughly set and cured.

1. Wet surfaces with water before applying cleaner.
2. Apply cleaner to cast stone in accordance with manufacturer's instructions.
3. Remove cleaner promptly by rinsing thoroughly with clear water.
4. Do not use acidic cleaners.

B. See Market and Johnson's Section 01 74 19 - Construction Waste Management, for additional requirements.

3.06 PROTECTION

A. Protect completed work from damage.

B. Clean, repair, or restore damaged or mortar-splashed work to condition of new work.

END OF SECTION

SECTION 04 73 00
MANUFACTURED STONE MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adhered manufactured stone masonry veneer (AMSMV).

B. Installation materials.

C. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-In-Place Concrete: Column base.

B. Section 04 05 11 - Masonry Mortaring and Grouting: Site-mixed mortars.

C. Section 04 72 00 - Cast Stone Masonry: Architectural cast stone trim.

D. Section 07 25 00 - Weather Barriers: Air and water-resistive barrier over masonry substrate.

E. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.

B. ASTM C847 - Standard Specification for Metal Lath 2018.

C. ASTM C926 - Standard Specification for Application of Portland Cement-Based Plaster 2022a.

D. ASTM C932 - Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering 2006 (Reapproved 2019).

E. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster 2022.

F. ASTM C1670/C1670M - Standard Specification for Adhered Manufactured Stone Masonry Veneer Units 2021b.

G. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry 2019a.

H. ASTM C1780 - Standard Practice for Installation Methods for Cement-Cased Adhered Masonry Veneer 2020.

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.

J. ICC-ES AC51 - Acceptance Criteria for Precast Stone Veneer 2016.

K. NCMA (AMSV) - Installation Guide and Detailing Options for Compliance with ASTM C1780 for Adhered Manufactured Stone Veneer Current Edition, Including All Revisions.

L. NCMA TEK 20-01 - Key Installation Checkpoints for Manufactured Stone Veneer 2014.

M. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Provide data for AMSMV units, lath, and rainscreen drainage material, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Color charts.
4. Installation methods.

C. Shop Drawings: Submit detail drawings depicting proper installation and flashing techniques. Coordinate locations with those found on drawings.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 12 inches square, representing actual product, color, patterns and texture.

F. Samples: Submit four samples of AMSMV units to illustrate color, texture, and extremes of color range.

G. Samples: Submit two 24 x 24-inch samples of metal lath.

H. Samples: Submit two 24-inch long samples of weep material.

I. Evaluation Service Reports: Show compliance of AMSMV with specified requirements of ICC-ES AC51.

J. Manufacturer's Certificate: Certify that AMSMV units and mortar meet or exceed specified requirements.

K. Manufacturer's Qualification Statement.

L. Installer's Qualification Statement.

M. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

N. Specimen Warranty.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified, with at least five years of documented experience and approved by manufacturer.

C. Expansion Joints: Provide expansion joints as indicated on Drawings or, if not indicated, install at frequency and in accordance with details and as recommended by manufacturer. Confirm locations and frequency with Architect before beginning work.

D. Certifications:

1. Provide written documentation that products have met or exceeded at least one of the following certifications for a minimum of 10 years.
   a. ICBO - International Conference of Building Officials.
   b. SBCCI - Southern Building Code Congress International.
   c. BOCA - Building Officials and Code Administrators International.
   d. ICC - International Code Council.
2. Provide written documentation that AMSMV products comply with specified minimum criteria when tested in accordance with testing standards specified in Part 2 of this Section.

1.07 MOCK-UPS

A. Construct full size mock-up of wood column concrete base, include AMSMV, mortar, accessories (Architectural cast stone trim), wood column metal base shoe, wood column with composite siding cedar texture trim, and weeps.

1. Obtain Architect's approval before beginning Work. Protect and retain sample as a basis on which the quality of the work will be judged.

B. Locate where directed.

C. Approved mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging on pallets in a dry location until ready for installation.

B. Prevent mechanical damage and contamination by other materials.

C. Protect products from precipitation combined with freezing temperatures. Do not install products with visible frozen moisture.

D. Protect metal lath and accessories from elements.

E. Protect Portland cement based materials from moisture and humidity. Store under cover off the ground in a dry location.

1.09 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace AMSMV product and components that fails as a result of manufacturing or installation defects within the specified warranty period.

1. Warranty Period: 40 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Adhered Manufactured Stone Masonry Veneer (AMSMV):

1. Basis of Design: Subject to compliance with requirements, provide Boral Stone Products, LLC, One Owens Corning Parkway, Toledo, OH 43659; Phone: (800) 255-1727, Fax: (866) 213-3037: www.culturedstone.com/#sle. Comparable product from one of the following manufacturers may be considered:
   a. Canyon Stone, Inc., 550 E. 56 Highway, Suite B, Olathe, KS 66061; Phone: (913) 254-9300, Fax: (913) 254-9301: www.canyon-stone.com/#sle.
   b. Boulder Creek Stone, Inc: www.bouldercreekstone.com/#sle.

2.02 ADHERED MANUFACTURED STONE MASONRY VENEER (AMSMV)

A. AMSMV: Cast masonry units using a mixture of cement, lightweight aggregates, concrete additives and color pigments to replicate appearance of natural stone and designed to be applied with a cementitious mortar to a backing surface, complying with ASTM C1670/C1670M and ICC-ES AC51.

1. Style: As selected by Architect from manufacturer's standard styles.
2. Color, Texture, Range, Special Shapes: As selected by Architect from manufacturer's standard styles.

B. Trim: Provide wall caps, specified in Section 04 72 00 - Cast Stone Masonry.

2.03 MORTAR APPLICATIONS

A. At Contractor's option, mortar may be field-mixed from packaged dry materials, made from factory premixed dry materials with addition of water only, or ready-mixed.

B. Mortar Color: Natural gray unless otherwise indicated.

C. Dash Bond Coat: One part Portland cement, with maximum two parts sand.

D. Scratch Coat Mortars: Scratch coat mortars for application directly to metal lath.

1. Site-Mixed: ASTM C270, Type N or Type S, using the Proportion Method as specified in Section 04 05 11.
2. Prepackaged/Preblended: ASTM C1714/C1714M, Type N or Type S.

E. Setting Bed Mortars: Setting bed used to adhere AMSMV units to scratch coat mortar or to bondable concrete or concrete masonry.

1. Site-Mixed: ASTM C270, Type S, using the Proportion Method as specified in Section 04 05 11.
2. Prepackaged/Preblended: ASTM C1714/C1714M, Type S.

F. Pointing Mortars: Pointing or grouting mortars used to fill the joints between individual AMSMV units once the setting bed mortar has sufficiently cured.

1. Site-Mixed: ASTM C270, Type N or Type S, using the Proportion Method as specified in Section 04 05 11.
2. Prepackaged/Preblended: ASTM C1714/C1714M, Type N or Type S.

2.04 ACCESSORIES

A. Metal Lath with Rainscreen Drainage Material: Factory-assembled combination of mesh drainage material and metal lath.

1. Diamond Mesh Metal Lath: ASTM C847, galvanized, self-furring.
   a. Weight: 2.5 lb/sq yd, minimum.
2. Attachment: Galvanized nails, screws, and other metal supports, of type and size to suit applications; to rigidly secure materials in place.

3. Rainscreen Drainage Mesh: 90 percent open non-woven polyester mesh.
    a. Thickness: 10-mm.
    b. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less (Class A), when tested in accordance with ASTM E84.
4. Manufacturers: Subject to compliance with requirements, manufacturers that may be incorporated into the Work include, but are not limited to the following:
    a. Mortar Net Solutions; LathNet: www.mortarnet.com/#sle.
    b. Masonry Technologies, Inc; Product SCMM 2532, 10-mm Sure Cavity.

B. Water-Resistive Barrier: See Section 07 25 00.

C. Weeps: 0.024-inch (0.6-mm) thick high-impact polystryene strip formed with 3/16-inch (4.8-mm) deep corrugations, bent into L-shape, 9-inch (229-mm) leg - 2.5-inch (57-mm) wide and 5-inch (127-mm) leg - 2.5-inch (57-mm) wide. Installed behind thin veneer scratch coat and metal lath to create a system of tunnels and channels down behind and out of simulated stone veneers.

1. Manufacturers: Subject to compliance with requirements, manufacturers that may be incorporated into the Work include, but are not limited to the following:
    a. Mortar Net Solutions; LathNet FHA-7 Weep Sill Screed: www.mortarnet.com/#sle.
    b. Masonry Technology, Inc; Product WOW9095 Wall Opening Weeps.

D. Bonding Compound: Provide type recommended for bonding scratch coat to solid surfaces, complying with ASTM C932.

E. Rainscreen Drainage Material:

1. Rainscreen Drainage Panels: Ribbed, dimpled, or channeled polyethylene or extruded polystyrene sheets with polypropylene fabric mortar screen on one face.
    a. Thickness: 10-mm.
    b. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less (Class A), when tested in accordance with ASTM E84.
    c. Seam Tape and Bug Screen: As recommended by rainscreen drainage sheet manufacturer.
    d. Manufacturers: Subject to compliance with requirements, manufacturers that may be incorporated into the Work include, but are not limited to the following:
        1) Mortar Net Solutions; LathNet: www.mortarnet.com/#sle.
        2) Masonry Technology, Inc; SCMM 2532, 10-mm Sure Cavity: www.mtidry.com/#sle.

F. Cleaning Solution: Non-acidic, not harmful to AMSMV work or adjacent materials, approved by AMSMV manufacturer.

G. Sealer: Blended silanes and siloxanes.

1. Manufacturers:
    a. Tnemec Company, Inc; Product Prime A Pell H2O: www.tnemec.com/#sle.
    b. BASF Construction Chemicals; Product Enviroseal 7: www.buildingsystems.basf.com/#sle.
    c. L & M Construction Chemicals; Product Hydropel WB: www.prosoco.com/#sle.
    d. PROSOCO, Inc; Product Weather Seal Siloxane WB: www.prosoco.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that backup wall system construction complies with AMSMV manufacturer's instructions, NCMA (AMSV), NCMA TEK 20-01, ASTM C1780 and ICC-ES AC51.

B. Verify that substrates to receive mortar scratch coat or setting bed comply with AMSMV manufacturer's instructions, NCMA (AMSV), NCMA TEK 20-01, ASTM C1780 and ICC-ES AC51:

1. Concrete: Verify surfaces are flat, honeycomb is filled flush, and surface is ready to receive mortar setting bed. Verify no bituminous, water repellent, or form release agents exist on concrete surface that are detrimental to mortar setting bed.
2. Metal Lath and Accessories: Verify lath is flat, secured to substrate, and joint and surface perimeter accessories are in place.

C. Verify that related items provided under other sections are properly sized and located.

D. Verify that built-in items are in proper location, and ready for installation of AMSMV.

3.02 PREPARATION

A. Clean concrete surfaces of foreign matter using approved acid solutions, solvents, or detergents, and then rinse surfaces thoroughly with clean water.

B. Roughen smooth concrete surfaces and apply bonding compound in accordance with manufacturer's written installation instructions.

C. Apply dash bond coat to solid bases and moist cure for at least 24 hours before applying setting bed.

3.03 INSTALLATION - WATER-RESISTIVE BARRIER

A. Where required by AMSMV manufacturer's instructions, NCMA (AMSV), NCMA TEK 20-01, ASTM C1780 or ICC-ES AC51, install 2 layers of water-resistive barrier in accordance with water-resistive barrier manufacturer's instructions. Integrate water-resistive barrier with all flashing accessories, adjacent water-resistive barriers, doors, windows, penetrations, and cladding transitions.

3.04 INSTALLATION - RAINSCREEN DRAINAGE MATERIAL

A. Install rainscreen drainage material and metal lath with accessories over sheathing material and water-resistive barrier with fastening system in accordance with ASTM C1063 into wood or metal studs. Install drainage material with filter fabric mortar screen to exterior.

B. Install metal lath with rainscreen drainage material in accordance with the manufacturer's instructions.

3.05 INSTALLATION - SCRATCH COAT

A. Apply mortar scratch coat of 1/2 inch nominal to cover metal lath in accordance with ASTM C926. Scratch surface when somewhat firm. If scratch coat dries before applying setting bed mortar and AMSMV, moisten scratch coat by misting it with water.

3.06 INSTALLATION - AMSMV

A. Install AMSMV with a cementitious mortar setting bed to a scratch coat backing surface, in accordance with AMSMV manufacturer's instructions, NCMA (AMSV), NCMA TEK 20-01, ASTM C1780 and ICC-ES AC51.

B. Mortar Joints: Raked.

1. Style: Tight fit joints.

C. Caps: Install capstones where located on drawings.

3.07 INSTALLATION - MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

B. Extend flashings to within 1/2 inch of exterior face of AMSMV and adhere to top of stainless steel angled drip with hemmed edge.

C. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.

3.08 CONTROL AND EXPANSION JOINTS

A. Form joints as detailed on drawings.

3.09 TOLERANCES

A. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.

3.10 CLEANING

A. Remove excess mortar and mortar smears as work progresses.

B. Replace defective mortar. Match adjacent work.

C. Clean AMSMV in accordance with manufacturer's installation instructions.

D. Clean soiled surfaces with cleaning solution.

E. Use non-metallic tools in cleaning operations.

3.11 PROTECTION

A. Protect finished work from rain during and for 48 hours following installation.

B. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

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SECTION 05 12 00
STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural steel framing members.

B. Base plates.

C. Grouting under base plates.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Steel fabrications affecting structural steel work.

1.03 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual 2017.

B. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges 2016.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

E. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric) 2021a.

F. ASTM A992/A992M - Standard Specification for Structural Steel Shapes 2022.

G. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions 2019.

H. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength 2022.

I. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2020.

J. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification 2021.

K. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).

L. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections 2020.

M. SSPC-SP 3 - Power Tool Cleaning 2018.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Shop Drawings:

1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.

2. Connections not detailed.
3. Indicate cambers and loads.
4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.

D. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.

E. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

F. Designer's Qualification Statement.

G. Fabricator's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."

B. Fabricator: Company specializing in performing the work of this section with minimum five years of documented experience.

C. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.

D. Design connections not detailed on drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Angles and Plates: ASTM A36/A36M.

B. Steel W Shapes and Tees: ASTM A992/A992M.

C. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563/A563M nuts and ASTM F436/F436M washers.

D. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

E. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.

1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

F. Shop and Touch-Up Primer: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

G. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Shop fabricate to greatest extent possible.

B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.

C. Develop required camber for members.

2.03 FINISH

A. Prepare structural component surfaces in accordance with SSPC-SP 3.

B. Shop prime Interior structural steel members. Do not prime surfaces that will be field welded, in contact with concrete, or high strength bolted.

C. Galvanize Exterior structural steel members to comply with ASTM A123/A123M. Provide minimum 1.7 oz/sq ft galvanized coating.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

A. Erect structural steel in compliance with AISC 303.

B. Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Field weld components indicated on shop drawings.

D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".

E. Do not field cut or alter structural members without approval of Architect and Structural Engineer.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

G. Grout solidly between bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency, selected by Owner, will perform field quality control tests.

B. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts," testing at least 25 percent of bolts at each connection.

C. Welded Connections: Visually inspect all field-welded connections.

END OF SECTION

SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items, including:

1. Steel Framing and supports for applications where framing and supports are not specified in other Sections.
2. Loose bearing and leveling plates.
3. Steel weld plates and angles for casting into concrete not specified in other Sections.
4. Slotted channel framing.

B. Products furnished, but not installed, under this Section include the following:

1. Countertop support bracket.
2. Loose steel lintels.
3. Anchor bolts, steel pipe sleeves and wedge-type inserts indicated to be cast into concrete or built into masonry.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.

B. Section 04 20 00 - Unit Masonry: Placement of metal fabrications in masonry.

C. Section 06 18 00 - Glue-Laminated Construction: For glue-laminated column and beam connectors.

D. Section 09 91 13 - Exterior Painting: Paint finish.

E. Section 09 91 23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

C. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates 2018.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

E. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.

F. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength 2022.

G. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2020.

H. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification 2021.

I. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).

J. AWS D1.2/D1.2M - Structural Welding Code - Aluminum 2014, with Errata (2020).

K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 2004.

L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic) 2019.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: For the following:

1. Paint products.
2. Grout.

C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

1.05 QUALITY ASSURANCE

A. Design all items requiring structural engineering, including, but not limited to bearing and leveling plates, steel lintels, loose steel lintels, etc. under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.

1.07 COORDINATION

A. Coordinate installation of anchorages for metal fabrications. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

B. Coordinate installation of steel weld plates and angles for casting into concrete and masonry that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A36/A36M.

B. Plates: ASTM A283/A283M.

C. Slotted Channel Fittings: ASTM A1011/A1011M.

D. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

A. Miscellaneous Framing and Supports: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

1. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
    a. Furnish inserts if units are installed after concrete is placed.

B. Plates Not Attached to Structural Framing: For support of masonry; Interior locations, prime paint; exterior locations, galvanize finish.

C. Loose Steel Lintels: Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Weld adjoining members together to form a single unit where indicated.

1. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span but not less than 8 inches, unless otherwise indicated.

2. Galvanize loose steel lintels located in exterior walls.
3. Prime paint loose steel lintels located in interior partitions.

D. Steel Lintels: As detailed; interior locations, prime paint; exterior locations, galvanize finish.

E. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

F. Countertop Support Bracket: Steel angle bracket manufactured from 0.1250-inch (3.18-mm) nominal thickness cold-rolled steel; bracket dimensions as required for countertop depth indicated with 3-inch by 3-inch -45-degree notch that allows for wall cleat and wire run clearance. Provide brackets with 1-1/2-inch forms with multiple 1/4-inch diameter mounting holes per side.

1. Finish: Baked enamel or powder coat.
   a. Color: As selected by Architect from manufacturer's full range.
2. Manufacturers: Subject to compliance with requirements, provide countertop support brackets by one of the following:
   a. Steel Angle Brackets manufactured by Premier Wood Products, Inc. P.O. Box 124, Statesville, NC 28677; Phone: (800) 277-7971.
   b. A & M Hardware, Inc. 400 West Gramby Street, Manheim, PA 17545; Phone: (888) 647-0200.

2.04 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.

2.05 MISCELLANEOUS MATERIALS

A. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

C. Concrete Materials and Properties: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 4000 psi, unless otherwise indicated.

2.06 FINISHES - STEEL

A. Prime paint steel items.

1. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.

B. Prime Painting (Interior Steel Members): Two coats.

C. Galvanizing of Exterior Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

D. Slotted Channel Framing: ASTM A653/A653M, Grade 33.

2.07 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components as indicated on shop drawings.

D. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

F. After erection, prime welds, abrasions, and surfaces not shop primed , except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

3.05 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil (0.05-mm) dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

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SECTION 06 10 00
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural dimension lumber framing.

B. Roof sheathing.

C. Preservative treated wood materials.

D. Miscellaneous framing and sheathing.

E. Communications and electrical room mounting boards.

F. Concealed wood blocking, nailers, and supports.

G. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

A. Section 06 15 00 - Wood Decking.

B. Section 06 17 53 - Shop-Fabricated Wood Trusses.

C. Section 06 18 00 - Glued-Laminated Construction.

D. Section 07 25 00 - Weather Barriers: Water-resistive barrier over sheathing.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2020.

C. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

E. AWPA U1 - Use Category System: User Specification for Treated Wood; 2022.

F. PS 1 - Structural Plywood; 2009 (Revised 2019).

G. PS 20 - American Softwood Lumber Standard; 2021.

H. SPIB (GR) - Grading Rules; 2014.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide technical data on roof sheathing.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: S-dry or MC19.

D. Rafter and Small Beam Framing (2 by 6 through 4 by 16):

1. Machine stress-rated (MSR) as follows:
   a. Fb-single; minimum extreme fiber stress in bending: As indicated on Drawings.
   b. E; minimum modulus of elasticity: As indicated on Drawings.
2. Species and Grades: As indicated on Drawings.

E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:

1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Roof Sheathing: Oriented strand board wood structural panel; PS 2.

1. Grade: As indicated on Drawings.
2. Bond Classification: As indicated on Drawings.
3. Performance Category: As indicated on Drawings.
4. Span Rating: As indicated on Drawings.
5. Edges: Square.

6. Exposure Time: Sheathing will not delaminate or require sanding due to moisture absorption from exposure to weather for up to 500 days.
7. Provide fastening guide on top panel surface with separate markings indicating fastener spacing for 16 inches and 24 inches on center, respectively.
8. Warranty: Manufacturer's standard lifetime limited warranty against manufacturing defects and that panels will not delaminate or require sanding due to moisture absorption damage from exposure to weather for up to the stated period.
9. Products:
   a. Huber Engineered Woods, LLC; AdvanTech Sheathing: www.huberwood.com/#sle.
   b. Georgia Pacific; BlueRibbon OSB Roof Sheathing: www.buildgp.com.

B. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES

A. Fasteners and Anchors:

1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Anchors: Toggle bolt type for anchorage to hollow masonry.

B. Die-Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.

1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.

C. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.

1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.

D. General Purpose Construction Adhesives: Comply with ASTM C557.

1. Products:
   a. Franklin International; Titebond GREENchoice Weatherproof Subfloor Adhesive: www.titebond.com/#sle.

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.

1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:

1. Products:
   a. Lonza Group: www.wolmanizedwood.com/#sle.
   b. Koppers Performance Chemicals, Inc: www.koppersperformancechemicals.com/#sle.
   c. Viance, LLC: www.treatedwood.com/#sle.
2. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
   a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.

b. Treat lumber exposed to weather.
c. Treat lumber in contact with masonry or concrete.
d. Treat lumber in other locations as indicated.

3. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
   a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
   b. Treat plywood in contact with masonry or concrete.
   c. Treat plywood in other locations as indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.

1. At long edges use sheathing clips where joints occur between roof framing members.
2. Nail panels to framing; staples are not permitted.

B. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.

1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.

3.06 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.

B. Allow preservative to dry prior to erecting members.

3.07 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.08 CLEANING

A. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

B. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

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SECTION 06 15 00
WOOD DECKING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glued laminated structural wood decking.

B. Preservative treatment of wood.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Bearing support.

B. Section 09 96 23 - Graffiti Resistant Coatings.

1.03 REFERENCE STANDARDS

A. AITC 109 - Standard for Preservative Treatment of Structural Glued Laminated Timber 2007.

B. AITC 110 - Standard Appearance Grades for Structural Glued Laminated Timber 2001.

C. AITC 111 - Recommended Practice for Protection of Structural Glued Laminated Timber During Transit, Storage and Erection 2005.

D. AITC 113 - Standard for Dimensions of Structural Glued Laminated Timber 2010.

E. AITC A190.1 - American National Standard for Wood Products - Structural Glued Laminated Timber 2007.

F. ASTM D2559 - Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions 2012a (Reapproved 2018).

1.04 SYSTEM DESCRIPTION

A. Design roof live and dead load: As indicated on Drawings with deflection limited to 1/240 of span.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide technical data on wood preservative materials.

C. Shop Drawings: Indicate deck framing system, loads and cambers, bearing details, and framed openings.

1. Include the design engineer's seal and signature on each sheet of shop drawings.

D. Samples of Wood Deck Exposed To View: Submit two samples, 24 by 24 inch in size illustrating wood grain, stain, and finish.

E. Designer's Qualification Statement.

F. Manufacturer's Qualification Statement.

G. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with at least five years of documented experience and certified by AITC.

C. Installer Qualifications: Company specializing in performing work of the type specified in this section, with at least five years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect glue laminated members in accordance with AITC 111 requirements for unwrapped material.

B. Store materials under cover and protected from weather and contact with damp or wet surfaces. Provide for air circulation within and around stacks and under temporary coverings. Stack wood decking with surfaces that are to be exposed in the final Work protected from exposure to sunlight.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Glued Laminated Wood Decking:

1. Disdero Lumber Company: www.lockdeck.com

2.02 WOOD MATERIALS

A. Wood fabricated from old growth timber is not permitted.

B. Glued Laminated Wood Decking: Douglas fir fabricated to comply with AITC A190.1 and AITC 113, laminated with adhesive tested according to ASTM D2559 for wet service; beveled edges, single tongue.

1. Appearance: Fabricate to AITC 110 Architectural grade.
2. After end trimming, seal with penetrating sealer.
3. Decking Nominal Size: 3 x 6-inches.
4. Face Grade: Decorative; Sound knots and natural characteristics are allowed, including chipped edge knots, short end splits, seasoning checks and some pid holes. Face knot holes, stain, end slits, skip, roller split and planer burn are not allowed.
5. Face Surface: Smooth.

2.03 ACCESSORIES

A. Fasteners and Anchors:

1. Fastener Type and Finish: Hot-dipped galvanized steel for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Screws: Bugle head, hardened steel, power driven type, length three times thickness of decking.

B. Adhesive: Waterproof, air cure type, cartridge dispensed.

C. Sealer: Manufacturer's standard product or product recommended by the glue-laminated wood decking manufacturer.

2.04 WOOD TREATMENT

A. Factory-Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.

B. Preservative Pressure Treatment:

1. Manufacturers:
   a. Lonza Group: www.wolmanizedwood.com/#sle.
   b. Osmose Utilities Services, Inc: www.osmose.com/#sle.
   c. Viance, LLC: www.treatedwood.com/#sle.
2. Preservative Pressure Treatment of Glued Laminated Decking: AITC 109 using waterborne preservative to 0.25 lb/cu ft retention.
   a. Kiln dry lumber after treatment and before lamination to maximum moisture content of 19 percent.
3. Marking: Mark each piece with stamp of an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

2.05 FACTORY FINISHING

A. Wiped Stain Finish: Manufacturer's standard, dry-appearance, penetrating acrylic stain and sealer; oven dried and resistant to mildew and fungus.

1. Color: As selected by Architect from manufacturer's full range.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that support framing is ready to receive glue laminated wood decking for compliance with installation tolerances and other conditions affecing performance of laminated wood decking.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 INSTALLATION - BOARD DECKING

A. Install glue laminated wood decking perpendicular to framing members, with ends staggered over firm bearing. On sloped surfaces, lay decking with tongue upward.

B. Fit butt end deck joints occurring between support members with metal splines to maintain tight, aligned joints.

C. Engage decking tongue and groove edges.

D. Secure with manufacturer's proprietary fastener system.

E. Maintain decking joint space of 1/16 inch maximum.

3.04 TOLERANCES

A. Surface Flatness of Decking Without Load: 1/4 inch in 10 feet maximum, and 1/2 inch in 30 feet maximum.

END OF SECTION

SECTION 06 17 53
SHOP-FABRICATED WOOD TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop-fabricated wood trusses.

B. Truss bridging.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Installation requirements for miscellaneous framing.

B. Section 06 10 00 - Rough Carpentry: Material requirements for blocking, bridging, plates, and miscellaneous framing.

1.03 REFERENCE STANDARDS

A. ANSI/TPI 1 - National Design Standard for Metal-Plate-Connected Wood Truss Construction 2014.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

C. SBCA (BCSI) - Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses 2018 (Updated 2020).

1.04 DESIGN REQUIREMENTS

A. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

1. Design Loads: As indicated.
2. Maximum Deflection Under Design Loads:
    a. Roof Trusses: Vertical deflection of 1/240 of span.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.

C. Shop Drawings: Prepared by or under the supervision of a qualified professional engineer licensed in the State where the Project is located. Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.

1. Include identification of engineering software used for design.
2. Provide shop drawings stamped or sealed by design engineer.

D. Product Certificates: For metal-plate-connected wood trusses, signed by officer of truss fabricating firm.

E. Qualification Data: For metal-plate manufacturer, professional engineer, fabricator and Installer.

F. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:

1. Metal-plate connectors.
2. Metal truss accessories.

G. Designer's Qualification Statement.

H. Fabricator's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Perform design by or under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Metal Connector-Plate Manufacturer Qualifications: A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.

1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer licensed in the State where the Project is located.

C. Fabricator Qualifications: Shop that participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 with a minimum five years of documented experience and that involves third-party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

D. Source Limitations for Connector Plates: Obtain metal connector plates from a single manufacturer.

E. Comply with applicable requirements and recommendations of the following publications:

1. TPI 1, "National Design Standard for Metal Plate Connected Wood Truss Construction."
2. TPI DSB, "Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses."
3. TPI HIB, "Commentary and Recommendations for Handling, Installing & Bracing Metal Plate Connected Wood Trusses."

F. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle trusses in accordance with SBCA (BCSI).

1. Store trusses in vertical position resting on bearing ends, off of ground, and adequately supported to prevent lateral bending.
2. Protect trusses from weather by covering with waterproof sheeting, securely anchored.
3. Provide for air circulation around stacks and under coverings.

B. Inspect trusses showing discoloration, corrosion, or other evidence of deterioration. Discard and replace trusses that are damaged or defective.

1.08 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

1.09 COORDINATION

A. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying progress of other trades whose work must follow erection of trusses.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Truss Plate Connectors:

1. Alpine, an ITW Company: www.alpineitw.com/#sle.
2. MiTek Industries, Inc: www.mii.com/#sle.
3. Truswal Systems: www.truswal.com/#sle.
4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Truss Fabricators:

1. Alpine, an ITW Company: www.alpineitw.com/#sle.
2. MiTek Industries, Inc: www.mii.com/#sle.
3. Truswal Systems: www.truswal.com.
4. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 TRUSSES

A. Wood Trusses: Design and fabricate trusses in accordance with ANSI/TPI 1 and to achieve specified design requirements indicated.

1. Species and Grade: As indicated on Drawings.
2. Connectors: Steel plate.
3. Structural Design: Comply with applicable code for structural loading criteria.
4. Roof Deflection: 1/240, maximum.

2.03 MATERIALS

A. Lumber:

1. Moisture Content: Between 7 and 9 percent.
2. Lumber fabricated from old growth timber is not permitted.

B. Steel Connectors: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) Grade 33/230, with G90/Z275 coating; die stamped with integral teeth; thickness as indicated.

C. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.04 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.

1. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot- dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

C. Power-Driven Fasteners: NES NER-272.

D. Wood Screws: ASME B18.6.1.

E. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).

F. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.

H. Anchor Bolts: ASTM F 1554, Grade 36.

1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

2.05 METAL TRUSS ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cleveland Steel Specialty Co.
2. Harlen Metal Products, Inc.
3. Simpson Strong-Tie Co., Inc.
4. USP Structural Connectors.
5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those of products of manufacturers listed. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

C. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: As specified in Section 06 10 00.

D. Fasteners: Hot-dip galvanized steel, type to suit application.

E. Bearing Plates: Hot-dip galvanized steel.

F. Truss Tie-Downs: Bent strap tie for fastening roof trusses to wood bearing plate below, 1-1/2- inches wide by 0.050 inch thick. Tie fasteners to one side of truss, top plates, and side of wood bearing plate below.

G. Roof Truss Clips: Angle clips for bracing bottom chord of roof trusses at non-load-bearing walls, 1-1/4 inches wide by 0.050 inch thick. Clip is fastened to truss through slotted holes to allow for truss deflection.

H. Roof Truss Bracing/Spacers: U-shaped channels, 1-1/2-inches wide by 1-inch deep by 0.040-inch thick, made to fit between 2 adjacent trusses and accurately space them apart, and with tabs having metal teeth for fastening to trusses.

2.06 FABRICATION

A. Fabricate trusses to achieve structural requirements specified.

B. Brace wood trusses in accordance with TPI DSB-89 and BCSI 1.

C. Cut truss members to accurate lengths, angles, and sizes to produce close-fitting joints.

D. Fabricate metal connector plates to sizes, configurations, thicknesses, and anchorage details required to withstand design loads for types of joint designs indicated.

E. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly, joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.

1. Fabricate wood trusses within manufacturing tolerances in TPI 1.

F. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated on shop drawings.

B. Verify that supports and openings are ready to receive trusses.

3.02 PREPARATION

A. Coordinate placement of bearing items.

3.03 ERECTION

A. Install trusses in accordance with manufacturer's instructions, SBCA (BCSI); maintain a copy of applicable documents on site until installation is complete.

B. Set members level and plumb, in correct position.

C. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure plumb, and in true alignment until completion of erection and installation of permanent bracing.

D. Do not field-cut or alter structural members without approval of Architect/Structural Engineer.

E. Install permanent bridging and bracing.

F. Install headers and supports to frame openings required.

G. Frame openings between trusses with lumber in accordance with Section 06 10 00.

H. Space trusses as indicated; adjust and align trusses in location before permanently fastening.

I. Anchor trusses securely at bearing points; use metal truss tie-downs. Install fasteners through each fastener hole in truss accessories according to manufacturer's fastening schedules and written instructions.

J. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.

K. Coordinate placement of decking with work of this section.

3.04 TOLERANCES

A. Framing Members: 1/2 inch maximum, from true position.

3.05 REPAIRS AND PROTECTION

A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA- registered label.

B. Repair damaged galvanized coatings on exposed surfaces with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

END OF SECTION

SECTION 06 18 00
GLUED-LAMINATED CONSTRUCTION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes structural glued-laminated beams and columns

B. Steel hardware and attachment brackets.

1.02 RELATED REQUIREMENTS.

A. Section 06 15 00 - Wood Decking for wood roof decking.

1.03 DEFINITIONS

A. Structural Glued-Laminated (Glulam) Timber: An engineered, stress-rated timber product assembled from selected and prepared wood laminations bonded together with adhesives and with the grain of the laminations approximately parallel longitudinally.

1.04 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design structural glued-laminated timber and connectors, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Structural glued-laminated timber and connectors shall withstand the effects of structural loads shown on Drawings without exceeding allowable design working stresses listed in AITC 117 or determined according to ASTM D 3737 and acceptable to authorities having jurisdiction.

1.05 SUBMITTALS

A. Product Data: For each type of product indicated.

1. Include data on lumber, adhesives, fabrication, and protection.
2. For preservative-treated wood products, include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.
3. For connectors, include installation instructions.

B. Shop Drawings:

1. Show layout of structural glued-laminated timber system and full dimensions of each member.
2. Indicate species and laminating combination, adhesive type, and other variables in required work.
3. Include large-scale details of connections.

C. Samples: Full width and depth, 24 inches long, showing the range of variation to be expected in appearance of structural glued-laminated timber, including variations due to specified treatment.

1. Apply specified factory finish to three sides of half length of each Sample.

D. Delegated-Design Submittal: For structural glued-laminated timber and timber connectors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

E. Certificates of Conformance: Issued by a qualified testing and inspecting agency indicating that structural glued-laminated timber complies with requirements in AITC A190.1.

F. Material Certificates: For preservative-treated wood products, from manufacturer. Indicate type of preservative used and net amount of preservative retained. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

G. Research/Evaluation Reports: For structural glued-laminated timber and timber connectors, from .

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide factory-glued structural units produced by an AITC- or APA-licensed firm that is certified for chain of custody by an FSC-accredited certification body.

1. Factory mark each piece of structural glued-laminated timber with AITC Quality Mark or APA-EWS trademark. Place mark on surfaces that will not be exposed in the completed Work.

B. Quality Standard: Comply with AITC A190.1.

1.07 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with provisions in AITC 111.

B. Individually wrap members using plastic-coated paper covering with water-resistant seams.

PART 2 PRODUCTS

2.01 STRUCTURAL GLUED-LAMINATED TIMBER

A. General: Provide structural glued-laminated timber that complies with AITC 117 or research/evaluation reports acceptable to authorities having jurisdiction.

1. Provide structural glued-laminated timber made from solid lumber laminations; do not use laminated veneer lumber.
2. Provide structural glued-laminated timber made with wet-use adhesive complying with ASTM D 2559.
   a. Use adhesive that contains no urea-formaldehyde resins.

B. Species and Grades for Structural Glued-Laminated Timber: Douglas fir-larch in grades needed to comply with "Performance Requirements" Article.

C. Species and Grades for Beams:

1. Species and Beam Stress Classification: Douglas fir-larch or southern pine, 24F-1.8E.
2. Lay-up: Either balanced or unbalanced.
3. Species and Combination Symbol: .

D. Species and Grades for Columns:

1. Species and Combination Symbol: Douglas fir-larch, 1.

E. Appearance Grade: Architectural, complying with AITC 110.

F. Preservative Treatment after Fabrication: Where preservative-treated structural glued-laminated timber is indicated, pressure treat after fabrication according to AWPA C28.

1. Use oxine copper (copper-8-quinolinolate) in a light petroleum solvent.

G. End Sealer: Manufacturer's standard, transparent, colorless wood sealer that is effective in retarding the transmission of moisture at cross-grain cuts and is compatible with indicated finish.

H. Penetrating Sealer: Manufacturer's standard, transparent, penetrating wood sealer that is compatible with indicated finish.

2.02 TIMBER CONNECTORS

A. General: Unless otherwise indicated, fabricate from the following materials:

1. Structural-steel shapes, plates, and flat bars complying with ASTM A 36/A 36M.
2. Round steel bars complying with ASTM A 575, Grade M 1020.
3. Hot-rolled steel sheet complying with ASTM A 1011/A 1011M, Structural Steel, Type SS, Grade 33.

B. Fabricate beam seats from steel with 3/16-inch bearing plates, 3/4-inch- diameter-by-12-inch-long deformed bar anchors, and 0.239-inch side plates.

C. Fabricate beam hangers from steel with 0.179-inch stirrups and 0.239-inch top plates.

D. Fabricate strap ties from steel, 2-1/2 inches wide by 0.179 inch thick.

E. Fabricate tie rods from round steel bars with upset threads connected with forged-steel turnbuckles complying with ASTM A 668/A 668M.

F. Provide bolts, 3/4 inch unless otherwise indicated, complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); nuts complying with ASTM A 563 (ASTM A 563M); and, where indicated, flat washers.

G. Provide shear plates, 2-5/8 inches in diameter, complying with ASTM D 5933.

H. Finish steel assemblies and fasteners with rust-inhibitive primer, 2-mil dry film thickness.

I. Hot-dip galvanize steel assemblies and fasteners after fabrication to comply with ASTM A 123/A 123M or ASTM A 153/A 153M.

2.03 FABRICATION

A. Camber: Fabricate horizontal and inclined members of less than 1:1 slope with either circular or parabolic camber equal to 1/500 of span.

B. End-Cut Sealing: Immediately after end cutting each member to final length[and after preservative treatment], apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces flood coated for not less than 10 minutes.

C. Seal Coat: After fabricating, sanding, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on surfaces of each unit, except for preservative-treated wood where treatment included a water repellent.

2.04 FACTORY FINISHING

A. Wiped Stain Finish: Manufacturer's standard, dry-appearance, penetrating acrylic stain and sealer; oven dried and resistant to mildew and fungus.

1. Color: As selected by Architect from manufacturer's full range.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates in areas to receive structural glued-laminated timber, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of structural glued-laminated timber.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Erect structural glued-laminated timber true and plumb, and with uniform, close-fitting joints. Provide temporary bracing to maintain lines and levels until permanent supporting members are in place.

1. Lift with padded slings and protect corners with wood blocking.
2. Install structural glued-laminated timber to comply with Shop Drawings.
3. Install timber connectors as indicated.

B. Cutting: Avoid cutting after fabrication. Where field fitting is unavoidable, comply with requirements for shop fabrication.

1. Where preservative-treated members must be cut during erection, apply a field-treatment preservative to comply with AWPA M4.
   a. Use inorganic boron (SBX) treatment for members not in contact with the ground and continuously protected from liquid water.

3.03 ADJUSTING

A. Repair damaged surfaces and finishes after completing erection. Replace damaged structural glued-laminated timber if repairs are not approved by Architect.

3.04 PROTECTION

A. Do not remove wrappings on individually wrapped members until they no longer serve a useful purpose including protection from weather, sunlight, soiling, and damage from work of other trades.

1. Coordinate wrapping removal with finishing work specified in Division 09. Retain wrapping where it can serve as a painting shield.

END OF SECTION

SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Hardware.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Countertop support bracket.

B. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

C. Section 12 36 00 - Countertops.

1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard 2022.

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).

C. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

D. BHMA A156.9 - Cabinet Hardware 2020.

E. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
2. Provide information as required by AWI/AWMAC/WI (AWS).

C. Product Data: Provide data for hardware accessories.

D. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.

E. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
2. Single Source Responsibility: Provide and install this work from single fabricator.

B. Quality Certification:

1. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) requirements for grade or grades specified.
2. Provide designated labels on shop drawings as required by certification program.
3. Provide designated labels on installed products as required by certification program.
4. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.
5. Replace, repair, or rework all work for which certification is refused.

1.07 MOCK-UPS

A. Provide mock-up of typical base cabinet, wall cabinet, and countertop, including hardware, finishes, and plumbing accessories.

B. Locate where directed.

C. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.09 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 MANUFACTURERS / FABRICATORS

A. Subject to compliance with requirements, Manufacturers / Fabricators that may be incorporated into the Work include, but and not limited to the following:

1. O'Keefe Inc. 611 Highland Drive, River Falls, Wisconsin 54022; Phone: (715) 425-8981: www.okeefewood.com.
2. Interior Components Group; 1045 - 33rd Street, South, St. Cloud MN 56301; Phone: (320) 230-9525, Fax: (320) 230-9527.
3. A-Cab Custom Woodworking; 30701 Pearl Drive, Suite 3, St. Joseph, mn 56374; Phone: (320) 363-0051, Fax: (320) 363-0052; Email: info@acabcustom.com.
4. Brenny Custom Cabinets, Inc; 2793 - 65th Avenue, Saulk Rapids, MN 56379; Phone: (320) 253-8340, Fax: (320) 220-3812.

B. Single Source Responsibility: Provide and install this work from single fabricator.

2.02 CABINETS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom grade.

C. Cabinets at Kitchen 107:

1. Finish - Exposed Exterior Surfaces: Decorative laminate.
2. Finish - Exposed Interior Surfaces: Thermally fused laminate (TFL).
3. Finish - Semi-Exposed Surfaces: Decorative laminate
4. Finish - Concealed Surfaces: Manufacturer's option.
5. Door and Drawer Front Edge Profiles: Square edge with thick applied band.
6. Door and Drawer Front Retention Profiles: Fixed panel.
7. Casework Construction Type: Type A - Frameless.
8. Interface Style for Cabinet and Door: Style 1 - Overlay; flush overlay.
9. Layout for Cabinet and Door Fronts: Flush panel.
10. Cabinet Design Series: As indicated on drawings.
11. Adjustable Shelf Loading: 50 psf.
    a. Deflection: L/144.
12. Cabinet Style: Flush overlay.
13. Cabinet Doors and Drawer Fronts: Flush style.
14. Drawer Side Construction: Multiple-dovetailed.
15. Drawer Construction Technique: Dovetail joints.

2.03 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

2.04 PANEL CORE MATERIALS

A. Particleboard: Composite panel composed of cellulosic particles, additives, and bonding system; comply with ANSI A208.1.

1. Grade: M-2; moisture resistance: MR10.
2. Panel Thickness: 1/2 inch.
3. Products: Subject to compliance with requirements, manufacturers that may be incorporated into the Work include, but are not limited to the following:
    a. Roseburg Forest Products; Particleboard: www.roseburg.com/#sle.

2.05 THERMALLY FUSED LAMINATE PANELS

A. Thermally Fused Laminate (TFL): Melamine- or polyester-resin-saturated decorative papers; for fusion to composite wood substrates under heat and pressure.

1. Test in accordance with NEMA LD 3 Section 3.
2. Panel Core Substrate: Particleboard.
3. Color: As selected from manufacturer's standard range of colors.
4. Products: Subject to compliance with requirements, manufacturers that may be incorporated into the Work include, but are not limited to the following:
    a. Roseburg Forest Products; Thermally Fused Laminate: www.roseburg.com/#sle.
    b. Wilsonart LLC; Thermally Fused Laminate Panels: www.wilsonart.com/#sle.

2.06 LAMINATE MATERIALS

A. Manufacturers:

1. Arborite: www.arborite.com/#sle.
2. Formica Corporation: www.formica.com/#sle.
3. Panolam Industries International, Inc: www.panolam.com/#sle.
4. Wilsonart LLC: www.wilsonart.com/#sle.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.

C. Provide specific types as follows:

1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, color as selected, satin finish.
2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, color as selected, satin finish.
3. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, color as selected, textured low gloss finish.
4. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.07 COUNTERTOPS

A. Countertops: See Section 12 36 00.

2.08 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Fasteners: Size and type to suit application.

C. Concealed Joint Fasteners: Threaded steel.

D. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

2.09 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, satin chrome finish, for nominal 1 inch spacing adjustments.

C. Drawer and Door Pulls: "U" shaped wire pull, aluminum with satin finish, 4 inch centers.

D. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with satin finish.

E. Cabinet Catches:

1. Type: Magnetic catch.
2. Manufacturers:
   a. Knape & Vogt Manufacturing Company: www.knapeandvogt.com/#sle.
   b. Sugatsune America, Inc: www.sugatsune.com/#sle.

F. Drawer Slides:

1. Type: Full extension.
2. Static Load Capacity: Heavy Duty grade.
3. Mounting: Side mounted.
4. Stops: Integral type.
5. Features: Provide self closing/stay closed type.
6. Manufacturers:
   a. Accuride International, Inc; Heavy-Duty Drawer Slides: www.accuride.com/#sle.
   b. Blum, Inc; MOVENTO: www.blum.com/#sle.
   c. Knape & Vogt Manufacturing Company; Heavy-Duty Drawer Slides: www.knapeandvogt.com/#sle.

G. Drawer Systems: Integrated drawers and slides.

1. Side Type: Single wall.

2. Extension Type: Full extension.
3. Static Load Capacity: Heavy Duty grade.
4. Mounting: Side mounted.
5. Stops: Integral type.
6. Features: Provide self closing/stay closed and white epoxy finish type.

H. Hinges: European style concealed self-closing type, steel with satin finish.

1. Manufacturers:
   a. Liberty 35-mm, 105-degree, soft close, ½-inch overlay hinge; Part No. H1530SL-NP-U; Finish: Satin Nickel.

2.10 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.

1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

C. Use fixture attachments in concealed locations for wall mounted components.

D. Use concealed joint fasteners to align and secure adjoining cabinet units.

E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

F. Secure cabinets to floor using appropriate angles and anchorages.

G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

H. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation.

3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

SECTION 06 83 16
FIBERGLASS REINFORCED PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiberglass reinforced plastic panels.

B. Trim.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. 9 CFR 416.2 - Regulatory Requirements Under the Federal Meat Inspection Act and the Poultry Products Inspection Act, Part 416-Sanitation current edition.

B. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2021.

C. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels 2017.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.

E. FM 4880 - Evaluating the Fire Performance of Insulated Building Panel Assemblies and Interior Finish Materials 2017.

F. ISO 846 - Plastics - Evaluation of the Action of Microorganisms 2019.

G. ISO 2812-1 - Paints and Varnishes -- Determination of Resistance to Liquids -- Part 1: Immersion in Liquids Other than Water 2017.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Samples: Submit two samples 6 by 6 inch in size illustrating material and surface design of panels.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements.
2. Extra Panels: Quantity equal to 5 percent of total installed.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. (FRP1) - Fiberglass Reinforced Plastic Panels:

1. Basis of Design: Subject to compliance with requirements, provide Panolam Panolam; Product Panolam FRP Embossed Wall Panels. Comparable product by one of the following may be considered:
   a. Crane Composites, Inc; Glasbord with Surfaseal: www.cranecomposites.com/#sle.
   b. Marlite, Inc; Standard FRP Wall Panels: www.marlite.com/#sle.
   c. Glasteel; Product "Wall Liner Panels": www.glasteel.com.

2.02 PANEL SYSTEMS

A. Wall Panels:

1. Panel Size: 4 by 8 feet.
2. Panel Thickness: 0.09 inch.
3. Surface Design: Embossed.
4. Color: As selected by Architect from manufacturer's full range of standard colors.
5. Attachment Method: Adhesive only, with trim and sealant in joints.

2.03 MATERIALS

A. Panels: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.

1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.
2. Class 1 fire rated when tested in accordance with FM 4880.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
4. Sanitation and Cleanability: Comply with 9 CFR 416.2.
5. Chemical Cleanability: Excellent chemical resistance to common cleaners and detergents when tested in accordance with ISO 2812-1.
6. Biological Resistance: Rating of 0, when tested in accordance with ISO 846.
7. Surface Texture: Pebbled.

B. Trim: Vinyl; color coordinating with panel.

C. Adhesive: Type recommended by panel manufacturer.

D. Sealant: Type recommended by panel manufacturer; white.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions and substrate flatness before starting work.

B. Verify that substrate conditions are ready to receive the work of this section.

3.02 INSTALLATION - WALLS

A. Install panels in accordance with manufacturer's instructions.

B. Cut and drill panels with carbide tipped saw blades, drill bits, or snips.

C. Apply adhesive to the back side of the panel using trowel as recommended by adhesive manufacturer.

D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.

E. Install panels with manufacturer's recommended gap for panel field and corner joints.

F. Place trim on panel before fastening edges, as required.

G. Fill channels in trim with sealant before attaching to panel.

H. Install trim with adhesive and screws or nails, as required.

I. Seal gaps at floor, ceiling, and between panels with applicable sealant to prevent moisture intrusion.

J. Remove excess sealant after paneling is installed and prior to curing.

3.03 CLEANING

A. Clean components of foreign material without damaging finished surface.

B. Clean components in accordance with manufacturer's instructions.

3.04 PROTECTION

A. Place manufacturer recommended protective covering over installed units. Remove protection after Date of Substantial Completion or when directed by Architect.

END OF SECTION

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SECTION 07 19 00
WATER REPELLENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water repellents applied to exterior, cast stone masonry, and manufactured stone veneer surfaces.

1.02 RELATED REQUIREMENTS

A. Section 04 72 00 - Cast Stone Masonry.

B. Section 04 73 00 - Manufactured Stone Veneer.

C. Section 07 90 00 - Joint Sealers.

D. Section 09 96 23 - Graffiti Resistant Coatings.

1.03 REFERENCE STANDARDS

A. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units 2022b.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a meeting at least one week prior to starting work; require attendance of affected installers; invite Architect and Owner.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide product description, details of tests performed, limitations, and chemical composition.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention; cautionary procedures required during application.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Field Reports: Report whether manufacturer's "best practices" are being followed; if not, state corrective recommendations. Email report to Architect the same day as inspection occurs; mail report on manufacturer's letterhead to Architect within 2 days after inspection.

F. Manufacturer's Qualification Statement.

G. Installer's Qualification Statement.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Water Repellent Material: Two gallons of type installed.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience and approved by manufacturer.

C. Verify that the water repellent products are compatible with the graffiti resistant coating products specified in Section - 09 96 23.

D. Owner reserves the right to provide continuous independent inspection of surface preparation and application of water repellent.

1.07 MOCK-UPS

A. Prepare representative surface 36 by 36 inches in size using specified materials and preparation and application methods on surfaces identical to those to be coated; approved mock-up constitutes standard for workmanship.

B. For proposed substitutions, prepare side-by-side mock-ups of specified and substitute products.

C. Locate where directed.

D. Mock-up may remain as part of work.

1.08 FIELD CONDITIONS

A. Protect liquid materials from freezing.

B. Do not apply water repellent when ambient temperature is lower than 50 degrees F or higher than 100 degrees F.

C. Do not apply under windy conditions which may result in uncontrolled and excessive water repellent drift.

D. Do not apply earlier than 24 hours after rain or if rain is predicted for a period of 8 hours after application, unless otherwise indicated by manufacturer's written instructions.

1.09 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Silane, Siloxane, Silane-Siloxane Blend, and Siliconate Water Repellents:

1. BASF Construction Chemicals: www.buildingsystems.basf.com/#sle.
2. PROSOCO, Inc: www.prosoco.com/#sle.
3. Tnemec Company, Inc: www.tnemec.com/#sle.
4. L&M Construction Chemicals, Inc: www.lmcc.com.

2.02 MATERIALS

A. Water Repellent: Non-glossy, colorless, penetrating, water-vapor-permeable, non-yellowing sealer, that dries invisibly leaving appearance of substrate unchanged.

1. Applications: Vertical surfaces and non-traffic horizontal surfaces.
2. Number of Coats: Two.

3. Moisture Absorption When Applied to Masonry: Five percent, maximum, when tested in accordance with ASTM C140/C140M using masonry sample completely coated with water repellent.
4. Maintains dry appearance when wetted.
5. Silane, siloxane, silane-siloxane blend, or siliconate that reacts chemically with concrete and masonry.
    a. Manufacturers:
        1) Master Builders; MasterProtect H 185: www.master-builders-solutions.com/en-us.
        2) Master Builders; MasterProtect H 440 VT: www.master-builders-solutions.com/en-us.
        3) PROSOCO, Inc; Consolideck SL100 Water Repellent, with VOC of 400 g/L or less: www.prosoco.com/#sle.
        4) Tnemec Inc; Prime-A-Pell Plus V662, with VOC of 400 g/L or less: www.tnemec.com/#sle.
        5) Tnemec Inc; Prime-A-Pell Plus 662: www.tnemec.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify joint sealants are installed and cured.

C. Verify surfaces to be coated are dry, clean, and free of efflorescence, oil, or other matter detrimental to application of water repellent.

3.02 PREPARATION

A. Protection of Adjacent Work:

1. Protect adjacent landscaping, property, and vehicles from drips and overspray.
2. Protect adjacent surfaces not intended to receive water repellent.

B. Prepare surfaces to be coated as recommended by water repellent manufacturer for best results.

C. Do not start work until masonry mortar substrate is cured a minimum of 60 days.

D. Remove loose particles and foreign matter.

E. Remove oil and foreign substances with a chemical solvent that will not affect water repellent.

F. Scrub and rinse surfaces with water and let dry.

G. Allow surfaces to dry completely to degree recommended by water repellent manufacturer before starting coating work.

3.03 APPLICATION

A. Apply water repellent in accordance with manufacturer's instructions, using procedures and application methods recommended as producing the best results.

B. Apply at rate recommended by manufacturer, continuously over entire surface.

C. Apply two coats, minimum.

D. Remove water repellent from unintended surfaces immediately by a method instructed by water repellent manufacturer.

E. Provide manufacturer's field service representative to inspect preparation and application work continuously during entire application period to ensure that manufacturer's "best practices" for preparation and application are being followed.

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Foam Board insulation at perimeter foundation wall and underside of floor slabs.

B. Foamed-in-place insulating sealant for filling perimeter window and door shim spaces.

1.02 RELATED REQUIREMENTS

A. Section 07 21 13.13-HUNTER - Foam Board Insulation: Continuous insulation composite panels for exterior masonry walls.

B. Section 07 21 26 - Blown Insulation: Blown-in, gravity-held fibrous insulation.

C. Section 07 25 00 - Weather Barriers: Seperate air and moisture barrier materials.

1.03 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2022.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Include information on installation techniques.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.

B. Insulation at Perimeter of Foundation: Extruded polystyrene board.

2.02 FOAM BOARD INSULATION MATERIALS

A. Extruded Polystyrene Board Insulation (Foundation Walls and Under Floor Slabs): Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:

1. Type: ASTM C578, Type IV.
2. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
4. Board Size: 48 x 96 inch.
5. Board Thickness: 2 inches.
6. Board Edges: Square.
7. Compressive Resistance: 25 psi.
8. Board Density: 1.6 lb/cu ft.
9. Water Absorption, Maximum: 0.3 percent, by volume.
10. Manufacturers:
    a. Dow Chemical Company; STYROFOAM Brand SM: www.dow.com/sle.
    b. Kingspan Insulation LLC; GreenGuard XPS TYPE IV 25 PSI: www.trustgreenguard.com/#sle.
    c. Owens Corning Corporation; FOAMULAR Extruded Polystyrene (XPS) Insulation: www.ocbuildingspec.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 FOAMED-IN-PLACE INSULATING SEALANT

A. Multi-purpose, UL classified, straw foam, one-component, low-expanding polyurethane foam.

B. Manufacturers:

1. Dow Chemical Company; Product Great Stuff Pro Gaps and Cracks Insulating Foam Sealant.
2. BASF; Product: Product Zerodraft.
3. Hilti North America; Product Hilti CF 812 Air Sealer.
4. Substitutions: See Market & Johnson's Section 01 65 00 - Material and Equipment.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of irregularities or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

A. Apply adhesive to back of boards:

1. Three continuous beads per board length.

B. Install boards horizontally on foundation perimeter.

1. Place boards to maximize adhesive contact.
2. Install in running bond pattern.
3. Butt edges and ends tightly to adjacent boards and to protrusions.

C. Extend boards over expansion joints, unbonded to foundation on one side of joint.

D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

E. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.

1. Apply adhesive in five continuous beads per board length.
2. Install boards horizontally from base of foundation to top of insulation.
3. Butt boards tightly, with joints staggered from insulation joints.

3.03 BOARD INSTALLATION UNDER CONCRETE SLABS

A. Place insulation under slabs on grade after base for slab has been compacted.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.04 INSTALLATION OF FOAMED-IN-PLACE INSULATING SEALANT

A. Apply foamed-in-place insulating sealant in accordance with manufacturer's instructions.

B. Install at perimeter of window and door shim spaces in exterior walls.

C. Apply foamed-in-place insulating sealant by spray method, to a uniform monolithic density without voids.

D. Patch damaged areas.

3.05 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

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SECTION 07 21 13.13
FOAM BOARD INSULATION - HUNTER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Continuous Insulation Composite Panels for exterior masonry walls.

B. Water Resistant Barrier.

C. Accessories.

1.02 RELATED SECTIONS

A. Section 04 20 00 - Unit Masonry.

1.03 REFERENCE STANDARDS

A. ASTM C209 - Standard Test Methods for Cellulosic Fiber Insulating Board; 2020.

B. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.

C. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2022.

D. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2016.

E. ASTM D2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging; 2020.

F. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

H. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022.

I. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2019.

J. PS 2 - Performance Standard for Wood Structural Panels; 2018.

1.04 DESIGN REQUIREMENTS

A. Perform work in accordance with all federal, state and local codes.

B. Physical properties (Foam Core):

1. Flame Spread Index: ASTM E 84; less than 75
2. Smoke Developed: ASTM E 84; less than 450.
3. Compressive Strength: ASTM D 1621; Grade 2 (20psi / 138 kPa) or Grade 3 (25psi / 172 kPa).
4. Dimensional Stability: ASTM D 2126, 2 percent linear change (7 days).

5. Moisture Vapor Permeance: ASTM E 96, less than 1 perm (57.5ng/(Pa•s•m2)).
6. Water Absorption: ASTM C 209, less than 0.1 percent by volume.
7. Service Temperature: Minus 100 degrees to 250 degrees F (Minus 73 degrees C to 122 degrees C).
8. Resistance to Mold: ASTM D 3273 Passed (10).
9. 3rd Generation Zero ODP Blowing Agent; Contains zero CFCs, HCFCs, or HFC; Virtually no Global Warming Potential (GWP).

C. OSB or Plywood substrate:

1. Flame Spread Index: ASTM E84; less than 75.
2. Smoke Developed: ASTM E84; less than 450
3. Plywood is 5-ply CDX.

D. ASTM C1289 Type V panel (foam core is Type 2, Class 2).

E. Hunter Panels Xci NB is evaluated and listed under DrJ TER 1508-01. Test include:

1. Structural shearwall attachment of Xci NB to wood studs. Limited panel thicknesses for this application.

F. Hunter Panels Xci NB has passed the following:

1. Meets the current continuous insulation standards of ASHRAE 90.1, IECC, and IBC Chapter 26.
2. UL 263 Time-Rated Assemblies

1.05 SUBMITTALS

A. Product Data: Provide data on product characteristics, performance criteria, product limitations, and including the following.

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.

B. Manufacturer's Installation Instructions: Include information on installation techniques and environmental conditions required for installation.

C. Fastening Guidelines: Manufacturer’s 3rd party engineering evaluations for attachment of Xci Ply, including:

1. DrJ TER 2102-05: For all non-structural applications of Xci Ply to wood and steel studs, concrete, and CMU. (state-specific stamped reports available).

D. Manufacturer's Certificate: Certify panels will conform to specified performance requirements.

1.06 MOCK-UPS

A. Construct mock-up of insulation and accessories; size and location as directed.

B. Mock-up may remain as part of work.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer shall be a company that regularly manufactures and assembles specified insulation in house with no outside fabrication operations.

B. Pre-Installation Meeting: Convene minimum one week prior to commencing Work of this section. Review installation procedures and coordination required with Related Work and the following:

1. Participants: Authorized representatives of the Contractor, Architect, Installer, and Manufacturer.
2. Review wall assemblies for potential interference and conflicts and coordinate layout and support provisions for interfacing work.
3. Review continuous insulation wall panels installation methods and procedures related to application, including manufacturer's installation guidelines.
4. Review firestopping requirements and weather resistive membrane requirements and placement locations.
5. Review field quality control procedures.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Good construction practice dictates that all insulations should be protected from moisture and direct sunlight during job-site storage. Pallets of Hunter Panels Xci NB are protected with a two-step packaging process using stretch wrap and a UV resistant polyethylene bag. This moisture resistant package is designed for protection from the elements during flatbed shipment from our factories to the job-site. Outdoor storage for extended periods of time requires waterproof tarpaulins and elevated storage above ground level a minimum of 2". Additionally, we recommend slitting the bundle packaging vertically down the center of the two short sides to prevent moisture accumulation within the package.

1.09 SEQUENCING

A. Coordinate with the installation of water resistant barrier materials specified this Section.

B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 FIELD CONDITIONS

A. Protect materials from moisture and direct sunlight. Elevate packages above ground. Slit shrink wrap and poly packaging to prevent moisture accumulation within package. Cover with waterproof tarpaulins.

B. Do not install insulation tapes, sealant, or adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Xci NB produced by Hunter Panels, 15 Franklin Street, Portland, Maine 04101. Phone: (207) 761-5678 or (888) 746-1114. Fax: (717) 960-1611. E-mail: info@hpanels.com: www.hunterpanels.com/#sle.

B. Substitutions: Not permitted.

2.02 FOAM BOARD INSULATION MATERIALS

A. Polyisocyanurate Foam - Composite Panel-Insulation Board:

1. Polyisocyanurate foam bonded to coated-glass facer on one side and wood structural panel on the other.
2. OSB Structural Panel: 7/16 inch thick, complying with PS 2.
   a. Composite Thickness and R-value at 75 Degrees F, ASTM C518: As indicated on drawings.
3. Foam Insulation: Comply with ASTM C1289.
4. Compressive Strength, ASTM D1621: Grade 2, 20 psi, minimum.
5. Moisture Vapor Permeance, ASTM E96/E96M: Less than 1.1 perm.
6. Flame Spread Index, ASTM E84: Less than 75.
7. Smoke Developed Index, ASTM E84: Less than 450.
8. Basis of Design: Hunter Panels; Xci NB: www.hunterpanels.com/#sle.

2.03 WATER RESISTANT BARRIER (WRB)

A. Vapor permeable barrier recommended for exterior of Xci NB panels (10-60 perms).

B. Basis of Design: Xci VP-SA-WRB, vapor permeable air and water resistive barrier available from Hunter Panels.

2.04 ACCESSORIES

A. Provide insulation manufacturer's recommended accessories for complete installation.

B. Sealant:

1. As recommended by Hunter Panels.

C. Tape:

1. As recommended by Hunter Panels.

D. Adhesive: Low-VOC contact adhesive.

1. Hunter Panels; Cav-Grip: www.hunterpanels.com/#sle.

E. Fasteners for Foam Insulation:

1. Provide screw-type fasteners with washers, approved by panel manufacturer.

F. Fasteners for Composite Board: Provide screw fasteners, type approved by panel manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until walls to receive insulation have been properly prepared and, where required, inspected or approved before covering.

B. Verify substrate surfaces are flat, free of irregularities or materials or substances that may impede adhesive bond.

C. Verify construction is complete and approved and ready for installation of insulation.

D. Verify mechanical and electrical services in walls have been installed and tested and, if appropriate, verify that adjacent materials and finishes are dry and ready to receive insulation.

E. If wall assembly preparation is responsibility of another installer, notify Architect.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under project conditions.

3.03 INSTALLATION - GENERAL

A. Install in accordance with manufacturer's instructions.

B. Install without gaps or voids. Do not compress insulation.

C. Fit insulation tight to exterior side of mechanical and electrical services within plane of insulation.

D. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

E. Ensure overall installation presents flush, level surface.

F. Tape joints between insulation panels to form continuous air-vapor-thermal control layer.

G. Tape perimeter of insulation that abuts adjacent materials to form continuous air-vapor-thermal control layer.

3.04 INSTALLATION OF COMPOSITE BOARD INSULATION AT EXTERIOR WALLS

A. Arrange panels with long dimension parallel or perpendicular to wall studs, with ends over firm bearing. Stagger vertical joints between courses by one or more studs.

B. Locate panel edges over solid framing members unless otherwise required or permitted.

C. Observe fastening pattern indicated in Contract Documents or, if none indicated, observe board manufacturer's recommendations.

D. Use maximum board lengths to minimize joints.

E. Install moisture resistant barrier over insulation panels as specified in this Section.

F. Hunter Panels Xci Ply NB is not intended to be left exposed for extended periods of time. During the time between the installation of the Xci NB and the application of the exterior cladding it is recommended that the WRB be installed as soon as possible. If the WRB is not being installed right away it is recommended that the Xci NB be protected from excess moisture and UV. All unfaced foam exposed directly to daylight can be taped with a compatible waterproof tape and the edges of the boards can be buttered with a compatible sealant.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Do not allow UV exposure of panels beyond manufacturer's recommended limits.

C. Protect insulation from open flame.

D. Cover top and edges of unfinished wall panel work to protect it from weather and to prevent accumulation of water in cores of panels.

E. If panels become wet inadvertently, allow wet panels to completely dry prior to application of subsequent coverings.

F. Repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07 21 26
BLOWN INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Attic: Loose insulation pneumatically placed through access holes.

1.02 RELATED REQUIREMENTS

A. Section 07 26 00 - Vapor Retarders: For vapor retarder applied to the interior face of attic framing.

1.03 REFERENCE STANDARDS

A. ASTM C739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation 2021a.

B. ASTM C764 - Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation 2019.

C. ASTM C1015 - Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation 2017.

1.04 SYSTEM DESCRIPTION

A. Materials of This Section: Provide continuity of thermal barrier at building enclosure elements .

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide data on product characteristics, performance criteria, and limitations.

C. Certificates: Certify that products of this section meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Indicate procedure for preparation and installation.

E. Certificates: Certify that products of this section meet or exceed specified requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Blown Insulation:

1. CertainTeed Corporation; Product TrueComfort Blow-in Fiber Glass Insulation: www.certainteed.com.
2. GreenFiber; Product Cocoon2 Stabilized Insulation INS 515LD: www.greenfiber.com.
3. International Cellulose Corp; Product Cebar: www.spray-on.com.
4. Johns Manville; Product Product Climate Pro Blow-in Loose-fill Fiber Glass Insulation: www.jm.com.

2.02 MATERIALS

A. Applications: Provide blown insulation in attic, exterior walls, and ceiling as indicated on drawings.

B. Blown Insulation: ASTM C764, and ASTM C739 Fiberglass or Cellulosic type, nodulated for pour and bulk for pneumatic placement.

1. Thermal Transmittance (U-value): 0.27 BTU/hr sq ft deg F, maximum.
2. Installed Thickness: As indicated on drawings for required R-value.

C. Ventilation Baffles: Formed plastic.

2.03 ACCESSORIES

A. Roof Ventilation Baffles: Prefabricated ventilation channels for placement under roof sheathing with baffles to prevent wind-washing.

1. Material: Polyvinyl chloride (PVC).
2. Roof Joist/Truss Spacing: 24 inch on center, nominal.
3. Manufacturers:
   a. Brentwood Industries, Inc; AccuVent Original: www.brentwoodindustries.com/#sle.
   b. Berger Building Products, Inc: AccuVent Attic Ventilation: www.bergerbp.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate and adjacent materials are dry and ready to receive insulation.

B. Verify that light fixtures have thermal cut-out device to restrict over-heating in soffit or ceiling spaces.

C. Verify spaces are unobstructed to allow for proper placement of insulation.

3.02 INSTALLATION

A. Install insulation and ventilation baffle in accordance with ASTM C1015 and manufacturer's instructions.

B. Place insulation pneumatically to completely fill truss spaces.

C. Place insulation against baffles, and do not impede natural attic ventilation to soffit.

D. Completely fill intended spaces leaving no gaps or voids.

E. Repair and reseal insulation access ports, and refinish to match adjacent work.

F. Provide measuring strips within attic space for visual determination of insulation depth (verify quantity and location w/ manufacturer and local governing authority.)

3.03 CLEANING

A. Remove loose insulation residue.

3.04 SCHEDULES

A. Attic Spaces: Pneumatically place blown insulation between ceiling joists in attic space to achieve an R-value of 49.

END OF SECTION

SECTION 07 25 00
WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water-resistive barriers.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-In-Place Concrete.

B. Section 04 20 00 - Unit Masonry.

C. Section 07 21 13.13-HUNTER - Foam Board Insulation - HUNTER: Weather barrier for continuous insulation composite panels.

1.03 DEFINITIONS

A. Weather Barriers: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.

B. Water-Resistive Barrier: A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.

1.04 REFERENCE STANDARDS

A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).

B. ASTM D751 - Standard Test Methods for Coated Fabrics; 2019.

C. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds; 1998 (Reapproved 2017).

D. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2021.

E. ASTM D5590 - Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated Four-Week Agar Plate Assay; 2017 (Reapproved 2021).

F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2022.

G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2022.

H. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.

I. ICC-ES AC212 - Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing; 2015.

J. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2019.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide data on material characteristics.

C. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.06 MOCK-UPS

A. Construct weather barrier mock-up, 6 feet long by 6 feet high.

B. Locate where directed.

C. Mock-up may remain as part of work.

1.07 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.01 WATER-RESISTIVE BARRIER MATERIALS

A. Water-Resistive Barrier: For use in Construction Types I, II, III, and IV on buildings greater than 40 feet in height.

1. Comply with NFPA 285 wall assembly requirements in accordance with local building code and authorities having jurisdiction (AHJ).

B. Water-Resistive and Air Barrier, Multilayers: Outer layers of nonwoven, spunbonded polypropylene with vapor permeable, watertight polymeric middle layer.

1. Air Permeance: 0.0011 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
2. Water Vapor Permeance: 54 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F.
3. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 3 months of weather exposure.
4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
5. Seam and Perimeter Tape: As recommended by sheet manufacturer.
6. Products:
    a. SIGA Cover Inc; SIGA-Majvest 200: www.siga.swiss/global_en/#sle.
    b. W.R. Meadows; product Air Shield SMP: www.wrmeadows.com.
    c. Dupont; product Tyvek® Commercial Wrap®: www.dupont.com.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Water-Resistive Barrier Coating: Fluid applied, UV-resistant coating for use over various types of exterior sheathing, CMU, and precast concrete in accordance with ICC-ES AC212.

1. Dry Film Thickness (DFT): 17-mils DFT, minimum.

2. Water Vapor Permeance: 10 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure B - Water Method.
3. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 120 days of weather exposure.
4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
5. Resistance to Fungal Growth: No growth when tested in accordance with ASTM D5590.
6. Joint Preparation Treatment: As recommended by coating manufacturer.
7. Products:
    a. Momentive Performance Materials, Inc/GE Silicones; Elemax™ 2600: www.siliconeforbuilding.com/#sle.
    b. PROSOCO, Inc; R•Guard® Air & Water Barrier Cat 5™: www.prosoco.com/#sle.

2.02 ACCESSORIES

A. Sealants, Tapes, and Accessories Used for Sealing Water-Resistive Barrier and Adjacent Substrates: As indicated or complying with water-resistive barrier manufacturer's installation instructions.

B. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and weather barrier materials.

1. Application: Apply at 30 to 40 mil, 0.030 to 0.040 inch nominal thickness.
2. Color: Manufacturer's standard.
3. Elongation: 1,300 percent, measured in accordance with ASTM D412.
4. Peel Adhesion: 28 lb/inch, minimum, when tested in accordance with ASTM D903.
5. Hydrostatic Head Pressure: Resist head pressure of 57 feet, maximum, when tested in accordance with ASTM D751.
6. Products:
    a. As recommended by water-resistive barrier coating manufacturer.

C. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.

1. Width: 4 inches.
2. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 30 days of weather exposure.
3. Products:
    a. As recommended by air & water-resistive barrier manufacturer.

D. Thinners and Cleaners: As recommended by water-resistive barrier manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions comply with requirements of this section.

3.02 PREPARATION

A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.

3.03 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Water-Resistive Barriers: Install continuous water-resistive barrier over surfaces indicated, with sheets lapped to shed water but with seams not sealed.

C. Mechanically Fastened Exterior Sheets:

1. Install sheets shingle-fashion to shed water, with seams aligned horizontal.
2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.
4. Install water-resistive barrier over jamb flashings.
5. Install head flashings under water-resistive barrier.
6. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.

D. Self-Adhered Sheets:

1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.
2. Lap sheets shingle-fashion to shed water and seal laps airtight.
3. Upon placement of sheets, firmly press onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
4. Use same material, or other material approved by sheet manufacturer, to seal sheets to adjacent substrates, and as flashing.
5. At expansion joints, provide transition to joint assemblies approved by sheet manufacturer.

E. Coatings:

1. Prepare substrate in accordance with coating manufacturer's installation instructions; treat joints in substrate and between dissimilar materials as indicated.
2. Where exterior masonry veneer is being applied, install masonry anchors prior to placement of water-resistive barrier over masonry substrate; seal airtight around anchors.
3. Apply bead or trowel coat of mastic sealant with minimum thickness of 1/4 inch along coating seams, rough cuts, and as recommended by manufacturer.
4. Apply flashing to seal with adjacent construction and to bridge joints in coating substrate.

F. Openings and Penetrations in Exterior Water-Resistive Barriers:

1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.04 FIELD QUALITY CONTROL

A. Owner's Inspection and Testing: Cooperate with Owner's testing agency.

1. Allow access to work areas and staging.
2. Notify Owner's testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.
3. Do not cover work of this section until testing and inspection is accepted.

B. Do not cover installed water-resistive barriers until required inspections have been completed.

C. Obtain approval of installation procedures from water-resistive barrier manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

D. Take digital photographs of each portion of installation prior to covering up weather barriers.

3.05 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

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SECTION 07 26 00
VAPOR RETARDERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Vapor retarders.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Vapor retarder under concrete slabs on grade.

B. Section 07 21 26 - Blown Insulation: Vapor retarder installed in conjunction with blown insulation used in the Picnic Pavilion Building attic space.

1.03 DEFINITIONS

A. Vapor Retarder: Airtight barrier made of material that is relatively water vapor impermeable, to degree specified, with seams and joints sealed to adjacent surfaces.

B. Vapor Retarder Class: A measure of a material or assembly's ability to limit the amount of moisture that passes through that material or assembly. Vapor retarder class is defined using Procedure A, Desiccant Method at 73 degrees F and 50 percent Relative Humidity (RH), in accordance with ASTM E96/E96M and ICC (IBC)-2018, as follows:

1. Class I: 0.1 perm or less.
2. Class II: Greater than 0.1 perm to 1.0 perm.
3. Class III: Greater than 1.0 perm to 10 perms.

1.04 REFERENCE STANDARDS

A. ASTM D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications 2016.

B. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022.

C. ICC (IBC)-2018 - International Building Code 2018.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Provide data on material characteristics, performance criteria, and limitations.

C. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

D. Installer's qualification statement.

E. Testing agency qualification statement.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience, and approved by manufacturer.

B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.07 MOCK-UPS

A. Construct vapor retarder mock-up, 8 feet long by 8 feet wide.

B. Locate where directed.

C. Approved mock-up may remain as part of work.

1.08 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.01 VAPOR RETARDERS

A. Underslab Vapor Retarders: See Section 03 30 00.

B. Vapor Retarder Sheet: Polyethylene sheeting complying with ASTM D4397; reinforced with glass fiber square mesh, clear or colored.

1. Thickness: 10 mil, 0.010 inch, nominal.
2. Water Vapor Permeance: 0.076 perm, maximum, when tested in accordance with ASTM E96/E96M.
3. Seam and Perimeter Tape: Polyethylene self-adhering type, mesh reinforced, 2 inches wide; compatible with sheet material.
4. Manufacturers:
   a. Tex-Trude: www.tex-trude.com/#sle.
   b. Stego® Industries, LLC: www.stegoindustries.com/#sle.
   c. Reef Industries, Inc: www.reefindustries.com/#sle.
   d. Raven Industries, Inc: www.ravenind.com/#sle.
   e. Henry® Company: www.henry.com/#sle.

2.02 ACCESSORIES

A. Sealants, Tapes, and Accessories for Sealing Vapor Retarder and Adjacent Substrates: As indicated, complying with vapor retarder manufacturer's installation instructions.

B. Vapor Retarder Tape: Coated polyester film with acrylic adhesive backing; pressure sensitive.

1. Products:
   a. As recommended by the vapor retarder manufacturer..
   b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Sheet Membrane Mounting Tape: Double-sided strip of pressure-sensitive tape, acrylic adhesive reinforced with embedded fiber-strand carrier layer and plastic backing.

1. Width: 3/4 inch.
2. Roll Length: 164 feet.
3. Thickness: 14 mil, 0.014 inch.

4. Products:
    a. As recommended by the vapor retarder manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions comply with requirements of this section.

3.02 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Vapor Retarders: Install continuous airtight barrier over surfaces indicated, with sealed seams and sealed joints to adjacent surfaces.

C. Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.

D. Mechanically Fastened Sheets - Vapor Retarder On Interior:

1. When insulation is installed within assembly, install vapor retarder over insulation.
2. Anchor to wood framing using large-headed nails or staples at 12 to 18 inches on center along each framing member covered; cover fasteners with seam tape.
3. Seal seams, laps, perimeter edges, penetrations, tears, and cuts with self-adhesive tape, providing an airtight seal.
4. Locate laps at framing members; at laps fasten one sheet to framing member then tape overlapping sheet to first sheet in shingle fashion to shed water.
5. Seal entire perimeter to structure, window and door frames, and other penetrations.
6. Where conduits, pipes, wires, ducts, outlet boxes, and other items are installed within insulation cavity, pass vapor retarder sheet behind these items and over insulation to maintain airtight seal.

3.03 FIELD QUALITY CONTROL

A. Owner’s Inspection and Testing: Cooperate with Owner’s testing agency.

1. Allow access to work areas and staging.
2. Notify Owner’s testing agency in writing of schedule for work of this section to allow sufficient time for testing and inspection.
3. Do not cover work of this section until testing and inspection is accepted.

B. Do not cover installed vapor retarders until required inspections have been completed.

C. Obtain approval of installation procedures from vapor retarder manufacturer based on a mock-up installed in place, prior to proceeding with remainder of installation.

D. Take digital photographs of each portion of installation prior to covering up vapor retarders.

3.04 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

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SECTION 07 41 13
METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal roof panel system of preformed steel panels.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Roof sheathing.

B. Section 07 92 00 - Joint Sealants: Sealing joints between metal roof panel system and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022.

D. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference 2005 (Reapproved 2017).

E. ASTM E1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference 1995 (Reapproved 2018).

F. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Storage and handling requirements and recommendations.
2. Installation methods.
3. Specimen warranty.

C. Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.

1. Show work to be field-fabricated or field-assembled.

D. Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each roofing system specified, submit samples of minimum size 12 inches square, representing actual roofing metal, thickness, profile, color, and texture.

1. Include typical panel joint in sample.

2. Include typical fastening detail.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Test Reports: Indicate compliance of metal roofing system to specified requirements.

I. Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section and with at least ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.

1.06 MOCK-UPS

A. Provide mock-up of 50 sq ft, including underlayment, eave protection membrane, and associated flashings.

B. Locate as directed by Architect.

C. Mock-up may remain as part of the work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide strippable plastic protection on prefinished roofing panels for removal after installation.

B. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.08 FIELD CONDITIONS

A. Do not install metal roof panels, eave protection membrane or underlayment when surface, ambient air, or wind chill temperatures are below 45 degrees F.

1.09 WARRANTY

A. Finish Warranty: Provide 20-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

B. Special Warranty: Provide 20-year warranty for weathertightness of roofing system, including agreement to repair or replace metal roof panels that fail to keep out water commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Metal Roof Panel Manufacturers:

1. Basis of Design: Subject to compliance with requirements, provide Firestone Building Products / UNACLAD, UNA-CLAD UC-4 Snap-Lock Standing Seam roofing system: www.firestonebpco.com/#sle. Comparable product by the following manufacturers may be considered:
   a. ATAS International, Inc: www.atas.com/#sle.
   b. Berridge Manufacturing Company: www.berridge.com/#sle.
   c. Metal Roofing Systems, Inc: www.metalroofingsystems.biz/#sle.
   d. Petersen Aluminum Corporation: www.pac-clad.com/#sle.

B. Metal Soffit Panels Manufacturers:

1. Basis of Design: Subject to compliance with requirements, provide Firestone Building Products / UNACLAD, UNA-CLAD UC-500 Flush Panel (Vented) Soffit system: www.firestonebpco.com/#sle. Comparable product by the following manufacturers may be considered:
   a. ATAS International, Inc: www.atas.com/#sle.
   b. Berridge Manufacturing Company: www.berridge.com/#sle.
   c. Metal Roofing Systems, Inc: www.metalroofingsystems.biz/#sle.
   d. Petersen Aluminum Corporation: www.pac-clad.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

A. Metal Roof Panels: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:

1. Structural Design Criteria: Provide panel assemblies designed to safely support design loads at support spacing indicated, with deflection not to exceed L/180 of span length(L) when tested in accordance with ASTM E1592.
2. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
3. Wind Uplift: Class 90 wind uplift resistance of UL 580.
4. Water Penetration: No water penetration when tested in accordance with procedures and recommended test pressures of ASTM E1646; perform test immediately following air infiltration test.
5. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 100 degrees F.

2.03 METAL ROOF PANELS

A. Metal Roof Panels: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.

B. Metal Panels: Factory-formed panels with factory-applied finish.

1. Steel Panels:
   a. Zinc-coated steel complying with ASTM A653/A653M; minimum G90 galvanizing.
   b. Steel Thickness: Minimum 24 gauge, 0.024 inch.
2. Profile: Standing seam, with minimum 1-1/2-inch seam height; concealed fastener system lapped seam in standing seam profile.
3. Texture: Smooth.
4. Length: Full length of roof slope, without lapped horizontal joints.
5. Width: Maximum panel coverage of 24 inches.

C. Metal Soffit Panels:

1. Profile: Style as indicated, with venting provided.
2. Material: Precoated steel sheet, 22 gauge, 0.0299 inch minimum thickness.
3. Color: As selected by Architect from manufacturer's standard line.

2.04 ATTACHMENT SYSTEM

A. Concealed System: Provide manufacturer's standard stainless steel or nylon-coated aluminum concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

2.05 FABRICATION

A. Panels: Provide factory fabricated panels with applied finish and accessory items, using manufacturer's standard processes as required to achieve specified appearance and performance requirements.

B. Joints: Provide captive gaskets, sealants, or separator strips at panel joints to ensure weathertight seals, eliminate metal-to-metal contact, and minimize noise from panel movements.

2.06 FINISHES

A. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected by Architect from manufacturer’s standard line.

2.07 ACCESSORIES

A. Miscellaneous Sheet Metal Items: Provide flashings, trim, moldings, closure strips, preformed crickets, and caps of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.

B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.

C. Sealants:

1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
2. Concealed Sealant: Non-curing butyl sealant or tape sealant.
3. Seam Sealant: Factory-applied, non-skinning, non-drying type.

D. Underlayment: Self-adhering polymer modified sheet; 40 mil total thickness; with strippable siliconized release film on bottom side and slip resistant and UV-stable facing on top side.Mod

1. Water Vapor Permeance: 30 perm, maximum, when tested in accordance with ASTM E96/E96M, Desiccant Method A.
2. Functional Temperature Range: From minus 40 degrees F to 250 degrees F.
3. Products:
    a. Basis of Design: Subject to compliance with requirements, provide Firestone Building Products CLAD-GARD™ SA-N Metal Underlayment, Item No. W6810RCGNR36: www.firestonebpco.com/#sle. Comparable product by the following manufacturers may be considered:
        1) ATAS International, Inc: www.atas.com/#sle.
        2) Berridge Manufacturing Company: www.berridge.com/#sle.
        3) Metal Roofing Systems, Inc: www.metalroofingsystems.biz/#sle.
        4) Petersen Aluminum Corporation[<>]: www.pac-clad.com/#sle.

E. Self-Adhering Sheet Underlayment, Polyethylene Faced Eave Protection Membrane: ASTM D 1970, minimum of 40-mil thick, slip-resisting, polyethylene-film-reinforced top surface laminated to SBS-modified asphalt adhesive, with release paper backing; cold applied.

1. Basis of Design: Subject to compliance with requirements, provide gcp Applied Technologies Grace Ice & Water Shield. Comparable product from the following manufacturers may be considered:
   a. Carlisle Coatings & Waterproofing, Inc; Product CCW WIP 400.
   b. Johns Manville; Product, JM Ice & WaterGuard™.
   c. GAF; Product, Weather Watch® or StormGuard®.
   d. Owens Corning; Product, Weatherlock® Flex Self Sealing Ice & Water Barrier.
   e. Substitutions: See Section 01 60 00 - Product Requirements.

F. Slip Sheet: Water-resistant rosin-sized building paper.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation of preformed metal roof panels until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Broom clean wood sheathing prior to installation of roofing system.

B. Coordinate roofing work with provisions for roof drainage, flashing, trim, penetrations, and other adjoining work to ensure that completed roof will be free of leaks.

C. Coordinate installation of waterproof membrane over roof sheathing with Section 06 10 00.

D. Remove protective film from surface of roof panels immediately prior to installation; strip film carefully to avoid damage to prefinished surfaces.

E. Separate dissimilar metals by applying a bituminous coating, self-adhering rubberized asphalt sheet, or other permanent method approved by metal roof panel manufacturer.

F. At locations where metal will be in contact with wood or other absorbent material subject to wetting, seal joints with sealing compound and apply one coat of heavy-bodied bituminous paint.

3.03 INSTALLATION

A. Overall: Install roofing system in accordance with approved shop drawings and metal roof panel manufacturer's instructions and recommendations, as applicable to specific project conditions; securely anchor components of roofing system in place allowing for thermal and structural movement.

1. Install roofing system with concealed clips and fasteners, except as otherwise recommended by manufacturer for specific circumstances.
2. Minimize field cutting of panels. Where field cutting is required, use methods that will not distort panel profiles. Use of torches for field cutting is prohibited.

B. Accessories: Install necessary components that are required for complete roofing assembly, including flashings, trim, moldings, closure strips, preformed crickets, caps, rib closures, and ridge closures.

C. Install eave protection membrane from roof edge up roof sheathing 6-feet past the exterior face of the exterior wall and 3-feet on both sides of valleys. Install roofing underlayment and building paper slip sheet on roof sheathing before installing preformed metal roof panels; secure by methods acceptable to roof panel manufacturer, minimizing use of metal fasteners; apply from eaves to ridge in shingle fashion, overlapping horizontal joints at least 2 inches and side and end laps at least 3 inches; offset seams in building paper and seams in roofing felt.

D. Roof Panels: Install metal roof panels in accordance with manufacturer's installation instructions, minimizing transverse joints except at junction with penetrations.

1. Provide sealant tape or other approved joint sealer at lapped panel joints.
2. Install sealant or sealant tape at end laps and side joints as recommended by metal roof panel manufacturer.

3.04 CLEANING

A. See Section 01 73 00 - Execution: for additional requirements.

B. Clean exposed sheet metal work at completion of installation. Remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving the work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to the finish.

3.05 PROTECTION

A. Do not permit storage of materials or roof traffic on installed roof panels. Provide temporary walkways or planks as necessary to avoid damage to completed work. Protect roofing until completion of project.

B. Touch-up, repair, or replace damaged roof panels or accessories before Date of Substantial Completion.

END OF SECTION

SECTION 07 46 43
COMPOSITION SIDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior composition siding.

1. Horizontal lap siding.
2. Soffit panels.
3. Trim and fascia.
4. Sealant.
5. Accessories.
6. Flashing.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Wood stud wall framing, sheathing.

B. Section 07 25 00 - Weather Barriers.

C. Section 07 62 00 - Sheet Metal Flashing and Trim: Fascia.

D. Section 07 90 05 - Joint Sealers.

E. Section 09 91 13 - Exterior Painting: field applied paint finish.

1.03 REFERENCE STANDARDS

A. ASTM D7031 - Standard Guide for Evaluating Mechanical and Physical Properties of Wood-Plastic Composite Products 2011 (Reapproved 2019).

B. ASTM D7032 - Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards, and Handrails 2021.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.

D. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Submit manufacturer's data sheets on each product to be used, including:

1. Manufacturer's requirements for related materials to be installed by others.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Installation methods, including nail patterns.

C. Samples: For each finish product specified, provide two complete sets of color samples representing manufacturer's full range of available colors and patterns, including the following:

1. Siding: Two of each type; full panel width by 24 inches long.
2. Trim: Two of each type; full width by 24 inches long.

3. Fasteners and Accessories: Two of each type; full size, and indicate use.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for engineered wood cladding.

E. Research/Evaluation Reports: For each type of engineered wood cladding required, from ICC- ES.

F. Manufacturer Certificates: Signed by manufacturer certifying that engineered wood cladding complies with requirements specified in "Performance Requirements" Article.

1. Submit evidence of meeting performance requirements.

G. Manufacturer's Qualification Statement.

H. Installer's Qualification Statement.

I. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.

J. Warranty: Submit copy of manufacturer’s warranty, made out in Owner’s name, showing that it has been registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum five years of documented experience and acceptable to the Manufacturer.

C. Source Limitations: Obtain engineered wood cladding products, including related accessories, from single source from single manufacturer.

1.06 COORDINATION

A. Coordinate installation with flashings, weather barriers, and other adjoining construction to ensure proper sequencing for weathertight performance.

B. Coordinate with finish coat to be applied over primed cladding, soffits, and trim. Comply with coating manufacturer's written requirements for substrate primer.

1.07 PREINSTALLATION MEETING

A. Meet at Project site 10 days before starting installation.

B. Attendees: Architect, Contractor, Installer, Manufacturer's Technical Representative, Engineered Wood Cladding Manufacturer Representative, and all affected trades.

1.08 MOCK-UP

A. Mockup: Build mockup for engineered wood cladding, soffit and trim and fascia including accessories, to establish quality standards for materials and installation.

1. Build mockup of typical wall area as directed by Architect in size approximately 96 inches long by 120 inches by full thickness.
2. Include one window and flashing.
3. Acceptable mock-ups may remain as part of the Work if undamaged at time of
4. Substantial Completion.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original packaging and clearly identified.

B. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards.

C. Store materials in manufacturer's labeled packaging until ready for installation under dry and waterproof cover, well ventilated, and elevated above grade on a flat surface.

D. Protect materials from damage, harmful environmental elements, construction dust, and other potentially detrimental conditions.

1.10 FIELD CONDITIONS

A. Do not install siding when air temperature or relative humidity are outside manufacturer's limits.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's limits.

1.11 WARRANTY

A. Manufacturer's Standard Warranty: Transferable limited warranty.

1. Warranty Period: Fifty years prorated from date of Substantial Completion.

B. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures including buckling.
   b. Deterioration of materials beyond normal weathering.
   c. Fungal degradation.
   d. Cracking, peeling, separating, chipping, flaking, or rupturing of resin-impregnated surface overlay.
   e. Hail damage consisting of a crack, chip, or dent in the surface overlay exceeding 3/8 inch in length or diameter.
2. Warranty Period: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Engineered Wood Cladding:

1. Basis of Design Manufacturer: Subject to compliance with requirements, provide products by L.P. Smart Side Louisiana-Pacific Corporation; Phone: (888) 820-0325, Fax: (877) 523-7192. Comparable products by other qualified manufacturers may be considered.

2.02 PERFORMANCE REQUIREMENTS

A. Structural Performance: Comply with local building code in accordance with authorities having jurisdiction (AHJ) for wind load resistance requirements of project location.

B. Comply with ASTM D7031 and following requirements:

1. Surface Burning Characteristics: Flame spread index (FSI) of 200 or less, Class C, and smoke development index (SDI) of 350 or less in accordance with ASTM E84 and UL 723.
2. Maximum Load Deflection: Less than 1/8 inch, nominal; ASTM D7032.

2.03 ENGINEERED WOOD CLADDING

A. Horizontal Strand Lap Siding: Basis of Design Product LP® SmartSide® 76 Series Smartlock Cedar Texture Lap Siding.

1. Description: Exterior-grade phenolic resin-saturated paper overlay laminated to EPA-registered zinc-borate-preservative-treated engineered wood siding; structurally rated; AWPA compliant; exposed edges sealed for moisture resistance; acrylic primed for painting.
2. Fire Rating: 1 hour per ASTM E119; ASTM E 84 Class C flamespread.
3. Texture: Embossed rough-sawn Cedar.
4. Nominal Thickness: 3/8 inch.
5. Width: 8 inches nominal.
6. Board Width: 8 inches nominal.
7. Board Length: 16 feet.
8. Factory Priming: Manufacturer's standard acrylic primer.

B. Strand Soffit Panels: Basis of Design Product: LP® SmartSide® 38 Series, Non-Vented and Vented Cedar Texture Soffit.

1. Description: Exterior grade phenolic resin-saturated paper overlay laminated to EPA-registered zinc-borate-preservative-treated engineered wood siding; AWPA compliant; acrylic primed for painting; no grooves; unprimed square edges.
2. Fire Rating: 1 hour per ASTM E119; ASTM E 84 Class C flamespread.
3. Texture: Embossed rough-sawn Cedar.
4. Type: Non vented and vented, Cut-to-Width Soffit Panel.
   a. See Drawings for non-vented and vented soffit locations.
5. Thickness: 0.375-inch.
6. Length: 8-feet.

2.04 TRIM AND FASCIA

A. Fiber Trim: Basis of Design Product: LP® SmartSide® 540 Series. Same material as cladding, including fire rating.

1. Style: Embossed rough-sawn Cedar.
2. Thickness: 0.625 inch.
3. Width: As indicated on Drawings.
4. Length: 16 feet.

B. Strand Trim Fascia Boards: Ploughed to receive soffit panel.

1. Style: Embossed rough-sawn Cedar.
2. Thickness: 0.625 inch.
3. Width: As indicated on Drawings.
4. Length: 16-feet.

2.05 ACCESSORIES

A. Furring Strips for Horizontal Cladding Application: Maximum 3/4 inch thick pressure treated wood furring strip at 16 inches on center.

B. Fasteners: ASTM A153, hot-dip galvanized or stainless steel nails with 0.113 inch diameter shank and 0.27 inch diameter head, long enough to achieve 1 1-1/2 inch penetration into structural sheathing and framing

C. Sealant: ASTM C920, minimum Class 25 sealant. Refer to Section 07 90 05 - Joint Sealers.

D. Clips and Anchors: Provide as indicated in accordance with siding manufacturer; conceal unless otherwise indicated.

E. Weather Barrier Coating: See Section 07 25 00 - Weather Barriers.

F. Flashing: Aluminum at window and door heads and where indicated on Drawings. Refer to Section 07 62 00 - Sheet Metal Flashing and Trim for sheet metal flashing.

1. Aluminum Flashing Finish: High-performance organic finish.
   a. Color: Matching adjacent surfaces.

G. Metal Corner Covers for Siding: Galvanized steel, siding manufacturer's minimum base metal thickness and standard profile. Factory priming with Manufacturer's standard acrylic primer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Field verify location of concealed framing for support and anchorage of engineered wood cladding, soffit and trim and fascia.

B. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.

C. Verify that water-resistive barrier has been installed.

D. Verify that substrate has been installed to permit proper installation of engineered wood cladding, soffit, trim and fascia.

E. Verify furring strips are properly placed according to orientation of siding.

F. Inspect products prior to installation. Do not install product which may have been damaged in shipment or appear to have a damaged or irregular finish.

G. Do not begin until unacceptable conditions have been corrected.

H. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Prepare substrates using methods recommended in writing by the cladding manufacturer.

B. Do not proceed with installation until substrates have been properly prepared and deviations from manufacturer's recommended tolerances are corrected.

C. Commencement of installation constitutes acceptance of conditions.

D. Install Sheet Metal Flashing: Secure using concealed fastening method in accordance with siding manufacturer's instructions.

1. Above door and window trim and casings.
2. Above horizontal trim in field of siding.
3. Above top of lower board for vertical installation with walls exceeding available length of boards.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

1. Install in accordance with conditions stated in ICC-ES ESR-1301.
2. Use trim details as indicated on drawings.
3. Touch-up field cut edges before installing.
4. Predrill screw holes if necessary to prevent breakage.
5. Properly space joints to allow for equilibration.

B. Do not install to green wood or crooked structural framing. Do not install over rain soaked or buckled materials. Do not install if excessive moisture is present in the interior, including that from curing concrete and plaster.

C. Securely attach siding boards to furring, using fastener size, number, spacing, and minimum dimensions from board edges and ends in accordance with manufacturer’s recommendations.

1. Cut and route siding boards using carbide-tipped blades to prevent frayed edge cuts.
2. Cut board ends square; 45 degree scarf-running butt joints in field of siding courses is permitted.
3. Predrill holes located less than 1-1/2 inches from ends of boards, 1 inch from board edges, and in siding boards 3 inches wide or less.
4. Install fasteners perpendicular to siding substrates and flush with surface of board.

D. Do not cut cladding to fabricate trim; use trim components.

E. Horizontal Board Orientation:

1. Begin siding installation at lowest established level.
2. Center butt joints over vertical furring, and as siding courses are added, stagger butt joints in a consistent stair-step manner.
3. Install lengths of siding to span at least three furring members.
4. Provide width of siding open joint at boards abutting ends in accordance with manufacturer’s instructions, as spacing dimensions are temperature dependent.
5. Provide width of open joints and locations as indicated, and in accordance with manufacturer's instructions.

F. Allow space for thermal movement between both ends of siding boards that butt against each other and trim.

G. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.

H. Field Painting: Within one week after installation, paint siding and trim with two coats of finish paint Specified in Section 09 91 13 - Exterior Painting.

3.04 ADJUSTING AND CLEANING

A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.

B. Clean siding boards in accordance with manufacturer’s maintenance instructions, using cleaning materials and methods acceptable to siding manufacturer.

3.05 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Repair damage to adjacent substrates and surfaces.

C. Touch-up, repair, or replace damaged products before Date of Substantial Completion.

END OF SECTION

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SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Field fabricated sheet metal items, including flashings and counterflashings and other items as indicated on the Drawings as sheet metal trim.

B. Reglets and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 41 13 - Metal Roof Panels: for sheet metal flashing and trim integral with metal roof panels.

B. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.

B. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

D. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.

E. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.

F. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing 2017.

G. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free 2007 (Reapproved 2018).

H. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

1.04 PERFORMANCE REQUIREMENTS

A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

B. Temperature Change (Range): 120 deg F. (67 deg C.), ambient; 180 deg F. (100 deg C.), material surfaces.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section. Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, General Contractor, Installer, and installers whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, etc.
2. Review methods and procedures related to sheet metal flashing and trim.
3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
4. Review special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect sheet metal flashing.
5. General Contractor document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.06 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

C. Shop Drawings: Show fabrication and installation layouts of sheet metal flashing and trim, including plans, elevations, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled work. Include the following:

1. Identification of material, thickness, weight, and finish for each item and location in Project.
2. Details for forming sheet metal flashing and trim, including profiles, shapes, seams, and dimensions.
3. Details for joining, supporting, and securing sheet metal flashing and trim, including layout of fasteners, cleats, clips, and other attachments. Include pattern of seams.
4. Details of termination points and assemblies, including fixed points.
5. Details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction.
6. Details of edge conditions, including eaves, ridges, valleys, rakes, crickets, and counterflashings as applicable.
7. Details of special conditions.
8. Details of connections to adjoining work.
9. Detail formed flashing and trim at a scale of not less than
10. 3 inches per 12 inches (1:5).

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Sheet Metal Flashing: 12 inches (300 mm) long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
3. Accessories and Miscellaneous Materials: Full-size Sample.

E. Qualification Data: For qualified fabricator.

F. Maintenance Data: For sheet metal flashing, trim, and accessories to include in maintenance manuals.

G. Warranty: Sample of special warranty.

1.07 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual" unless more stringent requirements are specified or shown on Drawings.

B. Maintain one copy of each document on site.

C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with a minimum of five years of documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.

B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials that could cause discoloration or staining.

D. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

1.09 WARRANTY

A. Special Warranty on Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
   a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
   b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
   c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet Metal Flashing and Trim Manufacturers:

1. OMG Roofing Products: www.omgroofing.com/#sle.
2. Petersen Aluminum Corporation: www.pac-clad.com/#sle.

2.02 FABRICATORS

A. Sheet Metal Flashing and Trim Fabricators:

1. Berwald Roofing and Sheet Metal; 2440 Charles Street, North St. Paul, MN 55109; Phone: (651) 777-7411.

2. John A. Dalsin & Son; 2830 S. 20th Avenue, Minneapolis, MN 55407; Phone (612) 729-9334.
3. MG McGrath Architectural Surfaces; 1387 Cope Avenue E, Maplewood, MN 55109; Phone: (651) 704-0300.

2.03 SHEET MATERIALS

A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.

B. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24 gauge, (0.0239) inch thick base metal, shop pre-coated with PVDF coating.

1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
2. Color: As selected by Architect from manufacturer's standard colors.
3. Surface: Smooth, flat.
4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013-mm).

2.04 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils (0.76 to 1.0 mm) thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: ASTM D 1970; stable after testing at 240 deg F.
2. Low-Temperature Flexibility: ASTM D 1970; passes after testing at minus 20 deg F.
3. Basis of Design: Subject to compliance with requirements, provide Firestone Building Products CLAD-GARD™ SA-N Metal Underlayment, Item No. W6810RCGNR36: www.firestonebpco.com/#sle. Comparable product by the following manufacturers may be considered:
4. Products: Subject to compliance with requirements, provide one of the following:
   a. Carlisle Coatings & Waterproofing Inc.; CCW WIP 300HT.
   b. GCP Applied Technologies; Ultra.
   c. Henry Company; Blueskin PE200 HT.
   d. Metal-Fab Manufacturing, LLC; MetShield.
   e. Owens Corning; WeatherLock Metal High Temperature Underlayment.
   f. Substitutions: See Section 01 60 00 - Product Requirements.

B. Slip Sheet: {CH#264640}.

2.05 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured Item unless otherwise noted.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
   a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating.

b. Blind Fasteners: High-strength aluminum or stainless-steel rivets suitable for metal being fastened.
c. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Hot-dip galvanized steel according to ASTM A 153/A 153M.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.

D. Elastomeric Sealant: ASTM C 920, elastomeric polyurethane or silicone polymer sealant; low modulus; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

E. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.

F. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

G. Asphalt Roofing Cement: ASTM D 4586, asbestos free, of consistency required for application.

2.06 FABRICATION, GENERAL

A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.

1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
2. Obtain field measurements for accurate fit before shop fabrication.
3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view

B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet (6 mm in 6 m) on slope and location lines as indicated and within 1/8-inch (3-mm) offset of adjoining faces and of alignment of matching profiles.

C. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant.

D. Expansion Provisions: Where lapped expansion provisions cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with butyl sealant concealed within joints.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by SMACNA's "Architectural Sheet Metal Manual" and by FMG Loss Prevention Data Sheet 1-49 for application, but not less than thickness of metal being secured.

G. Seams: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.

H. Do not use graphite pencils to mark metal surfaces.

I. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.

2.07 ACCESSORIES

A. Fasteners: Stainless steel, with soft neoprene washers.

B. Primer: Zinc chromate type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 UNDERLAYMENT INSTALLATION

A. General: Install underlayment as indicated on Drawings.

B. Self-Adhering Sheet Underlayment: Install self-adhering sheet underlayment, wrinkle free. Apply primer if required by underlayment manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation; use primer rather than nails for installing underlayment at low temperatures. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Roll laps with roller. Cover underlayment within 14 days.

3.04 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
3. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.
4. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
5. Install sealant tape where indicated, if not indicated, as recommended by Fabricator.
6. Torch cutting of sheet metal flashing and trim is not permitted.
7. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.

C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.

E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

1. Space cleats not more than 12 inches apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.

F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed within joints.

G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.
2. Aluminum: Use aluminum or stainless-steel fasteners.
3. Stainless Steel: Use stainless-steel fasteners.

H. Seal joints with elastomeric sealant as required for watertight construction.

3.05 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.06 FIELD QUALITY CONTROL

A. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

3.07 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder.

C. Clean off excess sealants.

D. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.

E. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 07 72 00
ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Snow guards.

1.02 RELATED REQUIREMENTS

A. Section 07 41 13 - Metal Roof Panels: For standing seam metal roof.

1.03 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Manufacturer's data sheets on each product to be used.

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
4. Maintenance requirements.

C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.

1. Snow Guards: Submit design calculations for loadings and spacings based on manufacturer testing.

D. Warranty Documentation:

1. Submit manufacturer warranty.
2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store products under cover and elevated above grade.

1.05 WARRANTY

A. Manufacturer Warranty: Provide 5-year manufacturer warranty for snow guard assembly. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 SNOW GUARDS

A. Fence Type Snow Guard: Continuous snow guard; manufacturer's standard dual pipe, bar, channel, or solid rod, set in brackets or posts, with optional plates and metal trim.

1. Brackets: Aluminum or stainless steel, standard finish.
2. Solid Rod: Aluminum or stainless steel standard finish.
   a. Outside Diameter: 3/8 inch (Stainless Steel), 1-inch (Aluminum).

b. Sleeve Couplings: Manufacturer's standard material.
1) Length: 3 inch, nominal.
c. End Collars and Caps: Manufacturer's standard material.

3. Supplemental Plates and Clips: Attached to horizontal component; match finish of pipe, tube, rod, or channel.
4. Clamps for Standing Seam Roof: Stainless steel or aluminum clamps attached to standing seams of roof panels; for attachment of fence type snow guard.
   a. Seam Profile: Selected by Architect from manufacturer's standard range; match profile of metal roof.
   b. Finish: Mill finish.
5. Products:
   a. Alpine SnowGuards; ASG2000B-Mini: www.alpinesnowguards.com/#sle.
   b. Berger Building Products; F-Rail Snow Rail: www.bergerbp.com/#sle.
   c. Metal Roof Innovations, Ltd. S-5! Attachment Solutions; DualGard: www.s-5.com/#sle.
   d. Rocky Mountain Snow Guards, Inc; S-5! Blizzard II Fence-Style Snow Guard Bracket: www.rockymountainsnowguards.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING

A. See Section 01 73 00 - Execution and Section 01 77 00 - Closeout Procedures for additional requirements.

B. Clean installed work to like-new condition.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 07 91 00
PREFORMED JOINT SEALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precompressed foam seals.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Liquid and mastic joint sealants and their backing materials.

1.03 REFERENCE STANDARDS

A. ASTM D1056 - Standard Specification for Flexible Cellular Materials—Sponge or Expanded Rubber 2020.

B. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness 2015 (Reapproved 2021).

C. ASTM D2628 - Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements 1991 (Reapproved 2016).

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Manufacturer's technical data sheets for each product, including chemical composition, movement capability, color availability, limitations on application, and installation instructions.

C. Color Cards: For color selection.

D. Samples for Color Selection: 4 inch long pieces of each color available; at least 2 samples of each color.

E. Manufacturer's Qualification Statement.

F. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section with at least five years of documented experience and approved by manufacturer.

1.06 WARRANTY

A. See Section 01 77 00 - Closeout Procedures for additional warranty requirements.

B. Correct defective work within a two year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealers that fail to achieve watertight seal or exhibit loss of adhesion or cohesion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Precompressed Foam Seals:

1. EMSEAL Joint Systems, Ltd; Backerseal (Greyflex): www.emseal.com/#sle.
2. Tremco Commercial Sealants & Waterproofing; illmod 600 Pre-compressed Impregnated Foam Seal for Expansion Joints: www.tremcosealants.com/#sle.
3. Willseal LLC; Willseal 600: www.willseal.com/#sle.

2.02 PRECOMPRESSED FOAM SEALS

A. Precompressed Foam Seal: Comprised of urethane, modified-acrylic impregnated, open-cell polyurethane, or closed-cell neoprene foam impregnated with water-repellent, and with self-adhesive faces protected prior to installation by release paper.

1. Color: To match adjacent material color.
2. Size as required to provide water-tight seal when installed.
3. Calculate size according to manufacturer's recommendations.
4. Measure size of existing joints before selecting seal width.
5. Provide product recommended by manufacturer for traffic-bearing use.
6. Applications:
   a. Interior applications where indicated on Drawings.
7. Manufacturers:
   a. EMSEAL Joint Systems, Ltd; Backerseal (Greyflex): www.emseal.com/#sle.
   b. Tremco Commercial Sealants & Waterproofing; illmod 600: www.tremcosealants.com/#sle.
   c. Willseal LLC; Willseal 600: www.willseal.com/#sle.

2.03 ACCESSORIES

A. Adhesive: As recommended by seal manufacturer.

B. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and strip seal.

C. Substrate Cleaner: Non-corrosive, non-staining type recommended by seal manufacturer; compatible with joint forming materials.

D. Primer: Type recommended by seal manufacturer to suit application; non-staining.

E. Backing Tape: Self-adhesive polyethylene tape with surface that seal will not adhere to.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive this work.

B. Measure joint dimensions and verify that seal products are of the correct size to properly seal the joints.

3.02 PREPARATION

A. Properly prepare construction components adjacent to the work of this section to prevent damage and disfigurement due to this work.

3.03 INSTALLATION

A. Install in accordance with manufacturer's written instructions.

B. Precompressed Foam Seals:

1. Install only when ambient temperature is within recommended application temperature range of adhesive. Consult manufacturer when installing outside this temperature range.
2. Prepare joints and install seals in accordance with manufacturer's written recommendations.
3. Remove loose materials and foreign matter that could impair adhesion of sealant.
4. Do not stretch precompressed seal; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION

A. Protect joints from damage until adhesives have properly cured.

END OF SECTION

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SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 25 00 - Weather Barriers: Sealants required in conjunction with water-resistive barriers.

B. Section 07 26 00 - Vapor Retarders: Sealants required in conjunction with vapor retarders.

C. Section 07 91 00 - Preformed Joint Seals: Precompressed foam, gaskets, and strip seals.

D. Section 08 71 00 - Door Hardware: Setting exterior door thresholds in sealant.

E. Section 08 80 00 - Glazing: Glazing sealants and accessories.

1.03 REFERENCE STANDARDS

A. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants 2018 (Reapproved 2022).

B. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications 2022.

C. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems 2016.

D. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.

E. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants 2018.

F. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints 2019 (Reapproved 2020).

G. SCAQMD 1168 - Adhesive and Sealant Applications 1989, with Amendment (2017).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the Work with other sections referencing this Section.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.

1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.

3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.
5. Substrates for which use of primer is required.
6. Substrates for which laboratory adhesion and/or compatibility testing is required.
7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
8. Sample product warranty.
9. Certification by manufacturer indicating that product complies with specification requirements.

C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

F. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

G. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

H. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

I. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

J. Field Quality Control Log: Submit filled out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

K. Manufacturer's qualification statement.

L. Installer's qualification statement.

1.06 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and with at least five years of documented experience and approved by manufacturer.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

E. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.

1. Adhesion Testing: In accordance with ASTM C794.

2. Compatibility Testing: In accordance with ASTM C1087.
3. Allow sufficient time for testing to avoid delaying the work.
4. Deliver to manufacturer sufficient samples for testing.
5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

F. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.

1. Identification of testing agency.
2. Name(s) of sealant manufacturers' field representatives who will be observing
3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
    a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
    b. Test date.
    c. Location on project.
    d. Sealant used.
    e. Stated movement capability of sealant.
    f. Test method used.
    g. Date of installation of field sample to be tested.
    h. Date of test.
    i. Copy of test method documents.
    j. Age of sealant upon date of testing.
    k. Test results, modeled after the sample form in the test method document.
    l. Indicate use of photographic record of test.

G. Field Quality Control Plan:

1. Visual inspection of entire length of sealant joints.
2. Non-destructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
    a. Test the entire length of every sealant joint.
3. Field testing agency's qualifications.
4. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

H. Field Adhesion Test Procedures:

1. Allow sealants to fully cure as recommended by manufacturer before testing.
2. Have a copy of the test method document available during tests.
3. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
4. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

I. Non-Destructive Field Adhesion Test: Test for adhesion in accordance with ASTM C1521, using Nondestructive Continuous Method.

1. Record results on Field Quality Control Log.
2. Repair failed portions of joints.

J. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or other applicable method as recommended by manufacturer.

1.07 MOCK-UP

A. Provide mock-up of sealant joints in conjunction with window and wall under provisions of Market & Johnson's Section 01 40 00 - Quality Assurance.

B. Construct mock-up with specified sealant types and with other components noted.

C. Locate where directed by Architect.

D. Mock-up may remain as part of the Work.

1.08 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.09 WARRANTY

A. See Section 01 73 00 - Execution and Section 01 77 00 - Closeout Procedures.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal , exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 JOINT SEALANTS - GENERAL

A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

B. Colors: As selected by the Architect from the manufacturer's full range of available colors..

2.02 JOINT SEALANTS

A. Type 1 - General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25. Uses M, A, and O; single component.

1. Products:
   a. BASF Construction Chemicals Building Systems; MasterSeal NP 1.
   b. Tremco; Dymonic 100.
   c. Tremco; Dymonic FC.
   d. Tremco; Vulkem 116.
2. Color: As selected by Architect from manufacturer's standard range.
3. Applications:
   a. Exterior control, expansion and soft joints in masonry.
   b. Exterior joints between concrete and other materials.
   c. Exterior joints between metal frames and other materials.
   d. Other exterior joints for which no other sealant is indicated.

B. Type 2 - General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25. Uses M, G and A; multicomponent:

1. Products:
   a. BASF Construction-Building Systems; MasterSeal NP 2.
   b. Tremco; Dymeric 240.
   c. Tremco; Dymeric 240 FC.
2. Color: As selected by Architect from manufacturer's standard range.
3. Applications:
   a. Exterior control, expansion and soft joints in masonry.
   b. Exterior joints between concrete and other materials.
   c. Exterior joints between metal frames and other materials.
   d. Other exterior joints for which no other sealant is indicated.

C. Type 3 - Multicomponent, Nonsag, Neutral-Curing Silicone Sealant: ASTM C 920, Type S, Grade NS, Class 50. Use NT, G, M, A and as applicable to joint substrates indicated O.

1. Product:
   a. Dow; DOWSIL 756 SMS Building Sealant.
2. Color: As selected by Architect from manufacturer's standard range.
3. Applications:
   a. For exterior joints in metal composite material wall panels.
      1) Use O Joint Substrates: Color anodic aluminum, aluminum coated with high performance coating, galvanized steel.

D. Type 4 - Non-Staining Silicone Sealant: ASTM C 920, Grade NS, Class 25. Uses NT, A, G, M and O. Single component, neutral curing, non-sagging, non-staining, fungus resistant, non-bleeding.

1. Products:
   a. Dow Corning; 786 Silicone Sealant.
   b. Momentive SCS1700 Sanitary Silicone Sealant.
   c. NUCO Industries, Inc. NuFlex 302 General Purpose Silicone Sealant.
   d. Pecora Corporation; 898 NT Sanitary Mildew Resistant Silicone Sealant.
   e. Substitutions: See Market Johnson's Sections 00 43 25 - Substitution Request and Section 01 65 00 - Material and Equipment.
2. Color: As selected by Architect from manufacturer's standard range.
3. Applications:
   a. Interior applications in ceramic tile vertical wall joints.
   b. Interior joints between wet countertops and vertical surfaces.

E. Type 5 - Mildew-Resistant Silicone Sealant: ASTM C 920, Grade NS, Class 25. Uses NT, A, G, M and O. Single component, solvent curing, non-sagging non-staining, fungus resistant, non-bleeding.

1. Products:
   a. Dow Chemical Company; DOWSIL™ 786 Silicone Sealant.
   b. Momentive SCS1700 Sanitary Silicone Sealant.
   c. NUCO Industries, Inc. NuFlex 302 Bath & Kitchen Silicone Sealant.
   d. Pecora Corporation: 898NST Sanitary Mildew Resistant Silicone Sealant.
   e. Polymeric Systems, Inc; PSI-601-FG.
2. Color: As selected by Architect from manufacturer's standard range.
3. Applications:
   a. Interior applications in joints between plumbing fixtures and floor and wall.

F. Type 6 - Acoustical Sealant: Butyl or acrylic sealant; ASTM C 834, Grade NS, Class 12-1.2. Uses M and A, single component, solvent release curing, non-skinning.

1. Products:
   a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
   b. Pecora Corporation; AIS-919 Acoustical and nsulation Latex Sealant.
   c. United States Gypsum Co; SHEETROCK Acoustical Sealant.
   d. ITW Polymers Sealants North America; Miracle SCS-100 Water-Based Sound-Control Sealant.
2. Applications: Use for exposed and consealed joints.
   a. Sealant bead between top stud plate and structure and between bottom stud plate and floor at drywall and stud sound partitions and other locations as noted on Drawings.

G. Type 7 - Acrylic Emulsion Latex: ASTM C 834, single component, non-staining, non-bleeding, non-sagging, paintable.

1. Products:
   a. Bostik Inc; Chem-Calk 600.
   b. Pecora Corporation; AC-20 +Silicone, Acrylic Latex Caulking Compound.
   c. ITW Polymers Sealant North America, Inc; ACRYL-R SM8500 Elastomeric Sealant.
   d. BASF Construction Chemicale-Building Systems; MasterSeal NP 520 Siliconized Acrylic Latex Sealant.
   e. Tremco; Tremflex 834 Acrylic Latex Sealant.
2. Color: As selected by Architect from manufacturer's standard range.
3. Applications:
   a. Interior wall and ceiling control joints.
   b. Joints between hollow metal door and window frames and wall surfaces.
   c. Dry Counters.
   d. Other interior joints for which no other type of sealant is indicated.

H. Type 8 - Butyl Sealant: ASTM C 920, Grade NS, Class 12-1/2. Uses NT, M, A, G and O. Single component, solvent release, non-skinning, non-sagging.

1. Products:
   a. Bostik, Inc; Chem-Calk 300 One-Component, Butyl Sealant.
   b. Pecora Corporation; BC-158 One-Part Butyal Rubber Sealant.
   c. Tremco; Tremco Butyl Sealant.
2. Color: Standard colors matching finished surfaces.
3. Applications:
   a. Under door thresholds.
   b. Under window sills.

I. Type 9 - Interior Floor Joint Sealant: ASTM C 920, polyurethane, self-leveling, Grade P, Class 25. Uses T, M, A, I and O. capable of continuous water immersion.

1. Product:
   a. Tremco; Vulkem 245SSL Multi-Component Polyurethane Sealant.
2. Color: As selected by Architect from manufacturer's standard range.
3. Applications:
   a. Expansion joints in concrete floors.

J. Type 10 - Self-Leveling Polyurethane Sealant: ASTM C 920, multi-component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, Grade P, Class 25. Uses T, I, M, A and O.

1. Products:
   a. Bostik; Chem-Calk 550 Pourable, Two-Component, Polyurethane Sealant.

b. Tremco; Vulkem 245SSL Multi-Component Polyurethane Sealant.
c. Pecora Corporation; Urexpan NR-200 Self-Leveling, Traffic-Grade Polyurethane Sealant.
d. Tremco, Inc; THC-900/THC-901 Multi-Component Polyurethane Sealant.

2. Color: As selected by Architect from manufacturer's standard range.
3. Application:
   a. Joints between floor tile and wall surfaces.

K. Type 11 - Concrete Paving Joint Sealant: Polyurethane, self-leveling, ASTM C 920, Class 25. Uses T, I, M and O. Multi-component, capable of continuous water immersion.

1. Product:
   a. Tremco; Vulkem 245SSL Field-Tintable, Polyurethane Sealant.
2. Color: Gray.
3. Applications:
   a. Joints in concrete walks and vehicular concrete paving.

2.03 ACCESSORIES

A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.

1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
2. Open Cell: 40 to 50 percent larger in diameter than joint width.
3. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
4. Manufacturers:
   a. ADFAST Corporation; ADSEAL BR-2600 (Backer Rod): www.adfastcorp.com/#sle.
   b. Nomaco, Inc; Sof Rod: www.nomaco.com/#sle.
   c. Tremco; Tremco Backer Rod..

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.

D. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

C. Verify that backer rods are of the correct size.

D. Preinstallation Adhesion Testing: Install a sample for each test location indicated in the test plan.

1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
3. Arrange for sealant manufacturer's technical representative to be present during tests.
4. Record each test on Preinstallation Adhesion Test Log as indicated.

5. If any sample fails, review products and installation procedures, consult manufacturer, or take whatever other measures are necessary to ensure adhesion; re-test in a different location; if unable to obtain satisfactory adhesion, report to Architect.
6. After completion of tests, remove remaining sample material and prepare joint for new sealant installation.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Perform acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. Perform field quality control inspection/testing as specified in Part 1 under Quality Assurance article.

B. Non-Destructive Adhesion Testing: If there are any failures in first 100 linear feet, notify Architect immediately.

C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

3.05 POST-OCCUPANCY

A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

END OF SECTION

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SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Thermally insulated hollow metal doors with frames.

1.02 RELATED REQUIREMENTS

A. Section 08 71 00 - Door Hardware.

B. Section 08 80 00 - Glazing: Glass for doors and borrowed lites.

C. Section 09 96 00 - High-Performance Coatings.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. HMMA: Hollow Metal Manufacturers Association.

C. NAAMM: National Association of Architectural Metal Manufacturers.

D. SDI: Steel Door Institute.

1.04 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors 2018.

C. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames 2020.

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2017.

E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2020.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

G. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable 2021a.

H. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2018a.

I. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.

J. ASTM C476 - Standard Specification for Grout for Masonry 2022.

K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.

L. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames 2016.

M. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

N. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames 2002.

O. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames 2011.

P. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames 2017.

Q. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames 2014.

R. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames 2019.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

E. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

F. Manufacturer's Qualification Statement.

G. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide hollow metal doors and frames from SDI Certified manufacturer: https://steeldoor.org/sdi-certified/#sle.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years of documented experience and approved by manufacturer.

C. Maintain at project site copies of reference standards relating to installation of products specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:

1. Ceco Door, an Assa Abloy Group company; Legion (LP): www.assaabloydss.com/#sle.
2. Curries, an Assa Abloy Group company; 707 Series: www.assaabloydss.com/#sle.
3. Republic Doors, an Allegion brand; DE Series: www.republicdoor.com/#sle.
4. Steelcraft, an Allegion brand; L-Series: www.allegion.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:

1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with ICC A117.1 and ADA Standards.
3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
4. Door Edge Profile: Manufacturers standard for application indicated.
5. Typical Door Face Sheets: Flush.
6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
    a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated.

1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    a. Level 3 - Extra Heavy-duty.
    b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
    c. Model 2 - Seamless.
    d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
    e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Door Core Material: Polystyrene, 1 lbs/cu ft minimum density.

a. Foam Plastic Insulation: Manufacturer's standard board insulation with maximum flame spread index (FSI) of 75, and maximum smoke developed index (SDI) of 450 in accordance with ASTM E84, and completely enclosed within interior of door.

3. Door Thermal Resistance: R-Value of 6.0 minimum, for installed thickness of polystyrene.
4. Door Thickness: 1-3/4 inches, nominal.
5. Weatherstripping: Integral, recessed into door edge or frame.

C. Interior Doors, Non-Fire-Rated:

1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 3 - Extra Heavy-duty.
   b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 2 - Seamless.
   d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
3. Door Thickness: 1-3/4 inches, nominal.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Full profile/continuously welded type.

1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
2. Frame Metal Thickness: 14 gauge, 0.067 inch, minimum.
3. Weatherstripping: Integral, recessed into frame edge.

D. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.

1. Frame Metal Thickness: 14 gauge, 0.067 inch, minimum.

E. Transom Bars: Fixed, of profile same as jamb and head.

F. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

G. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.

H. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

B. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.06 ACCESSORIES

A. Glazing: As specified in Section 08 80 00, factory installed.

B. Removable Stops: Formed sheet steel, manufacturer's standard , mitered corners; prepared for countersink style tamper proof screws.

C. Astragals for Double Doors:

1. Exterior Doors: Steel, Z-shaped.

D. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Coordinate frame anchor placement with wall construction.

C. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

D. Install door hardware as specified in Section 08 71 00.

1. Comply with recommended practice for hardware placement of doors and frames in accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

E. Comply with glazing installation requirements of Section 08 80 00.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

END OF SECTION

SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Ceiling-mounted access units.

1.02 RELATED REQUIREMENTS

A. Section 07 46 43 - Composition Siding: Ceiling material.

B. Section 08 71 00 - Door Hardware: Mortise cylinder and core hardware.

C. Section 09 91 23 - Interior Painting: Field paint finish.

1.03 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Manufacturer's Installation Instructions: Indicate installation requirements.

D. Manufacturer's qualification statement.

E. Installer's qualification statement.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years documented experience and approved by manufacturer.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

A. Ceiling-Mounted Units:

1. Location: Ceilings, locations as indicated on Drawings..
2. Panel Material: Steel.
3. Size: 24 by 48 inches.
4. Door/Panel: Hinged, standard duty, with mortise lock prep and handle.

2.02 CEILING-MOUNTED ACCESS UNITS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Activar Construction Products Group, Inc. - JL Industries; Model TM Flush Access Panel: www.activarcpg.com/#sle.
   a. Multipurpose Access Panel: Activar/JL Industries TM.
2. Babcock-Davis; Model BNTM24"x48"BD14G: www.babcockdavis.com/#sle.
3. Karp Associates, Inc; MODEL DSC214M: www.karpinc.com/#sle.

4. Milcor, Inc; M Access Door: www.milcorinc.com/#sle.
5. Nystrom, Inc; Model MTM24"x48"BG: www.nystrom.com/#sle.

B. Ceiling-Mounted Units: Factory-fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.

1. Door Style: Single thickness with rolled or turned in edges.
2. Frames: Manufacturer's standard, minimum thickness.
3. Single Steel Sheet Door Panels: Manufacturer's standard, minimum thickness.
4. Insulation: Non-combustible mineral wool or glass fiber.
5. Steel Finish: Primed.
6. Hardware:
   a. Hinges for Non-Fire-Rated Units: Continuous piano hinge.
   b. Handle: Fixed.
   c. Latch/Lock: Cylinder lock-operated cam latch, two keys for each unit.
      1) Mortise cylinder and core as specified in Section 08 71 00.
   d. Number of Locks/Latches Required: As recommended by manufacturer for size of unit.
   e. Inside Latch Release: Mechanism that allows door/panel to be opened from inside.
   f. Gasketing: Extruded neoprene, around perimeter of door panel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to proceeding with this work.

B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

3.03 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

SECTION 08 33 13
COILING COUNTER DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Coiling counter doors and operating hardware, manual operation:

1. Non-insulated.
2. Insulated.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

B. Section 08 71 00 - Door Hardware: Cylinder cores and keys.

C. Section 26 05 33.13 - Conduit for Electrical Systems: Conduit from fire alarm system.

1.03 REFERENCE STANDARDS

A. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Submit manufacturer's standard literature showing materials and details of construction and finish.

C. Shop Drawings: Indicate rough and actual opening dimensions, anchorage methods, hardware locations, and installation details.

D. Samples: Submit two slats, 4 inch long, illustrating shape, color and finish texture.

E. Manufacturer's Instructions: Indicate installation sequence and installation, adjustment, and alignment procedures.

F. Operation and Maintenance Data: Indicate modes of operation, lubrication requirements and frequency, and periodic adjustments required.

G. Project Record Documents: Include as-built electrical diagrams for electrical operation and connection to fire alarm system.

1.05 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Coiling Counter Doors (Interior Counter Door, Non-Insulated):

1. Alpine Overhead Doors, Inc; Counter Shutter™: www.alpinedoors.com/#sle.
2. Cornell/Cookson, Inc; Rolling Counter Door, Model ESC10; www.cornelliron.com.
3. C.H.I. Overhead Doors; Model 6544 (aluminum): www.chiohd.com/#sle.
4. Raynor Garage Doors; DuraShutter, Model CP: www.raynor.com/#sle.

B. Coiling Counter Doors (Exterior Counter Door, Insulated):

1. Alpine Overhead Doors, Inc; IMB-V7™ Counter Shutter: www.alpinedoors.com/#sle.
2. Cornell/Cookson, Inc; Rolling Counter Door, Model ESC30; www.cornelliron.com.
3. C.H.I. Overhead Doors; Model 6500 Series: www.chiohd.com/#sle.

2.02 COILING COUNTER DOORS

A. Coiling Counter Doors, Non-Fire-Rated, Non-Insulated, Manual Operation: Aluminum slat curtain.

1. Mounting: As indicated on Drawings, or if not indicated, Between jambs, within prepared opening.
2. Provide integral frame and sill of same material and finish.
3. Nominal Slat Size: 1½ inches wide, minimum.
4. Slat Profile: Flat.
5. Finish, Aluminum: Color anodized.
6. Color: Color as selected by Architect from manufacturer's standard colors.
7. Guides: Formed track; same material and finish unless otherwise indicated.
8. Hood Enclosure: Manufacturer's standard; aluminum.
9. Manual push up operation.
10. Locking Devices: Lock and latch handle on outside.

B. Coiling Counter Doors, Non-Fire-Rated, Insulated, Manual Operation: Aluminum slat curtain.

1. Mounting: As indicated on Drawings, or if not indicated, Between jambs, within prepared opening.
2. Insulated Slat Configuration:
   a. Nominal Slat Size: 1½ inches wide by ½-inch deep minimum.
   b. Slat Profile: Flat.
   c. Total Slat Thickness: .545 inch.
   d. Flame Spread Index of 15 and a Smoke Developed Index of 450 as tested per ASTM E84.
   e. R-Value: 2.0.
   f. U-Factor: .88.
3. Finish, Aluminum: Color anodized.
4. Color: Color as selected by Architect from manufacturer's standard colors.
5. Guides: Formed track; same material and finish unless otherwise indicated.
6. Hood Enclosure: Manufacturer's standard; aluminum.
7. Manual push up operation.
8. Locking Devices: Lock and latch handle on inside.

2.03 MATERIALS

A. Curtain Construction: Interlocking, single thickness slats.

1. Slat Ends: Alternate slats fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
2. Curtain Bottom: Fitted with angles to provide reinforcement and positive contact in closed position.
3. Aluminum Slats: ASTM B221 (ASTM B221M), aluminum alloy Type 6063; minimum thickness 0.040-inch minimum.
4. Insulation: Manufacturer's standard.

B. Guide Construction: Continuous, of profile to retain door in place, with mounting brackets of same metal.

1. Aluminum Guides: Extruded aluminum channel, with wool pile runners along inside.

C. Hood Enclosure: Internally reinforced to maintain rigidity and shape.

D. Lock Hardware:

1. Latchset Lock Cylinders: Standard mortise cylinder type; keyed master keyed.
   a. Keying: Master keyed.
2. Latching Mechanism: Inside mounted, adjustable keeper, spring activated latch bar feature to keep in locked or retracted position.
3. Latch Handle: Manufacturer's standard.

E. Roller Shaft Counterbalance (Manual Operation): Steel pipe and torsion steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

1. Cycle Life: High 100,000 cycles.

2.04 MANUAL OPERATION

A. Push-up Door Operation: Design counterbalance mechanism so required lift or pull for door operation does not exceed 25 lbf (111 N).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that opening sizes, tolerances and conditions are acceptable.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Install perimeter trim as indicated.

3.03 TOLERANCES

A. Maintain dimensional tolerances and alignment with adjacent work.

B. Maximum Variation From Plumb: 1/16 inch.

C. Maximum Variation From Level: 1/16 inch.

D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft straight edge.

3.04 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

3.05 CLEANING

A. Clean installed components.

B. Remove labels and visible markings.

END OF SECTION

SECTION 08 36 13
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overhead sectional doors, electrically operated.

B. Operating hardware and supports.

C. Electrical controls.

1.02 RELATED REQUIREMENTS

A. Section 07 46 43 - Composition Siding: Composition siding trim for door opening trim material.

B. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

C. Section 08 71 00 - Door Hardware: Lock cylinders.

D. Section 26 05 33.13 - Conduit for Electrical Systems: Conduit from electric circuit to operator and from operator to control station.

E. Section 26 05 83 - Wiring Connections.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test 2015 (Reaffirmed 2020).

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

D. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass 2019.

E. DASMA 102 - American National Standard Specifications for Sectional Doors 2018.

F. ITS (DIR) - Directory of Listed Products Current Edition.

G. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts 2008 (Reaffirmed 2020).

H. NEMA MG 1 - Motors and Generators 2021.

I. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum) 2020.

J. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

K. UL (DIR) - Online Certifications Directory Current Edition.

L. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems Current Edition, Including All Revisions.

1.04 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide exterior sectional overhead doors capable of withstanding the effects of gravity loads and the following loads and stresses without evidencing permanent deformation of door components:

1. Wind Loads: Uniform pressure (velocity pressure) of 20 lbf/sq. ft. (960 Pa), acting inward and outward.
   a. Basic Wind Speed: 90 mph (40 m/s).
   b. Importance Factor: III.
   c. Exposure Category: B.
2. Deflection Limits: Design sectional doors to withstand design wind loads without evidencing permanent deformation or disengagement of door components. Deflection of door in horizontal position (open) shall not exceed 1/120 of the door width.

B. Air Infiltration: Maximum rate not more than indicated when tested according to ASTM E 283 or DASMA 105.

1. Air Infiltration: Maximum Rate of 0.08 cfm/sq.ft. (0.406 L/s per sq. m) at 15 and 25 mph (24.1 and 40.2 km/h).

C. Operation-Cycles: Provide sectional door components and operators capable of operating for not less than number of cycles indicated for each door. One operation cycle is complete when a door is opened from the closed position to the fully open position and returned to the closed position.

1. Sectional overhead door components and operators capable of operating for not less than 100,000 cycles.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Shop Drawings: For each installation and for special components not dimensioned or detailed in manufacturer's product data. Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
2. Wiring Diagrams: For power, signal, and control wiring.

C. Product Data: For sectional door and accessory. Include the following:

1. Construction details, material descriptions, dimensions of individual components, profile door sections, and finishes.
2. Rated capacities, operating characteristics, electrical characteristics, and furnished accessories.

D. Samples: Submit two panel finish samples, 6 by 6 inch in size, illustrating color and finish.

E. Delegated-Design Submittal: For sectional doors indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1. Summary of forces and loads on walls and jambs.

F. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.

G. Manufacturer's Qualification Statement.

H. Installer's Qualification Statement.

I. Operation Data: Include normal operation, troubleshooting, and adjusting.

J. Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.

K. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least five years documented experience and approved by manufacturer.

C. Comply with applicable code for motor and motor control requirements.

D. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction, as suitable for purpose specified.

E. Source Limitations: Obtain sectional doors from single source from single manufacturer.

1. Obtain operators and controls from sectional door manufacturer.

F. Standard for Sectional Doors: Fabricate sectional doors to comply with DASMA 102 unless otherwise indicated.

G. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1.

1.07 WARRANTY

A. See Section 01 77 00 - Closeout Procedures for warranty requirements.

B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship, include coverage for electric motor and manufacturer warranty for electric operating equipment within specified warranty period.

1. Warranty Period: Warranty Period: Five years from date of Substantial Completion.

C. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Subject to compliance with Requirements, provide Rail and Style "AlumaView" AV300 by Raynor Garage Doors, 1101 East River Rd. P. O. Box 448; Dixon, IL 61021-0448; Toll Free Tel: 800-4-RAYNOR; Tel: 815-288-1431; Fax: 888-598-4790; Web: www.raynor.com. Comparable product from one of the following manufacturers may be considered:

1. Sectional Doors:
   a. Clopay® Corporation: www.clopaycommercial.com/#sle; Product Clopay Commercial - Model 904U Architectural Series.
   b. Overhead Door® Corporation: www.overheaddoor.com/#sle; Product Aluminum Door Systems Model 521 Aluminum Sectional Doors.
   c. Wayne-Dalton Commercial Doors: www.wayne-dalton.com; Product Model K-AL Aluminum Full View.

2.02 ALUMINUM DOORS

A. Aluminum Doors: Flush aluminum, insulated; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.

1. Door Nominal Thickness: 2 inches thick.
2. Finish: Factory anodized; color as selected from manufacturers standard line.
3. Glazed Lights: Full panel width, all rows; set in place with resilient glazing channel.
4. Electric Operation: Electric control station.

B. Full-Vision Sections: Manufacturer's standard, tubular, aluminum-framed section fully glazed with 1-inch thick, clear, laminated safety glass insulated glazing set in vinyl, rubber, or neoprene glazing channel and with removable extruded-vinyl or aluminum stops.

C. Window Frame: Manufacturers standard, finish to match.

D. Glazing: Laminated safety glass; insulated glass units; tinted; 1 inch overall thickness.

2.03 COMPONENTS

A. Track: Rolled galvanized steel, 0.090 inch minimum thickness; 2 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.

B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.

C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.

D. Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.

E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

F. Head Weatherstripping: EPDM rubber seal, one piece full length.

G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

H. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

I. Lock Cylinders: See Section 08 71 00.

2.04 MATERIALS

A. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.

B. Laminated Safety Glass: ASTM C1172 with at least 0.030 inch thick polyvinyl butyral (PVB) interlayer, and in compliance with safety criteria 16 CFR 1201 Categories 1 and 2, and ANSI Z97.1.

1. Type IG-2 - Insulating Glass Units: Safety glazing.
    a. Space between lites filled with argon.
    b. Outboard Lite: Fully tempered laminated safety glass, 1/4 inch thick, minimum.
        1) Tint: Clear.
        2) Coating: Low-E (passive type), on #2 surface.
    c. Warm-edge spacer.
    d. Inboard Lite: Fully tempered laminated safety glass, 1/4 inch thick, minimum.
        1) Tint: Clear.
    e. Total Thickness: 1 inch.

C. Insulation: Foamed-in-place polyurethane, bonded to facing.

2.05 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.

1. Provide interlock switches on motor operated units.
2. Provide tamperproof operation cycle counter.

B. Electric Operators:

1. Mounting: Jackshaft, Side mounted on cross head shaft.
2. Motor Enclosure:
    a. Exterior Doors: NEMA MG 1, Type 4; open drip proof.
3. Motor Rating: 3/4 hp; continuous duty.
4. Motor Voltage: 120 volts, single phase, 60 Hz.
5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
6. Controller Enclosure: NEMA 250, Type 1.
7. Opening Speed: 12 inches per second.
8. Brake: Adjustable friction clutch type, activated by motor controller.
9. Manual override in case of power failure.
10. Refer to Section 26 05 83 for electrical connections.
11. Manufacturer:
    a. Basis of Design: Subject to compliance with Requirements, provide ControlHoist manufactured by Raynor Garage Doors; Model Raynor ControlHoist Optima. Comparable product by manufacturers listed above may be considered.

C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.

D. Control Station: Provide standard key-operated (Open-Close-Stop) continuous-contact control device for each operator complying with UL 325.

1. 24 volt circuit.
2. Surface mounted, at interior location as indicated on Drawings, or if not indicated, as directed by Architect.
3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
   a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
   b. Secondary Device: Provide electric sensing edge with wireless edge kit or non-monitored safety edge as an option along with continuous-constant control device.

E. Safety Edge: Located at bottom of sectional door panel, full width; electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.

1. Manufacturers:
   a. Miller Edge, Inc: www.MillerEdge.com/#sle.

F. Provide interconnection to security system.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

B. Do not begin installation until substrates have been properly prepared. Verify that site conditions are acceptable for installation of doors, operators, controls and accessories. Ensure that openings are square, flush and plumb.

C. Verify that electric power is available and of the correct characteristics.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.

B. Clean surfaces thoroughly prior to installation.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Anchor assembly to wall construction and building framing without distortion or stress.

C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

D. Fit and align door assembly including hardware.

E. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

F. Lubricate bearings and sliding parts, and adjust doors for proper operation, balance, clearance and similar requirements.

G. Install perimeter trim.

3.04 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch.

B. Maximum Variation from Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

D. Maintain dimensional tolerances and alignment with adjacent work.

3.05 ADJUSTING

A. Adjust door assembly for smooth operation and full contact with weatherstripping.

B. Lubricate bearings and sliding parts, assure weather tight fit around door perimeter and adjust doors for proper operation, balance, clearance and similar requirements. Protect installed products until completion of project.

C. Have manufacturer's field representative present to confirm proper operation and identify adjustments to door assembly for specified operation.

3.06 CLEANING

A. Clean doors and frames and glazing.

B. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove and legally dispose of construction debris from project site.

C. Remove temporary labels and visible markings.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

B. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

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SECTION 08 43 13
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.

1.02 RELATED REQUIREMENTS

A. Section 07 21 00 - Thermal Insulation: for foamed-in-place insulating sealant used in filling perimeter aluminum-framed storefront shim spaces in exterior walls.

B. Section 07 25 00 - Weather Barriers: Sealing framing to water-resistive barrier installed on adjacent construction.

C. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

D. Section 08 51 13 - Aluminum Windows: Operable sash within glazing system.

E. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site 2015.

B. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems 2014.

C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document) 2015.

D. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2020.

E. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

G. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2021a.

H. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.

I. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2021.

J. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors 2002 (Reapproved 2018).

K. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference 2015.

L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic) 2019.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers. Conduct meeting at Project site.

1.05 PERFORMANCE REQUIREMENTS

A. General Performance:

1. Product to comply with the specified performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction, as determined by testing of aluminum storefront systems representing those indicated for this project.
2. Aluminum storefront systems shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
3. Failure includes any of these events:
    a. Thermal stresses transferring to building structure.
    b. Glass breakage.
    c. Loosening or weakening of fasteners, attachments, and other components.
    d. Failure of operating units

B. Delegated Design:

1. Design aluminum storefront systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated licensed in the State where the Project is located.

C. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.

1. Design Wind Loads: Comply with requirements of ASCE 7.

D. Air Leakage:

1. The test specimen shall be tested in accordance with ASTM E 283.
2. With interior seal, air leakage rate shall not exceed 0.06 cfm/ft² at a static air pressure differential of 6.2 psf.
3. Without interior seal, air leakage rate shall not exceed 0.06 cfm/ft² at a static air pressure differential of 1.6 psf.
4. CSA A440 Fixed Rating.

E. Water Resistance:

1. The test specimen shall be tested in accordance with ASTM E 331.
2. There shall be no leakage at a minimum static air pressure differential of 8 psf as defined in AAMA 501.

F. Uniform Load:

1. A static air design load of 35 psf shall be applied in the positive and negative direction in accordance with ASTM E 330.
2. There shall be no deflection in excess of L/175 of the span of any framing member.
3. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

G. Thermal Movements:

1. Allow for thermal movements resulting from the following:
   a. 0°F (-18 C) to 180°F (82 C) maximum change (range) in ambient and surface temperatures,
   b. 75°F (24 C) test interior ambient air temperature.
2. Test performance shows no buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5 for a minimum 3 cycles.

H. Thermal Transmittance (U-factor):

1. Thermal transmittance test results are based upon 1" (25.4 mm) clear high-performance insulating glass 1/4" (e, #2), 1/2" warm edge spacer and argon fill gas, 1/4".
2. When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:
   a. Glass to exterior .24 (low-e) per AAMA 507 .36 Btu/hr/ft²/°F per NFRC 100.

I. Condensation Resistance Factor (CRF):

1. The glass to exterior CRF, when tested to AAMA Specification 1503, shall not be less than 70frame and 69glass (low-e).

1.06 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Provide construction details, material descriptions, component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details, finishes and installation instructions.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, field welding required and the following:

1. Plans.
2. Elevations.
3. Sections.
4. Operational clearances.
5. Installation details.
6. Include design engineer's stamp or seal on shop drawings for attachments and anchors.

D. Samples: Submit two samples 4 x 4 inches in size illustrating finished aluminum surface, two insulated glass samples 12 x 12-inches in size, glazing materials.

E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

F. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

G. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

H. Designer's qualification statement.

I. Manufacturer's qualification statement.

J. Installer's qualification statement.

K. Specimen warranty.

1.07 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience.

1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
   a. Insulating Glass Certification Council (IGCC).

C. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience and approved by manufacturer.

1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.
   a. North American Contractor Certification (NACC) for glazing contractors.

D. Source Limitations for Aluminum-Framed Storefront Systems and Aluminum Windows: Obtain from single source from single manufacturer.

1.08 MOCK-UPS

A. Construct mockup to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

B. Construct mockup for the type(s) of storefront elevation(s) indicated, in location directed by Architect.

C. Locate where directed.

D. Approved mock-up may remain as part of work.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.10 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication and indicate measurements on Shop Drawings.

B. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.11 WARRANTY

A. Correct defective Work within a two year period after Date of Substantial Completion.

B. Provide ten year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.

C. Provide ten year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN -- ALUMINUM STOREFRONT FRAMING FOR INSULATING GLAZING

A. Front-Set Style, Thermally-Broken:

1. Basis of Design: Subject to compliance with requirements, provide Kawneer Trifab® VersaGlaze® 451T Series, Front Set Glazing, Storefront System, manufactured by Kawneer North America; an Alcoa company: www.kawneer.com/#sle..
2. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.

B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below may be considered .

1. Tubelite, Inc.: www.tubeliteinc.com/#sle.

2.02 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.

1. Glazing Rabbet: For 1 inch insulating glazing.
2. Finish: Class I color anodized.
   a. Factory finish all surfaces that will be exposed in completed assemblies.
   b. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
3. Finish Color: As selected by Architect from manufacturer's standard line.
4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
5. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
10. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing, and heel bead of glazing compound.

B. Thermal Barrier:

1. Thermal Break with dual nominal 1/4" (6.4 mm) separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
2. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

C. Brackets and Reinforcements:

1. Manufacturer's standard high-strength aluminum with non-staining, non-ferrous shims for aligning system components.

D. Fasteners and Accessories:

1. Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories must be compatible with adjacent materials.
2. Where exposed, fasteners and accessories shall be stainless steel.

E. Perimeter Anchors:

1. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

2.03 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.

1. Glazing Stops: Flush.
2. Cross-Section: 2 by 4½ inch nominal dimension.
3. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.
    a. Reinforcing Members:
        1) Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.
        2) Reinforcing members must provide sufficient strength to withstand the design pressure indicated.

B. Glazing: See Section 08 80 00.

1. For Exterior Framing: Type IGL Type 1.

C. Operable Sash: Aluminum project-out awning; finished to match storefront; turn handle latch with manufacturer's standard insect screen.

D. Sealant:

1. For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
2. Foamed-In-Place Insulating Sealant: Specified in Section 07 21 00 - Thermal Insulation.

2.04 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209/B209M.

C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.

D. Structural Supporting Anchors Attached to Reinforced Concrete Members: Design for welded attachment to weld plates embedded in concrete.

E. Fasteners: Stainless steel.

F. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.

G. Concealed Flashings: Sheet aluminum, 26 gauge, 0.017 inch minimum thickness.

H. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.

I. Joint Sealants:

1. For installation at perimeter of aluminum-framed systems, as specified in Division 07 Joint Sealants Section.

J. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

K. Glazing Accessories: See Section 08 80 00.

L. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

M. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

N. Bituminous Paint:

1. Cold-applied asphalt-mastic paint.
2. Complies with SSPC-Paint 12 requirements except containing no asbestos.
3. Formulated for 30-mil (0.762 mm) thickness per coat.

2.05 FABRICATION

A. Fabricate framing member components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fitted joints that are flush, hairline, and weatherproof.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing that maintain required glazing edge clearances.
6. Provisions for field replacement of glazing.
7. Fasteners, anchors, and connection devices that are concealed from view to the greatest extent possible.

B. Mechanically Glazed Framing Members:

1. Fabricate for flush glazing without projecting stops.

C. Storefront Framing:

1. Fabricate components for assembly using manufacturer’s standard installation instructions.

D. After fabrication, clearly mark components to identify their locations in project according to shop drawings.

2.06 FINISHES

A. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.

B. Color: As selected by Architect from manufacturer's standard range.

C. Touch-Up Materials: As recommended by coating manufacturer for field application.

PART 3 EXECUTION

3.01 EXAMINATION

A. With installer present, examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work:

1. Verify rough opening dimensions.
2. Verify levelness of sill plate.
3. Verify operational clearances.
4. Masonry Surfaces:
    a. Masonry surfaces must be visibly dry and free of excess mortar, sand, and other construction debris.

B. Verify dimensions, tolerances, and method of attachment with other work.

C. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

D. Proceed with installation only after correcting unsatisfactory conditions.

3.02 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed storefront system, accessories, and other components.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

1. Set sill members in bed of sealant or with gaskets, as indicated, for weather-tight construction.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront system to the exterior.

I. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

J. Fill shim spaces at perimeter of assembly with non-expanding foamed-in-place insulating sealant to maintain continuity of thermal barrier. Do not obstruct storefront interior drainage system.

K. Install operating sash.

L. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

A. Provide services of storefront manufacturer's field representative to observe for proper installation of system and submit report.

B. Provide field testing of installed storefront system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.

1. Perform a minimum of two tests in each designated area as indicated on drawings.
2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 6.2 psf.
    a. Maximum allowable rate of water penetration in 15-minute test is 0.5 ounce that is not contained in an area with provisions to drain to exterior, or collected on surface of interior horizontal framing member.
4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 1.57 psf.
    a. Maximum allowable rate of air leakage is 0.09 cfm/sq ft.

C. Manufacturer's Field Services:

1. Upon owner’s written request, provide periodic site visit by manufacturer’s field service representative.

3.05 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.06 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

1. Avoid damaging protective coatings and finishes.
2. Remove excess sealants, glazing materials, dirt, and other substances.
3. Repair or replace damaged installed products.

C. Clean glass immediately after installation.

1. Comply with glass manufacturer's written recommendations for final cleaning and maintenance.
2. Remove non-permanent labels and clean surfaces.

3. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.

D. Remove construction debris from project site and legally dispose of debris.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 51 13
ALUMINUM WINDOWS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Operable aluminum-framed windows inserted into aluminum-framed storefronts, including perimeter trims, accessories, shims and anchors, and perimeter sealing of window units.

1. Types of aluminum windows include:
   a. Project-Out windows (awning windows).

B. Related Sections include the following:

1. Section 07 92 00 – Joint Sealants.
2. Section 08 41 13 - Aluminum-Framed Storefronts: for coordinating finish among aluminum fenestration units.

1.02 DEFINITIONS

A. Performance class designations according to AAMA/WDMA 101/I.S.2/NAFS:

1. AW: Architectural.

B. Performance grade number according to AAMA/WDMA 101/I.S.2/NAFS:

1. Design pressure number in pounds force per square foot (pascals) used to determine the structural test pressure and water test pressure.

C. Structural Test Pressure: For uniform load structural test, is equivalent to 150 percent of the design pressure.

D. Minimum Test Size: Smallest size permitted for performance class (gateway test size). Products must be tested at minimum test size or at a size larger than minimum test size to comply with requirements for performance class.

1.03 PERFORMANCE REQUIREMENTS

A. General Performance: Aluminum-framed window system shall withstand the effects of the following performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.

B. Window System Performance Requirements:

1. Performance Requirements: Provide aluminum windows of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).
   a. Performance Class and Grade: P-HC40 – P-HC70 Project-Out Window.
2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283 at a minimum window size of 60" x 36" Project-Out. The air infiltration rate shall not exceed 0.10 cfm/ft2 at a static air pressure differential of 6.24 psf.
3. Water Resistance: The test specimen shall be tested in accordance with ASTM E547 and ASTM E331 at a minimum window size of 60" x 36" Project-Out. There shall be no leakage as defined in the test method at a static air pressure differential of 15 psf.
4. Uniform Load Deflection: A minimum static air pressure difference of 40 psf (2 locks) or 70 psf (3 locks) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member.

5. Uniform Load Structural Test: A minimum static air pressure difference of 60 psf (2 locks) or 105 psf (3 locks) shall be applied in the positive and negative direction in accordance with ASTM E 330. The unit shall be evaluated after each load with permanent set not to exceed 0.2% of span length.
6. Component Testing: Window components shall be tested in accordance with procedures described in ANSI AAMA/WDMA/CSA 101/I.S.2/A440 and AAMA 910.
7. Energy Efficiency:
    a. Thermal Transmittance (U-Factor): When tested to AAMA Specification 1503, AAMA Specification 507 or NFRC 100 the thermal transmittance (U-Factor) shall not be more than;
        1) 1" (25.4 mm) insulating glass:
            (a) Project-Out: U-Factor not more than .35 per AAMA 507 or NFRC 100 with exterior 1/4" clear glass with soft coat low e #2, warm edge spacer with argon , and interior 1/4" (4.76 mm) glass.
8. Condensation Resistance Test (CRF): Provide aluminum windows tested for thermal performance according to AAMA 1503, the condensation resistance factor (CFR) shall not be less than;
    a. 1" clear insulating glass with warm edge spacer:
        1) Project-Out: CRF not less than 73 (frame) and 60 (glass).
9. Forced Entry Resistance: All windows shall conform to ASTM F588, Grade 10.

C. Environmental Product Declarations (EPD): Shall have a Type III product specific EPD created from a Product Category Rule specific to North America.

D. Thermal Movements: Provide aluminum windows, including anchorage, that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C) material surfaces.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions for each type of aluminum window indicated.

C. Shop Drawings: Include plans, elevations, sections, details, hardware, attachments to other work, operational clearances and installation details.

D. Samples for Initial Selection: : For units with factory-applied color finishes including samples of hardware and accessories involving color selection.

1. Include similar Samples of hardware and accessories involving color selection.

E. Samples for Verification: For aluminum windows and components required, prepared on Samples of size indicated below.

1. Operable Window: Full-size unit with factory-applied finish.
2. Hardware: Full-size units with factory-applied finishes.
3. Weather Stripping: 12-inch-long sections.

F. Product Schedule: For aluminum windows. Use same designations indicated on Drawings.

G. Qualification Data: For Installer manufacturer professional engineer and testing agency.

H. Field quality-control test reports.

I. Product Test Reports: Based on evaluation of comprehensive tests performed a qualified testing agency for each type, class, grade, and size of aluminum window. Test results based on use of downsized test units will not be accepted.

J. Maintenance Data: For operable window, sash, operating hardware, weather stripping and finishes to include in maintenance manuals.

K. Warranty: Special warranty specified in this Section.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: An installer which has had successful experiences with installation of the same or similar units required for this project and other projects of similar size and scope, and acceptable to aluminum window manufacturer for installation of units required for this Project.

1. Installer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
2. Engineering Responsibility: Preparation of data for aluminum windows, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Manufacturer Qualifications: A manufacturer capable of fabricating aluminum windows that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.

C. Source Limitations: Obtain aluminum windows and aluminum-framed storefront through one source from a single manufacturer.

D. Product Options: Drawings indicate size, profiles, and dimensional requirements of aluminum windows and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements." Do not modify size and dimensional requirements.

1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Fenestration Standard: Comply with AAMA/WDMA 101/I.S.2/NAFS, "North American Fenestration Standard Voluntary Performance Specification for Windows, Skylights and Glass Doors," for definitions and minimum standards of performance, materials, components, accessories, and fabrication. Comply with more stringent requirements if indicated.

1. Provide AAMA-certified aluminum windows with an attached label.

F. Glazing Publications: Comply with published recommendations of glass manufacturers and with GANA's "Glazing Manual" unless more stringent requirements are indicated.

G. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockup for type(s) of window(s) indicated, in location(s) as directed by Architect.

H. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to aluminum windows including, but not limited to, the following:

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review and discuss the finishing of aluminum windows that is required to be coordinated with the finishing of other aluminum work for color and finish matching.
3. Review, discuss, and coordinate the interrelationship of aluminum windows with other exterior wall components. Include provisions for structural anchorage, glazing, flashing, weeping, sealants, and protection of finishes.
4. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
5. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.06 PROJECT CONDITIONS

A. Field Measurements: Verify aluminum window openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.07 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Failure to meet performance requirements.
   b. Structural failures including excessive deflection, water leakage, air infiltration, or condensation.
   c. Faulty operation of movable sash and hardware.
   d. Deterioration of metals, other materials, and metal finishes beyond normal weathering.
   e. Failure of insulating glass.
2. Warranty Period:
   a. Window: Two years from date of Substantial Completion.
   b. Glazing: Ten years from date of Substantial Completion.
   c. Metal Finish: Ten years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer Company Inc. GLASSvent™ Windows (Structural Silicone Glazed) Project-Out windows; 2-3/16" system depth (1/4" Infill), 2-13/16" system depth (1" Infill). Comparable product by one of the following manufacturers may be considered:

1. Tubelite, Inc.: www.tubeliteinc.com/#sle.
2. Substitutions: See Section 01 60 00 – Product Requirements.

2.02 MATERIALS

A. Aluminum Extrusions: Alloy and temper recommended by aluminum window manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090" wall thickness at any location for the main frame and sash members.

B. Thermal Barrier: The thermal barrier shall be manufacturer’s standard consisting of low conductive polymer full depth of infill.

C. Fasteners: Aluminum, nonmagnetic stainless steel or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components.

D. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

E. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

F. Compression-Type Weather Stripping: Provide compressible weather stripping designed for permanently resilient sealing under bumper or wiper action and for complete concealment when aluminum window is closed.

1. Weather-Stripping Material: Manufacturer's standard system and materials complying with AAMA/WDMA 101/I.S.2/NAFS.
2. Weather Seals: Provide weather stripping with integral barrier fin or fins of semirigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.

G. Replaceable Weather Seals: Comply with AAMA 701/702.

H. Sealant: For sealants required within fabricated windows, provide window manufacturer's standard, permanently elastic, non-shrinking, and nonmigrating type recommended by sealant manufacturer for joint size and movement.

2.03 WINDOW

A. Basis of Design: GLASSvent™ Windows - Project-Out.

2.04 GLAZING

A. Glass: Clear, insulating-glass units, argon gas filled, with low-E coating pyrolytic on second surface or sputtered on second or third surface, complying with Division 08 Section "Glazing."

B. Glazing System: Glazing method shall be four sided structural silicone glazed in accordance with manufacturer’s standards.

2.05 HARDWARE

A. General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum; designed to smoothly operate, tightly close, and securely lock aluminum windows, and sized to accommodate sash weight and dimensions.

B. Project-Out / Outswing Windows: Provide the following operating hardware:

1. Stainless Steel 4-Bar Hinges.
2. Cast White Bronze Cam Locking Handles.
3. Cast White Bronze Access Control (Custodial) Locks with Removable Handle.

C. Limit Devices: Provide limit devices designed to restrict sash or ventilator opening.

1. Safety Devices: Limit clear opening to 6-inches for ventilation; with custodial key release.

2.06 ACCESSORIES

A. Spacers, Setting Blocks, Gaskets, and Bond Breakers: Manufacturer's standard permanent, non-migrating types in hardness recommended by manufacturer, compatible with sealants, and suitable for system performance requirements.

B. Framing system gaskets, sealants, and joint fillers as recommended by manufacturer for joint type.

C. Sealants and joint fillers for joints at perimeter of window system as specified in Division 7 Section “Joint Sealants”.

D. Insect Screens: Extruded aluminum frames, 6063-T6 alloy and temper, joined at corners: 18 x 16 mesh fiberglass screen cloth; frames finished to match aluminum windows; splines shall be extruded vinyl, removable to permit rescreening.

2.07 FABRICATION

A. Framing Members, General: Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations.
2. Accurately fit joints; make joints flush, hairline and weatherproof.
3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
4. Physical and thermal isolation of glazing from framing members.
5. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
6. Provisions for field replacement of glazing.
7. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.

B. Window Vent and/or Vent Frame Joinery: Mitered and Mechanically clipped and/or staked. Factory sealed vent and /or vent frame and corner joints.

C. Fabricate aluminum windows in sizes indicated. Include a complete system for assembling components and anchoring windows.

D. Weather Stripping: Provide full-perimeter weather stripping for each operable sash and ventilator.

E. Weep Holes: Provide weep holes and internal passages to conduct infiltrating water to exterior.

F. Provide water-shed members above side-hinged ventilators and similar lines of natural water penetration.

G. Factory-Glazed Fabrication: Glaze aluminum windows in the factory where practical and possible for applications indicated. Comply with requirements in Division 08 Section "Glazing" and with AAMA/WDMA 101/I.S.2/NAFS.

2.08 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.09 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

1. Color: As selected by Architect from full range of industry colors and color densities.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate, and operational clearances. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight window installation.

1. Metal Surfaces: Dry; clean; free of grease, oil, dirt, rust, corrosion, and welding slag; without sharp edges or offsets at joints.
2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing windows, hardware, accessories, and other components.

B. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.

C. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.

D. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.03 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency, acceptable to Owner, to perform tests and inspections and prepare test reports.

1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.

B. Testing Services: Testing and inspecting of installed windows shall take place as follows:

1. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502, Test Method A, by applying same test pressures required to determine compliance with AAMA/WDMA 101/I.S.2/NAFS in Part 1 "Performance Requirements" Article.
2. Testing Extent: Architect shall select window units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer’s representative present.
3. Test Reports: Shall be prepared according to AAMA 502.

C. Remove and replace noncomplying aluminum window and retest as specified above.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.04 ADJUSTING, CLEANING, AND PROTECTION

A. Adjust operating sashes and ventilators, screens, hardware and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.

B. Clean aluminum surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.

C. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels, and clean surfaces.

D. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

E. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.

3.05 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain window operating system.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 CONDITIONS

A. Conditions of the contract (General and Supplementary Conditions) and Division One General Requirements, govern the work of this section.

B. This section includes all material, and related service necessary to furnish all finish hardware indicated on the drawings or specified herein.

C. Furnish UL listed hardware for all labeled and 20 min. openings in conformance with the requirements for the class of opening scheduled. Underwriters' requirements shall have precedence over specification where conflicts exist.

D. All work shall be in accordance with all applicable state and local building codes. Code requirements shall have precedence over this specification where conflicts exist.

1.2 WORK INCLUDED

A. This section includes the following:
1. Furnish door hardware (for hollow metal) specified herein, listed in the hardware schedule, and/or required by the drawings.
2. Cylinders for Hollow Doors
3. Thresholds and Weather-stripping
4. Access Control components and or systems specified within this section.

B. Where items of hardware are not definitely or correctly specified and is required for the intended service, such omission, error, or other discrepancy should be directed to the Architect prior to the bid date for clarification by addendum. Otherwise furnish such items in the type and quantity established by this specification for the appropriate service intended.

1.3 RELATED WORK IN OTHER SECTIONS

A. This section includes coordination with related work in the following sections:
1. Division 6 Section " Architectural Wood Casework "
2. Division 8 Section "Hollow Metal Doors and Frames".
3. Division 28 Sections "Electrical".

1.4 REFERENCES

A. Publications of agencies and organizations listed below form a part of this specification section to the extent referenced.
1. DHI - Recommended Locations for Builders' Hardware.
2. NFPA 80 - Standards for Fire Doors and Windows.
3. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures.
4. UL - Building Material Directory.
5. DHI - Door and Hardware Institute
6. WHI - Warnock Hersey
7. BHMA - Builders Hardware Manufacturers Association
8. ANSI – American National Standards Institute
9. IBC 2012 - International Building Code 2012 Edition (as amended by local building code)

1.5 SUBMITTALS

A. Within ten days after award of contract, submit detailed hardware schedule in quantities as required by Division 01 - General Conditions.

B. Schedule format shall be consistent with recommendations for a vertical format as set forth in the Door & Hardware Institute's (DHI) publication "Sequence and Format for the Hardware Schedule". Hardware sets shall be consolidated to group multiple door openings which share similar hardware requirements. Schedule shall include the following information:
   1. Door number, location, size, handing, and rating.
   2. Door and frame material, handing.
   3. Degree of swing.
   4. Manufacturer
   5. Product name and catalog number
   6. Function, type and style
   7. Size and finish of each item
   8. Mounting heights
   9. Explanation of abbreviations, symbols, etc.
   10. Numerical door index, indicating the hardware set/ group number for each door.

C. When universal type door closers are to be provided, the schedule shall indicate the application method to be used for installation at each door: (regular arm, parallel arm, or top jamb).

D. The schedule will be prepared under the direct supervision of a certified Architectural Hardware Consultant (AHC), or certified Door Hardware Consultant (DHC) employed by the hardware distributor. The hardware schedule shall be signed and embossed or stamped with the DHI certification seal of the supervising AHC or DHC. The supervising AHC or DHC shall attend any meetings related to the project when requested by the architect.

E. Check the specified hardware for suitability and adaptability to the details and surrounding conditions.

F. Review drawings from related trades as required to verify compatibility with specified hardware. Indicate unsuitable or in compatible items, and proposed substitutions in the hardware schedule.

G. Provide documentation for all hardware to be furnished on labeled fire doors indicating compliance with positive pressure fire testing UL 10C.

H. Furnish manufacturers' catalog data for each item of hardware in quantities as required by Division 1 - General Conditions.

I. Submit a sample of each type of hardware requested by the architect. Samples shall be of the same finish, style, and function as specified herein. Tag each sample with its permanent location so that it may be used in the final work.

J. Furnish with first submittal, a list of required lead times for all hardware items.

K. After final approved schedule is returned, transmit corrected copies for distribution and field use in quantities as required by Division 01 - General Conditions.

L. Furnish approved hardware schedules, template lists, and pertinent templates as requested by related trades.

M. Furnish necessary diagrams, schematics, voltage and amperage requirements for all electro-mechanical devices or systems as required by related trades. Wiring diagrams shall be opening specific and include both a riser diagram and point to point diagram showing all wiring terminations.

N. After receipt of approved hardware schedule, Hardware supplier shall initiate a meeting including the owner's representative to determine keying requirements. Upon completion of the initial key meeting, hardware supplier shall prepare a proposed key schedule with symbols and abbreviations as set forth in the door and hardware institute's publication "Keying Procedures, Systems, and Nomenclature". Submit copies of owner approved key schedule for review and field use in quantities as required by Division 01 - General Conditions. Wiring diagrams shall be included in final submittals transmitted for distribution and field use.

1.6 QUALITY ASSURANCE

A. Manufacturers and model numbers listed are to establish a standard of function and quality. Similar items by approved manufacturers that are equal in design, function, and quality, may be considered for prior approval of the architect, provided the required data and physical samples are submitted for approval as set forth in Division One General Requirements.

B. Where indicated in this specification, products shall be independently certified by ANSI for compliance with relevant ANSI/BHMA standards A156.1 - A156.36 – Standards for Hardware and Specialties. All products shall meet or exceed certification requirements for the respective grade indicated within this specification. Supplier shall provide evidence of certification when requested by the architect.

C. Obtain each type of hardware (hinges, latch & locksets, exit devices, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.

D. Electrical drawings and electrical specifications are based on the specific electrified hardware components specified in hardware sets. When electronic hardware components other than those indicated in hardware sets are provided, the supplier shall be responsible for all costs incurred by the design team and their consultants to review and revise electrical drawings and electrical specifications. Supplier shall also be responsible for any additional costs associated with required changes in related equipment, materials, installation, or final hook up to insure the system will operate and function as indicated in the construction documents, including hardware set operational / functional descriptions.

E. All hardware items shall be manufactured no earlier than 6 months prior to delivery to site.

F. Hardware supplier shall be factory trained and certified by the manufacture to provide and support all computer managed locks and system components.

G. Installation of hardware shall be installed or directly supervised and inspected by a skilled installer certified by the manufacturer of locksets, door closers, and exit devices used on the project, or with not less than 3 years’ experience in successful completion of projects similar in size and scope.

H. Provide hardware for all labeled fire doors, which complies with positive pressure fire testing UL 10C.

I. Comply with all applicable provisions of the standards referenced within section 1.4 of this specification.

J. Hardware supplier shall participate when reasonably requested to meet with the contractor and or architect to inspect any claim for incorrect or non-functioning materials; following such inspection, the hardware supplier shall provide a written statement documenting the cause and proposed remedy of any unresolved items.

1.7 DELIVERY, STORAGE AND HANDLING

A. Hardware supplier shall deliver hardware to the job site unless otherwise specified.

B. All hardware shall be delivered in manufacturers' original cartons and shall be clearly marked with set and door number.

C. Coordinate with contractor prior to hardware delivery and recommend secure storage and protection against loss and damage at job site.

D. Contractor shall receive all hardware and provide secure and proper protection of all hardware items to avoid delays caused by lost or damaged hardware. Contractor shall report shortages to the Architect and hardware supplier immediately after receipt of material at the job site.

E. Coordinate with related trades under the direction of the contractor for delivery of hardware items necessary for factory installation.

1.8 PRE-INSTALLATION MEETING

A. Schedule a hardware pre-installation meeting on site to review and discuss the installation of continuous hinges, locksets, door closers, exit devices, overhead stops, and electromechanical door hardware.

B. Meeting attendees shall be notified 7 days in advance and shall include: Architect, Contractor, Door Hardware Installers (including low voltage hardware), Manufacturers representatives for above hardware items, and any other effected subcontractors or suppliers.

C. All attendees shall be prepared to distribute installation manuals, hardware schedules, templates, and physical hardware samples.

1.9 WARRANTY

A. All hardware items shall be warranted against defects in material and workmanship as set forth in Division One General Requirements.

B. Repair, replace, or otherwise correct deficient materials and workmanship without additional cost to owner.

PART 2 - PRODUCTS

2.1 FASTENERS

A. All exposed fasteners shall be Phillips head or as otherwise specified and shall match the finish of the adjacent hardware. All fasteners ex-posed to the weather shall be non-ferrous or stainless steel. Furnish correct fasteners to accommodate surrounding conditions.

B. Coordinate required reinforcements for doors and frames. Seek approval of the architect prior to furnishing through-bolts. Furnish through-bolts as required for materials not readily reinforced.

2.2 BUTT HINGES

A. Acceptable manufacturers and respective catalog numbers:

	Ives	Stanley	Hager	McKinney
1. Standard Weight, Plain Bearing	5PB1	F179	1279	T2714
2. Standard Weight, Ball Bearing	5BB1	BB179	BB1279	TB2714
3. Standard Weight, Ball Bearing, Non-Ferrous	5BB1	FBB191	BB1191	TB2314
4. Heavy Weight, Ball Bearing	5BB1HW	FBB168	BB1168	T4B3786
5. Heavy Weight, Ball Bearing, Non-Ferrous	5BB1HW	FBB199	BB1199	T4B3386

B. Hinges shall be independently certified by ANSI for compliance with ANSI A156.1 (2006). Hinges shall meet or exceed the following ANSI grade requirements as indicated below:
   1. Standard Weight, Plain Bearing Hinges: Grade 3
   2. Standard Weight, 2 Ball Bearing Hinges: Grade 2
   3. Heavy Weight, 4 Ball Bearing Hinges: Grade 1

C. Unless otherwise specified, furnish the following hinge quantities for each door leaf.
   1. 3 hinges for doors up to 90 inches.
   2. 1 additional hinge for every 30 inches on doors over 90 inches.
   3. 4 hinges for Dutch door applications.

D. Unless otherwise specified, top and bottom hinges shall be located as specified in division 8 Section "Hollow Metal Doors and Frames". Intermediate hinges shall be located equidistant from others.

E. Unless otherwise specified, furnish hinge weight and type as follows:
   1. Standard weight: plain bearing hinge 5PB1 for interior openings through 36 inches wide without a door closer.
   2. Standard weight: ball bearing hinge 5BB1 for interior opening over 36 through 40 inches wide without a door closer, and for interior openings through 40 inches wide with a door closer.
   3. Heavyweight: 4 ball bearing hinge 5BB1HW for interior openings over 40 inches wide, and for all vestibule doors.
   4. Heavyweight: 4 ball bearing hinge 5BB1HWss for exterior openings unless otherwise listed in groups.

F. Unless otherwise specified, furnish hinges for exterior doors, fabricated from brass, bronze, or stainless steel. Unless otherwise specified, hinges for interior doors may be fabricated from steel.

G. Unless otherwise specified, furnish hinges in the following sizes:
   1. 5" x 5" 2-1/4" thick doors
   2. 4-1/2" x 4-1/2" 1-3/4" thick doors
   3. 3-1/2" x 3-1/2" 1-3/8" thick doors

H. Furnish hinges with sufficient width to accommodate trim and allow for 180-degree swing.

I. Unless otherwise specified, furnish hinges with flat button tips with non-rising pins at interior doors, non-removable loose pins (NRP) at exterior and out-swinging interior doors.

J. Unless otherwise specified, furnish all hinges to template standards.

2.3 EXIT DEVICES

A. Acceptable manufacturers and respective catalog numbers:

	Von Duprin	Falcon	Corbin
1. Wide Stile, Push Pad	98 / 99 Series	25 Series	ED5000-M110 Series
2. Wide Stile, Electric Latch Retraction (solenoid driven)	EL 98 / 99 Series	EL-25 Series	ED5000-M94-M110 Series
3. Lever Trim	996 Series	510L / 511L Series	900 Series
4. Pull Trim	990 Series	512 Series	1300 Series

A. Exit devices shall be independently certified by ANSI for compliance with ANSI A156.3, Grade 1 (2008).

B. Obtain exit devices from a single manufacturer, although several may be indicated as offering products complying with requirements.

C. All exit devices shall be provided with dead-locking latch bolts to insure security.

D. All exit devices shall be U.L. listed for accident hazard. Exit device for use on fire doors shall also be U.L. listed for fire exit hardware.

E. Provide optional strikes, special length rods, and adapter plates to accommodate door and frame conditions. Provide narrow style series devices in lieu of wide stile series devices where optional strikes will not accommodate door and frame conditions.

F. Coordinate with related trades to insure adequate clearance and reinforcement is provided in doors and frames. Provide thru bolts as required.

G. Refer to hardware groups for exit device applications utilizing the option of: "less bottom rod and floor strike" (LBR)

H. All exit devices shall be provided with optional trim designs to match other lever and pull designs used on the project.

I. Unless specific exit device dogging options are noted within hardware sets, provide dogging options as follows:

J. Fire Rated devices: Dogging not permitted.

K. Non-Rated Exit Only functions not equipped with outside trim or pull: Less Dogging.

L. Non-Rated Classroom functions: Less Dogging.

M. Non-Rated devices utilizing electric latch retraction or electrified outside trim: Less Dogging.

N. All Other Non-Rated devices: Cylinder Dogging utilizing interchangeable core cylinders. Cylinder keyway shall match locksets furnished on this project.

O. Provide glass bead kits as required to accommodate door conditions. Screws shall not be visible through full glass doors.

P. Where specified, provide compatible keyed mullions with cylinder for pairs of doors.

Q. Provide reinforced crossbars for all traditional style exit devices applied to doors over 36" wide.

2.4 LOCKS AND LATCHES

A. Acceptable manufacturers and respective catalog numbers:

	Schlage	Falcon	Corbin
1. Grade 1 Mortise	L Series 17A	MA Series QG	ML2000 PSA

A. Mortise locks shall be independently certified by ANSI for compliance with ANSI A156.13 (2012).

B. Minimize transmission of heat to lock trim. Provide temperature control modules (TCM) on all electrified locks when cataloged by the lock manufacturer.

C. Unless otherwise specified, all locks and latches to have:
1. 2-3/4" Backset
2. 1/2" minimum throw latchbolt
3. 1" throw deadbolt
4. 6 pin cylinders
5. ANSI A115.2 strikes

D. Provide guarded latch bolts for all locksets, and latch bolts with sufficient throw to maintain fire rating of both single and paired door assemblies.

E. Length of strike lip shall be sufficient to clear surrounding trim.

F. Provide wrought boxes for strikes at inactive doors, wood frames, and metal frames without integral mortar covers.

2.5 PULLS, PUSH BARS, PUSH/PULL PLATES

A. Acceptable manufacturers and respective catalog numbers:

	Burns	Hager	Ives
1. Straight Pull (1" dia., 10" ctc)	26C	4J	8103-0
2. Offset Door Pull (1" dia., 10" ctc)	39C	12J	8190-0
3. Pull / Push-Bar (1" dia., 10" ctc Pull)	422 x 26C	153	9103-0
4. Push Plate (.050 4"X 16")	54	30S 4 x 16	8200 4 x 16
5. Push Plate (.050 6"X 16")	56	30S 6 x 16	8200 6" X 16"

A. Adjust dimensions of push plates to accommodate stile and rail dimensions, lite and louver cutouts, and adjacent hardware. Where required by adjacent hardware, push plates shall be factory drilled for cylinders or other mortised hardware. All push plates shall be beveled 4 sides and counter sunk.

B. Where possible, provide back-to-back, and concealed mounting for pulls and push bars. Push bar length shall be 3" less door width, or center of stile to center of stile for stile & rail or full glass doors.

2.6 CLOSERS

A. Acceptable manufacturers and respective catalog numbers:

LCN	Yale	Norton
4050 / 4050 EDA	4400	R7500 / PR7500

B. Door closers shall be independently certified by ANSI for compliance with ANSI A156.4, Grade 1 (2013).

C. Obtain door closers from a single manufacturer, although several may be indicated as offering products complying with requirements.

D. Provide extra heavy duty arm (EDA / HD) when closer is to be installed using parallel arm mounting.

E. Hardware supplier shall coordinate with related trades to insure aluminum frame profiles will accommodate specified door closers.

F. Closers shall use aluminum cylinders.

G. Closers for fire-rated doors shall be provided with temperature stabilizing fluid that complies with standards UL10C.

H. Unless otherwise specified, all door closers shall have full covers and separate adjusting valves for sweeps, latch, and backcheck.

I. Provide closers for all labeled doors. Provide closer series and type consistent with other closers for similar doors specified elsewhere on the project.

J. Provide closers with adjustable spring power. Size closers to insure exterior and fire rated doors will consistently close and latch doors under existing conditions. Size all other door closers to allow for reduced opening force not to exceed 5 lbs.

K. Install closers on the room side of corridor doors, stair side of stairways and interior side of exterior doors.

L. Closers shall be furnished complete with all mounting brackets and cover plates as required by door and frame conditions, and by adjacent hardware.

M. Door closers shall be provided with a powder coat finish to provide superior protection against the effects of weathering. Powder coat finish shall successfully pass a 100 hour salt spray test.

2.7 KICK PLATES AND MOP PLATES

A. Furnish protective plates as specified in hardware groups.

B. Where specified, provide 10" kick plates, 34" armor plates, and 4" mop plates. Unless otherwise specified, metal protective plates shall be .050" thick; plastic plates shall be 1/8" thick.

C. Protective plates shall be 2" less door width, or 1" less door width at pairs. All protective plates shall be beveled 4 sides and counter sunk. Protection plates over 16" shall not be provided for labeled doors unless specifically approved by door manufacturers listing.

D. Where specified, provide surface mounted door edges. Edges shall butt to protective plates. Provide edges with cutouts as required adjacent hardware.

E. Adjust dimensions of protection plates to accommodate stile and rail dimensions, lite and louver cutouts, and adjacent hardware. Where required by adjacent hardware, protection plates shall be factory drilled for cylinders or other mortised hardware.

2.8 OVERHEAD STOPS

A. Acceptable manufacturers and respective catalog numbers:

	Glynn-Johnson	Rixson	Sargent
1. Heavy Duty Surface Mount	GJ900 Series	9 Series	590
2. Heavy Duty Concealed Mount	GJ100 Series	1 Series	690

B. Unless otherwise specified, furnish GJ900 series overhead stop for hollow metal or 1-3/4” solid core doors equipped with regular arm surface type closers that swing more than 140 degrees before striking a wall, for hollow metal or 1-3/4” solid core doors that open against equipment, casework, sidelights, or other objects that would make wall bumpers inappropriate, and as specified in hardware groups.

C. Furnish sex bolt attachments for wood and mineral core doors unless doors are supplied with proper reinforcing blocks.

D. Do not provide holder function for labeled doors.

2.9 WALL STOPS AND HOLDERS

A. Acceptable manufacturers and respective catalog numbers:

	Ives	Hager	Burns
1. Wrought Concave Wall Bumper	WS406CCV	236W	575

B. Furnish a stop or holder for all doors. Furnish floor stops or hinge pin stops only where specifically specified.

C. Where wall stops are not applicable, furnish overhead stops.

D. Do not provide holder function for labeled doors.

2.10 WEATHERSTRIP, GASKETING

A. Acceptable manufacturers and respective catalog numbers:

	Zero	Pemko	NGP	Reese
1. Weatherstrip	429	2891_PK	700NA	755
2. Adhesive Gasket	188	S88	5050	797
3. Sweep w/ drip	8198	345_N	C627	354
4. Drip Cap	142	346	16	R201

B. Weatherstrip and gasketing shall be independently certified by ANSI for compliance with ANSI A156.22 (2005).

C. Where specified in the hardware groups, furnish the above products unless otherwise detailed in groups.

D. Provide weatherstripping all exterior doors and where specified.

E. Provide intumescent and other required edge sealing systems as required by individual fire door listings to comply with positive pressure standards UL 10C.

F. Provide Zero 188 smoke gaskets at all fire rated doors and smoke and draft control assemblies.

G. Provide gasketing for all meeting edges on pairs of fire doors. Gasketing shall be compatible with astragal design provided by door supplier as required for specific fire door listings.

2.11 THRESHOLDS

A. Acceptable manufacturers and respective catalog numbers:

	Zero	Pemko	NGP	Reese
1. Saddle Thresholds	8655	171	425	S205

A. Thresholds shall be independently certified by ANSI for compliance with ANSI A156.21 (2001).

B. Hardware supplier shall verify all finish floor conditions and coordinate proper threshold as required to insure a smooth transition between threshold and interior floor finish.

C. Threshold Types:
1. Unless otherwise specified, provide saddle threshold similar to Zero 8655 for all exterior openings with an interior floor finish less than or equal to 1/4" in height.
2. Unless otherwise specified, provide half saddle threshold similar to Zero 1674 for all exterior openings with an interior floor finish greater than 1/4" in height. Threshold height shall match thickness of interior floor finish.

2.12 FINISHES AND BASE MATERIALS

A. Unless otherwise indicated in the hardware groups or herein, hardware finishes shall be applied over base metals as specified in the following finish schedule:

HARDWARE ITEM	BHMA FINISH AND BASE MATERIAL
1. Butt Hinges: Exterior, or Non-Ferrous	630 (US32D - Satin Stainless Steel)
2. Butt Hinges: Interior	652 (US26D - Satin Chromium)
3. Continuous Hinges	630 (US32D - Satin Stainless Steel)
4. Exit Devices	626 (US26D - Satin Chromium)
5. Locks and Latches	626 (US26D - Satin Chromium)
6. Pulls and Push Plates/Bars	630 (US32D - Satin Stainless Steel)
7. Closers	689 (Powder Coat Aluminum)
8. Protective Plates	630 (US32D - Satin Stainless Steel)
9. Overhead Stops	630 (US32D - Satin Stainless Steel)
10. Wall Stops and Holders	630 (US32D - Satin Stainless Steel)
11. Thresholds	628 (Mill Aluminum)
12. Weather-strip, Sweeps Drip Caps (hollow metal doors)	Aluminum Anodized
13. Miscellaneous	626 (US26D - Satin Chromium)

2.13 KEYING

A. Acceptable manufacturers and respective catalog numbers:

	Schlage	Corbin
1. Everest 29		Pyramid

B. Provide all locks and cylinders utilizing a patented keyway to prevent manufacturing and distribution of aftermarket key blanks by anyone other than factory authorized dealers.

C. All locks under this section shall be keyed as directed by the owner to a new Restricted Patented Grand Master Key System.

D. Keying shall be by lock manufacturer where permanent records shall be kept.

E. Furnish a total of 2 keys per cylinder. Actual cut keys to be determined by owner.

F. Master keys and control keys to be delivered by registered mail to the owner. Change keys shall be delivered in a set up key cabinet. Construction keys shall be delivered to the contractor.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to installation of hardware, installer shall examine door frame installation to insure frames have been set square and plumb. Installer shall examine doors, door frames, and adjacent wall, floor, and ceiling for conditions, which would adversely affect proper operation and function of door assemblies. Do not proceed with hardware installation until such deficiencies have been corrected.

3.2 INSTALLATION

A. Before hardware installation, general contractor/construction manager shall coordinate a hardware installation seminar with a 1 week notice to all parties involved. The seminar is to be conducted on the installation of hardware, specifically of locksets, closers, exit devices, continuous hinges and overhead stops. Manufacturer's representative of the above products to present seminar. Seminar to be held at the job site and attended by installers of hardware (including low voltage hardware) for aluminum, hollow metal and wood doors. Training to include use of installation manuals, hardware schedule, templates and physical products samples.

B. Install all hardware in accordance with the approved hardware schedule and manufacturers instructions for installation and adjustment.

C. Set units level, plumb and true to the line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accord with industry standards.

E. Drill appropriate size pilot holes for all hardware attached to wood doors and frames.

F. Shim doors as required to maintain proper operating clearance between door and frame.

G. Unless otherwise specified, locate all hardware in accordance with the recommended locations for builders hardware for standard doors and frames as published by the Door and Hardware Institute.

H. Use only fasteners supplied by or approved by the manufacturer for each respective item of hardware.

I. Mortise and cut to close tolerance and conceal evidence of cutting in the finished work.

J. Conceal push and pull bar fasteners where possible. Do not install through bolts through push plates.

K. Install hardware on UL labeled openings in accordance with manufacturer's requirements to maintain the label.

L. Apply self-adhesive gasketing on frame stop at head & latch side and on rabbet of frame at hinge side.

M. Install hardware in accordance with supplemental "S" label instructions on all fire rated openings.

N. Install wall stops to contact lever handles or pulls. Do not mount wall stops on casework, or equipment.

O. Where necessary, adjust doors and hardware as required to eliminate binding between strike and latchbolt. Doors should not rattle.

P. Overhead stops used in conjunction with electrified hold open closers shall be templated and installed to coincide with engagement of closer hold open position.

Q. Install door closers on corridor side of lobby doors, room side of corridor doors, and stair side of stairways.

R. Adjust spring power of door closers to the minimum force required to insure exterior and fire rated doors will consistently close and latch doors under existing conditions. Adjust all other door closers to insure opening force does not to exceed 5 lbs.

S. Adjust "sweep", "latch", & "back check" valves on all door closers to properly control door throughout the opening and closing cycle. Adjust total closing speed as required to comply with all applicable state and local building codes.

T. Install "hardware compatible" (bar stock) type weatherstripping continuously for an uninterrupted seal. Adjust templating for parallel arm door closers, exit devices, etc., as required to accommodate weatherstripping.

U. Unless otherwise specified or detailed, install thresholds with the bevel in vertical alignment with the outside door face. Notch and closely fit thresholds to frame profile. Set thresholds in full bed of sealant.

V. Compress sweep during installation as recommended by sweep manufacturer to facilitate a water-resistant seal.

W. Deliver to the owner 1 complete set of installation and adjustment instructions, and tools as furnished with the hardware.

3.3 FIELD QUALITY CONTROL

A. After installation has been completed, the hardware supplier and manufacturers representative for locksets, door closers, exit devices, and overhead stops shall check the project and verify compliance with installation instructions, adjustment of all hardware items, and proper application according to the approved hardware schedule. Hardware supplier shall submit a list of all hardware that has not been installed correctly.

B. After installation has been completed, the hardware supplier and manufacturers representative shall meet with the owner to explain the functions, uses, adjustment, and maintenance of each item of hardware. Hardware supplier shall provide the owner with a copy of all wiring diagrams. Wiring diagrams shall be opening specific and include both a riser diagram and point to point diagram showing all wiring terminations.

3.4 ADJUSTMENT AND CLEANING

A. At final completion, and when H.V.A.C. equipment is in operation, installer shall make final adjustments to and verify proper operation of all door closers and other items of hardware. . Lubricate moving parts with type lubrication recommended by the manufacturer.

B. All hardware shall be left clean and in good operation. Hardware found to be disfigured, defective, or inoperative shall be repaired or replaced.

3.5 HARDWARE SCHEDULE

A. The following schedule of hardware groups are intended to describe opening function. The hardware supplier is cautioned to refer to the preamble of this specification for a complete description of all materials and services to be furnished under this section.

HW SET 01

QTY		DESCRIPTION	CATALOG NUMBER	MFR
1	EA	CONT. HINGE	700	IVE
1	EA	IC CYLINDER	AS REQUIRED	SCH
1	EA	PANIC HARDWARE	LD-25-R-NL	FAL
1	EA	OH STOP	90S	GLY
1	EA	SURFACE CLOSER	4050 EDA	LCN
1	EA	WEATHERSTRIP	BY DR/FR SUPPLIER	ZER
1	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	THRESHOLD	8655	ZER

OPERATIONAL DESCRIPTION
FREE EGRESS AT ALL TIMES. PRESSING PUSH BAR RETRACTS LATCHBOLTS. TRIM ALWAYS LOCKED, ENTRANCE BY TRIM WHEN KEY RETRACTS LATCHBOLT FROM PULL SIDE. NO DOGGING INCLUDED.
SELF-CLOSING.

HW SET 02

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	DBL CYL DEADBOLT	D231	SCH
1	EA	DOOR PULL, 1" ROUND	8103 10"	IVE
1	EA	PUSH PLATE	8200 6” X 16”	IVE
1	EA	SURFACE CLOSER	4050 REG/EDA AS REQUIRED	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	IVE

HW SET 03

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	MA581	FAL
1	EA	OH STOP	90S	GLY

HW SET 04

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	CONT. HINGE	700	IVE
1	EA	STOREROOM LOCK	MA581	FAL
1	EA	OH STOP	90S	GLY
1	EA	WEATHERSTRIP	BY DR/FR SUPPLIER	ZER
1	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	THRESHOLD	8655	ER

HW SET 05

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	CONT. HINGE	700	IVE
1	EA	ENTRANCE LOCK	W511	FAL

1	EA	SWEEP	8198	IVE
1	EA	OH STOP	90S	GLY
1	EA	SURFACE CLOSER	4050 REG/EDA AS REQUIRED	LCN
1	EA	WEATHERSTRIP	BY DR/FR SUPPLIER	ZER
1	EA	DOOR SWEEP W/DRIP	8198	ZER
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	IVE
1	EA	THRESHOLD	8655	ZER

HW SET 06

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	CONT. HINGE	AS REQUIRED	IVE
1	EA	DOUBLE CYLINDER DEADBOLT	D231	FAL
1	EA	DOOR PULL, 1" ROUND	8103 10"	IVE
1	EA	PUSH PLATE	8200 6” X 16”	IVE
1	EA	SURFACE CLOSER	4050 REG/EDA AS REQUIRED	LCN
1	EA	WEATHERSTRIP	BT DR/FR SUPPLIER	ZER
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	IVE
1	EA	TRESHOLD	8655	ZER

HW SET 07

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	CONT. HINGE	700	IVE
1	EA	PRIVACY W/OCC IND	MA571 M	FAL
1	EA	SURFACE CLOSER	4050 REG/EDA AS REQUIRED	LCN
1	EA	WEATHERSTRIP	BY DR/FR SUPPLIER	ZER
1	EA	KICK PLATE	8400 10” X 2” LDW B4E	IVE
1	EA	SWEEP	8198	IVE
1	EA	THRESHOLD	8655	ZER

FUNCTION: BATH PRIVACY LOCK
LATCHBOLT RETRACTED BY LEVER FROM EITHER SIDE UNLESS OUTSIDE IS LOCKED BY INSIDE THUMBTURN. TURNING INSIDE LEVER OR CLOSING DOOR UNLOCKS OUTSIDE LEVER. TO UNLOCK FROM OUTSIDE, REMOVE EMERGENCY BUTTON, INSERT EMERGENCY TURN (FURNISHED) IN ACCESS HOLE AND ROTATE. LOCK INDICATOR WILL READ OCCUPIED/VACANT.

HW SET 08

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	HINGE	AS REQUIRED	IVE
1	EA	CLASSROOM LOCK	MA561	FAL
1	EA	OH STOP	90S	GLY
1	EA	SURFACE CLOSER	4050 REG/PA AS REQUIRED	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	IVE

OPERATIONAL DESCRIPTION

LATCHBOLT OPERATED BY KNOB/LEVER FROM EITHER SIDE EXCEPT WHEN OUTSIDE KNOB/LEVER IS LOCKED BY KEY. WHEN OUTSIDE KNOB/LEVER IS LOCKED, LATCHBOLT IS RETRACTED BY KEY FROM OUTSIDE OR BY OPERATING INSIDE KNOB/LEVER. AUXILIARY LATCH DEADLOCKS LATCHBOLT WHEN DOOR IS CLOSED. INSIDE KNOB/LEVER ALWAYS FREE FOR IMMEDIATE EXIT.
SELF-CLOSING.

HW SET 09

QTY		DESCRIPTION	CATALOG NUMBER	MFR
	EA	CONT. HINGE	AS REQUIRED	IVE
1	EA	STOREROOM LOCK	MA581	FAL
1	EA	SURFACE CLOSER	4111 SHCUSH – ACTIVE LEAF	LCN
1	EA	OH STOP	90H – INACTIVE LEAF	GLY
1	EA	DUSTPROOF STRIKE	DP2	IVE
2	EA	MANUAL FLUSH BOLTS	FB458	IVE
1	EA	MEETING STILE SEAL	S771	PEM
1	SET	WEATHERSTRIPPING	429	ZER
1	EA	MULLION SEAL	8780	ZER
2	EA	DOOR SWEEP	39A	ZER
2	EA	KICK PLATE	8400 10” X 2” LDW B4E	IVE
1	EA	THRESHOLD	8655	ZER

END OF SECTION

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SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 07 25 00 - Weather Barriers.

B. Section 07 26 00 - Vapor Retarders.

C. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.

D. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed transoms.

E. Section 08 36 13 - Sectional Doors: Glazed lites in doors.

F. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.

G. Section 08 51 13 - Aluminum Windows: Glazing provided by window manufacturer.

H. Section 10 28 00 - Toilet Accessories: Vandal resistent mirrors.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test 2015 (Reaffirmed 2020).

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers 2005 (Reapproved 2019).

E. ASTM C1036 - Standard Specification for Flat Glass 2021.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2018.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.

H. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass 2021a.

I. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings 2016.

J. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation 2019.

K. GANA (GM) - GANA Glazing Manual 2008.

L. GANA (SM) - GANA Sealant Manual 2008.

M. GANA (LGRM) - Laminated Glazing Reference Manual 2009.

N. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use 1990 (2016).

O. NFRC 100 - Procedure for Determining Fenestration Product U-factors 2020.

P. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence 2020.

Q. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems 2020.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data on Insulating Glass Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 12 by 12 inch in size of glass units.

E. Samples: Submit 12 inch long bead of glazing sealant, color as selected.

F. Certificate: Certify that products of this section meet or exceed specified requirements.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Insulating Glass Units: One of each glass size and each glass type.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM), GANA (SM), and GANA (LGRM) for glazing installation methods.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
   a. Insulating Glass Certification Council (IGCC).
   b. Safety Glazing Certification Council (SGCC).

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years documented experience.

1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.
   a. North American Contractor Certification (NACC) for glazing contractors.
   b. Equivalent independent third-party ANSI accredited certification.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.07 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 WARRANTY

A. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:

1. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
2. Pilkington North America Inc: www.pilkington.com/na/#sle.
3. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
4. Viracon, Inc: www.viracon.com/#sle.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.

1. Design Pressure: Calculated in accordance with ASCE 7.
2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
4. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.

1. In conjunction with weather barrier related materials described in other sections, as follows:
   a. Water-Resistive Barriers: See Section 07 25 00.
   b. Vapor Retarders: See Section 07 26 00.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:

1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.

1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.

2.04 INSULATING GLASS UNITS

A. Manufacturers:

1. Glass: Any of the manufacturers specified for float glass.

B. Fabricator: Certified by glass manufacturer for type of glass, coating, and treatment involved and capable of providing specified warranty.

C. Insulating Glass Units: Types as indicated.

1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Warm-Edge Spacers: Low-conductivity thermoplastic with dessicant warm-edge technology design.
   a. Spacer Width: As required for specified insulating glass unit.
   b. Spacer Height: Manufacturer's standard.
   c. Products:
      1) Manufacturer's standard Warm-Edge spacers.
4. Spacer Color: Black.
5. Edge Seal:
   a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
   b. Color: Black.
6. Purge interpane space with dry air, hermetically sealed.

D. Type IG-1 - Insulating Glass Units: Vision glass, low-E, double glazed.

1. Basis of Design: Viracon; VE 1-2M.
2. Applications: Exterior glazing unless otherwise indicated.
3. Space between lites filled with air.
4. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
   b. Coating: Low-E (passive type), on #2 surface.
5. Warm-edge spacer.
6. Inboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
7. Total Thickness: 1 inch.
8. Visible Light Transmittance (VLT): 70 percent, nominal.
9. Shading Coefficient: 0.43, nominal.
10. Solar Heat Gain Coefficient (SHGC): 33 percent, nominal.

11. Visible Light Reflectance, Outside: 70 percent, nominal.
12. Solar Energy: 33 percent, nominal.
13. Ultra-Violet: 10 percent, nominal.
14. Reflectance:
    a. Visible Light-Exterior: 11 percent.
    b. Visible Light-Interior: 12 percent.
15. ASHRAE U-Value:
    a. Winter: 0.25 Btu(hr x sqft x F°).
    b. Summer: 0.21 Btu(he x sqft x F°).
16. Glazing Method: Dry glazing method, gasket glazing.

E. Type IG-2 - Insulating Glass Units: Safety glazing.

1. Applications:
    a. Glazed lites in exterior sectional doors.
    b. Other locations required by applicable federal, state, and local codes and regulations.
2. Space between lites filled with argon.
3. Glass Type: Same as Type IG-1 except use fully tempered laminated float glass for both outboard and inboard lites.
4. Tint: Clear.
5. Total Thickness: 1 inch.
6. Warm-edge spacer.

2.05 LAMINATED GLASS INTERLAYERS

A. Type LGI-1 - Polyvinyl Butyral (PVB) Interlayer for Laminated Glazing:

1. Functionality: Post-breakage safety and security.
2. Applications:
    a. Interior and exterior laminated pane of insulating glass unit.
3. Color: Clear.
4. Thickness: As required for indicated performance of laminated glass application.
5. Manufacturers:
    a. Eastman Chemical Company; Saflex Clear PVB Interlayer: www.saflex.com/#sle.
    b. Sekisui S-LEC America, LLC; S-LEC Clear Film: www.s-lec.us/#sle.

2.06 ACCESSORIES

A. Setting Blocks: Neoprene, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.

1. Width: As required for application.
2. Thickness: As required for application.
3. Spacer Rod Diameter: As required for application.
4. Manufacturers:
    a. Pecora Corporation: www.pecora.com/#sle.
    b. Tremco Global Sealants: www.tremcosealants.com/#sle.
    c. Substitutions: See Section 01 60 00 - Product Requirements.

D. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option I; color black.

2.07 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Provide shop inspection and testing for insulated glass.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that the minimum required face and edge clearances are being provided.

C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

D. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 FIELD QUALITY CONTROL

A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

B. Monitor and report installation procedures and unacceptable conditions.

3.06 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.07 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

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SECTION 08 91 00
LOUVERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Louvers, frames, and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 25 00 - Weather Barriers: Sealing frames to water-resistive barrier installed on adjacent construction.

B. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.

B. AMCA 511 - Certified Ratings Program Product Rating Manual for Air Control Devices 2021.

C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.

D. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2021.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.

C. Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions, and tolerances; head, jamb and sill details; blade configuration, screens, blank-off areas required, and frames.

D. Test Reports: Independent agency reports showing compliance with specified performance criteria.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with minimum five years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least five years of documented experience and approved by manufacturer.

1.06 WARRANTY

A. See Section 01 77 00 - Closeout Procedures for additional warranty requirements.

B. Provide five year manufacturer's warranty against distortion, metal degradation, and connection failures of louver components.

1. Finish: Include twenty year coverage against degradation of exterior finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Louvers:

1. Airline Louvers: www.airlinelouvers.com/#sle.
2. Airolite Company, LLC: www.airolite.com/#sle.
3. Construction Specialties, Inc: www.c-sgroup.com/#sle.
4. Ruskin Company: www.ruskin.com/#sle.

2.02 LOUVERS

A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.

1. Wind Load Resistance: Design to resist positive and negative wind load of 25 psf without damage or permanent deformation.
2. Drainable Blades: Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.
3. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.

B. Stationary Louvers: Horizontal blade, extruded aluminum construction.

1. Free Area: 50 percent, minimum.
2. Blades: Drainable.
3. Frame: 4 inches deep, channel profile; corner joints mitered and , with continuous recessed caulking channel each side.
4. Aluminum Thickness: Frame 12 gauge, 0.0808 inch minimum; blades 12 gauge, 0.0808 inch minimum.
5. Aluminum Finish: High performance silicone-modified polyester (SMP) organic coatings; finish welded units after fabrication.

2.03 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

2.04 FINISHES

A. High Performance Organic Coating: Primer and silicone-modified polyester (SMP) enamel topcoat with minimum dry film thickness (DFT) of 1.2 mils, 0.0012 inch over aluminum extrusions and panels; AAMA 2604.

B. Primer: Zinc chromate, alkyd type.

C. Color: As selected from manufacturer's standard colors.

2.05 ACCESSORIES

A. Blank-Off Panels: Same material as louver, painted black on exterior side; provide where duct connected to louver is smaller than louver frame, sealing off louver area outside duct.

B. Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.

C. Bird Screen: Interwoven wire mesh of steel, 14 gauge, 0.0641 inch diameter wire, 1/2 inch open weave, diagonal design.

D. Insect Screen: 18 x 16 size aluminum mesh.

E. Fasteners and Anchors: Stainless steel.

F. Flashings: Of same material as louver frame, formed to required shape, single length in one piece per location.

G. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared openings and flashings are ready to receive this work and opening dimensions are as indicated on shop drawings.

B. Verify that field measurements are as indicated.

3.02 INSTALLATION

A. Install louver assembly in accordance with manufacturer's instructions.

B. Install louvers level and plumb.

C. Set sill members and sill flashing in continuous bead of sealant.

D. Install flashings and align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.

E. Secure louver frames in openings with concealed fasteners.

3.03 CLEANING

A. Strip protective finish coverings.

B. Clean surfaces and components.

END OF SECTION

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SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to all floors identified in the contract documents as to receive the following types of floor coverings:

1. Epoxy floor coating.

B. Preparation of new concrete floor slabs for installation of floor coating.

C. Testing of concrete floor slabs for moisture and pH.

D. Remediation of concrete floor slabs due to unsatisfactory moisture or pH conditions.

1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.

1.03 REFERENCES

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens) 2021.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete 2020.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring 2021.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride 2022.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes 2019a.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.05 SUBMITTALS

A. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.

1. Manufacturer's qualification statement.
2. Manufacturer's statement of compatibility with types of flooring applied over remedial product.

3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
4. Manufacturer's installation instructions.
5. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

B. Testing Agency's Report: Include:

1. Description of areas tested; include floor plans and photographs if helpful.
2. Summary of conditions encountered.
3. Moisture and pH test reports.
4. Copies of specified test methods.
5. Recommendations for remediation of unsatisfactory surfaces.
6. Submit report to Architect.
7. Submit report not more than two business days after conclusion of testing.

C. Floor Moisture Testing Technician Certificate: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician- Grade I certificate.

D. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.

1. Manufacturer's qualification statement.
2. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
3. Manufacturer's installation instructions.
4. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

1.06 QUALITY ASSURANCE

A. Moisture and pH testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Contractor may perform adhesive and bond test with his own personnel or hire a testing agency.

C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.

1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

D. Contractor's Responsibility Relating to Independent Agency Testing:

1. Provide access for and cooperate with testing agency.
2. Confirm date of start of testing at least 10 days prior to actual start.
3. Allow at least 4 business days on site for testing agency activities.
4. Achieve and maintain specified ambient conditions.
5. Notify Architect when specified ambient conditions have been achieved and when testing will start.

E. Floor Moisture Testing Technician Qualifications: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician Certification- Grade I.

F. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Keep materials from freezing.

1.08 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:

1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

B. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of pH found, and suitable for adhesion of flooring without further treatment.

1. Thickness: As required for application and in accordance with manufacturer's installation instructions.
2. If testing agency recommends any particular products, use one of those.
3. Products:
    a. ARDEX Engineered Cements; ARDEX MC ULTRA, with ARDEX FEATHERFINISH: www.ardexamericas.com/#sle.
    b. Floor Seal Technology, Inc; MES 100, with ARDEX K-15 or Mapei Ultraplan 1 Plus: www.floorseal.com/#sle.
    c. Koster American Corporation; Koster VAP I 2000, with Koster SL Premium overlay: www.kosterusa.com/#sle.
    d. ProSpec, an Oldcastle brand; Moisture Guard Max: www.prospec.com.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Follow recommendations of testing agency.

B. Perform following operations in the order indicated:

1. Preliminary cleaning.
2. Moisture vapor emission tests; 3 tests in the first 500 square feet and one test in each additional 500 square feet, unless otherwise indicated or required by flooring manufacturer.
3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
4. pH tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
5. Specified remediation, if required.
6. Patching, smoothing, and leveling, as required.
7. Other preparation specified.
8. Adhesive bond and compatibility test.
9. Protection.

C. Remediations:

1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating over entire suspect floor area.
3. Excessive pH: If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.03 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.04 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report the information required by the test method.

3.05 PH TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.

1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.

C. Note: This procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.

D. Use a wide range pH paper, its associated chart, and distilled or deionized water.

E. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the pH paper into the water, remove it, and compare immediately to chart to determine pH reading.

F. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value is over 10.

3.06 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with recommendations of testing agency.

C. Comply with requirements and recommendations of floor covering manufacturer.

D. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

E. Do not fill expansion joints, isolation joints, or other moving joints.

3.07 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.08 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:

1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
2. Exposed surfaces of steel lintels and ledge angles.
3. Mechanical and Electrical:
    a. On the roof and outdoors, paint equipment that is exposed to weather or to view, including factory-finished materials.

D. Do Not Paint or Finish the Following Items:

1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
5. Floors, unless specifically indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Shop-primed items.

B. Section 09 91 23 - Interior Painting.

C. Section 09 96 00 - High-Performance Coatings.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications 2019.

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials 2020.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.

E. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).

F. SSPC-SP 2 - Hand Tool Cleaning 2018.

G. SSPC-SP 6 - Commercial Blast Cleaning 2007.

1.05 SUBMITTALS

A. See Section 01 33 00 -Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
2. MPI product number (e.g. MPI #47).
3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
4. Manufacturer's installation instructions.

C. Samples: Submit three hardboard "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.

1. Where sheen is specified, submit samples in only that sheen.
2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
3. Allow 30 days for approval process, after receipt of complete samples by Architect.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention.

F. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years documented experience and approved by manufacturer.

1.07 MOCK-UP

A. Provide panel, height of wall by 6 feet wide, illustrating paint color, texture, and finish.

B. Provide door and frame assembly illustrating paint color, texture, and finish.

C. Locate where directed by Architect.

D. Mock-up may remain as part of the work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Paints:

1. Behr Process Corporation: www.behr.com/#sle.
2. PPG Paints: www.ppgpaints.com/#sle.
3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
4. Benjamin Moore: www.benjaminmoore.com.

C. Primer Sealers: Same manufacturer as top coats.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.

1. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:

1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
   a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.

2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: To be selected from manufacturer's full range of available colors.

1. Selection to be made by Architect after award of contract.
2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
3. Extend colors to surface edges; colors may change at any edge as directed by Architect.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete masonry units, primed wood, primed metal, and composition siding.

1. Two top coats and one coat primer.
2. Top Coat(s): Exterior Latex; MPI #10, 11, 15, 119, or 214.
   a. Products:
      1) Behr Pro e600 Exterior Satin Paint No.640. Applied at a (DFT) dry film thickness of not less than 1.6 to 2.6-mils Coverage approximately 250-400 sq.ft/gal: www.behr.com. (MPI #15)
      2) PPG Paints Speedhide Exterior Latex Satin, 6-2045XI Series. Applied at a (DFT) dry film thickness of not less than 1.3-mils. Coverage approximately 400 sq.ft/gal: www.ppgpaints.com/#sle. (MPI #15)
      3) Sherwin-Williams A-100 Exterior Latex Satin A82-Series. Applied at a (DFT) dry film thickness of not less than 1.4-mils. Coverage approximately 350-400 sq.ft/gal: www.sherwin-williams.com/#sle.
      4) Benjamin Moore Moorecraft Super Spec Low Luster House Paint No.185 Eggshell. Applied at a (DFT) dry film thickness of not less than 1.3-mils. Coverage 350-475 sq.ft/gal: www.benjaminmoore.com/#sle.(MPI #15).
      5) Benjamin Moore Moorecraft Super Spec Low Luster House Paint No. W170 Semi-Gloss. Applied at a (DFT) dry film thickness of not less than 1.1-mils. Coverage 400-475 sq.ft/gal: www.benjaminmoore.com.
3. Top Coat Sheen:
   a. Eggshell: MPI gloss level 3; use this sheen at locations directed by Architect.
   b. Satin: MPI gloss level 4; use this sheen at locations directed by Architect.
   c. Semi-Gloss: MPI gloss level 5; use this sheen at locations directed by Architect.
4. Primer: As recommended by top coat manufacturer for specific substrate.

B. Paint WE-OP-3A - Wood, Composite Siding and Trim, Opaque, Alkyd, 3 Coat:

1. One coat of alkyd primer sealer.
2. Eggshell: Two coats of alkyd enamel.

C. Paint WE-OP-3L - Wood, Composite Siding and Trim, Opaque, Latex, 3 Coat:

1. One coat of latex primer sealer.
2. Semi-gloss: Two coats of latex enamel.

D. Paint CE-OP-3L - Masonry/Concrete, Opaque, Latex, 3 Coat:

1. One coat of block filler.
2. Semi-gloss: Two coats of latex enamel.

E. Paint ME-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:

1. One coat of latex primer.
2. Semi-gloss: Two coats of latex enamel.

F. Paint MgE-OP-3L - Galvanized Metals, Latex, 3 Coat:

1. One coat galvanize primer.
2. Semi-gloss: Two coats of latex enamel.

G. Paint E-Pav - Pavement Marking Paint:

1. White: One coat, with reflective particles.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.

1. Alkali Resistant Water Based Primer; MPI #3.
   a. Products:
      1) Behr Premium Plus Interior/Exterior Multi-Surface Primer and Sealer No. 436. Applied at a (DFT) dry film thickness of not less than 2.9-mils @ 250 sq.ft/gal, 1.8-mils @ 400 sq.ft/gal: www.behr.com/#sle. (MPI #3)
      2) PPG Paints: 4-603XI Perma-Crete Interior/Exterior Alkali Resistant Primer. Applied at a (DFT) dry film thickness of not less than 2.6-mils @ 250 sq.ft/gal, 1.4-mils @ 400 sq.ft/gal: www.ppgpaints.com/#sle. (MPI #3)
      3) Sherwin-Williams Loxon Concrete and Masonry Primer Sealer, LX02W50. Applied at a (DFT) dry film thickness of not less than 3.2-mils @ 200 sq.ft/gal, 2.1-mils @ 320 sq.ft/gal: www.sherwin-williams.com/#sle. (MPI #3)
      4) Benjamin Moore Super Spec Latex Exterior Primer No. 169. Applied at a (DFT) dry film thickness of not less than 1.4-mils @ 400 -450 sq.ft/gal: www.benjaminmoore.com.
2. Interior/Exterior Latex Block Filler; MPI #4.
   a. Products:
      1) PPG Paints: 6-15XI Speedhide Masonry Hi Fill Latex Block Filler. Applied at a (DFT) dry film thickness of not less than 8-mils @ 100 sq.ft/gal: www.ppgpaints.com/#sle. (MPI #4)
      2) Sherwin-Williams Loxon Acrylic Block Surfacer. Applied at a (DFT) dry film thickness of not less than 8.8-mils @ 50-100 sq.ft/gal: www.sherwin-williams.com/#sle. (MPI #4)
      3) Benjamin Moore Ultra Spec Maonry Interior/Exterior 100% Acrylic Sealer 608. Applied at a (DFT) dry film thickness of not less than 0.95-mils @ 200 -400 sq.ft/gal: www.benjaminmoore.com.
3. Interior/Exterior Quick Dry Alkyd Primer for Metal; MPI #76.
   a. Products:
      1) PPG Paints: 4160 Series Multiprime Multi-Purpose Primer. Applied at a (DFT) dry film thickness of not less than 2.0 - 2.5-mils @ 409 sq.ft/gal for 2.0-mils: www.ppgpaints.com/#sle. (MPI #23, #76, #79, #95)
4. Alkyd Primer for Galvanized Metal.
   a. Products:
      1) PPG Paints Speedhide Interior/Exterior Galvanized Steel Primer, 6-209 Series.
5. Water Based Primer for Galvanized Metal; MPI #134.
   a. Products:
      1) Behr Premium Plus Interior/Exterior Multi-Surface Primer and Sealer No. 436. Applied at a (DFT) dry film thickness of not less than 2.9-mils @ 250 sq.ft/gal, 1.8-mils @ 400 sq.ft/gal: www.behr.com/#sle. (MPI #134)

2) PPG Paints: 4020 PF Pitt-Tech Plus Interior/Exterior Waterborne Acrylic Primer Finish DTM Industrial Enamel. Applied at a (DFT) dry film thickness of not less than 2.2 - 3.5-mils. Coverage 321 sq.ft/gal for 2.2-mils: www.ppgpaints.com/#sle. (MPI #134).
3) Sherwin-Williams DTM Primer/Finish. Applied at a (DFT) dry film thickness of not less than 1.9-mils to 3.9-mils. Coverage160-328 sq.ft/gal: www.sherwin-williams.com/#sle. (MPI #134)

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Composite Siding: 12 percent.
2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
3. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Masonry:

1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.

2. Prepare surface as recommended by top coat manufacturer.

G. Composite Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

H. Galvanized Surfaces:

1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
2. Prepare surface according to SSPC-SP 2.

I. Ferrous Metal:

1. Solvent clean according to SSPC-SP 1.
2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

J. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

K. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.

C. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

D. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

E. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

F. Apply each coat to uniform appearance.

G. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.

H. Sand metal surfaces lightly between coats to achieve required finish.

I. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

J. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. The Owner reserves the right to invoke the following test procedure at any time and as often as the Owner deems necessary during the period when paint is being applied.

1. The testing agency will perform appropriate tests for the following characteristics as required by the Owner:
   a. Adhesion.
   b. Quantitative material analysis.
2. The Owner may direct the Contractor to stop painting if test results show material being used does not comply with specified requirements. The Contractor shall remove non-complying paint from the site, pay for testing, and repaint surfaces previously coated with the rejected paint. If necessary, the Contractor may be required to remove rejected paint from previously painted surfaces if, on repainting with specified paint, the 2 coatings are incompatible.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:

1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
2. Elevator pit ladders.
3. Prime surfaces to receive wall coverings.
4. Mechanical and Electrical:
    a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
    b. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
    c. Paint dampers exposed behind louvers, grilles, to match face panels.

D. Do Not Paint or Finish the Following Items:

1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
5. Floors, unless specifically indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: Shop-primed items.

B. Section 09 91 13 - Exterior Painting.

C. Section 09 96 00 - High-Performance Coatings.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications 2019.

C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating 2005 (Reapproved 2017).

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.

E. SCAQMD 1113 - Architectural Coatings 1977, with Amendment (2016).

F. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).

G. SSPC-SP 3 - Power Tool Cleaning 2018.

H. SSPC-SP 13 - Surface Preparation of Concrete 2018.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
2. MPI product number (e.g. MPI #47).
3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
4. Manufacturer's installation instructions.

C. Samples: Submit three "draw down" samples on rigid backing, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.

1. Where sheen is specified, submit samples in only that sheen.
2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
3. Allow 30 days for approval process, after receipt of complete samples by Architect.
4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.

D. Certification: By manufacturer that paints and finishes comply with VOC limits specified.

E. Manufacturer's Instructions: Indicate special surface preparation procedures.

F. Maintenance Data: Submit data including product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements.
2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum five years documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum five years documented experience and approved by manufacturer.

1.07 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.08 MOCK-UP

A. Provide panel, height of room by 8 feet wide, illustrating paint color, texture, and finish.

B. Provide door and frame assembly illustrating paint color, texture, and finish.

C. Locate where directed by Architect.

D. Approved mock-up may remain as part of the work.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.10 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent; at temperatures less than 5 degrees F above the dew point; or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Paints:

1. Behr Process Corporation: www.behr.com/#sle.
2. PPG Paints: www.ppgpaints.com/#sle.
3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
4. Benjamin Moore & Company: www.benjaminmoore.com.

C. Primer Sealers: Same manufacturer as top coats.

2.02 PAINTS AND FINISHES - GENERAL

A. All materials shall be the manufacturer's "best" grade unless otherwise approved in writing by Architect.

B. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.

1. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
2. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.

C. Primers: As follows unless other primer is required or recommended by manufacturer of top coats; where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

D. Volatile Organic Compound (VOC) Content:

1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
   a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   b. SCAQMD 1113 Rule.
   c. Ozone Transport Commission (OTC) Model Rule, Architectural, Industrial, and Maintenance Coatings; www.otcair.org; specifically:
      1) Opaque, Flat: 50 g/L, maximum.
      2) Opaque, Nonflat: 150 g/L, maximum.
      3) Opaque, High Gloss: 250 g/L, maximum.
   d. Architectural coatings VOC limits of the State in which the Project is located.
   e. USGBC LEED Rating System; for interior wall and ceiling finish (all coats), anti-corrosive paints on interior ferrous metal, sanding sealers, other sealers, and floor coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

E. Flammability: Comply with applicable code for surface burning characteristics.

F. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

G. Colors: To be selected from manufacturer's full range of available colors.

1. Selection to be made by Architect after award of contract.
2. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
3. Extend colors to surface edges; colors may change at any edge as directed by Architect.
4. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
5. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

2.03 PAINT SYSTEMS - INTERIOR

A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including finished ceilings. Refer to Section 09 96 00 - High-Performance Coatings for epoxy paint required for interior walls, partitions, primed steel, galvanized steel, hollow metal doors and frames, etc.

1. Two top coats and one coat primer.
2. Top Coat(s): Institutional Low Odor/VOC Interior Latex.
    a. Products:
        1) Behr Premium Plus Interior Eggshell Enamel No. 2050; (<5 g/l VOC); Applied at a dry film thickness of not less than 1.6 to 2.6-mils: www.behr.com. (MPI #145)
        2) Behr Premium Plus Interior Semi-Gloss Enamel No. 3050; (<5 g/l VOC); Applied at a dry film thickness of not less than 1.4 to 2.2-mils: www.behr.com. (MPI #145) (MPI #147)
        3) Benjamin Moore; Product Eco Spec® Interior Latex Eggshell Finish N374 (0 g/l VOC); Applied at a dry film thickness of not less than 1.4-mils: www.benjaminmoore.com.
        4) Benjamin Moore; Product Eco Spec® Interior Latex Semi-Gloss Finish N376 (0 g/l VOC); Applied at a dry film thickness of not less than 1.5-mils: www.benjaminmoore.com.
        5) Pittsburgh Paints; Product 41-1210 Series ULTRA Latex Interior Paint and Primer Eggshell Finish (<50 g/L VOC); Applied at a dry film thickness of not less than 1.3-mils: www.ppgpaints.com.
        6) Pittsburgh Paints; Product 41-410 Series ULTRA Latex Interior Paint and Primer Semi-Gloss Finish (<50 g/L VOC); Applied at a dry film thickness of not less than 1.2-mils: www.ppgpaints.com.
        7) Sherwin-Williams; Product ProMar® 400 Zero V.O.C. Interior Latex Eggshell Finish, Series B20W04651 or B20W04653 (0 g/L VOC); Applied at a dry film thickness of not less than 1.3-mils; www.sherwin-williams.com.
        8) Sherwin-Williams; Product ProMar® 400 Zero V.O.C. Interior Latex Semi-Gloss Finish, Series B20W04651 or B20W04653 (0 g/L VOC); Applied at a dry film thickness of not less than 1.4-mils; www.sherwin-williams.com.
3. Top Coat Sheen:
    a. Eggshell: MPI gloss level 3; use this sheen at locations indicated on the Materials Schedule on Drawings.
    b. Semi-Gloss: MPI gloss level 5; use this sheen at locations indicated on the Materials Schedule on the Drawings.
4. Primer: As recommended by top coat manufacturer for specific substrate.

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.

1. Interior Institutional Vapor Barrier Primer Sealer.
    a. Products:
        1) PPG Paints Seal Grip® Perm Sealer/Vapor Barrier: www.ppgpaints.com.
        2) Sherwin Williams Moisture Vapor Barrier Interior Latex Primer/Sealer: www.sherwin-williams.com.
        3) Benjamin Moore ULTRA SPEC® Latex Vapor Barrier Primer Sealer 573; (44 g/L VOC). Applied at a dry film thickness of not less than 1.3-mil: www.benjaminmoore.com.
        4) Primer must be from the same manufacturer and compatible with top coat.
2. Interior Institutional Low Odor/VOC Primer Sealer; MPI #149.
    a. Products:
        1) PPG Paints Speedhide zero Interior Latex Sealer, 6-4900XI; (0 g/L VOC). Applied at a dry film thickness of not less than 1.4-mil: www.ppgpaints.com (MPI #149).
3. Interior/Exterior Latex Block Filler.
    a. Products:
        1) PPG Paints: 6-15XI Speedhide Masonry Hi Fill Latex Block Filler; (<50 g/L VOC). Applied at a dry film thickness of not less than 8.0-mil: www.ppgpaints.com (MPI #4).

2) Sherwin-Williams; PrepRite® Interior/Exterior Block Filler B25W00025; (<50 g/L VOC). Applied at a dry film thickness of not less than 7.7-mils; www.sherwin-williams.com.
3) Benjamin Moore; Super Spec® Latex Block Filler K 160; (13 g/l VOC). Applied at a dry film thickness of not less than 6.2-mils to 8.1 mils: www.benjaminmoore.com.

4. Interior Rust-Inhibitive Water Based Primer; MPI #107.
   a. Products:
      1) Benjamin Moore Super Spec HP Acrylic Metal Primer P04; (48 g/L V.O.C.); Applied at a dry film thickness of not less than 1.7 to 2.3-mils: www.benjaminmoore.com.
      2) PPG Paints Speedhide Interior/Exterior Rust Inhibitive Steel Primer 6-212; (<50 g/L VOC); Applied at a dry film thickness of not less than 3.1-mil: www.ppgpaints.com.
      3) Sherwin-Williams Pro-Cryl Universal Primer B66W00310; (96 g/l VOC); Applied at a dry film thickness of not less than 1.8 to 3.6-mils: www.sherwin-williams.com.
      4) Substitutions: See Section 01 60 00 - Product Requirements.
   b. Primer must be from the same manufacturer and compatible with top coat.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Masonry, Concrete, and Concrete Masonry Units: 12 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing paints or finishes that exhibit surface defects.

D. Remove surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

G. Concrete: Refer to Section 09 96 00 - High-Performance Coatings for additional information.

1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
2. Clean surfaces with pressurized water. Use pressure range of 1,500 to 4,000 psi at 6 to 12 inches. Allow to dry.
3. Clean concrete according to ASTM D4258. Allow to dry.
4. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.

H. Masonry: Refer to Section 09 96 00 - High-Performance Coatings for additional information.

1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
2. Prepare surface as recommended by top coat manufacturer.
3. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi at 6 to 12 inches. Allow to dry.

I. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

J. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

1. Refer to Section 09 96 00 - High-Performance Coatings for additional information.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

G. Sand wood and metal surfaces lightly between coats to achieve required finish.

H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 FIELD QUALITY CONTROL

A. The Contractor will secure the services of a qualified inspection and testing agency, acceptable to the Owner, for field inspection and testing.

B. Owner reserves the right to invoke the following test procedure at any time and as often as Owner deems necessary during the period when paint is being applied:

1. Contractor will engage the services of a qualified testing agency, acceptable to the Owner, to sample finish materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of the Owner, Architect and Contractor.
2. Testing agency may perform appropriate tests for the following characteristics as required by Owner:
   a. Adhesion per ASTM D 3359 - 09, Test Method A.
   b. Film Hardness per ASTM D 3363 - 05.
   c. Quantitative Analysis.
3. Owner may direct Contractor to stop applying finishes if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying materials from Project site, pay for testing, and refinish surfaces finished with rejected materials. Contractor will be required to remove rejected materials from previously finished surfaces if, on refinishing with complying materials, the two finishes are incompatible or if adhesion is not at an acceptable level.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.06 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

3.07 SCHEDULE - PAINT SYSTEMS

A. Concrete, Concrete Masonry Units (CMU), Concrete Block, Brick Masonry: Finish surfaces exposed to view.

END OF SECTION

SECTION 09 96 00
HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes surface preparation and application of high-performance coating systems at locations indicated on Drawings on the following substrates:

1. Exterior Substrates:
   a. Galvanized metal.
2. Interior Substrates:
   a. Primed steel.
   b. Galvanized steel.
   c. Concrete surfaces.
   d. Concrete Floor.
   e. Concrete masonry units (CMU).

B. Related Sections include the following:

1. Section 03 30 00 - Cast-In-Place Concrete: for concrete floor slab on gade.
2. Section 05 50 00 - Metal Fabrications: for shop priming of metal substrates with primers specified in this Section.
3. Section 09 05 61 - Common Work Results for Flooring Preparation: for concrete slab moisture and Ph testing and remediation requirements.
4. Division 09 painting Sections for special-use coatings and general field painting.

1.02 DEFINITIONS

A. Standard coating terms defined in ASTM D 16 apply to this Section.

B. Gloss ranges used in this Section include the following:

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
3. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

C. Environments: The following terms are used in Part 2 of this Section to distinguish between different corrosive exposures:

1. "Severe environments" are highly corrosive industrial atmospheres with sustained exposure to high humidity and condensation and with frequent cleaning using strong chemicals. Environments with heavy concentrations of strong chemical fumes and frequent splashing and spilling of harsh chemical products are severe environments.

1.03 SUBMITTALS

A. Product Data: For each coating system indicated. Include block fillers and primers.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference the specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each material specified.

B. Samples for Verification: For each color and material to be applied, with texture to simulate actual conditions, on representative samples of the actual substrate.

1. Provide stepped Samples defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
2. List of material and application for each coat of each sample. Label each sample for location and application.
3. Submit samples on two 12-inch- square samples of each color and material on hardboard.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed high-performance coating system applications similar in material and extent to those indicated for Project and whose work has a record of successful in-service performance.

B. Source Limitations: Obtain primers and undercoat materials for each coating system from the same manufacturer as the finish coats.

C. Mockups: Apply benchmark samples of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each type of coating and substrate.
   a. Wall Surface: Provide a 8 foot wide x height of room mockup at location designated by Owner or Architect.
   b. Floor Surface: Provide a 6 foot by 6 foot mockup at location designated by Owner or Architect.
2. Apply benchmark mockups after permanent lighting and other environmental services have been activated.
3. Final approval of color selections will be based on benchmark mockups.
   a. If preliminary color selections are not approved, apply additional benchmark mockups of additional colors selected by Architect at no added cost to Owner.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label with the following information:

1. Name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. Handling instructions and precautions.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1. Protect materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and applying coatings.

1.06 PROJECT CONDITIONS

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 45 and 95 deg F.

B. Do not apply coatings in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

1. Allow wet surfaces to dry thoroughly and attain temperature and conditions specified before proceeding with or continuing coating operation.
2. Work may continue during inclement weather only if areas and surfaces to be coated are enclosed and temperature within the area can be maintained within limits specified by manufacturer during application and drying periods.

1.07 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Subject to compliance with requirements, where room finish schedule indicates epoxy paint finish (EP1), provide products manufactured by Sherwin Williams; Industrial and Marine Coatings (S-W). Comparable high performance coatings by the following manufacturers may be considered:.

1. Moore: Benjamin Moore & Co. (Moore).
2. Pittsburgh Paint; PPG Industries, Inc. (PPG).
3. Tnemec Company, Inc. Kansas City, MO.

2.02 COATINGS MATERIALS, GENERAL

A. Material Compatibility: Provide primers, undercoats, and finish-coat materials that are compatible with one another and substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's highest grade of the various high-performance coatings specified. Materials not displaying manufacturer's product identification are not acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Flat Interior Topcoat Paints: VOC content of not more than 50 g/L.
2. Nonflat Interior Topcoat Paints: VOC content of not more than 150 g/L.
3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
5. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
6. Floor Coatings: VOC not more than 100 g/L.
7. Shellacs, Clear: VOC not more than 730 g/L.
8. Shellacs, Pigmented: VOC not more than 550 g/L.
9. Stains: VOC not more than 250 g/L.
10. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.

D. Colors: As selected by Architect from manufacturer's full range of available colors.

2.03 EXTERIOR / INTERIOR HIGH-PERFORMANCE COATING SYSTEMS

A. Exterior and Interior Primed Steel and Galvanized Steel:

1. System Type: Polyamidoamine Epoxy/Aliphatic Acrylic Polyurethane (gloss sheen):
   a. Surface Preparation Steel: Commercial Blast Cleaning per SSPC-SP6. Prime the area the same day as cleaned.
   b. Surface Preparation Galvanized Steel: Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC- SP1. When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP16 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.
      1) Primer: Sherwin Williams Pro Industrial™ Pro-Cryl® Primer B66-1300 Series; applied at 1.9 - 3.8 mils DFT.
      2) Finish: Sherwin Williams Pro Industrial™ High Performance Epoxy B67-200 Series (gloss); applied at 3.7 - 7.4 mils DFT.
   c. Requirements:
      1) ASTM D 4141, Method C (EMMAQUA):
         (a) No blistering, cracking or chalking. No less than 97% gloss retention and 0.11 DED Hunter Lab Scale color change after 500 MJ/m2 EMMAQUA exposure, average of five tests in five colors.

2.04 INTERIOR HIGH-PERFORMANCE COATING SYSTEMS

A. Cast-In-Place Concrete:

1. System Type: Pro Industrial Water Based Catalized Epoxy (Egg Shell).
   a. Surface Preparation: Allow mortar to cure for 14 days. Level protrusions and mortar spatter. Surfaces must be clean and dry prior to painting.
      1) Block Filler: Loxon® Block Surfacer, A24W00200 applied at 16 mils wet; 8.0 mils dry.
      2) Primer: S-W ProMar 200 Zero VOC Latex Primer, B28W2600; (4 mils wet, 1.5 mils dry).
      3) Intermediate: S-W Pro Industrial Water Based Catalyzed Epoxy Eg-Shel, B73-360 Series.
      4) Finish: S-W Pro Industrial Water Based Catalyzed Epoxy Eg-Shel, B73-360 Series (2.0- 4 mils dry per coat).

b. Finish Colors: As selected by Architect from manufacturer's full range of available colors.

B. Concrete Floor:

1. System Type: High solids, heavy duty, two-component, catalized, polyamid epoxy coating with resistance to alkalies, abrasion, corrosion and chemical attack, with high gloss, anti-slip finish.
2. Surface Preparation: Surface must be clean, dry and in sound condition. Remove all oil, dust, grease, dirt, and other foreign material to ensure adequate adhesion
3. Coating System:
   a. Base Coat: Sherwin Williams ArmorSeal 33 Epoxy Primer/Sealer applied at 8.0 mils DFT.
   b. Top Coat: Sherwin Williams ArmorSeal 1000 HS with anti-slip aggregate applied at 3.0 - 5.0 mils DFT.
4. Color:
   a. Epoxy Coating, Color and Gloss: As selected by Architect from manufacturer's standard colors and gloss.
   b. Anti-Slip Aggregate Color: As selected by Architect from manufacturer's standard aggregate colors.

C. CMU Walls:

1. System Type: Pro Industrial Water Based Catalized Epoxy (Egg Shell or Semi-Gloss, Refer to Materials Schedule on Drawings for gloss).
   a. Surface Preparation: Allow mortar to cure for 14 days. Level protrusions and mortar spatter. Surfaces must be clean and dry prior to painting.
      1) Block Filler: Loxon® Block Surfacer, A24W00200 applied at 16 mils wet; 8.0 mils dry.
      2) Primer (Exterior Walls): S-W Moisture Vapor Barrier Interior Latex Primer/Sealer B72W00001; (6.0 - 8.0 mils wet, 1.8 - 2.4 mils dry).
      3) Primer (Interior Walls): S-W ProMar 200 Zero VOC Latex Primer, B28W2600; (4 mils wet, 1.5 mils dry).
      4) Intermediate: S-W Pro Industrial Water Based Catalyzed Epoxy Eg-Shel, B73-360 Series.
      5) Finish: S-W Pro Industrial Water Based Catalyzed Epoxy Eg-Shel, B73-360 Series (2.0- 4 mils dry per coat).
   b. Finish Colors: As selected by Architect from manufacturer's full range of available colors.

PART 3 - EXECUTION

3.01 EXAMINATION

A. With Applicator present, examine substrates and conditions under which high-performance coatings will be applied, for compliance with coating application requirements.

1. Apply coatings only after unsatisfactory conditions have been corrected and surfaces to receive coatings are thoroughly dry.
2. Start of application is construed as Applicator's acceptance of surfaces within that particular area.

3.02 PREPARATION

A. General: Remove plates, machined surfaces, and similar items already in place that are not to be coated. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and coating.

1. After completing coating operations, reinstall items that were removed; use workers skilled in the trades involved.

B. Cleaning: Before applying high-performance coatings, clean substrates of substances that could impair bond of coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and coating application so dust and other contaminates from cleaning process will not fall on wet, newly coated surfaces.

C. Surface Preparation: Clean and prepare surfaces to be coated according to manufacturer's written instructions for each substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove primers and reprime substrate.
2. Cementitious Substrates: Prepare concrete to be coated. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods to prepare surfaces.
    a. Use abrasive blast-cleaning methods if recommended by coating manufacturer.
    b. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not coat surfaces if moisture content exceeds that permitted in manufacturer's written instructions.

3.03 APPLICATION

A. General: Apply high-performance coatings according to manufacturer's written instructions.

1. Use applicators and techniques best suited for the material being applied.
2. Do not apply high-performance coatings over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to forming a durable coating film.
3. Allow primer to cure for minimum of 24 hours before applying finish coats.
4. Coating colors, surface treatments, and finishes are indicated in the coating system descriptions.
5. Provide finish coats compatible with primers used.
6. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, grilles, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
    a. Coat surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
    b. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

B. Scheduling Coating: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for coating as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and film thickness required is the same regardless of application method.
    a. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer.
    b. Where manufacturer's written instructions require sanding, sand between applications to produce a smooth, even surface.
    c. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until coating has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat does not cause undercoat to lift or lose adhesion.

2. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance. Give special attention to edges, corners, crevices, welds, exposed fasteners, and similar surfaces to ensure that they receive a dry film thickness equivalent to that of flat surfaces.

C. Application Procedures: Apply coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brush Application: Use brushes best suited for material applied and of appropriate size for the surface or item being coated.
   a. Apply primers and first coats by brush unless manufacturer's written instructions permit using roller or mechanical applicators.
   b. Brush out and work brush coats into surfaces in an even film.
   c. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Neatly draw glass lines and color breaks.
2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by manufacturer for the material and texture required.
3. Spray Equipment: Use mechanical methods to apply coating if permitted by manufacturer's written instructions and governing regulations.
   a. Use spray equipment with orifice size recommended by manufacturer for material and texture required.
   b. Apply each coat to provide the equivalent hiding of brush-applied coats.
   c. Do not double back with spray equipment building-up film thickness of two coats in one pass, unless recommended by manufacturer.
   d. Back roll each coat.

D. Minimum Coating Thickness: Apply each material no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by manufacturer, to material required to be coated or finished that has not been prime coated by others.

1. Recoat primed and sealed substrates if there is evidence of suction spots or unsealed areas in first coat, to ensure a finish coat with no burn-through or other defects caused by insufficient sealing.
2. Primer Coat Color: When primer coats are of same color as finish coats, tint primer coat not less than two shades lighter or darker than finish coat to simplify identification of primer coat from finish coats.

G. Completed Work: Match approved Samples for color, texture, and coverage. Remove, refinish, or recoat work that does not comply with specified requirements.

3.04 FIELD QUALITY CONTROL

A. Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when coatings are being applied:

1. Owner may engage the services of a qualified testing agency to sample coating material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform appropriate tests for the following characteristics as required by Owner:
   a. Quantitative materials analysis.

3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with specified requirements. Contractor shall remove noncomplying coating materials from Project site, pay for testing, and recoat surfaces coated with rejected materials. If necessary, Contractor may be required to remove rejected materials from previously coated surfaces if, on recoating with specified materials, the two coatings are not compatible.

3.05 CLEANING

A. Cleanup: At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

1. After completing coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

3.06 PROTECTION

A. Protect work of other trades, whether being coated or not, against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, as approved by Architect, and leave in an undamaged condition.

1. Provide "Wet Paint" signs to protect newly coated finishes. After completing coating operations, remove temporary protective wrappings provided by others to protect their work.
2. At completion of construction activities of other trades, touch up and restore damaged or defaced coated surfaces. Comply with procedures specified in PDCA P1.

END OF SECTION

SECTION 09 96 23
GRAFFITI RESISTANT COATINGS

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes surface preparation and the application of permanent anti-graffiti coating systems on the following exterior substrates:

1. Concrete.
2. Cast stone masonry.
3. Manufactured stone veneer.
4. Concrete masonry units (CMU).
5. Steel.
6. Galvanized metal.
7. Wood decking.
8. Glue-laminated construction.
   a. Steel timber connectors.
9. Composite siding and trim.

1.02 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: For each type of product indicated.

1. Provide instructions bearing manufacturer's name, coating type, and recommended installation procedures.
2. Provide methods and material instruction for graffiti removal.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Qualification Data: For Installer.

E. Manufacturer’s Warranty: Submit one copy of manufacturer's warranty for specified materials

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five (5) years documented experience.

B. Installer Qualifications: An employer of workers trained and approved by the manufacturer, with a minimum of five (5) years of documented experience.

C. Source Limitations: Obtain graffiti resistant coating materials, and accessory materials from single source from single manufacturer.

D. Mockups: Apply graffiti resistant coating to field mock-up sample representing exterior wall surface to be coated. Apply coating system over a minimum 3 foot x 3 foot test area and test removal of applied spray paint in presence of Owner and Architect for approval using removal methods recommended by the manufacturer.

1.04 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 2 gal. (7.6 L) of material applied.

1.05 DELIVERY, STORAGE AND HANDLING

A. Graffiti resistant coating manufacturer or supplier shall identify the store number, location, and address of project. Contractor shall require a record keeping account be established and maintained by the paint supplier which records graffiti resistant paint type, brand, and quantity purchased, for the specific project.

B. Deliver graffiti resistant coating materials in sealed original labeled containers, bearing manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, and instructions for mixing and/or reducing.

C. Store materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F in ventilated area and as required by manufacturer's instructions.

D. Prevent fire hazards and spontaneous combustion.

1.06 PROJECT CONDITIONS

A. Environmental Requirements: Follow manufacturer's recommendations for temperature range in which coating may be applied.

1.07 WARRANTY

A. Provide manufacturers written warranty guaranteeing effective graffiti removal for not less than 10 years and warrant that treated surfaces can be effectively and repeatedly cleaned of graffiti without damage or loss of effectiveness of the graffiti resistant coating. Manufacturer shall, for the duration of the warranty period, guarantee replacement of product where graffiti removal has shown to be ineffective.

PART 2 PRODUCTS

2.01 GRAFFITI RESISTANT COATING

A. Graffiti resistant coating shall be a clear, non-sacrificial graffiti resistant coating which provides protection for exterior vertical surfaces from permanent graffiti staining and damage caused by spray paint and marking pens. Coating shall be suitable for application to painted and unpainted surfaces including, but not limited to, concrete, masonry, cast stone masonry, manufactured stone veneer, wood decking, glue-laminated construction, metals, etc. and compatible with water repellents products specified in Section - 07 19 00 used on exterior surfaces. Product shall be of type such that recoating with the underlying paint is possible without removal of the graffiti resistant coating. Product shall be a coating that dries clear, non-yellowing, with a low luster.

1. Manufacturer: Subject to compliance with requirements, products that may be incorporated into the Work include the following:
    a. Evonik Industries; Product Prtectosil ANTIGRAFFITI Coating.
    b. Prosoco, Inc; Product Sure Klean® Weather Seal Blok-Guard & Graffiti Control 15.
    c. Rainguard International; Product VandlGuard Non-Sacrificial Graffiti Coating.

2.02 ACCESSORY MATERIALS

A. First Coat (Base Coat) on Unpainted Concrete and Masonry Surfaces: Compatible with anti-graffiti coating; as recommended by the anti-graffiti material manufacturer.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to the following:
   a. Micro-Seal Water Repellant (One Coat) by Rainguard International, Newport Beach, CA 888-765-7070.

B. Graffiti Remover: Compatible with anti-graffiti coating; as recommended by the anti-graffiti material manufacturer.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to the following:
   a. VandlClean Super graffiti remover by Rainguard International, Newport Beach, CA; Phone: (888) 765-7070.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.

B. Verify all surfaces are ready to receive coating in accordance with manufacturer’s printed requirements.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. Unpainted Concrete, and Masonry: Verify water repellant has been applied in accordance with Section 07 19 00 - Water Repellents to new or non-painted concrete, masonry, cast stone masonry, manufactured stone veneer surfaces prior to the application of the graffiti resistant coating.

E. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.

1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates indicated.

B. Surface shall be free of dirt, dust, contaminants such as curing compounds, hardeners, bond breakers, and form release. Allow painted surfaces to cure properly. Do not water blast painted surfaces. Assure surfaces are clean and dry.

C. Mask or otherwise protect adjacent surfaces not scheduled to receive coating. If applied on unscheduled surfaces such as glass, remove immediately, by approved method.

D. Protect work of other trades against damage from graffiti resistant coating application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

1. Protect landscaping, property, and vehicles from over spray and drift.

E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.03 APPLICATION

A. Apply coating in accordance with manufacturer's published instructions.

B. Application Rate: Apply each coat at the manufacturers published application rate.

1. First Coat (Base Coat): Apply one (1) coat.
2. Graffiti Resistant Coating: Apply three (3) coats.

3.04 SURFACES TO BE COATED

A. Apply graffiti resistant coating to all exterior exposed building surfaces visible from the ground level including, but not limited to, concrete, masonry, metal doors and frames, sheet metal items, glue-laminated construction (columns, beams, steel timber connectors, glue-laminated wood decking), composite siding and trim, etc. Apply coating to painted and unpainted surfaces. Exclude horizontal surfaces subject to wheel or foot traffic.

B. Apply graffiti resistant coating to all interior exposed building surfaces including concrete, masonry, metal doors and frames, glue-laminated wood ceiling, and wood trim. Apply coating to painted and unpainted surfaces. Exclude horizontal surfaces subject to foot traffic.

C. On building surfaces, apply coating system to first definitive continuous horizontal demarcation including change in paint color or surface material but not less than 12 feet above finish grade. Apply to top of building if no definitive continuous horizontal demarcation lines exist.

3.05 MAINTENANCE

A. Deliver cleaning products to Owner for storage and subsequent use for graffiti removal. Apply cleaning instructions label to interior wall location as directed by the General Contractor.

3.06 FIELD QUALITY CONTROL

A. Verify application rate by periodic on-site inspection and calculation of area covered compared to consumption of coating material used. Document inspections showing total area covered and number and volume of coating containers used.

END OF SECTION

SECTION 10 14 00
SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Room and door signs.

B. Building identification signs.

1.02 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines current edition.

B. ADA Standards - 2010 ADA Standards for Accessible Design 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

1.03 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.

C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.

1. When room numbers to appear on signs differ from those on the drawings, include the drawing room number on schedule.
2. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
3. Submit for approval by Owner through Architect prior to fabrication.

D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.

E. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.

F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

B. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive specific requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package signs as required to prevent damage before installation.

B. Package room and door signs in sequential order of installation, labeled by floor or building.

C. Store tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.

B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flat Signs:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, Healthcare Signs: www.healthcaresigns.com; product FXAN-CR511 and FXAN-RG62. Comparable product by one of the following manufacturers may be considered:
   a. Best Sign Systems, Inc: www.bestsigns.com/#sle.
   b. Cosco Industries: www.coscoarchitecturalsigns.com/#sle.
   c. Inpro: www.inprocorp.com/#sle.
   d. Mohawk Sign Systems, Inc: www.mohawksign.com/#sle.

B. Dimensional Letter Signs:

1. Cosco Industries; Cast Aluminum: www.coscoarchitecturalsigns.com/#sle.
2. ACE Sign Systems.
3. Signature Signs Incorporated.

2.02 SIGNAGE APPLICATIONS

A. Accessibility Compliance: Signs are required to comply with ADA Standards and ICC A117.1, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.

B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.

1. Sign Type: Flat signs with engraved panel media as specified.
2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
3. Character Height: 1-1/2 inch.
4. Sign : Size: 7-inches H x 7-inches W., unless otherwise indicated.
5. Service Rooms: Identify with:
   a. JANITOR.
   b. KITCHEN.
   c. STORAGE / UTLITY.
   d. CONCESSIONS.
   e. STORAGE LOCKER 1.
   f. STORAGE LOCKER 2.
   g. STORAGE LOCKER 3.

6. Rest Rooms: Identify with pictograms, and the names with the handicap symbol as follows:
   a. MEN.
   b. WOMEN.

C. Building Identification Signs:

1. Use individual metal letters.
2. Mount on outside wall in location shown on drawings.

2.03 SIGN TYPES

A. Manufacturer: Subject to compliance with requirements, provide signs by Healthcare Signs.

1. Signage Style: Flexia Angulate™.
   a. Service Room Sign Type: FXAN-CR511; 2-Line Room Sign:
      1) JANITOR.
      2) KITCHEN.
      3) STORAGE / UTLITY.
      4) CONCESSIONS.
      5) STORAGE LOCKER 1.
      6) STORAGE LOCKER 2.
      7) STORAGE LOCKER 3.
   b. Restroom Sign Type: FXAN-RG62; Restroom sign with handicap symbol.
      1) MEN (with handicap symbol).
      2) WOMEN (with handicap symbol).

B. Flat Signs: Signage media frame material and finish as selected by Architect from manufacturer's standard and custom frames.

1. Corners: Square.
2. Mounting: Concealed screws.
3. Frame Finish: As selected by Architect from manufacturer's standard and custom frame finishes.

C. Color and Font: Unless otherwise indicated:

1. Character Font: As selected by Architect from manufacturer's full range.
2. Character Case: Upper case only.
3. Background Color: As selected by Architect from manufacturer's full range.
4. Character Color: Contrasting color.

2.04 TACTILE SIGNAGE MEDIA

A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:

1. Braille and symbols.
2. Sign Color: As selected by Architect from manufacture's full range of available colors.
3. Total Thickness: 1/16 inch.

2.05 DIMENSIONAL LETTERS

A. Metal Letters: Produce characters with smooth flat faces, sharp corners, and precisely formed lines and profiles, free of pits, scale, sand holes, and other defects. Cast lugs into back of characters and tap to receive threaded mounting studs. Alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated. Comply with the following requirements.

1. Character Material:
   a. Alumimum casting.

b. Finish: Brushed, satin.
2. Letter Style: As selected by Architect from manufacturer's standard letter styles.
3. Letter Height: As indicated on Drawings.
4. Letter Thickness: Manufacturer's standard for letter size.
5. Color(s): As selected by Architect from manufacturer's full range.
6. Mounting: Concealed studs, noncorroding for substrates encountered.

2.06 ACCESSORIES

A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs where indicated:

1. Room and Door Signs: Locate on wall at latch side of door with centerline of sign at 60 inches above finished floor.
2. If no location is indicated obtain Owner's instructions.

D. Protect from damage until Substantial Completion; repair or replace damaged items.

3.03 SIGNAGE SCHEDULE

A. The following rooms or areas are required to have signage by Code:

1. JANITOR.
2. Public Restrooms with handicap symbol:
   a. MEN.
   b. WOMEN.
3. KITCHEN.
4. STORAGE / UTLITY.
5. CONCESSIONS.
6. STORAGE LOCKER 1.
7. STORAGE LOCKER 2.
8. STORAGE LOCKER 3.
9. Exterior building signage.

END OF SECTION

SECTION 10 21 13.19
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Solid plastic toilet compartments.

B. Urinal screens.

1.02 RELATED REQUIREMENTS

A. Section 10 28 00 - Toilet Accessories.

1.03 REFERENCE STANDARDS

A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

B. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth 2019.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide data on panel construction, hardware, and accessories.

C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.

D. Samples: Submit two samples of partition panels, 6 by 6 inch in size illustrating panel finish, color, and sheen.

E. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Solid Plastic Toilet Compartments (HD1):

1. Basis of Design: Subject to compliance with requirements, provide Scranton Products (Santana/Comtec/Capital) Hiny Hiders HDPE Solid Plastic Bathroom Stalls: www.scrantonproducts.com. Equalivent product by the following may be considered:
   a. Ampco Products, Inc: www.ampco.com.
   b. Metpar Corp: www.metpar.com.

2.02 SOLID PLASTIC TOILET COMPARTMENTS

A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance wtih NFPA 286, floor-mounted headrail-braced.

1. Color: As selected by Architect from manufacturer's standard colors.

B. Doors:

1. Thickness: 1 inch.
2. Width: 24 inch.
3. Width for Handicapped Use: 36 inch, out-swinging.
4. Height: 58 inch.

C. Panels:

1. Thickness: 1 inch.
2. Height: 58 inch.
3. Depth: As indicated on drawings.

D. Pilasters:

1. Thickness: 1 inch.
2. Width: As required to fit space; minimum 3 inch.

E. Urinal Screens: Without doors; to match compartments; mounted to wall with continuous panel brackets.

1. Thickness: 1 inch.
2. Height: 42 inches.
3. Depth: As indicated on drawings, or if not indicated, 24-inches.

2.03 ACCESSORIES

A. Pilaster Shoes: Formed ASTM A 666 Type 304 stainless steel with No. 4 finish, 3 in high, concealing floor fastenings.

1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.

B. Head Rails: Hollow stainless steel, 1 by 1-1/2 inch size, with anti-grip profile and cast socket wall brackets.

1. Size: Manufacturer's standard size.

C. Wall and Pilaster Brackets: Stainless steel; manufacturer's standard type for conditions indicated on drawings.

D. Attachments, Screws, and Bolts: Stainless steel , tamper proof type.

1. For attaching panels and pilasters to brackets: Through-bolts and nuts ; tamper proof.

E. Hinges: Stainless steel, manufacturer's standard finish.

1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.

F. Door Hardware: Stainless steel, manufacturer's standard finish.

1. Door Latch: Slide type with exterior emergency access feature.
2. Door Strike and Keeper with Rubber Bumper: Mount on pilaster in alignment with door latch.
3. Provide door pull for outswinging doors.

G. Coat Hook: One per compartment, mounted on door.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify correct spacing of and between plumbing fixtures.

C. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.

B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

C. Adjust adjacent components for consistency of line or plane.

3.05 SCHEDULES

A. Mens 105: Two toilet stalls, floor mounted, one accessible and one standard stall, head rail braced type; two wall mounted urinal screens; colors as selected by Architect.

B. Womens 106: Five toilet stalls, floor mounted, one accessible and four standard stall, head rail braced type; colors as selected by Architect.

END OF SECTION

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SECTION 10 28 00
TOILET ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Under-lavatory pipe supply covers.

C. Electric hand dryers.

D. Diaper changing stations.

E. Grab bars.

F. Utility room accessories.

1.02 RELATED REQUIREMENTS

A. Section 10 21 13.19 - Plastic Toilet Compartments.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.

B. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures 2011 (Reaffirmed 2022).

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

D. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service 2015a (Reapproved 2019).

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

F. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.

G. ASTM C1822 - Standard Specification for Insulating Covers on Accessible Lavatory Piping 2021.

H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.

I. ASTM F2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use 2004, with Editorial Revision (2016).

J. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi 2015, with Editorial Revision (2021).

K. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet Accessories:

1. Basis of Design: Subject to compliance with requirements, provide products manufactured by Bobrick Washroom Equipment, Inc. Comparable products by the following manufacturers may be considered:
   a. AJW Architectural Products: www.ajw.com/#sle.
   b. American Specialties, Inc: www.americanspecialties.com/#sle.
   c. Bradley Corporation: www.bradleycorp.com.
   d. Atlas American LLC; Vandal Stop Products: www.vandalstop.com/#sle .

B. Under-Lavatory Pipe Supply Covers:

1. Plumberex Specialty Products, Inc: www.plumberex.com/#sle.
2. Truebro, Inc: www.ispcorp.com/#sle.

C. Electric Hand/Hair Dryers:

1. American Specialties, Inc: www.americanspecialties.com/#sle.
2. Excel Dryer: www.exceldryer.com/#sle.
3. World Dryer Corporation: www.worlddryer.com/#sle.
4. saniflow® Distributed by AmeraProducts: www.AmeraProducts.com/#sle.

D. Diaper Changing Stations:

1. Bradley Corporation: www.bradleycorp.com/#sle.
2. Koala Kare Products: www.koalabear.com/#sle.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

1. Grind welded joints smooth.
2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.

B. Keys: Provide 3 keys for each accessory to Owner; master key lockable accessories.

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Mirror Glass: Vandal resistant.

G. Adhesive: Two component epoxy type, waterproof.

H. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

I. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.

C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.

D. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.

E. Back paint components where contact is made with building finishes to prevent electrolysis.

2.04 COMMERCIAL TOILET ACCESSORIES

A. Toilet Paper Dispenser: Double roll, surface-mounted, stainless steel unit with pivot hinge, tumbler lock.

1. Basis of Design: Subject to compliance with requirements, provide Contra Series® Surface-Mounted Multi-Roll Toilet Tissue Dispenser; Model No. B4288 manufactured by Bobrick Washroom Equipment, Inc: www.bobrick.com. Comparable product by one of the following manufacturers may be considered:
    a. Available Manufactures:
        1) AJW Architectural Products: www.ajw.com/#sle.
        2) American Specialties, Inc: www.americanspecialties.com/#sle.
        3) Bradley Corporation: www.bradleycorp.com/#sle.

B. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gauge refill indicator, Valve shall be operable with one hand and with less than 5 pounds of force to comply with barrier-free accessibility guidelines (including ADAAG), tumbler lock.

1. Minimum Capacity: 48 ounces.
2. Basis of Design Product: Subject to compliance with requirements provide Classic Series® Surface-Mounted Soap Dispenser B-2112 manufactured by Bobrick Washroom Equipment, Inc: www.bobrick.com/#sle. Comparable product by one of the following manufacturers may be considered:
    a. Available Manufacturers:
        1) AJW Architectural Products: www.ajw.com/#sle.
        2) American Specialties, Inc: www.americanspecialties.com/#sle.
        3) Bradley Corporation: www.bradleycorp.com/#sle.

C. Integrally Framed Vandal Resistant Mirror: Tab locked safety mirror.

1. Mirror shall be constructed with 12-gauge 304L or 12-gauge 316L Stainless Steel joined with TIG welds and edges de-burred. Mirror housing and sacrifical plexiglass surface shall provide protective cover for polished stainless steel reflective surface, no glass. Mounting backer frame shall have twelve 3/8-inch dia. mounting holes. Tamper-proof hanging system.
   a. Size: 24 by 36-inches.
   b. Surface mounted.
2. Basis of Design: Subject to compliance with requirements, provide Vandal Resistant Mirror model AA-MTL distributed by Vandal Stop Products: www.vandalstop.com/#sle and manufactured by Atlas American LLC. 1930 Village Center Circle #3-5871, Las Vegas, NV 89134; Phone: (530) 894-7867, E-Mail: sales@vandalstop.com. Comparble product by one of the following manufacturers may be considered:
   a. Available Manufacturers:
      1) AJW Architectural Products: www.ajw.com/#sle.
      2) American Specialties, Inc: www.americanspecialties.com/#sle.
      3) Bobrick Washroom Equipment, Inc: www.bobrick.com/#sle.
      4) Bradley Corporation: www.bradleycorp.com/#sle.

D. Grab Bars: Stainless steel, textured surface.

1. Standard Duty Grab Bars:
   a. Push/Pull Point Load: 300 pound-force, minimum.
   b. Dimensions: 1-1/2 inch outside diameter, minimum 0.05 inch wall thickness, snap flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
   c. Finish: Satin.
   d. Length and Configuration: As indicated on drawings.
2. Basis of Design: Subject to compliance with requirements, provide B-6806 Series Grab Bars manufactured by Bobrick Washroom Equipment Company: www.bobrick.com. Comparable products by one of the following may be considered:
   a. Available Manufacturers:
      1) AJW Architectural Products: www.ajw.com/#sle.
      2) American Specialties, Inc: www.americanspecialties.com/#sle.
      3) Bradley Corporation: www.bradleycorp.com/#sle.

E. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.

1. Basis of Design: Subject to compliance with requirements, provide Sanitary Napkin Disposal B-270 manufactured by Bobrick Washroom Equipment, Inc: www.bobrick.com/#sle. Comparable product by one of the following manufacturers may be considered:
   a. Available Manufacturers:
   b. American Specialties, Inc: www.americanspecialties.com/#sle.
   c. AJW Architectural Products: www.ajw.com/#sle.
   d. Bradley Corporation: www.bradleycorp.com/#sle.

2.05 UNDER-LAVATORY PIPE AND SUPPLY COVERS

A. Under-Lavatory Pipe and Supply Covers:

1. Insulate exposed drainage piping, including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
3. Construction: 1/8 inch flexible PVC.
   a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   b. Comply with ASTM C1822, type indicated.

c. Comply with ASME A112.18.9.
d. Comply with ICC A117.1.
e. Microbial and Fungal Resistance: Comply with ASTM G21.

4. Color: White.
5. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces.
6. Products:
   a. Plumberex Specialty Products, Inc; Plumberex Handy-Shield Maxx: www.plumberex.com/#sle.
   b. Truebro; Lav Guard 2: www.truebro.com/#sle.

2.06 ELECTRIC HAND/HAIR DRYERS

A. Electric Hand and Hair Dryers: Traditional fan-in-case type, with fixed or swivel nozzle.

1. Operation: Automatic, sensor-operated on and off.
2. Mounting: Surface mounted.
3. Cover: Epoxy painted steel or die-cast zinc alloy.
   a. Color: White.
   b. Tamper-resistant screw attachment of cover to mounting plate.
4. Runtime: Field adjustable or automatic, up to 35 seconds.
5. Supply Voltage: 120 V, single phase, 60 Hz, nominal.
6. Warranty: 3 years.
7. Electric Hand Dryer Products:
   a. Excel Dryer Inc; Model XLERATOR® XL-W: www.exceldryer.com/#sle.
   b. World Dryer Corporation; VERDEdri: www.worlddryer.com/#sle.
   c. World Dryer Corporation; AirMax™ Series Hand Dryers: www.worlddryer.com/#sle.
   d. saniflow® Model E88A-UL Distributed by AmeraProducts: www.AmeraProducts.com.
   e. American Specialties, Inc; Model 0199-1: www.americanspecialties.com/#sle.

2.07 DIAPER CHANGING STATIONS

A. Diaper Changing Station: Wall-mounted folding diaper changing station for use in commercial toilet facilities, meeting or exceeding ASTM F2285.

1. Material: Polyethylene.
2. Mounting: Surface.
3. Color: Gray.
4. Minimum Rated Load: 300 pounds.
5. Basis of Design: Subject to compliance with requirements, provid Koala Bear Kare® KB200 Horizontal Wall Mounted Design with permanent Braille. Comparable products by one of the following manufacturers may be considered.
   a. Available Manufacturers:
      1) American Specialties, Inc: www.american specialties.com/#sle.
      2) Bradley Corporation: www.bradleycorp.com/#sle.
      3) Brocar Products, Inc: www.brocar.com/#sle.

2.08 UTILITY ROOM ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.

1. Drying rod: Stainless steel, 1/4 inch diameter.
2. Hooks: Three, 0.06 inch stainless steel rag hooks at shelf front.
3. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.
4. Length: 36 inches.

5. Basis of Design: Subject to compliance with requirements, provid Bobrick Washroom Equipment Inc; Model B-223x36. Comparable products by one of the following manufacturers may be considered.
   a. Available Manufacturers:
      1) American Specialties, Inc: www.americanspecialties.com/#sle.
      2) Bradley Corporation: www.bradleycorp.com/#sle.
      3) AJW Architectural Products: www.ajw.com/#sle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.

D. Verify that field measurements are as instructed by the manufacturer.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

1. Grab Bars: As indicated on drawings.
2. Mirrors: As indicated on Drawings.
3. Electric Hand Dryers: Measured from floor to bottom of nozzle:
   a. Men: 44 inches.
   b. Women: 42 inches.
   c. Teenager: 41 inches.
   d. Child: 32 inches.
   e. Handicap: 36 inches.
4. Other Accessories: As indicated on drawings.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Accessories.

1.02 REFERENCE STANDARDS

A. FM (AG) - FM Approval Guide current edition.

B. NFPA 10 - Standard for Portable Fire Extinguishers 2022.

C. UL (DIR) - Online Certifications Directory Current Edition.

1.03 PERFORMANCE REQUIREMENTS

A. Conform to applicable code.

B. Provide extinguishers classified and labeled by Underwriters Laboratories Inc. for the purpose specified and indicated.

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedure requirements.

B. Product Data: Provide extinguisher operational features.

C. Product Data: Provide extinguisher operational features and color and finish.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.05 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:

1. Activar Construction Products Group, Inc. - JL Industries; Cosmic 10E Multi-Purpose Dry Chemical Fire Extinguisher: www.activarcpg.com/#sle.
2. Kidde, a unit of United Technologies Corp; Pro Plus MP Fire Extinguisher: www.kidde.com/#sle.
3. Potter-Roemer; Fire Extinguisher Model No. 3010; 3000 Series: www.potterroemer.com/#sle.
4. Larsen's Manufacturing Co; MP Series-Multi-Purpose Dry Chemical: www.larsonsmfg.com.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.

1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.

B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.

1. Cartridge Operated: Spun shell.
2. Class: A:B:C type.
3. Size: 10 pound.
4. Finish: Baked polyester powder coat, Red color.
5. Temperature range: Minus 40 degrees F to +120 degrees F.

2.03 ACCESSORIES

A. Extinguisher Brackets: Formed steel, galvanized and enamel finished.

B. Signage: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location.

1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
   a. Orientation: Horizontal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in locations and at mounting heights indicated, or if not indicated, at heights acceptable to authorities having jurisdiction.

C. Secure rigidly in place.

D. Place extinguishers and accessories on wall brackets and in compliance with requirements of authorities having jurisdiction.

E. Identification: Apply decals at locations indicated.

3.03 MAINTENANCE

A. See Sections 01 73 00 - Execution and 01 77 00 - Closeout Procedures, for additional requirements relating to maintenance service.

3.04 MAINTENANCE - SELF-SERVICE FIRE EXTINGUISHERS

A. Monthly Inspections: Inspect self-service fire extinguishers on monthly basis in accordance with manufacturer’s instructions, and requirements of the authorities having jurisdiction (AHJ).

B. Annual Inspections: Inspect self-service fire extinguishers on annual basis in accordance with manufacturer's instructions, and requirements of the authorities having jurisdiction (AHJ).

C. Inspection Certification Tag: Provide new tag indicating acceptable condition of fire extinguisher, date of inspection, and name of self-service inspector for each inspection.

END OF SECTION

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SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

B. Countertops, stainless steel.

C. Wall-hung counters.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications: For countertop support bracket for wall-hung countertops.

B. Section 06 41 00 - Architectural Wood Casework.

C. Section 22 40 00 - Plumbing Fixtures: Sinks.

1.03 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2022.

B. AWI (QCP) - Quality Certification Program Current Edition.

C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).

D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.

E. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

F. PS 1 - Structural Plywood 2009 (Revised 2019).

1.04 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures for submittal procedure requirements.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Specimen warranty.

C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.

D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.

F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

G. Installer's qualification statement.

H. Installation Instructions: Manufacturer's installation instructions and recommendations.

I. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Natural Stone Institute (NSI) Accredited Natural Stone Fabricator; www.naturalstoneinstitute.org/#sle.

B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than five years of documented experience and approved by manufacturer.

C. Quality Certification:

1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
2. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) requirements for grade or grades specified.
3. Provide designated labels on shop drawings as required by certification program.
4. Provide designated labels on installed products as required by certification program.
5. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Premium Grade, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.

B. Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate.

1. Laminate Sheet: NEMA LD 3, Grade HGS, 0.048 inch nominal thickness.
   a. Manufacturers:
      1) Formica Corporation: www.formica.com/#sle.
      2) Panolam Industries International, Inc: www.panolam.com/#sle.
      3) Wilsonart: www.wilsonart.com/#sle.

4) Nevamar Company, LLC Decorative Products Division:.
5) Pionite Decorative Surfaces:
6) Wilsonart International; Division of Premark International, Inc:

b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
c. NSF approved for food contact.
d. Wear Resistance: In addition to specified grade, comply with NEMA LD 3 High Wear Grade requirements for wear resistance.
e. Laminate Core Color: Same as decorative surface.
f. Finish: Matte or suede, gloss rating of 5 to 20.
g. Surface Color and Pattern: As selected by Architect from the manufacturer's full line.

2. Exposed Edge Treatment: Square, substrate built up to minimum 1-1/4 inch thick; covered with matching laminate.
3. Back and End Splashes: Same material, same construction.
4. Core Material: Particleboard made with exterior glue or exterior-grade plywood.
   a. Thickness: ¾-inch.
5. Core Material at Sinks: Exterior-grade plywood.
   a. Thickness: ¾-inch.
6. Fabricate in accordance with AWI/AWMAC/WI (AWS), Section 11 - Countertops, Premium Grade.

C. Stainless Steel Countertops: Provide units with smooth surfaces in uniform plane free of defects. Ease exposed edges and corners. Provide front and end overhang of 1 inch (25 mm) over base cabinets.

1. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, not less than 0.062-inch (1.59-mm) nominal thickness, with No. 4B directional satin finish.
2. Extend top down 1 inch (25 mm) at edges with a 1/2-inch (13-mm) return flange under frame. Apply heavy coating of heat-resistant, sound-deadening mastic to undersurface.
3. Form backsplash coved to and integral with top surface.
4. Finish: 4B satin brushed finish.
5. Exposed Edge Shape: Marine edge with return; edge raised 3/16 inch above counter with 45 degree transition, minimum 1 inch flat rim; 1-1/2 inch high turndown, 1/2 inch return to face of case; reinforced with hardwood or steel.
   a. Countertops containing sinks; pitch two ways to sink to provide drainage without channeling or grooving.
6. Reinforce underside of countertop with channels or use thicker metal sheet where necessary to insure rigidity without deflection.
7. Back and End Splashes: Same material; welded 1/4 inch radius coved joint to countertop; square top edge with 1 inch wide top surface and minimum 1/2 inch turndown.
8. Splash Dimensions: 6 inch high by 1 inch thick, unless otherwise indicated.
9. Splash Depth Where Faucets are Mounted in Splash: 2 inches.
10. Sinks: Same material, same thickness; flush welded to counter; bottom sloped to outlet; radiused interior corners; drain outlet located in back corner.
    a. Where stainless-steel sinks occur in stainless-steel countertops, factory weld into one integral unit.
11. Weld shop-made joints.
12. Fabricate units for installation without field-made joints.
13. Fabricate units for field assembly, where necessary, using tight-fitting butt-joints mechanically bolted through continuous channels welded to underside at edges of joined ends.
14. After fabricating and welding, grind surfaces smooth and polish as needed to produce uniform, directionally textured finish with no evidence of welds and free of cross scratches. Passivate and rinse surfaces; remove embedded foreign matter and leave surfaces clean.
15. Associated Counter Shutters or Window Sills: Same material, same thickness.

16. Manufacturers: Subject to compliance with requirements, manufacturers that may be incorporated into the Work include, but are not limited to the following:
    a. Eskay Metal Fabricating; Phone 800-836-8015, Ext. 405: www.eskaymetalfab.com.commercial.html.
    b. RIS Restaurant Services,inc. Phone: 817-640-5415: www.rsidrivesroi.com.
    c. Avenue Metal Company, Inc. AMM; Phone: 312-243-3483, Fax: 312-243-0017: www.avenuemetal.com .

2.02 MATERIALS

A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

C. Joint Sealant: Mildew-resistant silicone sealant, white.

2.03 ACCESSORIES

A. Fixed Top-Mounted Countertop Support Brackets:

1. Material: Steel.
2. Finish: Manufacturer's standard, factory-applied, textured powder coat.
3. Color: As selected by Architect from manufacturer's standard colors.
4. Products:
    a. Centerline Brackets: www.countertopbracket.com/#sle.

2.04 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.

1. Join lengths of tops using best method recommended by manufacturer.
2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.

1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
2. Height: 4 inches, unless otherwise indicated.

C. Wall-Mounted Counters: Provide skirts, aprons, brackets, and braces as indicated on drawings, finished to match.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.

C. Attach stainless steel countertops using stainless steel fasteners and clips.

D. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

A. Clean countertops surfaces thoroughly.

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish as approved by Architect.

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Protect countertop surfaces during construction with 6-mil-thick polyethylene or other suitable water-resistant covering. Tape to underside of countertop at minimum of 48 inches o/c.

C. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

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SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements for plumbing systems and Division 22 Sections:
      a. References to standards.
      b. Submittals.
      c. Quality Assurance.
      d. Delivery, storage and handling.
   2. Pipe, pipe fittings and installation requirements common to multiple Sections:
      a. Facility water distribution.
      b. Facility sanitary sewerage.
   3. General duty valves common to multiple Sections.
   4. Pipe hangers and supports common to multiple Sections.
   5. Pipe and equipment identification.
   6. Cleaning.

B. Related Sections:
   1. Division 00 and 01 Sections:
      a. Administrative procedures and requirements.
      b. Environmental conditions affecting products.
   2. Section 03 30 00 - Cast-In-Place Concrete: Execution requirements for placement of concrete housekeeping pads specified by this Section.
   3. Section 22 07 00 - Plumbing Insulation: Insulation requirements related to sizing pipe hangers to encompass insulation.
   4. Section 22 11 00 Facility Water Distribution: Specialty valves and plumbing specialties.
   5. Section 22 13 00 Facility Sanitary Sewerage: Floor drains and cleanouts.
   6. Section 23 05 00 Common Work results for HVAC: Administrative and procedural requirements for HVAC ductwork, piping and equipment.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. A13.1 - Scheme for the Identification of Piping Systems.
   2. B16.3 - Malleable Iron Threaded Fittings.
   3. B16.4 - Gray Iron Threaded Fittings.
   4. B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
   5. B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
   6. B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes

7. B31.9 - Building Services Piping.

B. ASTM International (ASTM):
1. A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. A74 - Standard Specification for Cast Iron Soil Pipe and Fittings.
3. A536 - Standard Specification for Ductile Iron Castings.
4. A674 - Standard practice for polyethylene encasement for ductile iron pipe for water or other liquids.
5. A 888 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, And Vent Piping Applications.
6. B88 - Standard Specification for Seamless Copper Water Tube.
7. C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
8. C1277 - Standard Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings.
9. C1540 - Standard Specification for Heavy Duty Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings.
10. C 1563 - Standard Test Method for Gaskets for Use in Conjunction With Hub and Spigot Cast Iron Soil Pipe and Fittings for Sanitary Drain, Waste, Vent, and Storm Piping Applications.
11. D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
12. D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure Rated Pipe (SDR Series).
13. D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
14. D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
15. D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
16. D2665 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings.
17. D2729 - Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
18. D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
19. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
20. E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
21. E814 - Standard Test Method for Fire Tests of Through Penetration Fire Stops.
22. E1966 - Standard Test Method for Fire-Resistive Joint Systems.
23. F492 - Standard Specification for Propylene and Polypropylene (PP) Plastic-Lined Ferrous Metal Pipe and Fittings
24. F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
25. F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications.
26. F1866 – Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Schedule 40 Drainage and DWV Fabricated Fittings.

C. American Welding Society (AWS):
1. A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
2. D1.1 - Structural Welding Code - Steel.

D. American Water Works Association (AWWA):
1. C110 - American National Standard for Ductile-Iron and Grey-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids.

2. C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
3. C151 - American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.
4. C600 - Standard for Installation of Ductile-Iron Water Mains and their Appurtenances.

E. Cast Iron Soil Pipe Institute (CISPI):
1. 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
2. 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

F. International Association of Plumbing and Mechanical Officials (IAPMO):
1. PS 117 – Copper and Copper Alloy Tubing System Incorporating Press-Type or Nail-Type Connections.

G. Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry:
1. SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
2. SP 69 - Pipe Hangers and Supports - Selection and Application.
3. SP 70 - Cast Iron Gate Valves, Flanged and Threaded Ends.
4. SP 71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.
5. SP 80 - Bronze Gate, Globe, Angle and Check Valves.
6. SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
7. SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

H. National Sanitation Foundation International (NSF):
1. 61 - Drinking Water System Components - Health Effects.

I. Underwriters Laboratories Inc. (UL):
1. 263 - Fire Tests of Building Construction and Materials.
2. 723 - Tests for Surface Burning Characteristics of Building Materials.
3. 1479 - Fire Tests of Through-Penetration Firestops.
4. 2079 - Tests for Fire Resistance of Building Joint Systems.
5. Fire Resistance Directory.

1.04 PERFORMANCE REQUIREMENTS

A. Firestopping: Conform to applicable code for fire resistance ratings and surface burning characteristics.

1.05 SUBMITTALS

A. Refer to Section 01 33 00 for:
1. Electronic Submittal requirements.
2. Transmittal requirements.
3. Submittals regarding color selections.
4. Substitutions.
5. Coordination with other trades.
6. Coordination and approval from public agencies.
7. Deviations from Contract Documents.

B. Product Data:
1. Submit data on pipe materials and fittings.
2. Submit manufacturers catalog information:

a. Valves.
b. Pipe identification.
c. Equipment Identification.

C. Closeout Submittals:
1. Submit certification of water disinfection and chlorination.
2. Submit copies of plumbing inspector acceptance of air and water column tests.
3. Submit Operation and Maintenance manuals in accordance with closeout procedures.

D. Project Record Documents:
1. Provide dimensioned drawings indicating installed location of underground piping.
2. Record actual locations of tagged valves; include valve tag numbers.

1.06 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.07 QUALITY ASSURANCE

A. Perform Work in accordance with ASME B31.9 code for installation of piping systems.

B. Use joint grooving tools and materials provided from a single manufacturer.

C. For domestic water piping and valves, use products certified to meet NSF 61.

D. Dezincification resistant: Bronze valve chemical make-up for components in the waterway to not exceed 15 percent zinc.
1. Certify valves to be dezincification resistant to the criteria listed above.

E. Perform Work to comply with the latest edition of Wisconsin Plumbing Code.

F. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.

1.08 QUALIFICATIONS

A. Explanation of manufacturer listings for Part 2 - Products of Division 22 Sections:
1. Select equipment from the listed manufacturers where a list of manufacturers is under the heading "Manufacturers":
a. The list of manufacturers is provided as a convenience to the Contractor, indicating manufacturers that may be able to meet the indicated requirements.
b. Being listed does not indicate the availability of any product or approval of a product not containing the indicated features.
c. Approval to use products from manufacturers not listed is not a bid requirement
2. Use products meeting the indicated requirements where manufacturers are not listed for products:
a. Approval to use products from manufacturers not listed is not a pre-bid requirement.

B. Manufacturers: Company specializing in manufacturing products specified in this Division with minimum 3 years experience.

C. Installer: Company specializing in performing work of this Division with minimum 3 years experience.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 01 60 00: Requirements for transporting, handling, storing, and protecting products.

B. Provide temporary caps on fittings and valves removed from shipping containers and not immediately installed.

C. Provide temporary end caps and closures on pipes stored on site, but not installed.

D. Protect installed piping from entry of foreign materials using temporary covers for idle sections of the Work.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Refer to Section 01 60 00: Environmental conditions affecting products on site.

B. Do not install underground piping when bedding is wet or frozen.

1.11 COORDINATION

A. Refer to Section 01 31 00: Requirements for Coordination.

B. Coordinate installation of buried piping with trenching and footing installation.

1.12 WARRANTY

A. Refer to Section 01 07 00: Product warranties and product bonds.

PART 2 PRODUCTS

2.01 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Match material specified by Civil for water service entrance.

B. Copper Tubing conforming to ASTM B88:
   1. 2-1/2 inches and smaller, Type K, soft copper, seamless.
   2. No underground fittings except at connection to site utility.

2.02 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tubing: ASTM B88, Type L seamless, hard temper:
   1. Fittings: ASME B16.18, wrought copper.
   2. Joints: 95/5 solder or brazing.

B. Copper Tubing: ASTM B88, Type L, seamless, hard temper:
   1. Press Fitting Systems:
      a. ASME B16.18 cast copper alloy or ASME B16.22 wrought copper and bronze.
      b. IAPMO PS 117 performance criteria.
      c. EPDM sealing elements.
      d. Viega – ProPress, up to 4 inch.
      e. Victaulic – Permalynx up to 1-1/2 inch.

C. PEXa Piping
   1. Manufacturer: Rehau, George Fischer, or equal.
   2. Piping

a. All pipe shall be high-density crosslinked polyethylene manufactured using the high-pressure peroxide method of crosslinking (PEXa). Pipe shall conform to ASTM F876, ASTM F877 CSA B137.5, NSF/ANSI 14, and NSF/ANSI 61.
b. Supplier shall provide pipe in sizes 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 in.
c. Pipe shall be rated for continuous operation of 100 psi gauge pressure at 180°F temperature (690 kPa @ 82°C) and shall have a rating pf 80 psi gauge pressure at 200°F temperature (550 kPa @ 93°C) per the manufacturer's requirements.
d. Pipe shall be certified by PPI to standard TR-3, with applicable plumbing and mechanical code certifications.
e. Pipe to be manufactured using a high-pressure peroxide method with a minimum degree of crosslinking of 70-89% when tested in accordance with ASTM D2765, Method B.
f. Pipe to be tested for resistance to hot chlorinated water in accordance with ASTM F2023. Pipe to have a minimum extrapolated time-to-failure of 50 years, calculated in accordance with section 13.3 of F2023 and listed as "3306" per the ASTM F876 standard.
g. Pipe to have a minimum bend radius for cold bending not less than five (5) times the outside diameter. Bends with a radius less than this shall require the use of a bending template as supplied by the pipe manufacturer, and/or hot air.
h. PEXa pipe to have a co-extruded red, white or blue UV Shield made from UV-resistant polyethylene providing a minimum UV resistance of 6 months when tested according to ASTM F2657. In addition, pipe shall have a manufacturer's recommended UV resistance of 12 months based on additional testing to ASTM F2657.
i. Pipe to be manufactured in an ISO 9001 certified production facility.
j. Pipe to have a Flame Spread Index and a Smoke Developed Index listing to ASTM E84 (in U.S.) or CAN/ULC S102.2 (in Canada) with insulation or galvanized support channel as necessary.

3. Fittings & Multi-port Tees

All Fittings used with crosslinked polyethylene (PEXa) water distribution pipe intended for plumbing applications shall be cold-expansion fittings with PEX reinforcing rings.
a. All polymer fittings shall be made from PPSU (black) in accordance with ASTM D6394.
b. PPSU Multi-port Tees shall be manufactured from poly-phenylsulfone (PPSU) material.
c. All brass fittings shall be lead free brass made from ECO BRASS UNS C69300 or equivalent.
d. All PEX reinforcing rings shall be made from PEXa crosslinked polyethylene.
e. All fittings shall be third-party certified to applicable standards ASTM F877, NSF/ANSI 14, NSF/ANSI 61 and CSA B137.5.
f. Where joints are encased in concrete or buried underground, joints shall be wrapped if required per the manufacturer's recommendation to protect the material.
i. Assembly Tools

4. Cold Expansion Fittings with PEX Reinforcement Rings tools:
a. Tools for assembling F1960 Cold-expansion fittings with PEX reinforcement rings should be acquired by installing contractor from tools manufacturers in the market.
b. These tools should be certified to make ASTM F1960 Cold-Expansion Fittings with PEX Reinforcement Rings.
i. Markings
ii. Pipe shall carry the following markings every three (3) feet (0.9 meters): Manufacturer's name or trademark, nominal size, PEXa 3306 (material designation) SDR9 (standard dimension ratio), ASTM F876/ F877 / F2080 F1960, CSA B137.5, NSF-pw, U.P. Code, 160 psi @ 73.4°F / 100 psi @ 180°F / 80 psi @ 200°F, POTABLE TUBING, manufacturing date and footage mark.
iii. Cold-expansion fittings and PEX reinforcement rings shall be marked VALVES

2.03 SANITARY SEWER PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Hubless Cast Iron Pipe: CISPI 301 and ASTM A888.
1. Fittings: Cast iron, CISPI 301.

2. Couplings: ASTM C1540 heavy duty, shielded.

B. PVC Pipe: Schedule 40, ASTM D2665 with mechanical ring, or fusion or solvent cement.
1. Fittings: PVC, ASTM F1866.
2. Joints: Solvent weld with ASTM D2564 solvent cement.
3. Provide contrasting color primer for solvent weld joints.
4. Do not use plastic piping in the following locations:
a. Commercial kitchen drains, boiler room drains.

2.04 SANITARY SEWER PIPING, ABOVE GRADE (WASTE AND VENT)

A. Hubless Cast Iron Pipe: CISPI 301 and ASTM A888.
1. Fittings: Cast iron, CISPI 301.
2. Couplings: ASTM C1277 and CISPI 310, shielded.

B. PVC Pipe:
1. Schedule 40, ASTM D2665 with solvent welded joints.
2. Fittings: PVC, ASTM D1866.
3. Joints: Solvent weld with ASTM D2564 solvent cement.
4. Do not use plastic piping in the following locations:
a. Ceiling cavities above rooms served by transfer grilles (air plenums).
b. Locker rooms or shower areas where piping is exposed.
c. Within 8 feet of the floor where piping is exposed to public.

2.05 EQUIPMENT DRAINS AND OVERFLOWS

A. Copper Tubing: ASTM B88, Type M, hard temper.
1. Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.
2. Joints: ASTM B32, Alloy Grade Sb5 tin-antimony, or Alloy Grade Sn95 tin-silver, lead free solder.

B. PVC Pipe: ASTM D1785, Schedule 40, or ASTM D2241, SDR 21 or 26, polyvinyl chloride (PVC) material.
1. Fittings: ASTM D2466, Schedule 40, PVC.
2. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement.

2.06 GATE VALVES

A. Acceptable Manufacturers:
1. Crane.
2. Grinnell.
3. Hammond.
4. Milwaukee.
5. Nibco, Inc.
6. Stockham.

B. 2-1/2 inch and larger:
1. MSS SP-70, 200 psi CWP, bolted bonnet, non-rising stem.
2. Cast iron body, bonnet, stuffing box, handwheel and wedge; ASTM A 126 Class B.

3. Stem: Steel, ASTM A 108.
4. Non-asbestos packing.
5. Flanged ends.

2.07 BALL VALVE

A. Acceptable Manufacturers:
   1. Apollo Valve.
   2. Grinnell.
   3. Milwaukee.
   4. Nibco, Inc.
   5. Watts.

B. 2 Inches and Smaller: NSF 61. MSS SP 110.
   1. 600 WOG, 2-piece, full port, forged brass body.
   2. Chrome plated brass or stainless steel ball.
   3. Reinforced PTFE seats.
   4. Extended stems for insulation.
   5. Threaded or sweat ends.

2.08 UNIONS AND FLANGES

A. Unions for Pipe 2 inches and Smaller:
   1. Ferrous Piping: Class 150, malleable iron, threaded.
   2. Copper Piping: Class 150, bronze unions with soldered ends.

B. Dielectric Connections: Union or waterway fitting with galvanized or plated steel or ductile iron casing, with threaded end, grooved end, copper solder end, water impervious isolation barrier. NSF 61, ASTM F-492; Victaulic Style 47 or acceptable substitute.

2.09 PIPE HANGERS AND SUPPORTS

A. Acceptable Manufacturers:
   1. Anvil (Grinnell).
   2. B-Line - Cooper.
   3. Elcen
   4. Erico - Caddy System.
   5. Fee and Mason.
   6. Michigan Hanger Co.
   7. PHD Manufacturing.

B. Plumbing Piping - DWV:
   1. Conform to ASME B31.9.
   2. Grinnell Fig. 69 Carbon steel, adjustable, clevis.
   3. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
   4. Wall Support for Pipe Sizes 3 inches and Smaller: Grinnell Fig. 126 Cast iron hook.
   5. Wall Support for Pipe Sizes 4 inches and Larger: Grinnell Fig. 194 or 15 Welded steel bracket and wrought steel clamp.
   6. Vertical Support: Steel riser clamp.
   7. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   8. Copper Pipe Support: Copper-plated, carbon-steel adjustable, ring.

C. Plumbing Piping - Water:
   1. Conform to ASME B31.9.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
   3. Hangers for Cold Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
   4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
   5. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 inches and Larger: Steel channels with welded spacers and hanger rods, cast iron roll.
   6. Wall Support for Pipe Sizes 3 inches and Smaller: Cast iron hook.
   7. Vertical Support: Steel riser clamp.
   8. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   9. Floor Support for Hot Pipe Sizes 4 inches and Smaller: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   10. Copper Pipe Support: Copper-plated, Carbon-steel ring.

2.10 ACCESSORIES

A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.

2.11 FLASHING

A. Metal Flashing: 26-gauge galvanized steel.

B. Metal Counterflashing: 22-gauge galvanized steel.

C. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.

D. Caps: Steel, 22-gauge minimum; 16-gauge at fire resistant elements.

2.12 SLEEVES

A. Sleeves for Pipes Through Non-Fire Rated Floors: 18-gauge thick galvanized steel.

B. Sleeves for Pipes Through Non-Fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18-gauge thick galvanized steel.

2.13 ESCUTCHEONS

A. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where piping is exposed.

2.14 FORMED STEEL CHANNEL

A. Acceptable Manufacturers:
   1. Elcen.
   2. B-Line Systems.
   3. Hilti.
   4. Powerstrut, Inc.
   5. Unistrut Corp.
   6. Fee and Mason.

B. Product Description: Galvanized 12-gauge thick steel. With holes 1-1/2 inches on center.

2.15 VALVE TAGS

A. Plastic Tags:
   1. Acceptable Manufacturers:
      a. W.H. Brady.
      b. Marketing Systems, Inc.
      c. MSI.
      d. Seton Identification Products.
   2. Laminated 3-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inches diameter.

2.16 PIPE MARKERS

A. Color and Lettering: Conform to ASME A13.1.

B. Plastic Tape Pipe Markers:
   1. Acceptable Manufacturers:
      a. W.H. Brady.
      b. Marketing Systems, Inc.
      c. MSI.
      d. Seton Identification Products.
   2. Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.

C. Plastic Underground Pipe Markers:
   1. Acceptable Manufacturers:
      a. W.H. Brady.
      b. Marketing Systems, Inc.
      c. MSI.
      d. Seton Identification Products.
   2. Bright colored continuously printed plastic ribbon tape, minimum 6 inches wide by 4 mil thick, manufactured for direct burial service.

2.17 LABELS

A. Acceptable Manufacturers:
   1. W.H. Brady.
   2. Champion.
   3. MSI.
   4. Ready Made.
   5. Seton Identification Products.

B. Description: Laminated 3-layer rigid plastic with engraved black letters on light colored background. 1.9 inch by 0.75 inch minimum size, adhesive backed. Comply with ASME A13.1 standard for colors and locations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section 01 30 00: Verification of existing conditions before starting work.

B. Verify excavations are to required grade, dry, and not over-excavated.

C. Verify trenches are ready to receive piping.

D. The Contractor is responsible for verifying invert elevations with respect to building finished floor

elevations and site provisions.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel or groove plain end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Make piping connections to equipment with flanges, grooved joint couplings, or unions.

D. Protect open ends of installed pipe with temporary plugs or caps.

E. Select hangers to surround insulation, shield and piping on insulated pipe.

3.03 INSTALLATION - FLASHING

A. Provide flexible flashing and metal counter-flashing where piping penetrates weather or waterproofed walls, floors, and roofs.

B. Flash vent pipes projecting above roof surface with flexible flashing and secure with stainless steel bands or other method approved by roofing contractor.

C. Flash floor drains in floors with topping over finished areas with flexible flashing, 10 inches clear on sides with minimum 36 by 36 inch sheet size. Fasten flashing to drain clamp device.

D. Seal floor, shower and drains watertight to adjacent materials.

E. Adjust storm collars tight to pipe with bolts; caulk around top edge. Use storm collars above roof jacks. Screw vertical flange section to face of curb.

3.04 INSTALLATION - SLEEVES

A. Exterior watertight entries: Seal with mechanical sleeve seals.

B. Set sleeves in position in forms. Provide reinforcing around sleeves.

C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

E. Where piping penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with stuffing or firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

F. Install chrome plated steel escutcheons at finished surfaces.

3.05 INSTALLATION - BURIED PIPING SYSTEMS

A. Coordinate underground piping locations with structural footings.

B. Establish elevations of buried domestic water piping with not less than 7-feet of cover outside of building.

C. Install, support and restrain cast iron pipe, fittings and couplings in compliance with procedures detailed in ASTM C1540.

D. Establish minimum separation of 10 feet from water piping or sanitary sewer piping in accordance with Wisconsin code.

E. Excavate pipe trench in accordance with Division 31.

F. Install ductile iron piping in accordance with AWWA C600.

G. Install pipe on prepared bedding.
   1. Install PVC piping on a continuous granular bed in accordance with ASTM D2321.
   2. Place bedding material at trench bottom to provide uniform bedding for piping.
   3. Level bedding materials in one continuous layer not exceeding 4 inches depth.
   4. Compact to 95 percent modified Proctor density.

H. Pipe Cover and Backfilling:
   1. Backfill trench in accordance with Division 31.
   2. Maintain optimum moisture content of fill material to attain required compaction density.
   3. After hydrostatic test, evenly backfill entire trench width by hand placing backfill material and hand tamping in 6 inches compacted layers to 6 inches minimum cover over top of jacket. Compact to 95 percent maximum density.
   4. Evenly and continuously backfill remaining trench depth in uniform layers with backfill material.
   5. Do not use wheeled or tracked vehicles for tamping.
   6. Install plastic ribbon tape continuous over top of pipe.
      a. Bury ribbon tape 6 inches below finished grade, directly above pipe.

3.06 INSTALLATION - ABOVE GROUND PIPING

A. Install piping to conserve building space, to not interfere with use of space and other work.
   1. Route piping in orderly manner and maintain gradient.
   2. Route parallel and perpendicular to walls.
   3. Group piping whenever practical at common elevations.

B. Sleeve pipe passing through partitions, walls and floors.

C. Slope piping and arrange systems to drain at low points.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

E. Provide shut-off valves:
   1. Required by Code.
   2. At each fixture supply.
   3. At branch lines serving more than one fixture.
   4. With extended valve stems for insulated piping applications.
   5. With screwed connections for piping 2-1/2 inch and smaller.
   6. With flanged connections for piping 3 inch and larger.
   7. With hose end caps on low point drains.

F. Install unions downstream of valves and at equipment or apparatus connections.

G. Where pipe support members are welded, clean, and apply 1 coat of zinc rich primer to welding.

H. Support cast iron drainage piping at every joint.

I. Hubless fittings and couplings: Use the procedures described in ASTM C1277.

J. Cleanouts:
   1. Provide cleanouts at the base of sanitary waste and storm drain risers.
   2. Install floor cleanouts at elevation to be flush with finished floor.
   3. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil.
   4. Locate cleanouts to allow clearance for snaking drainage system.
   5. Encase exterior cleanouts in concrete, flush with grade.

K. Install piping penetrating roofed areas to maintain integrity of roof assembly.
   1. Install vent piping penetrating roofed areas with frost proof jackets having air space of at least 1 inch between outside surface of pipe and inside surface of frost proof jacket.

L. Install firestopping at fire rated construction perimeters and openings containing penetrating sleeves and piping.

3.07 INSTALLATION - DOMESTIC WATER PIPING SYSTEMS

A. Install domestic water piping to allow for insulation. Refer to Section 22 07 00.

B. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

C. Provide swing joint offsets for branch piping penetrating adjacent walls and floors.

D. Install non-conducting dielectric unions for domestic water piping joining dissimilar metals.

E. Install press type and grooved joints in accordance with the manufacturer's latest published installation instructions. Select gaskets of an elastomer grade suitable for the intended service, produced by the coupling manufacturer.

F. Install PEXa piping with manufacturer approved joints and fitting per manufacturer's installation instructions.

3.08 INSTALLATION - SANITARY WASTE AND VENT PIPING SYSTEMS

A. Establish invert elevations, slopes for drainage to ¼ inch per foot minimum. Maintain gradients.

B. Establish invert elevations, slopes for vents. Match drainage slope below grade; 1/16 inch per foot minimum above grade. Maintain gradients.

C. Cast iron pipe, fittings and standard couplings: Installed, supported and restrained using the installation procedures detailed in ASTM C1277.

D. Cast iron pipe, fittings and heavy duty couplings: Installed, supported and restrained using the installation procedures detailed in ASTM C1540.

E. Terminate vent pipes passing through roofs at least 12 inches above the roof line.
   1. Support at increments not to exceed those allowed by the Wisconsin Plumbing Code.

F. Provide contrasting color primer for solvent weld joints.

3.09 VALVE INSTALLATION

A. Install valves with stems upright or horizontal, not inverted.

B. Install uniform length nipple and threaded fittings on both sides of solder end valves. Install union on one side of valve if union or flange is not located within 5 feet for other service reasons.

C. Install 3/4-inch hose-end ball valves with threaded cap for drains at low points of piping, bases of vertical risers, and at equipment.

D. Install branch isolation valves where the branch piping is equal to or larger than half the upstream main pipe size. This does not apply to mains smaller than 1-1/2 inch.

E. Install valves with clearance for installation of insulation.

F. Locate valve to be accessible through access panels where valves are installed above gypsum or plaster ceilings and chases. Coordinate size and location of access doors.

G. Refer to Section 22 07 00 for insulation requirements for valves.

3.10 HANGER SCHEDULE

PIPE HANGER SPACING		
PIPE MATERIAL	MAXIMUM HANGER SPACING Feet	HANGER ROD DIAMETER Inches
Cast Iron (All Sizes)	5	5/8
Cast Iron (All Sizes) w/10 foot pipe length	10	5/8
Copper Tube, 1-1/4 inches and smaller	6	1/2
Copper Tube, 1-1/2 inches and larger	10	1/2
PVC (All Sizes)	Per Plumbing Code	3/8

A. Note for Cast Iron Pipe: Locate a hanger within 18 inches of each joint. Also provide hanger at each change of direction and each branch connection.

B. Select hangers for insulated piping to surround the insulation and pipe saddle.

3.11 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment. Refer to Section 03 30 00.

B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports using steel members, formed steel channel, angle iron or steel pipe and fittings. Brace and fasten with flanges bolted to structure.

3.12 INSTALLATION - HANGERS AND SUPPORTS

A. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

B. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

C. Fastener System Installation:
   1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
   2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

3.13 VALVE APPLICATIONS

A. Install gate valves in domestic water systems to isolate branch piping 2-1/2 inch and larger.

B. Install ball valves for shut-off service and to isolate equipment, part of systems, or vertical risers.

C. Install ball valves in domestic water systems to isolate branch piping 2 inch and smaller.

D. Install shutoff and drain valves at locations indicated on Drawings and/or specified herein.

3.14 VALVE IDENTIFICATION

A. Provide 4 copies of a typewritten list identifying numbered valves. Include valve number, service, location and area served.

B. Plumbing stop valves at fixtures are exempt from valve tagging and inclusion on the valve list.

C. Include a copy of the valve identification list in each maintenance manual.

3.15 PIPE IDENTIFICATION

A. Use pressure sensitive labels, pre-formed markers.

B. Include labeling of service, direction of flow and tape bands at each end of labels with approved colors.

C. Provide pipe identification for exposed piping within the building and in accessible concealed spaces, such as above lay-in ceilings and at access panels. Minimum locations:
   1. At not more than 30 foot intervals on straight runs of pipes.
   2. Wherever a pipe turns 90 degrees.
   3. Wherever a pipe passes through a wall, on both sides.
   4. At other locations deemed necessary for ease of maintenance, e.g. access panels.

D. Piping that does not require identification:
   1. Fixture supplies.

2. Below grade piping.
3. Inaccessible piping concealed in chase walls.
4. P-traps.
5. Indirect waste piping from kitchen equipment.
6. Fire sprinkler piping.

E. Abbreviations: label the piping as follows:

1.	Condensate Drain	CD
2.	Domestic Cold Water (Softened)	CW
3.	Domestic Hot Water	HW
4.	Domestic Circulating Hot Water	CHW
5.	Hard Water	HARD W
6.	Non-Potable Water	NON-POT WTR
7.	Storm Drainage	RWL

3.16 EQUIPMENT IDENTIFICATION

A. Provide identification labels for scheduled equipment (except drains and plumbing fixtures) permanently affixed to equipment with mechanical fasteners (rivets, screws, bolts or other approved methods) in a prominent location.

B. Install labels level and drawn tight to the equipment surface. Provide backing or back-up plates where required by the fastening devices. On pumps and similar small equipment, the label may be located on the wall adjacent to the equipment.

C. Spell out the description of each piece of equipment (Water Heater #1, for example).

3.17 CHLORINATION OF DOMESTIC WATER LINES

A. Chlorination of Domestic Water Lines: Clean domestic water system in building, disinfect system in accordance with governing codes and State Health Department Requirements, and flush entire system clean with potable water:
   1. Flush the piping system with clean, potable water until no dirty water appears at the points of outlet.
   2. Isolate portion of system to be chlorinated.
      a. Fill with a water-chlorine solution containing at least 50 parts per million of chlorine and allow to stand for 24 hours or
      b. Fill with a water-chlorine solution containing at least 200 parts per million of chlorine and allow to stand for 3 hours.
   3. Following the standing time, flush with clean potable water until no chlorine remains in the water coming from the system.
   4. Provide written certification to Architect/Engineer that chlorination and flushing of domestic water system has been completed.

3.18 CLEANING

A. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash from site periodically and dispose off-site; do not burn or bury.

E. Refer to Section 01 70 00: Requirements for cleaning.

END OF SECTION

SECTION 22 07 00

PLUMBING INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Plumbing piping insulation, jackets and accessories.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. ASTM International (ASTM):
1. C547 - Standard Specification for Mineral Fiber Pipe Insulation.
2. C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
4. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. C450 - Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging.
6. C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
7. C585 - Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).
8. C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
9. C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
10. D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
11. E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
12. E2231 - Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics.

B. National Fire Protection Association (NFPA):
1. 255 – Standard Method of Test of Surface Burning Characteristics of Building Materials.

C. Underwriters Laboratories, Inc. (UL):
1. -723 – Tests for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit product description, thermal characteristics and list of materials and thickness for each service, and location.

1.05 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.06 QUALITY ASSURANCE

A. Test pipe insulation for maximum flame spread index of 25 and maximum smoke developed index of not exceeding 50 in accordance with ASTM E84, UL-723, and NFPA 255.

B. Pipe insulation manufactured in accordance with ASTM C585 for inner and outer diameters.

C. Factory fabricated fitting covers manufactured in accordance with ASTM C450.

D. Insulation accessories, such as adhesives, mastics, cement, tapes and glass cloth shall have the same component rating as listed in Paragraph 1.02 of this Section.

1.07 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3 years experience.

B. Applicator: Company specializing in performing Work of this section with minimum 3 years experience.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 01 60 00: Requirements for transporting, handling, storing, and protecting products.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

C. Protect insulation from weather and construction traffic, dirt, water, chemical, and damage, by storing in original wrapping.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00: Environmental conditions affecting products on site.

B. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

C. Maintain temperature before, during, and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:
   1. CertainTeed.
   2. Knauf.
   3. Johns Manville.
   4. Owens-Corning.

5. Substitutions: Section - Not Permitted.

B. Manufacturers for Closed Cell Elastomeric Insulation Products:
1. Aeroflex, Aerocell.
2. Armacell, LLC, Armaflex.
3. Nomaco, K-Flex.

2.02 PIPE INSULATION

A. Type P-1: ASTM C547, molded glass fiber pipe insulation:
1. Thermal Conductivity: 0.23 at 75 degrees F.
2. Operating Temperature Range: 0 to 850 degrees F.
3. Vapor Barrier Jacket: ASTM C1136, Type I, factory applied reinforced foil Kraft with self-sealing adhesive joints.
4. Jacket Temperature Limit: Minus 20 to 150 degrees F.

2.03 PIPE INSULATION JACKETS

A. Vapor Retarder Jacket:
1. ASTM C921, white kraft paper with glass fiber yarn, bonded to aluminized film.
2. Water Vapor Permeance: ASTM E96/E96M; 0.02 perms.

B. PVC Plastic Pipe Jacket:
1. Product Description: ASTM D1784, 1-piece molded type fitting covers and sheet material, off-white color.
2. Thickness: 30 mil.
3. Connections: Brush on welding adhesive or pressure sensitive color matching vinyl tape. Closed-cell foam tubing insulation.

C. Connections: Brush on welding adhesive or pressure sensitive color matching vinyl tape. closed- cell foam tubing insulation.

2.04 PIPE INSULATION ACCESSORIES

A. Adhesives and mastic: Compatible with insulation and jacket materials.

B. Piping 1-1/2 Inches Diameter and Smaller: Galvanized steel insulation protection shield. MSS SP-69, Type 40. Length: Based on pipe size and insulation thickness.

C. Closed Cell Elastomeric Insulation Pipe Hanger: Polyurethane insert with aluminum jacket single piece construction with self adhesive closure. Thickness to match pipe insulation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section 01 30 00: Coordination and project conditions.

B. Verify piping and equipment has been tested before applying insulation materials.

C. Verify surfaces are clean and dry, with foreign material removed.
D.

3.02 GLASS FIBER INSULATION WITH AP JACKET

A. Insulate piping with fiberglass insulation and all purpose jacket:
   1. Apply insulation to clean piping. Verify that insulation is correct size to snugly fit around exterior of specific piping material to be insulated. Apply mastic to piping to temporarily secure insulation to pipes when jacket is not permanently affixed to outside of insulation system.
   2. Seal jackets and end laps with mastic applied to 2 surfaces or with self-sealing type lap system. Seal exposed ends of insulation with a full coat of mastic.
   3. Fittings, valve bodies and flanges for pipe sizes 4 inches and smaller shall be finished with mineral fiber cement to same thickness as adjacent pipe insulation.
   4. Fittings, valve bodies, roof drain bodies and flanges for pipes over 4 inches shall be insulated with 3/4-lb. density fiberglass blanket compressed to the same thickness as adjacent pipe insulation, or mitered pipe insulation segments, or pre-molded fittings secured with 3-ply jute twine, fiberglass tape or 18-gauge galvanized steel wire, and finished with a smooth coat of mineral fiber cement.
   5. After the cement is dry, fittings shall be finished with 4-oz. canvas adhered with permanent adhesive.
   6. Fittings shall be sealed with vapor barrier mastic over the canvas for the following piping systems:
      a. Domestic Cold Water (Hard and Soft Water).
      b. Condensate Drain.

3.03 FOAM PLASTIC INSULATION ON PIPING

A. Slip insulation over pipe before assembly. Fittings to be insulated with matching insulation.

B. Insulation exposed to weather shall be painted with alkyd chlorinated - rubber paint.

3.04 INSTALLATION - PIPING SYSTEMS

A. Piping Exposed to View in Finished Spaces: Locate insulation and cover seams in least visible locations.

B. Insulation shall be applied in accordance with the manufacturer’s published recommendations, unless otherwise specified.

C. Continue insulation through penetrations of building assemblies or portions of assemblies having fire resistance rating of 1 hour or less.

D. Piping Systems Conveying Fluids Below Ambient Temperature:
   1. Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
   2. Furnish factory-applied or field-applied vapor retarder jackets. Secure factory-applied jackets with pressure sensitive adhesive self-sealing longitudinal laps and butt strips. Secure field-applied jackets with outward clinch expanding staples and seal staple penetrations with vapor retarder mastic.
   3. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor retarder adhesive or PVC fitting covers.

E. Hot Piping Systems less than 140 degrees F:
   1. Furnish factory-applied or field-applied standard jackets. Secure with outward clinch expanding staples or pressure sensitive adhesive system on standard factory-applied jacket and butt strips or both.
   2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

3. Do not insulate unions and flanges at equipment, but bevel and seal ends of insulation at such locations.

F. Inserts and Shields:
1. Piping 1-1/2 Inches Diameter and Smaller: Install galvanized steel shield between pipe hanger and insulation.
2. Piping 2 Inches Diameter and Larger: Install insert between support shield and piping and under finish jacket:
   a. Insert Configuration: Minimum 6 inches long, of thickness and contour matching adjoining insulation; may be factory fabricated.
   b. Insert Material: Compression resistant insulating material suitable for planned temperature range and service.
3. Piping Supported by Roller Type Pipe Hangers: Install galvanized steel shield between roller and inserts.

G. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces less than 8 feet above finished floor: Finish with PVC jacket and fitting covers.

3.05 SCHEDULES

A. Plumbing Piping Insulation Schedule:

PIPING SYSTEM	INSULATION TYPE	PIPE SIZE	INSULATION THICKNESS Inches
Domestic Hot Water Supply and Recirculation	P-1	1-1/4 inches and smaller 1-1/2 inches and larger	0.5 1.0
Domestic Cold Water (Hard and Soft Water)	P-1	1-1/4 inches and smaller 1-1/2 inches and larger	0.5 1.0

END OF SECTION

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SECTION 22 11 00

FACILITY WATER DISTRIBUTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Pipe and fittings.
   2. Valves.
   3. Hose bibs.
   4. Backflow preventers.
   5. Water hammer arrestors.
   6. Water meter.
   7. Chlorination.

B. Related Sections:
   1. Section 03 30 00 - Cast-In-Place Concrete: Execution requirements for placement of concrete house keeping pads specified by this Section.
   2. Section 07 84 00 - Firestopping: Product requirements for firestopping for placement by this Section.
   3. Section 08 31 13 - Access Doors and Frames: Product requirements for access doors for placement by this Section.
   4. Section 09 91 00 - Painting and Coating: Product and execution requirements for painting specified by this Section.
   5. Section 22 05 00 – Common Work Results for Plumbing:
      a. Administrative procedures:
         1) Submittals.
         2) Quality Assurance.
         3) Delivery Storage and Handling.
      b. Hangers and supports.
      c. Flashing and Sleeves.
      d. Firestopping.
      e. Pipe and equipment identification.
      f. Installation requirements for piping materials applying to various systems.
      g. Cleaning.
   6. Section 22 07 00 - Plumbing Insulation: Execution requirements for insulated pipes.
   7. Section 26 27 26 - Wiring Devices: Execution requirements for electric connections to equipment specified by this Section.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. American National Standards Institute (ANSI):
   1. Z358.1 - Emergency Eyewash and Shower Equipment.

B. American Society of Mechanical Engineers (ASME):
   1. B16.3 - Malleable Iron Threaded Fittings.
   2. B16.4 - Gray Iron Threaded Fittings.
   3. B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
   4. B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
   5. B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
   6. B31.9 - Building Services Piping.
   7. B40.1 - Gauges - Pressure Indicating Dial Type - Elastic Element.

C. American Society of Sanitary Engineering (ASSE):
   1. 1010 - Performance Requirements for Water Hammer Arresters.
   2. 1011 - Performance Requirements for Hose Connection Vacuum Breakers.
   3. 1012 - Performance Requirements for Backflow Preventer With Intermediate Atmospheric Vent.
   4. 1013 - Performance Requirements for Reduced Pressure Principle Backflow Preventers and Reduced Pressure Fire Protection Principle Backflow Preventers.
   5. 1019 - Performance Requirements for Vacuum Breaker Wall Hydrants, Freeze Resistant, Automatic Draining Type.
   6. 1052 – Performance Requirements for Hose Connection Backflow Preventer, Field Testable.
   7. 1053 – Performance Requirements for Double check Backflow Prevention, Wall Hydrants, Field Testable.

D. ASTM International (ASTM):
   1. A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
   2. A536 - Standard Specification for Ductile Iron Castings.
   3. B88 - Standard Specification for Seamless Copper Water Tube.
   4. B584 - Standard Specification for Copper Alloy Sand Castings for General Applications.
   5. D1785 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
   6. D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
   7. D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
   8. D2467 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
   9. D2855 - Standard Practice for Making Solvent-Cemented Joints With Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
   10. F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.
   11. F 891 - Standard Specification for Coextruded Poly (Vinyl Chloride) (PVC) Plastic Pipe With a Cellular Core.
   12. F1476 - Standard Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications.

E. American Welding Society (AWS):
   1. A5.8 - Specification for Filler Metals for Brazing and Braze Welding.

F. American Water Works Association (AWWA):
   1. C110 - American National Standard for Ductile-Iron and Grey-Iron Fittings, 3 in. through 48 in. (75 mm through 1200 mm), for Water and Other Liquids.
   2. C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
   3. C151 - American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water.

4. C600 - Standard for Installation of Ductile-Iron Water Mains and their Appurtenances.
5. C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 inches through 12 inches, for Water Distribution.
6. C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 inches through 3 inches, for Water Service.
7. C950 - Fiberglass Pressure Pipe.
8. M6 - Water Meters - Selection, Installation, Testing, and Maintenance.

G. Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry:
1. SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
2. SP 67 - Butterfly Valves.
3. SP 69 - Pipe Hangers and Supports - Selection and Application.
4. SP 70 - Cast Iron Gate Valves, Flanged and Threaded Ends.
5. SP 71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.
6. SP 78 - Cast Iron Plug Valves, Flanged and Threaded Ends.
7. SP 80 - Bronze Gate, Globe, Angle and Check Valves.
8. SP 85 - Cast Iron Globe & Angle Valves, Flanged and Threaded.
9. SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.
10. SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

H. National Electrical Manufacturers Association (NEMA):
1. 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

I. National Sanitation Foundation International (NSF):
1. 61 - Drinking Water System Components - Health Effects.

J. Plumbing and Drainage Institute (PDI):
1. WH201 - Water Hammer Arrester Standard.

1.04 SUBMITTALS

A. Product Data:
1. Piping: Submit catalog information on pipe materials, fittings, and accessories.
2. Valves:
a. Submit manufacturers catalog information with valve data and ratings for each service.
b. Identify valve application in the submittal.
3. Domestic Water Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.
4. Pumps: Submit pump type, capacity, certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Include electrical characteristics and connection requirements.

B. Manufacturer's Installation Instructions: Submit installation instructions for pumps, valves and accessories.

C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.05 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of valves and equipment.
1. Submit certification of water disinfection and chlorination.

B. Operation and Maintenance Data: Submit spare parts list, exploded assembly views and recommended maintenance intervals.

1.06 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.07 QUALITY ASSURANCE

A. For drinking water service, provide valves complying with NSF 61.

1.08 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

B. Installer: Company specializing in performing Work of this section with minimum 3 years experience.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00: Product storage and handling requirements.

B. Accept valves and equipment on Site in shipping containers with labeling in place. Inspect for damage.

C. Provide temporary protective coating on cast iron and steel valves.

D. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

E. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00.

B. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 DOMESTIC WATER PIPING

A. Refer to Section 22 05 00.

2.02 INTERIOR HOSE BIBBS

A. Manufacturers:
   1. Chicago Faucet.
   2. Josam.
   3. Nibco.
   4. Smith.
   5. Woodford.
   6. Zurn.

B. 3/4 inch: 125 psi, CWP, copper to hose, bronze body, angle type, vacuum breaker on hose outlet. NIBCO Fig. 72VB, or approved equal.

2.03 BACKFLOW PREVENTERS

A. Manufacturers:
   1. Conbraco.
   2. Febco.
   3. Watts.
   4. Wilkins.

B. Double Check Valve Backflow Preventer Assembly.
   1. Comply with ASSE 1015.
   2. 2 Inch and Smaller: NPT threaded connections and quarter-turn, full port, resilient seated, bronze ball valve shut-offs.

2.04 WATER HAMMER ARRESTORS

A. Manufacturers:
   1. Josam.
   2. Precision Plumbing Products
   3. Sioux Chief.
   4. Smith.
   5. Zurn.

B. Josam Series 7500, or approved equal, stainless steel construction, bellows type sized in accordance with PDI WH-201.
   1. Barrel-piston type water hammer arresters with hard drawn copper barrel, brass piston and “O” rings, seal lubricant, pre-charged permanently sealed air cushion and male IPS plug. Arresters shall be designed for 150 PSI working pressure and PDI certified.

2.05 PIPE HANGERS AND SUPPORTS

A. Refer to Section 22 05 00.

2.06 WATER METER

A. Main service meter: Furnished by the City of New Berlin. Coordinate and pay associated fees to obtain city water meter for installation under this section.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section 01 30 00: Coordination and project conditions.

B. Verify excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

3.03 INSTALLATION

A. Pipe and fittings: Refer to Section 22 05 00.

B. Valves: Refer to Section 22 05 00.

C. Hose bibs: Provide vacuum breakers where directed by the Plumbing Inspector.

D. Wall Hydrants:
   1. Insulate piping through the wall and maintain the integrity of the vapor barrier.
   2. Apply sealant to wall surface behind the wall hydrant.

E. Backflow preventers:
   1. Register installation with the Department of Safety and Professional Services.
   2. Extend drain piping from funnel to floor drain.
   3. Provide RPZ for heating system fill line.

F. Water hammer arrestors: Install with shut-off valve and threaded fitting.

G. Thermostatic mixing valves:
   1. Set outlet temperature limit to not exceed 115 degrees F.

H. Water meter:
   1. Install water meter furnished by the Utility. Pay the meter charge if there is one.
   2. Provide meter support and other equipment and materials required by the Utility.
   3. Install upstream and downstream isolation valves. Provide union fitting or flange fitting between the isolation valves.
   4. Install remote reader in accordance with City requirements.

I. Chlorination: Refer to Section 22 05 00.

3.04 INSTALLATION - THERMOMETERS AND GAGES

A. Install thermometers in piping systems where indicated on Drawings.

B. Install one pressure gage for each pump, locate taps before strainers and on suction and discharge of pump; pipe to gage. Omit tap upstream of strainer for in-line pumps.

C. Install gage taps in piping.

D. Install pressure gages with snubbers. Provide needle valve or ball valve to isolate each gage.

E. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Allow clearance from insulation.

F. Provide instruments with scale ranges selected according to service with largest appropriate scale.

G. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.

H. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate.

3.05 INSTALLATION - HANGERS AND SUPPORTS

A. Install hangers and supports in accordance with Section 22 05 00.

3.06 INSTALLATION - ABOVE GROUND PIPING

A. Refer to Section 22 05 00 - Common Work Results for Plumbing for additional requirements.

3.07 INSTALLATION - SERVICE CONNECTIONS

A. Provide mechanical sleeve seal for wall penetrations. Anchor service main to concrete.

3.08 FIELD QUALITY CONTROL

A. Section 01 40 00: Field inspecting, testing, adjusting, and balancing.

B. Test domestic water piping system in accordance with applicable code or local authority having jurisdiction.

C. Hydrostatic Tests: Test at not less than one-and-one-half times working pressure for two hours.
   1. Increase pressure in 50-psi increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psi. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts (1.89 L) per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.

D. Disinfect water piping per Section 22 05 00.

3.09 PIPING TESTS:

A. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.

B. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.

C. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.

D. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

E. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.

F. Prepare reports for tests and for corrective action required.

3.10 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash from site periodically and dispose off-site; do not burn or bury.

3.11 CLEANING

A. Refer to Section 01 70 00.

B. Refer to Section 22 05 00.

END OF SECTION

SECTION 22 13 00

FACILITY SANITARY SEWERAGE

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Sanitary Drainage Specialties:
      a. Floor drains.
      b. Cleanouts.
      c. Sewage ejectors.

B. Related Sections:
   1. Section 03 30 00 - Cast-In-Place Concrete: Execution requirements for placement of concrete specified by this section.
   2. Section 07 84 00 - Firestopping: Product requirements for firestopping for placement by this section.
   3. Section 08 31 13 - Access Doors and Frames: Product requirements for access doors for placement by this section.
   4. Section 22 05 00 – Common Work Results for Plumbing: Product and installation requirements for piping materials applying to various systems.
   5. Section 26 27 26 - Wiring Devices: Execution requirements for electric connections to equipment specified by this section.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. A112.21.1 - Floor Drains.
   2. B31.9 - Building Services Piping.

B. American Society for Testing Materials (ASTM):
   1. A74 - Standard specification for cast iron soil pipe and fittings.
   2. C564 - Standard specification for rubber gaskets for joining cast iron soil pipe and fittings.

C. Cast Iron Soil Pipe Institute (CISPI):
   1. 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
   2. 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.

1.04 SUBMITTALS

A. Section 01 33 00: Submittal procedures.

B. Product Data:

1. Sanitary Drainage Specialties: Submit manufacturers catalog information, component sizes, rough-in requirements, service sizes, and finishes.

C. Manufacturer's Installation Instructions: Submit installation instructions for material and equipment.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.05 CLOSEOUT SUBMITTALS

A. Section 01 70 00: Closeout procedures.

B. Project Record Documents: Record actual locations of equipment and clean-outs.

C. Operation and Maintenance Data: Submit frequency of treatment required for interceptors. Include, spare parts lists, exploded assembly views for pumps and equipment.

1.06 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.07 QUALITY ASSURANCE

A. Perform Work in accordance with State of Wisconsin standards.

B. Maintain one copy of each document on site.

1.08 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3 years experience.

B. Installer: Company specializing in performing Work of this section with minimum 3 years experience.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00: Product storage and handling requirements.

B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the Work, and isolating parts of completed system.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00.

B. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 FLOOR DRAINS

A. Acceptable Manufacturers:

1. Jay R. Smith.
2. Josam.
3. Wade.
4. Watts.
5. Zurn.

B. Construction:
1. ASME A112.21.1.
2. Coated cast iron body.
3. Flashing collar with threaded strainer connection.
4. Drainage flange.

C. Basis of Design:
1. Refer to schedule on drawings for basis of design.

2.02 CLEANOUTS

A. Acceptable Manufacturers:
1. Jay R. Smith.
2. Josam.
3. Wade.
4. Watts.
5. Zurn.

B. Floor Cleanout (CO): Provide Josam Series 58580-1 series, or equal, with satin finish bronze top and carpet cleanout marker where appropriate. Provide chrome cover when located in a wall.

2.03 SEWAGE EJECTORS

A. Acceptable Manufacturers:
1. Liberty
2. Well
3. Zoeller

B. Sewage Ejector (SE): Provide duplex system with performance as scheduled on plans. Provide with manufacturer's basin and automatic control system.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section 01 30 00: Coordination and project conditions.

B. Verify excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Verify elevations with site utility work prior to commencing work.

B. Remove scale and dirt, on inside and outside of pipe before assembly. Remove burrs.

C. Protect open ends of pipe from dirt and debris using temporary plugs or caps.

3.03 GENERAL INSTALLATION

A. Pitch drain, waste, and vent piping 1/4 inch per foot minimum. Do not slope more than 1/2 inch per foot.

B. Support piping so it will not sag.

C. Follow manufacturer's installation instructions for neoprene gasket connections to specialties.

D. Install top of hubs below finish floor when masonry partition wall thickness is insufficient to conceal hub and/or outside diameter of hub is greater than stud width.

E. Install an approved expansion joint at intervals not to exceed 35 feet for vertical plastic piping.

F. Floor Drains: Install accurately where indicated on the drawings:
   1. Install with top set level with finished floor, unless indicated otherwise.
   2. Trap and vent as required by local code authority.

G. Cleanouts: Install full size at the following locations:
   1. Base of waste stacks.
   2. Ninety degree turns in mains.
   3. Point where sewer leaves building.
   4. All other necessary points as indicated and required to permit easy system rodding:
      a. Every 50 feet on lines 3 inches or less in size.
      b. Every 100 feet on lines 4 inches or more in size.

H. Encase exterior cleanouts in concrete flush with grade.

I. Install floor cleanouts at elevation to accommodate finished floor.

J. Install sewage ejector.

3.04 INSTALLATION - HANGERS AND SUPPORTS

A. Refer to Section 22 05 00.

3.05 INSTALLATION - PIPING SYSTEMS

A. Refer to Section 22 05 00.

3.06 FIELD QUALITY CONTROL

A. Section 01 40 00: Field inspecting, testing, adjusting, and balancing.

B. Test sanitary waste and vent piping system in accordance with the State of Wisconsin Rules and Regulations, and local authority having jurisdiction.

3.07 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash from site periodically and dispose off-site; do not burn or bury.

END OF SECTION

SECTION 22 33 00

ELECTRIC DOMESTIC WATER HEATERS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Commercial electric water heaters.
2. Diaphragm-type expansion tanks.

B. Related Sections:
1. Section 03 30 00 – Cast-In-Place Concrete: Execution requirements for concrete housekeeping pads specified by this section.
2. Section: 22 11 00 – Facility Water Distribution: Supply connections to domestic water heaters.
3. Section 26 27 26 - Wiring Devices: Execution requirements for electric connections specified by this section.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. American Society of Mechanical Engineers (ASME):
1. PTC 25 - Pressure Relief Devices.

1.04 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop drawings: Indicate size of taps and performance data. Indicate dimensions of tanks, tank lining methods, anchors, attachments, lifting points, taps, and drains.

C. Product Data: Submit dimensioned drawings of water heaters indicating components and connections to other equipment and piping. Submit electrical characteristics and connection locations.

1.05 CLOSEOUT SUBMITTALS

A. Section 01 70 00: Closeout procedures.

B. Operation and Maintenance Data: Submit replacement part numbers and availability.

1.06 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.07 QUALITY ASSURANCE

A. Perform Work in accordance with State of Wisconsin Plumbing Code.

1.08 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3 years experience.

B. Installer: Company specializing in performing Work of this section with minimum 3 years experience.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00: Products storage and handling requirements.

B. Accept water heaters on site in original labeled cartons. Inspect for damage.

C. Protect tanks with temporary inlet and outlet caps. Maintain caps in place until installation.

1.10 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.11 WARRANTY

A. Section 01 70 00: Product warranties and product bonds.

B. Provide 3 years or longer written guarantee. Tankless type water heaters to have a 1-year warranty.

PART 2 PRODUCTS

2.01 ELECTRIC WATER HEATERS

A. Manufacturers:
1. A.O. Smith
2. American Water Heater Group
3. Bradford-White
4. Bosch
5. State
6. Rheem
7. Rinnai
8. Or approved equal

B. Capacity and characteristics as indicated on Drawings.

C. Tank: Glass lined welded steel; thermally insulated with glass fiber; encased in corrosion-resistant steel jacket with baked-on enamel finish.

D. Controls: Automatic water thermostat with externally adjustable temperature range from 120 to 170 degrees F, flanged or screw-in nichrome elements, enclosed controls and electrical junction box, operating light and high temperature limit thermostat.

E. Accessories: Brass water connections and dip tube, drain valve, magnesium anode, and ASME temperature and pressure relief valve.

2.02 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics: In accordance with Division 26 and as indicated on Drawings.

B. Disconnect Switch: Factory mount disconnect switch in on equipment.

2.03 DIAPHRAGM-TYPE EXPANSION TANKS

A. Provide diaphragm type pressure tanks of the size and capacity shown on the drawings. Precharge to 40 PSI.

B. Provide suitable inlet and outlet tappings.

C. Construct tank of galvanized steel and provide a 100 percent corrosion free NSF approved lining. Provide permanently sealed heavy-duty butyl diaphragm with five year written warranty for entire assembly. Test for 125 psig working pressure. ASME Compliance.

D. Manufacturer: Amtrol Therm-X-Trol, Bell & Gossett, or equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. Maintain manufacturer's recommended clearances around and over water heaters.

B. Connect domestic hot water and domestic cold water piping to supply connections.

C. Install the following piping accessories. Refer to Section 22 11 00.
   1. On inlet:
      a. Shutoff valve
   2. On outlet:
      a. Thermometer well and thermometer

D. Install discharge piping from relief valves and drain valves to nearest floor drain.

E. Install water heater trim and accessories furnished loose for field mounting.

F. Install electrical devices furnished loose for field mounting.

G. Install control wiring between water heater control panel and field mounted control devices.

H. Install Work in accordance with State of Wisconsin Plumbing Code.

3.02 SCHEDULES

A. Water heaters: Refer to schedule on Drawings.

END OF SECTION

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SECTION 22 40 00

PLUMBING FIXTURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
1. Water closets.
2. Urinals.
3. Lavatories.
4. Mop sinks.
5. Drinking fountains.
6. Kitchen sinks.

B. Related Sections:
1. Section 07 90 00 - Joint Protection: Product requirements for calking between fixtures and building components for placement by this section.
2. Section 22 05 00 – Common Work Results for Plumbing: Administrative procedures and execution requirements. Explanation of approved manufacturers and prior approvals.
3. Section 22 11 00 - Facility Water Distribution: Supply connections to plumbing fixtures.
4. Section 22 11 00 - Facility Water Distribution: Hose bibbs, hydrants, and wall hydrants.
5. Section 22 13 00 - Facility Sanitary Sewerage: Waste connections to plumbing fixtures.
6. Section 26 27 26 - Wiring Devices: Execution requirements for electric connections to sensor valves and faucets specified by this section.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. American National Standards Institute (ANSI):
1. A117.1 - Accessible and Usable Buildings and Facilities.

B. Air-Conditioning and Refrigeration Institute (ARI):
1. 1010 - Self-Contained, Mechanically Refrigerated Drinking-Water Coolers.

C. American Society of Mechanical Engineers (ASME):
1. A112.6.1 - Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use.
2. A112.18.1 - Plumbing Fixture Fittings.
3. A112.19.1 - Enameled Cast Iron Plumbing Fixtures.
4. A112.19.2 - Vitreous China Plumbing Fixtures.
5. A112.19.4 - Porcelain Enameled Formed Steel Plumbing Fixtures.
6. A112.19.5 - Trim for Water-Closet Bowls, Tanks and Urinals.

D. American Society of Safety Engineers (ASSE):
1. 1016 - Performance Requirements for Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations

1.04 SUBMITTALS

A. In accordance with Section 01 33 00.

B. Product Data: Submit catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes. Include water surface area for water closet fixtures.

C. Manufacturer's Installation Instructions: Submit installation methods and procedures.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.05 CLOSEOUT SUBMITTALS

A. Section 01 70 00: Closeout procedures.

B. Operation and Maintenance Data: Submit fixture, trim, exploded view and replacement parts lists.

1.06 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.07 QUALITY ASSURANCE

A. Specified fixtures identify the basis of design and establish the standard of quality for this project. Comparable fixtures from other listed manufacturers are acceptable, providing they meet or exceed the indicated requirements.

B. Water surface area for the water closet fixtures is a salient feature. Fixtures with smaller areas will not be accepted.

1.08 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

B. Installer: Company specializing in performing Work of this section with minimum three years experience.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00: Product storage and handling requirements.

B. Accept fixtures on site in factory packaging. Inspect for damage.

C. Protect installed fixtures from damage by securing areas and by leaving factory packaging in place to protect fixtures and prevent use.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Vitreous China Fixtures: Water Closets, Urinals, and Lavatories
   1. American Standard.

2. Crane.
3. Kohler Co.
4. Sloan.
5. Zurn.

B. Fixture Carriers:
1. Josam.
2. Smith.
3. Wade.
4. Watts.
5. Zurn.

C. Stainless Fixtures: Sinks
1. Advance Tabco.
2. Elkay.
3. Just.
4. Kindred Commercial.

D. Faucets and Trim
1. American Standard.
2. Chicago.
3. Delta.
4. Kohler Co.
5. Speakman.
6. T & S Brass.
7. Zurn.

E. Flush Valves
1. American Standard.
2. Sloan.
3. Toto.
4. Zurn.

F. Molded Stone Fixtures: Mop Sinks
1. Fiat.
2. Florestone.
3. Mustee.
4. Pro Flo.
5. Stern Williams.
6. Zurn.

G. Drinking Fountains
1. Elkay.
2. Halsey Taylor.
3. Haws.
4. Oasis.

2.02 FIXTURE SCHEDULES

A. Refer to schedule on Drawings for basis of design.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section 01 30 00: Coordination and project conditions.

B. Verify walls and floor finishes are prepared and ready for installation of fixtures.

C. Verify electric power is available and of correct characteristics.

3.02 PREPARATION

A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

B. Install fixture and rough-ins with A suffix at accessible height.

3.03 INSTALLATION

A. Install Work in accordance with Wisconsin Plumbing Code.

B. Install each fixture with trap, easily removable for servicing and cleaning.

C. Provide 17 gauge, chrome plated brass adjustable p-trap with cleanout on fixtures reducing traps. Traps for mop sinks shall be cast iron.

D. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.

E. Provide water temperature limiting valve on lavatories. Set temperature to 110 deg. F.

F. Install components level and plumb.

G. Install and secure fixtures in place with wall supports, wall carriers, and bolts.

H. Seal fixtures to wall and floor surfaces with sealant as specified in Section 07 90 00, color to match fixture.

I. Solidly attach water closets to floor with lag screws. Lead flashing is not intended hold fixture in place.

J. For ADA accessible water closets, install flush valve with handle to wide side of stall.

K. Refer to Architectural Drawings for fixture locations and mounting heights.

L. Emergency fixtures: Extend discharge piping to floor and terminate with elbow discharging towards nearest floor drain.

3.04 ADJUSTING

A. Section 01 70 00: Testing, adjusting, and balancing.

B. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

3.05 CLEANING

A. Section 01 70 00: Final cleaning.

B. Clean plumbing fixtures and equipment.

3.06 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 70 00: Protecting installed construction.

B. Do not permit use of fixtures before final acceptance.

END OF SECTION

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SECTION 23 05 00

COMMON WORK RESULTS FOR HVAC

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative requirements for HVAC systems:
      a. Submittals.
      b. Quality Assurance.
      c. Delivery, storage and handling.
   2. Pipe hangers and supports.
      a. Hanger rods.
      b. Inserts.
      c. Flashing.
      d. Sleeves.
      e. Formed steel channel.
      f. Equipment bases and supports.
   3. Pipe and equipment identification.
      a. Tags.
      b. Stencils.
      c. Pipe markers.

B. Related Sections:
   1. Section 01 07 00 - Product warranties and product bonds.
   2. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
   3. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
   4. Section 03 30 00 - Cast-In-Place Concrete: Execution requirements for placement of concrete housekeeping pads specified by this section.
   5. Section 07 84 00 - Firestopping: Product requirements for firestopping for placement by this section.
   6. Section 07 90 00 - Joint Protection: Product requirements for sealant materials for placement by this section.
   7. Section 09 91 00 - Painting and Coating: Product and execution requirements for painting specified by this section.
   8. Section 22 05 00 Common Work results for Plumbing: Administrative, and procedural requirements for plumbing piping, fixtures and equipment.
   9. Section 23 07 00 - HVAC Insulation: Insulation requirements related to sizing pipe hangers to encompass insulation.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. American Society of Mechanical Engineers (ASME):
   1. A13.1 - Scheme for the Identification of Piping Systems.

2. B16.3 - Malleable Iron Threaded Fittings.
3. B16.4 - Gray Iron Threaded Fittings.
4. B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
5. B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
6. B31.9 - Building Services Piping.

B. ASTM International (ASTM):
1. A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
3. A536 - Standard Specification for Ductile Iron Castings.
4. B88 - Standard Specification for Seamless Copper Water Tube.
5. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
6. E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
7. E814 - Standard Test Method for Fire Tests of Through Penetration Fire Stops.
8. E1966 - Standard Test Method for Fire-Resistive Joint Systems.
9. F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers.

C. American Welding Society (AWS):
1. A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
2. D1.1 - Structural Welding Code - Steel.

D. International Association of Plumbing and Mechanical Officials (IAPMO):
1. PS 117 - Copper, Copper Alloy, Carbon Steel, and Stainless Steel Piping Systems with Press- Type or Nail-Type Connections

E. Manufacturers Standardization Society (MSS) of the Valve and Fittings Industry:
1. SP 58 - Pipe Hangers and Supports - Materials, Design and Manufacturer.
2. SP 69 - Pipe Hangers and Supports - Selection and Application.
3. SP 89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

F. Underwriters Laboratories Inc. (UL):
1. 263 - Fire Tests of Building Construction and Materials.
2. 723 - Tests for Surface Burning Characteristics of Building Materials.
3. 1479 - Fire Tests of Through-Penetration Firestops.
4. 2079 - Tests for Fire Resistance of Building Joint Systems.
5. Fire Resistance Directory.

1.04 SUBMITTALS

A. Section 01 33 00: Submittal procedures.

B. Product Data:
1. Identify specific products to be used on the project.
2. Submit data on pipe materials and fittings including project application.
3. Submit data on general duty valves.
4. Catalog data for equipment labels, valve tags and pipe identification.

C. Closeout Submittals:
1. Submit copies of inspector acceptance of gas piping and mechanical work.
2. Submit Operation and Maintenance manuals in accordance with closeout procedures.

D. Project Record Documents:
   1. Record actual locations of tagged valves; include valve tag numbers.

1.05 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with ASME B31.9 code for installation of piping systems.

B. Use joint grooving tools and materials provided from a single manufacturer.

C. Furnish date stamped castings for couplings, fittings and valve bodies.

D. Perform Work in accordance with Minnesota State Building Code.

E. Conform to ASME A13.1 for color scheme for identification of piping systems and accessories.

1.07 QUALIFICATIONS

A. Explanation of manufacturer listings for Part 2 of Division 23 Sections:
   1. Select equipment from the listed manufacturers where a list of manufacturers are listed under the heading "Manufacturers."
      a. Manufacturers not listed must submit for and be granted approval prior to the end of the bidding period for use on this Project.
      b. The list of manufacturers is provided as a convenience to the Contractor, indicating manufacturers that may be able to meet the indicated requirements.
      c. Being listed does not indicate the availability of any product or approval of a product not containing the indicated features.
   2. Use products meeting the indicated requirements where a list of manufacturers are listed under the heading "Acceptable Manufacturers."
      a. Approval to use products from manufacturers not listed is not a requirement.
      b. The list of manufacturers is provided as a convenience to the Contractor, indicating manufacturers that may be able to meet the indicated requirements.
      c. Being listed does not indicate the availability of any product or approval of a product not containing the indicated features.
   3. Use products meeting the indicated requirements where manufacturers are not listed for products.
      a. Approval to use products from manufacturers not listed is not a requirement.

B. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3 years experience.

C. Installer: Company specializing in performing work of this Section with minimum 3 years experience.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00: Requirements for transporting, handling, storing, and protecting products.

B. Furnish temporary end caps and closures on pipes.

C. Provide temporary caps on fittings and valves removed from shipping containers and not immediately installed.

D. Protect piping from entry of foreign materials using temporary covers for idle sections of the Work.

PART 2 PRODUCTS

2.01 PIPE HANGERS AND SUPPORTS

A. Acceptable Manufacturers:
1. Anvil (Grinnell).
2. B-Line - Coopers.
3. Carpenter & Paterson Inc.
4. Erico - Caddy System.
5. PHD Manufacturing.

B. Water Systems:
1. Conform to ASME B31.9.
2. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
3. Hangers for Cold Pipe Sizes 2 inches and Larger: Carbon steel, adjustable, clevis.
4. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
5. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
6. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 inches and Larger: Steel channels with welded spacers and hanger rods, cast iron roll.
7. Wall Support for Pipe Sizes 3 inches and Smaller: Cast iron hook.
8. clamp with adjustable steel yoke and cast iron roll.
9. Vertical Support: Steel riser clamp.
10. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
11. Floor Support for Hot Pipe Sizes 4 inches and Smaller: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
12. Copper Pipe Support: Copper-plated, Carbon-steel ring.

2.02 DUCT HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

D. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

E. Trapeze and Riser Supports:
1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

2.03 HANGER ACCESSORIES

A. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.

2.04 INSERTS

A. Acceptable Manufacturers:
   1. Cooper B-Line.
   2. Hilti.
   3. Simpson Strong Tie Company.
   4. Unistrut Corp.

B. Inserts: Galvanized steel shell and expander plug with threaded connection and lateral adjustment. Top slot for reinforcing rods, lugs for attaching to forms. Size inserts to suit threaded hanger rod loading.

2.05 FLASHING

A. Metal Flashing: 26 gage thick galvanized steel.

B. Metal Counterflashing: 22 gage thick galvanized steel.

C. Lead Flashing:
   1. Waterproofing: 5 lb./sq. ft sheet lead.
   2. Soundproofing: 1 lb./sq. ft sheet lead.

D. Flexible Flashing: 47 mil thick sheet butyl; compatible with roofing.

E. Caps: Steel, 22 gage minimum; 16 gage at fire resistant elements.

2.06 SLEEVES

A. Sleeves for Pipes through Floors: Schedule 10 steel pipe or 18 gage galvanized steel sheet metal.

B. Sleeves for pipes through beams and masonry walls: Schedule 10 steel pipe or 18 gage galvanized steel sheet metal. 24 gage galvanized sheet metal for gypsum wall board sleeves.

2.07 FORMED STEEL CHANNEL

A. Acceptable Manufacturers:
   1. Elcen.
   2. B-Line Systems.
   3. Hilti.
   4. Powerstrut, Inc.
   5. Unistrut Corp.
   6. Fee and Mason.

B. Product Description: Galvanized 12 gage thick steel. With holes 1-1/2 inches on center.

2.08 LABELS

A. Acceptable Manufacturers:
   1. W.H. Brady.
   2. Champion.
   3. MSI.

4. Ready Made.
5. Seton Identification Products.

B. Description: Laminated 3-layer rigid plastic with engraved black letters on light colored background. 1.9 inch by 0.75 inch minimum size, adhesive backed. Comply with ASME A13.1 standard for colors and locations.

C. Control Device Labels: Pressure sensitive machine printed labels, black print on white field.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section 01 30 00: Acceptance of existing conditions.

B. Verify excavations are to required grade, dry, and not over-excavated.

C. Verify trenches are ready to receive piping.

D. The contractor is responsible for verifying invert elevations with respect to building finished floor elevations and site provisions.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end pipe for welding.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges, grooved joint couplings, or unions.

D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

E. Select hangers to surround insulation, shield and piping on insulated pipe.

F. Review equipment installation and operation manuals prior to installing equipment.

3.03 INSTALLATION - INSERTS

A. Install inserts for placement in concrete forms.

B. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.

C. Provide hooked rod to concrete reinforcement section for inserts carrying pipe 4 inches and larger.

D. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.

E. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above flush with top of slab.

3.04 INSTALLATION - PIPE HANGERS AND SUPPORTS

A. Install in accordance with ASME 31.9.

B. Support horizontal piping as scheduled.

C. Install hangers with minimum 1/2-inch space between finished covering and adjacent work.

D. Place hangers within 12 inches of each horizontal elbow.

E. Use hangers with 1-1/2 inch minimum vertical adjustment.

F. Support vertical piping at every floor.

G. Where piping is installed in parallel and at same elevation, provide multiple pipe or trapeze hangers.

H. Support riser piping independently of connected horizontal piping.

I. Provide copper plated hangers and supports for copper piping or sheet lead packing between hanger or support and piping.

J. Design hangers for pipe movement without disengagement of supported pipe.

K. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.

L. Provide clearance in hangers and from structure and other equipment for installation of insulation.

3.05 INSTALLATION – DUCT HANGERS AND SUPPORTS

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.
   1. Where practical, install concrete inserts before placing concrete.
   2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
   3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches (100 mm) thick.
   4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches (100 mm) thick.
   5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches (610 mm) of each elbow and within 48 inches (1200 mm) of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet (5 m).

F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.06 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 3-1/2 inches thick and extending 6 inches beyond supported equipment.

B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports of steel members, formed steel channel, or steel pipe and fittings. Brace and fasten with flanges bolted to structure.

D. Provide rigid anchors for pipes after vibration isolation components are installed.

3.07 INSTALLATION - SLEEVES

A. Exterior Watertight Entries: Seal with mechanical sleeve seals.

B. Set sleeves in position in forms. Provide reinforcing around sleeves.

C. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

D. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

E. Where piping or ductwork penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with stuffing or firestopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

F. Install chrome plated steel escutcheons at finished surfaces.

3.08 INSTALLATION - HVAC EQUIPMENT

A. Follow manufacturer's published installation instructions.

3.09 EQUIPMENT IDENTIFICATION

A. Provide identification labels for scheduled equipment permanently affixed to equipment with mechanical fasteners (rivets, screws, bolts or other approved methods) in a prominent location.

B. Install labels level and drawn tight to the equipment surface. Provide backing or back-up plates where required by the fastening devices. On pumps and similar small equipment, the label may be located on the wall adjacent to the equipment.

C. Equipment labeling shall spell out the description of each piece of equipment (Water Heater #1, for example).

D. Control Device Labels: Install adhesive backed labels inside thermostat and sensor covers to indicate the controlled device. For potentiometers, locate label next to the adjustment knob.

3.10 FIELD QUALITY CONTROL

A. Section 01 40 00 and 01 70 00: Field inspecting, testing, adjusting, and balancing.

B. Provide hydronic radiant pipe manufacturer's representative sign-off that installation meets warranty requirements, prior to placing concrete slabs.

C. On-Site Training for grooved Couplings:
   1. Provide coupling manufacturer's representative to provide on-site training for contractor’s field personnel in the use of grooving tools and installation of grooved joint products.
   2. The representative is to periodically visit the jobsite and verify installers are following best recommended practices in grooved product installation.

D. Test heating water piping system in accordance with ASME B31.9.

3.11 CLEANING

A. Maintain areas free of waste materials, debris and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash from site periodically and dispose off-site; do not burn or bury.

E. Refer to Section 01 70 00: Requirements for cleaning.

END OF SECTION

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SECTION 23 07 00

HVAC INSULATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes HVAC Insulation for equipment, piping and ductwork.

B. Related Sections:
1. Section 23 05 00 - Common Work Results for HVAC:
   a. Hanger sizes for insulated pipes.
   b. Pipe identification.
   c. Extended valve stems for insulated valves.
   d. General material and installation requirements.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. ASTM International (ASTM):

1. ASTM C165 - “Test Method for Measuring Compressive Properties of Thermal Insulations”
2. C450 Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging.
3. C547 - Standard Specification for Mineral Fiber Pipe Insulation.
4. C552 – Specification for Cellular Glass Thermal Insulation.
5. C585 – Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).
6. C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
7. E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
8. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
9. C450 - Standard Practice for Fabrication of Thermal Insulating Fitting Covers for NPS Piping, and Vessel Lagging.
10. C533 - “Specification for Calcium Silicate Block and Pipe Thermal Insulation”
11. C534 - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form.
12. C547 - Standard Specification for Mineral Fiber Pipe Insulation.
13. C585 - Standard Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System).
14. C921 - Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.
15. C1071 - Standard Specification for Thermal and Acoustical Insulation (Glass Fiber, Duct Lining Material).
16. C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.
17. C1639 – Standard Specification for Fabrication of Cellular Glass Piping and Tubing Insulation.

18. D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
19. E96 - Standard Test Methods for Water Vapor Transmission of Materials.
20. E2231 - Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess Surface Burning Characteristics.

B. Sheet Metal and Air Conditioning Contractors (SMACNA):
1. HVAC Duct Construction Standard - Metal and Flexible.

C. National Fire Protection Association (NFPA):
1. 255 – Standard Method of Test of Surface Burning Characteristics of Building Materials.

D. Underwriters Laboratories Inc. (UL):
1. 723 – Tests for Surface Burning Characteristics of Building Materials.

1.04 SUBMITTALS

A. Refer to Section 01 33 00 for submittal procedures.

B. Product Data: Product description, thermal characteristics, ASTM standards compliance.
1. List specific materials for each service, and location.

1.05 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.06 QUALITY ASSURANCE

A. Certify insulation for maximum flame spread index of 25 and maximum smoke developed index of 50 when tested in accordance with ASTM E84, UL-723, and NFPA 255.
1. Follow mounting procedures of ASTM E2231.
2. Provide accessories, such as adhesives, mastics, cement, tapes and glass cloth to retain the indicated index rating of the assembly.

B. Manufacture pipe insulation inner and outer diameters in accordance with ASTM C585.

C. Manufacture factory fabricated fitting covers in accordance with ASTM C450.

1.07 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3 years of experience.

B. Applicator: Company specializing in performing Work of this section with minimum 3 years of experience.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weatherand construction traffic, dirt, water, chemicals, and damage by storing in original wrapping.

1.09 ENVIRONMENTAL REQUIREMENTS

A. Install insulation only when ambient temperature and humidity conditions are within range recommended by manufacturer.

B. Maintain temperature before, during, and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Acceptable Manufacturers for Glass Fiber and Mineral Fiber Insulation Products:
   1. CertainTeed.
   2. Knauf.
   3. Johns Manville.
   4. Owens Corning.

B. Acceptable Manufacturers for Insulation Saddles and Protection Shields:
   1. Anvil (Grinnell).
   2. B-Line - Coopers.
   3. Carpenter and Patterson.
   4. PHD Manufacturing.

C. Acceptable Manufacturers for Insulation Fitting Covers:
   1. Insulated Pipe Shields, LLC (Aluminum).
   2. Johns Manville (Zeston).
   3. Proto.
   4. Speedline.
   5. ITW Insulations Systems (Aluminum).

2.02 DUCTWORK INSULATION

A. TYPE D-1: ASTM C1290, Type III, flexible glass fiber, commercial grade with factory applied FSK jacket meeting ASTM C1136, Type II.
   1. Thermal Conductivity: 0.27 at 75 degrees F.
   2. Maximum Operating Temperature: 250 degrees F.
   3. Density: 0.75 pound per cubic foot.

B. Type D-2: ASTM C612, Type IA or IB, rigid glass fiber, with factory applied jacket meeting ASTM C1136, Type II:
   1. Thermal Conductivity: 0.24 at 75 degrees F.
   2. Density: 3.0 pound per cubic foot.

2.03 DUCTWORK INSULATION JACKETS (FIELD APPLIED)

A. Vapor Retarder AP Jacket:
   1. White kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Water Vapor Permeance: ASTM E96; 0.02 perms.
   3. Secure with pressure sensitive tape.

2.04 INSULATION SHIELDS, SADDLES AND INSERTS

A. Insulation protection shields at hangers:

1. Galvanized steel, minimum length: 12 inches.
2. MSS SP-69, Type 40.
3. Thickness:
   a. 5.7 inch diameter and smaller: 18 gage galvanized steel.
   b. 5.7 inch to 11 inch diameter: 16 gage galvanized steel.
   c. Larger than 11 inch diameter: 14 gage galvanized steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Coordinate sleeved openings with pipe and duct installers prior to setting sleeves to ensure adequate openings for insulation through floor and wall penetrations.

B. Verify piping, equipment, and ductwork has been tested before applying insulation materials.

C. Verify surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION - DUCTWORK

A. Duct dimensions indicated on Drawings are free area dimensions.

B. Ductwork Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 8 feet above finished floor): Finish with aluminum jacket.
   1. Jacket entire duct if bottom is within 8 feet of floor.

C. External Glass Fiber Duct Insulation:
   1. Secure insulation with vapor retarder with wires and seal jacket joints with vapor retarder adhesive or tape to match jacket.
   2. Secure insulation without vapor retarder with staples, tape, or wires.
   3. Install without sag on underside of ductwork. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift ductwork off trapeze hangers and insert spacers.
   4. Seal vapor retarder penetrations by mechanical fasteners with vapor retarder adhesive.
   5. Taper and seal insulation around access doors and damper operators to allow operation without interference.

D. Insert high density spacers of equal thickness as insulation at trapeze hanger locations.

E. Prepare duct insulation for finish painting. Refer to Section 09 91 00.

F. Apply insulation in accordance with the manufacturer’s published recommendations.

G. Exterior Duct Insulation (Rigid):
   1. Apply with edges tightly butted and impaled over welded pins and secured with clips. Place pins to hold insulation securely, but not over 18 inches on center. Seal joints with FSK tape.

3.03 PAINTING

A. Prepare duct insulation for finish painting. Refer to Section 09 91 00.

B. Prepare exposed, unfinished duct jacket, fittings, supports, and accessories ready for finish painting.

1. Acrylic Finish: Two finish coats over a primer that is compatible with material and finish coat paint.
2. Color: Final color as selected by Architect.

3.04 SCHEDULES

A. Ductwork Insulation Schedule:

DUCTWORK SYSTEM	INSULATION AND JACKET TYPE	INSULATION THICKNESS** (inches)
Exhaust Air Ducts within 10 feet of exterior openings (concealed)	D-1, FSK	1.5*
Exhaust Air Ducts within 10 feet of exterior openings, exposed to view	D-2, FSK	1.5

* Uncompressed thickness.
**R-value of interior lining can be used to offset required thickness of exterior duct insulation.

END OF SECTION

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SECTION 23 31 00

HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Duct Materials.
   2. Ductwork fabrication.

B. Related Sections:
   1. Section 09 91 00 - Painting and Coating: Product requirements for painting for placement by this section.
   2. Section 23 05 00 – Common Work Results for HVAC:
      a. Administrative procedures.
      b. Identification and labeling requirements.
   3. Section 23 07 00 – HVAC Insulation: Duct insulation requirements.
   4. Section 23 33 00 – Air Duct Accessories: Connections to ductwork and accessories.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. ASTM International (ASTM):
   1. A276 - Standard Specification for Stainless Steel Bars and Shapes.
   2. A480 - Specification for General Requirements for Flat-Rolled Stainless And Heat-Resisting Steel Plate, Sheet and Strip.
   3. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   4. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High- Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
   5. B209 Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.
   6. D1784 Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
   7. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. Underwriters Laboratories Inc. (UL):
   1. 181 - Factory-Made Air Ducts and Connectors.
   2. 723 - Tests for Surface Burning Characteristics of Building Materials.

C. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
   1. HVAC Air Duct Leakage Test Manual.
   2. HVAC Duct Construction Standards - Metal and Flexible; Third Edition – 2005.

1.04 PERFORMANCE REQUIREMENTS

A. Duct configurations resulting in higher friction or increased sound level are not permitted.

B. Insulated flexible ducts: Flame spread/smoke developed ratings not exceeding 25/50 (UL 723) when tested in accordance with ASTM E84.

1.05 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with SMACNA - HVAC Duct Construction Standards – Metal and Flexible.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not install duct sealant when temperatures are less than those recommended by sealant manufacturers.

B. Maintain temperatures during and after installation of duct sealant.

PART 2 PRODUCTS

2.01 DUCT MATERIALS

A. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G90 zinc coating of in conformance with ASTM A90/A90M for extension of existing systems.

B. Fasteners: Cadmium plated rivets, bolts, or sheet metal screws for new duct systems.

C. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.

2.02 DUCTWORK FABRICATION

A. Fabricate and support ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible. Construct to 1.0 inch pressure classification unless otherwise indicated to use higher classification.

B. Construct T's, bends, and elbows with centerline radius equal to the duct width. Where not possible and where rectangular elbows are used, provide turning vanes.

C. Transition duct sizes gradually:
   1. Divergence: not to exceed 15 degrees where possible; maximum 30 degrees.
   2. Convergence: not to exceed 30 degrees where possible; maximum 45 degrees.

D. Provide 45-degree lateral wye takeoffs with balancing dampers. When space does not allow 45- degree lateral wye takeoff, use 90-degree conical tee connections with balancing dampers.

E. Seal joints between duct sections and duct seams.
   1. Sealants, Mastics and Tapes: Conform to UL 181A. Provide products bearing appropriate UL 181A markings.

2.03 HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

E. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.

F. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.

G. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

H. Trapeze and Riser Supports:
   1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
   2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
   3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Refer to Section 01 30 00.

B. Verify sizes of equipment connections before fabricating transitions.

3.02 INSTALLATION

A. Duct Sealing:
   1. Exhaust Ducts: Class C: Transverse joints, up to 2-inch water gage.

B. Pressure Classification: In accordance with SMACNA HVAC Construction Standards - Standard and Standard VAV construction requirements.

C. Protect installed ductwork from construction dust by installing temporary closures of metal or taped polyethylene on open ends of ductwork.

D. Wipe construction dust and debris from duct interior immediately prior to installation.

E. Use double nuts and lock washers on threaded rod supports.

F. Connect flexible ducts to metal ducts with adhesive and draw bands.

3.03 INTERFACE WITH OTHER PRODUCTS

A. Connect air outlets and inlets directly to sheet metal ductwork.

B. Provide 2 inch wide flexible connectors at equipment inlets and outlets.

3.04 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steelfasteners appropriate for construction materials to which hangers are being attached.
   1. Where practical, install concrete inserts before placing concrete.
   2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
   3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches (100 mm) thick.
   4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches (100 mm) thick.
   5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1 (Table 5-1M), "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches (610 mm) of each elbow and within 48 inches (1200 mm) of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports. Do not use cable hangers unless approved by architect.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet (5 m).

F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.05 CLEANING

A. Refer to Section 01 70 00.

3.06 PAINTING

A. Paint visible portion of ductwork behind air outlets and inlets matte black.

B. Refer to Section 09 91 00

C. Prepare exposed, unfinished duct, fittings, supports, and accessories ready for finish painting.
   1. Acrylic Finish: Two finish coats over a primer that is compatible with material and finish coat paint.
   2. Color: Final color as selected by Architect.

3.07 SCHEDULES

A. Ductwork Material Schedule:

AIR SYSTEM	MATERIAL
Relief, Toilet Exhaust and Transfer	Steel, galvanized

END OF SECTION

SECTION 23 34 00

HVAC FANS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Cabinet fans

B. Related Sections:
   1. Section 23 05 00 – Common Work Results for HVAC.
   2. Section 26 27 26 – Wiring Devices.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

A. Air Movement and Control Association International, Inc. (AMCA):
   1. 210 - Laboratory Methods of Testing Fans for Aerodynamic Performance Rating.
   2. 301 - Methods for Calculating Fan Sound Ratings from Laboratory Test Data.

B. Underwriters Laboratories Inc. (UL):
   1. 705 - Power Ventilators.

1.04 SUBMITTALS

A. Refer to Section 01 33 00.

B. Product Data: Submit data on each type of fan and include accessories, fan curves with specified operating point plotted, power, RPM, sound power levels for both fan inlet and outlet at rated capacity, electrical characteristics and connection requirements.

C. Manufacturer's Installation Instructions: Submit fan manufacturer’s instructions.

1.05 CLOSEOUT SUBMITTALS

A. Refer to Section 01 70 00.

B. Operation and Maintenance Data: Submit instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.

1.06 SEQUENCING AND SCHEDULING

A. Conform to the requirements of WisDOT Specifications.

1.07 QUALITY ASSURANCE

A. Performance Ratings: Conform to AMCA 210 and bear AMCA Certified Rating Seal.

B. Sound Ratings: AMCA 301, tested to AMCA 300, and bear AMCA Certified Sound Rating Seal.

C. UL Compliance: UL listed and labeled, designed, manufactured, and tested in accordance with UL 705.

1.08 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3-years experience.

B. Installer: Company specializing in performing Work of this Section with minimum 3-years experience.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 01 60.

B. Protect motors, shafts, and bearings from weather and construction dust.

PART 2 PRODUCTS

2.01 CABINET FANS (BATH FAN)

A. Housing: Steel, lined with acoustical insulation.

B. Fan Wheel: Centrifugal wheels directly mounted on motor shaft. Fan shrouds, motor, and fan wheel shall be removable for service.

C. Grille: Painted aluminum, louvered grille with flange on intake and thumbscrew attachment to fan housing.

D. Electrical Requirements: Junction box for electrical connection on housing and receptacle for motor plug-in.

E. Accessories:
1. Variable-Speed Controller: Solid-state control to reduce speed from 100 to less than 50 percent.
2. Manual Starter Switch: Single-pole rocker switch assembly with cover and pilot light.
3. Motion Sensor: Motion detector with adjustable shutoff timer.
4. Isolation: Rubber-in-shear vibration isolators.
5. Manufacturer's standard roof jack or wall cap, with backdraft damper, and transition fittings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof curbs are installed as instructed by manufacturer.

3.02 PREPARATION

A. Coordinate roof curb flashing and installation with Architect and Roofing Contractor.

3.03 INSTALLATION

A. Install dampers on inlet to roof exhaust fans.

3.04 DEMONSTRATION

A. Refer to Section 01 70 00.

B. Demonstrate fan operation and maintenance procedures.

END OF SECTION

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SECTION 26 05 05

BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
1. References used in electrical and control Specifications.
2. Regulatory requirements for electrical construction.
3. Requirements of equipment and materials.
4. Workmanship.
5. Selective demolition.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid, unless noted otherwise.

1.03 REFERENCES

A. ANSI - American National Standards Institute
1. C2 - National Electrical Safety Code.
2. C62.41-IEEE - Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.

B. EPA-Environmental Protection Agency

C. ICEA - Insulated Cable Engineers Association
1. S-95-658 - Thermoplastic-Insulated Wire and Cable.
2. S-65-375 - Rubber-Insulated Wire and Cable.

D. IEEE - Institute of Electrical and Electronic Engineers
1. 519 - Recommended Practices and Requirements for Harmonic Control In Electric Power Systems.

E. NECA - National Electrical Contractors Association
1. NECA 1 - Standard Practices for Good Workmanship In Electrical Contracting.

F. NEMA - National Electrical Manufacturers Association
1. TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
2. MG 1 - Motors and Generators.
3. PB 2 - Deadfront Distribution Switchboards.
4. ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2,000 Volts AC or 750 Volts DC.
5. 250 - Enclosures for Electrical Equipment (1,000 Volts Maximum). 6. WC 5 - (See ICEA S-95-658).

7. WC 7 - (See ICEA S-95-658).

G. NFPA - National Fire Protection Association
   1. NFPA 70 - National Electrical Code.

H. OSHA - Occupational Safety and Health Administration
   1. 29 CFR 1910 - Occupational Safety and Health Standards.

I. UL - Underwriters Laboratories, Inc.
   1. UL-6 - Rigid Metal Conduit.
   2. UL-83 - Thermoplastic - Insulated Wires and Cables.
   3. UL-96 - Lightning Protection Components.
   4. UL-360 - Liquid-Tight Flexible Steel Conduit.
   5. UL-467 - Electrical Grounding and Bonding Equipment.
   6. UL 486D - Insulated Wire Connector Systems for Underground Use or In Damp or Wet Locations.
   7. UL-508 - Industrial Control Equipment.
   8. UL-651 - Schedule 40 and 80 Rigid PVC Conduit.
   9. UL-797 - Electrical Metallic Tubing.
   10. UL-891 - Dead-Front Switchboards.
   11. UL-913 - Intrinsically Safe Apparatus and Associated Apparatus for Use In Class I, II, and III, Division 1, Hazardous (Classified) Locations.
   12. UL-1008 - Transfer Switch Equipment.
   13. UL-1012 - Power Units Other Than Class 2.
   14. UL-1029 - High-Intensity-Discharge Lamp Ballasts.
   15. UL-1449 - Surge Protection Devices.
   16. UL-1479 - Fire Tests of Through-Penetration Firestops.
   17. UL-1572 - High Intensity Discharge Lighting Fixtures.

1.04 REGULATORY REQUIREMENTS

A. All Work performed under this Contract shall conform to the latest editions of the National Electrical Code (NFPA70), the National Electrical Safety Code (ANSI C2), and The Wisconsin Administrative Code.

1.05 INSTRUCTIONS AND PARTS LITERATURE

A. Instruction and parts literature are generally packed with electrical equipment and devices. Contractor shall remove this literature from the packing container or equipment enclosure, identify the literature with the equipment to which it applies, and file the literature in loose-leaf binders with index tabs. Each binder shall have an index which lists each piece of equipment and the literature which applies to it. An index tab shall be provided for each piece of equipment.

B. Contractor shall establish a procedure with the other trades for receiving, identifying, and filing literature for devices which are removed from their packaging and installed by other trades. Literature shall be provided as outlined above.

1.06 SUBMITTALS

A. Submittals for equipment provided by the Electrical Contractor shall bear a stamp or specific written certification from the Electrical Contractor, certifying the submittals have been reviewed.

B. Submit the following items consistent with Section 01 33 00. Refer to each Section under Division 26 for additional submittal requirements particular to that Section.

C. Shop Drawings and Manufacturer's Information:
   1. Product Data Sheets
      a. Product and component data sheets which describe all equipment and devices to be provided.
      b. Include all features specified.
      c. Provide dimensioned prints with weights.
      d. Highlight or otherwise accentuate on each data sheet the specified product features and product numbers.
   2. Composite Drawing
      a. Include power and control wiring for all systems and equipment.
      b. Show basic systems on composite drawing.
      c. Use terminal numbers on drawings and schematics.
      d. Use separate drawings to show details of sub-systems.
      e. Identify sub-system drawing interface points on composite drawing and sub-system drawings; terminal numbers of interface points shall be the same on both drawings.
      f. Revise or redraw manufacturer's standard drawings to meet above requirements.
   3. Record all Changes to Existing Systems
      a. Revise all wiring diagrams and schematic diagrams to show final installation:
         1) Includes all new and existing equipment diagrams.
   4. Programmable Systems
      a. Description of programmable system operation, including but not limited to input/output functions, control capabilities, configuration procedures, starting setpoints, etc.
      b. Preliminary graphic screens and reports.
         1) This submittal shall occur prior to shipment of the system.

D. Operating and Maintenance Manuals
   1. Include all the information provided with the shop drawings and manufacturer's information.
      a. Update and complete control system drawings and descriptions for all equipment.
      b. All documentation shall include modifications made which reflect the final installation.
   2. Date the manuals with the day, month, and year they are provided to the Owner/Engineer.
   3. Provide manufacturers' user manuals and installation instructions.
   4. Provide 2 digital copies in a PDF format. The saved files shall be clearly identified and organized in a similar manner to the hard copies
      a. Data saved shall be accessible and neatly organized.
      b. Provide a table of contents which utilizes bookmarks. The bookmark shall take the reader to a specific page when the reader clicks on the desired title in the table of contents. A bookmark shall be provided for materials associated with each piece of equipment included in the O&M manual.
   5. Record all Changes to Existing Systems
      a. Insert revised documents into the Owner's existing operation and maintenance manuals in place of original documents.

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIALS

A. All electrical and control equipment and materials shall be provided as specified in the Contract Documents.

B. All equipment and materials shall be new and shall bear the Underwriters Laboratories (UL) label if such products are listed by UL.

C. Where applicable, equipment and materials shall conform to ANSI, ICEA, IEEE, and NEMA Standards.

PART 3 EXECUTION

3.01 WORKMANSHIP

A. All Work shall be performed in a neat and workmanlike manner consistent with the high-quality standards of the electrical trade. “A neat and workmanlike manner” shall be as required by NFPA 70 and shall conform to NECA 1, Standard Practices for Good Workmanship in Electrical Contracting. Each electrician shall be knowledgeable and well-trained in the particular tasks to be performed.

3.02 EQUIPMENT MOUNTING

A. Unless noted otherwise, equipment which is not free-standing shall not be mounted on wood panels, but shall be attached to concrete or masonry walls, support channels, or building structural steel.

3.03 IDENTIFICATION

A. Nameplates shall be used to identify all field devices.

B. All nameplates shall be engraved phenolic nameplates attached with a permanent stamped tag.

3.04 RECEIVING AND STORING EQUIPMENT

A. All equipment shall be handled and stored in accordance with the manufacturer's instructions.

B. In general, equipment packaging is not designed to protect the contents for outdoor storage. As a minimum, Contractor shall store the equipment prior to installation in a clean, dry location free from excessive temperatures, humidity, or foreign materials normally encountered at a Site. If the storage facility is unheated, Contractor shall provide heating to protect equipment from condensation, which could cause components to corrode or to be otherwise damaged.

END OF SECTION

SECTION 26 05 19

LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. 600-volt wire and cable.
   2. Terminals and connectors.
   3. Telephone terminal cabinets.
   4. Installation.
   5. Splices and terminations.
   6. Identification.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 SUBMITTALS

A. Product data sheets shall be submitted for all wire and cable.

PART 2 PRODUCTS

2.01 600-VOLT WIRE AND CABLE

A. Feeder and Branch Circuit Wire
   1. Stranded copper conductor, solid copper for lighting and convenience receptacle circuits only.
   2. THWN insulated for conductor sizes #4 AWG and smaller.
   3. XHHW or THWN insulation for conductor sizes #3 AWG and larger.

B. Control Wire
   1. #14 AWG, 7 or 9 strand copper.
   2. THWN or XHHW insulation.
   3. Solid color.

C. Insulation of all wire shall conform to ICEA S-95-658, NFPA 70, and UL-83.

D. All Wire and Cable Shall Be
   1. New and coiled or on reels.
   2. Each coil and/or reel shall have a label with the manufacturer's name, trade name of wire, size of wire, and UL label.

2.02 TERMINALS AND CONNECTORS

A. Tool compressed terminals and connectors shall be made of 1 piece seamless highly conductive copper with a uniform tin-plate coating to minimize corrosion; Burndy, 3M, or equal.

B. Step-down adapters shall be copper compression type; Greaves PT-R Series, or equal.

C. Electrical spring connectors shall be 3M “Scotchlok” or “Ranger,” Ideal “Wing-Nut,” or equal.

D. Fork Terminals
   1. Vinyl or nylon self-insulated locking type.
   2. Terminal insulation that supports wire insulation.
   3. Thomas & Betts Type FL, Burndy Type TP-LF, Panduit Type PNF, 3M Type MNG, or equal.

E. Waterproof kits shall be utilized for all outdoor below-grade splices and connections as follows
   1. Heavy wall, heat shrinkable with interior coating of hot melt adhesive – sealant. Tubing shall be chemically cross linked, thermally stabilized polyolefin.
   2. UL listed (UL-486D).
   3. 3M – ITCSN, or equal.

2.03 WIRE COLOR CODING

A. Contractor may use color coding at his discretion, except for the following colors, which shall be used only as designated below for both power and control circuits
   1. Control Circuits
      a. Dark Blue - Direct current circuits.
      b. Light Blue - Intrinsically safe conductors.
      c. Green - Grounding conductor.
      d. White - Neutral conductor.
   2. Power Circuits (Use solid colors through Size No. 8 AWG. Use black conductors with tape color identification No. 6 AWG and larger)

	Voltage	120/240	208Y/120	480Y/277
a.	Phase A	Black	Black	Brown
b.	Phase B	Red	Red	Orange
c.	Phase C		Blue	Yellow
d.	Neutral	White	White	Gray
e.	Ground	Green	Green	Green

2.04 CONDUCTOR PULLING COMPOUND

A. Rated for use with the conductor insulation and conduit material.

B. Non-conductive.

C. Non-cementing.

D. Dry to a fine lubricating powder or a thin film which does not harden in conduit.

E. UL Listed.

F. Rated for repeated exposure to high heat or freezing temperatures.

PART 3 EXECUTION

3.01 INSTALLATION

A. All wire shall be installed in the specified raceways. Wire pulling shall be performed through the system in such a manner as to not exceed the maximum tensile strength of the cable being pulled as allowed by the NFPA 70 and/or cable manufacturer. All handling and installation of wire and cables shall be done by competent and skilled workmen who shall use methods which will prevent damage to the wire and cable. Pulling compound shall dry to a fine lubricating non-conductive powder and shall be approved by the cable manufacturer.

B. Adequate measures shall be employed to determine that the raceways are free of foreign material and moisture before pulling wire or cable.

C. Any conductor used for equipment grounding purposes shall be green in color, unless it is bare. Conductors with white or green covering shall not be used to indicate other than neutral or grounding. This limitation applies to all power and control circuits.

D. Conductors shall be without splice from termination to termination, unless indicated otherwise on the Drawings.

E. Conductors for ac and dc circuits shall be installed in separate conduits.

3.02 SPLICES AND TERMINATIONS

A. All splices, taps, and terminations shall be made with tool compressed connectors. Contractor shall provide all wire connectors, lugs, and terminals, unless indicated otherwise.

B. Bolted compression lugs furnished as an integral part of the equipment shall be used to terminate the conductors to that equipment.

C. Motor leads shall be connected with tool-compressed ring terminals which are bolted together, insulated with varnished cambric tape, and protected with an over-wrap of 3M No. 33, or approved equal weather resistant tape, or protected with Raychem MCK motor connection kit. Electrical spring connectors may be used to connect motor leads to #12 or #10 AWG branch circuit conductors.

D. Electrical spring connectors shall be used for splices and taps in lighting and 120-volt receptacle circuits.

E. All control wiring shall be terminated to terminal strips at both ends with fork terminals. Spare wires in control panels shall be terminated to spare terminals. Spare wires in motor control centers shall be coiled by respective conduit, labeled, and shall be long enough to reach the compartment furthest from conduit.

F. Every bolt, lug, and screw termination shall be tightened with a torque wrench or torque screwdriver to the torque values specified in UL Standards and/or as specified by the device manufacturer.

G. Terminal cabinets installed indoors shall have NEMA 12 enclosures.

3.03 IDENTIFICATION

A. Control circuits may be color-coded using available colors, except gray and green. They shall be identified at each terminal with a label. Imprinted labels shall be protected by a heat shrinkable sleeve.

B. Each control circuit shall be identified at both ends with the same number; wire number shall be the same as the wire number shown on the Equipment Drawings. Spare conductors shall be identified with a single letter at both ends.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Grounding Electrode System.

B. System and Equipment Grounding.

C. Installation.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

PART 2 PRODUCTS

2.01 WIRE

A. Class B stranded copper; either bare or with green insulation.

B. Size shall be as specified herein and as indicated in the Construction Drawings.

2.02 GROUND RODS

A. Grounding Electrode System:
   1. 5/8 inch by 10-feet copperweld.

2.03 CONNECTORS AND TERMINATORS

A. Tool-compressed connectors and lugs which are UL listed (UL-467).
   1. Manufacturer: Burndy “Hyground”, Thomas & Betts “Blackburn” Series, or equal.

B. Bar taps for connection to bus bars which are UL listed (UL-467).
   1. Manufacturer: Burndy, Thomas & Betts “Blackburn” Series, or equal.

C. Exothermic welding components.
   1. Manufacturer: Continental Industries “Thermoweld”, Erico Products “Cadweld,” or equal.

D. Ground clamps shall be UL listed (UL-E10661) cast high strength corrosion resistant copper alloy.
   1. Manufacturer: Burndy, Thomas & Betts “Blackburn” Series, or equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. The Power Company will provide grounding electrodes at the transformer and make the connections from the grounding electrode to the transformer neutral.

B. The Power Company's transformer neutral shall be connected to the service entrance switchboard ground bus with the grounded (neutral) conductors provided with the service entrance phase conductors.

C. Contractor shall provide a grounding electrode system as required per NFPA 70.

D. Raceways provided for grounding electrode conductors shall be rigid nonmetallic.

E. An equipment grounding conductor shall be installed with each circuit, included but not limited to feeder circuits, motor circuits, lighting circuits, and control circuits. Conductor shall be connected to the equipment ground bus or to the enclosure if there is no ground bus.

3.02 SPECIAL REQUIREMENTS

A. Contractor shall determine if there are any other special grounding requirements for equipment furnished on this Project and shall provide grounding as recommended by the manufacturer.

3.03 SPLICES AND TERMINATIONS

A. In general, splices and terminations of the grounding electrode system shall be brazed, shall be exothermic welded, or shall be made with tool-compressed fittings.

B. Connections to bus bars or equipment enclosures shall be made with tool-compressed lugs which are bolted to the equipment or with bar taps.

C. Connections to ground rods shall be exothermic welded. Provide adapter sleeves as required for #6 AWG conductors or smaller.

D. Connections to copper water piping shall be made with ground clamps.

END OF SECTION

SECTION 26 05 33

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Conduit.
   2. Conduit fittings.
   3. Underground warning tape.
   4. Pull and junction boxes.
   5. Fire stop material.

B. Related Sections
   1. Section 07 84 00 – Firestopping.
   2. Section 33 05 05 – Trenching and Backfilling.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 SUBMITTALS

A. Submit the following items consistent with Section 01 33 00:
   1. Product data sheets for each type of conduit.
   2. If the Contractor elects to use HPDE conduit, provide the manufacturer's recommend procedures, instructions, materials and equipment for splicing/coupling the conduit.

PART 2 PRODUCTS

2.01 RIGID METAL CONDUIT

A. Steel
   1. Galvanized inside and outside.
   2. NFPA 70, Article 344.
   3. UL Listed.

2.02 RIGID METAL CONDUIT FITTINGS

A. Threaded couplings and fittings only; no set screw, gland type, or split fittings.

B. Grounding type insulated bushings; O-Z/Gedney Type BLG, or equal.

C. Insulated bushings; Midwest Electrical Mfg. Co., O-Z/Gedney Type B, or equal.

D. Sealing locknuts; Midwest Electrical Mfg. Co., RACO, or equal.

E. Expansion Fittings

1. 4-inches conduit movement.
2. External bonding jumper.

F. Pull Fittings (C, LB, etc.): Clamp type, stamped covers with gaskets and stainless-steel screws and clamps.

G. Conduit Hubs
1. Full contact type with sealing “O” ring.
2. Myers “Scru-tite,” or equal.

H. Material: Fittings, hubs, etc. shall be galvanized steel for galvanized steel conduit and copper free aluminum for aluminum conduit.

I. Corrosion Resistant Coatings:
1. Pretreatment:
a. Carboline Carbocrylilc 120 (for both steel and aluminum conduit), or equal
2. Coating:
a. Carboline Bitumastic 300M.
b. 3M Scotchrap Pipe Primer and wrapped with 3M Scotchrap Corrosion Protection Tape.

2.03 RIGID NONMETALLIC CONDUIT AND FITTINGS

A. EPC-40-PVC and EPC-80-PVC.

B. Sunlight resistant.

C. NEMA TC2.

D. NFPA 70, Article 352.

E. UL Listed.

F. Manufacturer: Carlon, CertainTeed, or equal.

2.04 HIGH DENSITY POLYETHYLENE CONDUIT (HDPE)

A. Meets requirements of NFPA70.

B. Thermoplastic polymer material.

C. Smooth interior and smooth exterior wall.

D. UL listed.

E. NEMA –TC-7.

F. Manufacturer: Carlon or equal.

2.05 ELECTRICAL METALLIC TUBING (EMT)

A. Galvanized exterior.

B. Corrosion resistant, lubricating interior coating.

C. Galvanized or Zinc Plated Finish Steel Fittings
   1. Set screw, concrete-tight type, except raintight/concrete-tight gland compression type in wet locations.
   2. Insulated throat connectors.
   3. Appleton, Midwest Electric, O-Z/Gedney, or equal.

D. NFPA 70, Article 358.

E. UL Listed.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Galvanized steel core.

B. Built-in continuous copper ground in 1/2 inch through 1-1/4 inches.

C. PVC jacket.

D. NFPA 70, Article 350.

E. UL listed.

F. Manufacturer: Amer-Tite Type UL, Anamet Anaconda Sealtite Type U.A., Electri-Flex Liquatite Type L.A., or equal.

G. Connectors
   1. Grounding ferrule and insulated throat.
   2. Manufacturer: Appleton STB, Crouse-Hinds LTB, Midwest Electric LTB, or equal.

H. Grounding liquid tight connectors:
   1. Grounding ferrule and insulated throat.
   2. Ground lug cast as integral part of iron gland nut.
   3. Manufacturer: Appleton, Efcor Brand, O-Z/Gedney, or equal.

2.07 FLEXIBLE METAL CONDUIT

A. Aluminum or galvanized steel.

B. NFPA 70, Article 348.

C. UL listed.

2.08 COPPER MC (METAL CLAD) CABLE

A. Cable shall be UL listed Type MC.

B. Suitable for operation at 600 volts.

C. Rated 90 degrees C.

D. Conductors shall be THWN Stranded.

E. Aluminum interlocked armor.

F. Insulated ground.

2.09 UNDERGROUND WARNING TAPE

A. 6 inches wide, 4-mil polyethylene film.

B. Vivid, opaque, long-lasting red color with bold, black letters.

C. Lettering
   1. Top line – "...CAUTION CAUTION CAUTION..."
   2. Bottom line – "...ELECTRIC LINE BURIED BELOW..."

D. Seton Name Plate Corp. No. 210 ELE, EMED Co. Stock No. UT27737-6, or equal.

2.10 PULL AND JUNCTION BOXES

A. Covers attached with hinges and stainless steel screws located within 1/2 inch of each corner opposite the hinges and spaced not more than 12 inches apart.

B. Neoprene gasketed covers.

C. Sized per NFPA 70 with enough capacity to add to each side at least 2 conduits of the same size as the largest conduit entering the box.

D. Square cornered masonry type boxes, 2-1/2 inches minimum depth, shall be used for all flush switches and receptacles in glazed tile, face brick, and unfinished block walls.

E. Galvanized fittings and boxes for EMT conduit.

2.11 FIRE RETARDANT MATERIAL

A. Fire stop foam.

B. Fire stop sealant.

C. 3-hour fire rating.

D. UL Classified per UL-1479.

E. Chase Technology Corp., Dow Corning, General Electric, 3M, or equal.

2.12 DUCT SEALING COMPOUND

A. Soft, fibrous, slightly tacky, non-hardening, and easily applied by hand at all working temperatures.

B. Clean and non-staining.

C. J.M. Clipper Corp. Duxseal, O-Z/Gedney DUX, or equal.

2.13 CONDUIT CLAMPS

A. Conduit clamps for rigid metal conduit shall be malleable iron, 1-hole clamp with malleable iron clamp backs; Crouse-Hinds MW500 Series, Raco 1303/1324, Appleton CL75M/600M, or equal.

2.14 CONDUIT SEALS

A. Conduit seals shall be provided wherever conduits penetrate exterior concrete walls below grade, or cross hazardous location boundaries
   1. For conduits less than 60 inches below grade; OZ/Gedney Type FSK, or equal.
   2. For conduits more than 60 inches below grade; OZ/Gedney Type WSK, or equal.

PART 3 EXECUTION

3.01 CONDUIT INSTALLATION

A. Conduit size shall be as shown on the Drawings or as required by the NFPA 70 with a minimum size of 3/4 inch, except that 1/2 inch may be used to connect to devices which have a knock-out or fitting for only 1/2-inch conduit. All raceways shall be installed in accordance with NECA 1, Standard Practices for Good Workmanship in Electrical Contracting, and as specified herein.

B. Pull boxes or fittings shall be installed as Site and pulling requirements dictate.

C. All raceways shall be EMT, except where noted otherwise
   1. All raceways shall be installed concealed in walls, below floor slabs, or above suspended ceilings where possible.

D. Raceways shown on the Drawings to be installed under floor slabs shall be rigid nonmetallic as specified above.

E. Conduits or groups of conduits shall run parallel to or perpendicular to building lines. Grouped conduits shall be supported at proper intervals with trapeze or bracket type hangers constructed of galvanized Unistrut, Power-Strut, or equal. All hangers, fasteners, nuts, etc. shall be galvanized steel or stainless steel. Support fasteners shall be preset inserts, beam clamps, expansion shields, or gun-driven studs.

F. Conduit and Penetration Sealing
   1. Any conduit run which goes through an exterior building wall or between rooms of more than 30 degrees F difference in temperature shall be sealed internally with duct sealing compound at the point where they leave the room.
   2. All penetrations thru fire rated walls shall be sealed according to NFPA 70, Article 300.21. Refer to Specification Section 072700 for materials and methods.

G. No raceways, fittings, outlets, junction boxes, or pull boxes shall be attached to grating; they shall be connected to supports which are attached to structural members.

H. All pull and outlet boxes shall be set plumb. Boxes for concealed wiring shall be flush with the finished surface. All boxes shall be UL listed for the location in which they are installed.

I. Expansion fittings shall be installed at building expansion joints and where the length of straight run requires it.

J. All conduits shall be kept dry and free of water or debris with pipe plugs or caps.

K. Conduit and boxes shall not be attached to or suspended from equipment or mechanical ductwork. Where box or conduit must be mounted below ductwork, provide a structural channel support which is suspended from the ceiling or bracketed from a wall. Attachments to equipment shall be directly to the electrical devices associated with it.

L. Conduit terminations to terminal boxes, cabinets, and enclosures shall have double locknuts and insulated bushings. External locknuts shall be sealing locknuts.

M. All conduits which enter major equipment, such as the service entrance switchboard and motor control centers, shall have grounding type insulating bushings.

N. Conduit terminations to outdoor or below ground NEMA 3R, 4, and 4X terminal boxes, pull boxes, cabinets, and enclosures shall use full contact hubs.

O. Liquidtight flexible metal conduit shall be used to connect from the rigid conduit system to equipment and devices if a rigid connection is improper or impractical.
   1. Liquidtight flexible metal conduit 1-1/2 inches and larger shall have an external bonding jumper sized in accordance with NFPA 70.
   2. Grounding liquidtight connectors may be used in lieu of the grounding clamp on the conduit.

P. Underground conduit runs shall have a minimum cover of 2 feet, and shall be rigid nonmetallic conduit, unless noted otherwise
   1. Conduit shall be sloped to drain to handholes or pull boxes.
   2. Rigid metal conduit shall be used for the vertical elbow and riser out of the ground.
   3. Rigid metal conduit installed underground or in contact with concrete shall have a corrosion resistant coating or covering.
   4. HPDE conduit may be used for underground conduit runs longer than 50 feet.

Q. Contractor shall do all trenching for underground conduit with a minimum size trench.
3 inches of sand shall be placed below and above buried conduit in trench. All fill material shall be placed in 12-inch lifts and compacted to 90-Percent Standard Proctor Density. Underground warning tape shall be laid in the trench approximately 9 inches below the surface. Excavating, backfilling, and grading shall comply with Division 31.

R. A nylon pull cord shall be installed in each empty conduit.

S. Only raceway types which are specified in this section shall be used.

T. The roadway, sidewalk, or grade beneath which conduit is routed shall be restored to its original or better condition.

U. Provide cable fittings and wire mesh grip for cable entry into conduit.

V. All spices performed on the HDPE conduit shall use equipment and procedures recommended by the manufacturer and which meet NFPA 70.

3.02 COPPER MC (METAL CLAD) CABLE

A. Copper MC (Metal Clad) Cable shall be allowed as follows:
   1. Fixture whips.
   2. Receptacle wiring in walls. All ceiling wiring shall be in a rigid conduit system.

3.03 OPENINGS

A. Contractor shall review the size and location of all openings to be sure they meet the requirements of the equipment that is furnished and/or installed as a part of this Contract. Contractor shall be responsible for providing all required openings necessary for a complete installation. All required openings are not shown on the Drawings.

B. All openings shall be filled with an approved sealant, caulking, or grout after the conduit or cable installation is complete.

C. Openings through grating shall have the bars of the grating banded.

END OF SECTION

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SECTION 26 24 16

PANELBOARDS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Panelboards.
   2. Installation.
   3. Identification.

B. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.02 SUBMITTALS

A. Data sheets shall be submitted which describe the panelboards, give electrical ratings, give dimensions, and list the breakers.

PART 2 PRODUCTS

2.01 PANELBOARDS

A. Panelboard shall be furnished with the building and installed by the electrical contractor. The following specification is for reference. Coordinate the panelboard required to be installed with the building supplier.

B. Hardware
   1. Surface or flush mounted as indicated on the Drawings.
   2. Door in door front, complete with trim, doors, flush chrome plated cylinder lock, catch, and directory with clear plastic cover.
   3. 2 keys.
   4. Copper bus which includes all current carrying parts such as phase buses, ground and neutral buses/bars, bus fingers, etc.
   5. All spaces indicated shall have bus fully extended and drilled for the future installation of breakers.
   6. Gray baked enamel finish.
   7. Trim attached directly to the box with screws; trim clamps shall not be used.

C. Ratings
   1. Panelboard rating, main breaker, and branch breakers as specified on the Drawings. Branch mounted main breakers shall not be allowed.
   2. Service entrance ratings as required.
   3. Thermal-magnetic, quick make, quick-break, switching rated plug on circuit breakers.
   4. Circuit breaker rating and number of poles as specified on the Drawings.
   5. Multi-pole breakers with a common trip.
   6. Handle padlock attachments where required.
   7. Ampere Interrupting Ratings: 22,000 RMS symmetrical for 240 volts or under.

D. Manufacturer: Cutler-Hammer, Square D, Siemens, or equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. Panelboards shall be located where shown on the Drawings with the top approximately 6 feet above the floor. Box shall be set plumb. Breaker assemblies shall be set plumb and in continuous contact with the panel trim piece.

B. Panelboard schedule designations are as follows:
   1. Blank: Not intended for use.
   2. Space: Contains necessary bus and hardware for future addition of breakers.
   3. Spare: Contains a complete breaker installed, size as shown on schedule.

C. Provide HACR, GFCI and AFCI rated breakers which meet the requirements of NFPA 70 where noted on the panelboard schedules.

3.02 IDENTIFICATION

A. All panelboards shall be identified with laminated plastic name plates which have 1/2 inch high white letters on a black background. Nameplates shall be attached with screws.

B. Circuit directory shall be neatly machine typed with the number of the circuit, description of the circuit, the area served, and the size of the protective device.

3.03 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 10 percent, rearrange circuits in the panelboard to balance the phase loads within 10 percent. Take care to maintain proper phasing for multi-wire branch circuits.

B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION

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SECTION 26 27 26

WIRING DEVICES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Switches.
   2. Convenience receptacles.
   3. Wall plates.
   4. Outlet boxes.

1.02 PRICE AND PAYMENT PROEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 QUALITY

A. All wiring devices shall be products of the same manufacturer, unless specifically noted otherwise.

1.04 SUBMITTALS

A. Product data sheets shall be submitted for all materials specified herein.

PART 2 PRODUCTS

2.01 LIGHTING CONTROL DEVICES

A. Lighting control devices shall be furnished with the building and installed by the electrical contractor. The following specification is for reference. Coordinate the Lighting control devices required to be installed with the building supplier.

B. Switches:
   1. Heavy-duty, specification grade.
   2. Quiet, toggle type.
   3. Side and back wired.
   4. Rated 20 amperes under all loads, 1 HP at 120 volts, 2 HP at 240 volts.
   5. Ivory color.
   6. Single-pole, 2-pole, 3-way and/or 4-way as shown on the Drawings.
   7. Manufacturer: Eagle 2221 Series, General Electric GE 5930 Series, Hubbell 1220 Series, Leviton 1200 Series, Pass & Seymour 20 AC Series, or equal.

2.02 CONVENIENCE RECEPTACLES

A. Convenience receptacles shall be furnished with the building and installed by the electrical contractor. The following specification is for reference. Coordinate the Convenience receptacles required to be installed with the building supplier.

B. Duplex Receptacles
   1. Specification grade, 3-wire grounding type, NEMA 5-20R.
   2. Side wired.
   3. Rated 20 amperes, 125 volts.
   4. Ivory color.
   5. Manufacturer: Eagle 5362, Hubbell 5362, Leviton 5362, or equal.

C. Ground fault circuit interrupter receptacles
   1. Specification grade, 3-wire grounding type, NEMA 5-20R.
   2. Side wired.
   3. Rated 20 amperes, 125 volts.
   4. Ivory color.
   5. Manufacturer: Eagle 9569, Hubbell GF-5362, Leviton 7899, or equal.

2.03 WALL PLATES

A. All flush mounted switches and receptacles shall be provided with smooth, impact resistant thermoplastic or molded nylon ivory color wall plates
   1. Manufacturer: Eagle “Super Spec,” Hubbell ‘P’ Series, Leviton 807XX Series, Pass & Seymour ‘RP’ Line, or equal.

B. Surface mounted switches in cast aluminum boxes shall have stainless steel coverplates with dimensions which match the box dimensions
   1. Manufacturer: “Sierra,” or equal.

C. Weatherproof covers for switches shall be weatherproof gray cast aluminum lift cover plates
   1. Manufacturer: Hubbell 7420, or equal.

D. Weatherproof covers for receptacles shall be hinged, Specification grade, weatherproof while in use, cast aluminum, UL listed, gray, completely gasketed
   1. Manufacturer: TayMac, Red Dot, or equal.

E. Wall plates for switches or manual starters which serve exhaust fans shall be engraved “EXHAUST FAN” with 1/8 inch high black letters.

PART 3 EXECUTION

3.01 INSTALLATION

A. Switches and convenience outlets shall be provided where shown on the Drawings.

B. Switches shall be on the latch side of doors, located 4 feet above floor, unless noted otherwise. Note: Door swing shall be verified with door installer before installing switch outlet boxes.

C. Indicating lights shall be provided with switches where shown on the Drawings and manual motor starters. Switches or manual starters with indicating lights shall be installed in 2 gang or multiple gang boxes with 2 gang or multiple gang wall plates.

D. Receptacle outlets in finished area shall be mounted 18 inches above floor, unless noted otherwise.

E. Interior surface mounted receptacles shall be mounted at 2 feet above floor level, unless noted otherwise.

F. Exterior receptacles shall be mounted at 2 feet above grade level, unless noted otherwise.

G. Flush wall receptacles installed above counters or worktables shall be mounted with long dimension parallel to the floor. Contractor shall verify countertop heights before installing boxes for convenience receptacles.

H. All receptacle outlets shall be grounded to a separate grounding conductor that has green insulation.

I. All switches, convenience receptacles, telephone outlets, manual starters, etc. in the finished areas shall be flush mounted. Flush boxes shall fit flush with the final finished wall in every case. Install metal box extenders and bond to the box where necessary.

J. All boxes shall be plumb.

K. Multi-outlet assembles shall be mounted directly above the counter backsplashes.

L. Laboratory bench outlets shall be as specified in Part 2 - Products.

M. All receptacles on a GFCI breaker shall be identified with laminated plastic nameplates which read: “GFCI PROTECTED.” Letters shall be 1/4 inch high white on a red background. Feed through type GFCI receptacles which feed non-GFCI type receptacles where shown as GFCI type receptacles on the Drawing are not allowed.

N. Where indicated on the Drawings as WP, switches and receptacles shall have weatherproof cover plates.

END OF SECTION

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SECTION 26 28 16

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Local disconnects.
   2. Corrosion inhibitors.

1.02 PRICE AND PAYMENT PROCUDES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 SUBMITTALS

A. Data sheets which describe the switches, give electrical ratings, and give dimensions.

PART 2 PRODUCTS

2.01 LOCAL DISCONNECTS

A. Local disconnects shall be furnished with the building and installed by the electrical contractor. The following specification is for reference. Coordinate the Local disconnects required to be installed with the building supplier.

B. UL listed, heavy duty, 600 volts, 3-pole safety switches.

C. Fusible or non-fusible as shown on the Drawings.

D. Ampere and horsepower rating required for the connected load.

E. Quick-make, quick-break operating mechanism.

F. Provisions for padlocking in the open and closed positions.

G. NEMA 1 enclosure for indoor switches.

H. NEMA 3R enclosure for outdoor switches.

I. NEMA 4X enclosure for corrosive areas identified on the Drawings.

J. NEMA 7 and listed as "Raintight" for switches installed in Class 1, Division 1, or 2 hazardous locations.

K. Provide auxiliary contacts as follows:
   1. Auxiliary contact shall disconnect motor protection circuit when motors with integral motor protection devices are provided.

2. Auxiliary contact shall disable the associated VFD from operating when the disconnect is in the open position.
3. Provide auxiliary contacts where noted elsewhere on the Drawings.
4. Provide auxiliary contacts where noted elsewhere in control descriptions.

L. Each fusible switches shall have 2 sets of fuses.

M. Cutler Hammer, General Electric, Siemens, Square D, or equal.

2.02 CORROSION INHIBITOR

A. Vapor phase corrosion inhibitor device shall be Crouse-Hinds CID 101, Hoffman A-HCI, Zerust VC2, or approved equal.

B. Capsule or device size shall be adequate to provide 1 year of protection for the enclosure in which it is installed.

PART 3 EXECUTION

3.01 INSTALLATION

A. Disconnect switches shall be installed in a readily accessible location where indicated on the Drawings. Centerline of the switch shall be mounted 4 feet above the ground.

B. Each switch shall be identified with a laminated plastic nameplate.

C. All disconnect switches mounted outside shall contain a corrosion inhibitor device.

D. Disconnects for single-phase motors shall be manual motor starters or manual motor starting switches specified in Section 26 24 19.

END OF SECTION

SECTION 26 50 00

LIGHTING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. Luminaires.
   2. Lamps.
   3. Control devices.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment
   1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 SUBMITTALS

A. Product cut sheets with specified features highlighted for each luminaire.

B. Product photometric data for each luminaire which is not listed in the Contract Documents orwhich does not have prior approval.

C. Provide Operation and Maintenance Manuals.

PART 2 PRODUCTS

2.01 LUMINAIRES

A. Luminaires shall be furnished with the building and installed by the electrical contractor. The following specification is for reference. Coordinate the Luminaires required to be installed with the building supplier.

B. See Drawings for fixture schedule.

2.02 CONTROL DEVICES

A. Control devices shall be furnished with the building and installed by the electrical contractor. The following specification is for reference. Coordinate the Control devices required to be installed with the building supplier.

B. Photo Controls
   1. Light level selector to adjust activation.
   2. Time-delay activation and de-activation.
   3. SPST contacts rated 15-amp tungsten or 8.3-amp ballast at 120 Vac.
   4. 1/2-inch male thread for mounting.
   5. Manufacturer: Intermatic K4100, Tork 2100, or equal.

C. Timeclock
   1. Astronomic, Multi-purpose, 365 day with holiday and seasonal scheduling.
   2. 4-channel.
   3. Manual override capability.
   4. LCD display.
   5. Automatic daylight savings or standard time.
   6. Automatic Leap Year correction.
   7. SPDT contacts rated 10 amps 24-277VAC.
   8. Manufacturer: 4 channel Tork DZS400A or equal.

D. Relays
   1. 120 Vac, 60 Hz. general purpose plug-in type.
   2. Contacts rated 10 amps at 240 Vac.
   3. Dust cover and base with screw terminals.
   4. Manufacturer: Potter & Brumfield, Square D, Allen-Bradley, or equal.

E. Lighting Contactors
   1. 600-volt electrically held.
   2. Ampere rating and number of poles per the Drawings.
   3. NEMA 1 enclosure, or open type if mounted in enclosure with other components.
   4. Manufacturer: Cutler-Hammer, General Electric, Square D, or equal.

PART 3 EXECUTION

3.01 INSTALLATION

A. In general, luminaires shall be located where shown on the Drawings; however, Contractor shall check equipment locations and install luminaires so that piping, duct work, and other devices or equipment shall not interfere with the luminaire components or its performance.

B. All suspended luminaires shall be mounted using supports at both ends of the fixture.

C. Galvanized or stainless-steel bolts, nuts, washers, and screws shall be used for mounting luminaries or luminaire outlets.

D. Lenses, refractors, and glassware shall be clean and free from cracks or chips. All reflectors, shades, luminaire bodies, etc. shall be free from dents and scratches, thoroughly cleaned, and properly aligned before installation is accepted by the Owner. All exposed tags and labels other than UL and emergency ballast identifiers shall be removed.

E. All luminaries, other than troffers, shall be firmly supported by major structural members, by structural slab, or channels in the ceiling construction.

F. Type of ceilings shall be verified so proper mounting hardware is furnished with each luminaire.

G. Location of insulation above ceilings shall be verified where recessed fixtures are located. If insulation is present, Contractor shall install barrier to separate fixtures from insulation per manufacturer’s recommendations.

H. Intermediate framing shall be provided between structural members to support both ends of fluorescent luminaires mounted below gypsum board ceilings.

END OF SECTION

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SECTION 31 05 10

SITE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

A. Provide site preparation as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

B. Work includes, but is not limited to:

1. Protecting improvements, plants, and utilities.
2. Temporarily removing and replacing improvements.
3. Locating utilities and coordinating with utility companies.
4. Clearing and grubbing trees and vegetation.
5. Salvaging topsoil.
6. Performing site demolition and abandonments.

1.02 MEASUREMENT AND PAYMENT

A. Site preparation will be considered incidental to the work except where separate bid items are included in Bid Schedule. Drawing notes related to removals and replacements shall be interpreted as directives to Contractor for such work at no extra cost except where separate bid items are provided in Bid Schedule.

B. Saw cutting of existing asphaltic and concrete pavement, curb and gutter, driveways, sidewalks, and similar work will be paid for at the contract unit price per linear foot for PAVEMENT SAW CUTTING. Saw cuts made prior to need for paving are for Contractor's convenience. Resawing for any reason will be at Contractor's expense.

C. Removal of existing concrete pavement, sidewalk, and driveways and (if present) base course to Owner will be paid for at the contract unit price per square yard for REMOVE EXISTING CONCRETE PAVEMENT.

D. Removal of existing asphalt pavement and base course to Owner will be paid for at the contract unit price per square yard for REMOVE EXISTING ASPHALT (type).

E. Relocation of existing electrical system will be paid for at the contract lump sum price for RELOCATE EXISTING ELECTRICAL SYSTEM

F. Relocation of existing site lighting fixtures and conduit will be paid for at the contract lump sum price for RELOCATE EXISTING SITE LIGHTING FIXTURES AND CONDUIT.

G. Removal and disposal of existing buildings and foundations will be paid for at the contract lump sum price for REMOVE EXISTING BUILDINGS AND FOUNDATIONS.

H. Abandonment of existing pipelines by plugging the open ends will be paid for at the contract lump sum price for ABANDON EXISTING (pipe type).

I. Removal, temporary storage and protection, and reinstallation of existing signs, mailboxes, and similar improvements will be incidental to the contract unit prices, unless a separate bid item is designated on the Bid Schedule.

J. Removal of existing concrete curb and gutter will be paid for at the contract unit price per linear foot for REMOVE EXISITNG CURB AND GUTTER

PART 2 (NOT USED)

PART 3 EXECUTION

3.01 PROTECTION

A. Protect improvements on site and on adjoining properties. Provide barricades, coverings, or other types of protection as necessary to prevent damage and to safeguard against injury. Restore to original condition improvements damaged by the work or improvements which required temporary removal during construction.

B. Protect existing vegetation indicated to remain against unnecessary cutting, breaking, bruising, or smothering by stockpiling excavated materials or parking of vehicles within drip line. Provide temporary fences, tree wells, barricades, or guards; repair or replace trees and vegetation damaged by construction operations.

C. Maintain survey monuments, reference points, and benchmarks; notify Owner of disturbance to markers.

D. No extra payment or time will be allowed for protection work that could have been suspected or anticipated by site inspection and interpretation of bidding documents prior to execution of contract.

3.02 LOCATING EXISTING UTILITIES

A. Location and description of underground utilities and structures shown on drawings are approximate and are based on records available to Owner or surface features indicating their existence. There may be other utilities within project area that are not shown.

B. Notify all affected utility companies of construction operations at least three working days before beginning work near their facilities. Do not begin excavation work until underground utility locations have been marked.

C. Use caution when excavating so that exact location of underground utilities, both known and unknown, may be determined. Provide adequate protection and support for utilities during construction operations.

D. If uncharted or incorrectly charted utilities are encountered during excavation work, or if proposed construction conflicts with existing utilities, give prompt notice and submit proposed solution to A/E for approval. Cooperate with Owner and public and private utility companies to keep their services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

3.03 SITE CLEARING

A. Remove trees, stumps, snags, shrubs, brush, heavy growths of grass, weeds and other vegetation, improvements, rubbish and debris, and obstructions that interfere with proposed construction; remove items only as necessary for completion of work.

B. Cut brush and vegetation flush with ground. Grub out stumps, roots having a diameter of 2 in. or larger, and root clusters to a depth of at least 2 ft below subgrade elevation for pavements, structures, and embankments and 6 in. below ground surface in other areas.

C. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction. Cut back roots a minimum of 1 ft from concrete work, paving, and structures and to a depth of not less than 2 ft below structures, foundations, and embankments.

3.04 TOPSOIL STRIPPING

A. Topsoil shall include all friable, fertile, loam soil suitable for grass and plants, found at surface, reasonably free of subsoil, clay lumps, stones, objects over 2-in. diameter, weeds, large roots, root clusters, and other objectionable material.

B. Strip topsoil from project area to whatever depths encountered; prevent intermingling with underlaying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping topsoil.

C. Where trees are indicated to remain, terminate stripping a sufficient distance from such trees to prevent damage to root system.

D. Stockpile topsoil in storage piles in areas where designated. Construct storage piles to freely drain surface water. Cover or sprinkle water on storage piles to prevent windblown dust.

3.05 DEMOLITION

A. Remove structures, pavements, utilities, and other improvements within construction limits as shown and as required for construction.

B. If removing only a portion of pavement, curb, gutter, sidewalk, or similar surface improvements, remove the improvement to an existing joint or saw cut the improvement to provide a smooth straight joint.

C. Owner shall have first right to retain all useful salvage. All items not retained by Owner and construction debris shall become property of Contractor.

3.06 ABANDONMENTS

A. Pipes designated to be abandoned in place shall be permanently plugged with concrete a minimum of 24 in. at each open end, including at manholes.

B. Manholes, tanks, and basins designated to be abandoned shall be perforated for drainage and filled with compacted granular soil (1-1/2-in. maximum size) and walls shall be removed to 2 ft below finished grade.

3.07 DEBRIS DISPOSAL

A. Remove debris and excess materials from site and legally dispose of it; do not burn debris.

END OF SECTION

SECTION 31 20 00

EARTH MOVING

PART 1 GENERAL

1.01 SUMMARY

A. Provide earth moving as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 RELATED SECTIONS

31 05 10 Site Preparation.

1.03 CLASSIFICATION

A. Excavation of materials encountered under this work will be unclassified without regard to type, difficulty to remove, or suitability for use in construction.

1.04 SUBMITTALS

A. Test Reports: Two weeks prior to start of construction, indicate source and submit gradation analysis of proposed off-site fill and backfill materials for review. Make submittals in accordance with Section 01 33 00.

1.05 TESTING

A. Contractor shall arrange and pay for soil sampling and testing by a qualified testing agency, acceptable to Owner and independent of Contractor.

B. Test subgrade and fill materials for gradation in accordance with ASTM C136 for conformance with ASTM D2487 gradation limits. Test materials for liquid limit and plasticity index in accordance with ASTM D4318.

C. Provide one optimum moisture-maximum density curve for each type of soil encountered in subgrade and fills under foundations, structure slabs, and paved areas; determine maximum densities in accordance with ASTM D1557.

D. During course of work, testing agency shall inspect and approve subgrades and fill layers before further construction work is performed on each layer. Perform field density tests in accordance with standard, recognized procedures. Take tests as follows:

1. Footing Subgrade: Perform at least one field test for every 10,000 sq ft of structure area, but in no case less than three tests, to verify that the bearing capacity indicated on the Drawings is present.
2. Structure Slabs and Paved Areas: Perform at least one field density test on fill subgrade for every 2000 sq ft of structure slab or paved area, but in no case less than three tests. In each compacted fill layer, perform at least one field density test for every 2000 sq ft of overlaying structure slab or paved area, but in no case less than three tests.
3. Utility Trench Backfill (Pavement and Structure Areas): Perform at least two field density tests in random compacted backfill layers for every 400 linear feet of trench under pavements and structures.
4. Foundation Wall Backfill: Perform at least two field density tests at locations and elevations as directed.

E. If in opinion of A/E, based on reports of testing agency and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional cost to Owner.

1.06 PROTECTION

A. Protect existing improvements, utilities, trees and shrubs, and reference marks in accordance with Section 31 05 10.

1.07 BLASTING

A. Use of explosives is not permitted.

PART 2 PRODUCTS

2.01 SOIL MATERIALS, GENERAL

A. Soil materials shall be free of organic matter, debris, frozen soils, ice, and other objectionable materials. Rock particles larger than maximum size specified shall be removed prior to placement of soil.

B. Select existing material from required excavations may be used for fill or backfill if it meets the specified product requirements. If necessary, furnish additional approved material from suitable off-site sources.

2.02 GRANULAR FILL

A. Select soils complying with ASTM D2487 soil classification groups GW (well-graded gravel), GP (poorly-graded gravel), SW (well-graded sand), or SP (poorly-graded sand). Aggregate shall pass a 1-1/2-in. sieve and not more than 35% shall be retained on a No. 10 sieve. Maximum 5% by weight shall pass a No. 200 sieve.

2.03 STRUCTURAL FILL

A. Select soils complying with ASTM D2487 soil classification groups GW, GP, SW, or SP; or these groups in combination with groups GM, GC, SM, or SC (dual symbol soils). Aggregate shall pass a 1-1/2-in. sieve and not more than 35% shall be retained on a No. 10 sieve. Maximum 12% by weight shall pass a No. 200 sieve; plasticity index shall not exceed 5.

2.04 GENERAL SITE FILL

A. Select, natural, free draining soils complying with ASTM D2487 soil classification groups GW, GP, SW, SP, GM, GC, SM, SC, or combinations thereof, and suitable for compaction. Maximum aggregate size shall be 1/2 specified lift thickness.

2.05 GRANULAR BEDDING AND BACKFILL

A. Select soils suitable for use as Granular Fill, except coarse aggregate shall pass a 3/4-in. sieve.

PART 3 EXECUTION

3.01 PREPARATION

A. Prepare site for work in accordance with Section 31 05 10.

B. Layout and stake lines and grades as required to complete the work.

C. Layout of work is to be performed and certified in writing by a licensed surveyor.

3.02 EXCAVATION FOR STRUCTURES

A. Excavate to achieve necessary dimensions, lines, and grades. Conform to elevations and dimensions shown within a tolerance of plus or minus 1 in., and extending a sufficient distance from footings and foundations as required for bracing and supports, concrete formwork, installation of services, other required construction, and for inspection.

B. For footings and foundations, take care not to disturb bottom of excavation. Excavate to final grade just before concrete is placed. Trim bottoms to required lines and grades to leave solid, undisturbed base to receive granular fill, base course, or concrete as shown.

3.03 EXCAVATION FOR PAVEMENTS

A. Cut surface under pavement to comply with cross-sections, elevations, and grades as shown.

3.04 EXCAVATION FOR DITCHES

A. Cut ditches to cross-sections and grades as shown. Keep ditches free of debris until final acceptance of the work.

3.05 EXCAVATION FOR DRAINAGE SWALES AND INFILTRATION BASINS

A. Cut storm drainage swales and infiltration basins to cross-sections and grades as shown. Use excavating hoes, light equipment with turf-type tires, or wide track loaders to construct treatment swales and infiltration basins so as to minimize compaction of existing subgrade soils. Keep swales and basins free of debris until final acceptance of the work.

3.06 TRENCHING

A. Excavate trenches so that pipe can be laid safely and accurately to required line and grade. Hand excavate for bells, fittings and projections to allow for proper jointing and to ensure that pipe rests evenly along barrel and is not resting on bell.

B. In sand and gravel soils, bottom of trench may be shaped to fit bottom 1/3 of pipe. In silt or clay soils, bottom of trench shall be 4 in. below pipe barrel and 3 in. below bell. In rock, bottom of trench shall be 6 in. below pipe barrel. Under foundations and footings, bottom of trench shall be 8 in. below pipe. Provide Granular Bedding as specified below.

C. Trench widths in ordinary soil shall be limited at top of pipe to not less than a 6 in. clearance on either side of barrel to allow for installation of bedding material between pipe and trench wall. Maximum trench width at top of pipe shall be outside pipe diameter plus 24 in. (30 in. minimum). Trench above top of pipe may be sloped, stepped or vertical to comply with state and federal regulations regarding trenches.

D. Minimum trench width in rock shall not be less than that for ordinary soil. Maximum trench width shall be outside pipe diameter plus 18 in. for an unsheathed trench, and outside pipe diameter plus 24 in. for sheathed trench.

3.07 UNAUTHORIZED EXCAVATION

A. Unauthorized excavation consists of removal of materials beyond indicated elevations or side dimensions without specific direction of A/E. Unauthorized excavation, as well as remedial work, shall be at Contractor's expense. Notify A/E prior to backfilling if unauthorized excavations are made.

B. Under footings, foundations, underpinning, equipment bases, and retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to

excavation bottom, without altering required top elevation. Lean concrete or compacted fill may be used to bring elevations to proper position when approved by A/E.

C. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed.

3.08 STABILITY OF EXCAVATIONS

A. Maintain sides and slopes of excavations in a safe condition until completion of backfilling. Slope sides of excavations to angle of repose of material excavated; otherwise, shore and brace where sloping is not possible either because of space restrictions or stability of material excavated. Take precautions to prevent slides or cave-ins when excavations are made in locations adjacent to backfilled excavations, and when sides of excavations are subjected to vibrations from traffic, machinery, or any other source. Comply with applicable codes and ordinances.

3.09 SHORING AND BRACING

A. Carry down shoring and bracing as required as excavation progresses. Maintain shoring and bracing while excavations are open.

B. Provide and maintain shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition. Use timbers that are sound and free of large or loose knots.

C. Provide permanent steel sheet piling or pressure treated timber sheet piling wherever subsequent removal of sheet piling might permit lateral movement of soil under adjacent structures. Cut off tops as required and leave permanently in place.

3.10 DEWATERING

A. Perform earthwork in a manner to prevent surface water and ground water from flowing into excavations. Promptly remove water from excavations using pumps, sumps, and dewatering system components necessary to convey water away from excavations. If underground springs are encountered, notify A/E before proceeding.

B. Convey water removed from excavations and rain water to collection or run-off areas. Provide and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use foundation or utility trench excavations as temporary drainage ditches.

C. Provide filter material, trash screens, and other devices around pumps and intakes to avoid pumping or discharging sediment from construction site.

3.11 STOCKPILING

A. Stockpile excavated materials meeting the requirements for fill and backfill where directed until required for the work. Place, grade, and shape stockpiles for proper drainage. Locate stockpiles a sufficient distance from edge of excavations, even though such excavations may be sheeted and braced, to prevent such material from falling or sliding into excavations and to prevent cave-ins.

3.12 COLD WEATHER PROTECTION

A. Protect excavation bottoms against freezing when atmospheric temperature is less than 35 deg F by covering with dry insulating materials of sufficient depth to prevent frost penetration.

3.13 SUBGRADE EXAMINATION AND PREPARATION

A. Examine subgrade prior to placing fill. Remove organic materials and debris subject to rot or corrosion. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with subgrade.

B. In structure, pavement, and walk areas, proof-roll exposed subgrade in overlapping passes in a perpendicular grid pattern with a fully-loaded tandem-axle dump truck weighing not less than 10 tons, or other equipment of similar size and weight, to compact subgrade and detect areas which must be undercut or improved. Inform A/E of unsuitable, unconsolidated subgrade soils.

C. After subgrade soil is stable, scarify top 6 to 8 in., moisture condition, and compact surface to density specified in Part 4 Schedules.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by A/E, without additional compensation.

3.14 ADDITIONAL EXCAVATION (OVER EXCAVATION)

A. If unsuitable bearing materials, such as poorly compacted fill, existing foundations, rubble, debris, or organic deposits, are encountered at required subgrade elevations, carry excavations deeper and replace excavated material with properly compacted Structural Fill as directed by A/E.

B. Where over excavation below footing subgrade is required, widen over excavation beyond footing edges at least 1 ft for each 1 ft of over excavation depth.

C. Removal of unsuitable material and its replacement as directed will be paid for as extra work, unless a pay item is included in the Bid Schedule. Do not proceed with extra or unit price work until authorized.

3.15 FILLING AND BACKFILLING, GENERAL

A. Do not place fill until required subgrade preparation has been examined and approved by testing agency.

B. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Acceptance by A/E of construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.
2. Inspection, testing, approval, and recording locations of underground utilities.
3. Removal of concrete formwork.
4. Removal of trash and debris.
5. Removal of temporary shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.
6. Placement of permanent or temporary horizontal bracing on horizontally supported walls.

C. Place fill or backfill in approximately horizontal layers; do not exceed the maximum lift thickness specified in Part 4 Schedules before compaction. Spread piles and windrows uniformly.

D. Adjacent to structures, place fill or backfill to prevent damage and allow structures to assume loads gradually and uniformly, at approximately the same rate on all sides of structure. Adjacent to earth-retaining structures, do not place fill or backfill until concrete has reached specified 28-day compressive strength (minimum 14 days). Do not travel heavy equipment over cast-in-place concrete work until it has reached specified 28-day compressive strength (minimum 14 days), unless otherwise approved.

3.16 SOIL FILL

A. Place and compact fill materials in layers to required elevations as follows:

1. Under turf and planted areas: Use General Site Fill.
2. Under footing, foundation, building slab, pavement, and walk areas: Use Structural Fill.
3. For upper 6 in. immediately under building slabs and walks: Use Granular Fill.
4. For backfill behind retaining walls: Use Granular Fill.

B. Do not place soil fill on frozen subgrades.

3.17 TRENCH BEDDING AND BACKFILL

A. Trenches dug in sandy or gravelly materials may use undisturbed earth for bedding provided surface is shaped to conform to pipe. Provide Granular Bedding in all other trenches from subgrade to a point supporting bottom 1/3 of pipe for rigid pipe and to springline (mid-height) for flexible pipe. Place and compact bedding so that it fills and supports pipe haunch area.

B. Immediately after installation of pipe, provide tamped Granular Backfill up to a minimum depth of 1 ft above pipe. Take special care in placing and tamping initial backfill material so alignment and grade of pipe is not disturbed nor pipe damaged.

C. Backfill more than 1 ft over pipe shall meet material requirements for area in which pipe is located.

3.18 GRADING

A. Grade areas within project limits to achieve cross sections, lines, and elevations indicated. Slope grades to direct water away from structures and to prevent ponding. Finish surface to be reasonably smooth and free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

B. Finish subgrades to required elevations within the following tolerances:

1. Turf and Unpaved Areas: Plus or minus 1 in.
2. Pavements and Walks: Plus or minus 0.5 in.
3. Structure Slabs: Tolerance of 0.5 in. when tested with 10 ft straightedge.

3.19 CONTROL OF MOISTURE CONTENT

A. During placement and compaction, maintain moisture content of materials within optimum range.

B. Apply water to fill materials by sprinkling materials at borrow site or after placement on fill if necessary. Obtain uniform moisture distribution by discing, blading or other approved methods prior to compaction of layer.

C. If material is too wet when deposited on fill, remove or dry it to specified moisture content prior to compaction.

D. If top surface of a preceding layer of compacted fill becomes too dry to permit suitable bond, scarify and moisten it by sprinkling to an acceptable moisture content prior to placement of next layer of fill.

3.20 COMPACTION

A. Compact each layer of soil material to not less than the percentage of maximum density specified in Part 4 Schedules.

B. Provide compaction equipment required to obtain specified compaction. Compaction by travel of grading equipment is not considered adequate for uniform compaction. Small vibratory compactors are required wherever fill is placed adjacent to foundation walls, footings, and piers. Pipe bedding and initial backfill shall be hand or mechanically tamped.

3.21 MAINTENANCE

A. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

B. Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add fill or backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.22 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Remove excess excavated material and trash, debris, and other waste materials and legally dispose of them off-site.

PART 4 SCHEDULES

4.01 COMPACTION SCHEDULE

Material Type	Usage	Lift Thickness (1)	Compaction (2)
Granular Fill	Below concrete slabs.	6"	95%
	Other designated areas.	8"	95%
Structural Fill	Under foundations.	8"	95%
	Below concrete slabs.	8"	95%
	Below pavements, walks, and other designated areas.	8"	95%
	Below pipe and conduit.	8"	90%
General Site Fill	Unpaved areas 10 ft. or less outside structure line.	8"	95%
	Unpaved areas more than 10 ft. outside structure line.	12"	90%
Granular Bedding	Below pipe and conduit.	6"	90%
Granular Backfill	Initial backfill around pipe and conduit.	6"	90%

(1) Place manually compacted materials in maximum 4 in. layers.

(2) Percent of maximum density determined in accordance with ASTM D1557 (Modified Proctor test).

END OF SECTION

SECTION 31 23 33

TRENCHING AND BACKFILLING

PART 1 GENERAL

1.01 SUMMARY

A. Provide trenching and backfilling for buried utilities as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 RELATED SECTIONS

31 05 10 Site Preparation.

1.03 CLASSIFICATION

A. Excavation of materials encountered under this work will be unclassified without regard to type, difficulty to remove, or suitability for use in construction.

1.04 SUBMITTALS

A. Test Reports: Submit reports for laboratory tests and field density tests required under "Testing" article. Make submittals in accordance with Section 01 33 00.

1.05 TESTING

A. Contractor shall arrange and pay for soil sampling and testing by a qualified testing agency, acceptable to Owner and independent of Contractor. Test soil materials for suitability for intended purpose.

B. Test bedding and backfill materials for gradation in accordance with ASTM C136 for conformance with ASTM D2487 gradation limits. Test materials for liquid limit and plasticity index in accordance with ASTM D4318.

C. Provide one optimum moisture-maximum density curve for each type of soil to be used for backfill under structure, pavement, and walk areas; determine maximum densities in accordance with ASTM D1557.

D. During course of work, testing agency shall inspect and approve backfill layers before further construction work is performed on each layer. Perform field density tests in accordance with standard, recognized procedures. Take tests as follows:

1. Utility Trench Backfill: Perform at least two field density tests in random compacted backfill layers for every 400 linear feet of trench under structures, pavements, and walks.

E. If in opinion of A/E, based on reports of testing agency and inspection, backfills which have been placed are below specified density, provide additional compaction and testing at no additional cost to Owner.

1.06 PROTECTION

A. Protect existing improvements, utilities, trees and shrubs, and reference marks in accordance with Section 31 05 10.

PART 2 PRODUCTS

2.01 SOIL MATERIALS, GENERAL

A. Soil for fill and backfill shall be free of organic matter, debris, frozen soils, ice, and other objectionable materials. Rock particles larger than maximum size specified shall be removed prior to placement of soil.

B. Select existing material excavated from site may be used if it meets requirements specified. If necessary, furnish additional approved material from suitable off-site sources.

2.02 WASHED STONE

A. Clean, hard, tough, durable, 1-1/2 in. washed stone, crushed rock, crushed gravel, or gravel free from adherent coatings and soft, flat, or elongated particles.

2.03 GRANULAR BASE, BEDDING, AND BACKFILL

A. Select soils complying with ASTM D2487 soil classification groups GW (well-graded gravel), GP (poorly-graded gravel), SW (well-graded sand), or SP (poorly-graded sand). Aggregate shall pass a 3/4-in. sieve and not more than 35% shall be retained on a No. 10 sieve. Maximum 5% by weight shall pass a No. 200 sieve.

2.04 STRUCTURAL BACKFILL

A. Select soils complying with ASTM D2487 soil classification groups GW, GP, SW, or SP; or these groups in combination with groups GM, GC, SM, or SC (dual symbol soils). Aggregate shall pass a 1-1/2 in. sieve and not more than 35% shall be retained on a No. 10 sieve. Maximum 12% by weight shall pass a No. 200 sieve; plasticity index shall not exceed 5.

2.05 GENERAL SITE BACKFILL

A. Previously excavated soils, free of aggregate larger than 3 in., and organic material, subject to approval by A/E.

PART 3 EXECUTION

3.01 TRENCHING

A. Excavate trenches so that pipe can be laid safely and accurately to required line and grade. Hand excavate for bells, fittings and projections to allow for proper jointing and to ensure that pipe rests evenly along barrel and is not resting on bell.

B. Excavation shall extend to bottom of pipe bedding. Unnecessary excavation below this required level shall be filled with compacted sand, gravel, crushed stone or concrete, as approved by A/E.

C. In sand and gravel soils, bottom of trench may be shaped to fit bottom 1/3 of pipe. In silt or clay soils, bottom of trench shall be 4 in. below pipe barrel and 3 in. below bell. In rock, bottom of trench shall be 6 in. below pipe barrel. Under foundations and footings, bottom of trench shall be 8 in. below pipe. Provide Granular Bedding as specified below.

D. Trench widths in ordinary soil shall be limited at top of pipe to not less than a 6 in. clearance on either side of barrel to allow for installation of bedding material between pipe and trench wall. Maximum trench width at top of pipe shall be outside pipe diameter plus 24 in. (30 in. minimum). Trench above top of pipe may be sloped, stepped or vertical to comply with state and federal regulations regarding trenches.

E. Minimum trench width in rock shall not be less than that for ordinary soil. Maximum trench width shall be outside pipe diameter plus 18 in. for an unsheathed trench, and outside pipe diameter plus 24 in. for sheathed trench.

F. During trenching and backfilling work in areas with moisture sensitive soils, do not mix wet or ground water laden soils with dryer soils. Keep wet and dry soils separate to minimize the amount of soil drying required.

3.02 STABILITY OF TRENCHES

A. Slope sides of trenches to angle of repose of material excavated; otherwise, provide sheathing and bracing where sloping is not possible either because of space restrictions or stability of material excavated. Comply with applicable codes and ordinances.

B. Maintain sides and slopes of trenches in a safe condition until completion of backfilling. Take precautions to prevent slides or cave-ins when trenches are made in locations adjacent to backfilled trenches, and when sides of trenches are subjected to vibrations from traffic, machinery, or any other source.

3.03 SHEATHING AND BRACING

A. Provide tight sheathing where necessary to protect nearby structures and pavements, or when trench size must be confined. Notify A/E of unforeseen condition that requires use of sheathing. Sheathing shall be driven unless soil conditions allow sets to be placed after excavating. If placed after excavating, voids between trench wall and sheathing shall be immediately filled with sand.

B. Removal of sheathing shall not take place until trench is backfilled. Compact backfill by flooding or jetting after sheathing is removed. Obtain written approval to leave some or all of sheathed sets to remain in place; cut off and remove upper portion within 2 ft of surface.

3.04 WET TRENCH CONDITIONS

A. Contractor shall dispose of ground water or surface drainage entering trench by employing ordinary dewatering techniques such as use of sump pumps, sump pits adjacent to pipe alignment, dikes, and similar methods. Dispose of or divert water along existing drainage ways. Do not place water so that it ponds on structure, pavement, or walk subgrade.

B. Allowing water to flow into pipe being laid will not be permitted, except for storm sewer after joints have set. Install temporary stopper or plug on upper end of pipe if there is danger of sand or debris being washed into pipe.

C. Provide filter material, trash screens, and other devices around pumps and intakes to avoid pumping or discharging sediment from construction site.

3.05 UNSTABLE TRENCH BOTTOM

A. When trench bottom is unstable because of ground water, A/E may require extra excavation to remove unstable material. Provide Washed or Crushed Stone foundation followed by Granular Bedding as required in "Bedding and Initial Backfill" article.

3.06 POOR SUBSOIL MATERIALS

A. Notify A/E whenever muck, sawdust, bark, or other material is encountered which would not form a suitable and permanent base; A/E may order it removed and replaced with Granular Base up to bottom of normal trench section.

3.07 BEDDING AND INITIAL BACKFILL

A. Trenches dug in sandy or gravelly materials may use undisturbed earth for bedding provided surface is shaped to conform to pipe. Provide Granular Bedding in all other trenches from subgrade to a point supporting bottom 1/3 of pipe for rigid pipe and to springline (mid-height) for flexible pipe; see Details. Place and compact bedding so that it fills and supports pipe haunch area.

B. Immediately after installation of pipe, provide tamped Granular Backfill up to a minimum depth of 1 ft above pipe. Take special care in placing and tamping initial backfill material so alignment and grade of pipe is not disturbed nor pipe damaged.

3.08 TRENCH BACKFILL

A. Backfill more than 1 ft over pipe under structures, pavements, and walks shall be Structural Backfill. All other trench backfill over initial backfill zone may be General Site Backfill subject to approval of A/E.

B. Backfilling above initial backfill zone in areas where settlement is not critical may be done from top of trench by mechanical means. In no case shall backfill material be dropped from such a height or in such a volume that its impact will cause dislocation or damage to piping.

C. When backfilling in freezing temperatures, cover pipe and tamp backfill around pipe using only loose thawed material. Do not place frozen material in trench within 2 ft of top of pipe, nor around manholes and other structures.

3.09 COMPACTION

A. Provide compaction equipment required to obtain specified compaction. Compaction shall be by mechanical means, except bedding and initial backfill may be hand or mechanically tamped. Compact each layer of soil material to not less than the density specified in Part 4 Schedules.

3.10 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Remove excess excavated material and trash, debris, and other waste materials and legally dispose of them off-site.

PART 4 SCHEDULES

4.01 COMPACTION SCHEDULE

Material Type	Usage	Lift Thickness (1)	Compaction (2)
Washed Stone	Unstable trench bottom.	6"	90%
Granular Base	Over excavation.	6"	90%
Granular Bedding	Bedding and haunching.	6"	90%
Granular Backfill	Initial backfill.	6"	90%
Structural Backfill	Below concrete slabs.	8"	95%
	Below pavements, walks, and other designated areas.	8"	95%
General Site Backfill	Unpaved areas 10 ft. or less outside structure line.	8"	95%
	Unpaved areas more than 10 ft. outside structure line.	12"	90%

(1) Place manually compacted materials in maximum 4 in. layers.

(2) Percent of maximum density determined in accordance with ASTM D1557 (Modified Proctor test).

END OF SECTION

SECTION 32 12 16

ASPHALT PAVING

PART 1 GENERAL

1.01 SUMMARY

A. Provide asphalt paving, including prepared base, as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 DEFINITIONS

A. References to "WisDOT Std. Spec." shall mean Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, latest edition.

1.03 SUBMITTALS

A. Test Reports: Submit reports for laboratory and field tests required under "Testing" article. Test reports for base course shall be submitted prior to placing asphaltic pavement.

B. Make submittals in accordance with Section 01 33 00.

1.04 TESTING

A. Base Course: Contractor shall arrange and pay for base course compaction testing by a qualified testing agency, acceptable to Owner and independent of Contractor. Determine laboratory density of base course material. Perform at least one field density test for every 2000 sq ft of paved area, but in no case less than three tests.

B. Asphalt Mixture Design: Asphaltic pavement job mix formula shall be derived from tests performed by a qualified testing agency paid for by Contractor. Results of previous tests performed on aggregates from same source and using asphaltic material of same brand as used in a previous mix design may be used. If requested, submit job mix formula for review.

C. Asphalt Mixture Quality Control: Contractor shall maintain a quality control program in accordance with WisDOT Std. Spec., Subsection 460.2.8 to ensure that the asphalt produced meets the job mix design, but documentation submittals are not required. Owner will not provide mix verification testing.

PART 2 PRODUCTS

2.01 BASE COURSE

A. Crushed stone or crushed gravel meeting requirements of WisDOT Std. Spec., Section 305, for 1-1/4 in. base.

2.02 ASPHALTIC PAVEMENT

A. Hot-mixed asphaltic mixture consisting of 5 to 7 percent asphalt cement (by weight), aggregate, and mineral filler (as required) meeting requirements of WisDOT Std. Spec. Section 460 for the following mixtures.

1. Lower Layer(s) (Binder Course): 3MT 58-28 H.
2. Upper Layer (Surface Course): 4LT 58-28 S.

2.03 TACK COAT

A. Emulsified asphalt. As placed material shall have 50 percent or more residual asphalt content.

2.04 TRAFFIC MARKING PAINT

A. Factory mixed, non-bleeding, waterborne traffic marking paint complying with FS TT-P-1952, Type II, with drying time of less than 45 minutes. Color shall be white, except where yellow is designated.

PART 3 EXECUTION

3.01 PREPARATION

A. Shape and compact subgrade to uniform density and to required alignment and cross-section. Foundation shall be smooth and at proper elevation and contour to receive base course.

B. Whenever new work adjoins existing pavement, saw cut existing pavement to form a straight, vertical joint line.

3.02 PLACING BASE COURSE

A. Place base course to grade as shown with proper allowance for asphaltic pavement. Place base course in maximum 8 in. lifts and compact to 95% maximum density at optimum moisture content in accordance with ASTM D1557.

3.03 PLACING ASPHALT MIXTURE

A. Construct asphaltic pavement in accordance with WisDOT Std. Spec., Subsection 460.3, except as otherwise designated.

B. Place asphaltic pavement in one or more layers to thicknesses and grades shown using self-propelled spreading and finishing machines.

C. Before placing additional layers on existing or previously placed asphaltic or portland cement concrete pavement, apply tack coat to contact surfaces at rate of 0.05 to 0.07 gal per sq yd, after dilution. Allow to dry until at proper condition to receive new paving.

D. Compact paving to 93% of the target maximum density in accordance with WisDOT Std. Spec., Subsection 460.3.3.

E. Tolerance on finished surface shall be 1/4 in. in 10 ft. Paving shall meet manholes, curbs, and other construction at required grade.

3.04 ROLLING

A. Begin rolling when mixture will bear roller weight without excessive displacement.

B. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

C. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.

D. Second Rolling: Following breakdown rolling and as soon as possible while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.

E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until all roller marks are eliminated and course has attained maximum density.

F. Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out such areas and fill with fresh, hot asphaltic pavement. Compact by rolling to maximum surface density and smoothness.

G. Protect work using barricades until pavement has hardened.

3.05 LANE AND PARKING MARKING

A. Paint line work on asphaltic paving and concrete curbs as shown.

B. Clean surface in areas to receive markings. Paint markings and symbols with traffic marking paint. Apply paint with mechanical equipment to produce uniform straight edges. Apply one coat at manufacturer's recommended rate to achieve a minimum wet film thickness of 15 mils.

END OF SECTION

SECTION 32 13 13

CONCRETE PAVING

PART 1 GENERAL

1.01 SUMMARY

A. Provide concrete paving, including prepared base, as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

B. Work under this section includes, but is not necessarily limited to, site concrete work for:

1. Curb and gutter.
2. Walkways.
3. Pavements.
4. Patio areas.
5. Equipment pads.

1.02 DEFINITIONS

A. References to "WisDOT Std. Spec." shall mean Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, latest edition.

1.03 SUBMITTALS

A. Product Data: Submit product data for curing and sealing compound and joint sealant.

B. Samples: Submit samples for selection of colors for colored concrete, detectable warning fields, and joint sealant and for stamping pattern.

C. Test Reports: Submit reports for laboratory and field tests required under "Testing" article. Test reports for base course shall be submitted prior to placing concrete pavement.

D. Delivery Tickets: Submit delivery tickets for each load of concrete delivered to project.

E. Make submittals in accordance with Section 01 33 00.

1.04 QUALITY ASSURANCE

A. Prior to placing concrete, request review of reinforcement steel by A/E.

1.05 TESTING

A. Base Course: Contractor shall arrange and pay for base course compaction testing by a qualified testing agency, acceptable to Owner and independent of Contractor. Determine laboratory density of base course material. Perform at least one field density test for every 2000 sq ft of paved area, but in no case less than three tests.

B. Contractor shall arrange and pay for services of a qualified testing agency acceptable to Owner and independent of Contractor.

C. Testing agency shall test concrete to measure slump, entrained-air content, temperature, and compressive strength to determine compliance with specifications. Furnish test apparatus and cylinders, perform on-site sampling and testing, and have compressive strength cylinders tested by a qualified laboratory.

D. On-site tests shall be performed under observation of A/E unless waived.

E. Perform slump, air content, and temperature tests prior to concrete placement each day, whenever there is a change in consistency of concrete, and when concrete cylinders are prepared. If measured slump, air content, or temperature falls outside specified limits, immediately check another portion of same batch. In the event of a second failure, concrete shall be rejected.

F. During progress of work, prepare three test cylinders per 50 cu yd or fraction thereof for each class of concrete placed each day. Identify samples, moist cure in accordance with ASTM C31, and ship samples to testing laboratory for one 7-day compressive strength test and two 28-day tests.

G. Test procedures shall be in accordance with ASTM C31, C39, C143, C172, C231, and C1064.

H. Cost of tests, including materials and transportation, shall be paid by Contractor and shall be included in the contract unit price for SOIL, PAVEMENT, AND CONCRETE TESTING.

PART 2 PRODUCTS

2.01 CEMENTITIOUS MATERIAL

A. Cement: Portland cement, ASTM C150, Type I or ASTM C595, Type IL.

B. Fly Ash: ASTM C618, Class C.

2.02 AGGREGATES

A. Fine and coarse aggregates, ASTM C33 or AASHTO M43, consisting of clean, hard, durable sand and crushed rock, crushed gravel, or gravel.

B. Coarse aggregate shall meet grading requirements for size number 67, 57, or 467. Maximum coarse aggregate size shall not be more than one-fourth of slab thickness. Ratio of coarse aggregate to fine aggregate shall not be less than 1:1 nor more than 2:1.

2.03 WATER

A. Mixing water shall be potable, free of oil, acid, excessive alkalinity, organic matter, and salts.

2.04 ADMIXTURES

A. Air-entraining admixture shall conform to ASTM C260.

B. Water reducing admixture shall conform to ASM C494, Class A.

C. Other admixtures which do not adversely affect strength and durability of concrete may be used with permission of A/E, if used in strict accordance with manufacturer’s instructions. Care shall be exercised to assure that the admixture does not increase or decrease air content outside of allowable limits. Do not use salt or chemical anti-freeze admixtures.

2.05 FORMS

A. Forms may be either stationary or slip-form type. If slip forms are used, finished curb and gutter shall be of quality equal to that produced by stationary forms.

B. Stationary forms shall be steel or wood, free of distortion and defects, and of appropriate size and strength. Use flexible spring steel forms or laminated boards to form radius bends. Apply nonstaining, clear, paraffin-based form oil.

2.06 REINFORCING STEEL

A. ASTM A615, Grade 60, new billet steel bars, epoxy-coated in accordance with ASTM A775. Provide metal chairs, stirrups, spacers, and hangers to support reinforcement and insure against displacement during placement of concrete.

2.07 WELDED WIRE FABRIC

A. ASTM A1064, welded steel wire fabric.

2.08 EXPANSION JOINT FILLER

A. Premolded joint filler, ASTM D1751, asphalt saturated cellulosic fiber; 1/2-in. thickness by depth of concrete, unless otherwise shown.

2.09 CURING COMPOUND

A. Liquid membrane-forming compound, ASTM C309, Type 2, white-pigmented.

2.10 CONCRETE MIXTURES

A. Conform to minimum standards for class and usage in Part 4 Schedules.

B. Provide water-reducing admixture for all concrete work. Provide air entraining admixture as scheduled.

2.11 DETECTABLE WARNING FIELDS

A. Detectable warning fields shall consist of pre-manufactured cast iron panels with raised truncated domes complying with the Americans with Disabilities Act Accessibility Guidelines (ADAAG). Panels shall have a skid-resistant finish. Finish color shall be yellow. Provide panels from WisDOT's current approved products list.

PART 3 EXECUTION

3.01 PREPARATION FOR BASE COURSE

A. Shape and compact subgrade to uniform density and to required alignment and cross-section. Foundation shall be smooth and at proper elevation and contour to receive base course.

B. Whenever new work adjoins existing pavement, saw cut existing pavement to form a straight, vertical joint line.

3.02 PLACING BASE COURSE

A. Place base course to grade as shown with proper allowance for concrete pavement. Place base course in maximum 8 in. lifts and compact to 95% maximum density at optimum moisture content in accordance with ASTM D1557.

3.03 PREPARATION FOR CONCRETE

A. Remove loose material from compacted subgrade. Proof-roll subgrade; give notice of unstable areas. Moisten subgrade to provide a uniformly damp condition.

B. Set clean forms to required grades and lines, rigidly braced and secured. Provide minimum concrete thicknesses as indicated on Drawings.

C. Place and support steel reinforcement as shown.

D. Check tolerances as follows (slip form methods shall produce equivalent results):

1. Top of form: 1/8 in. in 10 ft.
2. Alignment of vertical face: 1/4 in. in 10 ft.

E. Adjust manholes and utility structures to grade.

F. Stringless Curb and Gutter:

1. Contractor, at its option, may use stringless technology to control placement of concrete curb and gutter provided Contractor performs the following field checks and computer model adjustments in order to obtain a finished product that is smooth and flowing, without sharp transitions both horizontally and vertically:

a. Adjustment of points of vertical intersection (PVIs) that do not have a vertical curve: Add point(s) on both sides of the curveless PVI to smooth out the profile.
b. Connections to existing: Field verify actual points of connection before beginning curb and gutter placement. Adjust model for actual field conditions.
c. Tie-in to curb inlets and manholes: Field verify actual points of connection before beginning curb and gutter placement. Adjust model for actual field conditions.
d. Adjustment of points of horizontal intersection (PHIs) that do not have a horizontal curve: Add point(s) on both sides of a PHI at curb tapers and alignment PHIs without a horizontal curve to smooth the transition.
e. Minimum slope check: Verify that the model meets the minimum slope requirements for the curb and gutter shown on the Drawings, particularly at radii. Notify A/E of any areas not meeting the minimum requirements.
f. Adjacent driveway conditions: Verify that driveways designated to drain to roadway, drain as expected.
g. A/E may require Contractor to stake the modeled finished location/elevation of critical locations and/or marginal slope areas in the field for visual verification by A/E.

2. Contractor acknowledges that stringless technology for placement of concrete curb and gutter inherently presents more risk for the Contractor. Contractor understands that it is proceeding at its own risk and will indemnify and hold harmless Owner and A/E from all costs for corrections to the work due to use of stringless technology to place concrete

3.04 JOINTS

A. General: Form construction, expansion, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at expansion joints.

1. Where steel reinforcement is used at joints, continue reinforcement across construction joints unless otherwise indicated.
2. Provide tie bars at sides of paving strips where indicated.
3. Butt Joints: Provide butt joints for joints not subject to traffic. Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys for joints subject to traffic, except where doweled joints are designated. Embed keys at least 1-1/2 in. into concrete.

5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Expansion Joints: Form expansion joints of preformed joint-filler strips abutting concrete radius points, catch basins, manholes, inlets, structures, existing concrete, other fixed objects, and where indicated.

1. Locate additional expansion joints in curb and gutter at a maximum of 300 ft on center, unless otherwise indicated. Locate additional expansion joints in other concrete work at a maximum of 100 ft on center, unless otherwise indicated.
2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 in. or more than 1 in. below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to one-fourth to one-third of the concrete thickness by forming or sawing.

1. Formed Joints: Form contraction joints by using parting strips or by grooving to a 1/4-in. width.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-in. wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
4. Locate joints in curbs and gutters at 20 ft on center, unless otherwise shown.
5. Locate joints in walks at intervals equal to width of walk.
6. Locate joints in pavements and larger slabs as shown on the Drawings. If not shown, prepare and submit a jointing plan with contraction joints located at a maximum of 15 ft. on center each way. Joints shall be continuous across slab, unless interrupted by an expansion joint.
7. Locate joints in patios as shown on the Drawings. All joints in patio areas shall be sawn, not formed.

3.05 CONCRETE PLACEMENT

A. Mix and place concrete in accordance with Section 03 30 00 and the following.

C. After striking off and consolidating concrete, smooth surface by screeding and floating. Test surface for trueness with a 10 ft straightedge. Remove surface irregularities and refloat repaired areas to provide a continuous, smooth finish of uniform texture.

D. Work edges of slabs and formed joints with edging tool to form a 1/4 in. radius.

E. After floating and when excess moisture has disappeared, provide broom finish by drawing a fine-hair broom perpendicular to direction of travel.

F. After 24 hours, remove forms, clean ends of joints, and point-up honeycombed areas.

3.06 COLD WEATHER PLACING

A. Protect concrete work from physical damage or reduced strength caused by frost, freezing actions, or low temperatures, in compliance with ACI 306.

3.07 HOT WEATHER PLACING

A. When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305.

3.08 DETECTABLE WARNING FIELD INSTALLATION

A. Locate detectable warning fields where indicated on the Drawings. Embed detectable warning field arrays in plastic concrete conforming to manufacturer-recommended procedures. Do not install on hardened concrete. Do not field cut plates except where ends of radial arrays abut ramp edges. Smooth edges of field cuts. Edges of warning field shall fit surrounding concrete with no variation in height at edges. Completed warning field shall be free of concrete, curing compound, and other foreign materials. Clean warning field as required.

3.09 CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Cure formed and unformed concrete for seven days or until 75 percent of the required 28-day compressive strength is obtained, whichever is less.

B. For standard gray concrete, methods may include plastic sheets, constant wetting of surface with water, curing paper, or commercial curing compound. Apply curing compound at not less than 200 sq ft per gal in accordance with manufacturer's recommendations.

3.10 SEALING JOINTS

A. Seal expansion joints between concrete pavements and buildings as indicated on Drawings.

B. Fill joint surface with sealant in accordance with manufacturer’s recommendations.

3.11 PAVEMENT MARKING

A. Paint line work on concrete paving and concrete curbs as shown.

B. Clean surface in areas to receive markings. Paint markings and symbols with traffic marking paint. Apply paint with mechanical equipment to produce uniform straight edges. Apply one coat at manufacturer's recommended rate to achieve a minimum wet film thickness of 15 mils.

3.12 REPAIR AND PROTECTION

A. Repair or replace broken or defective concrete. Remove surface stains. Exclude traffic from concrete until the specified curing period is complete (generally 7 days). Protect concrete from damage until Substantial Completion.

B. Prior to final inspection, sweep concrete and wash free of stains, dirt, and other foreign material.

PART 4 SCHEDULES

4.01 CLASSES OF CONCRETE

Class	Min. Comp. Strength, psi	Slump, In.	Min. Cement, Bags/ Cu Yd*	Max. Water-Cement Ratio	Air Content, % By Volume	Use
AA#	4000 (28-day)	1-4	6.0	0.45	6-8	Pavements, curbs, walks, slabs

* Except for Class AA-NF concrete, fly ash may be used to constitute up to 30% by weight of total cementitious material.
† Cement content as required to obtain the specified early compressive strength.
# WisDOT Std.Spec., Section 501, Concrete Grade A or Grade-A-FA, is an acceptable substitute for class AA.

 # WISDOT STD. SPEC., SECTION 501, CONCRETE GRADE A OR GRADE-A-FA, IS AN ACCEPTABLE SUBSTITUTE FOR CLASS AA.

END OF SECTION

SECTION 32 31 10

CHAIN LINK FENCES AND GATES

PART 1 GENERAL

1.01 SUMMARY

A. Provide chain link fences, gates, and appurtenances as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 SUBMITTALS

A. Delegated-Design Shop Drawings: Submit shop drawings for fence, gates, and appurtenances sealed by a professional engineer registered in the state where the project is located. Include:

1. Plan layout; fence height; location and sizes of posts, rails, braces, gates and footings; product data; and erection procedures.
2. Documentation of design in accordance with the specified standards.

B. Samples: Submit samples for selection of YELLOW POLY CAP.

C. Make submittals in accordance with Section 01 33 00.

1.03 QUALITY ASSURANCE

A. Provide chain link fence and gates as a complete unit produced by a single manufacturer, including necessary erection accessories, fittings, and fastenings.

PART 2 PRODUCTS

2.01 DELEGATED-DESIGN REQUIREMENTS

A. Chain link fence and gate framework shall be designed by a professional engineer registered in the state where the project is located.

B. Design shall be in accordance with ASCE/SEI 7 and CLFMI WLG 2445 for the following conditions:

1. Design Wind Speed: In accordance with ASCE/SEI 7, but not less than 105 mph.
2. Fence Height: As indicated on the Drawings.
3. Normal Post Spacing: 8 ft minimum; 10 ft maximum.
4. Mesh Size and Pattern: As specified below.
5. Slats or Screening: None.
6. Wind Exposure Category: In accordance with CLFMI WLG 2445 as selected by the fencing designer.
7. Ice Exposure: In accordance with CLFMI WLG 2445 as selected by the fencing designer.

2.02 FABRIC

A. Fabric shall be 9 gage (0.148 in.) steel wire in a 2-in. diamond pattern mesh. Fabric 5 ft high and under shall be knuckled at both selvages. Fabric 6 ft and over shall be knuckled at one selvage and twisted and barbed at other selvage. Provide one-piece fabric widths for fence up to 12 ft.

B. Fabric shall be one of the following:

1. Aluminum-coated before weaving, ASTM A491, with not less than 0.40 oz aluminum per sq ft of surface.
2. Galvanized before or after weaving, ASTM A392, Class 2, with not less than 2.0 oz zinc per sq ft of surface.

C. Fabric shall have minimum 6 mil polymer coating, ASTM F668, Class 2b, thermally bonded to aluminum-coated or galvanized steel; color as selected by A/E.

2.03 FRAMEWORK, GENERAL

A. Framework shall be steel and shall comply with ASTM F1043 for the types and sizes of components specified below.

B. Steel framework and appurtenances shall be galvanized as follows:

1. Group IA Pipe: ASTM F1043 (1.8 oz zinc psf).
2. Group IC Pipe: ASTM F1043 (0.9 oz zinc psf with clear organic overcoat).
3. Hardware and Accessories: ASTM A153 (zinc weight per Table I).

C. Steel framework and appurtenances shall have 10 mil polymer coating, thermally bonded to galvanized steel; color as selected by A/E.

2.04 POSTS

A. Posts shall be one of the following:

1. ASTM F1043, Group IA, round steel pipe, regular or high strength grade.
2. ASTM F1043, Group IC, round steel pipe, electric-resistance-welded.

B. Post sizes shall be a determined by fencing designer.

2.05 TOP RAILS

A. Top rails shall be one of the following minimum sizes:

1. 1.660-in. O.D. Group IA pipe, regular or high strength grade.
2. 1.660-in. O.D. Group IC pipe.

B. Furnish in manufacturer's longest lengths, with expansion type couplings approximately 6-in. long for each joint. Provide means for attaching top rail securely to each gate, corner, pull, and end post.

2.06 BRACES

A. Use 1.660-in. O.D. pipe for horizontal braces and 3/8-in. diameter rod with turnbuckle for diagonal trusses.

B. Provide bracing assemblies at end and gate posts and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric. Provide manufacturer's standard galvanized steel or cast iron cap for each end.

2.07 TENSION WIRE

A. 7 gage coil spring steel wire, finish to match fabric.

2.08 WIRE TIES

A. 9 gage steel wire or 6 gage preformed steel clips, finish to match fabric.

2.09 STRETCHER BARS

A. One piece lengths with minimum length 2 in. less than full height of fabric, with a minimum cross-section of 3/16 in. x 3/4 in. Provide one stretcher bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into post.

2.10 POST TOPS

A. Steel, wrought iron, or malleable iron, designed as a weather tight closure cap (for tubular posts). Provide one cap for each post. Furnish caps with openings to permit through passage of top rail.

2.11 GATES, GENERAL

A. Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members maximum of 8 ft apart, unless otherwise indicated.

B. Provide same fabric as for fence, unless otherwise indicated. Install fabric with tension bars and bands at vertical edges and at top and bottom edges.

C. Install diagonal cross-bracing consisting of 3/8-in. diameter adjustable-length truss rods on gates as required to ensure frame rigidity without sag or twist.

2.12 SWING GATES

A. Swing gates shall comply with ASTM F900.

B. Gate frame members shall be of minimum sizes as follows:

1. Up to 6-ft high, one of the following:

   a. 1.66-in. O.D. Group IA pipe, regular or high strength grade.
   b. 1.66-in. O.D. Group IC pipe.

2. Over 6-ft high, one of the following:

   a. 1.90-in. O.D. Group IA pipe, regular or high strength grade.
   b. 1.90-in. O.D. Group IC pipe.

3. Provide interior bracing at maximum of 8 ft vertically and horizontally.

C. Hinges shall be pressed or forged steel or malleable iron to suit gate size, non-lift-off type, offset to permit 180 deg gate opening. Provide 1-1/2 pair of hinges for each leaf over 6-ft nominal height.

D. Latch shall be forked type or plunger-bar type to permit operation from either side of gate. Provide padlock eye as integral part of latch.

E. Provide keeper for all vehicle gates, which automatically engages gate leaf and holds it in open position until manually released.

F. Provide gate stops for all double gates, consisting of mushroom type flush plate with anchors. Set in concrete to engage center drop rod or plunger bar. Provide locking device and padlock eyes as an integral part of latch, permitting both gate leaves to be locked with a single padlock.

2.13 SLIDING GATES

A. Sliding gates shall comply with ASTM F1184, Type II, cantilever.

B. Provide manufacturer's standard top rail incorporating track for top roller and guide posts to keep gate on rollers. External rollers shall have accessible grease fittings, and internal rollers shall have sealed lubricant ball bearings. Brace frame to prevent sagging and apply fabric to entire gate.

C. Provide lockable positive latch and other hardware and accessories as required.

2.14 GROUNDING MATERIALS

A. Connectors and Grounding Rods: Listed and labeled for complying with UL 467.

1. Connectors for Below-Grade Use: Exothermic welded type.
2. Grounding Rods: Copper-clad steel, 1/2 in. x 6 ft.

2.18 CONCRETE

A. Job-mixed or ready-mixed concrete with minimum 3000 psi compressive strength at 28 days, 1- to 4-in. slump, minimum 5.5 bags of cement per cu yd, and 3 to 5 percent air content by volume.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Install fence in compliance with ASTM F567. Do not begin installation and erection before final grading is completed, unless otherwise permitted.

B. Pull post spacing shall be determine by contractor. Pull posts spacing shall not exceed 500 ft.

C. Corner, pull, and gate posts, and one post on each side of these posts, shall be set in concrete. The remaining intermediate posts shall be driven or set in concrete, at Contractor's option.

3.02 CONCRETE SET POSTS

A. Excavate post holes to minimum diameters as recommended by fence manufacturer, but not less than as indicated on the Drawings. Space line posts evenly, 10 ft or less apart, unless otherwise indicated.

B. Excavate holes to depth as shown on the Drawings when in firm, undisturbed soil. Excavate deeper as required for adequate support in soft and loose soils, and for posts with heavy lateral loads.

C. Remove all loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.

D. Center and align posts in holes as shown on the Drawings.

E. Place concrete around posts in a continuous pour, and vibrate or tamp for consolidation. Check each post for vertical and top alignment; hold in position during placement and finishing operations.

F. Trowel finish tops of footings, and slope or dome to direct water away from posts. Set keeps, stops, sleeves and other accessories into concrete as required.

G. Keep exposed concrete surfaces moist for at least 7 days after placement, or cure with membrane curing material, or other acceptable curing method.

3.03 DRIVEN POSTS

A. Drive posts plumb to the required depth and alignment. If driven posts do not have adequate lateral stability to support fence in a plumb manner, the length of driven posts shall be increased or they shall be replaced with posts set in concrete.

B. Any post which is damaged during driving shall be replaced with an undamaged post.

3.04 FENCE ERECTION

A. Allow concrete to attain at least 75% of its minimum 28 day compressive strength, but in no case sooner than 7 days after placement, before rails, tension wires, barbed wire, or fabric are installed. Do not stretch and tension fabric and wires, and do not hang gates, until concrete has attained its full design strength.

B. Run top rail continuously through post caps or extension arms, bending to radius for curved runs. Provide expansion couplings as recommended by fencing manufacturer.

C. Install braces so posts are plumb when diagonal rod is under proper tension.

D. Install tension wire within 6 in. of bottom of fabric before stretching fabric and tie to each post with not less than same gage and type of wire. Pull wire taut, without sags. Fasten fabric to tension wire with 11-gage hog rings of same material and finish as fabric wire, spaced maximum 24 in. o.c.

E. Leave approximately 2 in. between finish grade and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.

F. Thread stretcher bars through or clamp to fabric 4 in. o.c., and secure to posts with metal bands spaced 15 in. o.c.

G. Tie fabric to line posts with wire ties spaced 12 in. o.c. Tie fabric to rails and braces with wire ties spaced 24 in. o.c. Tie fabric to tension wires with hog rings spaced 24 in. o.c. Use U-shaped wire, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns. Bend ends of wire to minimize hazard to persons or clothing.

H. Install nuts for tension band and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

I. Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage, as recommended by fence manufacturer. Adjust hardware for smooth operation and lubricate where necessary.

J. Repair damaged coatings in accordance with manufacturer's recommendations.

3.05 GROUNDING AND BONDING

A. Fence and Gate Grounding:

1. Ground for fence and fence posts shall be a separate system from ground for gate and gate posts.
2. Install ground rods and connections at maximum intervals of 1000 ft.
3. Ground fence on each side of gates and other fence openings.
4. Bond metal gates to gate posts.

B. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 in. below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.

C. Connections:

1. Make connections with clean, bare metal at points of contact.
2. Make above-grade ground connections with mechanical fasteners.
3. Make below-grade ground connections with exothermic welds.
4. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

END OF SECTION

SECTION 32 39 74

PARKING SIGNS

PART 1 GENERAL

1.01 SUMMARY

A. Provide parking signs as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 SUBMITTALS

A. Shop Drawings: Submit shop drawings for all signs. Show type of sign, materials, dimensions, colors, text, graphics, and method of attachment.

B. Samples: Submit samples for selection of crushed granite color.

C. Make submittals in accordance with Section 01 33 00.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Ship sign materials and attachment devices carefully packaged to prevent surface damage. Include shop drawings and templates to insure correct installation and arrangement of all materials.

PART 2 PRODUCTS

2.01 PARKING SIGNS

A. Minimum 12 in. x 18 in. x 18 ga cold rolled galvanized steel, treated for a baked enamel finish. Colors, text and design shall be as indicated on the Drawings. Handicapped parking signs shall meet the requirements of Wis. Adm. Code.

B. Signs shall be drilled for mounting on sign post specified below. Provide stainless steel mounting hardware for attaching sign to post.

C. Each sign shall be mounted on a single 2 in. square steel post with painted enamel finish. See Drawing details.

2.02 PVC PIPE SLEEVES

A. ASTM D1785, Sch. 40, PVC pipe.

2.03 CRUSHED GRANITE

A. Crushed decomposed granite with 100% of material passing a 3/8 in. sieve and finely graded down to a No. 200 sieve. Color of granite shall be as selected by A/E from supplier's standard colors. Suppliers of this material include, but are not limited to, Kafka Granite, Stratford, WI, www.kafkagranite.com.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install signs in accordance with manufacturer's instructions, shop drawings, and setting templates.

B. Signs shall be set plumb and level.

C. Touch-up any abrasions to finish. Completely clean signs of all foreign matter.

END OF SECTION

SECTION 32 99 10

TURF REPLACEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Replace turf and appurtenant improvements disturbed by construction as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

B. Restore surfaces as near as practical to condition existing prior to construction and as designated. Clean site and remove equipment, salvaged material, unused materials, cleared brush and trees, and debris resulting from construction. Repair or replace turf, shrubs, trees, and other items within and beyond construction limits damaged or destroyed through carelessness or failure to follow reasonable safeguards.

C. Unless otherwise indicated, locations and types of Turf Replacement shall be in accordance with Part 4 Schedules.

1.02 RELATED SECTIONS

31 05 10 Site Preparation: For topsoil removal.

1.03 MEASUREMENT AND PAYMENT

A. Replacement of turf, fields, and similar improvements will be paid for at the contract lump sum price for LANDSCAPE RESTORATION.

PART 2 PRODUCTS

2.01 TOPSOIL

A. Loam, sandy loam, silt loam, silty clay loam, or clay loam humus-bearing surface soil; 100% passing the 1 in. sieve and at least 90% passing the No. 10 sieve; pH range of 6.0 to 7.0; minimum organic material content of 3 percent; reasonably free of subsoil, clay lumps, brush, and weeds; and free of extraneous matter harmful to plant growth.

B. Obtain imported topsoil from naturally well-drained local sources; do not obtain from bogs or marshes. Topsoil salvaged from within work area may be reused if it meets the above requirements.

2.02 LIME

A. Agricultural grade limestone complying with requirements of WisDOT Std. Spec., Section 629.

2.03 FERTILIZER

A. Solid or liquid form, commercial fertilizer complying with WisDOT Std. Spec., Section 629, for Type A fertilizer.

2.04 SOD

A. Sod complying with WisDOT Std. Spec., Section 631, for lawn sod.

2.05 GRASS SEED

A. Seed complying with WisDOT Std. Spec., Section 630, for the seed mixtures indicated in Part 3 Execution for each type of turf replacement.

2.06 MULCH

A. Mulch materials complying with WisDOT Std. Spec., Section 627.

2.07 EROSION MAT

A. Erosion mat complying with WisDOT Std. Spec., Section 628, and WisDOT Erosion Control Product Acceptability List (PAL) for class and type of erosion mat indicated on the Drawings. If not indicated provide Class I, Type B, erosion mat.

PART 3 EXECUTION

3.01 TURF REPLACEMENT, GENERAL

A. Comply with construction methods of WisDOT Std. Spec., unless otherwise indicated.

B. Place topsoil to depth indicated for type of turf replacement.

C. Apply lime to salvaged topsoil at a uniform rate of 100 lb per 1000 sq ft (based on index zone of 60-69) unless optional Contractor-furnished soil test results permit less. Liming is not required for imported topsoil meeting specified pH range.

D. Immediately prior to seeding or sodding, apply fertilizer at a rate of 7 lb per 1000 sq ft.

3.02 TYPE "A" TURF REPLACEMENT

A. Place 6 in. of topsoil, prepare soil, grade smooth, and lay sod.

3.03 TYPE "B" TURF REPLACEMENT

A. Place 6 in. of topsoil, prepare soil, and seed with WisDOT Std. Spec. Mixture No. 40 at the rate of 3 lb per 1000 sq ft. Seed using WisDOT Std. Spec., Section 630, Method A or Method B.

3.04 TYPE "C" TURF REPLACEMENT

A. Place 4 in. of topsoil, prepare soil, and seed with WisDOT Std. Spec. Mixture No. 10 (where average loam, heavy clay, or moist soils predominate) or WisDOT Std. Spec. Mixture No. 20 (where light, dry, well-drained, sandy or gravelly soils predominate) at a rate of 3 lb per 1000 sq ft. Seed using WisDOT Std. Spec., Section 630, Method A or Method B.

3.05 TYPE "D" TURF REPLACEMENT

A. Place 4 in. of topsoil, prepare soil, and seed with WisDOT Std. Spec. Mixture No. 20 at rate of 3 lb per 1000 sq ft. Seed using WisDOT Std. Spec., Section 630, Method A or Method B. Install erosion mat.

3.06 FIELD RESTORATION

A. Restoration of cultivated lands shall include salvaging full depth of topsoil, stockpiling, and replacing topsoil in an even layer at least 6 in. thick following backfilling.

3.07 MULCHING

A. Mulch all seeded areas at a uniform rate of 1/2 to 3 ton per acre (loose depth 1/2 to 1-1/2 in.), except where erosion mat is used. Anchor mulch using WisDOT Std. Spec., Section 627, Method A, B, or C.

3.08 EROSION MAT INSTALLATION

A. Where shown or specified, provide erosion mats installed and stapled according to manufacturer's recommendations.

3.09 MAINTENANCE

A. Maintain seeded/sodded areas for 30 days or until satisfactory growth has been achieved, whichever is longer. Maintenance shall include replacement of eroded areas, watering as needed to prevent burn off, and other work as necessary to establish healthy growth. Satisfactory growth for seeded areas shall be considered healthy grass growth with no bare spots larger than 6 in. square and total bare spots not exceeding 2 percent of total seeded area.

B. After turf replacement work, or portions of turf replacement work, are completed, Contractor and A/E shall review areas that have been restored. If restored areas are acceptable, Contractor's maintenance period shall begin.

C. If erosion or washouts occur during maintenance period, Contractor shall reshape and reseed or sod. Reshaped areas shall be maintained for an additional 30 days. Contractor shall be responsible for reshaping eroded areas a maximum of two times, after which Owner will assume responsibility.

D. Areas seeded after September 15 which fail to become established in the fall shall be reseeded and fertilized the following spring before June 1.

PART 4 SCHEDULES

4.01 TURF REPLACEMENT SCHEDULE

Location	Turf Replacement
Residential Lawns	Type A or B
Boulevards and Other Mowed Areas	Type B
Shoulders, Ditches, and Semi-Developed Grass Areas	Type C
Slopes Greater Than 3H:1V (when designated on Drawings)	Type D

END OF SECTION

SECTION 33 05 07

HORIZONTAL DIRECTIONAL DRILLING

PART 1 GENERAL

1.01 SUMMARY

A. Provide horizontal directional drilling of pipe as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

B. Directionally controlled horizontal drilling operation shall consist of drilling a small diameter pilot hole along alignment and at elevations indicated on Drawings; reaming pilot hole to a diameter suitable for installation of prefabricated casing or carrier pipe; installing casing or carrier pipe along reamed hole; and (where applicable) installing carrier pipe inside casing pipe.

1.02 RELATED SECTIONS

31 20 00 Earth Moving.
31 23 33 Trenching and Backfilling.
33 14 13 Water Main.

1.03 MEASUREMENT AND PAYMENT

A. Horizontal directional drilling between the locations shown on the Drawings; including casing pipe (where required), carrier pipe, fittings, tracer wire, and appurtenances; will be measured horizontally and paid for at the contract unit price per linear foot for (diameter) (pipe system) - DIRECTIONALLY DRILLED.

1.04 NOTIFICATIONS

A. At least 72 hours prior to beginning operations, notify A/E and Owner.

B. Notify representatives of facilities being crossed in accordance with provisions of each permit.

1.05 SUBMITTALS

A. Product Data: Submit product data for pipe, fittings, and tracer wire.

B. Work Plan and Schedule: Submit proposed construction work plan and schedule to A/E a minimum of 5 working days prior to beginning work. Details shall include:

1. Description of equipment to be used.
2. List of personnel and their qualifications and experience.
3, Schedule of work activities.
4. Type of drilling fluid and method of disposal.
5. Contingency plan for detecting and responding to inadvertent drilling fluid returns.

C. Record Drawings: After completion of pilot hole drilling, submit tabulation of pilot hole coordinates as required under "Pilot Hole" article.

D. Make submittals in accordance with Section 01 33 00.

1.06 DRILLING SITE

A. Additional work space and access may be acquired by Contractor only with approval of Owner and applicable property owners. Expense of acquiring additional work space shall be

borne by Contractor. Site access, clearing, grading, and preparation necessary for construction operations shall be performed as required.

PART 2 PRODUCTS

2.01 CASING PIPING

A. Casing piping (where required) shall be steel pipe. An exterior coating and interior liner on casing is not required.

B. The minimum wall thickness shall be as shown on Drawing details. Provide a higher thickness of pipe if required by the loads imposed by pulling operation.

2.02 CARRIER PIPING - WATER MAIN

A. Carrier piping shall be polyethylene pipe conforming to AWWA C906 with DR number and PE compound number required to give pipe a pressure rating of not less than 160 psi at 73 deg F. Pipe dimensions shall be in accordance with ductile iron pipe standard (DIPS). Joints and fittings shall be butt heat fusion type, ASTM D3261.

B. The pressure rating specified above shall be considered a minimum. Provide a higher class of pipe if required by the loads imposed by pulling operation.

C. Pipe shall have an integral blue stripe to identify its use as water piping.

2.03 CARRIER PIPING - SEWER AND FORCE MAIN

A. Carrier piping shall be polyethylene pipe conforming to ASTM D2239, ASTM D3035, or ASTM F714 and having a minimum working pressure of 160 psi at 73 deg F. Joints and fittings shall be butt heat fusion type, ASTM D3261.

B. The pressure rating specified above shall be considered a minimum. Provide a higher class of pipe if required by the loads imposed by pulling operation.

C. Pipe shall have an integral green stripe to identify its use for sewer or force main piping.

2.04 MECHANICAL JOINT ADAPTERS

A. For connecting polyethylene pipe to mechanical joint fittings, valves, and other products, provide polyethylene, butt fusion weld mechanical joint adapters. Adapter shall have an integral collar that in combination with the mechanical joint serves to restrain the pipe connection.

2.05 PRE-MANUFACTURED CASING SPACERS

A. Pre-manufactured casing spacers intended to position carrier pipe in casing and restrain against movement (including floatation). Casing spacers shall consist of stainless steel or epoxy-polymer-coated steel band and risers, elastomeric liner, abrasion resistant polymer skids/runners, and stainless steel fasteners.

2.06 PRE-MANUFACTURED CASING END SEALS

A. Pre-manufactured synthetic rubber casing end seal with minimum 1/8 in. thickness and stainless steel band and fasteners.

2.07 TRACER (LOCATING) WIRE

A. Tracer wire shall be No. 12 AWG solid, copper-clad steel wire with minimum 1,150 lb tensile break load and 45 mil blue HDPE jacket for water piping and green HDPE jacket for sewer or

force main piping; Copperhead Industries "SoloShot Extra High Strength #1245-EHS", or approved equal. Tracer wire splices shall be made with twist lock wire connectors; Copperhead Industries "SnakeBite Locking Connector", or approved equal.

B. The wire strength and insulation specified above shall be considered a minimum. Provide a stronger wire, thicker insulation, or pull multiple wires to assure that tracer wire survives the loads imposed by pipe pulling operation.

2.08 DRILLING FLUIDS

A. Drilling fluid shall be composed of naturally occurring clay and water. Non-toxic additives may be added to drilling fluid to optimize its properties. Drilling fluid composition shall meet permit requirements and environmental regulations.

2.09 WATER

A. Contractor shall procure, transport, and store water as required for its operations.

A. Water for directional drilling work may be obtained from Owner as specified in Section 01 01 00 / 01 50 00.

PART 3 EXECUTION

3.01 EXCAVATING AND BACKFILLING

A. Excavating and backfilling as required for directional drilling entry and exit pits and for tie-in of directionally drilled pipe to other work shall comply with Section 31 20 00 / 31 23 33.

3.02 JOINING POLYETHYLENE PIPE AND FITTINGS

A. Join polyethylene pipe using the butt fusion method, ASTM D2657. Comply with pipe manufacturer's recommended procedures.

3.03 CONNECTING POLYETHYLENE PIPE TO OTHER MATERIALS

A. Water Main: Where polyethylene pipe that has been directionally drilled is connected to mechanical joint fittings, valves, or other products, fusion weld a polyethylene mechanical joint adapter on to end of pipe before making connection. Adapter shall not be attached to pipe until pipe is in final position after directional drilling operation.

3.04 MONITORING

A. Contractor shall at all times provide and maintain instrumentation which will accurately locate pilot hole position in X, Y, and Z axis relative to ground surface. Drilling fluid flow rate and pressure shall also be monitored. A/E and Owner shall have access to this data at all times during the operation.

3.05 PILOT HOLE

A. A pilot hole shall be drilled along the path shown on the Drawings to the following tolerances:

1. Elevation (Pressure Pipe): Plus or minus 1.0 ft. Maintain minimum depth of bury indicated on the Drawings.
2. Elevation (Gravity Pipe): Plus or minus 0.2 ft up to 100 ft, and an additional plus or minus 0.1 ft per 100 ft thereafter. Backfall in pipe is not allowed.
3. Alignment: Plus or minus 2 ft.
4. Curve Radius: Minimum 250 ft or pipe manufacturer’s recommendation, whichever is greater.
5. Entry Point: At the location required to properly perform the work.

6. Exit Point: At the location required to properly perform the work. Pilot hole shall penetrate ground surface within plus 10 ft and minus 0 ft of length shown on the Drawings.

B. Contractor shall plot actual horizontal and vertical alignment of pilot bore at intervals not exceeding 50 ft. This "as-built" plan and profile shall be updated as pilot bore is advanced.

C. In all cases, right-of-way restrictions shall take precedence over the tolerances listed above. Regardless of the tolerance achieved, no pilot hole will be accepted if it will result in any or all of pipeline being installed in violation of right-of-way restrictions. In all cases, concern for adjacent utilities and structures shall take precedence over the tolerances listed above. Specification of tolerances does not relieve Contractor from responsibility for safe operations or damage to adjacent utilities and structures.

D. After completion of pilot hole drilling, Contractor shall provide a tabulation of coordinates to A/E, referenced to drilling entry point, which accurately describes location of pilot hole.

3.06 REAMING AND CASING/CARRIER PIPE PULL-BACK OPERATION

A. General: Upon completion of pilot hole drilling, hole shall be enlarged by reaming and preassembled pipeline pull section shall be installed in hole. Pipeline shall be preassembled to provide one continuous pulling operation. Pipeline shall be temporarily capped before pulling operation to prevent any drilling fluid, water, or debris from entering pipeline.

B. Prereaming: Prereaming operations shall be conducted at discretion of Contractor. All provisions of this specification relating to simultaneous reaming and pulling back operations shall also pertain to prereaming operations.

C. Pulling Loads: The maximum allowable tensile load imposed on pipeline pull section shall be calculated based on 70 percent of the specified minimum yield strength (SMYS) of the pipe material. If more than one value is involved for a given pull section, the lesser value shall govern. Contractor shall maintain accurate records of pull forces at all times for review by A/E.

D. Torsional Stress: A swivel shall be used to connect pipeline pull section to reaming assembly to minimize torsional stress imposed on section.

E. Pull Section Support: Pull section shall be supported as it proceeds during pull-back so that it moves freely and pipe is not damaged.

F. External Collapse Pressure: Pull section shall be installed in reamed hole in such a manner that external pressures are minimized. Any damage to pipe resulting from external pressure during installation shall be the responsibility of Contractor.

G. Buoyancy Modification: Buoyancy modification shall be used at the discretion of Contractor. Any buoyancy modification procedure proposed for use shall be submitted to A/E for acceptance. No procedure may be used which has not been reviewed by A/E. Contractor will be responsible for any damage to the pipeline resulting from buoyancy modification.

3.07 PULL-BACK OPERATION FOR CARRIER PIPE INSIDE CASING PIPE

A. Upon completion of casing pipe installation (where required), carrier pipe shall be installed in casing. Support carrier pipe for its entire length either by means of hardwood planks strapped to pipe in such a way as to support pipe and prevent it from resting on casing pipe, or by means of pre-manufactured spacers designed for casing pipe use. The pulling load, torsional stress, and pull section support requirements specified for the casing pipe shall also apply to this work.

B. Fill void space between casing and carrier pipes with blown sand, cement grout, fly ash grout, or cement-sand slurry grout.

C. Seal ends of casing with pre-manufactured casing end seals. Casing pipes with rigid carrier piping may be sealed using a 12 in. concrete bulkhead. Place 15 lb asphalt-impregnated felt between concrete and carrier pipe.

3.08 HANDLING OF DRILLING FLUIDS

A. Recirculation: Contractor shall employ his best efforts to minimize excess drilling fluid by recirculating surface returns. This shall include, but not be limited to, provision of a solids control system sized and configured to remove spoil from drilling fluid surface returns so that fluid may be returned to active system without hindering drilling progress.

B. Inadvertent Returns: Contractor shall employ his best efforts to maintain full annular circulation of drilling fluids. Drilling fluid returns at locations other than entry and exit points shall be minimized. In the event that annular circulation is lost, Contractor shall take steps to restore circulation. If inadvertent surface returns of drilling fluids occur, they shall be immediately contained with hand-placed barriers (hay bales, sandbags, silt fences, etc.), and collected using pumps, where practicable. If amount of surface return is not great enough to be collected, affected area shall be flushed with fresh water and fluid shall be allowed to dry and dissipate naturally. If amount of surface return exceeds that which can be contained with hand-placed barriers, small collection sumps (less than 5 cu yd) may be used. If amount of surface return exceeds that which can be contained and collected in small sumps, drilling operations shall be suspended until surface return volumes can be brought under control. Clean-up of inadvertent returns shall be the responsibility of Contractor and shall be handled promptly. All inadvertent returns, regardless of size or volume, shall be promptly reported to A/E.

C. Disposal: Disposal of excess drilling fluids and spoil shall be the responsibility of Contractor and shall be conducted in compliance with environmental regulations, right-of-way and workspace agreements, and permit requirements. No drilling fluids or soil cuttings shall be left in right-of-ways or project areas after project completion. Drilling fluid and spoil disposal procedures proposed for use shall be submitted to A/E for acceptance. No procedure may be used which has not been reviewed by A/E.

3.09 TRACER (LOCATING) WIRE INSTALLATION

A. Install tracer wire by pulling it along with the carrier pipe. Attach wire to pulling eye and to top of pipe at 24 in. o.c. with 8 mil thermoplastic tape wrapped a minimum of two full times around pipe.

B. Provide two access points for each continuous section of tracer wire. Access points shall be located no more than 1,000 ft apart.

1. For Water Main: Bond tracer wire to a hydrant or a valve box with a conductivity strap and brass bolt and nut. Termination at grade is not required.
2. For Sewer and Force Mains: Acceptable access points are through a pump station, valve box, or manhole. If none of these are available, make tracer wire available through a tracer wire access box.

C. Test tracer wires to verify conductivity. Repair wires not showing conductivity.

3.10 DISINFECTION

A. Disinfect and test water main pipe for bacteria in accordance with Section 33 14 13.

3.11 PRESSURE AND LEAKAGE TEST

A. Carrier pipe shall be pressure and leak tested in accordance with the requirements of Section 33 14 13.

END OF SECTION

SECTION 33 05 60

MANHOLES AND STRUCTURES

PART 1 GENERAL

1.01 SUMMARY

A. Provide manholes and structures as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 RELATED SECTIONS

31 23 33 Trenching and Backfilling.
33 31 26 Pressure Sewer.
33 42 12 Storm Sewer.

1.03 MEASUREMENT AND PAYMENT

A. Manholes, including risers, base, cone/top, adjusting rings, paving extension ring (if specified), and appurtenances, will be paid for at the contract unit price per each for MANHOLE (size).

B. Storm inlets and catch basins will be paid for at the contract unit price for each STORM INLET (size) or CATCH BASIN (size).

C. Castings, consisting of a frame and lid or grating, will be paid for at the contract unit price each for CASTING (type).

D. Connecting to existing manholes by making new openings as specified and installing pipeline will be paid for at the contract unit price each for CONNECT TO EXISTING Sanitary Sewer.

E. Adjustment of existing castings to required grade by adding or removing adjusting rings and/or (if specified) paving extension rings will be paid for at the contract unit price each for ADJUST EXISTING CASTING.

1.04 SUBMITTALS

A. Shop Drawings: Submit shop drawings for manholes and other structures in accordance with Section 01 33 00.

PART 2 PRODUCTS

2.01 MANHOLES

A. General: Manholes shall be precast reinforced concrete and shall comply with ASTM C478.

B. Precast Risers: Precast reinforced concrete of 48-in. inside diameter, unless otherwise designated. Joint shape shall be compatible with designated joint materials. Steps and pipe seal components shall be cast into riser sections.

C. Base: Precast or cast-in-place concrete base. Precast bases shall be minimum 6-in. thick and either separate or integral with first riser. Cast-in-place concrete bases shall be minimum 12-in. thick and cast with first riser embedded at least 4 in., unless otherwise designated.

D. Top: Manhole top shall be precast eccentric cone. Where space does not permit a cone top, a minimum 6-in. thick (48-in. diameter) or 8-in. thick (60-in. or greater diameter) slab top with eccentric opening may be substituted.

2.02 INLETS AND CATCH BASINS

A. Small inlets and catch basins (36 in. or less diameter) shall be reinforced concrete pipe sections, ASTM C76, sizes as shown on Drawings.

B. Rectangular inlets and catch basins shall be precast reinforced concrete, ASTM C478 or ASTM C913, dimensions as shown on Drawings.

C. Where underdrain pipe enters inlets and catch basins, pipe entrance holes for underdrain pipe shall be pre-formed.

2.03 MANHOLE AND STRUCTURE APPURTENANCES

A. Adjusting Rings: Precast reinforced concrete rings with diameter/dimensions matching casting frame or Expanded polypropylene grade adjustment rings manufactured using a high compression molding process to produce rings with a finished density of 7.5 pcf. Include manufacturer's recommended adhesive/sealant. Provide Cretex "Pro-Ring", or approved equal.

B. Joint Sealant: Rubber ring gaskets or butyl rubber sealant. Rubber ring gaskets shall comply with ASTM C443. Butyl rubber sealant shall be preformed, high adhesion material, packaged ready for use between protective paper strips, complying with ASTM C990.

C. Pipe Seals: Flexible, watertight, gasketed seals for pipe entrance holes complying with ASTM C923. Pipe entrances into storm manholes (only) may be made with non-shrink grout complying with ASTM C1107 in lieu of flexible seals.

D. Manhole Steps: Cast iron or steel reinforced plastic and complying with ASTM C478. Cast iron steps shall conform to ASTM A48, Class 30B, and have a minimum cross-section of 1 in. in any direction. Steel reinforced plastic steps shall be copolymer polypropylene complying with ASTM D4101 reinforced with a deformed 1/2 in. reinforcing bar complying with ASTM A615, Grade 60.

2.04 CASTINGS

A. Castings shall be made from ASTM A48, minimum Class 30, cast iron of uniform quality and free from blow holes, porosity, hard spots, shrinkage defects, cracks, and other serious defects.

1. Fabricate castings true to pattern with machined bearing faces between frame and lid or grate.
2. Provide traffic-rated castings, unless otherwise noted.

B. Provide castings as designated on the Drawing Details, or approved equal.

B. Provide castings by Neenah Foundry, East Jordon Iron Works, or approved equal. Neenah products are listed below to establish a standard of type, function, appearance, and quality. Casting "type" required for each structure is designated on the Drawings.

Type	Typical Use	Casting
B6	Beehive Inlet	Neenah R-2560-E1 or Neenah R-2561
C	Flat Inlet	Neenah R-3210-A
H	Curb Inlet, 2x3-ft opening	Neenah R-3067-R
H-D	Drive Over Inlet, 2x3-ft opening	Neenah R-3501-R

J	Storm Manhole	Neenah R-1661
J-S	Sanitary Manhole	Neenah R-1660-5260

2.05 CAST-IN-PLACE CONCRETE

A. Job-mixed or ready-mixed concrete in accordance with Section 03 30 00, Class CC or better.

PART 3 EXECUTION

3.01 MANHOLE CONSTRUCTION

A. Construct standard manholes of precast or cast-in-place bases, precast risers, precast top section, adjusting rings, and appurtenances in accordance with Drawing Details. Alternate construction with cast-in-place concrete forms or other procedures shall be submitted for review.

B. Excavate as necessary to construct manholes. Set precast bases on firm, level, granular bedding. Pour cast-in-place bases on undisturbed earth; if over excavation occurs, backfill with concrete or compacted granular material. On wet subgrades, provide 6 in. of washed or crushed stone under bases.

C. Join risers, top sections, adjusting rings, and castings using compatible rubber rings or butyl rubber sealant. When butyl rubber sealant is used, joining surfaces shall receive manufacturer's approved primer, as required. Under weight of superimposed sections, rubber rings or sealant shall form a tightly packed, watertight seal in annular joint space.

D. Adjust manhole castings to grade shown for finished pavement. Match street cross-slope.

E. Backfill and compact soils around manholes as required for adjacent piping.

3.02 INLET AND CATCH BASIN CONSTRUCTION

A. Construct inlets and catch basins of precast or cast-in-place bases, precast risers, adjusting rings, and appurtenances in accordance with Drawing Details. Alternate construction with cast-in-place concrete forms or other procedures shall be submitted for review.

B. Excavate as necessary to construct structures. Set precast bases on firm, level, granular bedding. Pour cast-in-place bases on undisturbed earth; if over excavation occurs, backfill with concrete or compacted granular material. On wet subgrades, provide 6 in. of washed or crushed stone under bases.

C. Join risers, adjusting rings, and castings using compatible rubber rings or butyl rubber sealant. When butyl rubber sealant is used, joining surfaces shall receive manufacturer's approved primer, as required. Under weight of superimposed sections, rubber rings or sealant shall form a tightly packed, watertight seal in annular joint space.

D. Adjust castings to grade shown for finished pavement. Match street cross-slope.

E. Backfill and compact soils around structures as required for adjacent piping.

3.03 PIPING INSTALLATION

A. Complete pipe seals in accordance with manufacturer's instructions.

1. For manholes and other structures with flexible seals, support pipe outside structures by bedding as specified for type of pipe installed.
2. For manholes and other structures with rigid (non-shrink grout) seals, support pipe outside structures until reaching undisturbed soil or to first joint by a 6 in. thick wall of

cast-in-place concrete, brick, or solid concrete block contoured at top to fit lower 1/3 of pipe.

B. Manholes with more than one entrance pipe and manholes at changes in alignment or grade shall have formed flow channels with smooth radius transitions. Unless precast in shop, flow channel shall not be poured until manhole is completely built and backfilled. Flow channel shall be the same diameter as the larger of adjoining sewers.

C. When flow channels are field poured in manholes with flexible seals, maintain seal flexibility by plugging interior space between pipe and manhole wall with butyl rubber sealant.

D. For inlets, slope invert toward pipe at 1/2 in. per ft.

3.04 PROVISION FOR FUTURE CONNECTION

A. Connections for future sewers, when indicated, shall consist of a short piece of sewer terminating with a bell end and stopper or bulkhead not more than 1 ft or one stub diameter outside manhole wall, unless otherwise shown. If no elevation is given, set invert at spring line of main sewer.

3.05 CONNECTING TO EXISTING MANHOLES

A. Where a new connection is required to an existing manhole, core drill opening in manhole riser to avoid damage to existing manhole. Retrofit a new pipe seal (manhole boot) into opening in order to create a watertight seal.

B. For storm manholes (only), a new connection to an existing manhole may be made by neatly sawing a new opening and filling the annular spacing between new pipe and manhole wall using non-shrink grout.

3.07 ADJUSTING EXISTING CASTINGS

A. Manholes: Adjust existing manhole castings in work area to required elevation by removing or adding adjusting rings or masonry and reinstalling fixtures.

1. Bed each precast concrete adjusting ring and casting with butyl rubber sealant or join each polypropylene adjusting ring and casting with adjusting ring manufacturer's recommended adhesive/sealant.

B. Inlets and Catch Basins: Adjust existing inlet and catch basin castings in work area to required elevation by removing or adding adjusting rings or masonry and reinstalling fixtures.

1. Bed each precast concrete adjusting ring and casting with butyl rubber sealant or join each polypropylene adjusting ring and casting with adjusting ring manufacturer's recommended adhesive/sealant.

END OF SECTION

SECTION 33 14 13

WATER MAIN

PART 1 GENERAL

1.01 SUMMARY

A. Provide water main as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 RELATED SECTIONS

31 23 33 Trenching and Backfilling.

1.03 MEASUREMENT AND PAYMENT

A. All work will be considered incidental to contract unit prices for WATER SERVICE and HYDRANT LEAD, unless a separate bid item is included in Bid Schedule.

B. Water service will be paid for at the contract unit price per linear foot for (size) WATER SERVICE, and (size) DUCTILE IRON HYDRANT LEAD measured horizontally through valves and fittings to centerline of connecting main, service, end of pipe, valve, fitting, or end of service. Fittings (bends, tees, offsets, curb stop, etc.) and tracer wire, which are a necessary part of the work, will be incidental to unit price for water service.

C. Valves and valve boxes will be paid for at the contract unit price per each (size) GATE VALVE.

D. Hydrants will be paid for at the contract unit price per each HYDRANT ASSEMBLY. Cost shall include 6” valve.

E. Connection of new water service to existing water main including locating existing pipe and furnishing and installing fittings for horizontal and vertical adjustment (if required), will be paid for at the contract unit price each for CONNECT TO EXISTING WATER MAIN.

F. Connection of existing water services (2-inch diameter or less) or existing irrigation system to new water main, including locating and verifying service, temporary service if needed, and required fittings and couplings, will be paid for at the contract unit price each for CONNECT TO EXISTING IRRIGATION SERVICE

G. When tracer wire and tracer wire access points for plastic pipe are specified, they shall be included in the contract unit price for WATER MAIN or WATER SERVICE, as applicable.

1.04 SUBMITTALS

A. Product Data: Submit six (6) sets of the following for approval:

1. Letter of certification and representative test reports by manufacturer for all pipe delivered to the work site for EACH material item furnished.
2. Representative test reports for EACH material item furnished to the Work Site.
3. Installation manuals for all valve, operators, hydrants, etc.
4. Maintenance manuals for all mechanical equipment furnished to the Work Site.

B. Test Reports: Submit test reports for:

1. Bacteriological tests.
2. Pressure and leakage tests.
3. Electrical continuity tests.

C. Record Drawings: Accurately record locations of pipe, valves, fittings, service laterals, and field changes on a set of Drawings. Prior to final application for payment, deliver record drawings to A/E.

D. Make submittals in accordance with Section 01 33 00.

1.05 REGULATORY REQUIREMENTS

A. The wetted surface of pipes, pipe fittings, and fixtures (except fire hydrants) in contact with potable water shall have a lead content of less than or equal to 0.25% by weight.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Carefully unload and store pipe to prevent damage to pipe and surface coatings. Pipe shall not be skidded upon ground. Repair damaged coatings.

PART 2 PRODUCTS

2.01 WATER PIPE, GENERAL

A. Water main and water services shall be of material and type indicated below. Each pipe shall be stamped or indelibly marked with its type and class and the manufacturer's name or mark.

2.02 DUCTILE IRON PIPE

A. Ductile iron pipe shall conform to AWWA C151, Class 52 unless otherwise shown. Pipe sections shall be straight and true circular sections with inner and outer surfaces concentric. Pipe sections shall be at least 16 ft long. Each Ductile Iron Pipe shall be pressure Class 350 or greater, manufactured in the USA, and subject to a hydrostatic pressure test of at least 500 psi at point of manufacture.

B. Fittings shall be Class 350 or greater, conform to AWWA C110 or C153, 250 psi working pressure, and be manufactured in the USA.

C. Pipe and fittings shall have standard thickness cement mortar lining and interior bituminous coating conforming to AWWA C104. Apply bituminous seal coat on exterior of pipe and fittings conforming to AWWA C151. Coatings shall be smooth, tough and tenacious and impervious to water without tendency to scale off, and shall not be brittle.

D. Pipe joints shall be push-on type (slip joint).

E. Joints connecting pipes to fittings, valves, and hydrants, and to other pipes for required restraint length on each side of fittings, shall be restrained by use of wedge type restraining glands on mechanical joint pipe fittings in accordance with current AWWA C-111. All nuts and bolts shall be stainless steel on hydrants and valves.

F. Acceptable Manufacturers of Ductile Iron pipe fittings include the following: American Cast Iron Pipe Co., Clow Water Systems, Co., and Tyler Union.

G. Acceptable restraints include the following: EBAA Megalug, Romac Roma Grip, or approved equal.

G. T-bolts and nuts for mechanical joint pipe and fittings shall be Cor-Blue or have a fluoropolymer coating as pre-approved by the City Engineer.

H. Provide electrical conductivity across joints and fittings in accordance with manufacturer's recommendations. Devices may be cable bond type or a copper conductivity strip, capable of carrying 500 amperes continuously; metal wedges are not permitted.

2.03 PVC PLASTIC PIPE

A. Polyvinyl chloride (PVC) plastic water main, AWWA C900, Pressure Class 235, DR-18, cast iron O.D., with push-on type integral elastomeric gasket bell and spigot joints.

B. Fittings shall be either ductile iron or PVC:

1. Ductile iron fittings shall be mechanical joint type and shall conform to AWWA C110 or C153, 250 psi working pressure. Fittings shall have standard thickness cement mortar lining and interior bituminous coating conforming to AWWA C104. Apply bituminous seal coat on exterior of fittings conforming to AWWA C151. Coatings shall be smooth, tough and tenacious and impervious to water without tendency to scale off, and shall not be brittle.
2. PVC fittings shall be fabricated type conforming to the same standard as PVC pipe.

C. Joints connecting pipes to fittings, valves, and hydrants, and to other pipes for required restraint length of each side of fittings, shall have wedge or grip-ring type restraining glands or harnesses suitable for use with PVC pipe; Ebaa Iron, Sigma, Star Pipe Products, or approved equal. Standard mechanical joint retainer glands will not be acceptable.

D. T-bolts and nuts for mechanical joint fittings shall be Cor-Blue or have a fluoropolymer coating as pre-approved by the City Engineer.

2.04 POLYETHYLENE WATER SERVICE PIPE

A. High Density Polyethylene (HDPE) tubing conforming to AWWA C901, SDR-9 (250 psi), CTS - OD-controlled, with integral blue stripe(s) indicating water service. Name or trademark of manufacturer and type shall be permanently and plainly marked on tubing at intervals not greater than 18 in.

B. Fittings for polyethylene tubing shall be "no lead" cast brass having a lead content of less than or equal to 0.25% by weight, uniform in wall thickness and strength, and free of defect which may affect serviceability. Connections shall be made with resilient seal compression type joints. Internal stainless-steel stiffeners shall be used for all joints. Fittings shall be permanently and plainly marked with name or trademark of manufacturer and a marking identifying the "no lead" content of fitting.

C. Terminal couplings on HDPE services shall be made with a pressure tight joint with a Buna-N beveled gasket, stainless steel insert sleeve equal to Ford 50-series, and compression fitting which includes a grooved clamp equal to: Ford C84-xx, C14-xx, C04-xx, Mueller 110, or approved equal.

2.06 VALVES AND VALVE BOXES

A. Gate valves (10” and smaller diameters) shall be resilient seated type conforming to AWWA C509-94 or AWWA C515, designed for continuous cold hydrostatic working pressure of 150 psi and shop tested to 300 psi. Valves shall have iron body, fully bronze mounted, bronze non-rising stem, a 2-in. square operating nut, opening counterclockwise, two O-ring stem seals, and mechanical joint ends. Interior coating shall be fusion bonded epoxy complying with AWWA C550. Acceptable valves include: Clow R/W, Kennedy R/W-4571, Mueller R/W A-2361 or A-2362, Waterous Series 2500, or pre-approved equal.

1. All exposed and non-epoxy coated bolts and nuts on valves shall be stainless steel; T-Bolts shall be Cor-Blue or have a fluoropolymer coating as pre-approved by the City Engineer

C. Valves shall be provided with a valve box adaptor to prevent settling or shifting of valve box; Adaptor, Inc. (www.adaptorinc.com), or approved equal.

D. Valve boxes shall be cast iron screw type suitable for type of valve, allowing adjustment up to 2 ft, with sections sufficient to extend up and terminate at finished grade. Stay put covers shall be marked "Water". Boxes shall be manufactured in the USA with acceptable manufacturers: Tyler Series 6860 US Domestic or pre-approved equal.

E. All valves shall be furnished with interior and exterior epoxy coatings per AWWA C-550-90.

2.07 TAPPING SLEEVE ASSEMBLY

A. General: Assembly for tapping pipe while it is under pressure shall consist of a sleeve and valve compatible with pipe tapping machine.

B. Standard: MSS SP-60.

C. Tapping Sleeve: Stainless-steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve. Sleeves for HDPE pipe taps shall have spring washers.

D. Valve: AWWA C509 or C515, cast- or ductile-iron, nonrising-stem, resilient-seated gate valve with one raised face flange mating tapping-sleeve flange, 2-in. square operating nut, opening counterclockwise, and interior fusion bonded epoxy coating complying with AWWA C550.

E. Valve Box: Box of the type specified for regular main line valves.

2.08 CORPORATION STOPS, CURB STOPS, AND CURB BOXES

A. Corporation Stops: Corporation stops serving as shutoff valves on service taps on main shall conform to AWWA C800 and shall have resilient seal compression type joints; Mueller B-25000, Ford FB1000, McDonald 74701BQ, or approved equal. For ductile iron water main, provide conductive-type service clamp or saddle if thickness of water main does not allow three full threads engagement by corporation stop. For PVC plastic water main, provide saddle for all service taps.

B. Service saddles: Service saddles shall be used on all corporation valve sizes larger than 1”, subject to specific pipe manufacturer restrictions for the pipe to be tapped. Saddles shall be all 304 stainless, double bolt saddle. Acceptable products for service sizes through 2” corps include: Cascade Series CSC2 and CS22, Ford FS303, PowerSeal 3412AS, Romac Style 306, Smith-Blair 372, or pre-approved equal.

B. Curb Stops: Curb stops serving as shutoff valves shall conform to AWWA C800 and shall have resilient seal compression type joints; Mueller B-25154, Ford B44-M, A.Y. McDonald 76104BQ, or approved equal.

C. Curb Stop Boxes: Curb stop boxes shall be cast iron, minimum 1-1/4 in. inside diameter, Minneapolis pattern, with 7 to 8 ft extension. Lids shall be cast iron with pentagon bolt. Acceptable boxes; Mueller H-10300 and H-10302, Ford E.M. 2-65-56/57 and 2-70-56/57, A.Y. McDonald 5614/15, or approved equal.

D. In conforming to AWWA C800, any brass parts of corporation stops and curb stops in contact with potable water shall be made of "no lead" brass having a lead content less than or equal to 0.25% by weight. A marking identifying the "no lead" content shall be cast or permanently stamped on stops.

2.09 FIRE HYDRANTS

A. Fire hydrants shall be dry-barrel type conforming to AWWA C502, painted Brite Hydrant Red (5 mil DFT), and shall have cast iron body, fully bronze mounted; 5.25-in. main valve opening; 6-in. mechanical joint inlet connection (except push-on joint connections may be used with joint restraint gaskets); 6.5’ depth of bury; one 4-1/2 in. pumper nozzle and two

2-1/2 in. hose nozzles with National Standard Threads; 1-1/2-in. (point to flat) pentagon operating nut, open counterclockwise; caps secured with heavy chains; one 5 ft. long Heavy Duty Candy Cane Fire Hydrant Marker with a spring-equipped L-bracket for hydrant flange bolt mounting; and traffic flange with no-flow separation. Interior coating shall be fusion bonded epoxy complying with AWWA C550. Exterior coating shall be heavy duty exterior enamel of color selected by Owner.

B. Verify size of pumper and hose nozzles with local fire department before furnishing hydrants.

C. Furnish hydrants with drain holes in bottom plugged with brass pipe plugs and reducing bushings, and with an aluminum tag marked "No Drain. Pump After Use."

D. Hydrants shall be Clow Medallion, Kennedy Guardian, Mueller Super Centurion 250 Model A423, Waterous 5.25” Pacer, or pre-approved equal.

E. Hydrant leads shall be six (6) inch, Class 52 ductile iron pipe.

F. Hydrants shall be connected to watermain with a Clow F1217 Anchoring Tee or pre-approved equal, a branch RW Gate Valve at main, a valve box and adaptor base.

2.10 POLYETHYLENE ENCASEMENT

A. Polyethylene encasement shall conform to AWWA C105. Film shall be Class "C", black with a minimum nominal thickness of 8 mils. Tape for securing the film shall be a thermoplastic material with a pressure sensitive adhesive face capable of bonding to metal, bituminous coating, and polyethylene. Tape shall have a minimum thickness of 8 mils, and a minimum width of 1 in.

2.11 TRACER WIRE AND ACCESS BOX

A. Wire: Tracer wire shall be No. 12 AWG solid, copper-clad steel wire with minimum 450 lb tensile break load and 30 mil blue HDPE jacket. Tracer wire splices shall be made with inline resin splice kits or locking dry connectors.

B. Tracer wire shall be terminated behind hydrant barrels and curb stop boxes using a ½” PVC electrical conduit to carry the wire from bottom to top of structure, with a 1.5 foot pigtail. The tracer wire shall be run from each curb stop box and terminate at the meter or meter horn location within the building.

PART 3 EXECUTION

3.01 LINE AND GRADE

A. Owner will provide primary line and benchmark at a convenient offset. Contractor shall be responsible for preservation of line and grade markings and if disturbed, shall pay actual cost of replacement. Give three working days prior notice of need for line and grade.

B. Contractor shall transfer line and grade from offset to water main by means of laser beam equipment or other approved methods. Inform A/E of proposed methods and equipment prior to construction. Discontinue methods which do not produce accurate control for setting line and grade.

C. Minimum depth of cover for water main and services shall be as designated on Drawings. Additional depth may be required to clear other utilities. When water main and services cross over or under sewers or force main, maintain minimum vertical separation as required by State and local codes.

D. Contractor shall determine required pipe profile to meet depth of cover requirements. If water main and services are installed prior to sewers on this project, and conflicts are discovered, Contractor shall adjust water pipe location at no additional cost.

3.02 LAYING OF WATER MAIN

A. Except as otherwise indicated, ductile iron water main shall be installed in accordance with the requirements of AWWA C600 and PVC plastic water main shall be installed in accordance with the requirements of AWWA C605.

B. Water main materials shall be carefully lowered into trench individually by means of a derrick, ropes or other suitable means to prevent damage to protective coatings and linings. Under no circumstances shall water main materials be dumped into trench.

C. Where water mains pass under sewers or force mains, the length of water pipe shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the sewer.

D. Remove all foreign matter and dirt from inside of pipe and fittings before lowering materials into position in trench. Materials shall be kept clean during and after laying. Openings along main shall be securely closed, and when work is suspended, install suitable stoppers to prevent soil, water or other substances from entering main.

E. Pipe shall be bedded uniformly throughout its entire length. No pipe shall be laid in water or when trench conditions are unsuitable.

F. Joint materials and methods shall conform to manufacturer recommendations and the following provisions. Necessary deflections of joints shall not exceed those recommended by manufacturer.

1. Push-On Joints: Resilient joint filler or sealer and joint surfaces shall be thoroughly cleaned and wiped just before assembly. Lubricant shall be a nontoxic material that does not support growth of bacteria, has no deteriorating effects on gasket material, and is recommended by pipe manufacturer.
2. Mechanical Joints: Joint surfaces shall be thoroughly brushed and cleaned. Rubber gasket shall be cleaned with soapy water and placed on plain end while still wet. Bolts for mechanical joint shall be alternately tightened to provide even pressure on gland. Apply torque according to manufacturer's recommendation. Wrench handle shall be at least 8 in. long and not more than 10 in.

3.03 VALVE AND VALVE BOX INSTALLATION

A. Install valves where shown, unless otherwise designated. Provide valve box for each buried valve except where a manhole is shown. Box shall not transmit shock or stress to valve and shall be centered and plumb over wrench nut of valve, with box cover adjusted to finished grade. See Details for diagram of valve box setting.

B. All valves not installed in vaults or manholes shall be installed per SWS File No. 37, and shall be wrapped with polyethylene per Section 2.1.10 of these Specifications.

D. Top sections of valve boxes shall be whole factory lengths. Breaking of the top section to shorten its length is not acceptable.

E. Screw-in risers for valve boxes are acceptable and preferred. Slip in risers may be used with prior approval.

F. All valve boxes shall be wrapped with polyethylene

G. All valve boxes shall be installed straight and plumb when initially installed during new construction, as well as during rehabilitation or repaving projects. The top of the valve box

shall be set 3/8" – ½" below pavement grade to avoid damage from snowplows and streets cleaning equipment.

H. Valve boxes shall be operable, cleaned and free of debris after installation, after rehabilitation or repaving projects or after any work done by non-Utilities and Streets Department personnel.

3.04 FIRE HYDRANT INSTALLATION

A. Set hydrants where staked by Owner. One-half cu yd of washed stone shall be placed under hydrant base for drainage. Hydrants shall be thoroughly cleaned of dirt or other foreign matter before setting. Hydrants shall stand plumb with hose nozzles parallel to curb and pumper nozzle facing curb or pavement, braced and blocked to prevent disturbance during backfilling and operation. See Details for diagram of hydrant setting.

B. All hydrants and valves shall be restrained by Megalugs or pre-approved equal from the main to the hydrant. Any push on joints in hydrant leads need to be harness restrained.

C. Contractor shall provide for a 6.5' burial depth for all hydrant leads shown on plans. If a water main burial depth is greater than 6.5', Contractor shall install fitting(s) to raise the hydrant lead to meet the required burial depth.

D. Hydrants that are not placed in service shall have a "Not in Service" tag attached to the pumper nozzle.

3.05 JOINT RESTRAINT

A. Joint restraint shall be provided at all fittings, valves, and hydrants, and between pipe sections for the minimum length shown below.

B. Blocking with concrete shall not be used to restrain joints.

RESTRAINED PIPE LENGTH TABLE
DUCTILE IRON PIPE (WITHOUT POLYETHYLENE ENCASEMENT)
Minimum Length Requiring Restraint in Feet[1]

Fitting Type	4-Inch	6-Inch	8-Inch	10-Inch	12-Inch
11.25-Degree Bend	10	10	10	10	10
22.50-Degree Bend	10	10	10	10	10
30-Degree Bend	10	10	10	10	10
45-Degree Bend	10	10	10	10	10
60-Degree Bend	10	10	10	18	18
90-Degree Bend	10	18	18	18	27
45-Degree Vertical Offset	10	10	18	18	27
Tee[2] - Runs	10	10	10	10	10
Tee[2] - Branch	10	10	10	18	27
Stub or Dead End	18	18	27	27	36
Valve[3]	18	18	27	27	36

(1) Minimum length of ductile iron pipe (without polyethylene encasement) in feet to be tied together in each required direction from the fitting listed. This table is only applicable where depth of cover is 7 ft or greater and test pressure does not exceed 150 psi. Notify A/E if specified requirements or actual conditions for project are outside these ranges.
(2) Branch size no bigger than run size. Also applicable to cross with plugged end.
(3) For in-line valve, if pipe on both sides of valve is clear of bends, tees, and other flow interruption devices for the indicated restraint length, only valve joints need be restrained.

RESTRAINED PIPE LENGTH TABLE
DUCTILE IRON PIPE (WITH POLYETHYLENE ENCASEMENT)
Minimum Length Requiring Restraint in Feet(1)

Fitting Type	4-Inch	6-Inch	8-Inch	10-Inch	12-Inch
11.25-Degree Bend	10	10	10	10	10
22.50-Degree Bend	10	10	10	10	10
30-Degree Bend	10	10	10	10	18
45-Degree Bend	10	10	18	18	18
60-Degree Bend	10	18	18	18	27
90-Degree Bend	18	27	27	36	36
45-Degree Vertical Offset	18	27	36	36	45
Tee(2) - Runs	10	10	10	10	10
Tee(2) - Branch	10	10	27	36	45
Stub or Dead End	36	45	55	65	75
Valve(3)	36	45	55	65	75

(1) Minimum length of ductile iron pipe (with polyethylene encasement) in feet to be tied together in each required direction from the fitting. This table is only applicable where depth of cover is 7 ft or greater and test pressure does not exceed 150 psi. Notify A/E if specified requirements or actual conditions for project are outside these ranges.
(2) Branch size no bigger than run size. Also applicable to cross with plugged end.
(3) For in-line valve, if pipe on both sides of valve is clear of bends, tees, and other flow interruption devices for the indicated restraint length, only valve joints need be restrained.

RESTRAINED PIPE LENGTH TABLE
PVC PLASTIC PIPE
Minimum Length Requiring Restraint in Feet(1)

Fitting Type	4-Inch	6-Inch	8-Inch	10-Inch	12-Inch
11.25-Degree Bend	10	10	10	10	10
22.50-Degree Bend	10	10	10	10	10
30-Degree Bend	10	10	10	10	10
45-Degree Bend	10	10	10	18	18
60-Degree Bend	10	10	18	18	18
90-Degree Bend	18	18	27	27	36
45-Degree Vertical Offset	18	18	27	27	36
Tee(2) - Runs	10	10	10	10	10
Tee(2) - Branch	10	10	18	27	27
Stub or Dead End	18	27	36	45	55
Valve(3)	18	27	36	45	55

(1) Minimum length of PVC plastic pipe in feet to be tied together in each required direction from the fitting listed. This table is only applicable where depth of cover is 7 ft or greater and test pressure does not exceed 150 psi. Notify A/E if specified requirements or actual conditions for project are outside these ranges.
(2) Branch size no bigger than run size. Also applicable to cross with plugged end.
(3) For in-line valve, if pipe on both sides of valve is clear of bends, tees, and other flow interruption devices for the indicated restraint length, only valve joints need be restrained.

3.06 POLYETHYLENE ENCASEMENT INSTALLATION

A. Protect ductile iron pipe, fittings, valves, and accessories from corrosion by use of polyethylene encasement. Install polyethylene in accordance with AWWA C105. Encase hydrants to ground line.

B. When wrapping valve boxes, only wrap the bell portion and the bottom of the first section.

3.07 TRACER WIRE INSTALLATION

A. Install continuous tracer wire the full length of each run of PVC plastic water main and over PE water services from main to curb stop. Attach wire to top of pipe at maximum 10 foot intervals using 8 mil thermoplastic tape.

B. Tracer wire shall be terminated behind hydrant barrels and curb stop boxes using a ½" PVC electrical conduit to carry the wire from bottom to top of structure, with a 1.5 foot pigtail. The tracer wire shall be run from each curb stop box and terminate at the meter or meter horn location within the building.

C. Test tracer wires to verify conductivity. Repair wires not showing conductivity.

3.08 CONNECTING MAINS

A. Elsewhere: If necessary, active water services may be interrupted to make tie-ins to existing mains. Notify Owner and all users affected by shut-off 24 hr in advance. No shut-off will be allowed until necessary trenching has been completed, new pipe has been cut to length, necessary fittings are on site, and Owner has approved the shut-off. Make connections to existing mains using cutting-in sleeves or compression couplings, as applicable.

3.09 WATER SERVICE INSTALLATION

A. Install water service connections to individual lots and as shown in accordance with local plumbing code and Wis. Adm. Code, s. SPS 382.40.

B. Make necessary taps on water main and install corporation stops. Provide service pipe free of splices from corporation stop to property line. Provide horizontal gooseneck or offset pipe near main. Install curb stop and box where indicated with a brick set under stop; if not otherwise designated, locate on property line. New inactive services shall be provided with a stub pipe at lot line, peened closed or capped. Mark end with a 4-in. x 4-in. x 6-ft or similar board projecting 4-in. above ground. Keep an accurate record of lengths and locations of services. Existing services which are relaid shall be reconnected at lot line with a suitable pipe coupling.

C. Maintain 1 ft minimum distance from bell end of water pipe or fittings, or from another tap on either side of water main, to a corporation cock.

D. Joints shall be resilient seal compression type securely tightened against fitting with sleeve nut. Internal stiffeners shall be used for all PE pipe joints. Connections of copper to existing lead services or repair of lead services shall be soldered and wiped joint made according to standard plumbing procedures.

E. The entire laying length shall be carefully inspected before placement into the trench for cuts or gouges or kinks. If a cut or gouge is found to be deeper than 10% of the minimum standard wall thickness of the pipe, the entire affected length shall be removed and discarded. If there is any kink in the laying length, the entire affected length shall be removed and discarded.

F. The pipe to be placed shall not be kinked, cut or gouged during installation, or the preceding requirements shall be applied. Laying length of HDPE lines shall afford enough slack to allow for thermal contraction of the plastic and in such manner as to avoid placing it under any undue tension. The pipe shall be laid by snaking the pipe in the bottom of an 18" wide trench and continuously supporting it on a smooth bedding surface. Before placing cover and backfill materials in the trench, water is to be run through the pipe to check connections for leaks and to cool the pipe to ambient ground temperature, and NOT ambient air temperature.

E. Cover materials shall be placed immediately after the leak check and while the pipe is still at ambient ground temperature. A minimum of two (2.0) feet of material, referenced in Section 31 23 33, shall be placed over the pipe before additional backfill material may be plowed or

dumped into the trench to final grade. HDPE pipe shall be carefully placed to ensure minimum cover to final grade to be not less than 6.0-ft. in turf areas and not less than 7.0-ft. under paved areas. During backfilling, support service box in a vertical position accurately centered over valve.

F. Water services may be installed in same trench as sanitary laterals provided separation distances required under Wis. Adm. Code, s. SPS 382.40(8)(b), are met.

3.10 DISINFECTION AND BACTERIOLOGICAL TESTS

A. Disinfect and conduct bacteriological tests on water main in accordance with AWWA C651.

B. During installation, place calcium hypochlorite granules in water main. Upon completion, fill main with water and allow to stand for 24 hr. Operate intermediate valves during sterilization process. Keep piping being chlorinated isolated from lines in service.

C. After disinfection, flush main and test water for coliform bacteria.

1. Take two sets of samples at representative locations. Either take an initial set of samples and then resample again after a minimum of 16 hr (AWWA C651 Option A) or let main sit for a minimum of 16 hr without use and then without flushing collect two sets of samples a minimum of 15 minutes apart while sampling taps are left running (AWWA C651 Option B).
2. For new mains, sets of samples shall be collected every 1200 ft of new main, plus one set from end of line and at least one set from each branch greater than one pipe length.
3. Test samples for bacteriological quality in accordance with AWWA "Standard Methods for the Examination of Water and Wastewater". Tests shall show the absence of coliform bacteria.
4. If tests show the presence of coliform bacteria, rechlorinate main and repeat tests until satisfactory results are obtained.

D. Main shall not be connected to the active water system until satisfactory bacteriological test results are obtained. Fittings, taps, and extra work involved in sampling or rechlorinating to meet this requirement shall be provided by Contractor at no extra cost.

E. The Water Utility shall take the water samples. The first 2 water samples are at the utilities expense. After the initial 2 samples are taken, the Developer/Contractor shall pay all utility expenses until the system is considered safe.

1. Approximate cost per sample trip is $250.
2. No first sample will be taken on a Friday, weekend, or adjacent to a holiday.
3. Note: In order for acceptance, 2 consecutive samples must pass in a 24 hour period.

3.11 PRESSURE AND LEAKAGE TEST

A. Pressure and leak test each valved section of water line in accordance with AWWA C600 for ductile iron pipe and AWWA C605 for PVC pipe as soon as possible after its construction. Fire and Combination water/fire service lines shall be tested at 200 psi for 2.0 hours. Leakage allowed shall be in accordance with AWWA C600 or AWWA C605, as applicable. If tests disclose greater leakage, Contractor shall locate and repair defects until leakage is within specified limit.

B. Furnish necessary equipment and labor for test. Submit testing procedure for approval prior to testing.

3.12 ELECTRICAL CONTINUITY

A. Perform a continuity test on all ductile iron pipe between hydrants or any other accessible point of backfilled water main system.

B. Pass a direct current of 250 amperes through pipeline for 5 minutes. Before applying voltage to any main to which service laterals are connected, all electrical grounds shall be disconnected from service laterals. Current flow through pipe shall be measured continuously on a suitable ammeter and shall remain steady without interruption or excessive fluctuation during the test period.

C. If test indicates a lack of electrical continuity, find and repair broken circuit.

END OF SECTION

SECTION 33 31 26

PRESSURE SEWER

PART 1 GENERAL

1.01 SUMMARY

A. Provide pressure sewer as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 RELATED SECTIONS

31 20 00 Earth Moving.
31 23 33 Trenching and Backfilling.
33 05 60 Manholes and Structures.

1.03 MEASUREMENT AND PAYMENT

A. All work will be considered incidental to the contract unit prices for SANITARY LATERAL - FM (DESCRIPTION), unless a separate pay item is included in the Bid Schedule.

B. Pressure sewer will be paid for at the contract unit price per linear foot for SANITARY LATERAL - FM (DESCRIPTION) measured horizontally from end of pressure sewer to point of discharge or connection to next section of sewer. Fittings (bends, offsets, etc.) and appurtenances which are a necessary part of complete work will be incidental to pressure sewer. Fittings and labor to cut in or connect to existing pressure sewer will be incidental to the unit price for pressure sewer.

C. If a separate bid item is designated, pressure sewer cleanouts including pipe from primary pressure sewer, frost sleeve, concrete box with access cover, shut-off valve and box, concrete collar, and miscellaneous fittings will be paid for at the contract unit price each for PRESSURE SEWER CLEANOUT.

D. If a separate bid item is designated, pressure sewer service shut-off valves, including valve, box, concrete collar, and appurtenances will be paid for at the contract unit price each for (type) VALVE.

E. If a separate bid item is designated, connection of new pressure sewer to existing sanitary sewer, including locating existing pipe and providing fittings for horizontal and vertical adjustment (if required), will be paid for at the contract unit price each for CONNECT TO EXISTING SANITARY SEWER.

1.04 SUBMITTALS

A. Product Data: Submit product data for pipe, fittings, couplings, valves, and tracer wire.

B. Test Reports: Submit report for pressure and leakage test.

C. Record Drawings: Accurately record locations of fittings and field changes on a set of Drawings. Prior to final application for payment, deliver record drawings to A/E.

D. Make submittals in accordance with Section 01 33 00.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Carefully unload and store pipe to prevent damage to pipe and surface coatings. Pipe shall not be skidded upon ground. Repair damaged coatings.

PART 2 PRODUCTS

2.01 PRESSURE SEWER PIPE, GENERAL

A. Pressure sewer to be installed by open trench method shall be of material and type indicated in the Drawings or Special Provisions. If not designated, select one of the materials listed below; do not intermix types of pipe unless so designated on Drawings. Each pipe shall be stamped or indelibly marked with its type and class and the manufacturer's name or mark.

B. Pressure sewer to be installed by horizontal directional drilling shall meet the requirements of Section 33 05 07.

2.02 PVC PLASTIC PRESSURE PIPE

A. Polyvinyl chloride plastic pressure pipe shall be ASTM D2241, PVC (solid wall) SWS 8.51.2, AWWA C-900 or C-905 • PVCO AWWA C-909, Class 150

B. PVC pipe shall have integral bell end, grooved for receiving rubber ring gaskets. Solvent weld joints will not be allowed, except that solvent weld joints shall be used at fittings.

C. Fittings shall be PVC socket type, ASTM D2466, Sch. 40.

2.03 POLYETHYLENE PRESSURE PIPE

A. Polyethylene pressure pipe shall conform to ASTM D2239, ASTM D3035, or ASTM F714 and have a minimum working pressure of 160 psi at 73 deg F.

B. Joints and fittings shall be butt heat fusion type, ASTM D3261.

C. Tapping tees for connecting laterals to mainline pipe and other electrofusion fittings called out in the Drawings and/or Specifications shall be HDPE clamp or saddle fittings; Central Plastics Company, or approved equal.

D. HDPE pipe penetrations to manholes, wet wells, or other unflanged connections shall be restrained by an electrofusion flex restraint; Central Plastics Company, or approved equal.

2.04 BALL VALVES

A. Mainline isolation valves 2 in. and smaller and shut-off valves on laterals shall be ball valves conforming to AWWA C800. Valves shall have 2 in. square gate valve type operating nut and shall have joints suitable for connection to selected pipe material. Valve boxes shall be Minneapolis pattern, with depth of bury suitable for depth of pressure sewer. Riser pipes shall be black iron and parts shall be coated with black asphaltum paint. Provide Mueller "Mark II Oriseal", Ford ball style, McDonald ball style, or approved equal.

2.05 COMBINATION AIR VALVES

A. Combination air-vacuum and air release, high strength fiberglass reinforced plastic body, non-corrosive operating parts, 3 to 230 psi working pressure range, 2 in. male NPT connection; A.R.I. Model D-020, or approved equal.

2.06 SLEEVE COUPLINGS

A. Plain-End Sleeve Couplings: Steel or cast iron, sleeve coupling; Smith-Blair 411/441, Dresser 38, or approved equal.

B. Flanged Coupling Adaptors: Steel or cast iron, flexible flanged adaptor; Smith-Blair 912/913, Dresser 128/227, or approved equal.

2.07 TRACER WIRE

A. Tracer wire shall be No. 12 AWG solid, copper-clad steel wire with minimum 450 lb tensile break load and 30 mil green HDPE jacket. Tracer wire splices shall be made with inline resin splice kits or locking dry connectors. Furnish wire in full coils of at least 1,000 ft.

PART 3 EXECUTION

3.01 LINE AND GRADE

A. Contractor will be responsible for establishing line and grade markings.

B. Minimum depth of cover for pressure sewer is indicated on Drawings. Additional depth may be required to clear other utilities. Install pressure sewer at a uniform slope to eliminate high points that will accumulate air in the pipe.

3.02 PRESSURE SEWER INSTALLATION - TRENCHING

A. Pressure sewer materials shall be carefully lowered into trench individually by means of a derrick, ropes or other suitable means to prevent damage to protective coatings and linings. Under no circumstances shall pressure sewer materials be dumped into trench.

B. Remove all foreign matter and dirt from inside of pipe and fittings before lowering materials into position in trench. Materials shall be kept clean during and after laying. Openings along main shall be securely closed, and when work is suspended, install suitable stoppers to prevent soil, water or other substances from entering main.

C. Pipe shall be bedded uniformly throughout its entire length. Bedding and backfill shall comply with Section 31 20 00 / 31 23 33; note particularly requirements for flexible pipes. No pipe shall be laid in water or when trench conditions are unsuitable.

3.03 JOINING PRESSURE SEWER

A. Joint materials and methods shall conform to manufacturer recommendations. Necessary deflections of joints shall not exceed those recommended by manufacturer.

B. Follow the manufacturer's recommendations for joining and making connections to HDPE pipe using butt-welding and electrofusion joining methods. Give special attention to ensure that moisture is not present during welding operations and that temperature and time duration requirements for preheating and cooling are met.

3.04 VALVE INSTALLATION

A. Install valves as shown on Drawings.

3.05 CLEANOUT INSTALLATION

A. Construct cleanouts as shown on Drawings.

3.06 TRACER WIRE INSTALLATION

A. Install continuous tracer wire the full length of each run of pressure sewer.

1. Tracer wire shall be required on all force mains
2. Branch or connections with the tracer wire shall require 10 full turns of exposed and undamaged copper-to-copper contact and watertight wrap to prevent corrosion or any deterioration of electrical conductivity (i.e. Western Union Splice).
3. Tracer wire shall be terminated at start-end points and all intermediate valve boxes.

4. A ½" diameter PVC electrical conduit placed inside of the valve box shall carry the wire from bottom to top of each valve box. A 1.5-ft. pigtail of excess tracer wire shall stick out of the top of the conduit.

B. Provide two access points for each continuous section of tracer wire. Acceptable access points are through a pump station, valve box, or cleanout manhole. Access points shall be located no more than 1,000 ft apart. If none of these are available, make tracer wire available through a post-mounted box.

C. Test tracer wires to verify conductivity. Repair wires not showing conductivity.

3.07 PRESSURE AND LEAKAGE TEST

A. Pressure and leak test pressure sewer with water as soon as possible after its construction. Test pressure at lowest point of test section shall be 150 percent of operating pressure. Test shall last for two hours. Leakage allowed shall be in accordance with the hydrostatic testing requirements of AWWA C600. If tests disclose greater leakage, locate and repair defects until leakage is within specified limit.

B. Furnish necessary equipment and labor for test. Testing procedure shall be approved by A/E prior to testing.

END OF SECTION

SECTION 33 42 12

SITE STORM SEWER SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Provide site storm sewer system as shown and as specified. Comply with applicable provisions of Divisions 00 and 01.

1.02 RELATED SECTIONS

31 20 00 Earth Moving.

1.03 MEASUREMENT AND PAYMENT

A. All work will be considered incidental to the contract unit price for STORM SEWER, unless a separate bid item is included in the Bid Schedule.

B. Storm sewer will be paid for at the contract unit price per linear foot for STORM SEWER. Storm sewer, less than 48-in. diameter (width), will be measured horizontally from center to center of proposed or existing manholes or to end of sewer pipe not terminating in a manhole. Storm sewer, 48-in. diameter (width) or greater, will be measured horizontally from inside face to inside face of manholes or chambers or to end of sewer pipe not terminating in a manhole or chamber. Storm sewer leads or drains will be measured horizontally from center line of storm inlet or catch basin to center line of manhole for sewer less than 48-in., or from center line of storm inlet or catch basin to inside face of structures for sewers 48-in. or greater. New sewers which begin at an existing connection 6 in. or more outside an existing manhole wall will begin measurement from connection. Where storm sewer is paid for by depth of installation, the depth referred to shall be depth to pipe invert.

C. Connection of new storm sewer main to existing storm sewer main or structure, including locating connection point, will be paid for at the contract unit price each for CONNECT TO EXISTING STORM SEWER.

D. Apron endwalls, including trash guards, for storm sewer will be paid for as part of the contract unit price each for APRON ENDWALL DESCRIPTION.

1.04 SUBMITTALS

A. Shop Drawings: Submit shop drawings for drainage structures.

B. Product Data: Submit product data for pipe, fittings, and tracer wire.

C. Record Drawings: Accurately record locations of storm pipe and field changes on a set of Drawings. Prior to final application for payment, deliver record drawings to A/E.

D. Make submittals in accordance with Section 01 33 00.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Carefully unload and store pipe to prevent chipping, cracking, or damage to surface coatings. Pipe shall not be skidded upon ground. Repair damaged coatings.

PART 2 PRODUCTS

2.01 STORM SEWER PIPE, GENERAL

A. Storm sewer shall be of material and type indicated on the Drawings. If not designated, select one of the materials listed below; pipe used shall be recommended by manufacturer for intended purpose. Each pipe shall be stamped or indelibly marked with its type and class and manufacturer's name or mark.

B. Pipe material selected shall be approved under State Plumbing Code (Wis. Adm. Code, s. SPS 384) for use at the diameter shown on Drawings.

2.02 REINFORCED CONCRETE PIPE

A. ASTM C76 (circular pipe) or ASTM C507 (elliptical pipe), Class III minimum, unless otherwise designated. Joints shall be bell and spigot or tongue and groove type with rubber ring gasket, ASTM C443.

2.03 PVC SEWER PIPE

A. ASTM D3034, Type PSM, SDR-35, PVC sewer pipe. Joints shall be bell-spigot, elastomeric gasket type.

2.04 CORRUGATED POLYETHYLENE (PE) PIPE

A. 4- to 10-in. Diameter: AASHTO M252, Type S, high density, dual-wall corrugated PE pipe with integrally formed smooth interior. Joints shall consist of an integral bell and spigot and shall be water tight according to requirements of ASTM D3212 (10.8 psi pressure test).

B. 12-in. and Greater Diameter: AASHTO M294, Type S, or ASTM F2306, high density, dual-wall corrugated PE pipe with integrally formed smooth interior. Joints shall consist of an integral bell and spigot and shall be water tight according to requirements of ASTM D3212 (10.8 psi pressure test).

C. To be acceptable, PE pipe must be individually approved by the Wis. Dept. of Safety and Professional Services (DSPS) and listed in the DSPS Plumbing Products Register.

2.05 CORRUGATED POLYPROPYLENE (PP) PIPE

A. AASHTO M330, Type S, or ASTM F2881, high density, dual-wall or triple-wall corrugated PP pipe with integrally formed smooth interior. Joints shall consist of an integral bell and spigot and shall be water tight according to requirements of ASTM D3212 (10.8 psi pressure test).

B. To be acceptable, PP pipe must be individually approved by the Wis. Dept. of Safety and Professional Services (DSPS) and listed in the DSPS Plumbing Products Register.

2.06 PVC DOWNSPOUT LATERALS

A. Drains from downspouts to storm sewer shall be PVC pipe and fittings, ASTM D1785, Sch 40, or ASTM D2665, DWV pipe. Joints shall be solvent weld type.

B. Downspout collector rodent screening shall be stainless steel, 1/2 in. square mesh, minimum 16 ga wire. Hose clamps for screening shall be stainless steel.

2.07 GRAVITY PIPE COUPLINGS

A. ASTM C1173, rubber or elastomeric sleeve and stainless band assembly fabricated to mate with OD of pipes to be joined, for non-pressure joints.

2.08 MANHOLES AND INLETS

A. Manholes shall be precast concrete, ASTM C478. Manhole riser joints shall have rubber ring gaskets or plastic gasket material, or may use cement mortar. Pipe entrance holes shall have flexible, watertight, gasketed seals, or may use non-shrink grout.

B. Small inlets (36 in. or less diameter) shall be reinforced concrete pipe sections, ASTM C76, sizes as shown on Drawings. Rectangular inlets shall be precast reinforced concrete, ASTM C478 or ASTM C913, dimensions as shown on Drawings. Inlet joints and pipe entrance holes shall have flexible, watertight, gasketed seals, or may use non-shrink grout.

2.09 ADJUSTING RINGS

A. Adjusting Rings: Precast reinforced concrete rings with diameter/dimensions matching casting frame.

B. Adjusting Rings: Expanded polypropylene grade adjustment rings manufactured using a high compression molding process to produce rings with a finished density of 7.5 pcf. Include manufacturer's recommended adhesive/sealant. Provide Cretex "Pro-Ring", or approved equal.

2.10 CASTINGS

A. Castings shall be made from ASTM A48, minimum Class 30, cast iron of uniform quality and free from blow holes, porosity, hard spots, shrinkage defects, cracks, and other serious defects.

1. Fabricate castings true to pattern with machined bearing faces between frame and lid or grate.
2. Provide traffic-rated castings, unless otherwise noted.

B. Provide castings as designated on the Drawing Details, or approved equal.

Type	Typical Use	Casting
B6	Beehive Inlet	Neenah R-2560-E1 or Neenah R-2561
C	Flat Inlet	Neenah R-3210-A
H	Curb Inlet, 2x3-ft opening	Neenah R-3067-R
H-D	Drive Over Inlet, 2x3-ft opening	Neenah R-3501-R
J	Storm Manhole	Neenah R-1661

2.11 APRON ENDWALLS

A. Use pre-fabricated concrete apron endwalls with reinforced concrete pipe and use pre-fabricated steel apron endwalls with PVC, PE, and PP pipe.

1. Concrete endwalls shall meet the material requirements of ASTM C76 or AASHTO M170 for Class II reinforced concrete pipe.
2. Steel endwalls shall meet the material requirements of ASTM A760 or AASHTO M36.
3. Fabrication shall comply with WisDOT Standard Detail Drawing 8F1.

B. Endwalls shall have hot-dip galvanized steel trash guards, unless otherwise designated. Provide suitable coupling or adaptor to attach endwall to selected storm sewer pipe material.

C. Tieing of last three joints of sewer pipe (as shown on Details) is only required where concrete pipe is used for storm sewer. Where another pipe material is used, provide full length section of pipe prior to apron endwall. Tie bolt fasteners shall be hot-dip galvanized steel.

2.12 ORIFICE PLATE

A. Non-corrosive plate fitting for the end of a pipe section with an orifice of the designated size.

2.13 TRACER WIRE

A. Tracer wire shall be No. 12 AWG solid, copper-clad steel wire with minimum 450 lb tensile break load and 30 mil green HDPE jacket. Tracer wire splices (if required) shall be made with inline resin splice kits or locking dry connectors.

PART 3 EXECUTION

3.01 LINE AND GRADE

A. Contractor shall be responsible for establishing line and grade as shown on Drawings.

3.02 LAYING OF SEWER PIPE

A. Where practicable, begin at lowest point of proposed sewer line; lay with bell end or receiving groove edge upstream in direction of laying.

B. Cut in and connect to existing manhole(s) or sewer as required. When connection to an existing sewer pipe is required, contact A/E if adjustments to inverts are needed. Make connection to existing pipe stub using a gravity pipe coupling, unless connection with a standard pipe joint is possible.

C. Sewer pipe shall be laid immediately following the trench preparation and bedding provisions of Section 31 20 00.

D. Exercise care when handling pipe. Ropes, slings, or other devices must be used for lowering pipe into trench. Only pipe which is suitable for use is to remain on site. Damaged or broken pipe shall be immediately separated from acceptable pipe.

E. Lay pipe uniformly to line and grade on a prepared bed providing even support along entire barrel. Excavate bell holes in bedding material so pipe will rest on barrel and not on bell. As work progresses, interior of sewer shall be cleared of dirt and debris. Do not lay pipe where water is above bedding material except where A/E determines that foundation is stable, pipe will not be displaced upward, and joint construction will not be affected by water.

F. Each pipe shall be bedded by hand or by equally careful means to 12-in. cover before laying subsequent pipes. Fill space between pipe and trench wall in 6-in. layers and manually compact. Pipe sizes larger than 15-in. diameter may require mechanical compaction of bedding material.

G. When work is not in progress, water may be allowed to flow into newly laid pipe if provisions are made to prevent dirt from washing into pipe.

3.03 JOINTING

A. Joint materials and methods shall conform to manufacturer's recommendations and the following procedures.

B. Rubber-type gasket joint shall be made using lubricant of vegetable origin. If rubber gasket is O-ring type, groove in spigot shall be lubricated before setting gasket.

3.04 INSTALLING MANHOLES AND INLETS

A. Storm manholes and inlets shall be constructed as shown on the Drawings. Steps 16 in. on center shall be provided wherever depth of manhole is greater than 5 ft. Castings shall be as shown on Details.

B. Manholes with more than one entrance pipe and manholes at changes in alignment or grade shall have formed flow channels with smooth radius transitions. For manholes with flexible seals, support pipe outside manholes by bedding as specified for type of pipe installed. For manholes with rigid seals, support pipe outside manholes until reaching undisturbed soil or to first joint by cast-in-place concrete or a wall of brick or concrete block contoured at top to fit lower 1/3 of pipe.

3.05 CONNECTING TO EXISTING MANHOLES

A. Where a new connection is required to an existing manhole, core drill opening in manhole riser to avoid damage to existing manhole. Retrofit a new pipe seal (manhole boot) into opening in order to create a watertight seal.

B. For storm manholes (only), a new connection to an existing manhole may be made by neatly sawing a new opening and filling the annular spacing between new pipe and manhole wall using non-shrink grout.

3.06 TRACER WIRE INSTALLATION

A. Install continuous tracer wire over all storm sewer.

1. Attach wire to top of pipe at approximately 10 ft intervals.
2. Provide an access point to wire at interior top of each manhole and inlet. Wire shall enter manhole or inlet between top of structure and adjusting rings. Core drill small hole in existing structures as needed to insert tracer wire. Provide sufficient slack left in wire length so that wire can be pulled to ground level for connection to locating transmitter.

B. Energize each installed tracer wire and verify that wire can be located with tracing equipment.

3.07 LEAKAGE INSPECTION

A. Storm sewer shall be inspected for excessive infiltration and sand leakage. Contractor shall repair infiltration and sand leaks which may cause a continued maintenance problem.

3.08 ALIGNMENT AND GRADE

A. Check alignment and grade by lamping method. If pipe shows poor alignment, offset or open joints, sags, or kinks, defects shall be corrected by Contractor before final acceptance. If closer inspection is warranted, Owner may arrange for a televised inspection. Owner will assume the cost of televised inspection if no serious defect is found. If defects are found due to failure of proper installation or materials, Contractor shall pay for test and promptly correct defects. Pipeline shall be relaid if lamp cannot be viewed between adjacent manholes.

3.09 DEFLECTION LIMITATION

A. Deflections in PVC, PE, and PP pipe shall be limited to 5 percent of nominal pipe diameter if tested within 30 days of placement of final backfill and 7.5 percent of nominal pipe diameter if tested more than 30 days after placement of final backfill. If visual inspection indicates a greater deflection, Contractor shall supply and pull a ball of proper size through sewer; failure to freely pass through shall be cause for rejection of sewer.

END OF SECTION

Appendices

Quest Construction Data Network

VirtuBid™ Online Bidding User Guide

Contact Support – 952-233-1632

Support@QuestCDN.com

Welcome to VirtuBid™ with the Quest Construction Data Network! VirtuBid™ (vBid™) is a state-of-the-art electronic bidding service that benefits the bidder by allowing more time for last minute price adjustments. Bidders can now submit their numbers and forms within seconds of bid closing to ensure the most competitive bids, simply by the push of a button.

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YOU MUST CREATE YOUR 'ONLINE BID ID CODE' BEFORE ACCESSING ONLINE BIDDING.

Prior to participating in Online Bidding, be sure to set up your company's 'Online Bid ID Code'. Your 'Online Bid ID Code' is your digital signature. You may also need to update your QuestCDN password to higher security if needed *(Online Bidding new password minimum is 8 characters with one uppercase, one lowercase and one numeral).*

Updating passwords and creating an 'Online Bid ID Code' can only be done by the main account holder.

What is the 'Online Bid ID Code' and where can I find it on QuestCDN?

The 'Online Bid ID Code' is a passcode required at bid submission and is the digital signature for the company. The code is created by the main account holder **before** account users can access VirtuBid™. The code can be accessed, viewed or updated by logging into QuestCDN with the main account holder username and password.

Make sure to write down the code or obtain the code from the main account holder before submitting a bid.

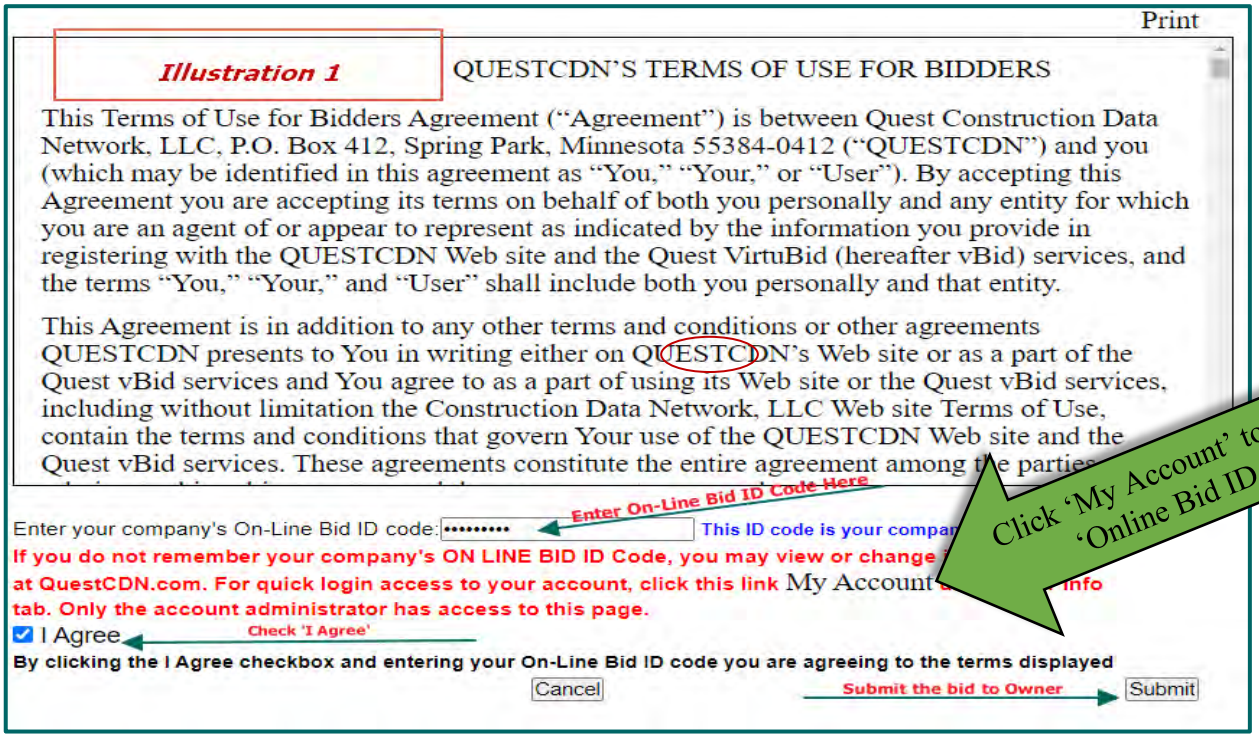
FINDING THE COMPANY ONLINE BID ID CODE

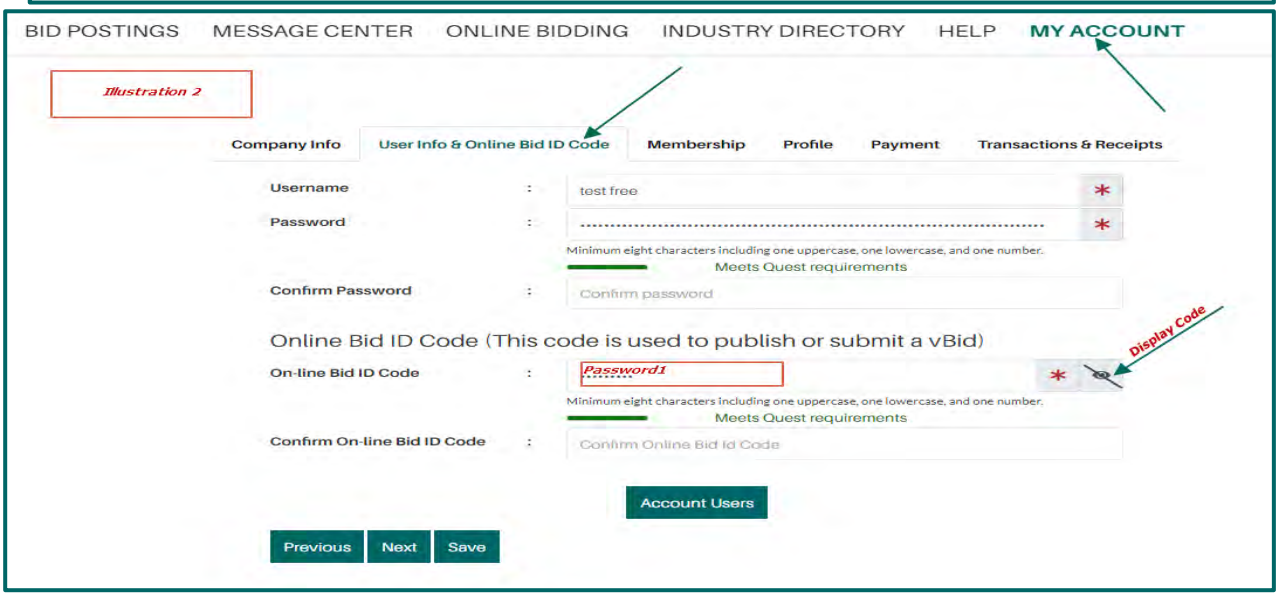
There are two ways to access the 'Online Bid ID Code'.

1. A link to access the code is located on the bid submission page. (*Illustration 1.*) Click 'My Account' on the submission page of VirtuBid™. A new browser window will open. Sign into QuestCDN using the main account holder username and password. Under the 'User Info & Online Bid ID Code' tab, (*Illustration 2*) click the eye icon to view an existing code. Click the VirtuBid™ opened browser tab to go back to the online bid submission window. Enter the code, check 'I Agree' and click 'Submit'

   Only the main account holder username and password can access the 'Online Bid ID Code'.

   A link to access the code is located on the bid submission page.





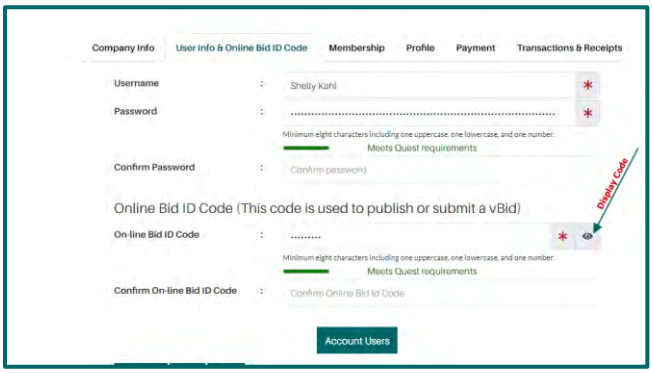
Log into

2. QuestCDN using the main account holder username and password, click 'My Account' at the top of the page. Select 'User Info & Online Bid ID Code' tab and click the eye icon to view or edit an existing code (*Illustration 2.*)

VirtuBid™ (vBid) Online Bidding

Create an Online Bid ID Code

Log into QuestCDN at https://questcdn.com/auth/login. Click 'My Account' at the top of the page. Click the 'User Info & Online Bid ID Code' tab. Add or update your 'Online Bid ID Code'. Click the eye icon symbol to view the code when black dots are populated in the fields. *(Only the QuestCDN main account holder can access 'My Account' and update/view the code).*



Online Bid ID Code Explanation

The 'Online Bid ID Code' is a passcode and acts as your digital signature. It is required to submit an online bid through the QuestCDN online bidding system, VirtuBid™.

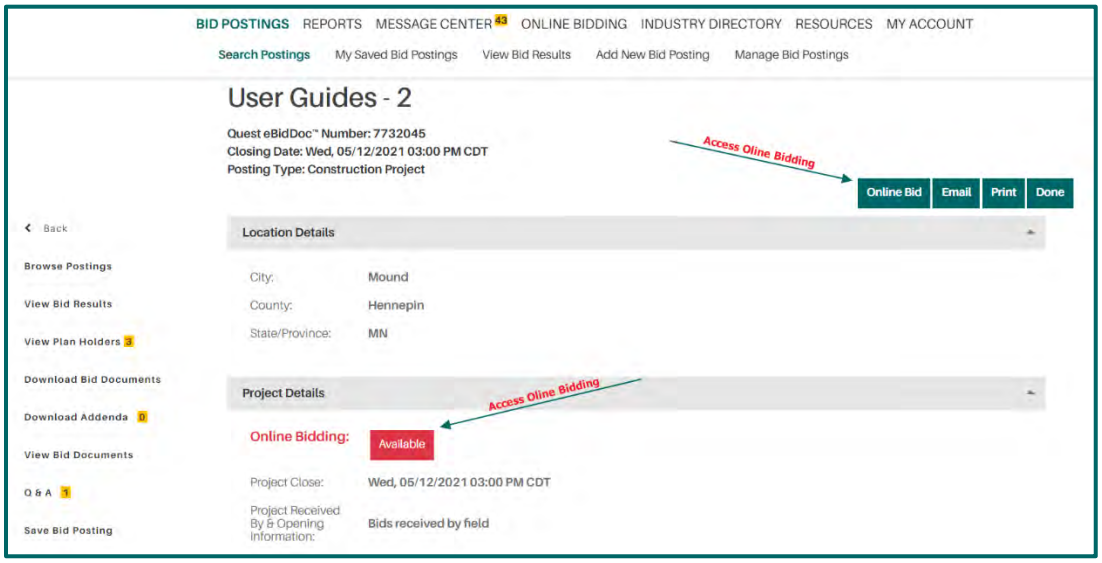
- An 'Online Bid ID Code' must be created before users can access VirtuBid™. The code is established, modified and viewable by QuestCDN main account holder.
- This code is the digital signature that allows submission of a bid on behalf of the company. QuestCDN does not have access to codes for security purposes.
- The code is found in 'My Account,' in the 'User Info & Online Bid ID Code' tab. QuestCDN also provides a link to 'My Account' located in the 'Submit Bid' page within VirtuBid™ to retrieve the 'Online Bid ID Code'.
- The VirtuBid™ login page may prompt to update the current QuestCDN password due to higher security. *(Online Bidding new password minimum is 8 characters with at least one uppercase, one lowercase and one numeral).*
- The VirtuBid™ login page will prompt a message if a code is not created.

Accessing Online Bidding

There are two ways to access QuestCDN online bidding:

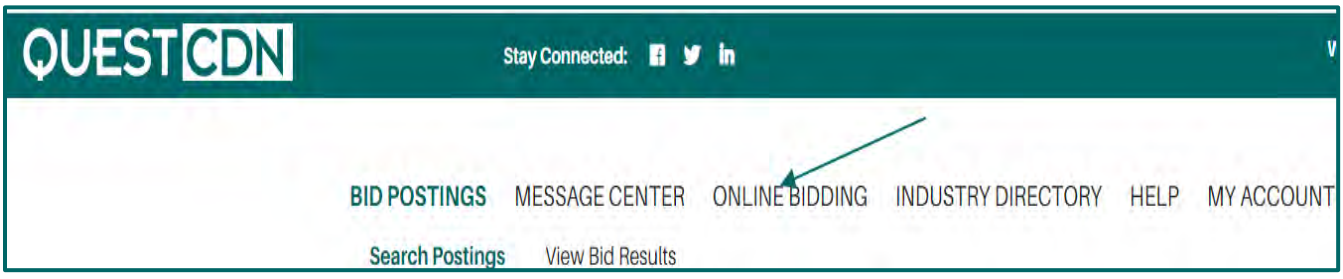
1. ### Online bidding through the bid posting page

   Enter project number and click the search button. To submit an electronic bid and access the VirtuBid™ system, companies must be a plan holder. Download the eBidDoc™ from the bid posting page. On the 'Bid Posting' page, click the red Online Bidding 'Available' button under the 'Project Document Information' section or the 'Online Bid' button at the top of the page and log into VirtuBid™ (vBid) using your username and password. A password update may be required due to security requirements *(the password must contain a minimum of 8 characters with one uppercase, one lowercase and one numeral. If needed, go to 'My Account' and 'User Info & Online Bid ID Code' to update the password.)*



2. Online bidding through the VirtuBid home page

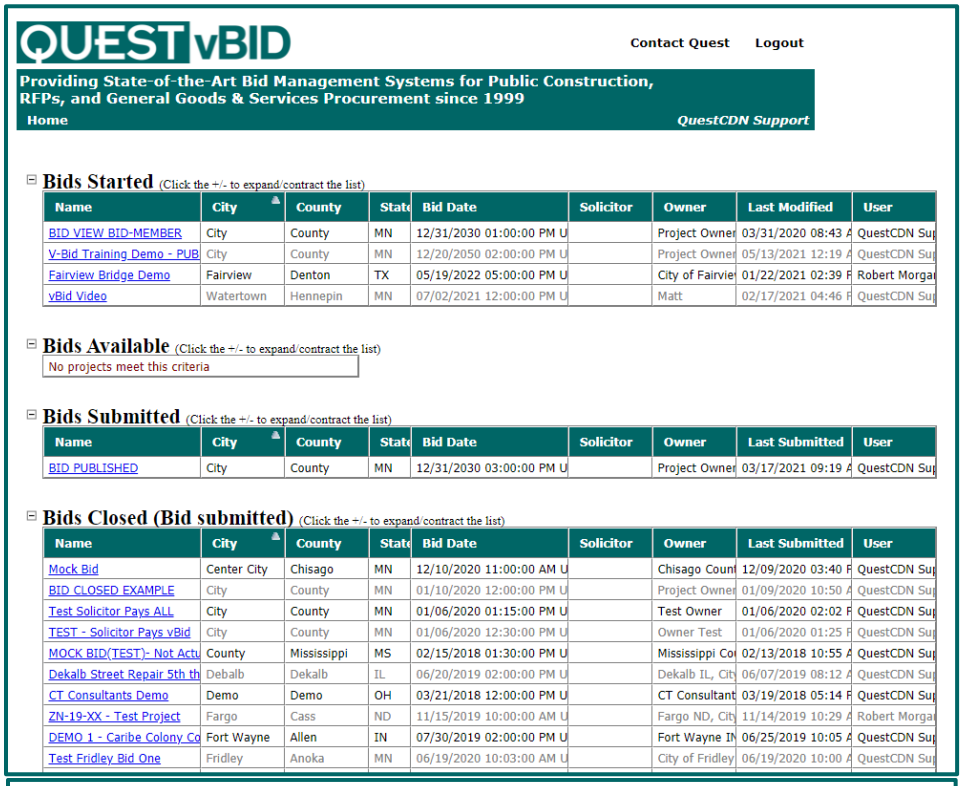
   Current and past electronic bid postings (eBidDoc™ that has been downloaded) will display on this page. Click 'Online Bidding' from the main navigation to log into VirtuBid™ (vBid) home page to access online bids. Log in using the QuestCDN username and password. A password update may be required due to security requirements *(the password must contain a minimum of 8 characters with one uppercase, one lowercase and one numeral. If needed, go to 'My Account' and 'User Info & Online Bid ID Code' to update the password.)*



VirtuBid™ (vBid) Home Page

The VirtuBid™ (vBid) home page is grouped by searchable sections. Current and past bid opportunities are located on the page. Qualification and bid worksheet information is sorted and saved by section for future reference. Click the +/- to expand/contract the section lists. Click the underlined project name to access the qualification, bid worksheet and submit pages.

1. 'Bids Started'
2. 'Bids Available'
3. 'Bids Submitted'
4. 'Bids Closed (Bid submitted)'
5. 'Bids Closed (No bid submitted)'



QUEST vBID

Contact Quest Logout

Providing State-of-the-Art Bid Management Systems for Public Construction, RFPs, and General Goods & Services Procurement since 1999

Home QuestCDN Support

Bids Started (Click the +/- to expand/contract the list)

Name	City	County	State	Bid Date	Solicitor	Owner	Last Modified	User
BID VIEW BID-MEMBER	City	County	MN	12/31/2030 01:00:00 PM U		Project Owner	03/31/2020 08:43 A	QuestCDN Sup
V-Bid Training Demo - PUB	City	County	MN	12/20/2050 02:00:00 PM U		Project Owner	05/13/2021 12:19 A	QuestCDN Sup
Fairview Bridge Demo	Fairview	Denton	TX	05/19/2022 05:00:00 PM U		City of Fairvie	01/22/2021 02:39 F	Robert Morgar
vBid Video	Watertown	Hennepin	MN	07/02/2021 12:00:00 PM U		Matt	02/17/2021 04:46 F	QuestCDN Sup

Bids Available (Click the +/- to expand/contract the list)

No projects meet this criteria

Bids Submitted (Click the +/- to expand/contract the list)

Name	City	County	State	Bid Date	Solicitor	Owner	Last Submitted	User
BID PUBLISHED	City	County	MN	12/31/2030 03:00:00 PM U		Project Owner	03/17/2021 09:19 A	QuestCDN Sup

Bids Closed (Bid submitted) (Click the +/- to expand/contract the list)

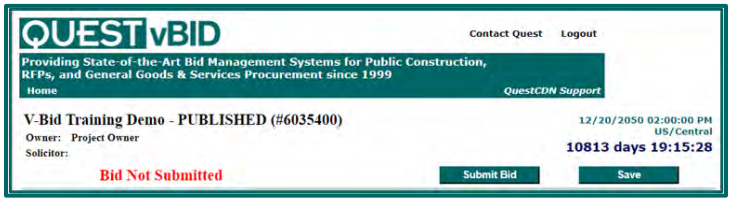
Name	City	County	State	Bid Date	Solicitor	Owner	Last Submitted	User
Mock Bid	Center City	Chisago	MN	12/10/2020 11:00:00 AM U		Chisago Count	12/09/2020 03:40 F	QuestCDN Sup
BID CLOSED EXAMPLE	City	County	MN	01/10/2020 12:00:00 PM U		Project Owner	01/09/2020 10:50 A	QuestCDN Sup
Test Solicitor Pays ALL	City	County	MN	01/06/2020 01:15:00 PM U		Test Owner	01/06/2020 02:02 F	QuestCDN Sup
TEST - Solicitor Pays vBid	City	County	MN	01/06/2020 12:30:00 PM U		Owner Test	01/06/2020 01:25 F	QuestCDN Sup
MOCK BID(TEST)- Not Actu	County	Mississippi	MS	02/15/2018 01:30:00 PM U		Mississippi Co	02/13/2018 10:55 A	QuestCDN Sup
Dekalb Street Repair 5th th	Debalb	Dekalb	IL	06/20/2019 02:00:00 PM U		Dekalb IL, City	06/07/2019 08:12 A	QuestCDN Sup
CT Consultants Demo	Demo	Demo	OH	03/21/2018 12:00:00 PM U		CT Consultant	03/19/2018 05:14 F	QuestCDN Sup
ZN-19-XX - Test Project	Fargo	Cass	ND	11/15/2019 10:00:00 AM U		Fargo ND, City	11/14/2019 10:29 A	Robert Morgar
DEMO 1 - Caribe Colony Co	Fort Wayne	Allen	IN	07/30/2019 02:00:00 PM U		Fort Wayne IN	06/25/2019 10:05 A	QuestCDN Sup
Test Fridley Bid One	Fridley	Anoka	MN	06/19/2020 10:03:00 AM U		City of Fridley	06/19/2020 10:00 A	QuestCDN Sup

Bids Closed (No bid submitted) (Click the +/- to expand/contract the list)

Name	City	County	State	Bid Date	Solicitor	Owner	User
2018 County Wide Route C		Ward	ND	02/27/2018 02:00:00 PM U		Ward County,	QuestCDN Sup
503493 - Marston Treatmer		Dnever	CO	07/31/2018 01:00:00 PM U		Denver Water	QuestCDN Sup
503196 - 2018 Aerial Cross		Arapahoe & D	CO	08/08/2018 10:00:00 AM U		Denver Water	QuestCDN Sup
2019 County Wide Culvert		Ward	ND	01/08/2019 02:00:00 PM U		Ward County,	QuestCDN Sup
2019 County Wide Culvert		Ward	ND	01/08/2019 02:00:00 PM U		Ward County,	QuestCDN Sup
2019 Gravel Hauling & Resl		Ward	ND	03/07/2019 02:00:00 PM U		Ward County,	QuestCDN Sup
Replacement of 72		Ward	ND	04/30/2020 02:00:00 PM U		Ward County,	QuestCDN Sup
2021 Water Base Pavement		Ward	ND	03/03/2021 02:00:00 PM U		Ward County,	QuestCDN Sup
Fueling Station Installation		Ward	ND	03/18/2021 02:00:00 PM U		Ward County,	QuestCDN Sup
DEMO -Grayson County Ro	Clarkson	Grayson	KY	06/04/2020 10:00:00 AM U		Kentucky Tran	QuestCDN Sup
DEMO - Jefferson County C	Louisville	Jefferson	KY	08/31/2020 10:00:00 AM U		Kentucky Tran	QuestCDN Sup
PLATTEVILLE WRRF - BLOV	Platteville	Grant County	WI	02/04/2021 02:00:00 PM U		City of Plattev	QuestCDN Sup
503037 Conduit No 16 W. S	--	Jefferson	CO	03/22/2018 10:00:00 AM U		Denver Water	QuestCDN Sup
Contract 503229 - Foothills	-----	Douglas	CO	08/23/2018 10:00:00 AM U		Denver Water	QuestCDN Sup
Abbotsford 2018 Street & U	Abbotsford	Marathon Cou	WI	04/02/2018 10:00:00 AM U		City of Abbbot	QuestCDN Sup

VirtuBid™ (vBid)

Bid title, QuestCDN eBidDoc™ number, owner, solicitor, bid closing date, time, time zone, a running bid countdown date/time clock and submitted/not submitted bid status are located at the top of VirtuBid™. The 'Home' tab returns to the VirtuBid™ home page. Click the save button periodically to save work and refresh the page. There is a 60-minute security time out. Information not saved will be lost. All uploaded and entered information will be saved. Log out of VirtuBid and re-enter as many times as needed to revise the work.



Qualification Information

Bid Bond Section

Upload a completed bid bond file and/or enter the Surety 2000 'Bond id' number to complete the bid bond information. (This information depends on the solicitor requirements.) Submit only one if both options are offered.

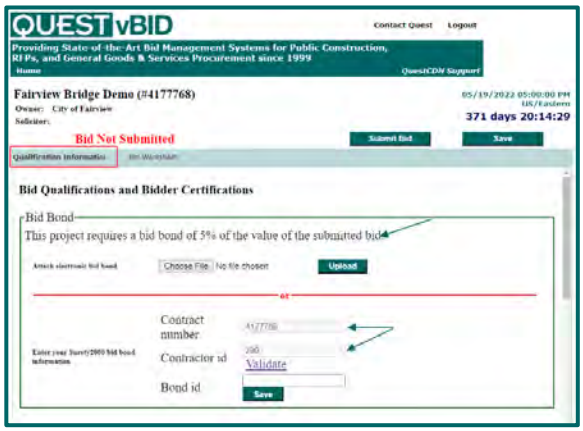
Electronic Bid Bond

- Upload file containing signed bid bond information

Surety2000 Bid Bond

- 'Contract Number' (QuestCDN eBidDoc™ number)
- 'Contractor ID' (QuestCDN member number)

Provide the 'Contract number' and 'Contractor id' to the insurance agency. The agent must use these two numbers when requesting a Surety2000 'Bond Id' validation number. The 'Contractor id' (Surety2000 refers to this as the "State vendor ID number") is the QuestCDN member number and will always stay the same. The 'Contract number' will change with each project and is the QuestCDN bid posting eBidDoc™ No. Both the 'Contract number' and 'Contractor id' are displayed in the Bid Bond fields. The contractor number can also be found in 'My Account' under the 'Company Info & Online Bid ID' tab.



'Bidder must download the following files for bid submission' (DOWNLOAD ONLY)

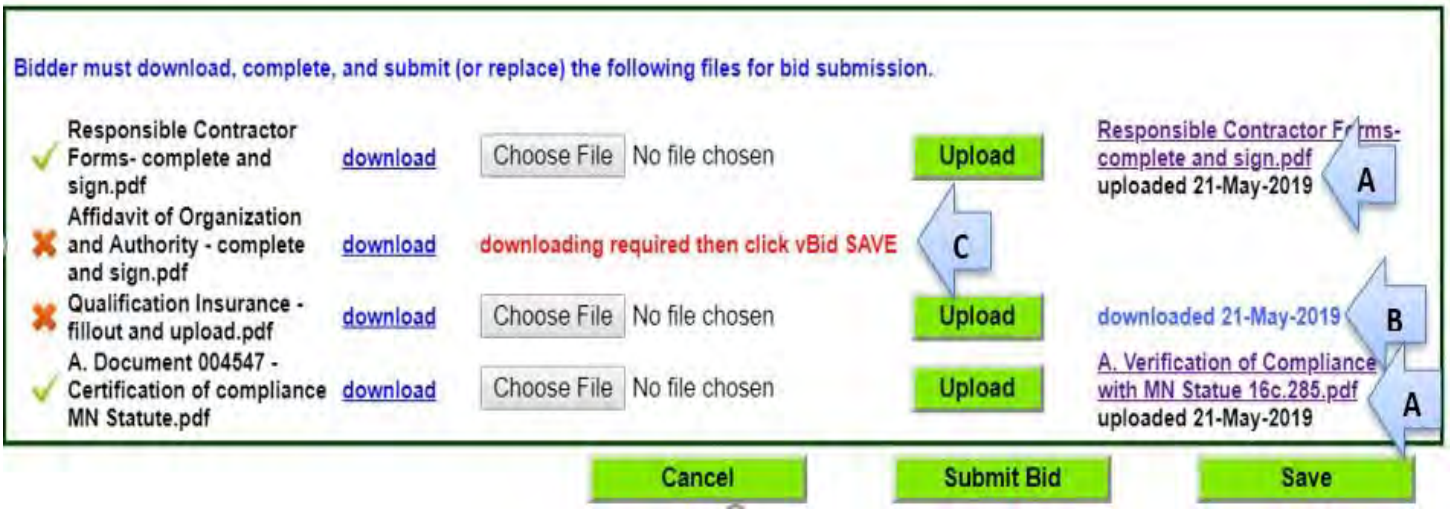
Each required download has a file name and download link. Download all documents listed by clicking the 'download' link. Save the document. Click VirtuBid™ 'Save' button on the top or bottom right of the page to update and refresh the information. A red '**x**' indicates the requirement is not complete. Files may be downloaded and saved multiple times.

The downloaded date of the file will display after downloading the documents and refreshing the page. A green check mark '✓' replaces the previous red **x.** The green check indicates the requirement has been completed.

'Bidder must download, complete, and submit (or replace) the following files for bid submission.'

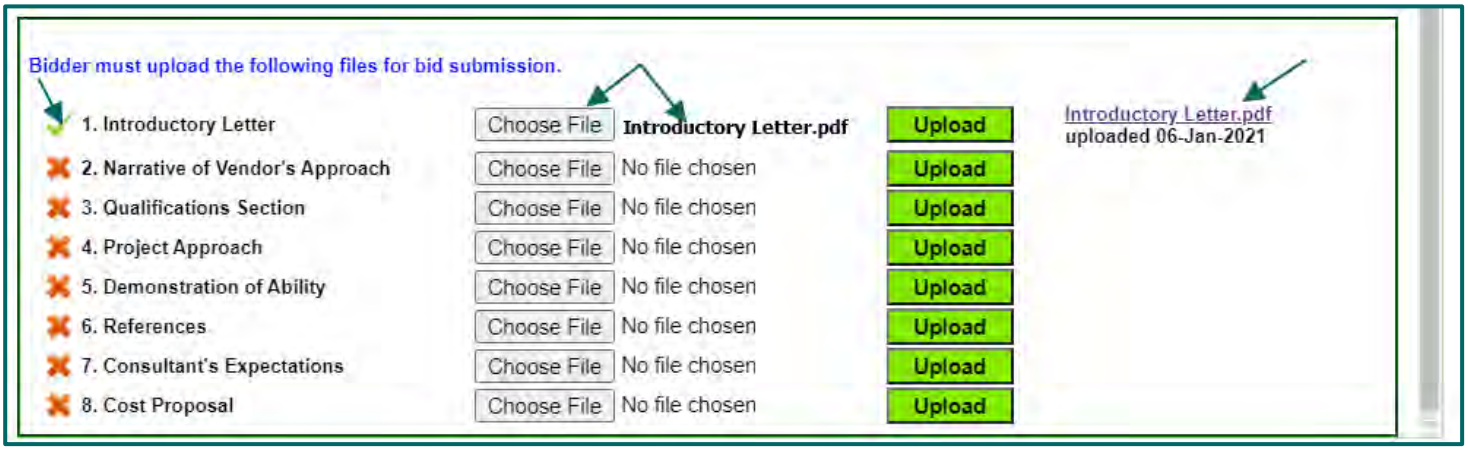
Click the 'download' link to download each document. Save the document to the computer. A red '**x**' indicates the requirement is not complete. Click the VirtuBid™ 'Save' button on the top or bottom right of the page to update the page with the downloaded date. If the file is in a fillable format, complete all information and save each document to your computer. If the file is not in a fillable format, print and complete the forms manually. Scan and save documents to the computer. Select **'Choose File/Browse'** button to retrieve each file from the computer. Select the '**Upload**' button to upload the file. Click the VirtuBid™ '**Save**' button. Exit VirtuBid™ after saving the completed work. All information will be saved upon return. **Note: If needed, click 'Choose File/Browse' to retrieve a new file that replaces the existing uploaded file.**

- **Completed Upload** - The name of the uploaded document is displayed on the right side of the 'Upload' button. A green check mark '✓' indicates the process has been successfully completed. (**Arrow A**)
- **Download File** – 'downloading required then click vBid Save' message indicates the file is not downloaded. Download, complete and upload the completed file before submitting a bid. A red **x** will indicate the process is incomplete. (**Arrow C**)
- **Downloaded Date** - Downloaded date of the documents is shown on the right side of the 'Upload' button. Upload the completed file before submitting a bid. A red **x** indicates the process is incomplete. (**Arrow B**)
- **Check or Replace File** – Click the uploaded underlined document name to review uploaded documents for accuracy and completion. Click **'Choose File/Browse'** to retrieve a new file that replaces the existing uploaded file. Select '**Upload'** to upload the replacement file and click **'Save'**. (**Arrow A**)



'Bidder must upload the following files for bid submission'

Select **'Choose File/Browse'** button to retrieve and attach a required file from the computer. Select the '**Upload**' button to upload the file. Click the VirtuBid™ '**Save**' button on the top or bottom right of the page. All information will be saved upon exiting the VirtuBid™ system. Click the uploaded underlined document to review the file for accuracy and completion. If needed, click 'Choose File/Browse' to retrieve a new file that **replaces** the existing uploaded file. Select '**Upload'** to upload a replacement file and click VirtuBid™ **'Save'**. A red '**x**' indicates the requirement is not complete. . A green check mark '✓' indicates the requirement has been successfully completed.



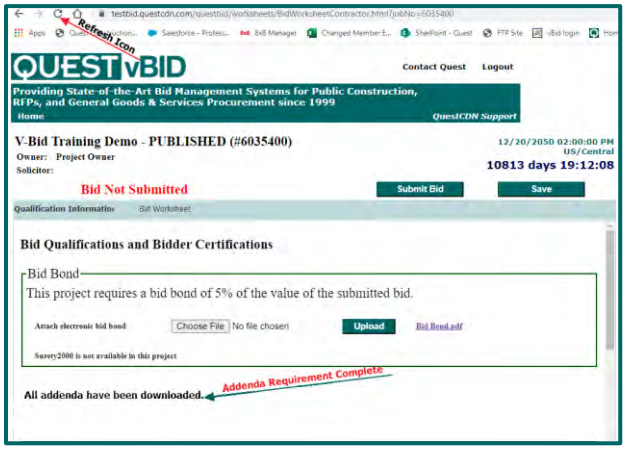
Post Letting Information

Post letting information allows submission of documents requested after the bid close and is similar to the sections above. There may be a post letting 'Deadline' date and time entered. All documents must be uploaded before the date/time expires. A red '**x**' indicates the requirement is not complete. A green check mark '✓' indicates the requirement has been successfully completed. **There is <u>no submit</u> process required upon completion of the upload.** Documents are available to the solicitor/owner immediately. Submitting post letting documents after the bid close is not allowed if a successful bid was not submitted.

Download Addenda

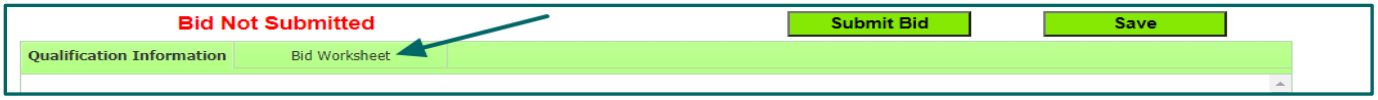
Bids will not be submitted if all addenda are not downloaded from the **<u>main QuestCDN</u>** system. A field on the qualification page indicates 'There are (#) unread addenda for this project. Follow '<u>this link'</u> to download them on QuestCDN'. (opens new window)'.

6. Click '<u>this link</u>' to open/return to the bid posting page and download any missed addenda.
7. Download all addenda and review the information if unsure of missed addendum to download.
8. Choose the VirtuBid™ open browser tab. May need to refresh/reload the page to update the addenda information. To refresh/reload the page, click the refresh icon symbol at the top of the browser or right click the mouse and choose 'reload'/'refresh' option from the drop-down box. The VirtuBid™ qualification page will update and read 'All Addenda have been downloaded'.



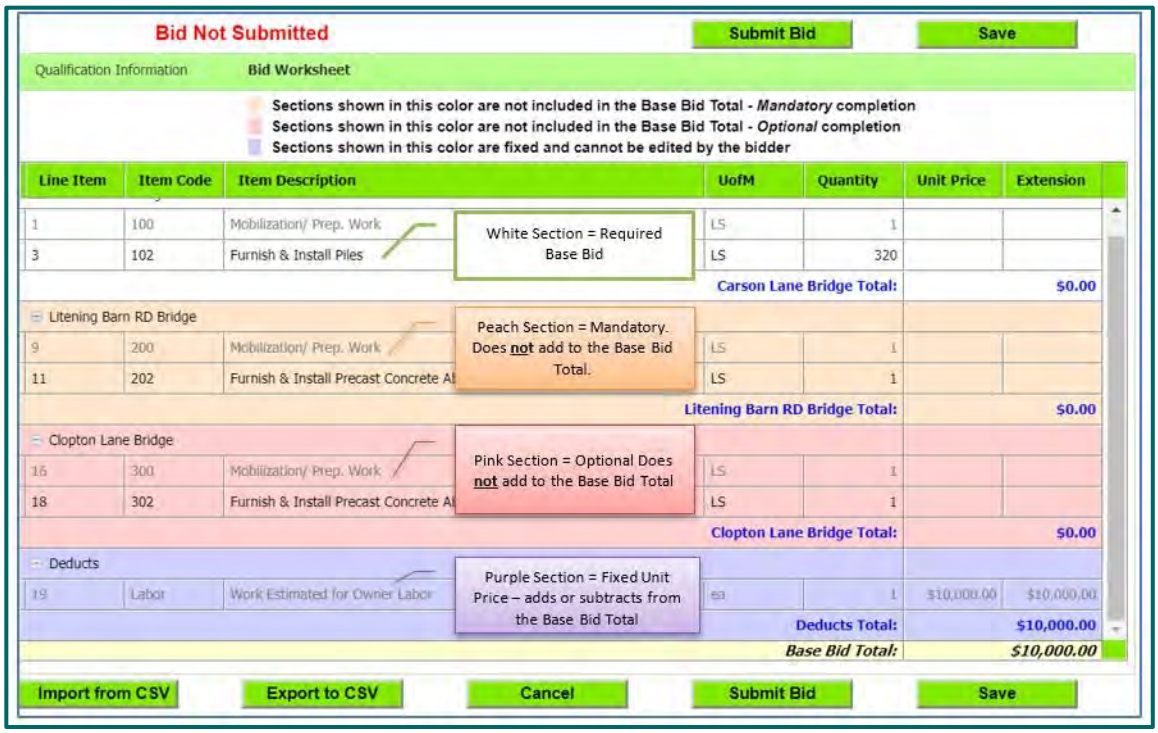
Bid Worksheet Page

Click the Bid Worksheet tab to access the electronic bid form.



Worksheet Sections

1. White colored sections are added to the base bid total, have a subsection total and require a unit price entry for each item before submitting.
2. Pink colored sections are optional, have a subsection total and completion may or may not be mandatory to submit a bid (please follow the instructions specified by the solicitor/owner). Items in this section will not add to the base bid total.
3. Peach colored sections are mandatory, have a subsection total and completion is required to submit a bid. Items in this section will not add to the base bid total.
4. Purple colored sections have a fixed unit price added by the solicitor/owner. Unit prices cannot be changed and are added to or subtracted from the base bid total.
5. Click the appropriate unit price field within the line item. Fill in the unit price excluding the dollar sign. The 'Unit Price' field will only display two digits after the decimal point. The 'Extension' field is calculated using the entered value (example - Qty 20 x unit price 2.558 = Extension = 51.16). Use the enter key, up/down arrows or click each unit price field to move to the next unit price field.
6. vBid will time out and log out after 60 minutes. Click the 'Save' button often to update and save the work.
7. Click 'Submit Bid' once the qualification requirements and bid worksheet page are complete. (The 'Online Bid ID Code' is required. Accept the terms on the submit page to submit the bid to the owner.)



Import & Export CSV

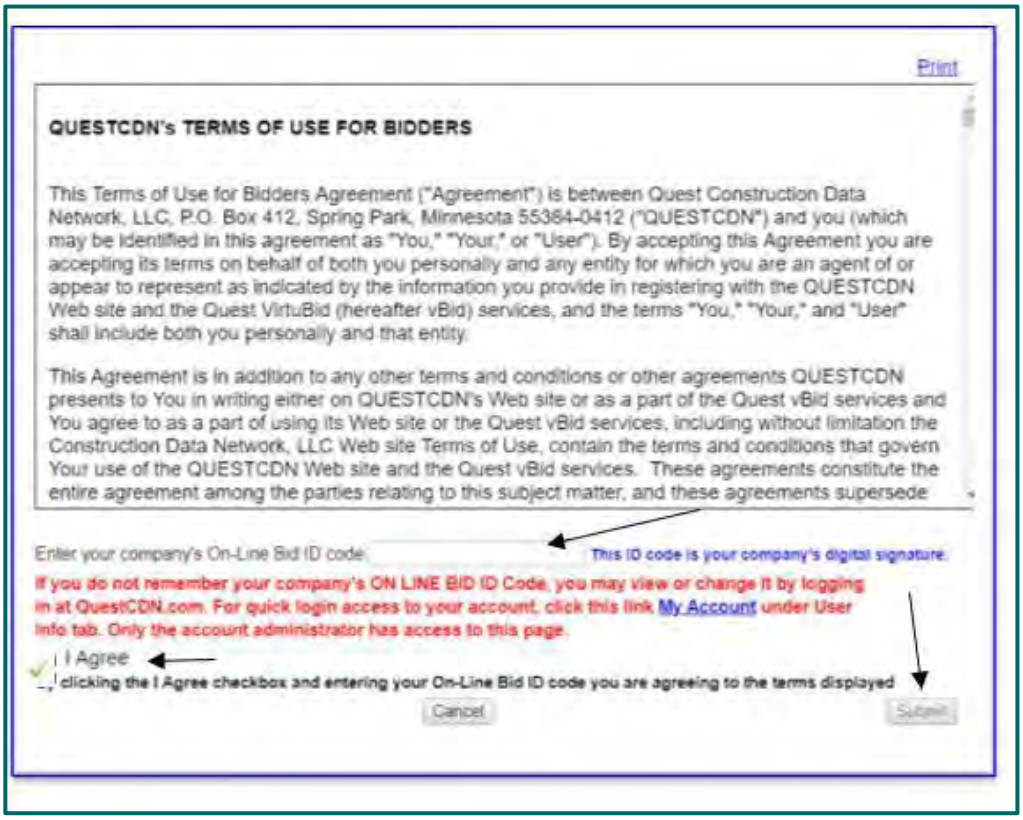
1. The 'Export to CSV' button is used to export the bid worksheet into an Excel CSV spreadsheet which can be helpful to configure additional calculations, formulas and percentage markups on unit prices.
2. The 'Import from CSV' button is used to import the Excel CSV spreadsheet into the bid worksheet.

*** Changes are allowed only to the 'Unit Price' field. DO NOT add or make changes to the header, descriptions or move/add/delete line items on the exported worksheet. The spreadsheet will fail to upload correctly if changes are made causing the system to error on bid submission or the bid may be incorrect.*

Bid Submission & On-Line Bid ID Code

Submit the Bid

Click the 'Submit Bid' button and enter the **'Online Bid ID Code'**. Check **'I Agree'** box to accept the 'QuestCDN Terms of Use for Bidders'. Click '**Submit**' button at the bottom of the page to submit the bid to the owner/solicitor.



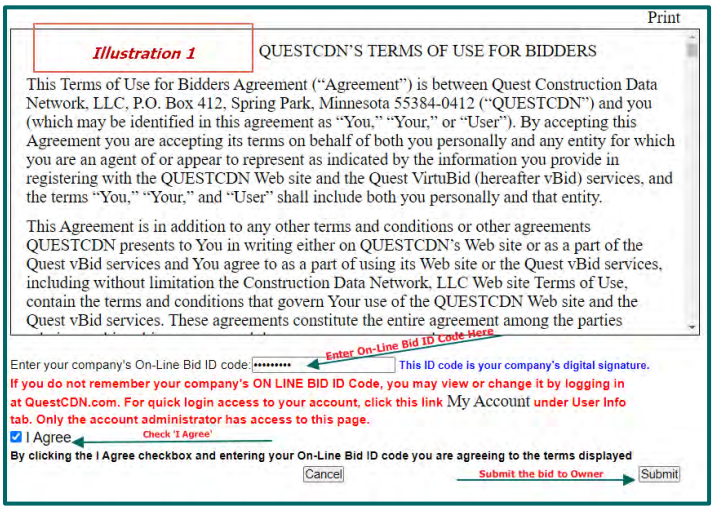
1. There is an opton to unsubmit or remove a bid in its entirety (all data will remain saved). Re-submit bid before the end of the bid closing.
2. Leave bid submitted, revise the bid worksheet and re-submit the revisions.

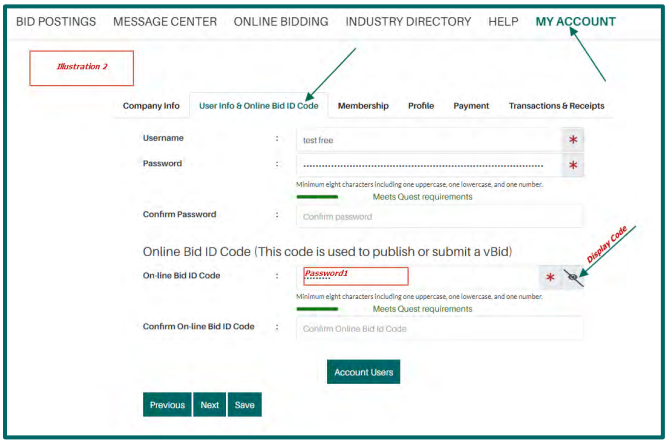
What is the ‘Online Bid ID Code’ and where can I find it on QuestCDN?

The ‘Online Bid ID Code’ is a passcode required at bid submission and is the digital signature for the company. The code is created by the main account holder before account users can access VirtuBid™. The code can be accessed, viewed or updated by logging into QuestCDN with the main account holder username and password. There are two ways to access the ’Online Bid ID Code’.

1. Only the main account holder username and password can access the ‘Online Bid ID Code’. A link to access the code is located on the bid submission page. Click ‘My Account’ and a new browser window will open. Sign into QuestCDN using the main account holder username and password. Under the ‘User Info & Online Bid ID Code’ tab, click the eye icon to view an existing code. Click the VirtuBid™ open browser tab to go back to the online bid submission window. Enter the code, check ‘I Agree’ and click ‘Submit’ (*Illustration 1.*)

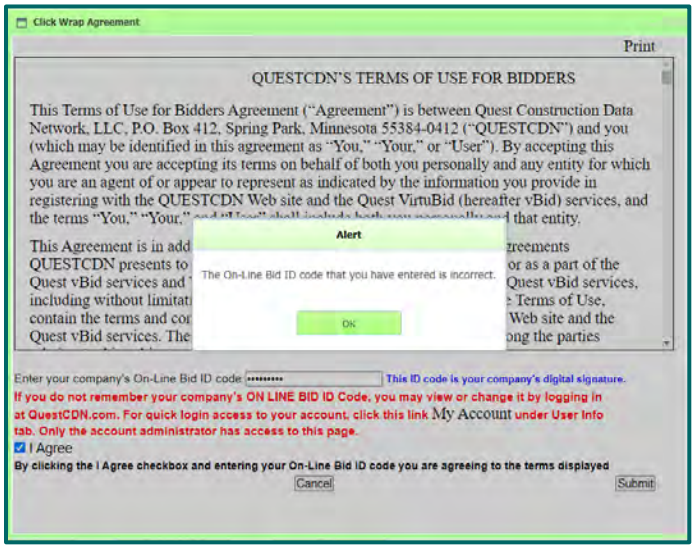
2. Log into QuestCDN using the main account holder username and password, click ‘My Account’ at the top of the page. Select ‘User Info & Online Bid ID Code’ tab and click the eye icon to view or edit an existing code (*Illustration 2.*)





Incorrect Online Bid ID Code

A correct 'Online Bid ID Code' must be entered before the VirtuBid™ system can verify completion of requirements. When a correct code is entered and required fields are complete, the bid will be submitted to the owner/solicitor. If an incorrect code is entered, an 'Alert' error window will display 'The Online Bid ID code that you have entered is incorrect'. Retype a correct code, click 'I Agree' and click 'Submit'. To retrieve the code, click '**My Account'** and a new browser window will open. Sign into QuestCDN using the main account holder username and password. Under the 'User Info & Online Bid ID Code' tab, click the eye icon to view an existing code. Click the VirtuBid™ open browser tab to go back to the online bid submission window. Enter the code, check 'I Agree' and click 'Submit' (*Illustration 1.*)



Unsuccessful Bid Submission Error Messages

The VirtuBid™ system verifies the completion of bid requirements after the 'Online Bid ID Code' is accepted. 'Bid Not Submitted' error message(s) will display if information is missing or incomplete.

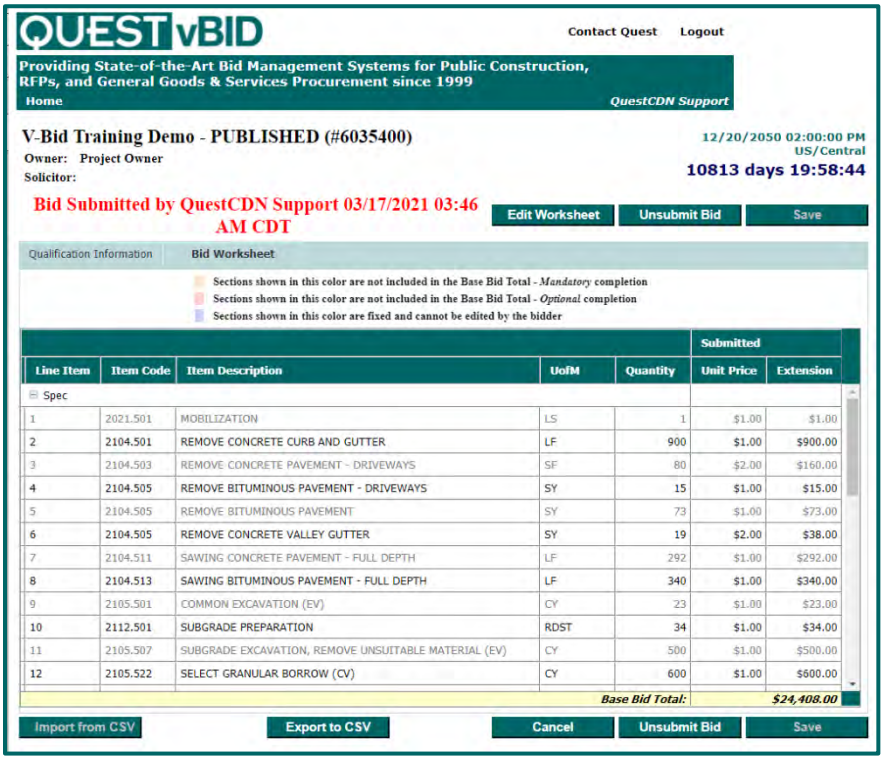
Examples of Error Messages

- Required bid bond has not been entered
- Required addenda have not been downloaded
- Requirement has not been completed (qualification area not complete)
- Item unit price is missing

Bid Submitted

Successfully Submitted Bid

A message displaying '**Bid Submitted by**' (with date/ time and username stamp (shown in red) will display.



A bid submitted confirmation message receipt is sent to the individual's 'Message Center' on QuestCDN.

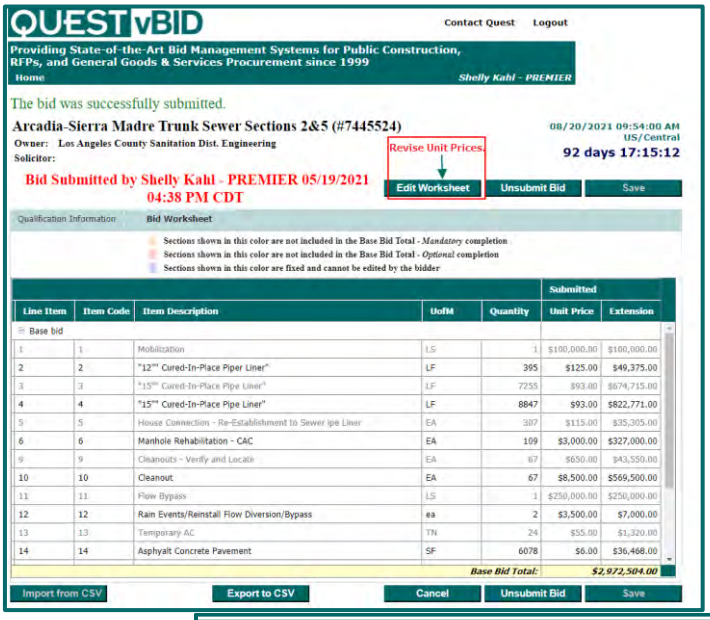
Making Changes After Successful Bid Submission

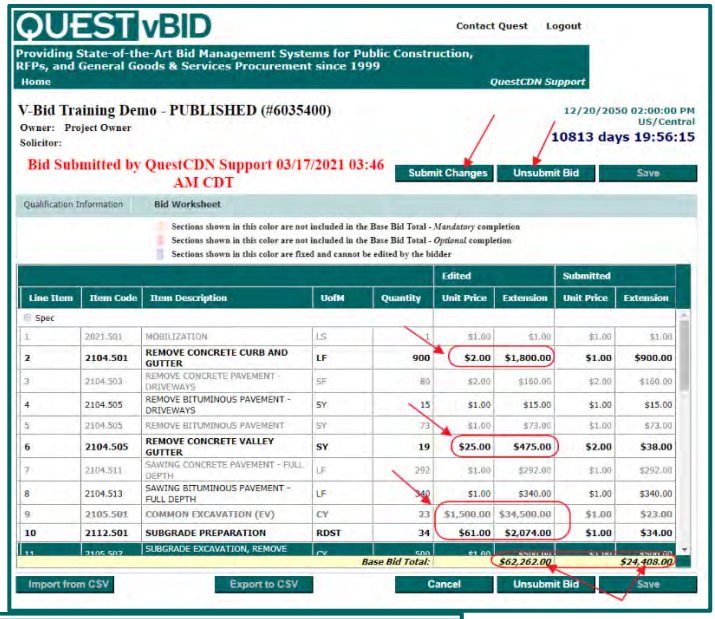
The owner/solicitor does not have access to the bid information until after the bid closes. Qualification requirements and the bid worksheet can be revised before the bid clock closes.

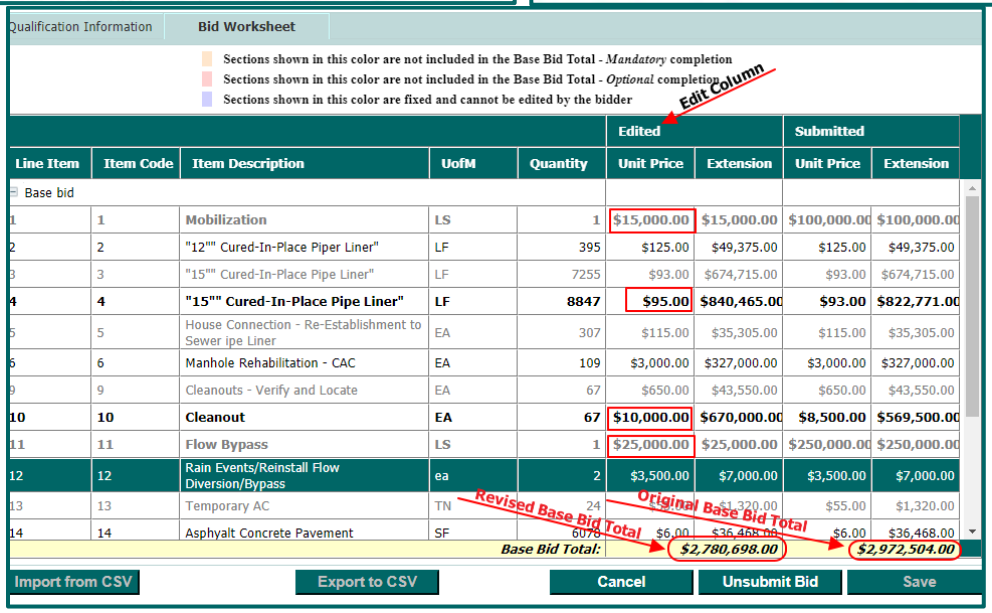
Changing Prices

Make changes while the original bid is submitted. Resubmit bid as many times as needed before the bid closes.

From the 'Bid Worksheet' tab select 'Edit Worksheet' button to revise unit prices. Enter revised unit prices under the populated 'Edited' column. When completed, select 'Submit Bid', enter Online Bid Id code, check 'I agree' and 'Submit'. The owner/solicitor of the project will receive the last bid submission with the revised unit prices. The changes will not be updated if the bid is not resubmitted.







Unsubmit Bid

Click ‘Unsubmit Bid’ to remove bid in its entirety (all data entered will remain saved.) Make changes to the qualification and/or bid worksheet page. Re-submit bid before the end of the bid closing. The bid will not be received by the owner/solicitor if the bid is not resubmitted.

A ’Bid Unsubmitted’ email is sent to the individual’s email address and a confirmation message is sent to the individuals ‘Message Center’.

Example Bid Unsubmitted by user.

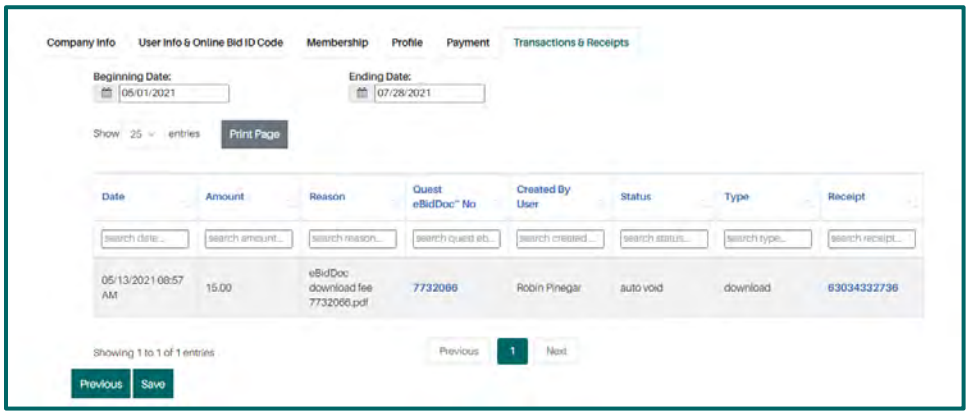
BID UNSUBMITTED

Dear _____
This message is sent to notify you that you UNSUBMITTED your bid for 7638906 eBidDoc number vBid User Guides.
at 5/18/21 2:33PM CDT

You must resubmit our bid before the bid close date for it to be available at the bid letting.

Transactions & Receipts

‘Transactions & Receipts’ contain a record of downloaded transactions and receipts. Click the highlighted column name to sort. Searchable fields include the ‘Date’, ‘Amount’, ‘Reason’, ‘Quest eBidDoc™ No’, ‘Created By User’, ‘Status’, ‘Type’ and ‘Receipt’. Change the calendar ‘Beginning Date’ and ‘Ending Date’ to select a specific date range. Click the ‘Print Page’ button to print to pdf or save. Click on the highlighted transaction number to access and print detailed receipt and bid posting information.



Resources

The resource tab contains frequently asked questions and answers, user guides and instructional videos. Click on the question name to open the field and view the answer. Click ‘Support@QuestCDN’ link to request assistance by sending an email to QuestCDN Customer Support team. Click on a guide or video link to access and download information.

Geotechnical Engineering Report

Malone Park Improvements
New Berlin, Wisconsin
August 4, 2022
Terracon Project No. 58225130

Prepared for:
Ayres Associates
Waukesha, WI

Prepared by:
Terracon Consultants, Inc.
Franklin, Wisconsin

August 4, 2022

Ayres Associates
20975 Swenson Drive, Suite 200
Waukesha, WI 53186

Attn: Mr. Michael Payant, P.E.

Re: Geotechnical Engineering Report
Malone Park Improvements
New Berlin, Wisconsin
Terracon Project No. 58225130

Dear Mr. Payant:

We have completed our geotechnical engineering evaluation for the above referenced project. This study was performed in general accordance with our Agreement Between Consultant and Subcontractor For Drilling Services dated June 23, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Connor Rupke
Staff Engineer

Paul J. Koszarek, P.E.
Principal

REPORT TOPICS

INTRODUCTION 1
SITE CONDITIONS 1
PROJECT DESCRIPTION 2
GEOTECHNICAL CHARACTERIZATION 2
GEOTECHNICAL OVERVIEW 4
EARTHWORK 5
SHALLOW FOUNDATIONS 9
FLOOR SLABS 12
SEISMIC CONSIDERATIONS 13
PAVEMENTS 14
GENERAL COMMENTS 15

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLANS
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Malone Park Improvements
16400 West Al Stigler Parkway
New Berlin, Wisconsin

Terracon Project No. 58225130
August 4, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed Malone Park improvements located at in New Berlin, Wisconsin. The improvements will consist of new walking paths, concession building, an additional basketball court, canopy area, and joined canopy area with a shelter. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Dewatering considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site classification per IBC
- Pavement design and construction for walking paths

The geotechnical engineering scope of services for this project included the advancement of eleven (11) soil borings to a depth of about 6 and 15 feet in the proposed building and pavement areas.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available topographic maps.

Item	Description
Parcel Information	The project is located at 16400 West Al Stigler Parkway in New Berlin, Wisconsin. The site Latitude and Longitude is 42.9719 and -88.1201, respectively (See **Exhibit D**)
Existing Improvements	The area for the new structures is primarily a vacant grass covered area.

Item	Description
Current Ground Cover	Grass.
Existing Topography	A topographic survey has not been provided at this time; however, based on Google Earth the site is between 910 feet and 925 feet in elevation.

PROJECT DESCRIPTION

Our understanding of the project is as follows:

Item	Description
Planned Construction	It is anticipated that the project will include a new 3,364 square foot concessions building. The building will be a slab on grade building with no below grade structures. Also, the southwest building, located near the existing tennis courts will be a slab on grade canopy with a metal roof and the southeast building, located near the splashpad will be a slab on grade shelter with a joined canopy section with a metal roof. Additional site work will include the construction of a basketball court, and 10-foot-wide walking paths throughout the entire park.
Maximum Loads (assumed by Terracon)	■ Columns: 30 kips ■ Walls: continuous load bearing, 2 kips per linear foot (klf) ■ Slabs: 100 pounds per square foot (psf)
Grading/Slopes (assumed by Terracon)	Less than 2 feet of cut and/or fill may be required to develop final grades.

GEOTECHNICAL CHARACTERIZATION

Subsurface Profile

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs and GeoModel can be found in the **Exploration Results** section of this report. Stratification boundaries on the boring logs represent the approximate location of changes in soil types, the transition between materials may be gradual.

We completed the following borings at these general locations.

Borings	Boring Depth (feet)[1]	Planned Location
2 (B-1 and B-2)	15	Concessions Building Footprint

Borings	Boring Depth (feet)[1]	Planned Location
2 (B-3 and B-4)	15	Canopy Footprint (Near Tennis Courts)
2 (B-5 and B-6)	15	Canopy & Shelter Footprint (Near Splash pad)
1 (P-4)	6	Basketball Court
4 (P-1 thru P-3)	6	Walking Paths

1. Below ground surface.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	**Existing Surface Material**	Topsoil (3 to 6 inches thick)
2	**Existing Fill**	Buried Topsoil and Lean Clay, typically up to 6 feet thick.
3	**Native Clay**	Native Brown, Tan, and Gray Lean Clay, Lean Clay With Silt, typically stiff to hard.
4	**Native Granular**	Native Clayey Sand, moist to wet, medium dense to very dense

Topsoil thickness was observed to vary from 3 to 6 inches at our boring locations. Existing fill was encountered up to 6 feet thick in borings B-5, B-6, P-1, and P-2. Native soils consisting of stiff to hard lean clay and lean clay with silt overlaying clayey sand in a medium dense to very dense condition.

Groundwater Conditions

The boreholes were observed while drilling and after completion for the presence and level of groundwater. The water levels observed in the boreholes can be found on the boring logs in **Exploration Results**, and are summarized below.

Based on the observed groundwater levels, perched water was observed at boring B-4 at 3 feet, and again at 13 feet. Perched water is that which is held within more permeable soils like silt and sand by less permeable underlying soils such as clay. Another method of determining long term groundwater levels in clay soils is by colorization. The color the clay soils above the long-term water level is typically brown and below the water level, the soils turn to gray. The table below shows the approximate depths where this change occurs below the existing grade.

Boring	Approximate Depth Where Brown to Gray Color Change Occurs (Feet)
B-1	13
B-2	1
B-3	6
B-4	1
B-6	6
P-3	1
P-4	3

Groundwater was not observed in the remaining borings while drilling, or for the short duration the borings could remain open. However, this does not necessarily mean the borings terminated above groundwater, or the water levels summarized above are stable groundwater levels. Due to the low permeability of the soils encountered in the borings, a relatively long period may be necessary for a groundwater level to develop and stabilize in a borehole. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define groundwater levels in materials of this type.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be different than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

GEOTECHNICAL OVERVIEW

The **Shallow Foundations** section addresses foundation support of structures. It is our opinion that the structures can be supported on typical spread footing foundations bearing on the native, inorganic stiff to very stiff of sufficient strength, newly placed and compacted engineered fill to raise grades, or lean concrete extending to suitable native bearing soils. Shallow foundations may be proportioned for a net allowable bearing pressure of 3,000 psf.

The near surface, stiff to hard lean clay with high moistures (>20%) at borings B-3 and B-4 could become unstable with typical earthwork and construction traffic, especially after precipitation events. Effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the winter

months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

EARTHWORK

The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria as necessary to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Existing vegetation, trees and root bulbs, topsoil, and other unsuitable material should be completely removed from the proposed construction area. Remnants of the former structures should also be removed, including any foundations, floor slabs, and utilities. The existing foundations could be left in place below new slabs and pavements provided they are not below any new foundations and there is at least 2 feet of vertical separation between the existing foundation and new slabs or pavements. Proper site drainage should be maintained during construction so that ponding of surface runoff does not occur and cause construction delays and/or inhibit site access.

Once initial stripping has been completed, the exposed subgrade soils should be proofrolled to delineate any unstable areas. For granular soils, proofrolling can be accomplished using a vibratory steel drum roller with a minimum drum weight of 10 tons. The proofrolling should be performed under the direction of the Geotechnical Engineer. Areas that rut or excessively deflect under the proofroll should be improved by scarification and compaction or by removal and replacement with an approved engineered fill as discussed in **Fill Material Types**.

It should be anticipated that high moisture (>20%) clay soils will be present across most of the site, excluding locations near B-1, B-2, P-3, and P-4 and may require remediation prior to placing new structural fill above. If these locations are in areas of cut, then the near surface soils may require modification in order to reuse for structural fill. In general, silt soils are not suitable to be used for structural fill. Stabilization options could include removal and replacement with crushed stone or stabilization using geogrid and stone starting from existing grade, once the topsoil has been stripped or by removal and replacement with drier clay soils. If undercuts are backfilled with stone in paved areas, then draintile should be inserted at the bottom of the undercut to keep water from ponding in these areas. The depth of undercut should be determined in the field by the on site testing representative.

Existing Fill

As noted in **Geotechnical Characterization**, borings B-5, B-6, P-1, and P-2 encountered fill to a depth of 6 feet. In addition to the existing fill, buried topsoil was encountered in all borings previously listed with a consistent depth of 3 to 6 feet below the existing grade. The existing fill soils and buried topsoil are not considered to be suitable for foundation support but may be considered for use with floor slabs and pavement if the owner accepts that some higher settlements make occur due to the fill materials. However, it should be noted that the fill and buried organic soils were relatively stiff and would not appear to be prone to settlement.

If the owner elects to construct the floor slabs and pavements on the existing fill, the following protocol should be followed. Once the planned grading has been completed, the entire area should be proofrolled with heavy, rubber tire construction equipment, to aid in delineating areas of soft or otherwise unsuitable soil. However, even with the recommended construction procedures, there is inherent risk for the owner that compressible fill or unsuitable material, within or buried by the fill will, not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but can be reduced by following the recommendations contained in this report.

Fill Material Types

Engineered fill should meet the following material property requirements:

Soil Type [1, 2]	USCS Classification	Acceptable Location for Placement
Cohesive	CL[3], CL-ML[3] (LL ≤ 45 and PI ≤ 20)	Mass earthwork below pavements and floor slabs
Granular	GW, GM, GC, SW, SP, SM, SC 5% to 15% passing #200 sieve	Not native to the site.
Granular	1 ¼" dense graded base crushed stone, gravel or concrete	Undercuts below footings, floor slabs or pavements
Unsuitable	ML[4], CH[4], MH[4], OL, OH[4], PT	Non-structural locations

Soil Type [1, 2]	USCS Classification	Acceptable Location for Placement

1. Engineered fill soils should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. Any organic material, rock fragments larger than 3 inches, and other unsuitable material should be removed prior to use of these soils as fill.
3. Highly susceptible to frost, unstable when wet, are commonly used for pavement support with the knowledge that additional maintenance and/or shorter pavement life are likely.
4. High plasticity CH, MH, or OH soils should not be used beneath or adjacent to movement sensitive structures such as foundations, floor slabs, and pavements.

Fill Compaction Requirements

Engineered fill should meet the following compaction requirements:

Item	Description
Maximum Lift Thickness	■ 9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used
Maximum Lift Thickness	■ 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used
Minimum Compaction Requirements [1, 2]	■ 95% of the modified Proctor (ASTM D1557) maximum dry density below foundations and within 3 feet below the pavement subgrade elevation. The compaction effort should extend laterally beyond the edges of the structures at least 8 inches for every foot of fill below the structure's elevation. ■ 92% of the modified Proctor (ASTM D1557) maximum dry density above foundations, below floor slabs, and 3 feet or more below the pavement subgrade elevation.
Moisture Content Range [3]	■ Granular fill: Compact within workable moisture content levels to achieve minimum compaction requirements.

1. We recommend that engineered fill soils be tested for moisture content and compaction during placement. If the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
2. Moisture levels should be maintained to achieve compaction without bulking during placement or pumping when proof-rolled.

Grading and Drainage

The site should be graded to provide effective drainage away from the building during and after construction, and proper grades should be maintained throughout the life of the structure. Water retained next to the building can result in soil movements greater than those discussed in this

report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roof should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 5 feet from the building.

Exposed ground should be sloped and maintained at a minimum 5 percent away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After construction and landscaping, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted as necessary as part of the site's maintenance program. Where paving or flatwork abuts the building a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

Terracon should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, placement and compaction of engineered fills, and backfilling of excavations.

Upon completion of filling and grading, care should be taken to maintain the moisture content of the subgrade soils prior to construction of floor slabs. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Any water that collects over or adjacent to construction areas should be promptly removed. If the subgrade should become frozen, desiccated, saturated, or disturbed, the affected material should be removed, or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction and observed by Terracon.

Care should be taken to avoid disturbance of prepared subgrade soils. The native soils can be easily disturbed, especially by construction traffic. Construction traffic should not operate directly on saturated or low strength soils. If the subgrade becomes saturated, desiccated, or disturbed, the affected materials should either be scarified and compacted, or be removed and replaced as previously discussed. Subgrades should be observed and tested by Terracon prior to construction.

We do not anticipate that the local groundwater table will be encountered in excavations for shallow spread foundations. However, minor amounts of seepage may be encountered from perched water conditions. If seepage is encountered, the contractor is responsible for employing appropriate dewatering methods to control seepage and facilitate construction. If needed, we anticipate that excavation dewatering can be accomplished with a typical sump pit and pump system, though the contractor should determine the required number of sumps and sump locations based on the amount of water entering the excavation. The pumps should be adequately filtered to prevent pumping of fines.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, as well as other applicable codes, and in

accordance with any applicable local, state, and federal safety regulations. The contractor should be aware that slope height, slope inclination, and excavation depth should in no instance exceed those specified by these safety regulations. The fill soils are classified as Type “C”, the native clay soils are classified as Type “B”, and the native granular soils above water levels are classified as Type “C” soils. Maximum slope inclinations for Type “B” soils under the OSHA regulations are 1H:1V and the maximum slop inclinations for Type “C” soils under the OSHA regulations are 1.5H:1V.

Flatter slopes than those dictated by these regulations may be required depending upon the soil conditions encountered and other external factors. These regulations are strictly enforced and if they are not followed, the owner, the contractor, and/or earthwork and utility subcontractor could be liable and subject to substantial penalties. Under no circumstances should the information provided in this report be interpreted to mean that Terracon is responsible for construction site safety or the contractor’s activities. Construction site safety is the sole responsibility of the contractor who shall also be solely responsible for the means, methods, and sequencing of the construction operations.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proof-rolling and mitigation of areas delineated by the proof-roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test for every 50 linear feet of compacted utility trench backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. In the event that unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer’s evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the removal of the existing fill and buried topsoil, which isn’t suitable for foundation support, has been removed from the site and replaced with engineered fill in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations.

Design Parameters

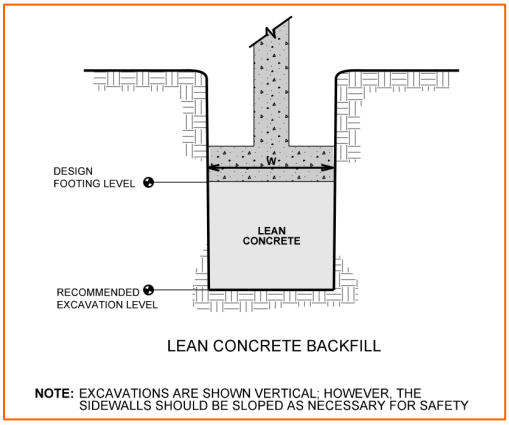
Item	Description
Maximum Net Allowable Bearing pressure [1, 2]	Buildings and Canopies: 3,000 psf Footings bearing directly on suitable native non-organic soils, or engineered fill or lean concrete extending to suitable native soils
Minimum Foundation Dimensions	Columns: 30 inches Continuous: 18 inches
Estimated Total Settlement from Structural Loads [2]	Less than 1 inch
Estimated Differential Settlement [2, 5]	About ½ to 2/3 of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. These bearing pressures can be increased by 1/3 for transient loads unless those loads have been factored to account for transient conditions. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
4. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
5. Differential settlements are as measured over a span of 50 feet.

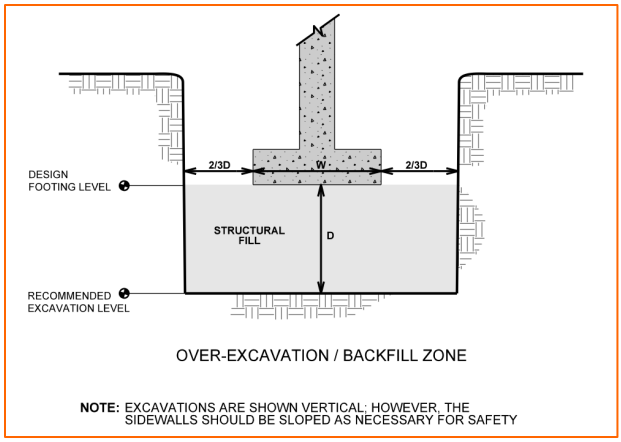
Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level, or on structural fill or lean concrete backfill placed in the excavations. This is illustrated on the sketches below. If lean concrete backfill (minimum 28-day compressive strength of 1,500 psi) is used, widening of the footing excavation may not be needed.



Over-excavation for structural fill (1 ¼" dense graded base crushed stone, gravel or concrete) placement below footings should be conducted as shown below. The over-excavation should be backfilled up to the footing base elevation, with structural fill placed, as recommended in the **Earthwork** section.

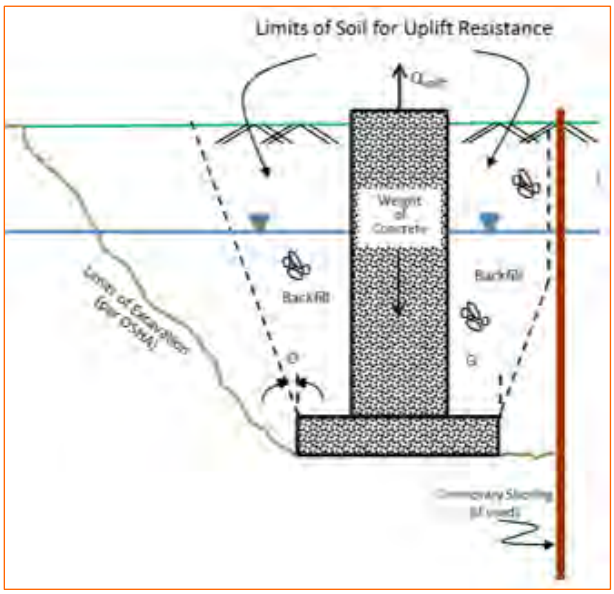


Uplift and Lateral Loading Considerations

New canopy areas are planned at borings two locations. Borings B-3 and B-4 are located at the proposed canopy location in the southwest area of Malone Park near the existing tennis courts. Borings B-5 and B-6 are located at the proposed canopy and shelter location in the southeast area of Malone Park near an existing splash pad. Existing fill and buried topsoil were identified in B-5 and B-6 extending 6 feet below the existing grade. Footing foundations supporting the canopy columns should bear on suitable native soils and be embedded sufficiently to resist uplift and lateral loads.

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils. As illustrated on the subsequent figure, the effective weight of the soil prism defined by diagonal planes extending up from the top of the perimeter of the foundation to the ground surface at an angle, θ, of 20 degrees from the vertical can be included in uplift resistance.

The maximum allowable uplift capacity should be taken as a sum of the effective weight of soil plus the dead weight of the foundation, divided by an appropriate factor of safety. A maximum total unit weight of 100 pcf should be used for the backfill. This unit weight should be reduced to 40 pcf for portions of the backfill or natural soils below the groundwater elevation.



FLOOR SLABS

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor slab support [1]	Native granular soils or newly placed and compacted engineered fill materials that have been prepared in accordance with the **Earthwork** section and tested/approved by Terracon.
Granular leveling course [2]	A minimum of 4 inches of well-graded crushed stone meeting WISDOT Section 310 for an open graded base course material.
Modulus of subgrade reaction	125 pci for a soil subgrade prepared as recommended in this report

1. Floor slabs should be structurally independent of building footings or walls to reduce the potential for floor slab cracking caused by differential movements between the slab and foundation.

Item	Description
2.	The floor slab should be placed on a leveling course comprised of well-graded crushed stone (less than 15 percent fines) compacted to a stable condition.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Floor Slab Construction Considerations

Finished subgrade within and for at least 10 feet beyond the floor slab should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil properties encountered at the site and as described on the exploration logs and

results, it is our professional opinion that the **Seismic Site Classification is D**. Subsurface explorations at this site were extended to a maximum depth of 15 feet. The site properties below the boring depth to 100 feet were assumed to be similar to those encountered in the upper 15 feet of the soil profile. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

PAVEMENTS

General Pavement Comments

A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

There is often a time lapse between the end of grading operations and the commencement of paving. Subgrades prepared early in the construction process can become disturbed by construction traffic. Non-uniform subgrades often result in poor pavement performance and local failures relatively soon after pavements are constructed. Depending on the paving equipment used by the contractor, measures may be required to improve subgrade strength to greater depths for support of heavily loaded trucks. Improvements should be made as recommended in **Earthwork**.

Pavement Section Thicknesses

It is anticipated that the walking paths will be used for pedestrians with occasional pick up trucks for maintenance. Further that these roads are not designed for dump trucks or fire trucks and if these vehicles do drive over the walking paths, then significant damage could occur.

Based upon the estimated design parameters listed above, we have developed recommended minimum pavement sections for Asphaltic Concrete (AC) pavements, where the subgrade appears firm under proof-rolling at the time of construction. The recommended minimum pavement sections are provided in the following table. Greater pavement and/or base course thicknesses may be required for greater expected traffic loads and volumes, or if poorer subgrade conditions are encountered.

Asphaltic Concrete (AC)	
Layer	Thickness (inches)
	Standard Duty Pavement
AC Surface [1]	3

Asphaltic Concrete (AC)	
Layer	Thickness (inches)
	Standard Duty Pavement
Aggregate Base [2]	6

1. Surface course, WisDOT Specifications for No. 5 (9.5 mm) Hot Mix Asphalt (HMA)
2. The base course aggregate beneath the new pavement should conform to the 1-1/4-inch Dense Graded Base listed in Section 305 of the WisDOT Standard Specifications (current edition).

Pavements and subgrades will be subject to freeze-thaw cycles and seasonal fluctuations in moisture content. Construction traffic on the pavements was not considered in developing the estimated minimum pavement thicknesses. If the pavements will be subject to construction equipment/vehicles, the pavement sections should be revised to consider the additional loading.

Pavement Drainage

Pavements and adjacent sidewalks should be sloped to provide rapid drainage of surface water. Water should not be allowed to pond on or adjacent to the pavements or sidewalks, since this could saturate the subgrade and contribute to premature pavement or slab deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through the GeoReport system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering

practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Borings	Boring Depth (feet)[1]	General Location
2 (B-1 and B-2)	15	Concessions Building Footprint
2 (B-3 and B-4)	15	Canopy Footprint (Near Tennis Courts)
2 (B-5 and B-6)	15	Canopy Footprint (Near Splash pad)
1 (P-4)	6	Basketball Court Footprint
4 (P-1 thru P-3, P-5)	6	Walking Paths Footprint

1. Below ground surface.

Boring Layout and Elevations: The borings were located in the field by Terracon personnel using a consumer grade handheld GPS unit (estimated horizontal accuracy of about ±20 feet. Ground surface elevations were not provided for inclusion in this report.

Subsurface Exploration Procedures: We advanced the borings with an ATV-mounted rotary drill rig using hollow stem augers. Four samples were obtained in the upper 10 feet of each boring and at 5-foot intervals thereafter in the deeper borings. Soil sampling was performed using split-barrel sampling procedure. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon is driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and upon completion of drilling. For safety purposes, the borings were backfilled with bentonite chips or auger cuttings.

The sampling depths, penetration distances, and other sampling information were recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a geotechnical engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs include visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the geotechnical engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to better understand

the engineering properties of the soil strata encountered in the borings. The laboratory program included moisture content testing of all samples and hand penetrometer for clay soils. The laboratory testing program also included examination of soil samples by the project engineer. Based on the texture and plasticity, we described and classified the soil samples in general accordance with the Unified Soil Classification System (USCS).

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan
Exploration Plan

SITE LOCATION

Malone Park Improvements ■ New Berlin, Wisconsin
August 4, 2022 ■ Terracon Project No. 58225130

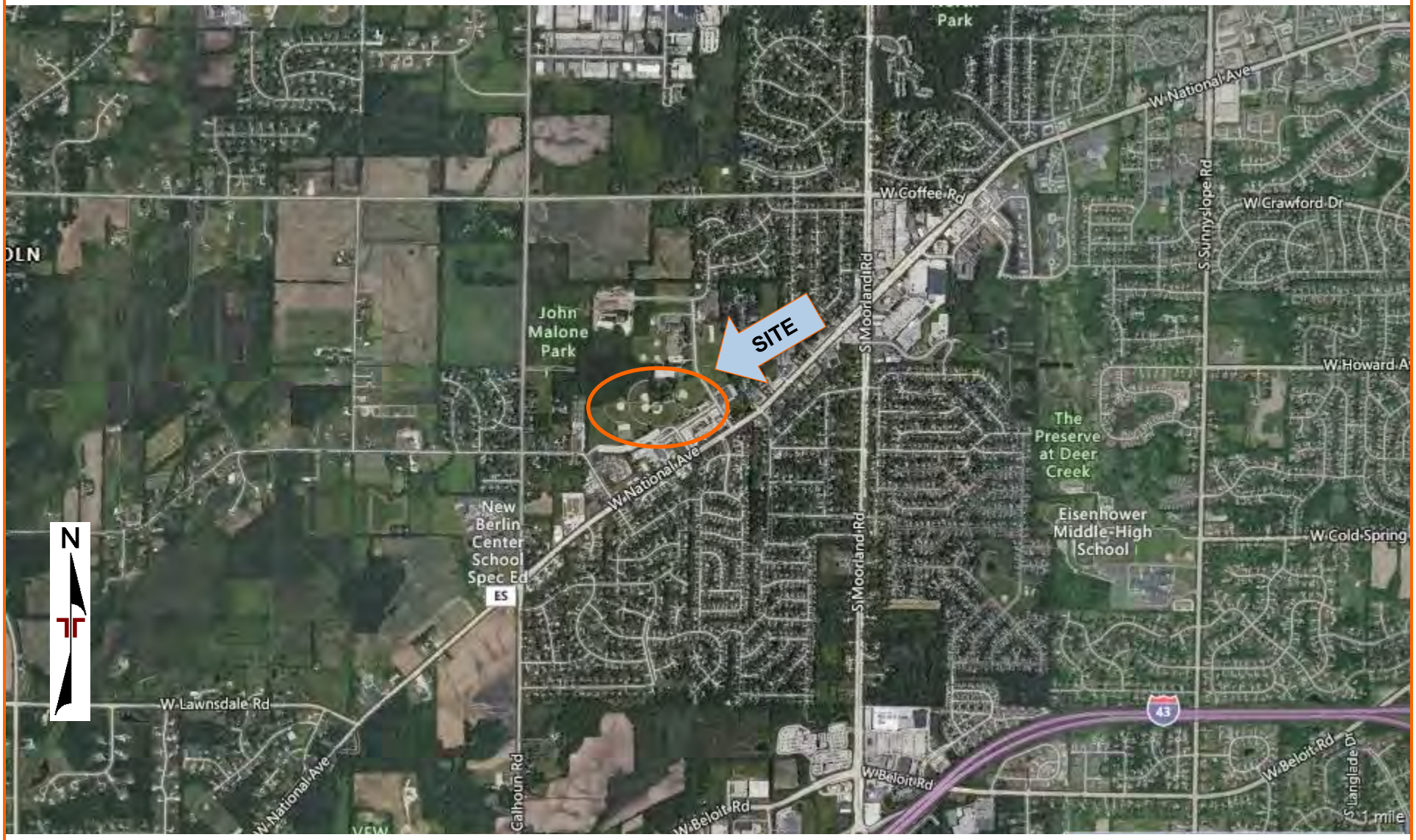


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY BING MAPS

EXPLORATION PLAN

Malone Park Improvements ■ New Berlin, Wisconsin
August 4, 2022 ■ Terracon Project No. 58225130

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY BING MAPS

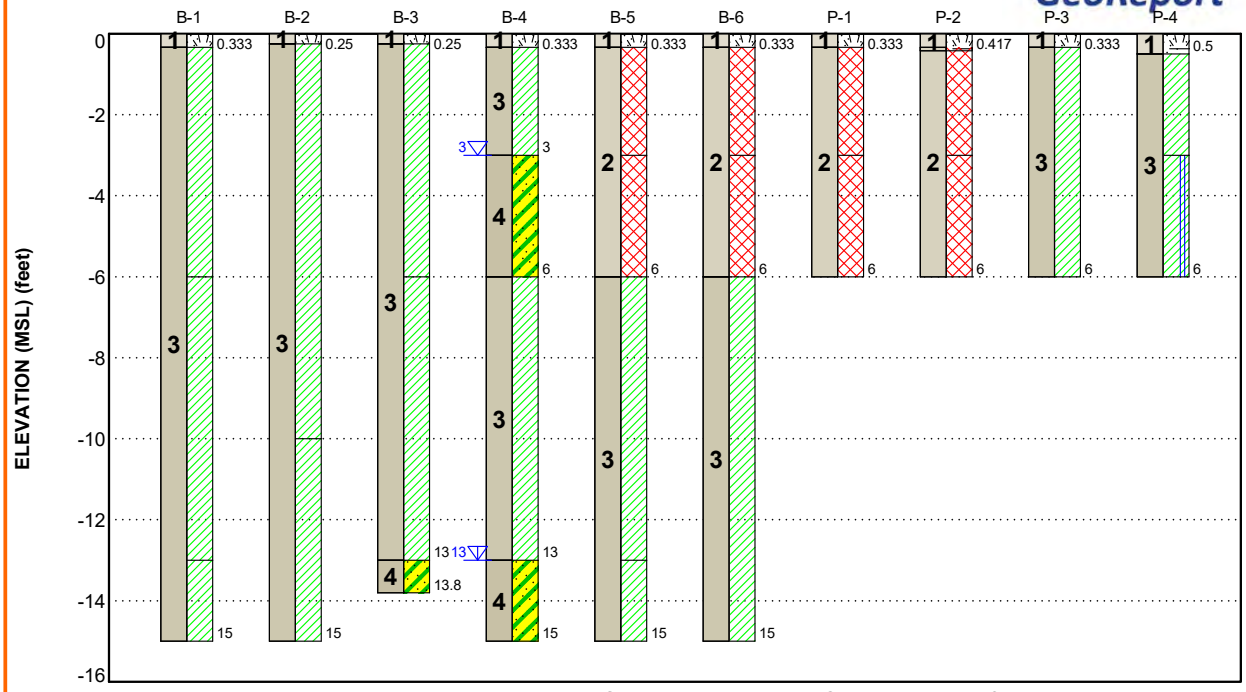
EXPLORATION RESULTS

Contents:

Boring Logs (B-1 thru B-6, P-1 thru P-4)

GEOMODEL

Malone Park Improvement ■ New Berlin, WI
Terracon Project No. 58225130



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Existing Surface Material	Topsoil (3 to 6 inches thick)
2	Existing Fill	Buried Topsoil and Lean Clay, typically up to 6 feet thick
3	Native Clay	Native Brown, Tan, and Gray Lean Clay, Lean Clay With Silt typically stiff to hard
4	Native Granular	Native Clayey Sand, moist to wet, medium dense to very dense

LEGEND

- Topsoil
- Fill
- Lean Clay
- Lean Clay with Silt
- Clayey Sand

▽ First Water Observation
▽ Second Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

BORING LOG NO. B-1

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9723° Longitude: -88.1207°

DEPTH		GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.3	**TOPSOIL (4" Thick)**							
	LEAN CLAY (CL), seams of silt, brown and gray, hard			X	18	7-6-7 N=13	4.50+ (HP)	13.6
				X	13	10-10-15 N=25	4.50+ (HP)	14.3
6.0								
	LEAN CLAY (CL), brown, hard			X	16	6-6-12 N=18	4.50+ (HP)	17.2
				X	13	7-9-14 N=23	4.50+ (HP)	16.7
13.0								
	LEAN CLAY (CL), seams of silt, brown and gray, hard			X	11	11-12-15 N=27	4.50+ (HP)	14.1
15.0								
	Boring Terminated at 15 Feet							

5
10
15

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-1

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. B-2

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9721° Longitude: -88.1208°

DEPTH		SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.3	**TOPSOIL (3" Thick)**					
	LEAN CLAY (CL), seams of silt, brown and gray, hard					
		X	18	6-6-9 N=15	4.50+ (HP)	13.0
		X	18	10-15-16 N=31	4.50+ (HP)	13.6
5						
		X	18	5-10-16 N=26	4.50+ (HP)	16.9
		X	10	6-12-18 N=30	4.50+ (HP)	15.6
10.0						
10	**LEAN CLAY (CL)**, brown, hard					
		X	9	12-14-16 N=30	4.50+ (HP)	14.3
15.0						
15	***Boring Terminated at 15 Feet***					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-2

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. B-3

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9719° Longitude: -88.1185°

DEPTH		GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.3	**TOPSOIL (3" Thick)**								
	LEAN CLAY (CL), brown, very stiff to hard					16	2-3-3 N=6	2.25 (HP)	27.7
						18	2-5-7 N=12	4.25 (HP)	17.7
6.0			5						
	LEAN CLAY (CL), seams of silt, brown and gray, hard					18	5-9-12 N=21	4.50+ (HP)	16.1
						18	9-14-15 N=29	4.50+ (HP)	17.4
13.0			10						
13.8	**CLAYEY SAND (SC)**, medium grained, tan and brown, moist, very dense, possible boulders and cobbles					4	50/4"		7.9
	Auger Refusal due to cobbles and boulders at 13.8 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-3

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. B-4

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9719° Longitude: -88.1183°

DEPTH		GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.3	**TOPSOIL (4" Thick)**							
	LEAN CLAY (CL), seams of silt, brown and gray, stiff				15	2-2-2 N=4	1.25 (HP)	28.1
3.0			▽					
	CLAYEY SAND (SC), brown, wet, medium dense				18	2-4-8 N=12		25.1
6.0								
	LEAN CLAY (CL), seams of silt, brown, hard				18	6-7-11 N=18	4.50+ (HP)	15.2
					18	9-14-14 N=28	4.50+ (HP)	16.4
13.0			▽					
	CLAYEY SAND (SC), brown and tan, wet, medium dense, contains boulders and cobble				18	5-5-20 N=25		10.2
15.0								
	Boring Terminated at 15 Feet							

5 10 15

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *Perched water encountered at 3' - 6'*
▽ *free water observed while drilling at 13'*

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. B-5

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9703° Longitude: -88.1236°

DEPTH		GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.3	**TOPSOIL (4" Thick)**								
	FILL - LEAN CLAY, trace gravel, brown				X	18	3-3-4 N=7	4.50+ (HP)	19.4
3.0									
	FILL - BURIED TOPSOIL, black				X	10	4-7-9 N=16	3.50 (HP)	29.7
6.0			5						
	LEAN CLAY (CL), seams of silt, brown, very stiff				X	18	2-2-4 N=6	2.00 (HP)	25.2
					X	18	6-6-6 N=12	2.50 (HP)	25.6
			10						
13.0									
	LEAN CLAY (CL), brown, hard				X	13	5-8-10 N=18	4.50+ (HP)	17.7
15.0			15						
	Boring Terminated at 15 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. B-6

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9702° Longitude: -88.1235°

GRAPHIC LOG	DEPTH	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
	0.3	**TOPSOIL (4" Thick)**							
	3.0	**FILL - LEAN CLAY**, trace gravel, brown			X	18	3-3-3 N=6	3.50 (HP)	21.3
	6.0	**FILL - BURIED TOPSOIL**, black	5		X	17	5-5-7 N=12	3.75 (HP)	26.8
	15.0	**LEAN CLAY (CL)**, seams of silt, brown and gray, very stiff			X	18	2-2-2 N=4	3.00 (HP)	20.5
			10		X	16	5-6-6 N=12	2.50 (HP)	25.6
			15		X	9	7-7-10 N=17	dist.	
		Boring Terminated at 15 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022	Boring Completed: 07-14-2022
Drill Rig: 415	Driller: C.A.
Project No.: 58225130	Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. P-1

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9722° Longitude: -88.1197°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.3		**TOPSOIL (4" Thick)**							
		FILL - LEAN CLAY, brown			X	16	3-4-4 N=8	2.50 (HP)	24.5
3.0		**FILL - BURIED TOPSOIL**, black							
			5		X	18	4-5-6 N=11	2.50 (HP)	19.5
6.0		***Boring Terminated at 6 Feet***							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. P-2

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9715° Longitude: -88.1223°

DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.4	**TOPSOIL (5" Thick)** **FILL - LEAN CLAY**, brown							
				X	18	3-4-6 N=10	2.75 (HP)	28.4
3.0	**FILL - BURIED TOPSOIL**, black							
		5		X	18	7-7-7 N=14	2.25 (HP)	33.0
6.0	***Boring Terminated at 6 Feet***							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. P-3

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9715° Longitude: -88.1211°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.3		**TOPSOIL (4" Thick)**							
		LEAN CLAY, seams of silt, brown and gray, hard			X	13	5-8-10 N=18	4.50+ (HP)	16.4
			5		X	18	15-18-20 N=38	4.50+ (HP)	16.4
6.0		***Boring Terminated at 6 Feet***							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

BORING LOG NO. P-4

PROJECT: Malone Park Improvement

CLIENT: Ayres Associates
Riverwood, WI

SITE: 16400 W Al Stigler Pkwy
New Berlin, WI

LOCATION See Exhibit A-2

Latitude: 42.9706° Longitude: -88.1232°

DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS	LABORATORY HP (tsf)	WATER CONTENT (%)
0.5	**TOPSOIL (6" Thick)**							
	LEAN CLAY (CL), trace gravel, brown and tan, hard			X	16	6-6-6 N=12	4.50+ (HP)	15.8
3.0								
	LEAN CLAY WITH SILT (CL), brown and gray, very stiff	5		X	18	3-5-5 N=10	3.75 (HP)	8.3
6.0	***Boring Terminated at 6 Feet***							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3 1/4" HSA

Abandonment Method:
Boring backfilled with Auger Cuttings and/or Bentonite

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
9856 S 57th St
Franklin, WI

Boring Started: 07-14-2022 | Boring Completed: 07-14-2022
Drill Rig: 415 | Driller: C.A.
Project No.: 58225130 | Exhibit: A-10

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL 58225130 MALONE PARK IMPRO.GPJ TERRACON_DATATEMPLATE.GDT 7/25/22

SUPPORTING INFORMATION

Contents:

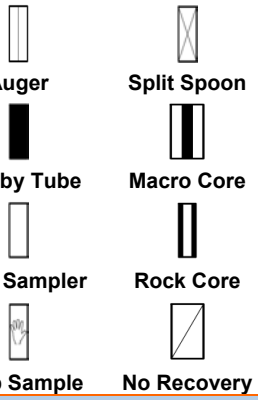
General Notes
Unified Soil Classification System

GENERAL NOTES

Malone Park Improvements ■ New Berlin, Wisconsin
August 4, 2022 ■ Terracon Project No. 58225130

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



Auger **Split Spoon**
Shelby Tube **Macro Core**
Ring Sampler **Rock Core**
Grab Sample **No Recovery**

WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Subsurface water level variations will occur over time. In low permeability soils, accurate determination of subsurface water levels is not possible with short term water level observations.

FIELD TESTS

(HP)	**Hand Penetrometer**
(T)	**Torvane**
(b/f)	**Standard Penetration Test (blows per foot)**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**
(DCP)	**Dynamic Cone Penetrometer**

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve) Consistency determined by laboratory shear strength testing, field visual-manual procedures, or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength, Qu, tsf**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 – 3	Very Soft	Less than 0.25	0 – 1
Loose	4 – 9	Soft	0.25 to 0.50	2 – 4
Medium Dense	10 – 29	Medium Stiff	0.50 to 1.00	4 – 8
Dense	30 – 50	Stiff	1.00 to 2.00	8 – 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 – 30
		Hard	> 4.00	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive term(s) of other constituents	Percent (%) of dry weight
Trace	< 15
With	15 – 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major component of sample	Particle size
Boulders	Over 12 in. (300mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive term(s) of other constituents	Percent (%) of dry weight
Trace	< 5
With	5 – 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non plastic	0
Low	1 – 10
Medium	11 – 30
High	> 30

UNIFIED SOIL CLASSIFICATION SYSTEM

Malone Park Improvements ■ New Berlin, Wisconsin
August 4, 2022 ■ Terracon Project No. 58225130

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or 1 > Cc > 3 [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or 1 > Cc > 3 [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OL	Organic clay [K, L, M, N] / Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried / Liquid limit - not dried	< 0.75	OH	Organic clay [K, L, M, P] / Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

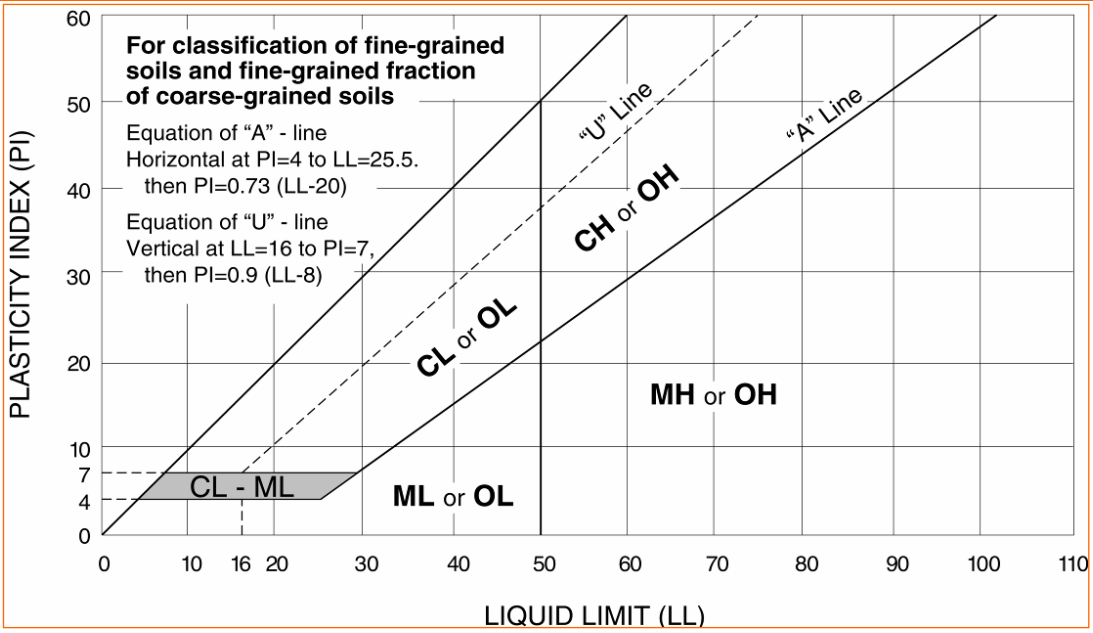
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



END OF PROJECT MANUAL

MALONE PARK IMPROVEMENT PLANS

3805 SOUTH CASPER DRIVE
NEW BERLIN, WI

PROJECT TEAM

OWNER
CITY OF NEW BERLIN
3805 SOUTH CASPER DRIVE
NEW BERLIN, WI, 531551
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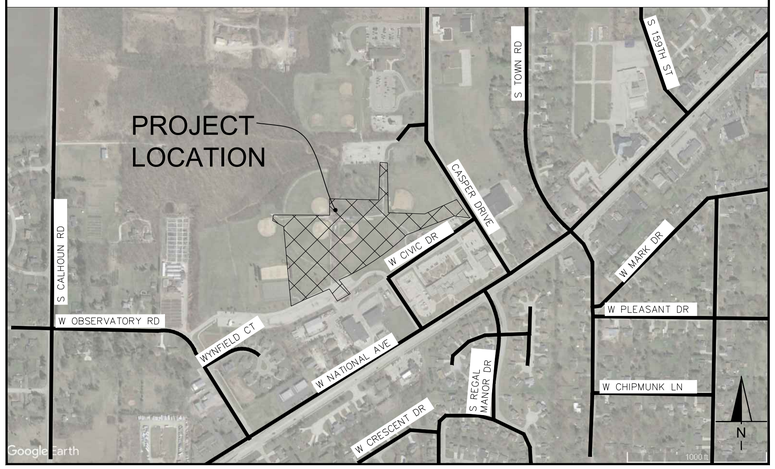
LOCATION MAP
NOT TO SCALE



Sheet List Table

SHEET NUMBER	SHEET TITLE
C1.0	COVER SHEET
C1.1	GENERAL NOTES/LEGEND
C2.0-C2.1	EXISTING CONDITIONS
C2.2-C2.3	DEMO PLAN
C3.0-C3.3	SITE PLAN
C3.4-C3.7	FENCING & NETTING PLAN
C4.0-C4.3	HORIZONTAL CONTROL PLAN
C4.4-C4.5	PAVING PLAN
C5.0-C5.1	EROSION CONTROL PLAN
C5.2	EROSION CONTROL DETAILS
C6.0-C6.4	OVERALL GRADING PLAN
C7.0-C7.5	UTILITY PLAN AND PROFILE
C8.0-C8.1	CONSTRUCTION DETAILS
C9.0-C9.2	ALTERNATE BIDS
A101-A600	PARK STRUCTURES - ARCHITECTURE
S001-S707	PARK STRUCTURES - STRUCTURAL
M000-M201	PARK STRUCTURES - MECHANICAL
P100-P901	PARK STRUCTURES - PLUMBING
E000-E801	PARK STRUCTURES - ELECTRICAL

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MARK B. PASCHKE A-9082 RIVER FALLS WIS. — WISCONSIN — ARCHITECT
4/07/2025
ARCHITECTURE

BRIAN F. GLASZCZ S-3118 SLINGER WIS. — WISCONSIN — LAND SURVEYOR
SURVEY

JACOB W. ZANDER 46374-6 ROCHESTER MN — WISCONSIN — PROFESSIONAL ENGINEER
04/07/2025
STRUCTURAL

LICIA OLIGMUELLER 50026-6 ROSEVILLE MN — WISCONSIN — PROFESSIONAL ENGINEER
MECHANICAL AND PLUMBING

TIBEBU B. OGETO E-101515-6 OAKDALE, MN — WISCONSIN — PROFESSIONAL ENGINEER
Date: 04/04/2025
ELECTRICAL

AUSTIN J. JOHRENDT E48660-6 OCONOMOWOC WI — WISCONSIN — PROFESSIONAL ENGINEER
SITE CIVIL

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date
Revision

MALONE PARK
CITY OF NEW BERLIN, WI

COVER SHEET

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C1.0

File: I:\24\New Berlin, City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C0.0 COVER SHEET.dwg Layout: COVER SHEET User: JohrendtA Plotted: Apr 03, 2025 - 4:26pm

EXISTING

SANITARY SEWER

FORCE MAIN

WATER MAIN

STORM SEWER

UNDERGROUND GAS

UNDERGROUND ELECTRIC

UNDERGROUND FIBER OPTIC

UNDERGROUND TELEPHONE

UNDERGROUND VIDEO

OVERHEAD ELECTRIC

OVERHEAD UTILITY

UTILITY POLES:

TELEPHONE POLE

LIGHT POLE

CURB AND GUTTER

HARD SURFACED ROADWAY

NON-SURFACED ROADWAY

SIDEWALK

STREET CENTERLINE

RETAINING WALL

TREES

TREE LINE

HEDGE OR BUSH LINE

BUSH / SHRUB

CONTOURS

DITCH

FENCE

FENCE CHAIN LINK

FENCE WOOD

RIGHT OF WAY

PROPERTY LINE

SECTION LINE

WETLAND

SWAMP EDGE

WATER'S EDGE

RAILROAD

BUILDING

GUARD RAIL

ANCHOR

CONTROL BOX

METER

PARKING METER

POLE

PULLBOX

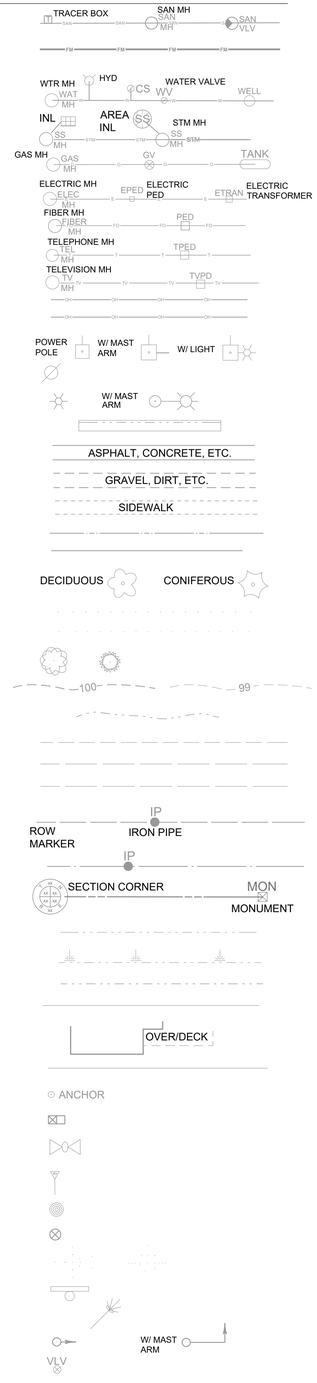
RR SIGNAL FLASHER / BOX

SIGN

SPRINKLER HEAD

TRAFFIC SIGNAL

VALVE



PROPOSED

SANITARY SEWER

FORCE MAIN

WATER MAIN

STORM SEWER

HARD SURFACE ROADWAY

NON-SURFACED ROADWAY

CURB AND GUTTER

SIDEWALK

BASELINE

CONTOURS

FENCE

PERMANENT EASEMENT

TEMPORARY EASEMENT

UTILITY EASEMENT

SETBACK

RETAINING WALL

POND

DITCH

SILT FENCE

EROSION BALES

EROSION MAT

EROSION LOG

SAW CUT

DEMOLITION / REMOVAL

GUARD RAIL

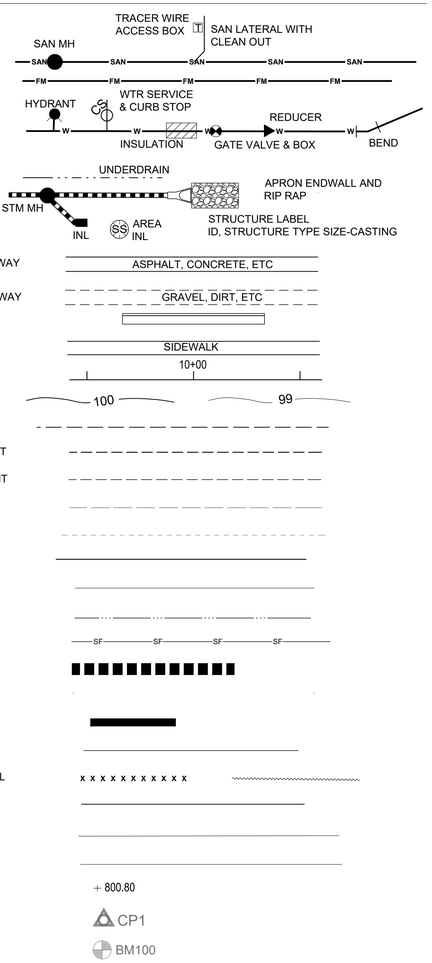
TOP OF CUT

TOP OF FILL

SPOT ELEVATION

CONTROL POINT

BENCHMARK



ABBREVIATIONS:

AB	ANCHOR BOLT
ABV	ABOVE
ADJ	ADJUST
AFF	ABOVE FINISHED FLOOR
AL	ALUMINUM
ALT	ALTERNATE WITH
ALT/	ALTERNATE
APPROX	APPROXIMATE
ASPH	ASPHALT
AUTO	AUTOMATIC
AVE	AVENUE
@	AT
B CRS	BASE COURSE
BC	BACK OF CURB
BD	BOARD
BEL	BELOW
BETWN	BETWEEN
BF	BACK FACE
BFV	BUTTERFLY VALVE
BIT	BITUMINOUS
BL	HYDRANT BURY LINE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLVD	BOULEVARD
BM	BENCHMARK
BO	BREAKOFF
BRG	BEARING
BRK	BRICK
BS	BACK OF SIDEWALK
BTM	BOTTOM
BV	BALL VALVE
B/$\mathbb{L}$	BASELINE
B/	BOTTOM OF
C&G	CURB AND GUTTER
CB	CATCH BASIN
CF	CUBIC FOOT
CHKD P	CHECKERED PLATE
CI	CAST IRON
CJ	CONTROL JOINT
CL $\mathbb{C}$	CENTERLINE
CHL	CHLORINE
CLG	CEILING
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONST JT	CONSTRUCTION JOINT
CONT	CONTINUOUS
CONTR	CONTRACTOR
CONTR JT	CONTRACTION JOINT
COR	CORNER
CP	CONTROL POINT
CPLG	COUPLING
CRS	COURSE
CS	WATER SERVICE CURB STOP
CSP	CORRUGATED STEEL PIPE
CTG	CASTING
CTH	COUNTY TRUNK HIGHWAY
CULV	CULVERT
CV	CHECK VALVE
CW	COLD WATER
CY	CUBIC YARD
DEFL	DEFLECTION
DEG / °	DEGREE
DF	DRINKING FOUNTAIN
DI	DUCTILE IRON
DIA	DIAMETER
DIM	DIMENSION
DISCH	DISCHARGE
DN	DOWN
DP	DEPTH
DR	DOOR
DTL	DETAIL
DW	DRIVEWAY
DWG	DRAWING
E	EAST
EA	EACH
EF	EACH FACE
EFF	EFFLUENT
EJ	EXPANSION JOINT
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRICAL
EQ	EQUAL
EQUIP	EQUIPMENT
ER	END RADIUS BACK OF CURB
EST	ESTIMATE
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EX	EXISTING
EXH	EXHAUST
EXP	EXPANSION
EXT	EXTERIOR
FD	FLOOR DRAIN
FDN	FOUNDATION
FERT	FERTILIZER
F-F	FACE TO FACE
FGL	FIBERGLASS
FIN	FINISHED
FL	FLOWLINE
FLG	FLANGED
FLR	FLOOR
FM	FORCE MAIN
FN	FENCE
FT (')	FOOT
FTG	FOOTING
FUT	FUTURE
G	GAS
GA	GAGE
GAR	GARAGE
GEN	GENERAL
GRD	GRADE, GROUND
GV	GATE VALVE
GRAV	GRAVEL
GW	GROUNDWATER
HB	HOSE BIB
HORZ	HORIZONTAL
HPZ	HIGH PRESSURE ZONE
HSE	HOUSE
HT	HEIGHT
HW	HOT WATER
HWR	HOT WATER RETURN
HYD	HYDRANT
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN (")	INCHES
INCL	INCLUDE
INF	INFLUENT
INL	INLET
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
IP	IRON PIPE
IPS	IRON PIPE SIZE
JT	JOINT
KGV	KNIFE GATE VALVE
LAB	LABORATORY
LAV	LAVATORY
LC	LENGTH OF CURVE
LF	LINEAL FEET
LG	LENGTH
LOC	LOCATION
LP	LIGHT POLE
LPZ	LOW PRESSURE ZONE
LS	LUMP SUM
LT	LEFT
MAS	MASONRY
MAX	MAXIMUM
MECH	MECHANICAL
MFG	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MP	MID POINT
MR	MID RADIUS BACK OF CURB
MTL	MATERIAL
N	NORTH
NF	NEAR FACE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OE	OVERHEAD ELECTRIC
OF	OUTSIDE FACE
OH	OVERHEAD
OPG	OPENING
OT	OVERHEAD TELEPHONE
PC	POINT OF CURVE
PE	PRIVATE ENTRANCE
PED	PEDESTAL
PERF	PERFORATE
PI	POINT OF INTERSECTION
PKG	PARKING
P	PLATE
PL	PLACE
PL $\mathbb{R}$	PROPERTY LINE
PP	POWER POLE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PW	POTABLE WATER
%	PERCENT
QTY	QUANTITY
RAD	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RD	ROOF DRAIN
RDWY	ROADWAY
RED	REDUCER
REF	REFERENCE
R/L	REFERENCE LINE
REM	REMOVE
REPL	REPLACE
REQD	REQUIRED
REV	REVISED
RM	ROOM
RR	RAILROAD
RT	RIGHT
RW	RIGHT OF WAY
S	SOUTH
SAN	SANITARY
SAMH	SANITARY MANHOLE
SCH	SCHEDULE
SEC	SECTION
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SL	SLOPE
SPA	SPACE
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
SSMH	STORM SEWER MANHOLE
ST	STREET
STD	STANDARD
STH	STATE TRUNK HIGHWAY
STL	STEEL
STM	STORM
STP	SEWAGE TREATMENT PLANT
SURF	SURFACE
SW	SIDEWALK
SWR	SEWER
SY	SQUARE YARD
SYS	SYSTEM
T&B	TOP & BOTTOM
TC	TOP BACK OF CURB
TELE	TELEPHONE
THK	THICKNESS
THRU	THROUGH
TP	TELEPHONE POLE
TYP	TYPICAL
T/	TOP OF
UG	UNDERGROUND GAS
UE	UNDERGROUND ELECTRICAL
UNEXC	UNEXCAVATED
UNO	UNLESS NOTED OTHERWISE
USH	UNITED STATES HIGHWAY
UT	UNDERGROUND TELEPHONE
UV	UNDERGROUND VIDEO
V	VALVE
V&B	VALVE & BOX
VAR	VARIABLE
VER	VERTICAL
VC	VERTICAL CURVE
W	WEST
W/	WITH
W/O	WITHOUT
WD	WIDTH
WM	WATER MAIN
WS	WATER SURFACE
WTP	WATER TREATMENT PLANT
WTR	WATER
WWF	WELDED WIRE FABRIC
WWM	WOVEN WIRE MESH
WWTP	WASTEWATER TREATMENT PLANT

EROSION CONTROL NOTES

1. CONTRACTOR SHALL PROVIDE RUNOFF BARRIERS PRIOR TO RAIN EVENTS TO PREVENT ROADWAY WASH OUT. INLET PROTECTION SHALL BE PLACED AT ALL INLETS THAT WILL RECEIVE RUNOFF FROM DISTURBED AREAS.
2. INSTALL INLET PROTECTION AND OTHER EROSION CONTROL PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY.
3. EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION UNTIL THE SITE IS STABILIZED BY VEGETATION OR OTHER APPROVED MEASURES.
4. EROSION CONTROL DEVICES DESTROYED OR DAMAGED SHALL BE REPAIRED BY THE END OF THE WORK DAY.
5. INSPECT ALL EROSION CONTROL MEASURES AT LEAST ONCE A WEEK AND AFTER ANY RAINFALL OF 0.5-INCHES OR MORE AND MAKE NEEDED REPAIRS. RECORD INSPECTIONS AS SPECIFIED.
6. OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF A STORM EVENT SHALL BE CLEANED UP BY THE END OF THE NEXT WORK DAY. ALL OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION ACTIVITIES, INCLUDING SOIL TRACKED BY CONSTRUCTION TRAFFIC, SHALL AT A MINIMUM, BE CLEANED BY THE END OF EACH WORK DAY. EXCESSIVE AMOUNTS OF SEDIMENT OR DEBRIS TRACKED ONTO ADJACENT STREETS SHALL BE CLEANED IMMEDIATELY. FINE SEDIMENT ACCUMULATIONS SHALL BE CLEANED FROM ADJACENT STREETS BY THE USE OF MECHANICAL OR MANUAL SWEEPING OPERATIONS ONCE A WEEK AT A MINIMUM AND BEFORE IMMINENT RAIN EVENTS.
7. ALL SEDIMENT LADEN WATER PUMPED FROM THE SITE SHALL BE TREATED BY A TEMPORARY SEDIMENT BASIN OR BE FILTERED BY OTHER APPROVED MEANS. WATER SHALL NOT BE DISCHARGED IN A MANNER THAT CAUSES EROSION OF THE SITE OR RECEIVING CHANNELS. SEE GENERAL NOTES.
8. TEMPORARY SEDIMENT BARRIERS SHALL BE USED ON ALL DE-WATERING DISCHARGES THROUGHOUT THE PROJECT. THE SEDIMENT BARRIERS MUST BE APPROVED BY THE ENGINEER PRIOR TO ANY DE-WATERING ACTIVITIES. ALL FLOWS SHALL BE CONTROLLED VIA CONTRACTOR INSTALLED CONVEYANCE SYSTEM. THE CONTRACTOR SHALL PROVIDE A DE-WATERING PLAN THAT SATISFIES ALL REQUIREMENTS OF THE PROJECT PLANS AND SPECIFICATIONS
9. ALL ACTIVITIES SHALL BE CONDUCTED IN A LOGICAL SEQUENCE AS TO MINIMIZE THE AMOUNT OF BARE SOIL EXPOSED AT ANY ONE TIME. MAINTAIN EXISTING VEGETATION AS LONG AS POSSIBLE.
10. DISTURBED GROUND OUTSIDE OF THE EVERYDAY CONSTRUCTION AREA, INCLUDING SOIL STOCKPILES LEFT INACTIVE FOR MORE THAN 10 DAYS, SHALL AT A MINIMUM BE TEMPORARILY STABILIZED BY SEEDING/MULCHING OR OTHER METHODS APPROVED BY THE ENGINEER. SILT FENCE SHALL BE PLACED AROUND ALL SOIL STOCK PILES.
11. DRAWINGS SHOW GENERAL LOCATIONS OF EROSION CONTROL DEVICES AND SIGNS. ACTUAL LOCATIONS MAY VARY AS DETERMINED BY ENGINEER IN THE FIELD.
12. CONTRACTOR TO TAKE SPECIAL CARE AS TO NOT DISTURB ADDITIONAL AREAS BEYOND THE GRADING LIMITS.

GENERAL PROJECT NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING PROPERTY IRONS. PROPERTY IRONS REMOVED OR DISTURBED DURING CONSTRUCTION SHALL BE RE-ESTABLISHED BY A REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
2. CONTRACTOR SHALL NOT OPERATE CONSTRUCTION EQUIPMENT OUTSIDE OF CONSTRUCTION EASEMENTS OR CITY RIGHT-OF-WAY WITHOUT WRITTEN APPROVAL FROM ENGINEER AND PROPERTY OWNER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING ASPHALT OR CONCRETE ON STREETS AND PARKING LOTS OUTSIDE OF PROPOSED SAW CUTS. ANY DAMAGE DURING CONSTRUCTION UNDER THIS CONTRACT SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
4. WORK ITEMS SHOWN SHALL BE INCIDENTAL TO CONTRACT OTHERWISE INCLUDED IN THE BID FORM.
5. EXISTING PAVEMENT MATERIALS AND THEIR THICKNESS MAY VARY. ALL COSTS ASSOCIATED WITH REMOVAL OF EXISTING PAVEMENT MATERIAL SHALL BE PAID FOR UNDER REMOVALS.
6. THE OWNER RESERVES THE RIGHT TO SALVAGE ANY EXISTING UTILITY AND STREET APPURTENANCES INCLUDING, BUT NOT LIMITED TO CASTINGS, VALVES, HYDRANTS, OR SURPLUS EXCAVATED MATERIAL.
7. THE REMOVAL OF UNSUITABLE MATERIAL FROM EXCAVATION BELOW SUB-GRADE WILL BE DONE SO AT THE DIRECTION OF THE ENGINEER IN THE FIELD.
8. REMOVE ALL EXISTING PAVEMENT AND OTHER EXISTING ITEMS AS SHOWN. ALL ITEMS SHALL BE REMOVED AS NECESSARY FOR PROPOSED CONSTRUCTION TO THE LIMITS SHOWN. REMOVALS SHALL BE INCIDENTAL TO CONTRACT UNLESS OTHERWISE SPECIFIED.
9. CLEAR & GRUB AND REMOVE ALL VEGETATION AND DEBRIS FROM WITHIN PROJECT LIMITS AS SHOWN.
10. ANY FENCES THAT ARE NOT DESIGNATED TO BE REMOVED AND ARE REMOVED OR DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR PREVIOUS CONDITION, INCIDENTAL TO OTHER PAY ITEMS.
11. ALL UTILITY TRENCHES WILL BE BACKFILLED AND MECHANICALLY COMPACTED AS SPECIFIED.
12. LOCATION OF EXISTING UTILITIES MAY VARY FROM THAT SHOWN ON THE PLANS. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES TO AVOID POTENTIAL CONFLICTS. THE CONTRACTOR MAY NEED TO ADJUST THE PROPOSED UTILITIES TO AVOID CONFLICTS WITH EXISTING UTILITIES AND SITE CONDITIONS.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING UTILITIES AND APPURTENANCES NOT SHOWN TO BE REPLACED. TEMPORARY REMOVAL AND ANY DAMAGE DURING CONSTRUCTION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
14. ANY STORM SEWER MAINS OR LEADS, SANITARY MAINS OR LATERALS, AND WATER MAIN OR WATER SERVICES THAT ARE ENCOUNTERED DURING CONSTRUCTION AND NOT BEING REPLACED, SHALL BE SUPPORTED AND PROTECTED SO THEY DO NOT GET DAMAGED. ANY OF THESE ITEMS THAT ARE DAMAGED, WILL BE REPLACED BY THE CONTRACTOR AT THE CONTRACTORS EXPENSE.
15. ASPHALT OR CONCRETE ROADWAY AND DRIVEWAYS AND CONCRETE CURB & GUTTER SHALL BE SAW CUT PRIOR TO RESTORATION. SAW CUTTING SHALL BE INCIDENTAL TO CONSTRUCTION.
16. FINAL SAW CUTTING LIMITS WILL BE DETERMINED BY THE ENGINEER IN THE FIELD OR OWNER.
17. EXISTING BUILDINGS, GRADING, EASEMENTS, AND UTILITIES ARE BASED ON SURVEY INFORMATION PROVIDED BY OTHERS.
18. ALL LAYOUT DIMENSIONS ARE TWO DIMENSIONAL, NO VERTICAL CHANGE IS ACCOUNTED FOR IN MEASUREMENTS. ACTUAL LENGTH MAY VARY FROM PLANS.
19. LIMITS OF WORK ARE APPROXIMATE. CONTRACTOR TO RESTORE ANY DISTURBED AREAS OUTSIDE OF LIMITS SHOWN AT CONTRACTORS EXPENSE.
20. SLOPES SHOULD BE CONTINUOUS ACROSS PLANTING BEDS TO MEET PLANNED GRADES.
21. CONTRACTOR SHALL MAINTAIN IRRIGATION TO EXISTING SOD AND OTHER PLANT MATERIAL TO REMAIN.
22. REFER TO THE CITY OF NEW BERLIN STANDARD SPECIFICATIONS FOR ADDITIONAL DETAIL AND SPECIFICATIONS FOR THE PROJECT DRAWINGS. IN THE EVENT OF A DISCREPANCY AMONG ANY OF THE CONSTRUCTION DRAWINGS AND/OR CONTRACT DOCUMENTS, THE SPECIFICATIONS AS PREPARED BY THE CITY OF NEW BERLIN SHALL GOVERN AND THE DECISIONS OF THE CITY ENGINEER SHALL BE CONSIDERED FINAL.
23. ALL UTILITY LOCATIONS SHOWN ARE BASED ON A 2022 FIELD SURVEY AND AVAILABLE AS-BUILT RECORD DRAWINGS. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UTILITIES THAT CROSS PROPOSED FACILITIES AND CONFIRM THERE IS PROPER CLEARANCE TO CONSTRUCT THE UTILITY FACILITIES AND SITE FEATURES AS SHOWN. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL ALSO VERIFY UTILITY LOCATIONS AT CONNECTION POINTS. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

GENERAL NOTES/LEGEND

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C1.1

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C1.0 GENERAL NOTES.dwg Layout: C1.1 GENERAL NOTES User: JohrendtA Plotted: Apr 07, 2025 - 4:17pm

CONTROL / BENCHMARK POINT DATA				
POINT NO.	FEATURE	NORTHING	EASTING	ELEVATION
200	CP ROD W/ CAP	359601.247	2503244.001	921.60
201	CP_CUT CROSS	360215.388	2503278.024	912.88
202	CP_MAG NAIL	359442.949	2502853.696	928.04
203	CP_CUT CROSS	359243.847	2502379.232	928.22
204	CP_MAG NAIL	360447.951	2503270.856	919.97
205	CP_MAG NAIL	360324.910	2502947.328	909.69
206	CP_MAG NAIL	359954.839	2503190.699	917.38
207	CP_MAG NAIL	359935.875	2502843.559	921.93
208	CP_MAG NAIL	359919.737	2502477.863	918.74
209	CP_MAG NAIL	360020.281	2502888.364	920.04
210	CP_MAG NAIL	359940.150	2503761.295	921.60
211	CP_MAG NAIL	359250.426	2502134.140	925.46
220	CP_NAIL	359662.567	2503425.897	923.04

INL 5127
RIM ELEV = 909.35
42" RCCP NW., IE = 902.27
42" RCCP SE., IE = 902.27
BOTTOM, IE = 902.27
WATER, IE = 904.95
NOTE: COULD NOT TELL EXACT SIZE OF OUTGOING PIPE AS WATER LEVEL WAS HIGH IN STRUCTURE AND OUTFALL FILLED ON ROCK LAYER
OUTFALL INL
42" RCCP NW., IE = 902.24

INL 6124
RIM ELEV = 911.57
42" RCCP NW., IE = 905.51
42" RCCP SE., IE = 905.57

MH 7964
RIM ELEV = 912.80
BOLTED SHUT

INL 7963
RIM ELEV = 912.11
30" RCCP NW., IE = 905.51
42" RCCP NE., IE = 906.05
36" RCCP S., IE = 906.25 (FROM PLANS)
NOTE: PIPES EXTREMELY OFFSET TO GET ACCURATE SIZE AND INVERT MEASUREMENTS. USED PIPE MIC ON 2 OF THE 3 PIPES. 3RD PIPE INACCESSIBLE

SSMH 7970
RIM ELEV = 914.72
18" PVC W., IE = 907.80
CONCRETE LEDGE INVERT, IE = 909.22
BOTTOM, IE = 904.73
WATER, IE = 907.88
NOTE: PVC OUTLET HEADS WEST. COULD NOT FIND END OR OTHER STRUCTURE IN TOPO AREA

SSMH 7971
RIM ELEV = 914.73
BOTTOM, IE = 904.81
WATER, IE = 907.90
NOTE: NO PIPES VISIBLE WATER TREATMENT SYSTEM

SSMH 7972
RIM ELEV = 914.71
BOTTOM, IE = 905.05
WATER, IE = 907.87
NOTE: NO PIPES VISIBLE WATER TREATMENT SYSTEM

MH 7973
RIM ELEV = 914.93
BOLTED SHUT

MH 6864
RIM ELEV = 916.90
6" CONC W., IE = 910.92
6" CONC N., IE = 910.85
BOTTOM, IE = 910.53
WATER, IE = 911.00
NOTE: NO PIPES VISIBLE - APPEAR TO BE 6 INCH HOLES IN CONC WALL STRUCTURE

INL 6975
RIM ELEV = 916.71
36" RCCP N., IE = 910.60
36" RCCP S., IE = 910.64

UNDERGROUND STORAGE STRUCTURE

INL 6121
RIM ELEV = 917.16
30" RCCP W., IE = 910.51
30" RCCP E., IE = ?
24" PCP S., IE = ?
BOTTOM, IE = 911.06
CONCRETE WALL INSIDE STRUCTURE IS SEPARATING THE THE INVERT FOR 30" TO THE EAST AND 24" TO THE SOUTH FROM THE 30" TO THE WEST
UNABLE TO MEASURE INVERTS TO SOUTH AND EAST DUE TO CONCRETE WALL

SSMH 7986
RIM ELEV = 917.16
24" PVC N., IE = 910.24
18" CONC OPENING IN WALL S., IE = 910.22
BOTTOM, IE = 907.22
WATER, IE = 910.42
WALL, IE = 912.29

SSMH 7985
RIM ELEV = 917.19
BOTTOM, IE = 907.21
WATER, IE = 910.42

SSMH 7984
RIM ELEV = 917.26
BOTTOM, IE = 907.50
WATER, IE = 910.40

INL 10106
RIM ELEV = 916.82
30" RCCP W., IE = 911.32
30" RCCP E., IE = 911.37

INL 10107
RIM ELEV = 917.16
30" RCCP W., IE = 911.31
30" RCCP E., IE = 911.41

INL 10108
RIM ELEV = 916.63
30" RCCP W., IE = 911.37
30" RCCP E., IE = 911.88

INL 10109
RIM ELEV = 916.76
30" RCCP W., IE = 911.86
18" x 30" ELIPTICAL RCCP E., IE = 912.16

INL 6122
RIM ELEV = 917.29
30" RCCP W., IE = 910.59
30" RCCP E., IE = 911.20
21" RCCP S., IE = 911.33
BOTTOM, IE = 910.98

INL 8395
RIM ELEV = 921.09
6" PVC N., IE = 919.43
BOTTOM, IE = 919.17
NOTE: FILLED WITH LEAVES

SAMH 9255
RIM ELEV = 921.18
6" RCP NW., IE = 915.48
6" RCP SE., IE = 915.22
4" RCP NE., IE = 915.49

CP 205
CP 206
CP 207
CP 208
CP 209
CP 210

DIAMOND 3

S CASPER DRIVE

AL STIGLER PARKWAY

N

0 20 40 80
GRAPHIC SCALE IN FEET

AYRES
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WAUKESHA, WI 53186

Date
Revision

MALONE PARK
CITY OF NEW BERLIN, WI
EXISTING CONDITIONS PLAN (NORTH)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C2.0

File: I:\24\New Berlin City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C2.0_EXISTING CONDITIONS PLAN.dwg Layout: C2.0 EXISTING CONDITIONS PLAN (NORTH) User: JohrendtA Plotted: Apr 07, 2025 - 4:18pm

CONTROL / BENCHMARK POINT DATA				
POINT NO.	FEATURE	NORTHING	EASTING	ELEVATION
200	CP ROD W/ CAP	359601.247	2503244.001	921.60
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Revision | Date

MALONE PARK
CITY OF NEW BERLIN, WI
EXISTING CONDITIONS PLAN (SOUTH)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C2.1

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C2.0 EXISTING CONDITIONS PLAN.dwg Layout: C2.1 EXISTING CONDITIONS PLAN (SOUTH) User: JohrendtA Plotted: Apr 07, 2025 - 4:18pm

DEMOLITION NOTES

1. ALL EXISTING SITE FEATURES TO REMAIN SHALL BE PROTECTED THROUGHOUT THE CONSTRUCTION PERIOD. ANY FEATURES DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST.
2. DURING EARTHWORK OPERATIONS, CONTRACTOR SHALL TAKE CARE TO NOT DISTURB EXISTING MATERIALS TO REMAIN, OUTSIDE THE LIMITS OF EXCAVATION AND BACKFILL AND SHALL TAKE WHATEVER MEASURES NECESSARY, AT THE CONTRACTOR'S EXPENSE, TO PREVENT ANY EXCAVATED MATERIAL FROM COLLAPSING. ALL BACKFILL MATERIALS SHALL BE PLACED AND COMPACTED AS SPECIFIED TO THE SUBGRADE REQUIRED FOR THE INSTALLATION OF THE REMAINDER OF THE CONTRACT WORK.
3. ALL ITEMS CALLED FOR REMOVAL SHALL BE REMOVED TO FULL DEPTH INCLUDING ALL FOOTINGS, FOUNDATIONS, AND OTHER APPURTENANCES, EXCEPT AS SPECIFICALLY NOTED OTHERWISE.
4. THE STORAGE OF MATERIALS AND EQUIPMENT WILL BE PERMITTED AT LOCATIONS DESIGNATED BY OWNER OR OWNER'S REPRESENTATIVE. PROTECTION OF STORED MATERIALS AND EQUIPMENT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
5. STRIP & STORE EXISTING TOPSOIL FOR LATER REUSE WHERE APPROPRIATE WITH APPROPRIATE EROSION AND SEDIMENT CONTROLS.
6. EXISTING SIDEWALKS SHALL REMAIN OPEN AND PROTECTED. CONTRACTOR RESPONSIBLE FOR PEDESTRIAN SAFETY. ANY SIDEWALK TO BE CLOSED REQUIRES CITY PERMIT PRIOR TO CLOSURE.
7. CONTRACTOR SHALL PROTECT/REMOVE AND REINSTALL ANY EXISTING PARK AMENITY DISTURBED DURING CONSTRUCTION. I.E BENCHES, BLEACHERS, LIGHT POLES, ETC.
8. CONTRACTOR TO VERIFY UTILITY IS NO LONGER ACTIVE PRIOR TO ABANDONMENT OR REMOVAL.

KEY NOTES

- PROJECT LIMITS
- 1 — REMOVE PARKING LOT, PATH, ROADWAY, AND DRIVEWAY REMOVAL (INCLUDES STRIPING)
- 2 — REMOVE EXISTING BUILDING (INCLUDES FOUNDATION, ANCILLARY OBJECTS, DECKS, PATIOS, SIDEWALKS, ETC.
- 3 — SANITARY SEWER TO BE PROTECTED (SEE UTILITY PLAN)
- 4 — STORM SEWER TO BE PROTECTED (SEE UTILITY PLAN)
- 5 — MONUMENT TO BE PROTECTED
- 6 — RELOCATE EXISTING NEW BERLIN ELECTRICAL SYSTEM AND CONDUIT.WE ENERGIES TRANSFORMER TO REMAIN. (SEE MEP PLANS)
- 7 — RELOCATE EXISTING STREET LIGHT FIXTURE (COORDINATE LOCATION WITH OWNER)
- 8 — REMOVE EXISTING CONCRETE SIDEWALK
- 9 — REMOVE EXISTING CURB AND GUTTER
- 10 — ABANDON EXISTING WATER SERVICE AND VALVE
- 11 — ABANDON EXISTING SANITARY SERVICE
- 12 — RELOCATE EXISTING UNDERGROUND ELECTRICAL LINE AND PEDESTAL (SEE ELECTRICAL PLANS)
- 13 — REMOVE FENCE
- CLEAR AND GRUB EXISTING TREE (BY CITY OF NEW BERLIN)
- PROTECT EXISTING TREE

REMOVE EXISTING STRUCTURE AND CONCRETE BASE. CONTRACTOR MAY USE MATERIAL FROM EXISTING HILL FOR SITE GRADING WORK IF SOIL IS DETERMINED ACCEPTABLE FILL MATERIAL BY CONTRACTOR GEOTECH.

DIAMOND 2
DIAMOND 3
DIAMOND 4
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AL STIGLER PARKWAY

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GRAPHIC SCALE IN FEET

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20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision | Date

MALONE PARK
CITY OF NEW BERLIN, WI

DEMO PLAN (NORTH)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C2.2

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C2.1 DEMO PLAN.dwg Layout: C2.2 DEMO PLAN (NORTH) User: JohrendtA Plotted: Apr 07, 2025 - 4:18pm

DEMOLITION NOTES

1. ALL EXISTING SITE FEATURES TO REMAIN SHALL BE PROTECTED THROUGHOUT THE CONSTRUCTION PERIOD. ANY FEATURES DAMAGED DURING CONSTRUCTION OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST.
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- PROJECT LIMITS
- 1 — REMOVE PARKING LOT, PATH, ROADWAY, AND DRIVEWAY REMOVAL (INCLUDES STRIPING)
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- 4 — STORM SEWER TO BE PROTECTED (SEE UTILITY PLAN)
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- 12 — RELOCATE EXISTING UNDERGROUND ELECTRICAL LINE AND PEDESTAL (SEE ELECTRICAL PLANS)
- 13 — REMOVE FENCE
- CLEAR AND GRUB EXISTING TREE (BY CITY OF NEW BERLIN)
- PROTECT EXISTING TREE

DIAMOND 5
DIAMOND 6
DIAMOND 4
DIAMOND 3

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GRAPHIC SCALE IN FEET

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20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision | Date

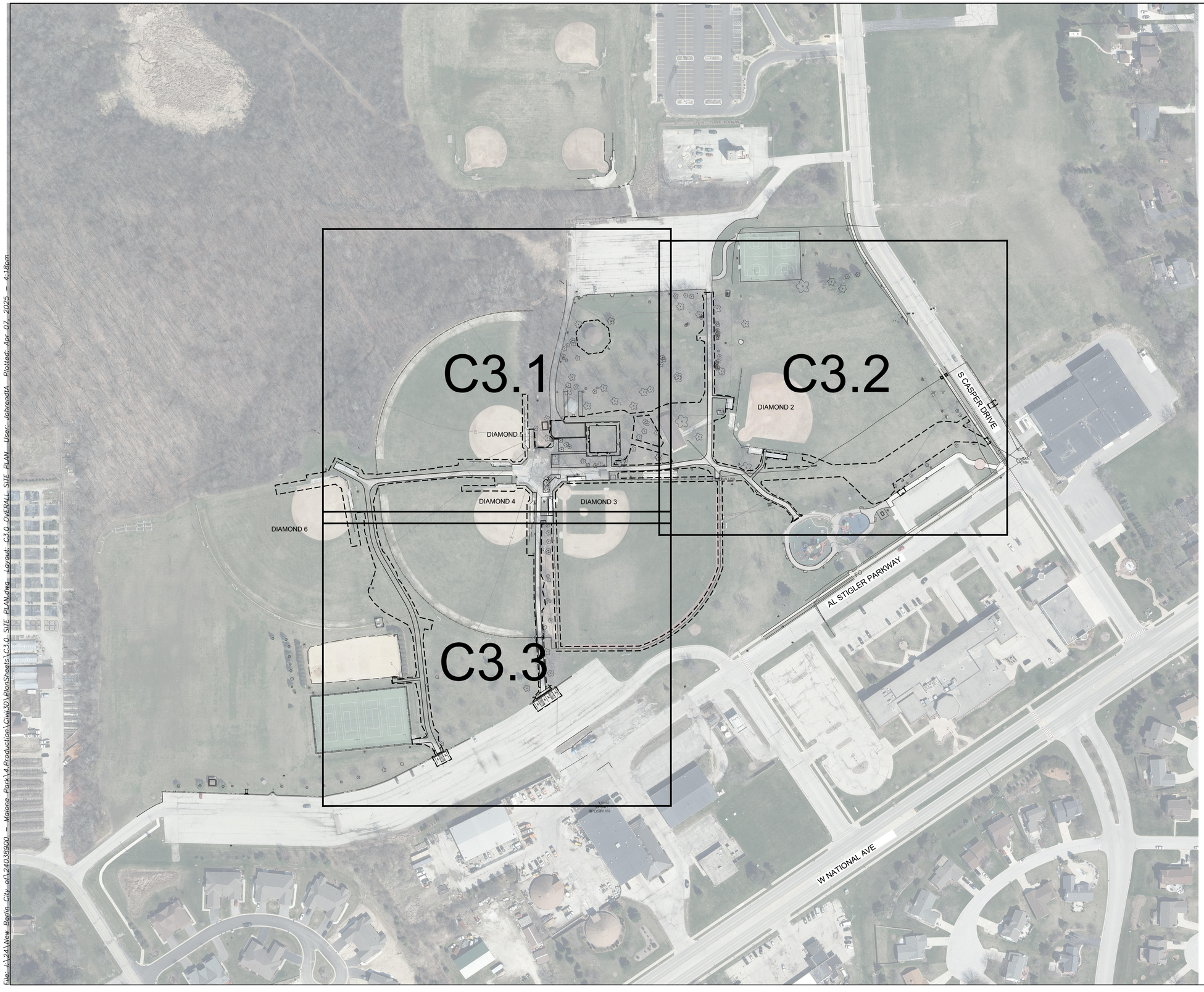
MALONE PARK
CITY OF NEW BERLIN, WI

DEMO PLAN (SOUTH)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C2.3

File: I:\24\New Berlin, City of\240389.00 – Malone Park\4.Production\Civil3D\PlanSheets\C2.1 DEMO PLAN.dwg Layout: C2.3 DEMO PLAN (SOUTH) User: JohrendtA Plotted: Apr 07, 2025 – 4:18pm



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SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

OVERALL SITE PLAN

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GRAPHIC SCALE IN FEET

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
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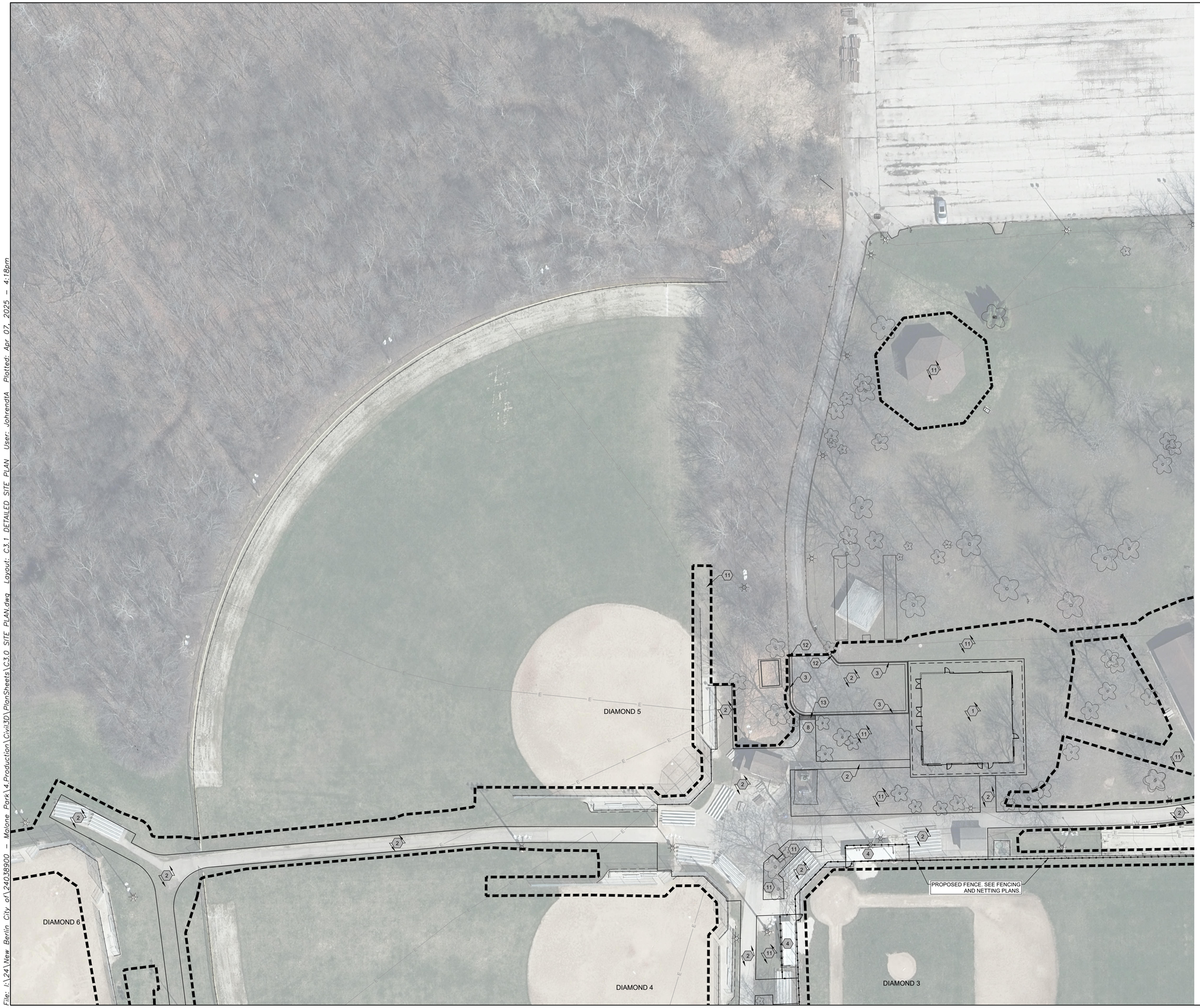
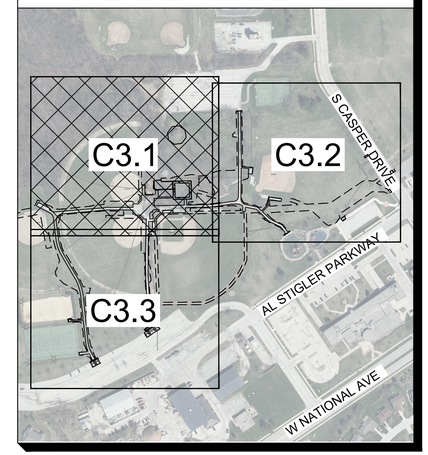


KEY NOTES

1. PROPOSED BUILDING (SEE ARCHITECTURAL PLANS FOR DESIGN)
2. ASPHALT PAVEMENT (SEE PAVING PLAN)
3. 24" CONCRETE CURB AND GUTTER
4. CONCRETE SIDEWALK
5. 4" WIDE PAINTED STRIPE TYP.
6. ADA PAVEMENT MARKING
7. ADA UNLOADING ZONE
8. CURB RAMP (SEE DETAILS)
9. ACCESSIBLE PARKING SIGN (SEE DETAILS)
10. "NO MOTOR VEHICLES" SIGN
11. LAWN RESTORATION
12. CONNECT TO EXISTING PAVEMENT, SIDEWALK, CURB ETC. TYP SAWCUT OR REMOVE TO NEAREST JOINT.
13. DETECTABLE WARNING FIELD

OVERVIEW SHEET KEY



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20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

DETAILED SITE PLAN

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C3.1

File: I:\24\New Berlin, City of\240389\00 - Malone Park\4.Production\Civil3D\PlanSheets\C3.0 SITE PLAN.dwg Layout: C3.1 DETAILED SITE PLAN User: JohrendtA Plotted: Apr 07, 2025 - 4:18pm

KEY NOTES

1. PROPOSED BUILDING (SEE ARCHITECTURAL PLANS FOR DESIGN)
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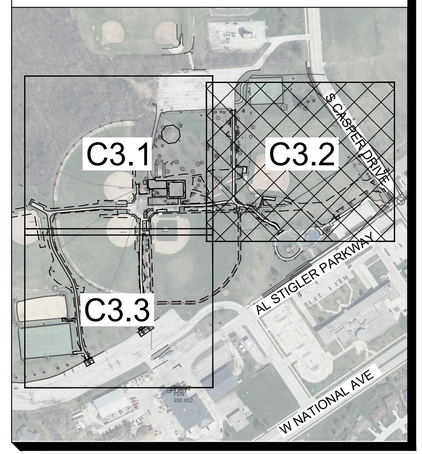
OVERVIEW SHEET KEY



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WAUKESHA, WI 53186

Revision	Date

MALONE PARK
CITY OF NEW BERLIN, WI

DETAILED SITE PLAN

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C3.2

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DIAMOND 4

DIAMOND 3

PROPOSED FENCE. SEE FENCING AND NETTING PLANS.

KEY NOTES

1. PROPOSED BUILDING (SEE ARCHITECTURAL PLANS FOR DESIGN)
2. ASPHALT PAVEMENT (SEE PAVING PLAN)
3. 24" CONCRETE CURB AND GUTTER
4. CONCRETE SIDEWALK
5. 4" WIDE PAINTED STRIPE TYP.
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8. CURB RAMP (SEE DETAILS)
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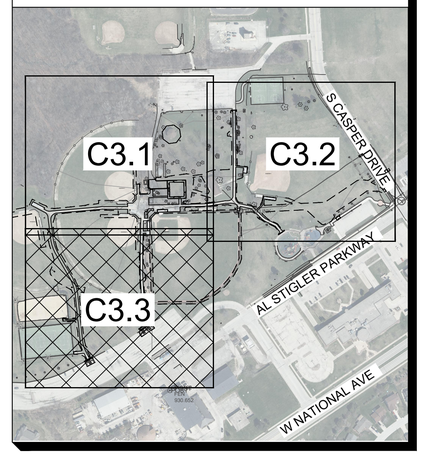
12. CONNECT TO EXISTING PAVEMENT, SIDEWALK, CURB ETC. TYP SAWCUT OR REMOVE TO NEAREST JOINT.
13. DETECTABLE WARNING FIELD

OVERVIEW SHEET KEY



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SUITE 200
WAUKESHA, WI 53186

Revision

Date

MALONE PARK

CITY OF NEW BERLIN, WI

DETAILED SITE PLAN

Drawn By:	AJJ
Checked By:	MDP
Date:	04/09/2025
Project No.	24-0389.00

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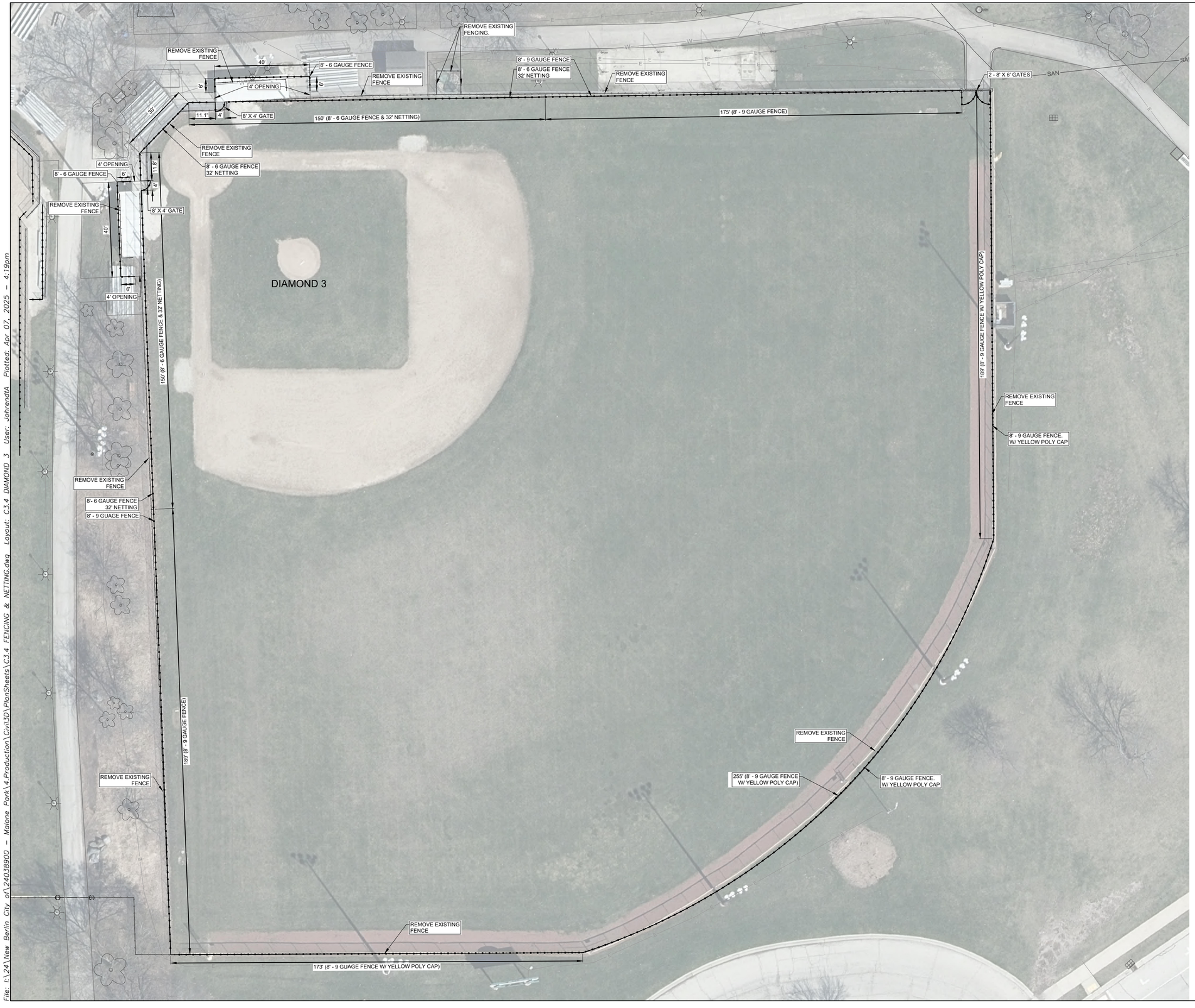


KEY NOTES

PROPOSED FENCE

EXISTING FENCE

ALL FENCING TO BE GALVANIZED STEEL.

ALL FENCING TO HAVE 10' O.C POST SPACING.

ALL CHAIN LINK FENCE TO HAVE 2" MESH SPACING

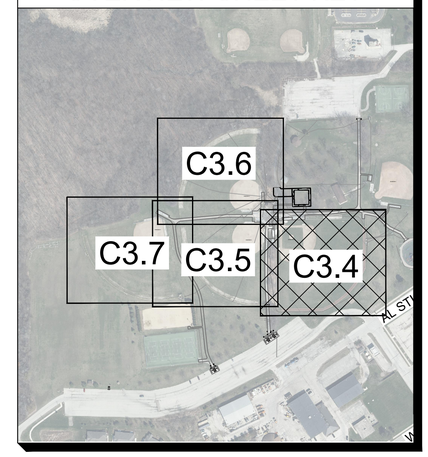
ALL NETTING TO BE #36 BLACK TWISTED KNOTTED NYLON, 1-3/4" SQUARE

REMOVE AND FILL EXISTING CONCRETE FOOTINGS. REMOVAL OF EXISTING FENCE AND POST SHALL BE INCIDENTAL TO PROPOSED FENCING IMPROVEMENTS

ALL EXISTING FENCING NOT LABELED "REMOVE" IS TO REMAIN IN KIND AND BE PROTECTED THROUGHOUT THE PROJECT.

FENCE POSTS ARE INCIDENTAL TO LF OF FENCING AND NETTING

OVERVIEW SHEET KEY



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GRAPHIC SCALE IN FEET

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SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI
FENCING & NETTING PLAN (DIAMOND 3)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C3.4

File: I:\24\New Berlin, City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C3.4 FENCING & NETTING.dwg Layout: C3.4 DIAMOND 3 User: JohrendtA Plotted: Apr 07, 2025 - 4:19pm

DIAMOND 6

DIAMOND 4

REMOVE EXISTING FENCE

BOTTOM - 10' - 6 GAUGE FENCE
TOP - 20' - 9 GAUGE FENCE

6' - 9 GAUGE FENCE

4' OPENING

40'

5.6'

20'

100'

135°

KEY NOTES

PROPOSED FENCE

EXISTING FENCE

ALL FENCING TO BE GALVANIZED STEEL.

ALL FENCING TO HAVE 10' O.C POST SPACING.

ALL CHAIN LINK FENCE TO HAVE 2" MESH SPACING

ALL NETTING TO BE #36 BLACK TWISTED KNOTTED NYLON, 1-3/4" SQUARE

REMOVE AND FILL EXISTING CONCRETE FOOTINGS. REMOVAL OF EXISTING FENCE AND POST SHALL BE INCIDENTAL TO PROPOSED FENCING IMPROVEMENTS

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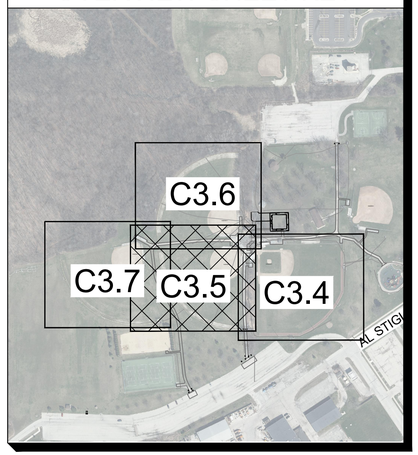
FENCE POSTS ARE INCIDENTAL TO LF OF FENCING AND NETTING

OVERVIEW SHEET KEY



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GRAPHIC SCALE IN FEET

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SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

FENCING & NETTING PLAN (DIAMOND 4) - ALTERNATE 3

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C3.5

File: I:\24\New Berlin, City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C3.4 FENCING & NETTING.dwg Layout: C3.5 DIAMOND 4 User: JohrendtA Plotted: Apr 07, 2025 - 4:19pm

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KEY NOTES

PROPOSED FENCE

EXISTING FENCE

ALL FENCING TO BE GALVANIZED STEEL.

ALL FENCING TO HAVE 10' O.C POST SPACING.

ALL CHAIN LINK FENCE TO HAVE 2" MESH SPACING

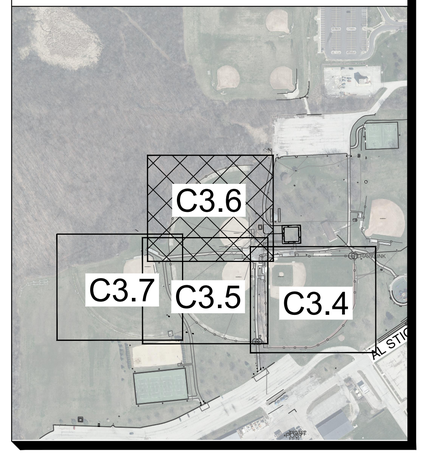
ALL NETTING TO BE #36 BLACK TWISTED KNOTTED NYLON, 1-3/4" SQUARE

REMOVE AND FILL EXISTING CONCRETE FOOTINGS. REMOVAL OF EXISTING FENCE AND POST SHALL BE INCIDENTAL TO PROPOSED FENCING IMPROVEMENTS

ALL EXISTING FENCING NOT LABELED "REMOVE" IS TO REMAIN IN KIND AND BE PROTECTED THROUGHOUT THE PROJECT.

FENCE POSTS ARE INCIDENTAL TO LF OF FENCING AND NETTING

OVERVIEW SHEET KEY



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GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

FENCING & NETTING PLAN (DIAMOND 5) - ALTERNATE 3

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C3.6

KEY NOTES

PROPOSED FENCE

EXISTING FENCE

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ALL FENCING TO HAVE 10' O.C POST SPACING.

ALL CHAIN LINK FENCE TO HAVE 2" MESH SPACING

ALL NETTING TO BE #36 BLACK TWISTED KNOTTED NYLON, 1-3/4" SQUARE

REMOVE AND FILL EXISTING CONCRETE FOOTINGS. REMOVAL OF EXISTING FENCE AND POST SHALL BE INCIDENTAL TO PROPOSED FENCING IMPROVEMENTS

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FENCE POSTS ARE INCIDENTAL TO LF OF FENCING AND NETTING

OVERVIEW SHEET KEY

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GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

FENCING & NETTING PLAN (DIAMOND 6) - ALTERNATE 3

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

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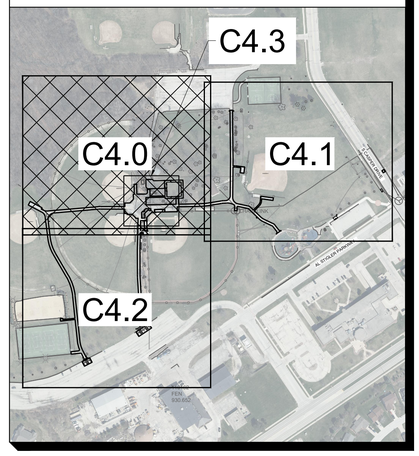
GENERAL NOTES

1. ALL DIMENSIONS REFER TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
2. BUILDING DIMENSIONS ARE TO THE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
3. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS TO VERIFY ALL BUILDING DIMENSIONS.

OVERVIEW SHEET KEY



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GRAPHIC SCALE IN FEET

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SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision	Date

MALONE PARK
CITY OF NEW BERLIN, WI

HORIZONTAL CONTROL PLAN

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

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File: I:\24\New Berlin, City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C4.0 HORIZONTAL CONTROL PLAN.dwg Layout: C4.0 HORIZONTAL CONTROL PLAN User: JohrendtA Plotted: Apr 07, 2025 - 4:19pm

GENERAL NOTES

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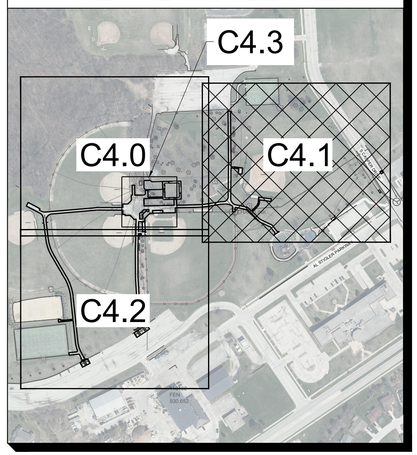
OVERVIEW SHEET KEY



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SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision	Date

MALONE PARK
CITY OF NEW BERLIN, WI

HORIZONTAL CONTROL PLAN

Drawn By:	AJJ
Checked By:	MDP
Date:	04/09/2025
Project No.	24-0389.00

Sheet Number

C4.1

File: i:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C4.0 HORIZONTAL CONTROL PLAN.dwg Layout: C4.1 HORIZONTAL CONTROL PLAN User: JohrendtA Plotted: Apr 07, 2025 - 4:19pm

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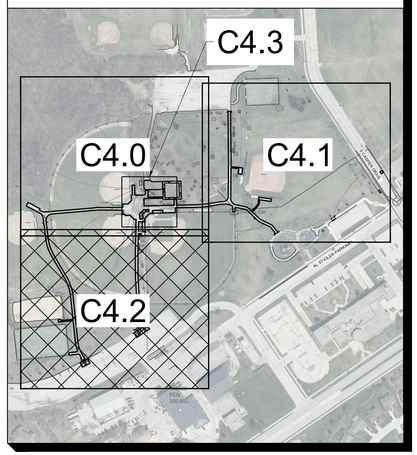
3. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS TO VERIFY ALL BUILDING DIMENSIONS.

OVERVIEW SHEET KEY



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0 15 30 60

GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision | Date

MALONE PARK
CITY OF NEW BERLIN, WI

HORIZONTAL CONTROL PLAN

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

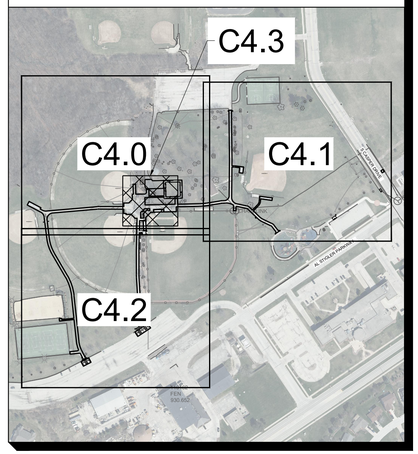
C4.2

File: I:\24\New_Berlin_City_of\24038900_-_Malone_Park\4-Production\Civil3D\PlanSheets\C4.0_HORIZONTAL_CONTROL_PLAN.dwg Layout: C4.2_HORIZONTAL_CONTROL_PLAN User: JohrendtA Plotted: Apr. 07, 2025 - 4:20pm

GENERAL NOTES

1. ALL DIMENSIONS REFER TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
2. BUILDING DIMENSIONS ARE TO THE OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
3. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS TO VERIFY ALL BUILDING DIMENSIONS.

OVERVIEW SHEET KEY



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GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision	Date

MALONE PARK

CITY OF NEW BERLIN, WI

HORIZONTAL CONTROL PLAN CONCESSIONS BUILDING

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C4.3

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C4.0 HORIZONTAL CONTROL PLAN.dwg Layout: C4.3 HORIZONTAL CONTROL PLAN CONCESSIONS User: JohrendtA Plotted: Apr 07, 2025 - 4:20pm

PAVING AND CURB LEGEND

PATHWAY ASPHALT PAVEMENT
SEE CONSTRUCTION DETAILS FOR PAVEMENT SECTION

CONCRETE PAVEMENT
SEE CONSTRUCTION DETAILS FOR PAVEMENT SECTION

ROADWAY/PARKING LOT ASPHALT PAVEMENT
SEE CONSTRUCTION DETAILS FOR PAVEMENT SECTION

NOTE:
- CONTRACTOR TO CREATE CLEAN SAWCUT LINE AT ALL JOINTS WITH NEW/EXISTING PAVEMENT CONNECTIONS
- ALL DISTURBED AREAS NOT SPECIFIED ON THE PLANS SHALL BE TOPSOILED AND SEEDED PER PLAN SPECIFICATIONS
- ALL OTHER DISTURBED AREAS SHALL BE RESTORED WITH GRASS RESTORATION

STANDARD CONCRETE CURB AND GUTTER

TIPPED OUT CURB AND GUTTER

PROJECT LIMITS

CONCRETE 24" CURB AND GUTTER

TIPPED OUT 24" CONCRETE CURB AND GUTTER

DEPRESSED CURB AND GUTTER AT PATH OPENING

5" CONCRETE SIDEWALK

5" CONCRETE SIDEWALK

5" CONCRETE SIDEWALK

5" CONCRETE SIDEWALK

24" CONCRETE CURB AND GUTTER

ROADWAY ASPHALT PAVEMENT

DIAMOND 2

DIAMOND 3

S CASPER DRIVE

N

0 20 40 80

GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

PAVING PLAN (NORTH)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C4.4

File: I:\24\New Berlin, City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C4.4 PAVING PLAN.dwg Layout: C4.4 PAVING PLAN NORTH User: JohrendtA Plotted: Apr 07, 2025 - 4:20pm

PAVING AND CURB LEGEND

PATHWAY ASPHALT PAVEMENT
SEE CONSTRUCTION DETAILS FOR PAVEMENT SECTION

CONCRETE PAVEMENT
SEE CONSTRUCTION DETAILS FOR PAVEMENT SECTION

ROADWAY/PARKING LOT ASPHALT PAVEMENT
SEE CONSTRUCTION DETAILS FOR PAVEMENT SECTION

NOTE:
- CONTRACTOR TO CREATE CLEAN SAWCUT LINE AT ALL JOINTS WITH NEW/EXISTING PAVEMENT CONNECTIONS
- ALL DISTURBED AREAS NOT SPECIFIED ON THE PLANS SHALL BE TOPSOILED AND SEEDED PER PLAN SPECIFICATIONS
- ALL OTHER DISTURBED AREAS SHALL BE RESTORED WITH GRASS RESTORATION

STANDARD CONCRETE CURB AND GUTTER

TIPPED OUT CURB AND GUTTER

PROJECT LIMITS

CONCRETE 24" CURB AND GUTTER

TIPPED OUT 24" CONCRETE CURB AND GUTTER

DEPRESSED CURB AND GUTTER AT PATH OPENING

DIAMOND 5

DIAMOND 6

DIAMOND 4

DIAMOND 3

5" CONCRETE SIDEWALK

5" CONCRETE SIDEWALK

24" CONCRETE CURB AND GUTTER

DEPRESSED CURB AND GUTTER ALONG UNLOADING ZONES.

24" CONCRETE CURB AND GUTTER

DEPRESSED CURB AND GUTTER AT PATH OPENING

N

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GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision | Date

MALONE PARK
CITY OF NEW BERLIN, WI

PAVING PLAN (SOUTH)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C4.5

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C4.4 PAVING PLAN.dwg Layout: C4.5 PAVING PLAN SOUTH User: JohrendtA Plotted: Apr 07, 2025 - 4:20pm

EROSION CONTROL LEGEND

- EXISTING CONTOUR (900)
- PROPOSED CONTOUR (900)
- SF — SILT FENCE - LOCATION OFFSET FOR PLAN CLARITY. INSTALL AT PROJECT LIMITS. (SEE EROSION CONTROL DETAILS)
- LD — LIMITS OF DISTURBANCE
- IP — INLET PROTECTION (SEE EROSION CONTROL DETAILS)
- CP — CULVERT PIPE DITCH CHECK (SEE EROSION CONTROL DETAILS)
- CE — CONSTRUCTION ENTRANCE (TO BE DETERMINED BY CONTRACTOR) (SEE EROSION CONTROL DETAILS)
- CONCRETE WASHOUT (TO BE DETERMINED BY CONTRACTOR)

EROSION CONTROL NOTES

PROPOSED SURFACE FOR REFERENCE ONLY. SEE GRADING PLAN FOR ELEVATIONS.

N

0 20 40 80

GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision | Date

MALONE PARK
CITY OF NEW BERLIN, WI

EROSION CONTROL PLAN (NORTH)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C5.0

File: I:\24\New Berlin, City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C5.0 EROSION CONTROL PLAN.dwg Layout: C5.0 EROSION CONTROL PLAN NORTH User: JahrendtA Plotted: Apr 07, 2025 - 4:20pm

EROSION CONTROL LEGEND

- EXISTING CONTOUR (900)
- PROPOSED CONTOUR (900)
- SF — SILT FENCE - LOCATION OFFSET FOR PLAN CLARITY. INSTALL AT PROJECT LIMITS. (SEE EROSION CONTROL DETAILS)
- LD — LIMITS OF DISTURBANCE
- IP — INLET PROTECTION (SEE EROSION CONTROL DETAILS)
- CP — CULVERT PIPE DITCH CHECK (SEE EROSION CONTROL DETAILS)
- CE — CONSTRUCTION ENTRANCE (TO BE DETERMINED BY CONTRACTOR) (SEE EROSION CONTROL DETAILS)
- CONCRETE WASHOUT (TO BE DETERMINED BY CONTRACTOR)

EROSION CONTROL NOTES

PROPOSED SURFACE FOR REFERENCE ONLY. SEE GRADING PLAN FOR ELEVATIONS.

N

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GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

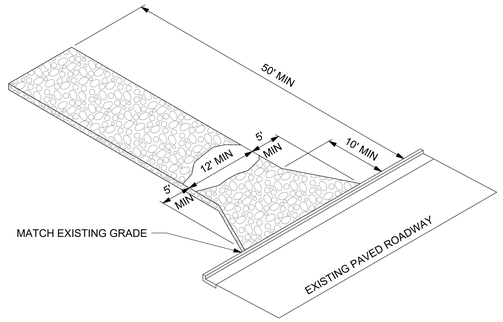
EROSION CONTROL PLAN (SOUTH)

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

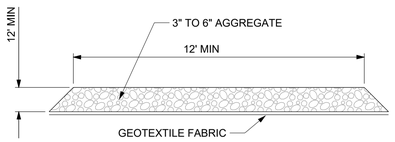
Sheet Number

C5.1

File: I:\24\New Berlin, City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C5.0 EROSION CONTROL PLAN.dwg Layout: C5.1 EROSION CONTROL PLAN SOUTH User: JohrendtA Plotted: Apr 07, 2025 - 4:20pm

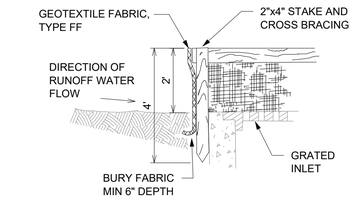


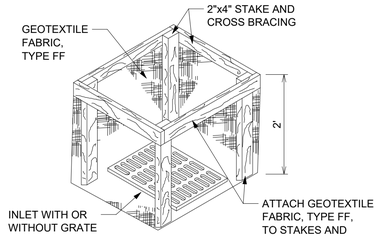
PLAN



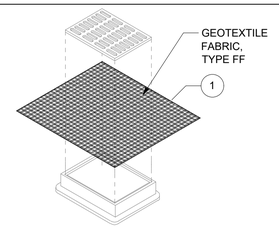
SECTION

CE **CONSTRUCTION ENTRANCE**
NOT TO SCALE

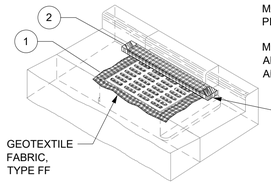




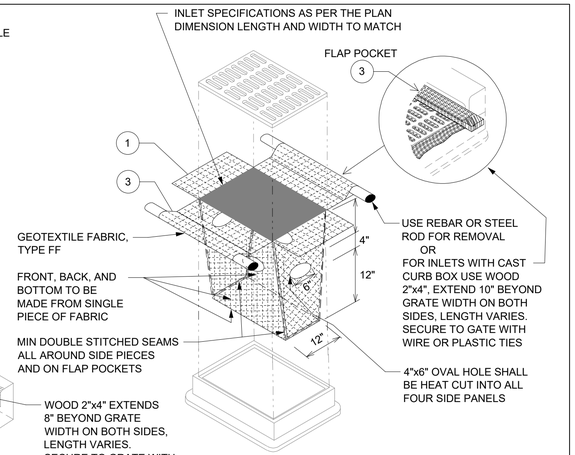
INLET PROTECTION, TYPE A



INLET PROTECTION, TYPE B
(WITHOUT CURB BOX)
(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)



INLET PROTECTION, TYPE C
(WITH CURB BOX)

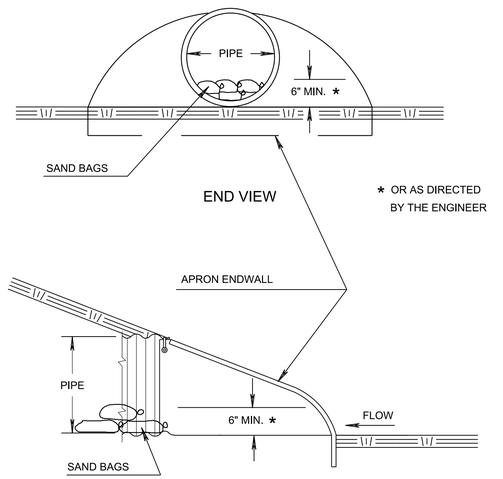


INLET PROTECTION, TYPE D
(WITHOUT CURB BOX)
(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE (2))

GENERAL NOTES
-MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.
-WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING IN TO HE INLET SHALL BE REMOVED IMMEDIATELY.
(1) -FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
(2) -FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
(3) -FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT A WOOD 2x4.

INSTALLATION NOTES
TYPE B & C: -TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.
-THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.
TYPE D: -DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.
-TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.
-THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.

IP **INLET PROTECTION**
NOT TO SCALE



SIDE VIEW

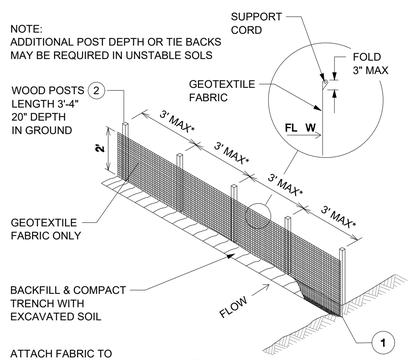
CP **CULVERT PIPE DITCH CHECK**
NOT TO SCALE

GENERAL NOTES

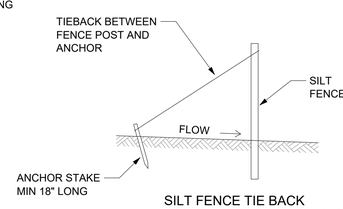
(1) TRENCH SHALL BE A MIN OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC, FOLD THE MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.

(2) WOOD POSTS SHALL BE A MIN SIZE OF $1\frac{1}{2}$" x $1\frac{1}{2}$" OAK OR HICKORY.

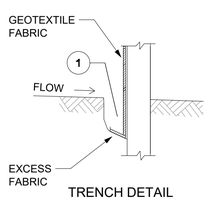
(3) CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY, USE ONE OF THE FOLLOWING TWO METHODS;
A. TWIST METHOD -- OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES.
B. HOOK METHOD -- HOOK THE END OF EACH SILT FENCE LENGTH.



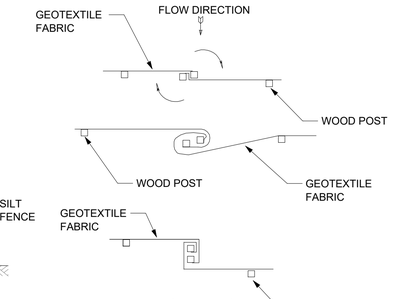
SILT FENCE



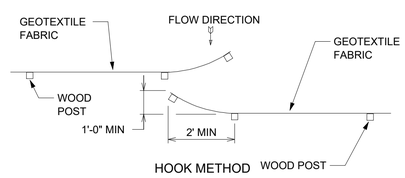
SILT FENCE TIE BACK
(WHEN ADDITIONAL SUPPORT REQUIRED)



TRENCH DETAIL



TWIST METHOD



HOOK METHOD

JOINING 2 LENGTHS OF SILT FENCE

SF **SILT FENCE**
NOT TO SCALE

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date
Revision

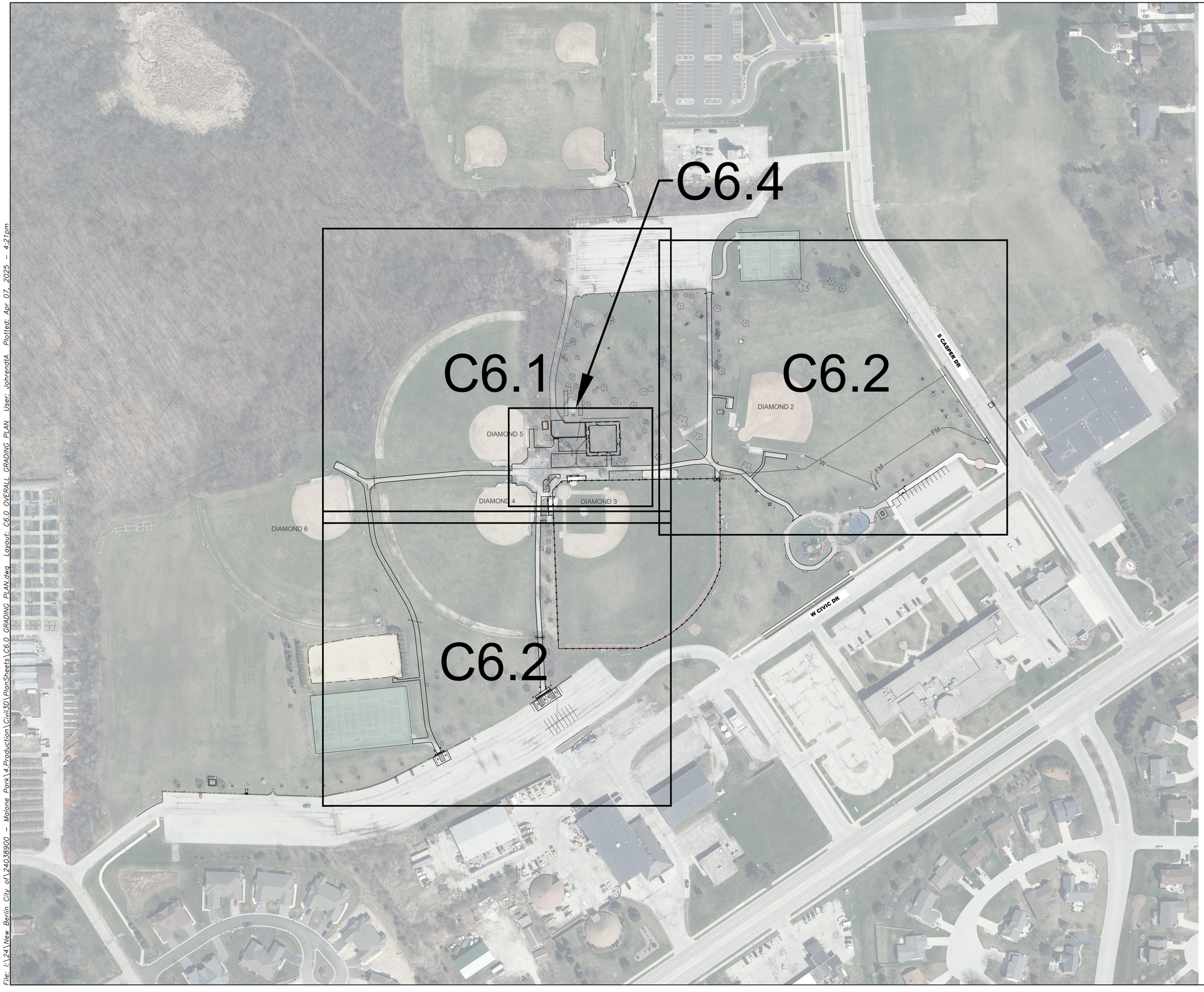
MALONE PARK
CITY OF NEW BERLIN, WI

EROSION CONTROL DETAILS

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C5.2

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C5.1 EROSION CONTROL DETAILS.dwg Layout: C5.2 EROSION CONTROL DETAILS User: JohrendtA Plotted: Apr 07, 2025 - 4:20pm



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GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision	Date

MALONE PARK

CITY OF NEW BERLIN, WI

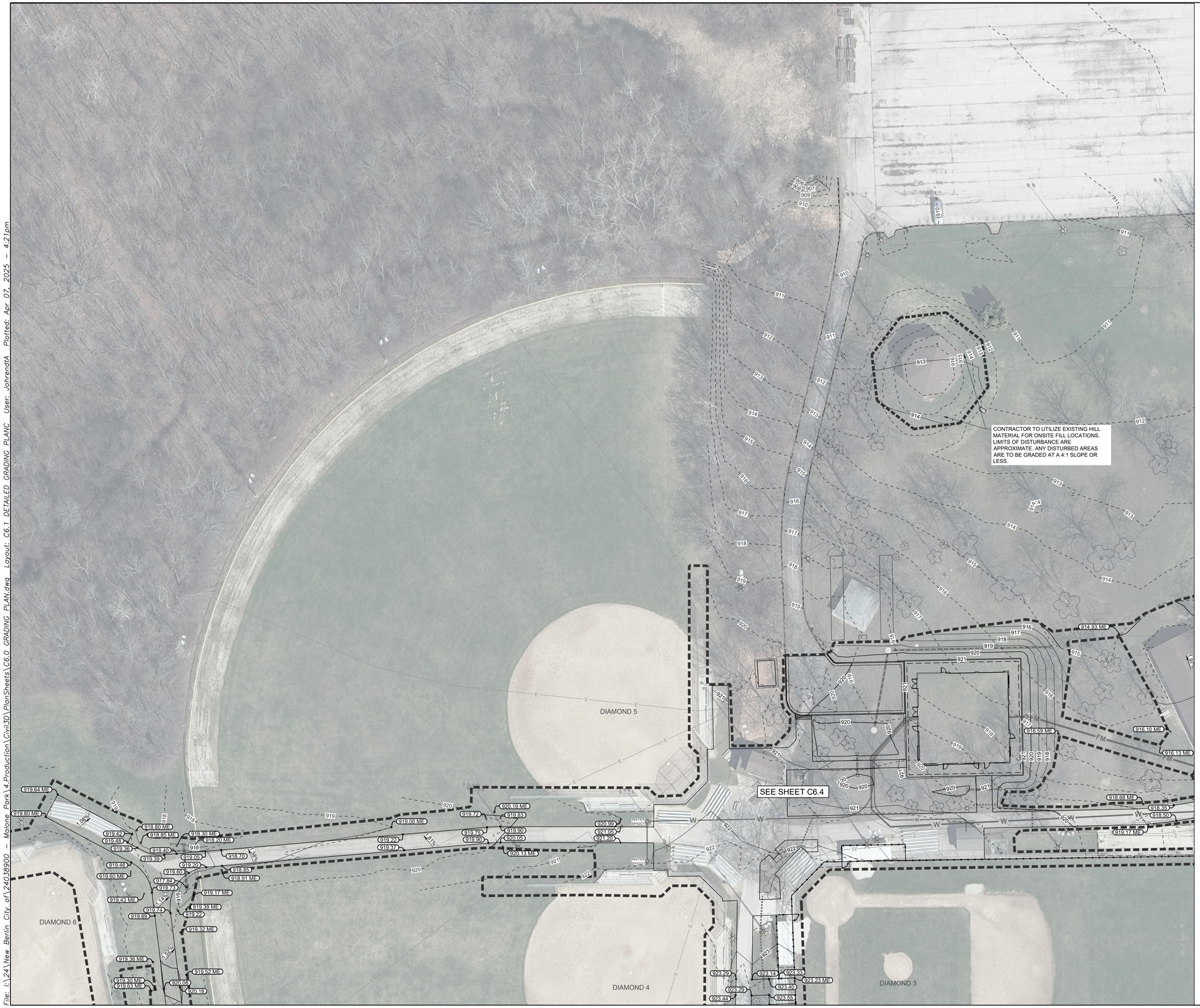
OVERALL GRADING PLAN

Drawn By:	AJJ
Checked By:	MDP
Date:	04/09/2025
Project No.	24-0389.00

Sheet Number

C6.0

File: I:\24\New Berlin, City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C6.0 GRADING PLAN.dwg Layout: C6.0 OVERALL GRADING PLAN User: JohrendtA Plotted: Apr 07, 2025 - 4:21pm



GRADING LEGEND

900.00	FINISHED GRADE
900.00 TOC	TOC = TOP OF CURB
900.00 ME	ME = MATCH EXISTING ELEVATION
900.00 LP	LP = LOW POINT
900.00 FL	FL = FLOW LINE
X.XX%	SLOPE AND FLOW DIRECTION
900	EXISTING CONTOUR
900	PROPOSED CONTOUR
	LIMITS OF DISTURBANCE

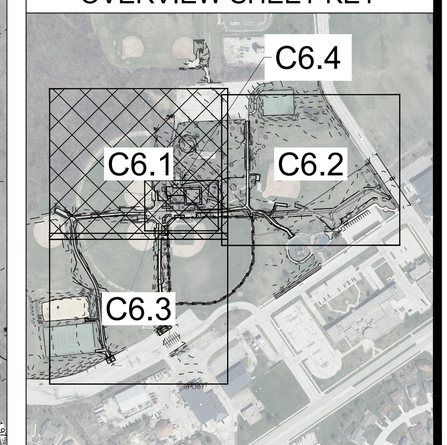
PATHWAYS AND SIDEWALK SHALL NOTE EXCEED 2% CROSS SLOPE OR 5% RUNNING SLOPE.

ADA PARKING STALLS SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION

CONTRACTOR SHALL VERIFY EXISTING GRADES AND MATCH POINTS PRIOR TO SIDEWALK, PATHWAY, CURB AND GUTTER AND PARKING LOT CONSTRUCTION.

CONTRACTOR TO PROTECT ALL EXISTING TREES TO REMAIN THROUGHOUT CONSTRUCTION. ALL DISTURBED AREAS OUTSIDE OF GRADING LIMITS SHALL BE RESTORED IN KIND.

OVERVIEW SHEET KEY



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GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision | Date

MALONE PARK

CITY OF NEW BERLIN, WI

DETAILED GRADING PLAN

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C6.1

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C6.0 GRADING PLAN.dwg Layout: C6.1 DETAILED GRADING PLANC User: JohrendtA Plotted: Apr 07, 2025 - 4:21pm

DIAMOND 2
S CASPER DR
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1.89%
1.89

File: I:\24\New Berlin City of\240389\00 - Malone Park\4.Production\Civil3D\PlanSheets\C6.0 GRADING PLAN.dwg Layout: C6.3 DETAILED GRADING PLANC User: JohrendtA Plotted: Apr 07, 2025 - 4:21pm

DIAMOND 4

DIAMOND 3

SEE CURB RAMP SPOT ELEVATION DETAIL 2

SEE CURB RAMP SPOT ELEVATION DETAIL 1

GRADING LEGEND

900.00	FINISHED GRADE
900.00 TOC	TOC = TOP OF CURB
900.00 ME	ME = MATCH EXISTING ELEVATION
900.00 LP	LP = LOW POINT
900.00 FL	FL = FLOW LINE
X.XX%	SLOPE AND FLOW DIRECTION
900	EXISTING CONTOUR
900	PROPOSED CONTOUR
	LIMITS OF DISTURBANCE

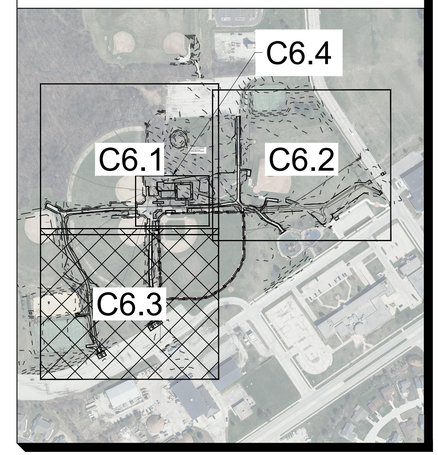
PATHWAYS AND SIDEWALK SHALL NOTE EXCEED 2% CROSS SLOPE OR 5% RUNNING SLOPE.

ADA PARKING STALLS SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION

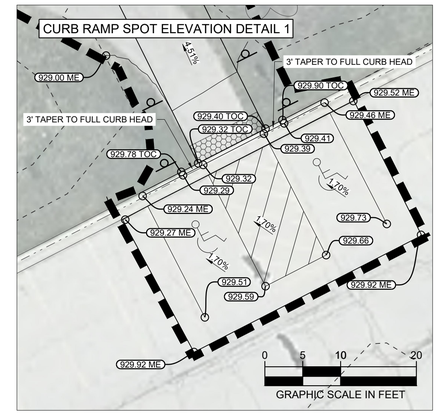
CONTRACTOR SHALL VERIFY EXISTING GRADES AND MATCH POINTS PRIOR TO SIDEWALK, PATHWAY, CURB AND GUTTER AND PARKING LOT CONSTRUCTION.

CONTRACTOR TO PROTECT ALL EXISTING TREES TO REMAIN THROUGHOUT CONSTRUCTION. ALL DISTURBED AREAS OUTSIDE OF GRADING LIMITS SHALL BE RESTORED IN KIND.

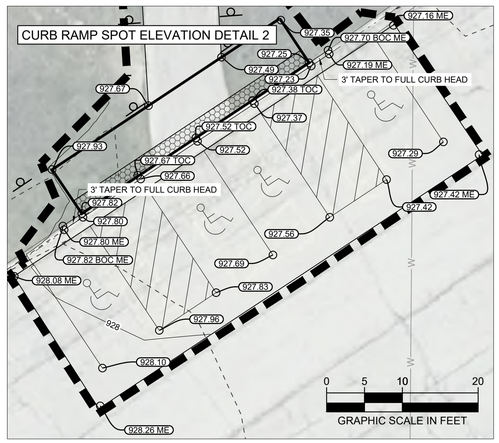
OVERVIEW SHEET KEY



CURB RAMP SPOT ELEVATION DETAIL 1



CURB RAMP SPOT ELEVATION DETAIL 2



N

0 15 30 60

GRAPHIC SCALE IN FEET

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

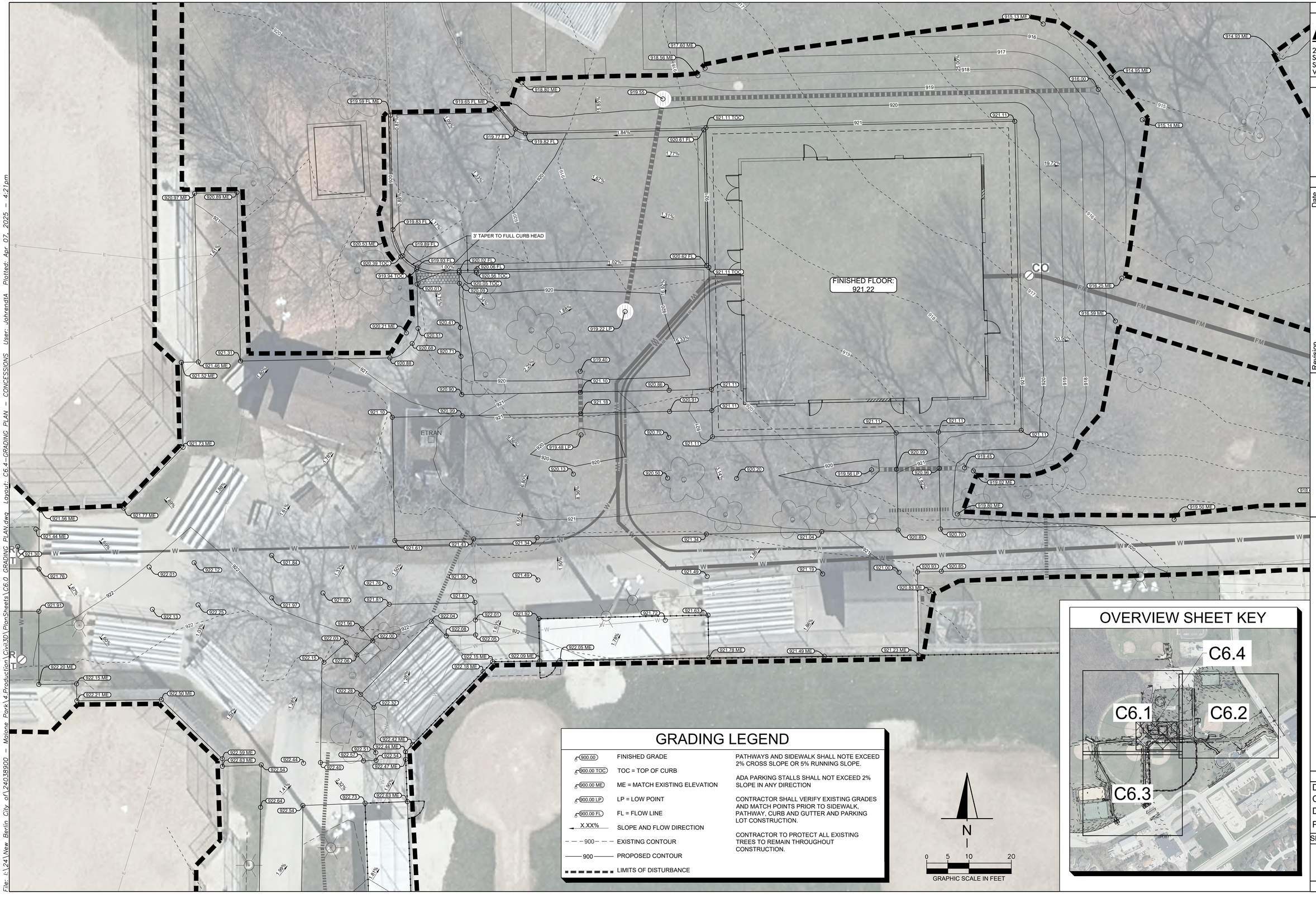
MALONE PARK
CITY OF NEW BERLIN, WI

DETAILED GRADING PLAN

Drawn By:	AJJ
Checked By:	MDP
Date:	04/09/2025
Project No.	24-0389.00

Sheet Number

C6.3



GRADING LEGEND

900.00	FINISHED GRADE
900.00 TOC	TOC = TOP OF CURB
900.00 ME	ME = MATCH EXISTING ELEVATION
900.00 LP	LP = LOW POINT
900.00 FL	FL = FLOW LINE
X.XX%	SLOPE AND FLOW DIRECTION
900	EXISTING CONTOUR
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	LIMITS OF DISTURBANCE

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CONTRACTOR TO PROTECT ALL EXISTING TREES TO REMAIN THROUGHOUT CONSTRUCTION.

N

0 5 10 20

GRAPHIC SCALE IN FEET

OVERVIEW SHEET KEY

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

DETAILED GRADING PLAN - CONCESSIONS

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C6.4

File: I:\24\New Berlin, City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C6.0 GRADING PLAN - CONCESSIONS User: JohrendtA Plotted: Apr 07, 2025 - 4:21pm
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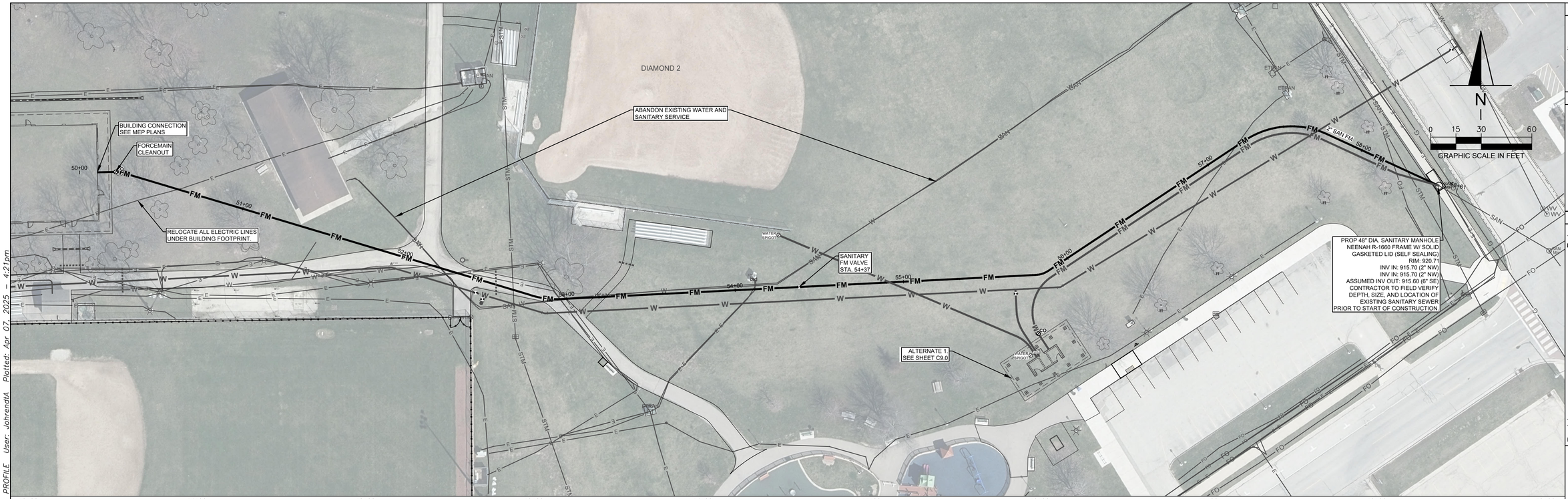

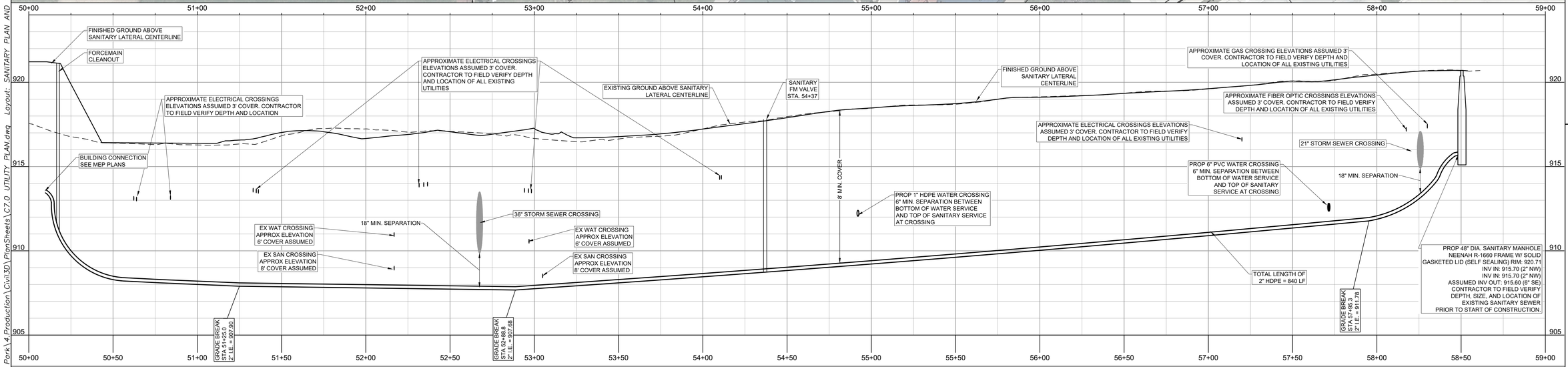

UTILITY NOTES

ALL UTILITY LOCATIONS SHOWN ARE BASED ON A 2022 FIELD SURVEY AND AVAILABLE AS-BUILT RECORD DRAWINGS. PRIOR TO THE START OF CONSTRUCTION, CONTRACTOR SHALL VERIFY VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UTILITIES THAT CROSS PROPOSED FACILITIES AND CONFIRM THERE IS PROPER CLEARANCE TO CONSTRUCT THE UTILITY FACILITIES AND SITE FEATURES AS SHOWN. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL ALSO VERIFY UTILITY LOCATIONS AT CONNECTION POINTS. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO STARTING WORK.

UTILITY LEGEND

- STORM SEWER
- STORM SEWER INLETS
- WATER LINE
- FIRE HYDRANT
- GATE VALVE
- SANITARY SEWER FORCE MAIN
- UTILITY POLE
- GUY WIRE
- STREET SIGN
- LIGHT POLE
- WATER METER
- EX. STORM MANHOLE
- EX. SANITARY SEWER MANHOLE
- UNKNOWN MANHOLE (NO ACCESS)
- OVERHEAD UTILITY LINE
- EX. SANITARY SEWER LINE
- EX. STORM SEWER LINE
- EX. WATER LINE
- EX. UNDERGROUND TELEPHONE LINE
- EX. UNDERGROUND ELECTRICAL LINE
- EX. GAS LINE

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MALONE PARK
CITY OF NEW BERLIN, WI

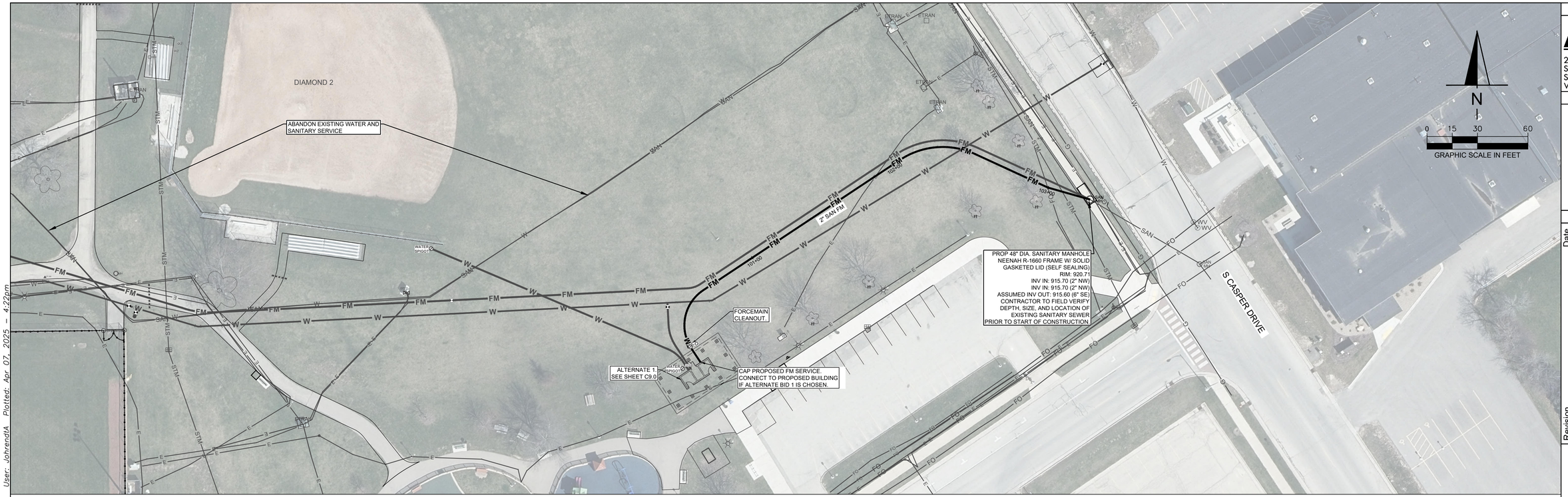
SANITARY SEWER PLAN AND PROFILE

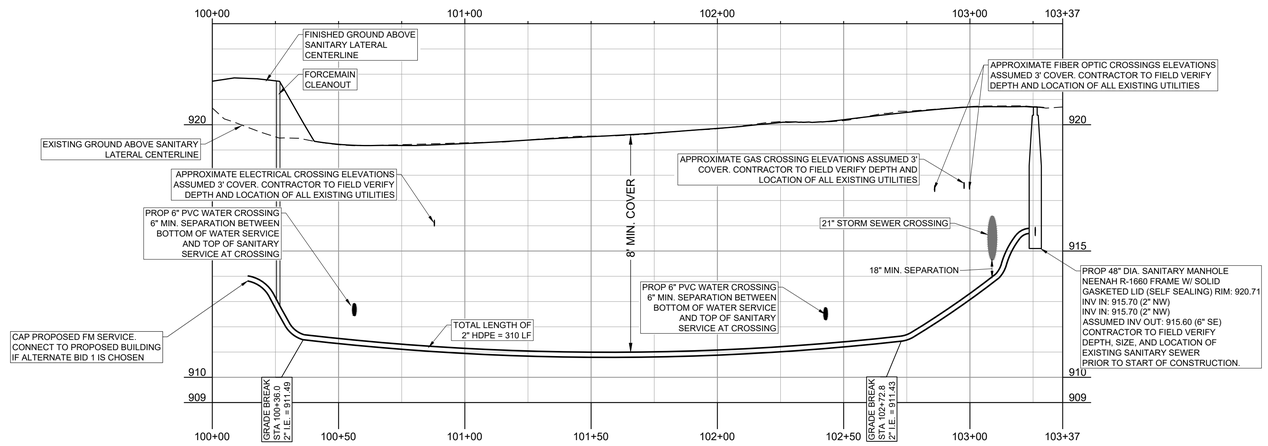
Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C7.0

File: I:\24\New Berlin, City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C7.0 UTILITY PLAN.dwg Layout: SANITARY PLAN AND PROFILE User: JohrendtA Plotted: Apr 07, 2025 - 4:21pm





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UTILITY LEGEND

STORM SEWER	UTILITY POLE	OVH	OVERHEAD UTILITY LINE
STORM SEWER INLETS	GUY WIRE	SS	EX. SANITARY SEWER LINE
WATER LINE	STREET SIGN	ST	EX. STORM SEWER LINE
FIRE HYDRANT	LIGHT POLE	EX W	EX. WATER LINE
GATE VALVE	WATER METER	T	EX. UNDERGROUND TELEPHONE LINE
SANITARY SEWER FORCE MAIN	EX. STORM MANHOLE	E	EX. UNDERGROUND ELECTRICAL LINE
	EX. SANITARY SEWER MANHOLE	G	EX. GAS LINE
	UNKNOWN MANHOLE (NO ACCESS)		

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Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

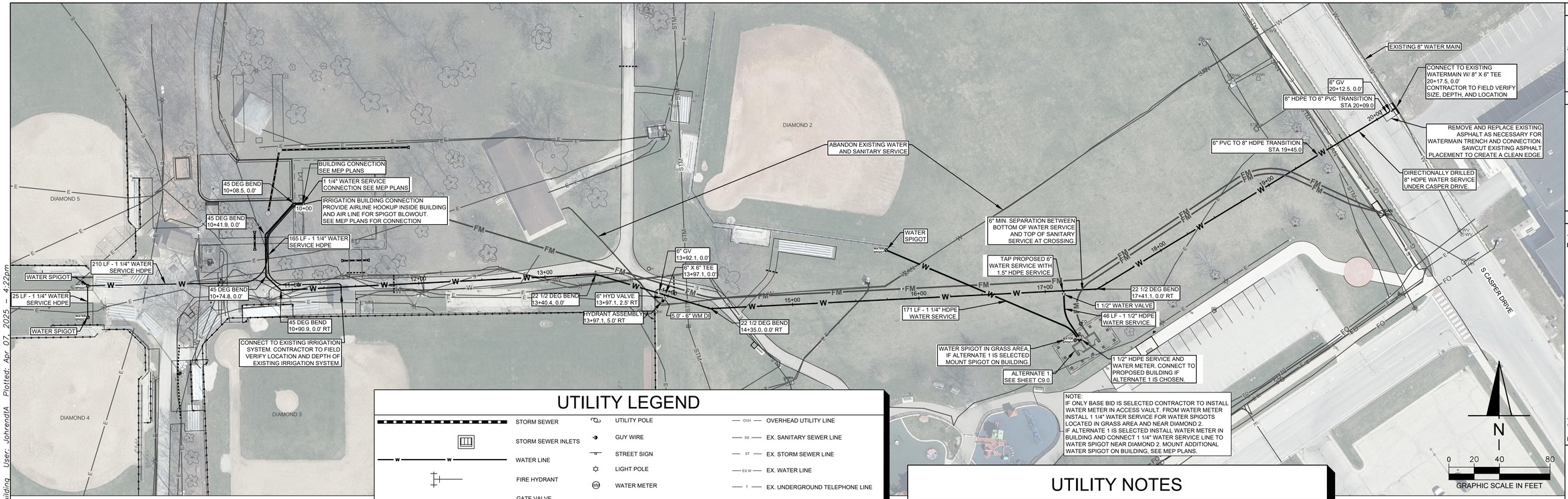
SANITARY SEWER PLAN AND PROFILE

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C7.1

File: I:\24\New Berlin City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C7.0_UTILITY_PLAN.dwg Layout: SANITARY FM SMALL User: JohrendtA Plotted: Apr 07, 2025 - 4:22pm



UTILITY LEGEND

- STORM SEWER
- STORM SEWER INLETS
- WATER LINE
- FIRE HYDRANT
- GATE VALVE
- SANITARY SEWER FORCE MAIN
- UTILITY POLE
- GUY WIRE
- STREET SIGN
- LIGHT POLE
- WATER METER
- EX. STORM MANHOLE
- EX. SANITARY SEWER MANHOLE
- UNKNOWN MANHOLE (NO ACCESS)
- OVERHEAD UTILITY LINE
- EX. SANITARY SEWER LINE
- EX. STORM SEWER LINE
- EX. WATER LINE
- EX. UNDERGROUND TELEPHONE LINE
- EX. UNDERGROUND ELECTRICAL LINE
- EX. GAS LINE

UTILITY NOTES

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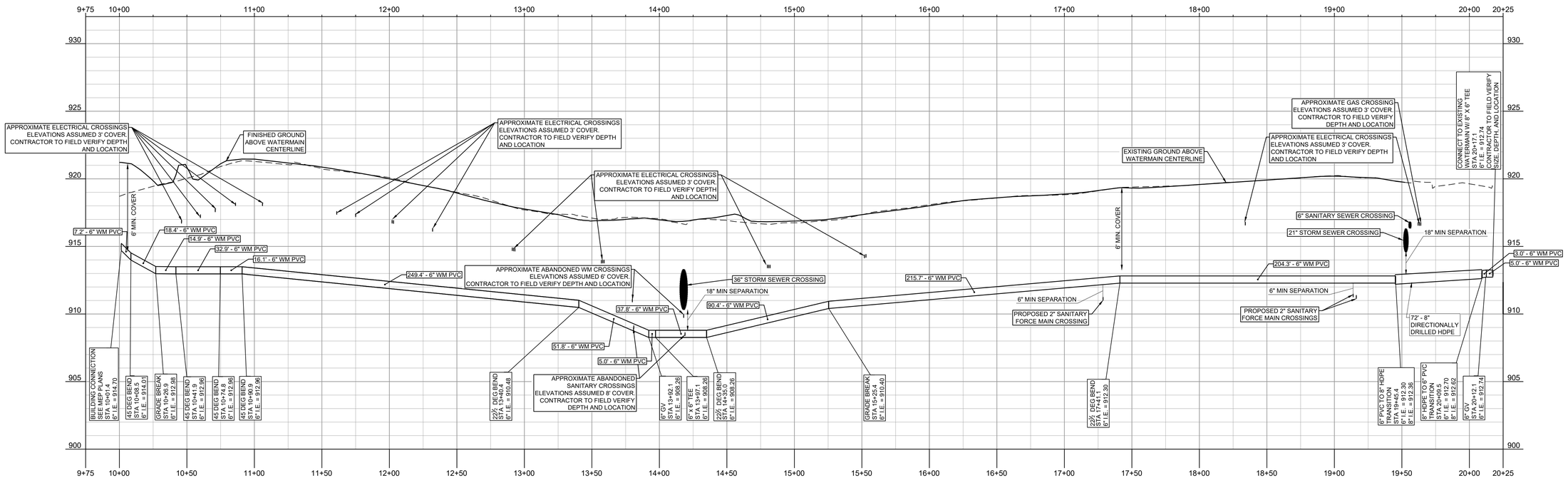

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Date
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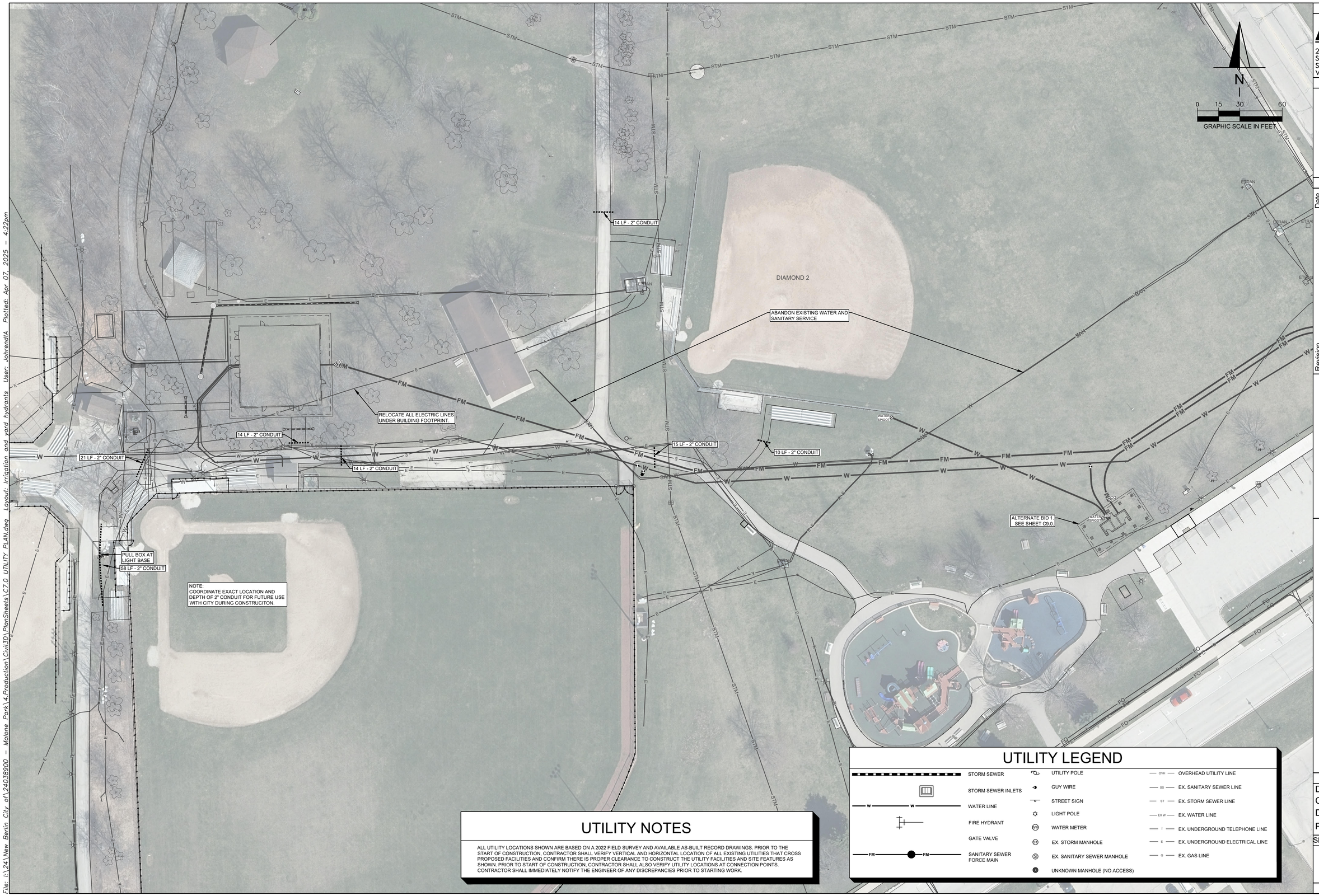
MALONE PARK
CITY OF NEW BERLIN, WI

WATER SERVICE PLAN AND PROFILE

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C7.2

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C7.0 UTILITY PLAN.dwg Layout: Water service to building User: JohrendtA Plotted: Apr 07, 2025 - 4:22pm



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UTILITY LEGEND

	STORM SEWER		UTILITY POLE	OVH	OVERHEAD UTILITY LINE
	STORM SEWER INLETS		GUY WIRE	SS	EX. SANITARY SEWER LINE
W	WATER LINE		STREET SIGN	ST	EX. STORM SEWER LINE
	FIRE HYDRANT		LIGHT POLE	EX W	EX. WATER LINE
	GATE VALVE	WM	WATER METER	T	EX. UNDERGROUND TELEPHONE LINE
FM	SANITARY SEWER FORCE MAIN	ST	EX. STORM MANHOLE	E	EX. UNDERGROUND ELECTRICAL LINE
		S	EX. SANITARY SEWER MANHOLE	G	EX. GAS LINE
			UNKNOWN MANHOLE (NO ACCESS)		

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SUITE 200
WAUKESHA, WI 53186

Revision | Date

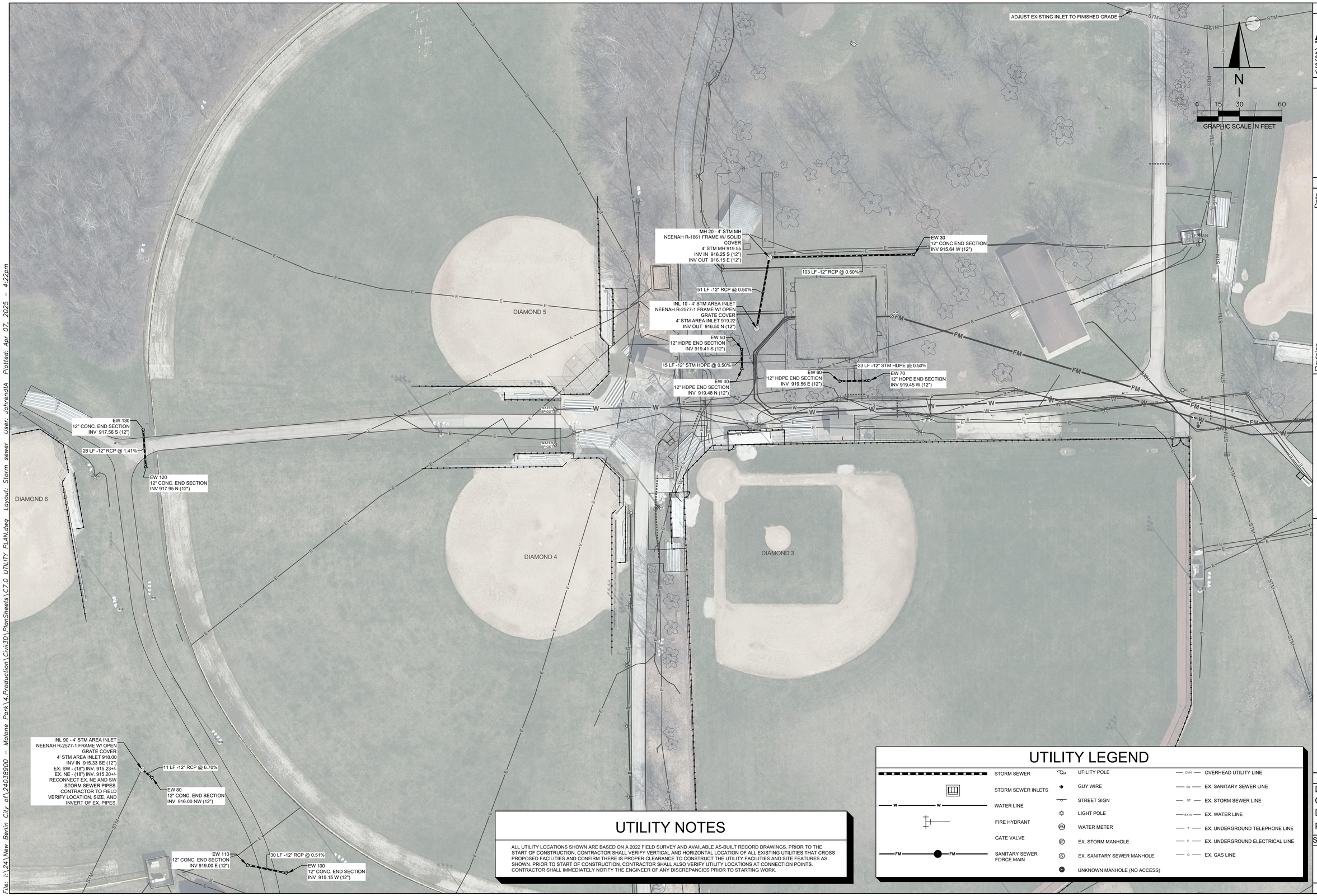
MALONE PARK
CITY OF NEW BERLIN, WI

UTILITY SERVICE PLAN

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C7.3

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C7.0 UTILITY PLAN.dwg Layout: Irrigation and yard hydrants User: JohrendtA Plotted: Apr 07, 2025 - 4:22pm



UTILITY NOTES

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- STORM SEWER
- STORM SEWER INLETS
- WATER LINE
- FIRE HYDRANT
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- UTILITY POLE
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- STREET SIGN
- LIGHT POLE
- WATER METER
- EX. STORM MANHOLE
- EX. SANITARY SEWER MANHOLE
- UNKNOWN MANHOLE (NO ACCESS)
- OVERHEAD UTILITY LINE
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- EX. WATER LINE
- EX. UNDERGROUND TELEPHONE LINE
- EX. UNDERGROUND ELECTRICAL LINE
- EX. GAS LINE

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20975
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SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

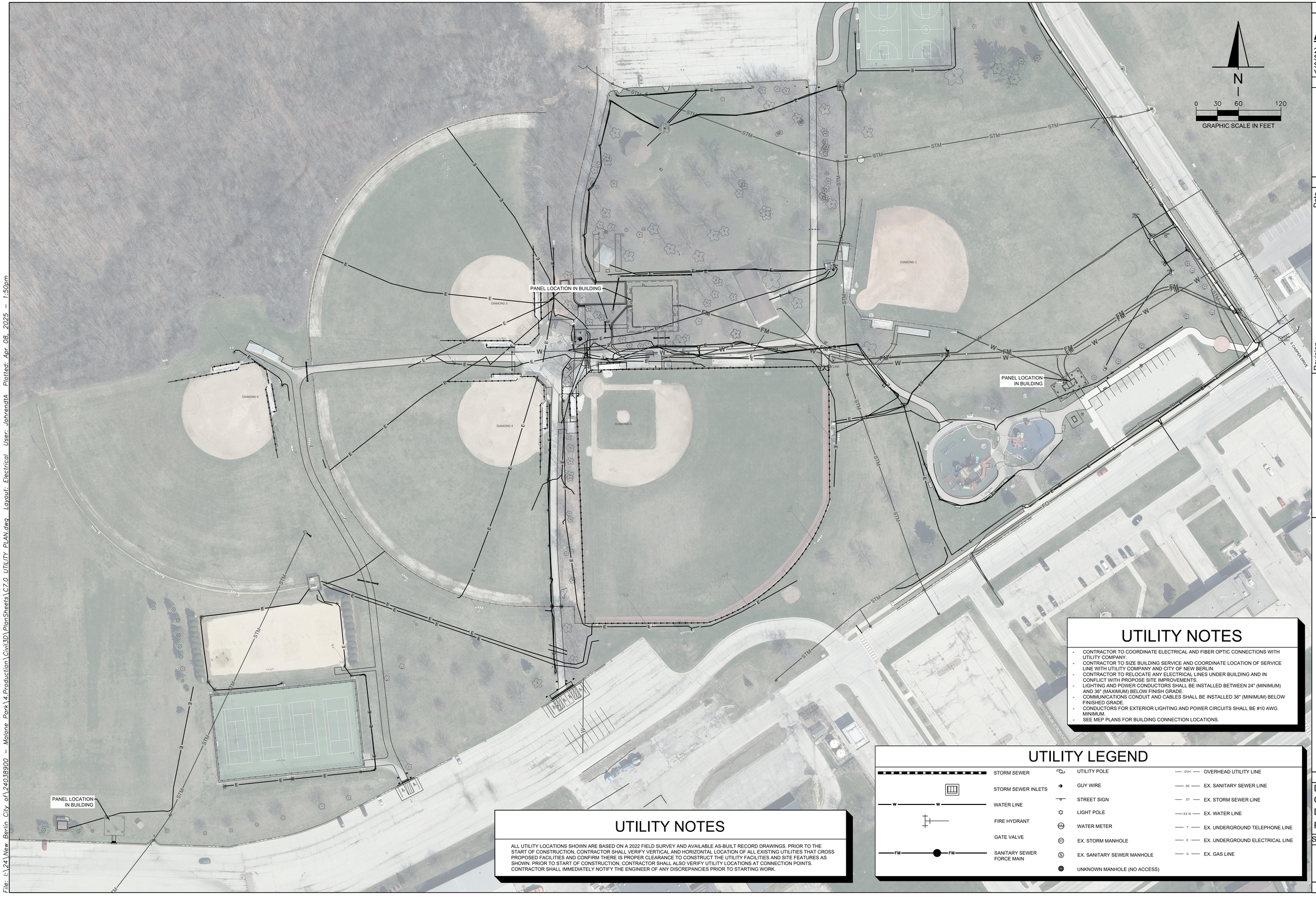
STORM SEWER

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C7.4

File: I:\24\New Berlin City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C7.0 UTILITY PLAN.dwg Layout: Storm sewer User: JohrendtA Plotted: Apr 07, 2025 - 4:22pm



UTILITY NOTES

- CONTRACTOR TO COORDINATE ELECTRICAL AND FIBER OPTIC CONNECTIONS WITH UTILITY COMPANY.
- CONTRACTOR TO SIZE BUILDING SERVICE AND COORDINATE LOCATION OF SERVICE LINE WITH UTILITY COMPANY AND CITY OF NEW BERLIN.
- CONTRACTOR TO RELOCATE ANY ELECTRICAL LINES UNDER BUILDING AND IN CONFLICT WITH PROPOSE SITE IMPROVEMENTS.
- LIGHTING AND POWER CONDUCTORS SHALL BE INSTALLED BETWEEN 24" (MINIMUM) AND 36" (MAXIMUM) BELOW FINISH GRADE.
- COMMUNICATIONS CONDUIT AND CABLES SHALL BE INSTALLED 36" (MINIMUM) BELOW FINISHED GRADE.
- CONDUCTORS FOR EXTERIOR LIGHTING AND POWER CIRCUITS SHALL BE #10 AWG MINIMUM.
- SEE MEP PLANS FOR BUILDING CONNECTION LOCATIONS.

UTILITY NOTES

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- LIGHT POLE
- WATER METER
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- EX. SANITARY SEWER MANHOLE
- UNKNOWN MANHOLE (NO ACCESS)
- OVERHEAD UTILITY LINE
- EX. SANITARY SEWER LINE
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- EX. WATER LINE
- EX. UNDERGROUND TELEPHONE LINE
- EX. UNDERGROUND ELECTRICAL LINE
- EX. GAS LINE

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date
Revision

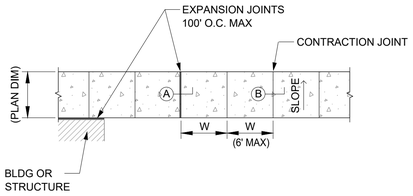
MALONE PARK
CITY OF NEW BERLIN, WI

ELECTRIC SITE PLAN

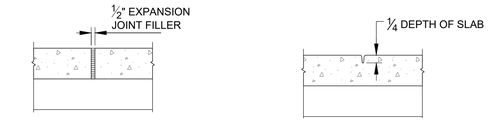
Drawn By: AJJ
Checked By: ALE
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number
C7.5

File: I:\24\New Berlin, City of\24038900 - Malone Park\4-Production\Civil3D\PlanSheets\C7.0 UTILITY PLAN.dwg Layout: Electrical User: JohrendtA Plotted: Apr 08, 2025 - 1:50pm

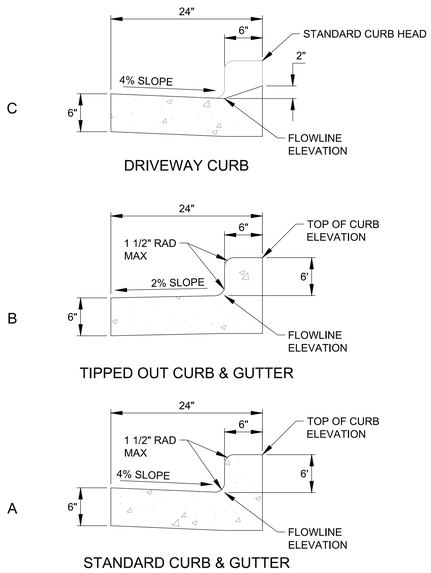


PLAN - TYPICAL SIDEWALK



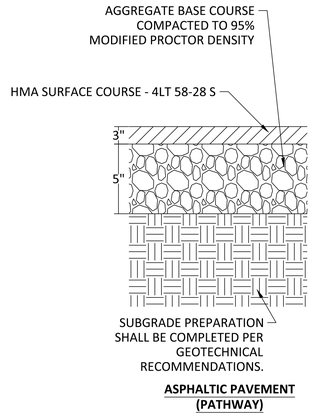
SIDEWALK

NOT TO SCALE



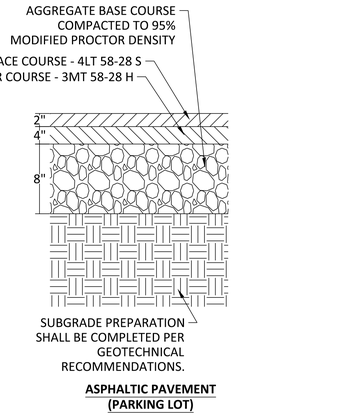
24" CONCRETE CURB & GUTTER

NOT TO SCALE



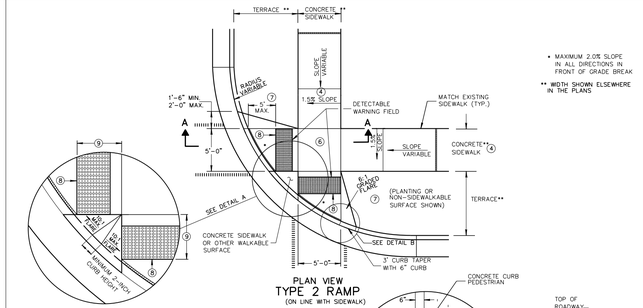
ASPHALT PATHWAY

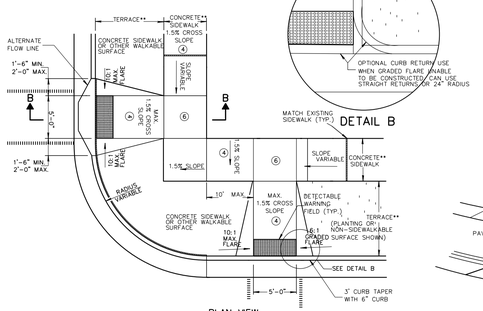
NOT TO SCALE

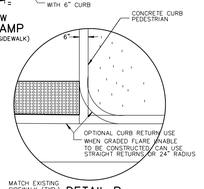


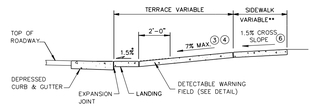
ASPHALT PARKING LOT & ROADWAY

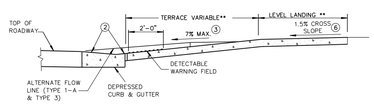
NOT TO SCALE

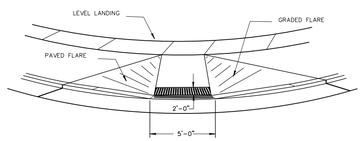












CURB RAMPS

TYPES 2 AND 3

GENERAL NOTES

AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF RAMP ACCESS AREAS.

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS

DETECTABLE WARNING FIELDS THAT ARE INSTALLED AS A GROUP OR SIDE BY SIDE, SHALL BE FROM THE SAME MANUFACTURER.

(2) GRADE CHANGE BETWEEN GUTTER FLAG SLOPE AND THE CURB RAMP SLOPE SHALL NOT EXCEED 11%. MAXIMUM GUTTER FLAG SLOPE IS 4%. PROVIDE LONGITUDINAL DRAINAGE AROUND CURB AND AWAY FROM CURB RAMP. NO VERTICAL LIPS OR DISCONTINUITIES GREATER THAN 1/4-INCH ARE ALLOWED. SLOPE OF CURB HEAD OPENING SHALL MATCH THE RAMP SLOPE, MINIMALLY 1.5% AND NOT TO EXCEED 7%. WHEN ADJACENT TO 1.5% LANDING, CONSTRUCT CURB HEAD OPENING AT 1.5% IN THE DIRECTION OF PEDESTRIAN TRAVEL.

(3) AN 8.33% CURB RAMP SLOPE IS ALLOWABLE WITH FLATTENED GUTTER FLAG SLOPE (2.67% OR LESS) AND NOT EXCEED 11% GRADE CHANGE.

(4) ±0.5% CONSTRUCTION TOLERANCE IN SIDEWALK CROSS SLOPE. THE SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2% WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

(6) PROVIDE A LEVEL LANDING (MAXIMUM 2% SLOPE) IN ANY DIRECTION OF PEDESTRIAN TRAVEL. STANDARD LANDING SIZE IS 5 FEET X 5 FEET.

(7) WHEN THIS GRADE BREAK DISTANCE EXCEEDS 5 FEET, USE RADIAL DETECTABLE WARNING FIELD.

(8) PROVIDE GRADE BREAK PERPENDICULAR TO DIRECTION OF WHEELCHAIR TRAVEL.

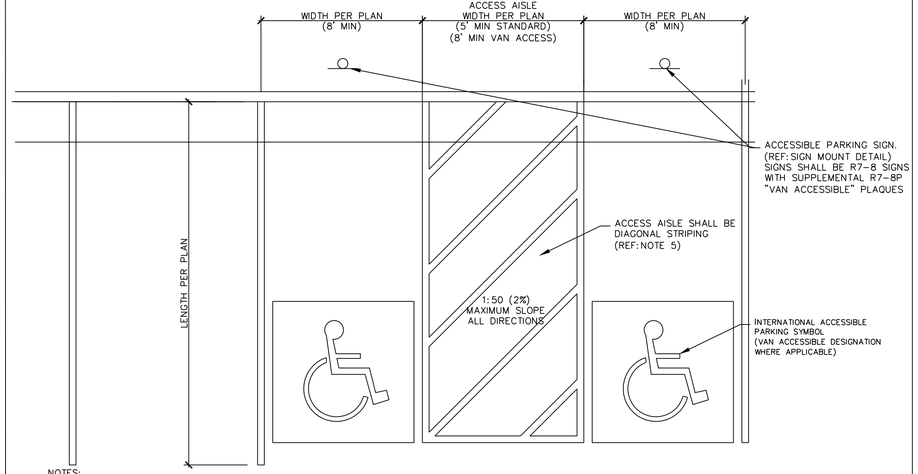
(9) WHEN THIS DISTANCE IS LESS THAN 6'-0", IT MAY BE DIFFICULT TO ACHIEVE A 7% SLOPE OR FLATTER ALONG THE RAMP. REDUCE CURB HEIGHT IN TRIANGLE AREA TO ACHIEVE 7% SLOPE OR FLATTER ON RAMP. CONSTRUCT 2-INCH MINIMUM CURB HEIGHT BETWEEN 10:1 FLARES.

* MAXIMUM 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK

** WIDTH SHOWN ELSEWHERE IN THE PLANS

LEGEND

- 1/2" EXPANSION JOINT-SIDEWALK
- CONTRACTION JOINT FIELD LOCATED
- PAVEMENT MARKING CROSSWALK (WHITE)
- ALTERNATIVE LAYOUT



NOTES:

1. EACH ACCESSIBLE PARKING SPACE IS TO BE A MINIMUM OF 8 FEET WIDE AND HAVE A 96" MINIMUM ACCESS AISLE FOR VANS OR 60" ACCESS AISLE FOR CARS ADJACENT TO THE SPACE.
2. CONSTRUCTED SLOPES WITHIN THE ACCESSIBLE PARKING SPACES AND ACCESS AISLES SHALL NOT EXCEED 1:50 (2%) IN ANY DIRECTION.
3. RAMPS MUST NOT EXTEND OUT FROM THE CURB INTO THE ACCESS AISLE OF ANY ACCESSIBLE PARKING SPACE.
4. CURB AND GUTTER ADJACENT TO OR WITHIN ACCESSIBLE PARKING STALLS SHALL BE MODIFIED IN A MANNER THAT THE SLOPE CONSTRUCTED WITHIN THE GUTTER PAN SHALL NOT EXCEED 1:50 OR (2%) SLOPE IN ALL DIRECTIONS.
5. SURFACE STRIPING PAINT SHALL BE FS-TT-P-1952D (WATERBORNE), TYPE II ADVERSE CONDITIONS, COLOR: YELLOW

ACCESSIBLE PARKING DETAIL

N.T.S

AYRES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Date

Revision

MALONE PARK

CITY OF NEW BERLIN, WI

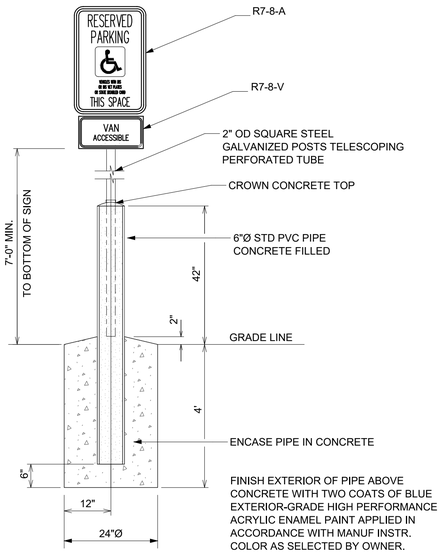
CONSTRUCTION DETAILS

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

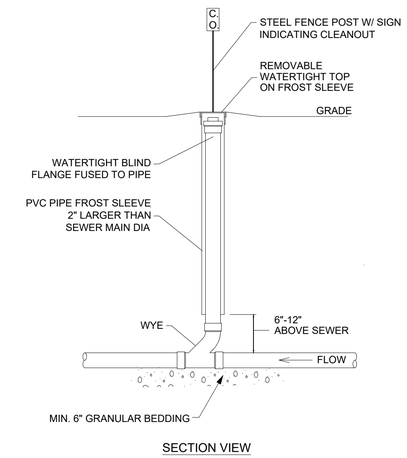
C8.0

File: I:\24\New Berlin City of\24038900 - Malone Park\4.Production\Civil3D\PlanSheets\C8.0 CONSTRUCTION DETAILS.dwg Layout: C8.0 CONSTRUCTION DETAILS User: JohrendtA Plotted: Apr 08, 2025 - 1:50pm



HDCP PIPE GUARD POST

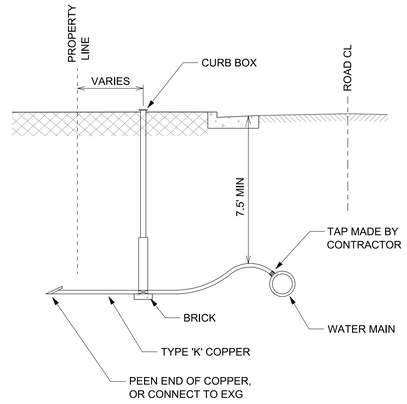
NOT TO SCALE



SECTION VIEW

IN-LINE PRESSURE SEWER CLEANOUT

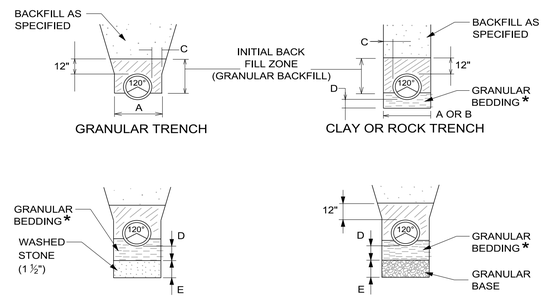
NOT TO SCALE



NOTE:
TAP WATER MAIN ON 45° WITH PIPE.
MIN SEPARATION BETWEEN WATER
AND SANITARY SERVICES SHALL BE
12" VERTICAL AND 18" HORIZONTAL.

WM 500 **WATER SERVICE INSTALLATION**

NOT TO SCALE



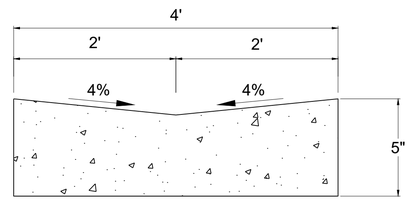
* FOR FLEXIBLE PIPE,
BEDDING MATERIAL SHALL
EXTEND TO SPRING LINE
(MID HEIGHT) OF PIPE.

A=O.D. PIPE + 24"(MAX)
B=O.D. PIPE + 18"(MAX) FOR ROCK
C=6" MIN.

D=4" BELOW BARREL FOR CLAY
3" BELOW BELL FOR CLAY
6" BELOW BARREL FOR ROCK
E=DETERMINED BY A/E

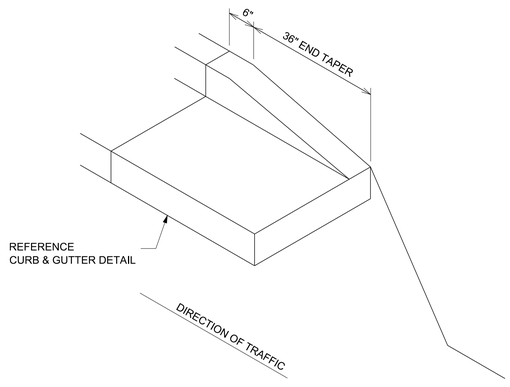
TRENCH SECTIONS

NOT TO SCALE



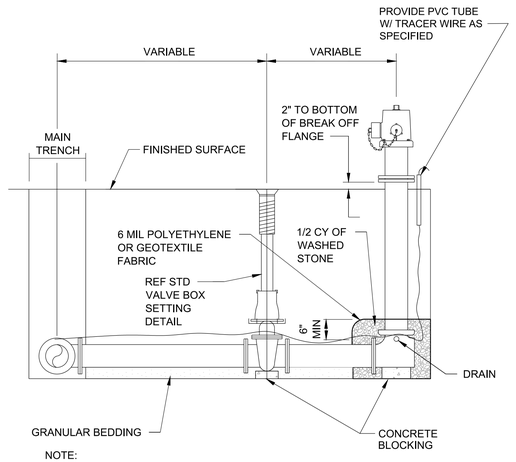
CONCRETE DRAINAGE PAN

NOT TO SCALE



ST 101 **CURB & GUTTER TERMINATOR**

NOT TO SCALE

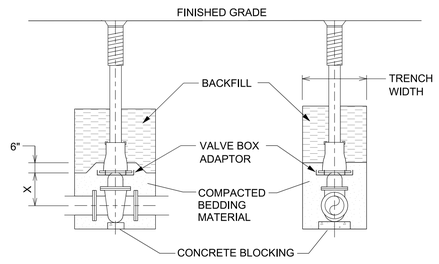


NOTE:

1. ENTIRE HYDRANT LEAD SHALL BE RESTRAINED FROM MAIN TO HYDRANT.

WM 100 **STANDARD HYDRANT SETTING**

NOT TO SCALE



SIDE VIEW

PIPE DIA (INCHES)	X=SETTING (INCHES)
2	6
3	7
4	8
6	12
8	13

FRONT VIEW

PIPE DIA (INCHES)	X=SETTING (INCHES)
10	17
12	21
14	25
16	30

WM 300 **STANDARD VALVE BOX SETTING**

NOT TO SCALE

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20975
SWENSON DR.
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MALONE PARK

CITY OF NEW BERLIN, WI

CONSTRUCTION DETAILS

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C8.1

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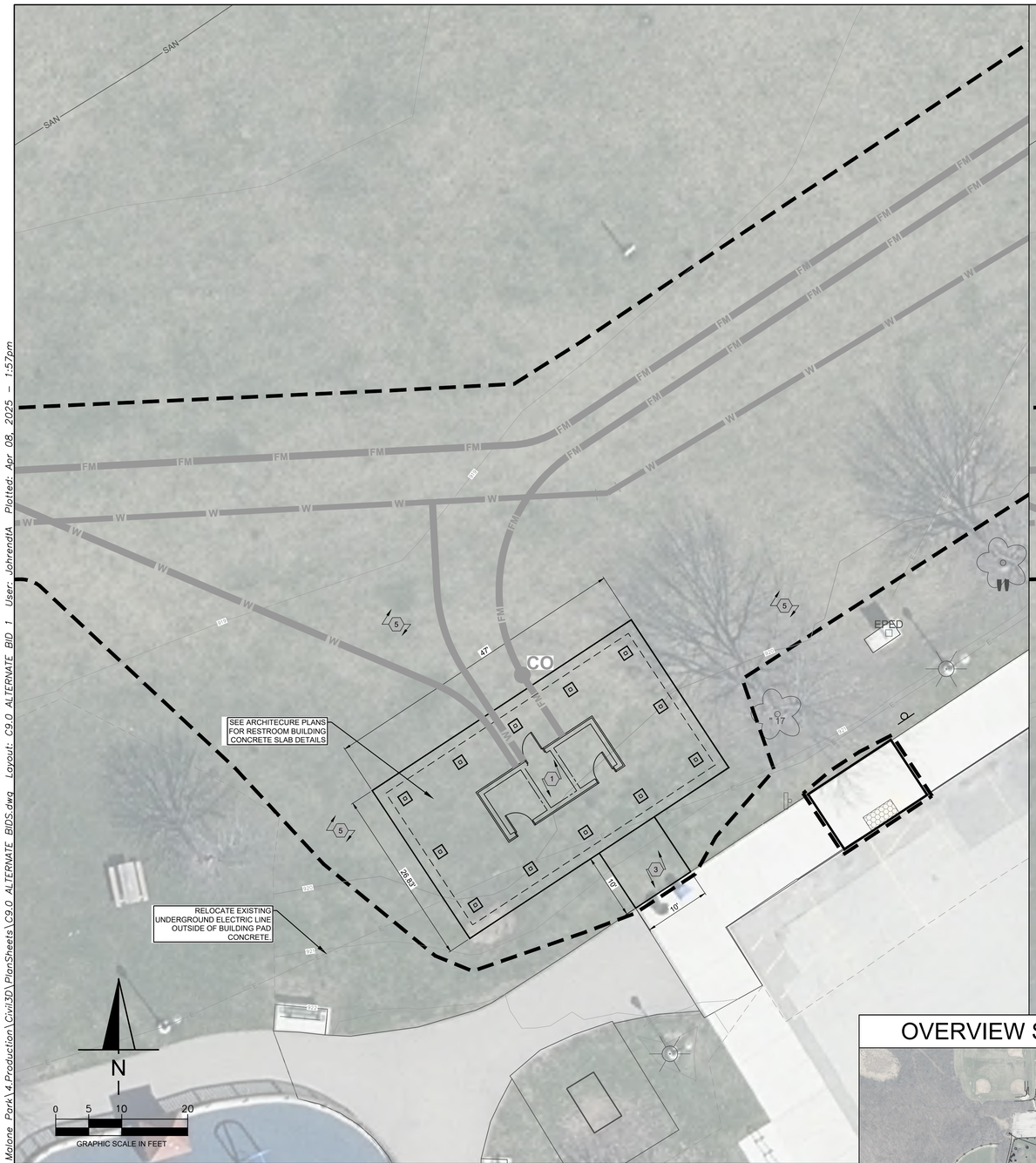

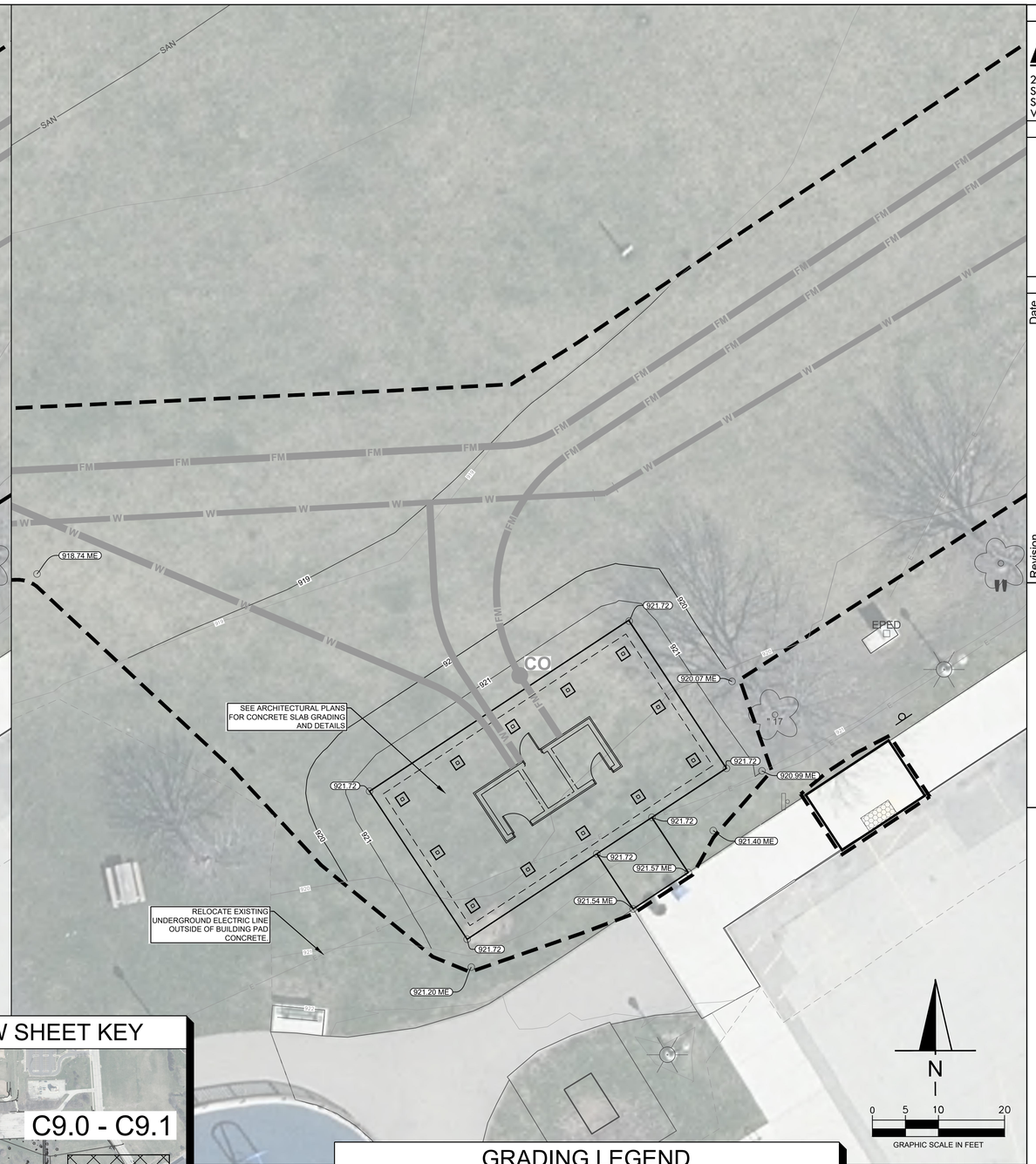

KEY NOTES

1. PROPOSED BUILDING (SEE ARCHITECTURAL PLANS FOR DESIGN)
2. 24" CONCRETE CURB AND GUTTER
3. CONCRETE SIDEWALK
4. CURB RAMP (SEE DETAILS)
5. LAWN RESTORATION
6. CONNECT TO EXISTING PAVEMENT, SIDEWALK, CURB ETC. TYP
7. DETECTABLE WARNING FIELD
8. INLET PROTECTION

UTILITY NOTES

- CONTRACTOR TO COORDINATE ELECTRICAL AND FIBER OPTIC CONNECTIONS WITH UTILITY COMPANY.
- CONTRACTOR TO SIZE BUILDING SERVICE AND COORDINATE LOCATION OF SERVICE LINE WITH UTILITY COMPANY AND CITY OF NEW BERLIN.
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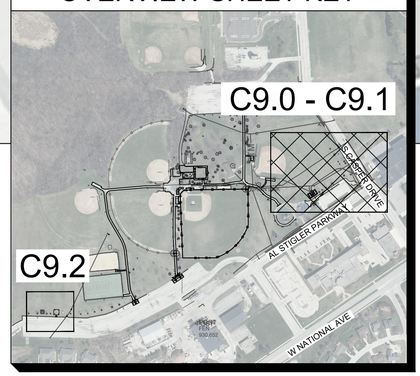
- CONDUCTORS FOR EXTERIOR LIGHTING AND POWER CIRCUITS SHALL BE #10 AWG MINIMUM.
- SEE MEP PLANS FOR BUILDING CONNECTION LOCATIONS.

OVERVIEW SHEET KEY



GRADING LEGEND

900.00	FINISHED GRADE
900.00 TOC	TOC = TOP OF CURB
900.00 ME	ME = MATCH EXISTING ELEVATION
900.00 LP	LP = LOW POINT
900.00 FL	FL = FLOW LINE
X.XX%	SLOPE AND FLOW DIRECTION
900	EXISTING CONTOUR
900	PROPOSED CONTOUR
	LIMITS OF DISTURBANCE

PATHWAYS AND SIDEWALK SHALL NOTE EXCEED 2% CROSS SLOPE OR 5% RUNNING SLOPE.

ADA PARKING STALLS SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION

CONTRACTOR SHALL VERIFY EXISTING GRADES AND MATCH POINTS PRIOR TO SIDEWALK, PATHWAY, CURB AND GUTTER AND PARKING LOT CONSTRUCTION.

CONTRACTOR TO PROTECT ALL EXISTING TREES TO REMAIN THROUGHOUT CONSTRUCTION.

AYRES
20975
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WAUKESHA, WI 53186

Date

Revision

MALONE PARK
CITY OF NEW BERLIN, WI

ALTERNATE BID 1

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C9.0

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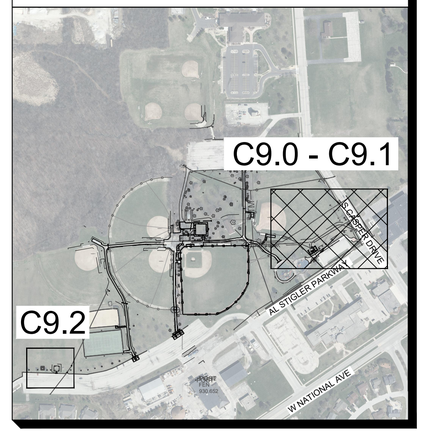

WATER SPIGOT

WATER SPIGOT

171 LF - 1 1/4" HDPE WATER SERVICE

WATER SERVICE BUILDING CONNECTIONS SEE MEP PLANS

RELOCATE EXISTING UNDERGROUND ELECTRIC LINE OUTSIDE OF BUILDING PAD CONCRETE

S CASPER DRIVE

ETRAN

N

0 10 20 40

GRAPHIC SCALE IN FEET

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MALONE PARK
CITY OF NEW BERLIN, WI

ALTERNATE BID 1 - UTILITIES

Drawn By: AJJ
Checked By: MDP
Date: 04/09/2025
Project No. 24-0389.00

Sheet Number

C9.1

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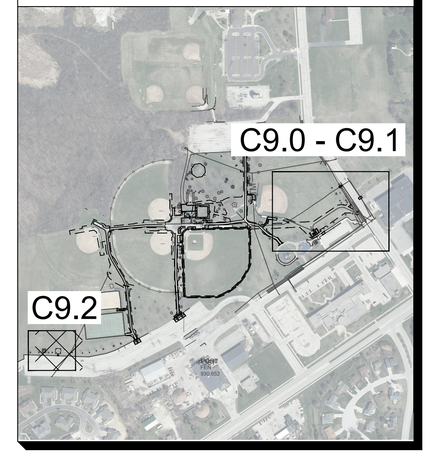

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0 5 10 20

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MALONE PARK
CITY OF NEW BERLIN, WI

ALTERNATE BID 2

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Sheet Number

C9.2

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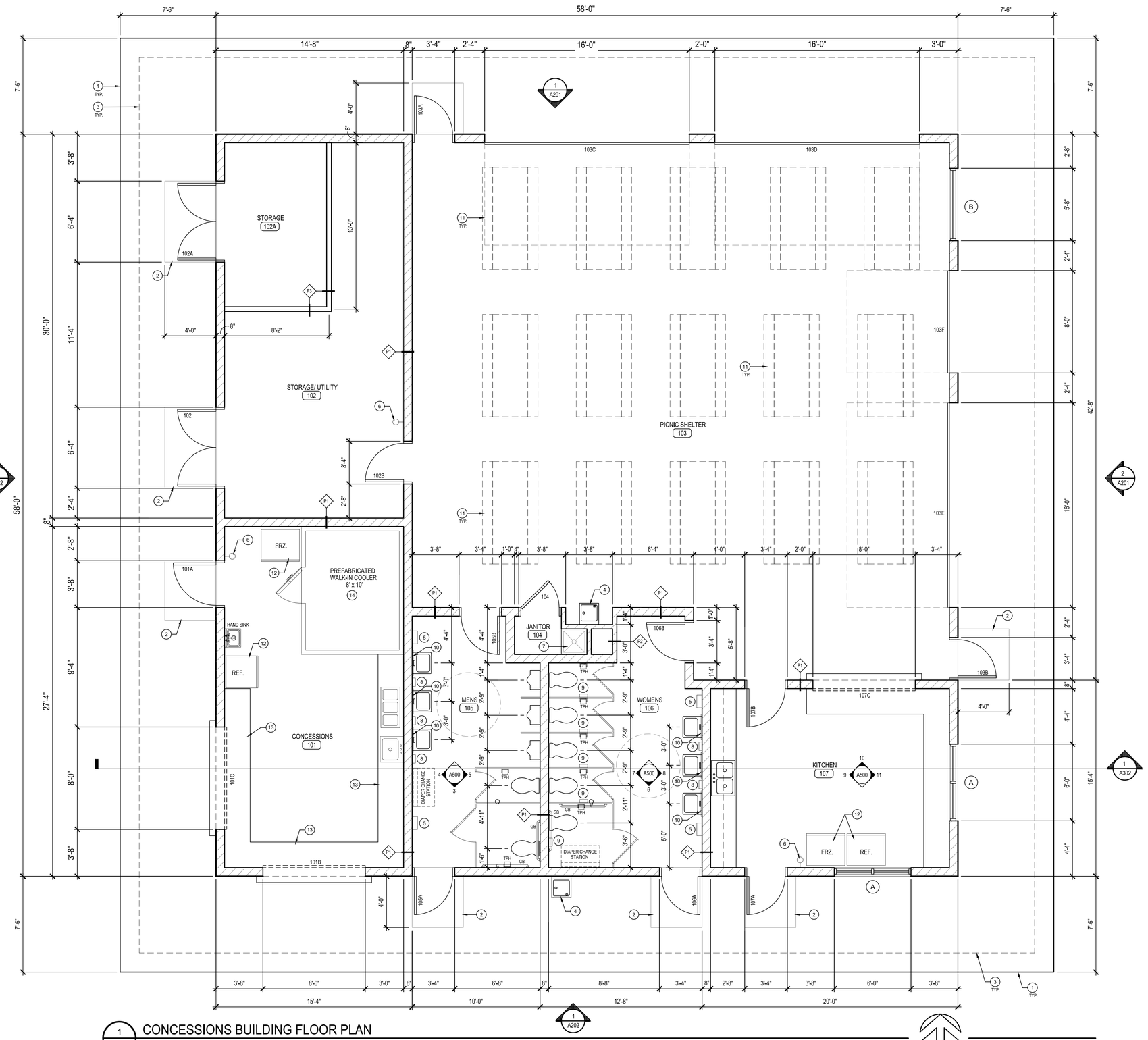

1 A101 CONCESSIONS BUILDING FLOOR PLAN

SCALE: 1/4" = 1'-0"

BUILDING CODE SUMMARY:

BASED UPON: 2015 IBC

CITY OF NEW BERLIN - MALONE PARK CONCESSIONS BUILDING

I. OCCUPANCY: "A-2" (RECREATION - PARK SHELTER & CONCESSIONS)

II. CONSTRUCTION CLASSIFICATION:
A. CONSTRUCTION TYPE: TYPE VB
B. TOTAL BUILDING AREA = 3,364 S.F.

(SPRINKLERED BUILDING)

CONSTR. TYPE	BASIC ALLOW. HEIGHT	ACT. NO. OF STORIES	SPRINKLERED BUILDING ALLOWABLE AREA / FLR.	TOTAL ACTUAL BUILDING AREA
VB	1 STORY & 40 FT.	1 STORY & 21 FT.	24,000 S.F.	3,364 S.F.

C. FIRE PROTECTION: (CHAPTER 9)
1. AN AUTOMATIC SPRINKLER SYSTEM IS REQUIRED SINCE THE OCCUPANT LOAD EXCEEDS 100 PEOPLE. (PER SEC. 903.2.1.3)

D. BUILDING ELEMENTS SHALL HAVE FIRE RESISTANCE RATINGS AS SPECIFIED IN TABLE 601.

	TYPE VB:
1. STRUCTURAL FRAME	= (-) HR.
2. BEARING WALLS (EXTERIOR & INTERIOR)	= (-) HR.
3. NONBEARING WALLS & PARTITIONS	= (-) HR.
4. FLOOR / CLG. CONSTRUCTION	= (-) HR.
5. ROOF CONSTRUCTION	= (-) HR.

III. EGRESS AND ACCESS REQUIREMENTS:
A. OCCUPANT LOAD: (TABLE 1004.1.2)

DESCRIPTION:	S.F. ACTUAL: /	LOAD FACTOR:	OCC. LOAD:	NO. OF EXITS REQ'D.:
1. CONCESSIONS #101	203 S.F.	200 S.F.	1 PERSON	1
2. STORAGE #102	301 S.F.	300 S.F.	1 PERSON	1
3. PICNIC SHELTER #103	1,526 S.F.	15 S.F.	101 PERSONS	2
2. COMM. KITCHEN #104	176 S.F.	200 S.F.	1 PERSON	1
TOTAL OCCUPANT LOAD			104 PERSONS	2

B. WHERE MORE THAN ONE MEANS OF EGRESS IS REQUIRED BY SECTION 1006.2 OR 1006.3 EACH ACCESSIBLE PORTION OF THE SPACE SHALL BE SERVED BY NOT LESS THAN TWO ACCESSIBLE MEANS OF EGRESS. (PER SEC. 1009.1)

C. EACH REQUIRED ACCESSIBLE MEANS OF EGRESS SHALL BE CONTINUOUS TO A PUBLIC WAY. (PER SEC. 1009.2)

D. SPACES ARE ALLOWED ONE EXIT OT EXIT ACCESS WHERE OCCUPANT LOADS ARE LESS THAN THE FOLLOWING: GROUP 'A' OCCUPANCIES: 49 PERSONS. (PER SEC. & TABLE 1006.2.1)

E. MAX TRAVEL DISTANCE TO EXIT: (SPRINKLERED BLDG.) - 250 FT. IN GROUP 'A' (TABLE 1017.2)

F. THE COMMON PATH OF EGRESS TRAVEL IN GROUP 'A' OCCUPANCIES SHALL NOT EXCEED 75 FT. (PER SEC. & TABLE 1006.2.1)

G. IN GROUP 'A' OCCUPANCIES DEAD END CORRIDORS SHALL NOT EXCEED 20 FT. (PER SEC. 1020.4)

H. EXITS SHALL DISCHARGE DIRECTLY TO THE EXTERIOR OF THE BUILDING. THE EXIT DISCHARGE SHALL BE AT GRADE OR SHALL PROVIDE DIRECT ACCESS TO GRADE. (PER SECTION 1028.1)

IV. ACCESSIBILITY:
A. AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT ACCESSIBLE BUILDINGS, ACCESSIBLE FACILITIES, ACCESSIBLE ELEMENTS AND ACCESSIBLE SPACES THAT ARE ON THE SAME SITE. (PER SEC. 1104.2)

B. AT LEAST 60% OF ALL PUBLIC ENTRANCES SHALL BE ACCESSIBLE. (SEC. 1105.1)

V. REQUIRED PLUMBING FIXTURES: (TABLE 2902.1)

OCCUPANCY	NO. OF REQUIRED WATER CLOSETS: MEN:	WOMEN:	NO. OF REQUIRED LAVATORIES:	DRINKING FACILITIES:
GROUP 'A-3'	1 PER 125	1 PER 65	1 PER 200	1 PER 500
	1 REQUIRED 2 PROVIDED + 3 URINALS	1 REQUIRED 5 PROVIDED	2 PROVIDED EA. PER TENANT	1 PROVIDED PER TENANT

NUMBERED CONSTRUCTION NOTES:

1. EXTENT OF 4" CONCRETE SLAB
2. STOOP, (SEE STRUCTURAL)
3. DASHED LINE INDICATES EXTENT OF ROOF OVERHANG, ABOVE.
4. ELECTRIC WATER COOLER WITH BOTTLE FILL STATION, (SEE PLUMBING DRAWINGS)
5. ELECTRIC HAND DRYER, (SEE ELECTRICAL DRAWINGS)
6. BRACKET MOUNTED FIRE EXTINGUISHER
7. FLOOR MOP SINK, (SEE PLUMBING DRAWINGS)
8. SOAP DISPENSER
9. SANITARY NAPKIN DISPENSER
10. 24" x 36" MIRROR
11. PICNIC TABLE, (BY OWNER)
12. APPLIANCES, (BY OWNER)
13. 34" HIGH STAINLESS STEEL COUNTERTOP WITH BACKSPLASH AND STORAGE SHELF UNDERNEATH AT 6" A.F.F.
14. PREFABRICATED WALK-IN COOLER, (BY OWNER)

GENERAL NOTE:
1. REFER TO DETAIL 3/A600 FOR A DESCRIPTION OF WALL TYPES USED.

AYRES ASSOCIATES
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Revision: REVISED: Date: 3/21/2025

MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

Drawn By: MP
Checked By: MP
Date: 3/21/2025
Project No. 24-0389.00

Sheet Number
A101

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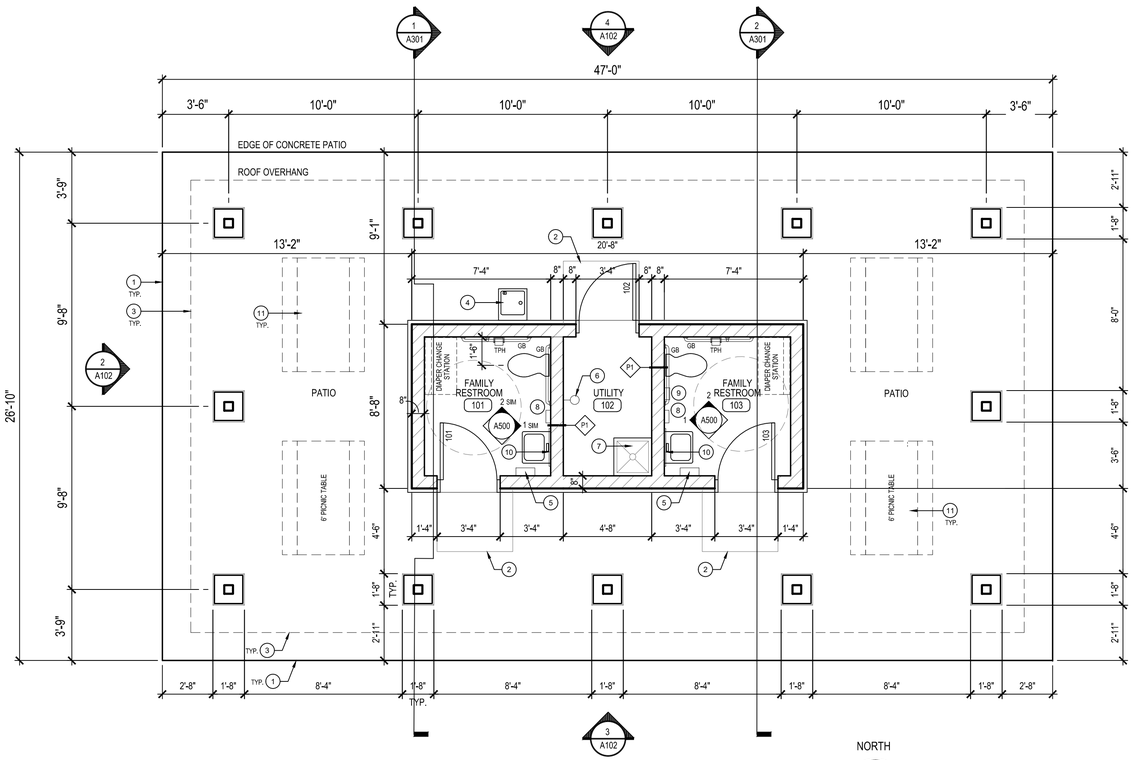


BID ALTERNATE NO. 1

1 A102 RESTROOM PAVILION FLOOR PLAN

SCALE: 1/4" = 1'-0"

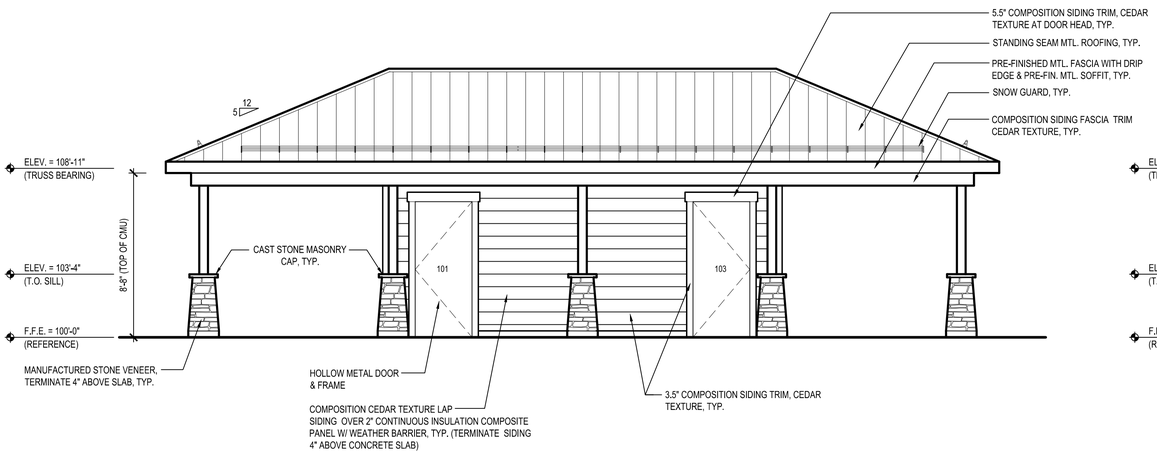
BUILDING FLOOR PLAN = 176 S.F.

CITY OF NEW BERLIN - MALONE PARK RESTROOM PAVILION
BASED UPON: 2015 IBC

I. OCCUPANCY: "A-3" (RECREATION - PARK SHELTER)
NONSPRINKLERED BUILDING

II. CONSTRUCTION CLASSIFICATION:
A. CONSTRUCTION TYPE: TYPE VB
B. TOTAL BUILDING AREA = 176 S.F.

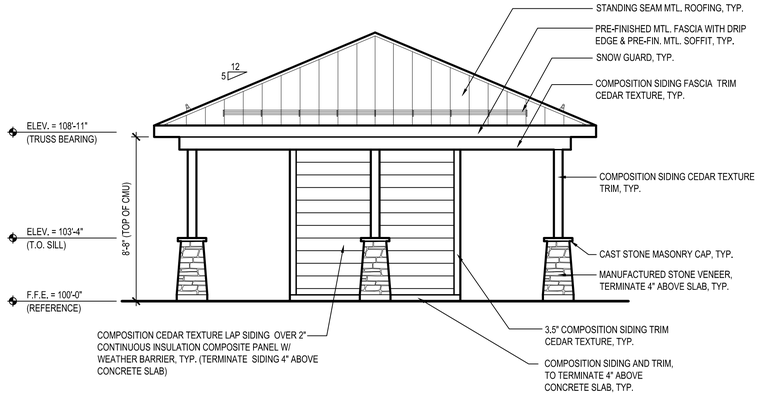
GENERAL NOTES:
1. REFER TO DETAIL 3/A600 FOR A DESCRIPTION OF WALL TYPES USED.
2. REFER TO SHEET FOR A LISTING OF 'NUMBERED CONSTRUCTION NOTES.'



BID ALTERNATE NO. 1

3 A102 RESTROOM PAVILION - SOUTH EXTERIOR ELEVATION

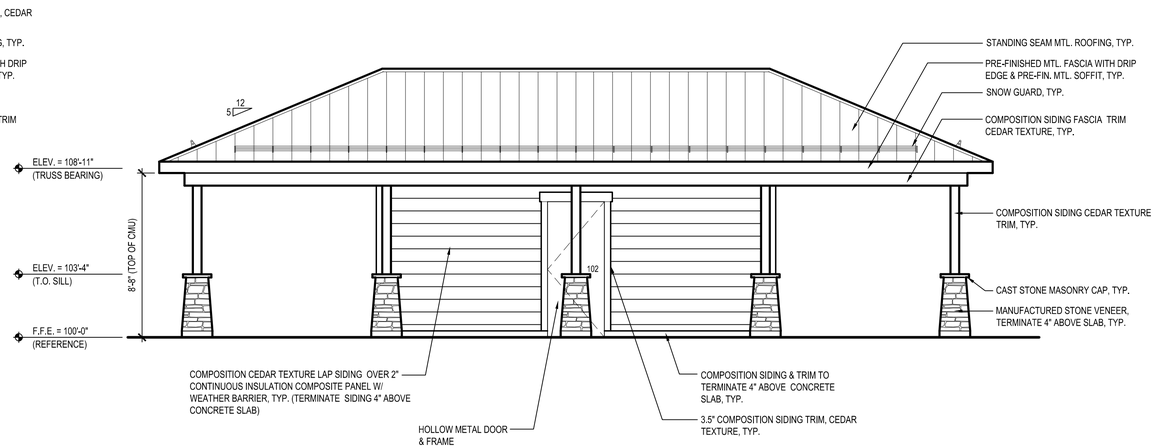
SCALE: 1/4" = 1'-0"



BID ALTERNATE NO. 1

2 A102 RESTROOM PAVILION - EAST & WEST EXTERIOR ELEVATION

SCALE: 1/4" = 1'-0"



BID ALTERNATE NO. 1

4 A102 RESTROOM PAVILION - NORTH EXTERIOR ELEVATION

SCALE: 1/4" = 1'-0"

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Revision	Date
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MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

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Date: 3/21/2025
Project No. 24-0389.00

Sheet Number

A102

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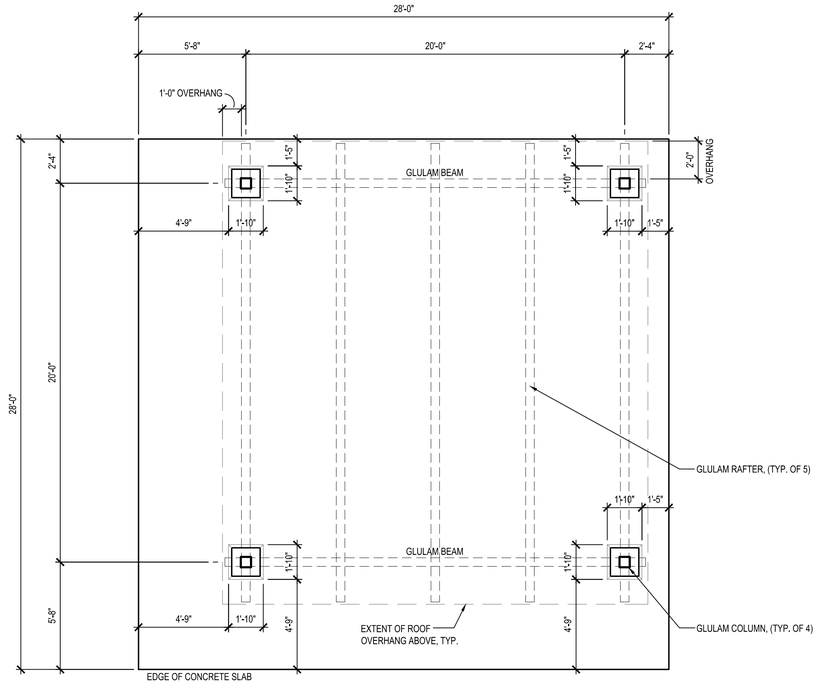


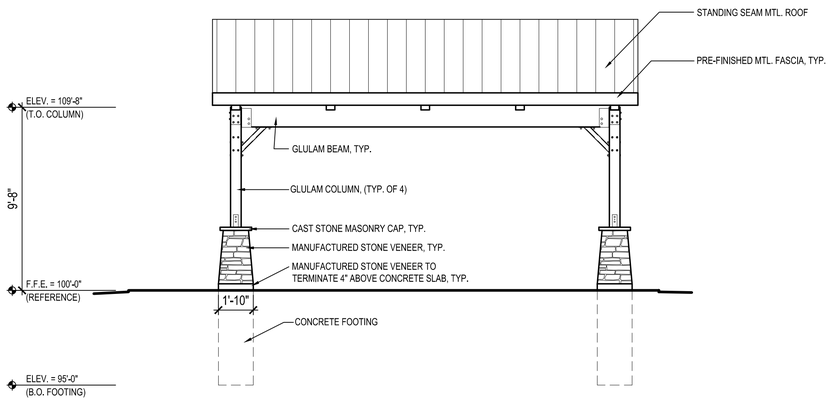
BID ALTERNATE NO. 2

1 A103

SHELTER FLOOR PLAN

SCALE: 1/4" = 1'-0"

NORTH

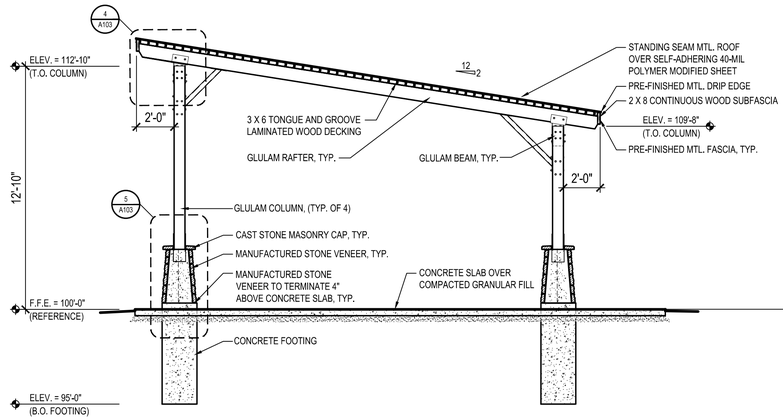


BID ALTERNATE NO. 2

2 A103

SHELTER - SOUTH ELEVATION

SCALE: 1/4" = 1'-0"



BID ALTERNATE NO. 2

3 A103

SHELTER - WEST SECTION

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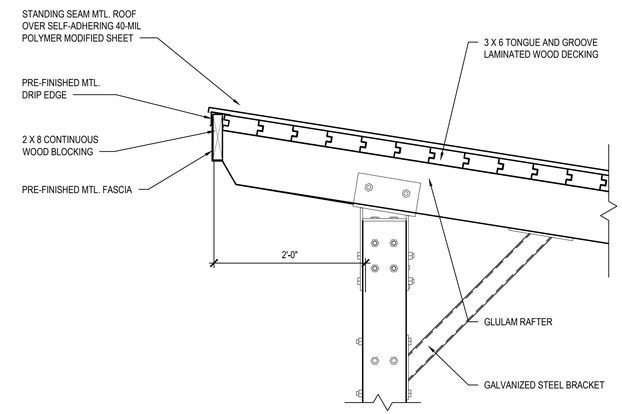
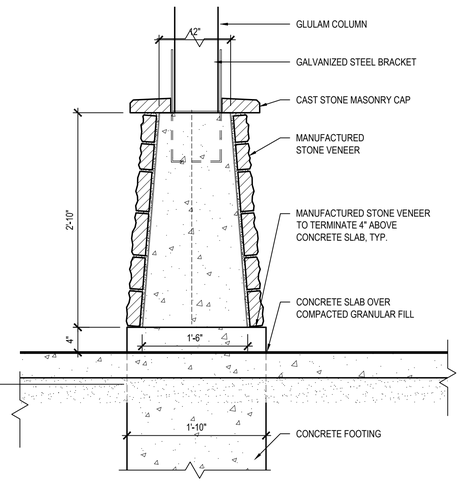


BID ALTERNATE NO. 2

4 A103

HIGH EAVE DETAIL

SCALE: 1" = 1'-0"



BID ALTERNATE NO. 2

5 A103

COLUMN BASE DETAIL

SCALE: 1" = 1'-0"

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MALONE PARK

CITY OF NEW BERLIN, WI

PARK STRUCTURES

Drawn By: MP
Checked By: MP
Date: 3/21/2025
Project No. 24-0389.00

Sheet Number

A103

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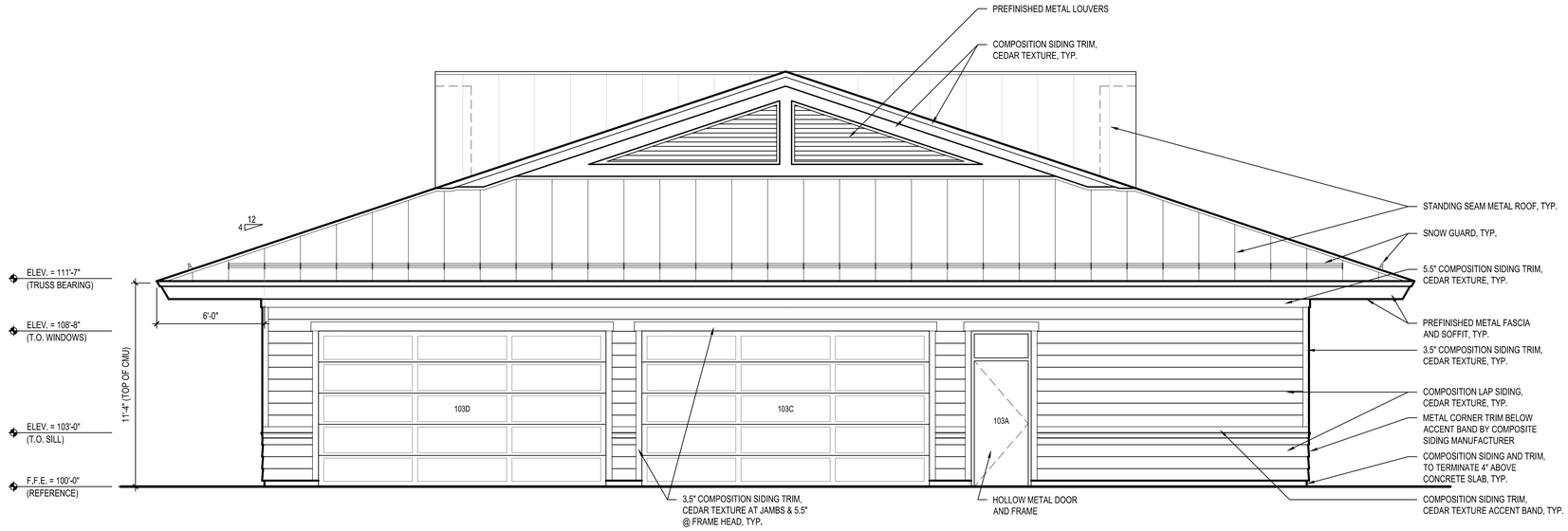
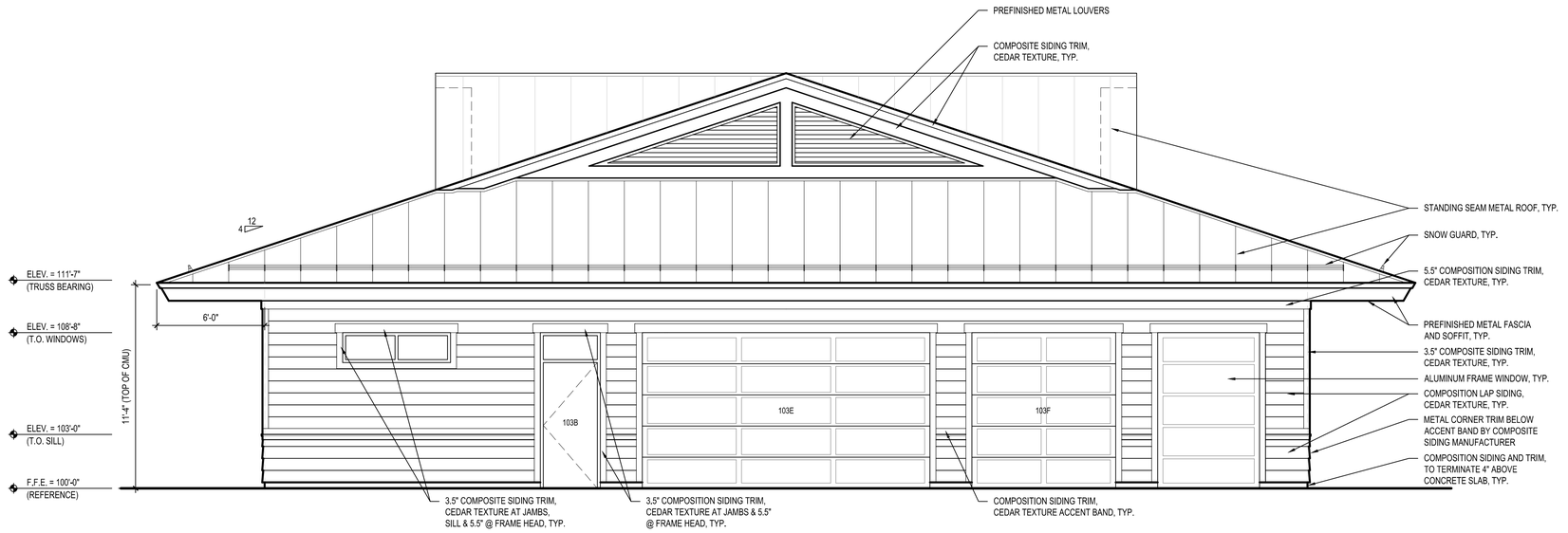


1 A201 CONCESSIONS BUILDING - NORTH EXTERIOR ELEVATION

SCALE: 1/4" = 1'-0"



2 A201 CONCESSIONS BUILDING - EAST EXTERIOR ELEVATION

SCALE: 1/4" = 1'-0"

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MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

Drawn By: MP
Checked By: MP
Date: 3/21/2025
Project No. 24-0389.00

Sheet Number

A201

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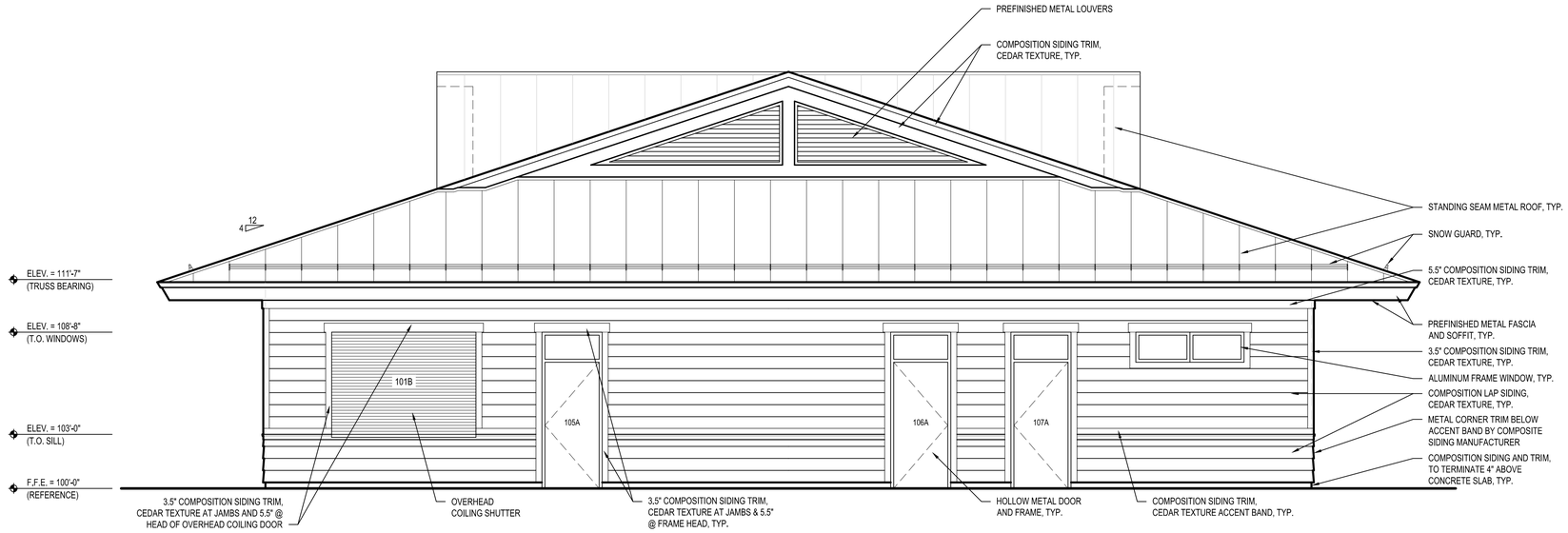
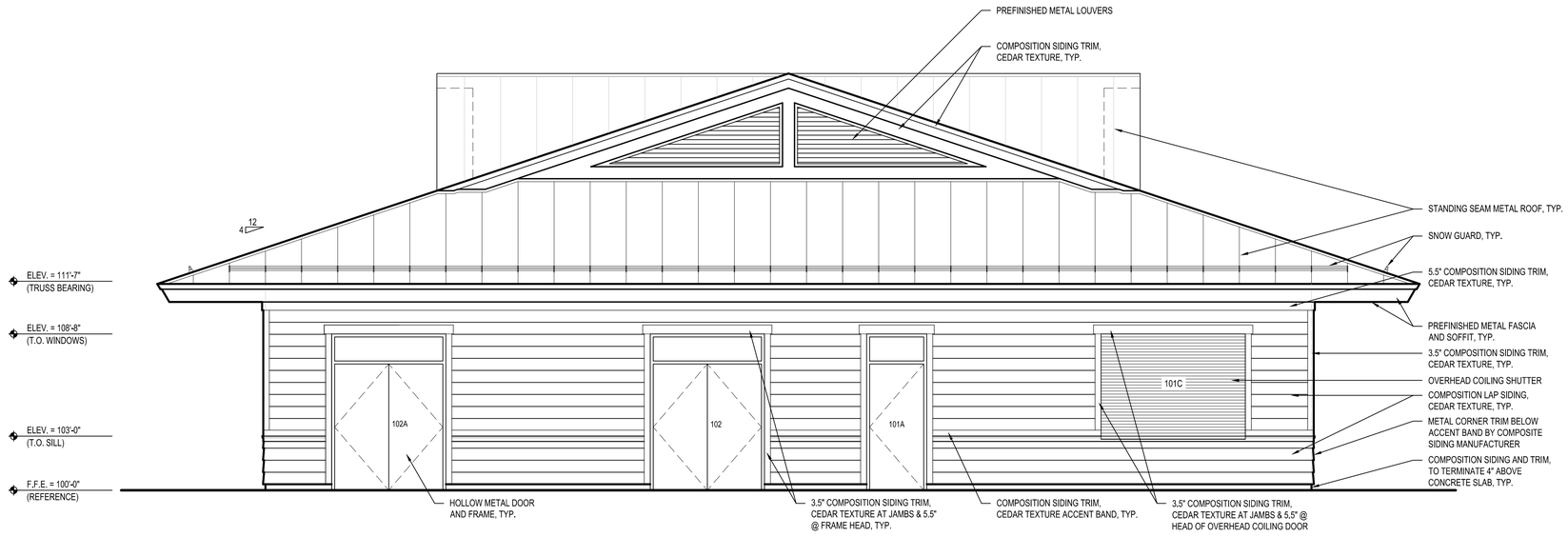


1 A202 CONCESSIONS BUILDING - SOUTH EXTERIOR ELEVATION

SCALE: 1/4" = 1'-0"



2 A202 CONCESSIONS BUILDING - WEST EXTERIOR ELEVATION

SCALE: 1/4" = 1'-0"

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MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

Drawn By: MP
Checked By: MP
Date: 3/21/2025
Project No. 24-0389.00

Sheet Number

A202

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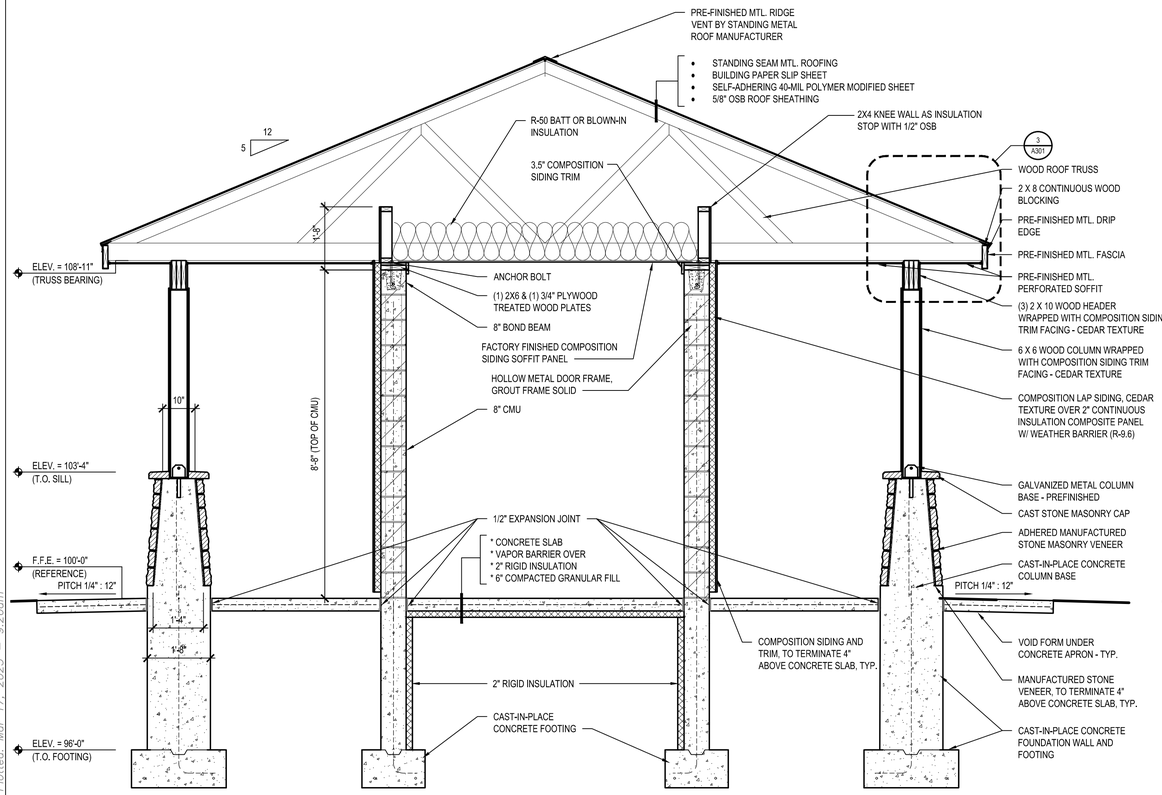
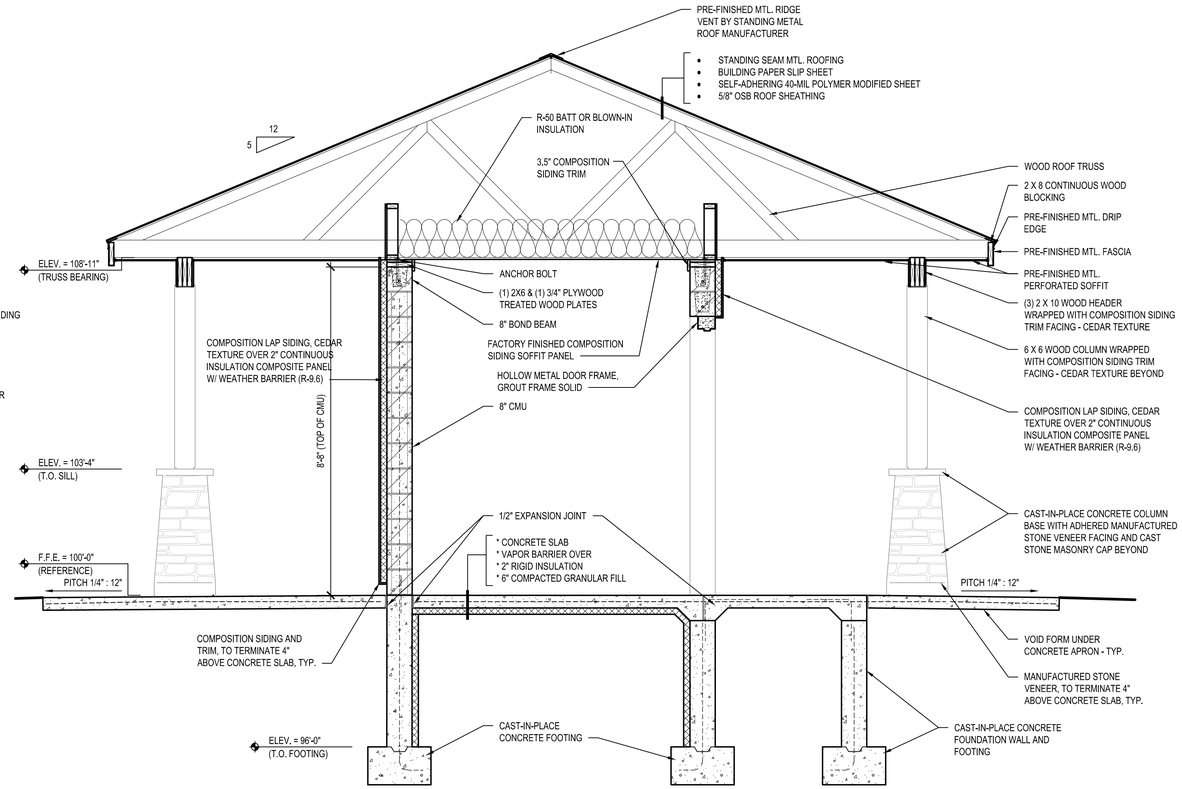
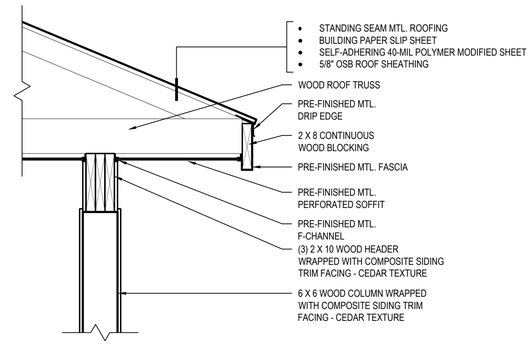


1 A301 BID ALTERNATE NO. 1
RESTROOM PAVILION - NORTH-SOUTH BUILDING SECTION
SCALE: 1/2" = 1'-0"



2 A301 BID ALTERNATE NO. 1
RESTROOM PAVILION - NORTH-SOUTH BUILDING SECTION
SCALE: 1/2" = 1'-0"



3 A301
EAVE DETAIL
SCALE: 1" = 1'-0"

AYRES ASSOCIATES
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Revision	Date
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MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

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Sheet Number
A301

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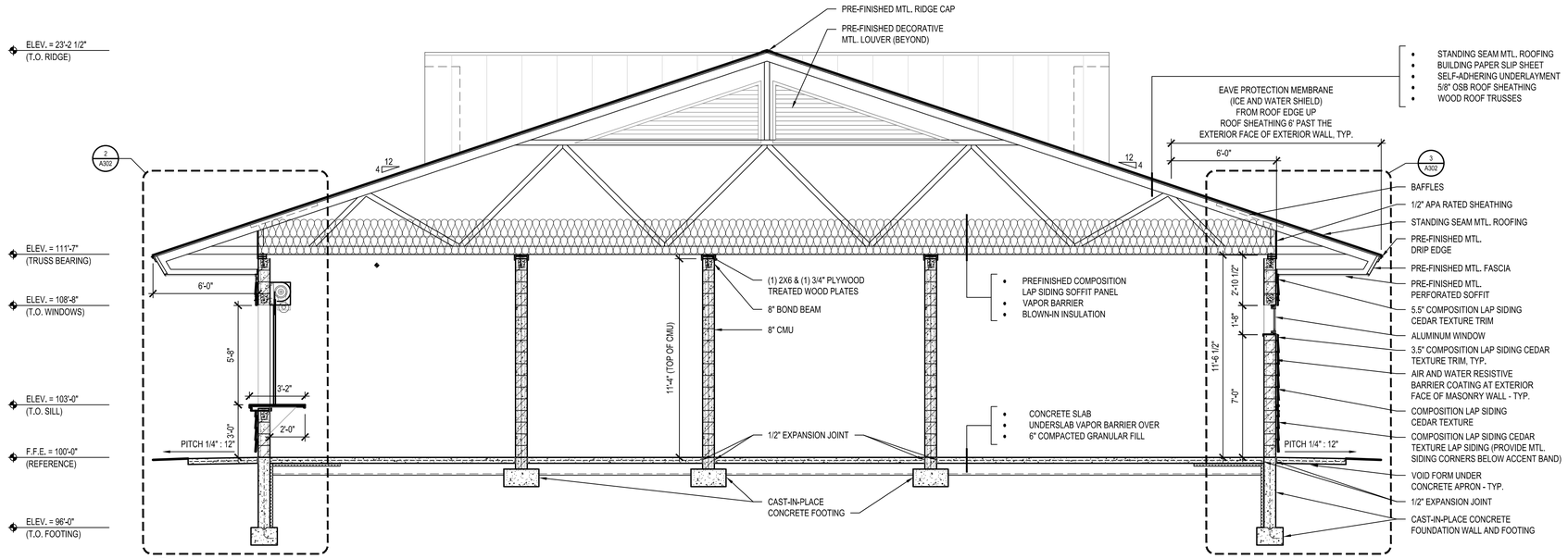
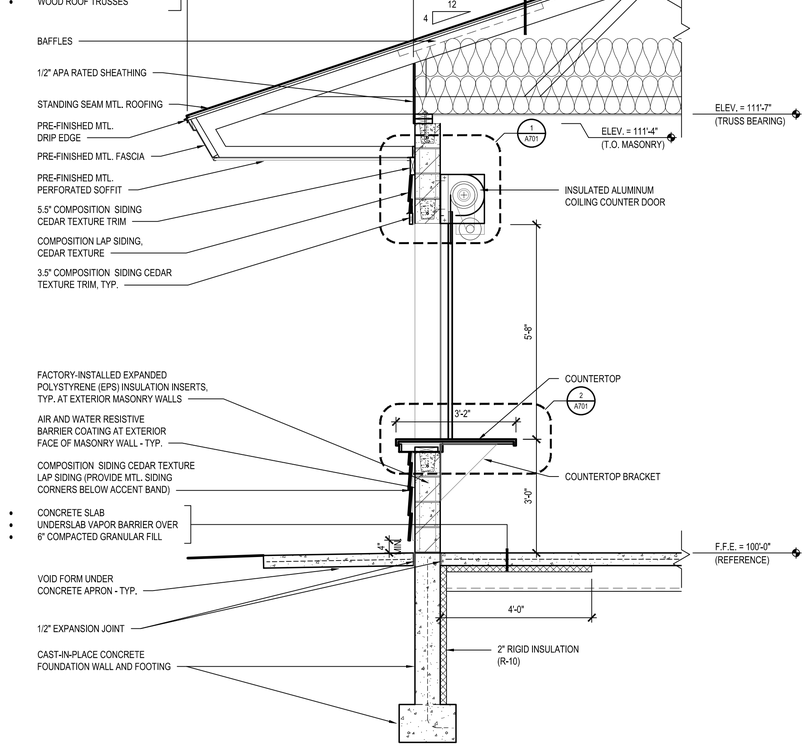


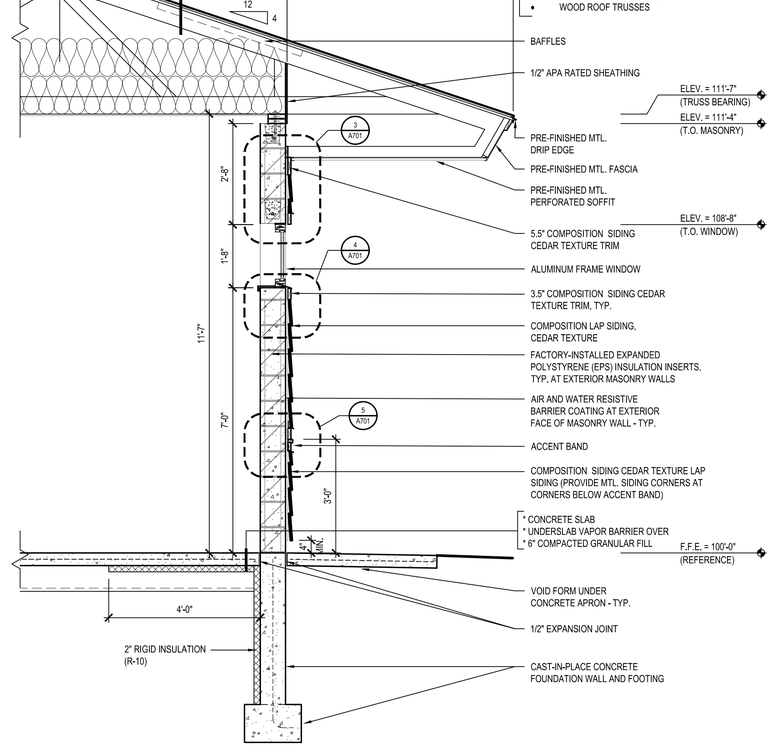
1 A302 CONCESSIONS BUILDING - EAST-WEST SECTION

SCALE: 1/4" = 1'-0"



2 A302 WALL SECTION

SCALE: 1/2" = 1'-0"



3 A302 WALL SECTION

SCALE: 1/2" = 1'-0"

AYRES ASSOCIATES
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MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

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Date: 3/21/2025
Project No. 24-0389.00

Sheet Number

A302

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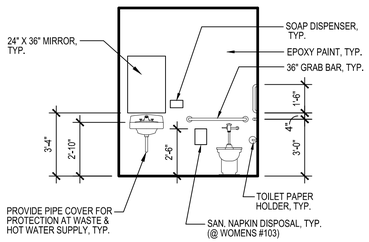
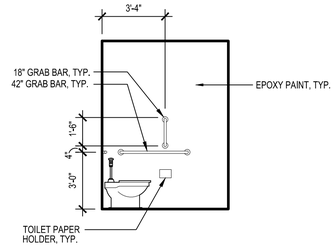
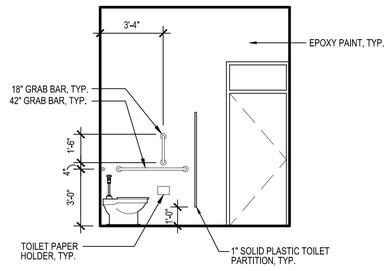


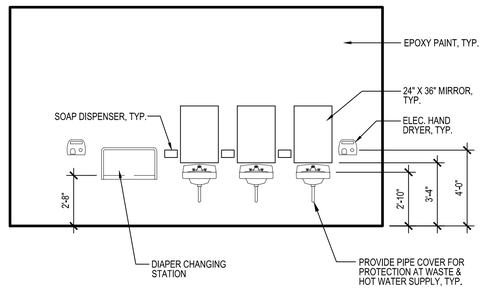
1 A500 RESTROOM PAVILION - BID ALTERNATE NO. 1
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



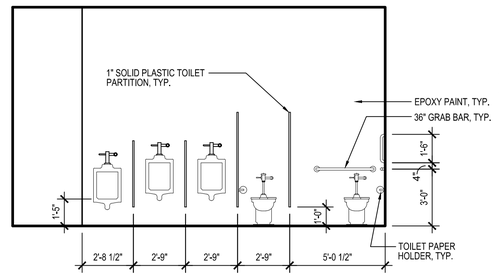
2 A500 RESTROOM PAVILION - BID ALTERNATE NO. 1
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



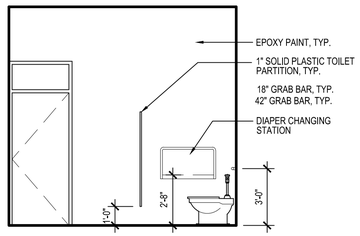
3 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



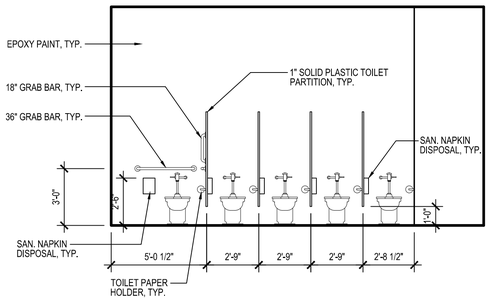
4 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



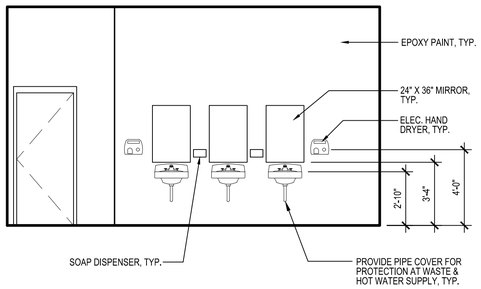
5 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



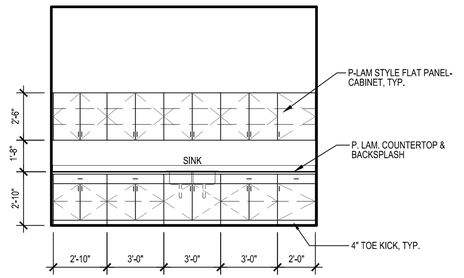
6 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



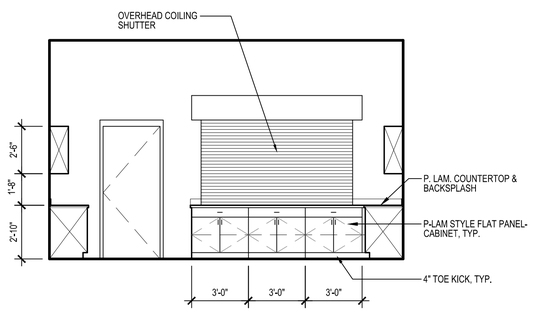
7 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



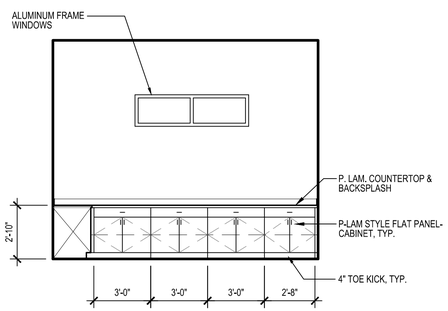
8 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



9 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



9 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



10 A500 CONCESSIONS BUILDING
INTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

AYRES ASSOCIATES
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SUITE 200
WAUKESHA, WI 53186

Revision
REVISED:
Date
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MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

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Date: 3/21/2025
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Sheet Number
A500

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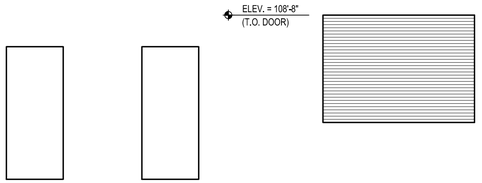


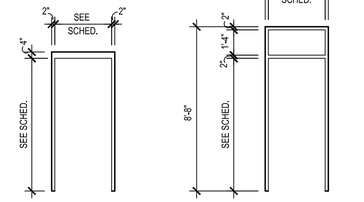
F1 - HOLLOW METAL
FLUSH PANEL

F2 - HOLLOW METAL
INSULATED - FLUSH
PANEL

OH1 - OVERHEAD COILING
DOOR (PRE-FINISHED STEEL)

GLASS PANEL	GLASS PANEL	GLASS PANEL
GLASS PANEL	GLASS PANEL	GLASS PANEL
GLASS PANEL	GLASS PANEL	GLASS PANEL
GLASS PANEL	GLASS PANEL	GLASS PANEL
GLASS PANEL	GLASS PANEL	GLASS PANEL

OH2 - ALUMINUM SECTIONAL
STILE & RAIL OVERHEAD DOOR



1 HOLLOW METAL FULLY WELDED FRAME

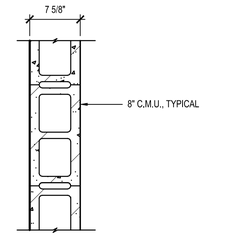
2 HOLLOW METAL FULLY WELDED FRAME WITH 1" CLEAR 'LOW-E' GLAZING, (TEMPERED AS REQUIRED)

DOOR SCHEDULE

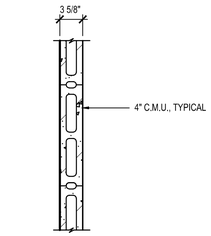
OPENING NUMBER	FRAME TYPE :	DOOR TYPE :	W HEAD X	H JAMB X	T SILL	FIRE LABEL	HDW	NOTES
CONCESSIONS BUILDING:								
101A	2	F2	3'-0"	7'-0"	1 3/4"	-	5	
101B	-	OH1	8'-0"	5'-10"	-	-	-	* COILING DOOR
101C	-	OH1	8'-0"	5'-10"	-	-	-	* COILING DOOR
102	2	F2	PR. 3'-0"	7'-0"	1 3/4"	-	9	
102A	2	F2	PR. 3'-0"	7'-0"	1 3/4"	-	9	
102B	2	F2	3'-0"	7'-0"	1 3/4"	-	4	
103A	2	F2	3'-0"	7'-0"	1 3/4"	-	1	
103B	2	F2	3'-0"	7'-0"	1 3/4"	-	1	
103C	-	OH2	16'-0"	8'-8"	-	-	-	* OVERHEAD DOOR
103D	-	OH2	16'-0"	8'-8"	-	-	-	* OVERHEAD DOOR
103E	-	OH2	16'-0"	8'-8"	-	-	-	* OVERHEAD DOOR
103F	-	OH2	8'-0"	8'-8"	-	-	-	* OVERHEAD DOOR
104	1	F1	3'-0"	7'-0"	1 3/4"	-	3	
105A	2	F2	3'-0"	7'-0"	1 3/4"	-	2	
105B	1	F1	3'-0"	7'-0"	1 3/4"	-	6	
106A	2	F2	3'-0"	7'-0"	1 3/4"	-	2	
106B	1	F1	3'-0"	7'-0"	1 3/4"	-	6	
107A	2	F2	3'-0"	7'-0"	1 3/4"	-	5	
107B	1	F1	3'-0"	7'-0"	1 3/4"	-	8	
107C	-	OH1	8'-0"	4'-6"	-	-	-	* COILING DOOR
RESTROOM PAVILION: BID ALTERNATE NO. 1								
101	1	F2	3'-0"	7'-0"	1 3/4"	-	7	* BID ALTERNATE NO. 1
102	1	F2	3'-0"	7'-0"	1 3/4"	-	4	* BID ALTERNATE NO. 1
103	1	F2	3'-0"	7'-0"	1 3/4"	-	7	* BID ALTERNATE NO. 1

3 A600 DOOR TYPES

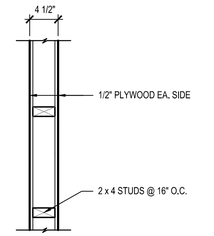
SCALE: 1/4" = 1'-0"



P1 TYPICAL INTERIOR PARTITION



P2 INTERIOR PARTITION



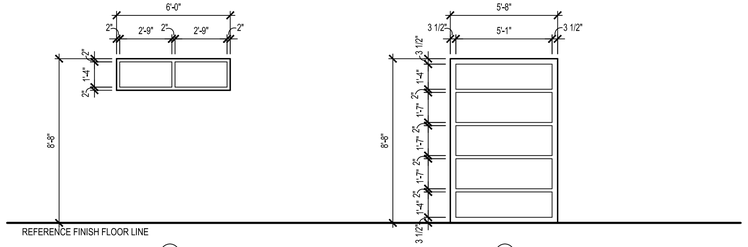
P3 INTERIOR PARTITION

2 A600 DOOR FRAME TYPES

SCALE: 1/4" = 1'-0"

3 A600 PARTITION TYPES

SCALE: 1" = 1'-0"



A ALUMINUM
1" INSULATED CLR. LOW-E'

B ALUMINUM
1" INSULATED CLR. LOW-E'

NOTE: ALL GLASS TO BE CLEAR 1" INSULATED, LOW-E' UNLESS NOTED OTHERWISE.
ALUMINUM WINDOW FRAME COLOR: "CLEAR ANODIZED"

4 A600 WINDOW TYPES

SCALE: 1/4" = 1'-0"

ACCESSIBILITY NOTES

- THE INTERNATIONAL SYMBOL FOR BARRIER-FREE ENVIRONMENTS SHALL IDENTIFY ALL ACCESSIBLE ENTRANCES, TOILET FACILITIES, DRINKING FOUNTAINS AND PARKING SPACES.

- ALL SURFACES ALONG ACCESSIBLE ROUTE SHALL BE STABLE, FIRM AND SLIP-RESISTANT.

- CONTROLS AND OPERATING MECHANISMS
  - CLEAR FLOOR SPACE THAT ALLOWS A FORWARD OR A PARALLEL APPROACH BY A PERSON USING A WHEELCHAIR SHALL BE PROVIDED AT CONTROLS, DISPENSERS, RECEPTACLES, AND OTHER OPERABLE EQUIPMENT.
  - THE HIGHEST OPERABLE PART OF CONTROLS, DISPENSERS, RECEPTACLES AND OTHER OPERABLE EQUIPMENT SHALL BE PLACED WITHIN AT LEAST ONE OF THE REACH RANGES SHOWN. ELECTRICAL AND COMMUNICATIONS SYSTEM RECEPTACLES ON WALLS SHALL BE MOUNTED NO LESS THAN 15" ABOVE THE FLOOR.
  - CONTROLS AND OPERATING MECHANISMS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GREATER THAN 5 LB.

- DOOR HARDWARE - HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERATING DEVICES ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING, OR TWISTING OF THE WRIST TO OPERATE. LEVER-OPERATED MECHANISMS, PUSH-TYPE MECHANISMS, AND U-SHAPED HANDLES ARE ACCEPTABLE DESIGNS. WHEN SLIDING DOORS ARE FULLY OPEN, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES. HARDWARE REQUIRED FOR ACCESSIBLE DOOR PASSAGE SHALL BE MOUNTED NO HIGHER THAN 48" ABOVE FINISHED FLOOR.

- DOOR CLOSERS - IF A DOOR HAS A CLOSER, THEN THE SWEEP PERIOD OF THE CLOSER SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 70 DEGREES, THE DOOR WILL TAKE AT LEAST 3 SECONDS TO MOVE TO A POINT 3" FROM THE LATCH, MEASURED TO THE LEADING EDGE OF THE DOOR.

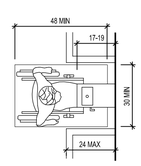
-THE MAXIMUM FORCE FOR PUSHING OR PULLING OPEN AND INTERIOR OR SLIDING DOOR SHALL BE 5 LBF. THESE FORCES DO NOT APPLY TO THE FORCE REQUIRED TO RETRACT LATCH BOLTS OR DISENGAGE OTHER DEVICES THAT MAY HOLD THE DOOR IN A CLOSED POSITION.

- ONE VAN ACCESSIBLE (16' WIDE) PARKING SPACE REQUIRED - SEE SITE PLAN.

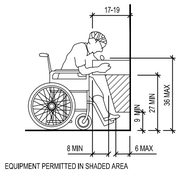
- FURNISH AND INSTALL SIGN AT ACCESSIBLE PARKING STALL PER TRANS 200.07 WITH AN ADDITIONAL SIGN BELOW INDICATING VAN ACCESSIBILITY.

WATER COOLERS

NOTE: IN ADDITION TO A WHEELCHAIR ACCESSIBLE WATER COOLER A PAPER CUP DIPENSER SHALL ALSO BE PROVIDED TO ALLOW A PERSON WITH DIFFICULTY BENDING OVER ACCESS TO DRINKING WATER.



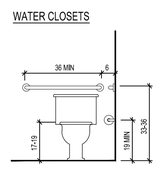
CLEAR FLOOR SPACE



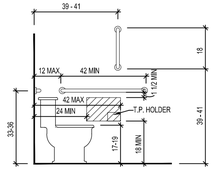
EQUIPMENT PERMITTED IN SHADED AREA

SPOUT HEIGHT AND KNEE CLEARANCE

WATER CLOSETS

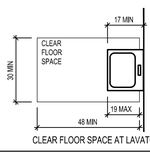


REAR WALL

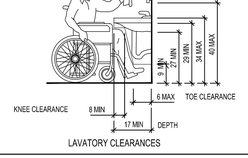


SIDE WALL

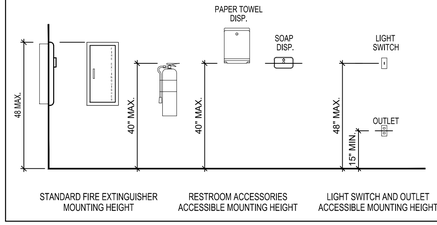
LAVATORIES



CLEAR FLOOR SPACE AT LAVATORIES



LAVATORY CLEARANCES

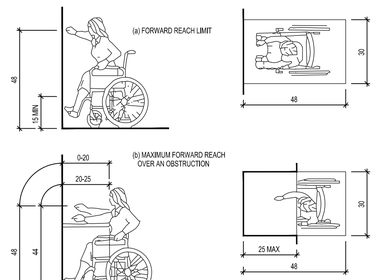


STANDARD FIRE EXTINGUISHER MOUNTING HEIGHT

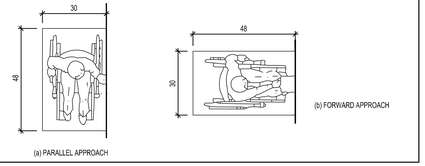
RESTROOM ACCESSORIES ACCESSIBLE MOUNTING HEIGHT

LIGHT SWITCH AND OUTLET ACCESSIBLE MOUNTING HEIGHT

REACH DIMENSIONS OVER AN OBSTRUCTION.



MINIMUM CLEAR FLOOR SPACE FOR WHEELCHAIRS.



ACCESSIBILITY DETAILS

NO SCALE

AYRES ASSOCIATES
20975 SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision
REVISED:

Date
3/21/2025

MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

Drawn By: MP
Checked By: MP
Date: 3/21/2025
Project No. 24-0389.00

Sheet Number

A600

File: J:\08\24038900 New Berlin – Malone Park\3.Production\AutoCad\A600.dwg Layout: A600 User: PaschkeM Plotted: Mar 17, 2025 – 9:35am

STRUCTURAL NOTES

GENERAL REQUIREMENTS
THESE NOTES SUPPLEMENT THE SPECIFICATIONS, WHICH SHALL BE REFERENCED FOR ADDITIONAL REQUIREMENTS.

DEFINITIONS OF TERMINOLOGY AS USED IN THESE GENERAL NOTES:
"DRAWINGS" MEANS THE LATEST STRUCTURAL DESIGN DRAWINGS, UNO.
"SPECIFICATIONS" MEANS THE LATEST PROJECT SPECIFICATIONS, UNO.
"CONTRACT DOCUMENTS" IS DEFINED AS THE DESIGN DRAWINGS AND THE SPECIFICATIONS.
"SER" IS DEFINED AS THE STRUCTURAL ENGINEER OF RECORD FOR THE STRUCTURE IN ITS FINAL CONDITION.
"DESIGN PROFESSIONALS" IS DEFINED AS THE OWNER'S ARCHITECT AND SER.
"MEP" INCLUDES, BUT IS NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION.
"CONTRACTOR" IS DEFINED TO INCLUDE ANY OF THE FOLLOWING: GENERAL CONTRACTOR AND THEIR SUBCONTRACTORS, CONSTRUCTION MANAGER AND THEIR SUBCONTRACTORS, STRUCTURAL STEEL FABRICATOR OR STRUCTURAL STEEL ERECTOR, ETC.
"BASE BUILDING STRUCTURE" IS DEFINED AS THE STRUCTURAL FRAME DESIGNED BY AYRES.
"STRUCTURE IN ITS FINAL CONDITION" MEANS ALL STRUCTURAL ELEMENTS SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS ARE INSTALLED AND COMPLETELY CONNECTED AND INSPECTED WITH NO OUTSTANDING NON-COMPLIANCE ISSUES.
"DELEGATED DESIGN" MEANS A SCOPE OF WORK THAT MEETS PERFORMANCE CRITERIA ESTABLISHED IN THE CONTRACT DOCUMENTS AND IS TO BE COMPLETED BY THE CONTRACTOR'S LICENSED ENGINEER.
"SERVICE LEVEL" LOADS ARE DEFINED AS NOMINAL OR UNFACTORED LOADS TO BE COMBINED USING ALLOWABLE STRESS LOAD COMBINATIONS.
"STRENGTH LEVEL" LOADS ARE DEFINED AS FACTORED LOADS TO BE COMBINED USING STRENGTH DESIGN LOAD COMBINATIONS.

THESE NOTES ARE PROVIDED FOR TYPICAL CONDITIONS. SEE PLANS AND DETAILS FOR SPECIFIC REQUIREMENTS IN OTHER AREAS.

THE USE OF A SCALE TO OBTAIN DIMENSIONS NOT CALLED OUT ON THE DRAWINGS IS NOT PERMITTED.

STRUCTURAL ELEMENTS ARE CENTERED ON GRID LINES AND GRID LINE INTERSECTIONS UNLESS DIMENSIONED OR NOTED OTHERWISE.

WHERE DETAILS ARE CALLED OUT AT A CERTAIN LOCATION OF THE STRUCTURE, THEY SHALL BE DUPLICATED AT SIMILAR LOCATIONS OF THE STRUCTURE UNLESS SHOWN OTHERWISE.

IN NO CASE SHALL STRUCTURAL REPAIRS, CORRECTIONS, ALTERATIONS, OR OTHER WORK AFFECTING A STRUCTURAL MEMBER BE MADE, UNLESS APPROVED BY THE SER.

THE STRUCTURE SHOWN IN THESE DRAWINGS IS STRUCTURALLY SOUND ONLY IN THE COMPLETE FORM. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION.

THE CONTRACTOR SHALL CROSS-CHECK STRUCTURAL PLANS WITH ARCHITECTURAL, CIVIL, MECHANICAL, ELECTRICAL, AND PLUMBING FOR DETAILS, DIMENSIONS, ELEVATIONS, OPENINGS, INSERTS, BRICK LEDGES, RECESSES, DEPRESSIONS, ETC. THAT MAY APPLY TO STRUCTURAL WORK. NOTIFY ARCHITECT/SER OF ANY DISCREPANCIES BEFORE PROCEEDING.

THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING STRUCTURAL WORK AFFECTED BY OTHER TRADES (E.G. MECHANICAL, ELECTRICAL, PLUMBING). OPENINGS, PENETRATIONS, FRAMING, BRACING, AND CONNECTIONS RELATED TO OTHER TRADES AND SHOWN ON THE DRAWINGS IS FOR BIDDING PURPOSES ONLY. CONTRACTOR'S REVIEW OF SHOP DRAWINGS WILL BE TAKEN TO INDICATE THAT THIS COORDINATION HAS BEEN COMPLETED.

THE SER'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, DESIGN CALCULATIONS, ETC. DOES NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL INFORM THE SER IN WRITING OF ANY SPECIFIC DEVIATIONS TO THE CONTRACT DOCUMENTS AND OBTAIN THE SER'S WRITTEN APPROVAL BEFORE PROCEEDING.

SEE ARCHITECTURAL DRAWINGS FOR INTERIOR PARTITIONS. PARTITION FRAMING SHALL BE CONNECTED TO THE PRIMARY STRUCTURE IN SUCH A WAY SO AS TO ALLOW FOR VERTICAL LIVE LOAD DEFLECTIONS OF THE FLOOR OR ROOF FRAMING. DO NOT MAKE RIGID VERTICAL AND HORIZONTAL CONNECTIONS TO THE PRIMARY STRUCTURE IN THE PLANE OF THE PARTITION.

FOUNDATIONS AND EARTHWORK
REFERENCE THE PROJECT'S GEOTECHNICAL EXPLORATION REPORT (TERRACON NO. 58225130) PREPARED BY TERRACON CONSULTANTS, INC. ON 8/4/2022 FOR ADDITIONAL INFORMATION RELATED TO THE ANTICIPATED SOIL CONDITIONS AT THIS SITE.

NOTIFY THE SER IMMEDIATELY IF QUESTIONABLE CONDITIONS ARE ENCOUNTERED DURING EXCAVATION FOR FOUNDATIONS.

FOUNDATIONS ARE ASSUMED TO BE SUPPORTED ON UNDISTURBED NATIVE MATERIAL OR PROPERLY COMPACTED STRUCTURAL FILL. ALL FOOTING EXCAVATIONS SHALL BE INSPECTED BY A GEOTECHNICAL ENGINEER (HIRED BY THE CONTRACTOR) TO VERIFY SUITABLE SOIL MATERIAL AND CONDITIONS PRIOR TO PLACEMENT OF STRUCTURAL FILL AND/OR FOOTINGS. SUITABLE SOIL MUST MEET THE REQUIRED SOIL PROPERTIES LISTED UNDER THE 'DESIGN LOADS AND OTHER CRITERIA' SECTION.

ACCORDING TO THE GEOTECHNICAL EXPLORATION REPORT, SOME EXCAVATION OF UNSUITABLE SOILS BELOW THE FOUNDATION BEARING ELEVATIONS IS ANTICIPATED. CARRY EXCAVATIONS DEEPER AND REPLACE EXCAVATED MATERIAL WITH PROPERLY COMPACTED STRUCTURAL FILL OR LEAN CONCRETE. SEE "FILL BELOW FOOTING" DETAIL FOR MINIMUM FILL EXTENTS.

LOCATIONS THAT REQUIRE OVER-EXCAVATION OF IN-SITU MATERIAL BEYOND THE BOTTOM OF FOOTINGS SHALL BE BACKFILLED WITH PROPERLY COMPACTED STRUCTURAL FILL OR LEAN CONCRETE

WATER SHALL NOT BE PERMITTED TO ACCUMULATE IN FOOTING EXCAVATIONS.

PROVIDE A MINIMUM OF 6 INCHES OF GRANULAR FILL BELOW ALL INTERIOR SLABS-ON-GRADE. COMPACT PER SPECIFICATIONS.

FOOTINGS, PIERS, AND FOUNDATION WALLS SHALL BE CENTERED UNDER THE WALLS AND COLUMNS BEING SUPPORTED, UNLESS NOTED OTHERWISE.

PROVIDE FROST AND MOISTURE PROTECTION FOR FOOTINGS EXPOSED DURING CONSTRUCTION. FOOTINGS SHALL NOT BE PLACED ON FROZEN MATERIAL.

FOUNDATION WALLS MAY BE BACKFILLED PRIOR TO THE SLAB-ON-GRADE CONSTRUCTION. BACKFILL SHALL BE PLACED EVENLY ALONG THE LENGTH OF THE BUILDING UP TO THE SPECIFIED GRADE. USE ONLY HAND-OPERATED TOOLS FOR COMPACTION ADJACENT TO FOUNDATION WALLS.

CAST-IN-PLACE CONCRETE
ALL CONCRETE WORK SHALL CONFORM WITH THE GOVERNING EDITIONS OF ACI 318 (BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE), ACI 301 (SPECIFICATIONS FOR STRUCTURAL CONCRETE), AND THE PERTINENT SECTIONS OF THE SPECIFICATIONS. REINFORCEMENT DETAILING, FABRICATION, AND ERECTION SHALL CONFORM WITH THE GOVERNING EDITIONS OF ACI 315 (GUIDE TO PRESENTING REINFORCING STEEL DESIGN DETAILS), ACI SP-066 (ACI DETAILING MANUAL), ACI 318, AND CRSI MANUAL OF STANDARD PRACTICE.

ALL CONCRETE SHALL INCLUDE REINFORCEMENT. IF REINFORCEMENT IS NOT SPECIFICALLY INDICATED ON THE DRAWINGS VERIFY WITH THE SER.

THE NUMBER OF BARS REQUIRED BY NOTES (AND SCHEDULES, IF PROVIDED) CONTROLS OVER THE NUMBER OF BARS SHOWN ON DETAILS.

WHERE A 90-DEG, 135 –DEG OR 180-DEG HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI STANDARD HOOKS UNO.

COMPRESSIVE STRENGTH OF CONCRETE AND YIELD STRESS OF REINFORCING STEEL SHALL BE AS INDICATED UNDER THE APPLICABLE MATERIAL PROPERTIES TABLE.

SPLICES IN CONTINUOUS REINFORCING STEEL SHALL BE CLASS 'B' LAP SPLICES PER ACI, UNLESS NOTED OTHERWISE.

CONCRETE CLEAR COVER FOR NON-PRESTRESSED MEMBERS SHALL BE AS INDICATED IN THE 'CAST-IN-PLACE CONCRETE CLEAR COVER' TABLE.

FURNISH ALL ACCESSORIES, CHAIRS, SPACER BARS, AND SUPPORTS NECESSARY TO SECURE THE REINFORCEMENT PRIOR TO PLACEMENT OF CONCRETE.

CONTROL OR CONSTRUCTION JOINTS PROVIDED IN CONCRETE SLABS-ON-GRADE AT SPACING NO GREATER THAN 10'.

SLAB-ON-GRADE CONTROL JOINTS SHALL CONSIST OF A 1/8"-WIDE x 1"-DEEP SAWCUT OR A SLAB CONTRACTION JOINT DEVICE.

SLAB-ON-GRADE CONSTRUCTION JOINTS SHALL CONSIST OF A FORMED VERTICAL JOINT REINFORCED WITH A #4 SMOOTH DOWEL (2'-0" LONG) SPACED AT 2'-0" ON CENTER. GREASE ONE END OF DOWEL AND PROVIDE ADEQUATE SUPPORT TO ENSURE HORIZONTAL ALIGNMENT.

PROVIDE BENT BARS AT ALL WALL CORNERS AND INTERSECTIONS. BENT BARS SHALL BE THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS DETAILED FOR THE WALL.

PROVIDE ADDITIONAL REINFORCING STEEL AT ALL RE-ENTRANT (INSIDE) CORNERS OF SLABS-ON-GRADE. ADDITIONAL REINFORCING STEEL SHALL BE TWO (2) #5 X 3'-0 DIAGONAL BARS.

CAST-IN-PLACE CONCRETE (CONT)
ALTERNATIVE REINFORCING (BARS OR WWF) FOR SLABS-ON-GRADE MAY BE PROPOSED BY THE CONTRACTOR. ALTERNATIVE REINFORCING MUST PROVIDE A COMBINATION OF AREA OF STEEL AND STEEL YIELD STRENGTH EQUIVALENT TO THAT CALLED OUT ON THE DRAWINGS. SUBMIT PROPOSED ALTERNATIVE REINFORCING TO SER FOR REVIEW.

PROVIDE DOWELS TO MATCH ALL VERTICAL REINFORCING STEEL IN CONCRETE PIERS, WALLS, FOOTINGS, AND OTHER REINFORCED CONCRETE MEMBERS. LAP DOWELS WITH VERTICAL REINFORCING STEEL OR DEVELOP BARS INTO CONCRETE WITH STRAIGHT OR HOOKED DEVELOPMENT LENGTH AS REQUIRED BY ACI.

WALL REINFORCING STEEL SHALL BE CONTINUOUS THROUGH PIERS AND COLUMNS, UNLESS NOTED OTHERWISE.

THE USE OF POST-INSTALLED (MECHANICAL AND ADHESIVE) ANCHORS IN LIEU OF CAST-IN-PLACE REINFORCING STEEL DOWELS SHALL BE AVOIDED IF POSSIBLE. USE OF POST-INSTALLED ANCHORS SHALL BE VERIFIED BY THE SER UNLESS NOTED OTHERWISE.

PROVIDE ISOLATION JOINTS WHERE SLABS-ON-GRADE ABUT AGAINST WALLS, COLUMNS, OR OTHER VERTICAL SURFACES.

PROVIDE ISOLATION JOINTS AROUND EQUIPMENT PADS, DRAINS, MANHOLES, SUMPS, OR OTHER POINTS OF RESTRAINT.

OPENINGS FOR PIPES, CONDUITS, SLEEVES, OR DUCTS ARE NOT ALLOWED IN STRUCTURAL CONCRETE UNLESS SHOWN ON THE DRAWINGS OR APPROVED BY THE SER. UNLESS NOTED OTHERWISE, ALL OPENINGS IN CONCRETE WALLS AND SLABS SHALL HAVE TWO (2) #5 BARS PLACED ALONG FACES AND EXTENDING 2'-0" (MIN.) BEYOND CORNERS. PROVIDE ONE (1) #5 X 4'-0" DIAGONAL BAR IN EACH FACE AT EACH CORNER OF THE OPENING UNLESS NOTED OTHERWISE.

OPENINGS FOR SLEEVES, CONDUITS, AND PIPES SHALL BE LOCATED AND PLACED SUCH THAT:
1. ADJACENT OPENINGS ARE NO CLOSER THAN THE MINIMUM OF THREE (3) DIAMETERS OR 6 INCHES;
2. NO MORE THAN THREE CONDUITS PER 6-FOOT WIDTH OF SLAB;
3. THE CONCRETE COVER IS NOT LESS THAN 2 INCHES;
4. THEY RUN BETWEEN AND DO NOT DISPLACE ANY REINFORCING STEEL;
5. THEY ARE LOCATED AT MID-THICKNESS OF THE SLAB OR WALL;
6. THEY ARE NO LARGER THAN 2 INCHES OR ONE-QUARTER THE THICKNESS OF THE SLAB OR WALL, WHICHEVER IS LESS.

ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4-INCH BY 3/4-INCH CHAMFER.

UNLESS OTHERWISE NOTED ALL LAP SPLICES ARE TO BE TENSION LAP SPLICES PER LAP SPLICE AND EMBEDMENT SCHEDULE.

LAP WELDED WIRE REINFORCEMENT TWO PANEL SPACINGS, UNO.

PROVIDE EPOXY COATED REINFORCEMENT AND ACCESSORIES IN AREAS OF DIRECT EXPOSURE TO THE ENVIRONMENT, CHEMICALS, OR DE-ICING, INCLUDING AREAS SPECIFICALLY INDICATED ON THE DRAWINGS.

UNIT MASONRY
ALL UNIT MASONRY WORK SHALL CONFORM WITH THE GOVERNING EDITIONS OF NCMA TEK MANUAL, TMS 402/ACI 530 (BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES), TMS 602/ACI 530.1 (SPECIFICATIONS FOR MASONRY STRUCTURES), AND THE PERTINENT SECTIONS OF THE SPECIFICATIONS.

CONCRETE MASONRY UNITS, MORTAR, GROUT, AND REINFORCING STEEL SHALL MEET THE MATERIAL REQUIREMENTS INDICATED UNDER THE APPLICABLE MATERIAL PROPERTIES TABLE.

MASONRY CONSTRUCTION SHALL BE RUNNING BOND UNLESS NOTED OTHERWISE.

PROVIDE FULL MORTAR BEDDING (FACE SHELL AND WEBS OF BED JOINTS) FOR ALL STARTER COURSES, SOLID UNITS, COLUMNS, PILASTERS, FIRST COURSE DIRECTLY ABOVE LINTELS, AND CELLS TO BE GROUTED.

LOAD BEARING MASONRY WALLS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE ON THE DRAWINGS:
1. PROVIDE VERTICAL REINFORCEMENT WITH ONE (1) #5 BAR SPACED AT 48 INCHES ON-CENTER;
2. PROVIDE VERTICAL REINFORCEMENT WITH ONE (1) #5 BAR AT CORNERS, ENDS, AND AT EACH SIDE OF CONTROL AND EXPANSION JOINTS;
3. PROVIDE VERTICAL REINFORCEMENT AT ALL JAMBS ADJACENT TO WALL OPENINGS;
4. PROVIDE VERTICAL DOWELS INTO FOUNDATIONS OR SLABS SUPPORTING MASONRY WALL FROM BELOW – MATCH SIZE AND SPACING OF VERTICAL REINFORCEMENT;
5. PROVIDE HORIZONTAL REINFORCEMENT (BOND BEAMS) USING ONE (1) #5 BAR AT:
   A. SILL OF ALL OPENINGS,
   B. TOP OF MASONRY WALLS,
6. PROVIDE LINTELS ABOVE ALL OPENINGS. REFER TO MASONRY DETAILS FOR TYPICAL LINTELS AND LINTEL SCHEDULE.
7. PROVIDE HORIZONTAL BED JOINT REINFORCEMENT SPACED AT 16 INCHES ON CENTER FOR THE FULL HEIGHT.
8. PROVIDE CONTROL JOINTS AT A SPACING NOT TO EXCEED 17' AT LOCATIONS INDICATED ON THE DRAWINGS.

NON-LOAD BEARING MASONRY WALLS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS, UNLESS NOTED OTHERWISE ON THE DRAWINGS. ADDITIONALLY, PROVIDE SUPPORT FROM THE ADJACENT STRUCTURE AT THE TOP AND ENDS OF WALLS - SEE DETAILS FOR CONNECTIONS. NON-LOAD BEARING MASONRY WALLS MAY NOT BE SHOWN ON THE STRUCTURAL DRAWINGS – REFER TO THE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION.
1. PROVIDE VERTICAL REINFORCEMENT WITH ONE (1) #5 BAR SPACED AT 48 INCHES ON-CENTER;
2. PROVIDE VERTICAL REINFORCEMENT WITH ONE (1) #5 BAR AT CORNERS, ENDS, AND AT EACH SIDE OF CONTROL AND EXPANSION JOINTS;
3. PROVIDE VERTICAL REINFORCEMENT AT ALL JAMBS ADJACENT TO WALL OPENINGS;
4. PROVIDE VERTICAL DOWELS INTO FOUNDATIONS OR SLABS SUPPORTING MASONRY WALL FROM BELOW – MATCH SIZE AND SPACING OF VERTICAL REINFORCEMENT;
5. PROVIDE HORIZONTAL REINFORCEMENT (BOND BEAMS) USING ONE (1) #5 BAR AT:
   A. SILL OF ALL OPENINGS,
   B. TOP OF MASONRY WALLS,
6. PROVIDE LINTELS ABOVE ALL OPENINGS. UNLESS DETAILED OR SHOWN OTHERWISE PROVIDE THE FOLLOWING LINTELS FOR NON-BEARING WALL OPENINGS. REFER TO MASONRY DETAILS FOR TYPICAL MASONRY LINTEL.
   A. SPAN ≤ 6'-0": 8" DEEP, REINF WITH (1) #5 BOTTOM BAR,
   B. 6'-0" < SPAN ≤ 8'-0": 16" DEEP, REINF WITH (1) #5 BOTTOM BAR AND (1) #4 TOP BAR.
7. PROVIDE HORIZONTAL BED JOINT REINFORCEMENT SPACED AT 16 INCHES ON CENTER FOR THE FULL HEIGHT.
8. PROVIDE CONTROL JOINTS AT A SPACING NOT TO EXCEED 17' AT LOCATIONS INDICATED ON THE DRAWINGS.

LINTELS SHALL BE MASONRY, PRECAST, OR STRUCTURAL STEEL. MASONRY LINTELS SHALL BE COMPRISED OF U-SHAPED LINTEL BLOCK. REFER TO LINTEL SCHEDULE FOR DETAILS. WHERE MASONRY OR PRECAST LINTELS ARE CALLED FOR, STRUCTURAL STEEL MAY BE USED AS AN ALTERNATIVE AT THE CONTRACTOR'S EXPENSE.

PROVIDE A MINIMUM COVER OVER REINFORCING STEEL AS MEASURED FROM THE NEAREST EXTERIOR MASONRY SURFACE TO THE EDGE OF REINFORCING STEEL. PROVIDE 2 INCHES OF COVER (MINIMUM) FOR #6 BARS AND LARGER IN EXTERIOR WALLS AND FOUNDATION WALLS. PROVIDE 1-1/2 INCHES OF COVER (MINIMUM) FOR ALL OTHER BARS UNLESS NOTED OTHERWISE. SECURE REINFORCING STEEL WITH BAR POSITIONERS, CHAIRS, AND TIES.

PROVIDE LAP SPLICES WHERE REQUIRED. SEE 'REBAR LAP AND PLACEMENT DETAIL' FOR REQUIRED LENGTHS.

GROUT CORES SOLID AT ALL BOND BEAMS, MASONRY LINTELS, JAMBS, PILASTERS, INSERTS, ANCHORS AND OTHER CONNECTIONS TO APPURTENANCES ATTACHED TO THE MASONRY (E.G. STAIRWAY CONNECTIONS), AND ALL OTHER CORES THAT CONTAIN REINFORCING STEEL.

GROUT SHALL BE PLACED IN LIFT HEIGHTS NOT EXCEEDING 4'-8" IF CLEANOUT ARE NOT PROVIDED, OR 12'-8" IF CLEANOUTS ARE PROVIDED. VERTICAL CORES SHALL BE ALIGNED AND UNOBSTRUCTED FOR GROUT PLACEMENT. ROD AND VIBRATE GROUT IN PLACE.

GROUTING SHALL BE STOPPED 2" BELOW THE TOP OF A COURSE SO AS TO FORM A KEY AT THE POUR JOINT.

PROVIDE CONTROL JOINTS AT LOCATIONS INDICATED ON THE DRAWINGS. HORIZONTAL BED JOINT REINFORCEMENT SHALL BE TERMINATED AT JOINTS. BOND BEAM REINFORCING AT FLOOR AND ROOF BEARING ELEVATIONS SHALL BE CONTINUOUS THROUGH JOINTS. ALL OTHER BOND BEAMS SHALL BE DISCONTINUOUS AT CONTROL JOINTS, UNLESS NOTED OTHERWISE.

STRUCTURAL STEEL
FABRICATION AND ERECTION OF STRUCTURAL STEEL MEMBERS SHALL CONFORM WITH THE GOVERNING EDITIONS OF AISC 360 (SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS), AISC 303 (CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES), AND AWS D1.1 (STRUCTURAL WELDING – STEEL), AND THE PERTINENT SECTIONS OF THE SPECIFICATIONS.

ALL WELDING SHALL BE COMPLETED WITH E70 ELECTRODES, UNLESS NOTED OTHERWISE ON DRAWINGS. ALL WELDERS SHALL BE CERTIFIED BY AWS.

STRUCTURAL STEEL, BOLTS, AND ANCHORS SHALL MEET THE MATERIAL REQUIREMENTS INDICATED UNDER THE APPROPRIATE MATERIAL PROPERTIES TABLE, AND IN THE SPECIFICATIONS.

EDGE ANGLES AND BENT PLATES SHALL BE FIELD-INSTALLED AND STRING -LINE-STRAIGHT WITH AND ERECTION TOLERANCE OF 1/4-INCH FROM PLAN DIMENSIONS. BUTT WELD AT ALL LOCATIONS TO FORM A CONTINUOUS MEMBER.

ALL STRUCTURAL STEEL SHALL BE FINISHED ACCORDING TO THE SPECIFICATIONS, UNLESS NOTED OTHERWISE. COORDINATE ALL FINISHES WITH ARCHITECT.

WHERE NO CAMBER IS INDICATED, FABRICATE BEAMS SO THAT ANY NATURAL CAMBER IS UPWARD AFTER ERECTION.

STRUCTURAL STEEL (CONT.)
ANY WELD SIZES SHOWN ON THE DESIGN DRAWINGS ARE CONSIDERED EFFECTIVE WELD SIZES AND SHALL BE INCREASED IN ACCORDANCE WITH AWS AS REQUIRED BY GAPS OR SKEWS BETWEEN COMPONENTS.

SOLID SAWN LUMBER
SOLID SAWN LUMBER IS CONSIDERED TO BE ALL BOARDS, DIMENSION LUMBER, AND TIMBER AS DEFINED BY THE NDS

TREATMENT, MANUFACTURING, AND ERECTION OF ALL SOLID SAWN LUMBER SHALL CONFORM WITH THE LATEST EDITIONS OF AWPA STANDARDS (PRESERVATIVE TREATMENT), IBC, AND THE AWC NDS/SDPWS.

ALL SOLID SAWN LUMBER SHALL MEET THE STRENGTH REQUIREMENTS LISTED UNDER THE APPLICABLE MATERIAL PROPERTIES TABLE. THE STRENGTH REQUIREMENTS ARE BASED ON UNADJUSTED REFERENCE DESIGN VALUES AS SPECIFIED IN THE NDS. LUMBER CONSISTING OF A SPECIES AND GRADE OTHER THAN THAT LISTED MAY BE APPROVED BY THE SER PROVIDED THE STRENGTH REQUIREMENTS ARE MET.

ALL SOLID SAWN LUMBER SHALL BE DRESSED LUMBER (S4S) WITH SIZE DIMENSIONS CONFORMING TO STANDARD NET SIZES, UNLESS NOTED OTHERWISE. THE SIZE DIMENSIONS STATED ON THE DRAWINGS ARE NOMINAL UNLESS NOTED OTHERWISE.

SOLID SAWN LUMBER IN CONTACT WITH THE GROUND OR CONCRETE, OR AT OTHER LOCATIONS CALLED OUT ON THE DRAWINGS, SHALL BE TREATED WITH A PRESERVATIVE MEETING THE REQUIREMENTS OUTLINED IN THE SPECIFICATIONS.

CONNECT ALL SOLID SAWN LUMBER USING THE FASTENERS AND CONNECTORS CALLED OUT IN THE DRAWINGS. IF FASTENERS ARE NOT SPECIFIED, USE THE MINIMUM REQUIRED FASTENERS OUTLINED IN IBC TABLE 2304.9.1.

FASTENERS CONSIST OF BOLTS, LAG SCREWS, WOOD SCREWS, NAILS, SPIKES, DRIFT BOLTS, DRIFT PINS, OR OTHER DOWEL-TYPE FASTENERS AS DEFINED BY THE NDS.

CONNECTORS CONSIST OF THE METAL PARTS USED IN ADDITION TO FASTENERS TO CONNECT WOOD MEMBERS.

ALL FASTENERS AND CONNECTORS SHALL BE FINISHED AS REQUIRED IN THE SPECIFICATIONS. ALL FASTENERS AND CONNECTORS IN CONTACT WITH TREATED WOOD SHALL BE GALVANIZED OR STAINLESS STEEL.

PROPRIETARY CONNECTORS SHALL BE FASTENED WITH THE MANUFACTURER'S RECOMMENDED FASTENERS UNLESS NOTED OTHERWISE.

CONFIRM PROPRIETARY CONNECTORS CALLED OUT ON THE DRAWINGS ARE APPROPRIATELY SIZED FOR THE INTENDED WOOD MEMBER'S DIMENSIONS PRIOR TO ORDERING. CONNECTOR CONFIGURATION MAY VARY FROM THAT SHOWN ON THE DETAILS.

ENGINEERED LUMBER
ENGINEERED LUMBER IS CONSIDERED TO BE ALL STRUCTURAL GLUED-LAMINATED TIMBER (GLULAM), LAMINATED VENEER LUMBER (LVL), PARALLEL STRAND LUMBER (PSL), AND PREFABRICATED WOOD I-JOISTS AS DEFINED BY THE NDS.

TREATMENT, MANUFACTURING, AND ERECTION OF ALL ENGINEERED LUMBER MEMBERS SHALL CONFORM WITH THE LATEST EDITIONS OF AWPA STANDARDS (PRESERVATIVE TREATMENT), IBC, AWC NDS/SDPWS, ANSI/AITC STANDARDS (GLULAM), AND THE ENGINEERED LUMBER MANUFACTURER SUPPLYING THE LUMBER.

GLULAM MEMBERS SHALL BE STAMPED WITH AN AITC QUALITY MARK. THE QUALITY MARK FOR NON-CUSTOM MEMBERS SHALL INDICATE THE STRUCTURAL USE, APPEARANCE GRADE, PLANT NUMBER, WOOD SPECIES, LAMINATING SPECIFICATION, COMBINATION SYMBOL, AND CONFORMING AITC STANDARD. THE QUALITY MARK FOR CUSTOM MEMBERS SHALL INDICATE THE PLANT NUMBER AND CONFORMING ATIC STANDARD.

ENGINEERED LUMBER SHALL BE THE WIDTH AND DEPTH CALLED OUT ON THE DRAWINGS. THE SIZE DIMENSIONS STATED ON THE DRAWINGS ARE THE TRUE MEMBER SIZE.

ALL ENGINEERED LUMBER SHALL BE TREATED WITH A PRESERVATIVE MEETING THE REQUIREMENTS OUTLINED IN THE SPECIFICATIONS.

CONNECT ALL ENGINEERED LUMBER USING THE FASTENERS AND CONNECTORS CALLED OUT IN THE DRAWINGS. IF FASTENERS ARE NOT SPECIFIED, USE THE MINIMUM REQUIRED FASTENERS OUTLINED IN IBC TABLE 2304.10.1.

FASTENERS CONSIST OF BOLTS, LAG SCREWS, WOOD SCREWS, NAILS, SPIKES, DRIFT BOLTS, DRIFT PINS, OR OTHER DOWEL-TYPE FASTENERS AS DEFINED BY THE NDS.

CONNECTORS CONSIST OF THE METAL PARTS USED IN ADDITION TO FASTENERS TO CONNECT WOOD MEMBERS.

ALL FASTENERS AND CONNECTORS SHALL BE FINISHED AS REQUIRED IN THE SPECIFICATIONS. ALL FASTENERS AND CONNECTORS IN CONTACT WITH TREATED WOOD SHALL BE GALVANIZED OR STAINLESS STEEL. COORDINATE COLOR WITH ARCH AND SPECIFICATIONS.

PROPRIETARY CONNECTORS SHALL BE FASTENED WITH THE MANUFACTURER'S RECOMMENDED FASTENERS UNLESS NOTED OTHERWISE.

CONFIRM PROPRIETARY CONNECTORS CALLED OUT ON THE DRAWINGS ARE APPROPRIATELY SIZED FOR THE INTENDED WOOD MEMBER'S DIMENSIONS PRIOR TO ORDERING. CONNECTOR CONFIGURATION MAY VARY FROM THAT SHOWN ON THE DETAILS.

ALL CUTTING AND BORING OF HOLES FOR ENGINEERED LUMBER MEMBERS SHALL BE COMPLETED PRIOR TO APPLICATION OF PRESERVATIVE TREATMENT INSOFAR AS PRACTICAL.

ALL CUTS AND HOLES MADE IN ENGINEERED LUMBER MEMBERS IN THE FIELD AND AFTER APPLICATION OF THE PRESERVATIVE TREATMENT SHALL BE FIELD-TREATED FOLLOWING AWPA GUIDELINES.

PROVIDE SQUARE WASHERS FOR ALL BOLTED CONNECTIONS IN WHICH THE WASHER BEARS DIRECTLY ON WOOD MATERIAL.

WOOD STRUCTURAL PANELS
WOOD STRUCTURAL PANELS (WSP) CONSIST OF PLYWOOD, ORIENTED STRAND BOARD (OSB), AND COMPOSITE PANELS AS DEFINED BY THE NDS.

TREATMENT, MANUFACTURING, AND ERECTION OF ALL WSP SHALL CONFORM WITH THE LATEST EDITIONS OF AWPA STANDARDS (PRESERVATIVE TREATMENT), ANSI//APA PRP-210, VOLUNTARY PRODUCT STANDARD PS 1, VOLUNTARY PRODUCT STANDARD PS 2, IBC, AND THE AWC NDS/SDPWS.

ALL WSP SHALL MEET THE GRADE, SPAN RATING, AND EXPOSURE RATING LISTED UNDER THE APPLICABLE MATERIAL PROPERTIES TABLE. THESE REQUIREMENTS ARE BASED ON APA TESTING AND GRADING RULES.

WSP SHALL BE PLACED CONTINUOUS OVER TWO (2) OR MORE SPANS WITH THE STRONG AXIS ORIENTED PERPENDICULAR TO THE SUPPORTS, UNLESS NOTED OTHERWISE. SUITABLE EDGE SUPPORT SHALL BE PROVIDED WHERE INDICATED ON THE DRAWINGS (OR IN RECOMMENDATIONS OF APA) BY USE OF PANEL CLIPS, TONGUE-AND-GROOVE EDGES, OR LUMBER BLOCKING BETWEEN SUPPORTS. PANEL END JOINTS SHALL OCCUR OVER FRAMING.

SPACING OF 1/8-INCH IS RECOMMENDED AT ALL PANEL ENDS AND EDGES, UNLESS OTHERWISE INDICATED BY THE PANEL MANUFACTURER.

ALL WSP SHALL BE THE THICKNESS AND TYPE (PLYWOOD, OSB, ETC.) CALLED OUT ON THE DRAWINGS.

FASTEN ROOF SHEATHING WITH 10d COMMON NAILS AT 6-INCHES ON-CENTER ALONG SUPPORTED PANEL EDGES AND AT 12-INCHES ON-CENTER ALONG INTERMEDIATE SUPPORTS, UNLESS NOTED OTHERWISE.

FASTEN WALL SHEATHING WITH NAILS AT 6-INCHES ON-CENTER ALONG SUPPORTED PANEL EDGES AND AT 12-INCHES ON-CENTER ALONG INTERMEDIATE SUPPORTS, UNLESS NOTED OTHERWISE. NAILS SHALL BE 6d COMMON NAILS FOR PANELS WITH A PERFORMANCE CATEGORY OF 1/2 OR SMALLER. NAILS SHALL BE 8d COMMON NAILS FOR PANELS WITH A PERFORMANCE CATEGORY OF GREATER THAN 1/2.

COVER ROOF AND WALL SHEATHING AS SOON AS POSSIBLE FOR PROTECTION AGAINST EXCESSIVE MOISTURE PRIOR TO ROOFING APPLICATION.

ALL NAILING OF ROOF SHEATHING SHALL BE DONE WITH COMMON NAILS AND SHALL BE DRIVEN FLUSH BUT NOT FRACTURE THE SURFACE OF THE SHEATHING.

SHOP-FABRICATED WOOD TRUSSES
SHOP-FABRICATED WOOD TRUSSES CONSIST OF METAL PLATE CONNECTED WOOD TRUSS MEMBERS SUPPORTING THE ROOF.

DESIGN, FABRICATION, TREATMENT, AND ERECTION OF ALL WOOD TRUSSES SHALL CONFORM TO THE LATEST EDITIONS OF ANSI/TPI 1 (DESIGN SPECIFICATIONS FOR METAL PLATE CONNECTED WOOD TRUSSES), AWPA STANDARDS (PRESERVATIVE TREATMENT, IF REQUIRED), IBC, AND THE AWC NDS.

TRUSSES, PERMANENT BRACING (IF REQUIRED BY TRUSS DESIGN), TRUSS BLOCKING, AND TRUSS-TO-TRUSS CONNECTIONS ARE DELEGATED DESIGN COMPONENTS. SUBMIT STRUCTURAL COMPUTATIONS AND SHOP DRAWINGS THAT ARE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. SHOP DRAWINGS SHALL INCLUDE THE INFORMATION SPECIFIED IN IBC 2303.4.1.1 AND THE LOCATION, SIZE, AND CONNECTION OF PERMANENT BRACING.

SUPPLY WOOD FOR PERMANENT BRACING AND ERECT PERMANENT BRACING IN ACCORDANCE WITH THE WOOD TRUSS DESIGNER'S REQUIREMENTS.

SHOP-FABRICATED WOOD TRUSSES (CONT)
WOOD TRUSS DESIGN SHALL ACCOUN

STRUCTURAL DESIGN CRITERIA

CODES AND STANDARDS
- WISCONSIN COMMERCIAL BUILDING CODE, SPS 362 (LATEST EDITION);
- IBC 2015;
- OTHER CODES AS INDICATED IN THE STRUCTURAL NOTES.

DESIGN LOADS
RISK CATEGORY 'II'

EXPOSURE CATEGORY 'B'

DEAD LOAD (DL)
- SUPERIMPOSED ROOF DL — 4 PSF (RESTROOM PAVILION, INCL METAL ROOFING AND WOOD SHEATHING)
- SUPERIMPOSED ROOF DL — 5 PSF (CONCESSIONS BLD, INCL METAL ROOFING, WOOD SHEATHING, AND INSULATION)
- MECH/ELEC/PLUMB (MEP) ALLOWANCE — 4 PSF
- SUSPENDED CEILING ALLOWANCE — 4 PSF

LIVE LOAD (LL)
- ROOF LL (DISTRIBUTED) — 20 PSF
- FLOOR LL (ASSEMBLY AREA) — 100 PSF

SNOW LOAD (SL)
- FLAT ROOF SL (p_f) — 23 PSF
- GROUND SL (p_g) — 30 PSF
- IMPORTANCE FACTOR (I_s) — 1.00
- EXPOSURE FACTOR (C_e) — 0.90
- THERMAL FACTOR (C_t) — 1.20
- SNOW DRIFT — SEE DETAIL

WIND LOAD (WL)
- MAIN WIND FORCE RESISTING SYSTEM (MWFRS) LOADS AT RESTROOM PAVILION AND CONCESSIONS BUILDING DETERMINED BY ASCE 7 *ENVELOPE PROCEDURE FOR ENCLOSED AND PARTIALLY ENCLOSED LOW-RISE BUILDINGS.*
- MWFRS LOADS AT SHELTER DETERMINED BY ASCE 7 DIRECTIONAL *PROCEDURE FOR ENCLOSED, PARTIALLY ENCLOSED, AND OPEN BUILDINGS OF ALL HEIGHTS.*
- COMPONENTS AND CLADDING (C&C) LOADS AT RESTOOM PAVILION AND CONCESSIONS BUILDING DETERMINED BY ASCE 7 *COMPONENTS AND CLADDING ENVELOPE PROCEDURE FOR LOW-RISE BUILDINGS.*
- C&C LOADS AT SHELTER DETERMINED BY ASCE 7 *COMPONENTS AND CLADDING PROCEDURE FOR OPEN BUILDINGS.*
- BASIC WIND SPEED (V) — 115 MPH
- BUILDING CLASSIFICATION — ENCLOSED (RESTROOM PAVILION); ENCLOSED (CONCESSIONS BUILDING); OPEN (SHELTER)
- DIRECTIONALITY FACTOR (K_d) — 0.85
- VELOCITY PRESSURE COEFFICIENT (K_h) — 0.70
- TOPOGRAPHIC FACTOR (K_{zt}) — 1.00
- VELOCITY PRESSURE (q_h) — 20 PSF
- MWFRS DESIGN WIND PRESSURE — (SEE COMPUTATIONS)
- C&C DESIGN WIND PRESSURE — (SEE TABLE)

LATERAL FORCE RESISTING SYSTEM (LFRS)
LFRS AT RESTROOM PAVILION AND CONCESSIONS BUILDING IS WOOD SHEATHING ON TRUSSES ACTING AS DIAPHRAGMS BETWEEN CMU SHEAR WALLS ON STRIP FOOTINGS.

LFRS AT SHELTER IS WOOD PLANKING ACTING AS DIAPHRAGMS BETWEEN WOOD BRACED FRAMES ON ISOLATED FOOTINGS.

GEOTECHNICAL DESIGN CRITERIA
- ALLOWABLE SOIL BEARING PRESSURE — 3,000 PSF
- FROST DEPTH — 48 IN
- MODULUS OF SUBGRADE REACTION — 125 PCI

C&C DESIGN WIND PRESSURE (PSF)

ZONE	EFFECTIVE AREA =	10 SF	20 SF	50 SF	100 SF
ZONE 1	(MIN)	-22	-21	-20	-20
	(MAX)	6	5	4	2
ZONE 2	(MIN)	-38	-35	-31	-28
	(MAX)	6	5	4	2
ZONE 3	(MIN)	-56	-52	-48	-44
	(MAX)	6	5	4	2
ZONE 2 (overhang)	(MIN)	-48	-48	-48	-48
	(MAX)	--	--	--	--
ZONE 3 (overhang)	(MIN)	-78	-70	-62	-54
	(MAX)	--	--	--	--
ZONE 4	(MIN)	-26	-25	-23	-22
	(MAX)	17	16	13	12
ZONE 5	(MIN)	-32	-30	-27	-25
	(MAX)	17	16	13	12

(APPLICABLE FOR RESTROOM PAVILION AND CONCESSIONS BUILDING)

C&C DESIGN WIND PRESSURE (2) (PSF)

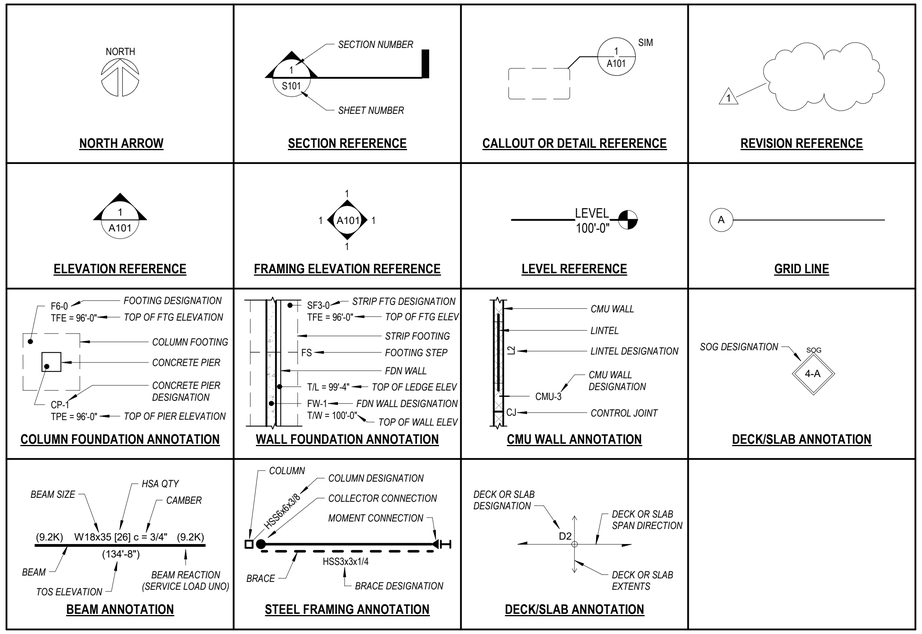
ZONE	EFFECTIVE AREA =	≤ 34 SF	>34 SF, ≤ 135 SF	> 130 SF
ZONE 1	(MIN)	-24	-24	-24
	(MAX)	27	27	27
ZONE 2	(MIN)	-36	-36	-24
	(MAX)	41	41	27
ZONE 3	(MIN)	-72	-36	-24
	(MAX)	55	41	27

(APPLICABLE FOR SHELTER)

CIP CONCRETE CLEAR COVER

CONCRETE EXPOSURE	MEMBERS	REINFORCING SIZE	CLEAR COVER
CAST PERMANENTLY IN CONTACT WITH GROUND	FOOTINGS, FDN WALLS, PIERS, ETC	ALL	3"
EXTERIOR EXPOSURE (NOT IN CONTACT WITH GROUND)	WALLS, PIERS, COLUMNS, BEAMS, SLABS, ETC	#6 ≤ SIZE ≤ #18 BARS	2"
		SIZE ≤ #5 BARS, W31 OR D31 WWF	1-1/2"
INTERIOR EXPOSURE	SLABS, JOISTS, WALLS	#14 ≤ SIZE ≤ #18 BARS	1-1/2"
		SIZE ≤ #11 BARS	3/4"
	BEAMS, COLUMNS	ALL	1-1/2"

LEGEND - STRUCTURAL DRAWING SYMBOLS



REINFORCED CONCRETE MATERIALS

CONCRETE ELEMENT	ASTM/TYPE	Fy (KSI)	Fu (KSI)	F'c (PSI)	COMMENTS
REINFORCING STEEL	A615, GR. 60	60	90	---	DEFORMED BARS
REINFORCING STEEL	A775, GR. 60	60	90	---	EPOXY-COATED DEFORMED BARS
WELDED WIRE FABRIC	A1064	65	75	---	SUPPLY IN FLAT PANELS
FOOTINGS	---	---	---	3000	---
WALLS & PIERS	---	---	---	4000	---
SLAB-ON-GRADE	---	---	---	4000	---

UNIT MASONRY MATERIALS

UNIT MASONRY ELEMENT	ASTM/TYPE	STRENGTH	COMMENTS
UNIT MASONRY WALL ASSEMBLY	---	f'm = 2500 PSI	---
MASONRY UNITS	ASTM C90	f'cmu = 3250 PSI	---
MORTAR	ASTM C270	---	TYPE S
GROUT	ASTM C476	f'g ≥ 2500 PSI	---
REINFORCING STEEL	A615, GR. 60	fy = 60 KSI	---

STRUCTURAL STEEL MATERIALS

STEEL ELEMENT	ASTM/TYPE	Fy (KSI)	Fu (KSI)	COMMENTS
ANCHOR RODS	F1554	36	58	GRADE 36, HEAVY HEX HEADED
HS BOLTS	A325	---	120	1/2" ≤ DIA ≤ 1"
THREADED ROD	F1554	55	75	GRADE 55
NUTS	A563	---	---	---
WASHERS	F436	---	---	---
HAS	A108	---	65	TYPE B
WELD ELECTRODES	E70	---	---	---
W SHAPES	A992	50	65	---
HSS (RECT) SHAPES	A500	46	60	GRADE B
C, L SHAPES	A36	36	58	---
PLATES	A36	36	58	---

SOLID-SAWN LUMBER MATERIALS

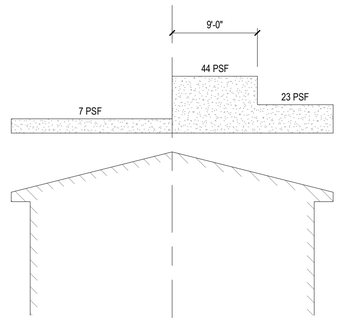
LUMBER ELEMENT	SPECIES	GRADE	COMMENTS
ROOF TRUSSES	---	---	BY DELEGATED DESIGNER
RIM JOIST	MICROLAM LVL	2.0E	FABRICATED BY WEYERHAEUSER
ALL OTHER	SOUTHERN PINE	NO. 1	VISUALLY GRADED

GLULAM LUMBER MATERIALS

LUMBER ELEMENT	SPECIES	COMBINATION SYMBOL	COMMENTS
BEAMS	SP/SP	24F-1.8E	---
COLUMNS	SP/SP	24F-V8	---

WOOD STRUCTURAL PANEL MATERIALS

LUMBER ELEMENT	GRADE	THICK.	SPAN RATING	BOND CLASSIFICATION	COMMENTS
ROOF SHEATHING	RATED SHEATHING	5/8"	---	EXPOSURE 1	---
WALL SHEATHING (EXTERIOR)	RATED SHEATHING	1/2"	---	EXPOSURE 1	---



UNBALANCED SNOW LOAD

LEGEND - STRUCTURAL ABBREVIATIONS

SYMBOLS

@	AT
#	POUND
&	AND

A

AB	ANCHOR BOLT
ADDT'L	ADDITIONAL
ALT	ALTERNATE, ALTERNATIVE
ACI	AMERICAN CONCRETE INSTITUTE
AISC	AMERICAN INSTITUTE OF STEEL CONST.
AITC	AMERICAN INSTITUTE OF TIMBER CONST.
AISI	AMERICAN IRON AND STEEL INSTITUTE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
AWS	AMERICAN WELDING SOCIETY
AWC	AMERICAN WOOD COUNCIL
AWPA	AMERICAN WOOD PROTECTION ASSOC.
ANCH	ANCHOR, ANCHORAGE
ANSI	AMERICAN NATL. STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARCH	ARCHITECT, ARCHITECTURAL
ASTM	ASTM INTERNATIONAL

B

BF	BACK FACE
BP	BASE PLATE
BSMT	BASEMENT
BM	BEAM
BRG	BEARING
BRP	BEARING PLATE
BTWN	BETWEEN
BB	BOND BEAM
BOT	BOTTOM
BO, B/	BOTTOM OF
BFE	BOTTOM OF FOOTING ELEVATION
BLDG	BUILDING

C

CANT	CANTILEVER
CIP	CAST-IN-PLACE
CJ	CONTROL JOINT
CL, C/L	CENTERLINE
CLR	CLEAR
CFS	COLD-FORMED STEEL
COL	COLUMN
COMP	COMPOSITE
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CRSI	CONCRETE REINFORCING INSTITUTE

D

DL	DEAD LOAD
DEFL	DEFLECTION
DEG, °	DEGREES
DET, DTL	DETAIL
DIAG	DIAGONAL
DIA	DIAMETER
DIM	DIMENSION
DBL	DOUBLE
DWL	DOWEL(S)
DN	DOWN
DWG	DRAWING

E

EA	EACH
EF	EACH FACE
EW	EACH WAY
EOD	EDGE OF DECK
EOS	EDGE OF SLAB
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
EL	ELEVATION
ELEV	ELEVATOR
ENGR	ENGINEER
EOR	ENGINEER OF RECORD
EQ	EQUAL
EQUIP	EQUIPMENT
ERECT	ERECTION
EXIST, (E)	EXISTING
EXP	EXPANSION
EXT	EXTERIOR

F

FS	FAR SIDE
FL, FLR	FLOOR
FD	FLOOR DRAIN
FF	FRONT FACE
FT	FOOT, FEET
FTG	FOOTING
FDN/FND	FOUNDATION

G

GA	GAGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GLULAM	GLUED-LAMINATED TIMBER
GB	GRADE BEAM

H

HE	HEADED
HDR	HEADER
HT	HEIGHT
HS	HIGH STRENGTH
HSA	HEADED STUD ANCHOR
HSS	HOLLOW STRUCTURAL SECTION
HK	HOOK
HORIZ	HORIZONTAL

I

IN	INCH, INCHES
INFO	INFORMATION
ID	INSIDE DIAMETER
IF	INSIDE FACE
INT	INTERIOR
IBC	INTERNATIONAL BUILDING CODE
IEBC	INTERNATIONAL EXISTING BUILDING CODE
IRC	INTERNATIONAL RESIDENTIAL CODE

J

JT, JNT	JOINT
JST	JOIST
JBE	JOIST BEARING ELEVATION
JSD	JOIST SEAT DEPTH

K

K	KIP
K/FT, KLF	KIPS PER (LINEAL) FOOT
K/SF, KSF	KIPS PER SQUARE FOOT

L

L	ANGLE (STEEL SHAPE)
LVL	LAMINATED VENEER LUMBER
LG	LENGTH, LONG
LWT	LIGHTWEIGHT
LL	LIVE LOAD
LOC	LOCATE, LOCATION
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LSL	LONG SLOT
LONGIT	LONGITUDINAL
LB	POUND

M

MFR	MANUFACTURER
MCJ	MASONRY CONTROL JOINT
MO	MASONRY OPENING
MAX	MAXIMUM
MECH	MECHANICAL
MTL	METAL
MEZZ	MEZZANINE
MIN	MINIMUM
MISC	MISCELLANEOUS

N

NCMA	NATL. CONCRETE MASONRY ASSOC.
NDS	NATL. DESIGN SPEC. FOR WOOD CONST.
NS	NEAR SIDE
NOM	NOMINAL
NWT	NORMAL WEIGHT
NTS	NOT TO SCALE
NO	NUMBER

O

OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMIN.
OC	ON CENTER
OPNG	OPENING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE

P

PSL	PARALLEL STRAND LUMBER
PEMB	PRE-ENGINEERED METAL BUILDING
PERP	PERPENDICULAR
PL	PLATE
PVC	POLYVINYL CHLORIDE
PT	POST-TENSIONED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PC	PRECAST, PRESTRESSED CONCRETE

R

REF	REFERENCE
REINF	REINFORCEMENT
RD	ROOF DRAIN
REQ'D	REQUIRED
RO	ROUGH OPENING

S

SECT	SECTION
SHT	SHEET
SSL	SHORT SLOT
SIM	SIMILAR
SOG	SLAB-ON-GRADE
SPA	SPACE, SPACES
SPEC	SPECIFICATION(S)
SQ	SQUARE
STD	STANDARD
STL	STEEL
SDI	STEEL DECK INSTITUTE
SJI	STEEL JOIST INSTITUTE
STIFF	STIFFENER
STRUCT	STRUCTURAL
SYM	SYMMETRIC, SYMMETRICAL

T

T/, TO	TOP OF
T/L	TOP OF LEDGE
TEMP	TEMPORARY
THK	THICK, THICKNESS
T & B	TOP AND BOTTOM
TBE	TOP OF BEAM ELEVATION
TDE	TOP OF DECK ELEVATION
TFE	TOP OF FOOTING ELEVATION
TMS	THE MASONRY SOCIETY
TOSL	TOP OF SLAB
TOS	TOP OF STEEL
TWE, T/W	TOP OF WALL ELEVATION
TRANSV	TRANSVERSE
TYP	TYPICAL

U

UNO	UNLESS NOTED OTHERWISE

V

VIF	VERIFY IN FIELD
VERT	VERTICAL

W

W/	WITH
W/O	WITHOUT
WWF	WELDED WIRE FABRIC
WT	WEIGHT
W, w	WIDTH
WRI	WIRE REINFORCEMENT INSTITUTE
WSP	WOOD STRUCTURAL PANELS

MARK	DATE	DESCRIPTION

MALONE PARK
PARK STRUCTURES
CITY OF NEW BERLIN, WI

Eau Claire Office
3430 Oakwood Hills Parkway
Eau Claire, Wisconsin 54701
(715) 834-3161

River Falls Office
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PROJECT No: 24-0389.00

STRUCTURAL DESIGN CRITERIA, SYMBOLS, & ABBREVIATIONS

S002

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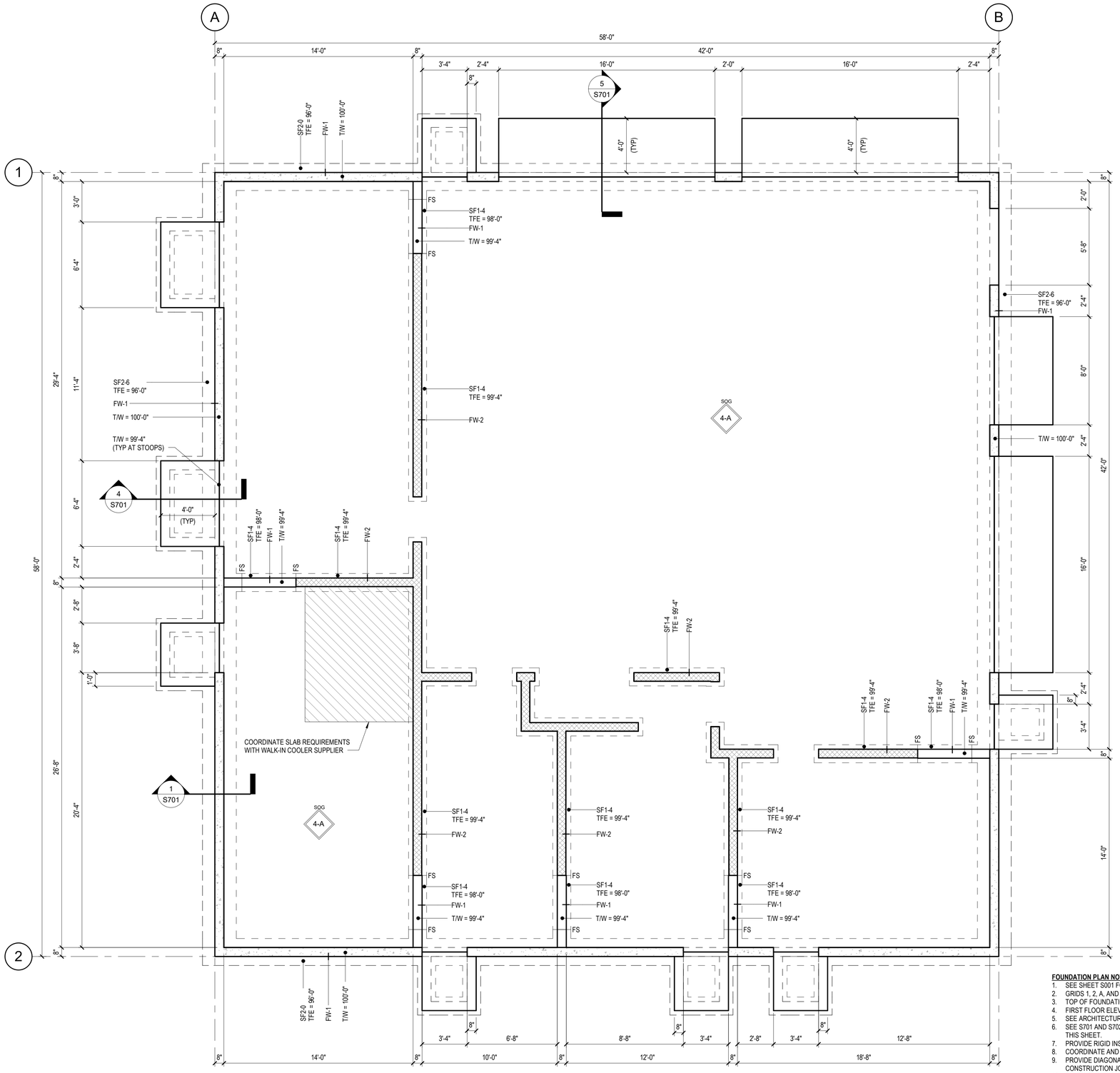

FOUNDATION PLAN NOTES:

1. SEE SHEET S001 FOR STRUCTURE NOTES ASSOCIATED WITH THE WORK SHOWN ON THIS SHEET.
2. GRIDS 1, 2, A, AND B DENOTE THE EXTERIOR FACE OF FOUNDATION WALL, UNO.
3. TOP OF FOUNDATION WALL ELEVATION IS 100'-0", UNO.
4. FIRST FLOOR ELEVATION IS 100'-0", UNO.
5. SEE ARCHITECTURAL DRAWINGS FOR FLOOR PITCHES, DEPRESSIONS, ETC.
6. SEE S701 AND S702 FOR TYPICAL FOUNDATION AND SLAB-ON-GRADE DETAILS THAT ARE NOT SPECIFICALLY CALLED OUT ON THIS SHEET.
7. PROVIDE RIGID INSULATION AT EXTERIOR FOUNDATION WALLS. SEE ARCH FOR DETAILS.
8. COORDINATE AND VERIFY ALL UNDERGROUND WORK PRIOR TO PLACING CONCRETE SLAB-ON-GRADE.
9. PROVIDE DIAGONAL REINFORCING BARS IN SOG AT RE-ENTRANT CORNERS THAT DO NOT HAVE CONTROL OR CONSTRUCTION JOINTS. SEE S702 FOR 'SOG AT RE-ENTRANT CORNERS' DETAIL.
10. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR TO CONFORM WITH THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS. VERIFY ALL STOOP AND DOOR LOCATIONS AND SIZES WITH ARCH DRAWINGS PRIOR TO PLACING CONCRETE.

NORTH

1 S101A CONCESSION BUILDING - FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

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MARK	DATE	DESCRIPTION

MALONE PARK

PARK STRUCTURES

CITY OF NEW BERLIN, WI

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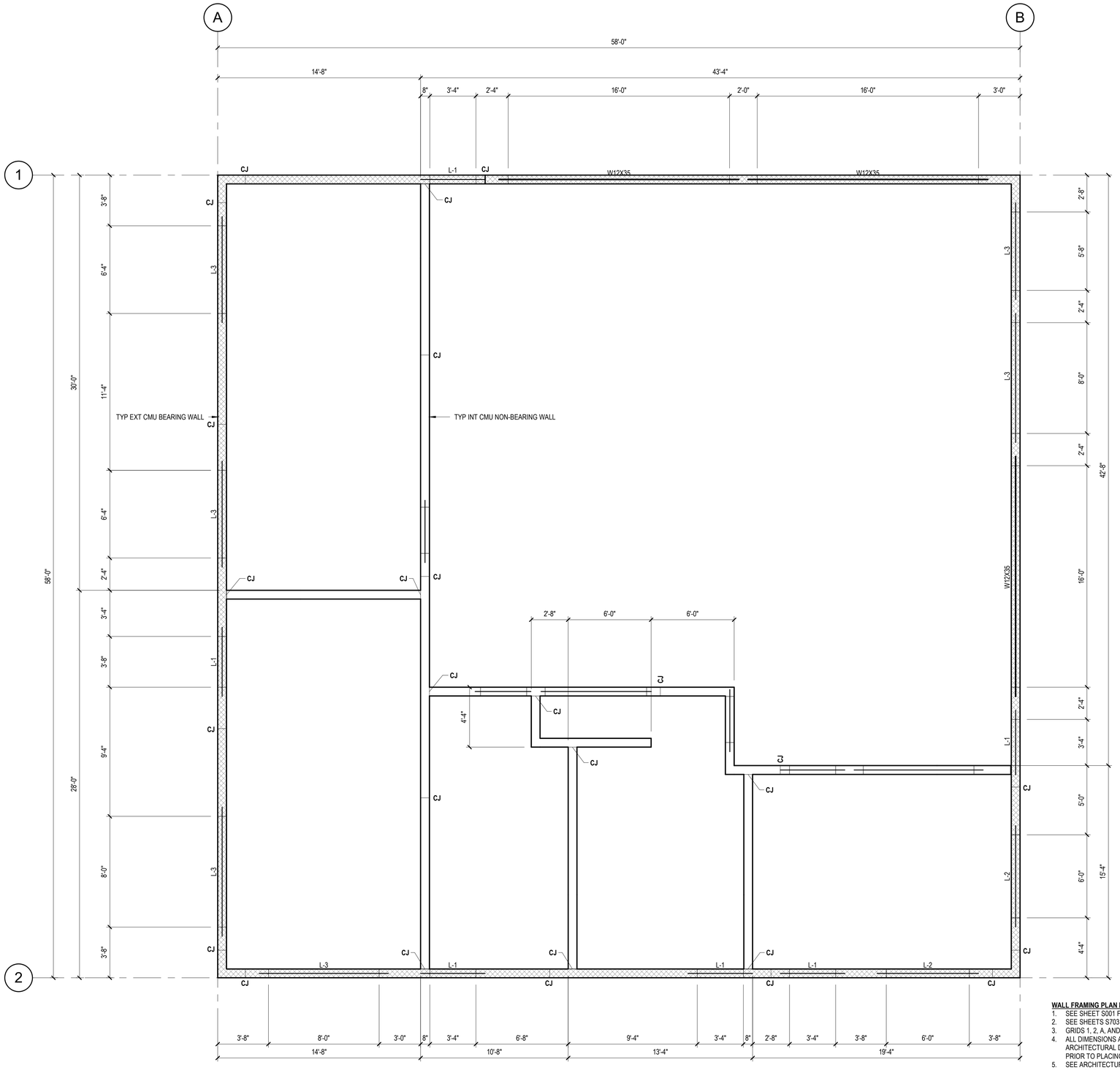
PROJECT No: 24-0389.00

CONCESSION BUILDING - FOUNDATION PLAN

S101A



WALL FRAMING PLAN NOTES:

1. SEE SHEET S001 FOR STRUCTURE NOTES ASSOCIATED WITH THE WORK SHOWN ON THIS SHEET.
2. SEE SHEETS S703 AND S704 FOR TYPICAL WALL DETAILS THAT ARE NOT SPECIFICALLY CALLED OUT ON THIS SHEET.
3. GRIDS 1, 2, A, AND B DENOTE THE EXTERIOR FACE OF CMU WALL.
4. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR TO CONFORM WITH THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS. VERIFY ALL DOOR AND WINDOW LOCATIONS AND ROUGH OPENINGS WITH ARCH DRAWINGS PRIOR TO PLACING WALLS.
5. SEE ARCHITECTURAL DRAWINGS FOR SILL AND LINTEL ELEVATIONS.
6. REINFORCE ALL MASONRY WALLS PER THE NOTES ON SHEET S001.
7. SEE SHEET S704 FOR BEARING WALL LINTEL SCHEDULE AND DETAILS. SEE UNIT MASONRY NOTES FOR NON-BEARING WALL LINTEL REQUIREMENTS.
8. SEE SHEET S705 FOR DETAIL SHOWING LATERAL SUPPORT AT TOP OF NON-BEARING CMU WALLS AT ROOF TRUSSES.

NORTH

1 S101B

CONCESSION BUILDING - WALL FRAMING PLAN

SCALE: 1/4" = 1'-0"

MARK	DATE	DESCRIPTION

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CONCESSION BUILDING - WALL FRAMING PLAN

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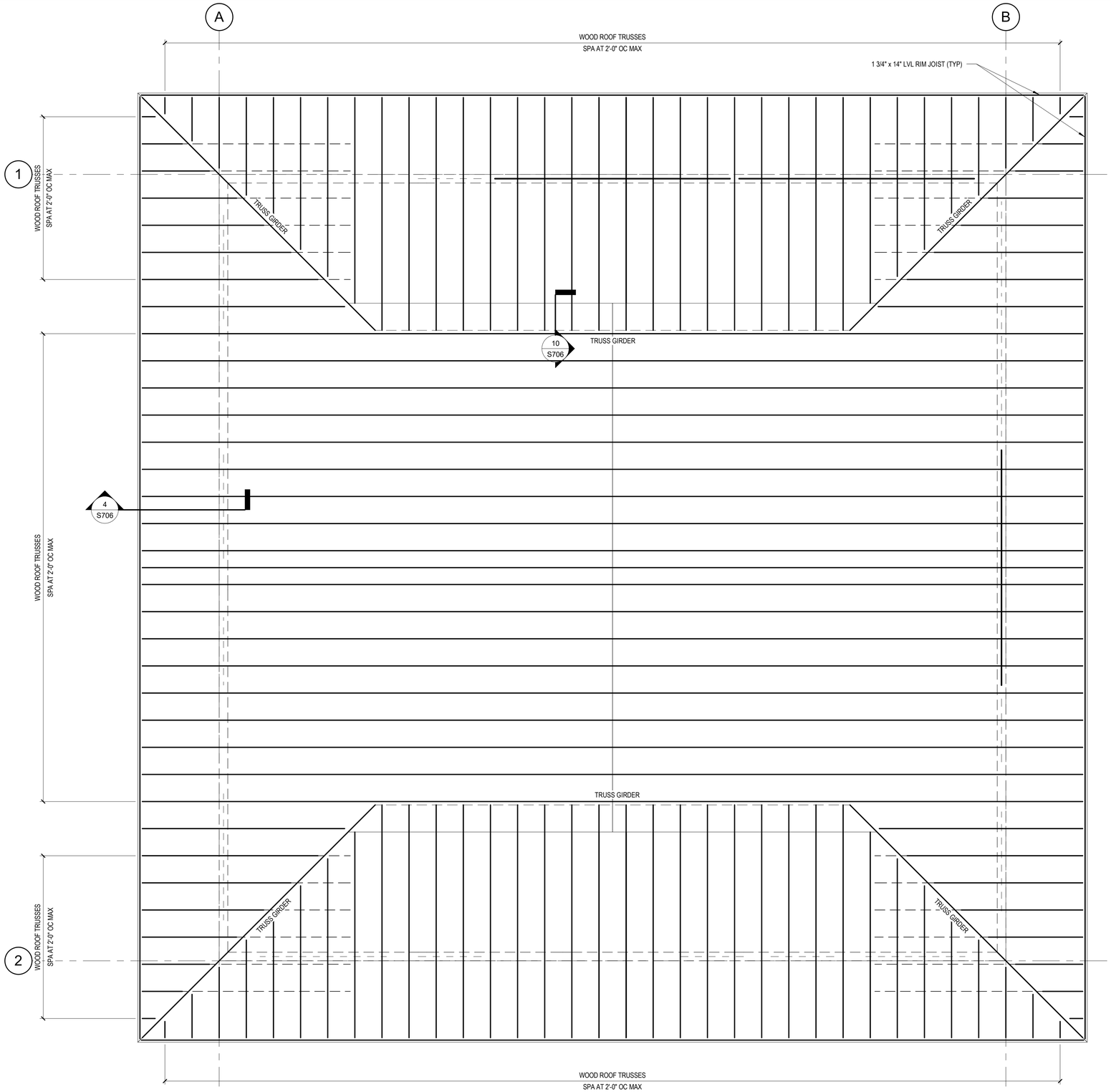

2 S101C ROOF FRAMING PLAN - VALLEY FRAMING

SCALE: 3/32" = 1'-0"

1 S101C CONCESSION BUILDING - ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"

ROOF FRAMING PLAN NOTES:

1. SEE SHEET S001 FOR STRUCTURE NOTES ASSOCIATED WITH THE WORK SHOWN ON THIS SHEET.
2. SEE SHEET S002 FOR DESIGN LOADS.
3. SEE SHEET S705 TYPICAL ROOF FRAMING DETAILS THAT ARE NOT SPECIFICALLY CALLED OUT ON THIS SHEET.
4. GRIDS 1, 2, A, AND B DENOTE THE EXTERIOR FACE OF CMU WALL.
5. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR TO CONFORM WITH THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS.
6. TRUSS BLOCKING SHALL BE DESIGNED BY DELEGATED TRUSS DESIGN TO RESIST AXIAL FORCE RESULTING FROM DIAPHRAGM SHEAR (170 POUNDS PER FOOT OF WALL LENGTH SERVICE LOAD).
7. SEE ARCH FOR TRUSS PROFILES. VERIFY BOTTOM CHORD CLEAR HEIGHT WITH ARCH.
8. INTERIOR CMU WALLS ARE NOT BEARING WALLS.

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CONCESSION BUILDING - ROOF FRAMING PLAN

S101C

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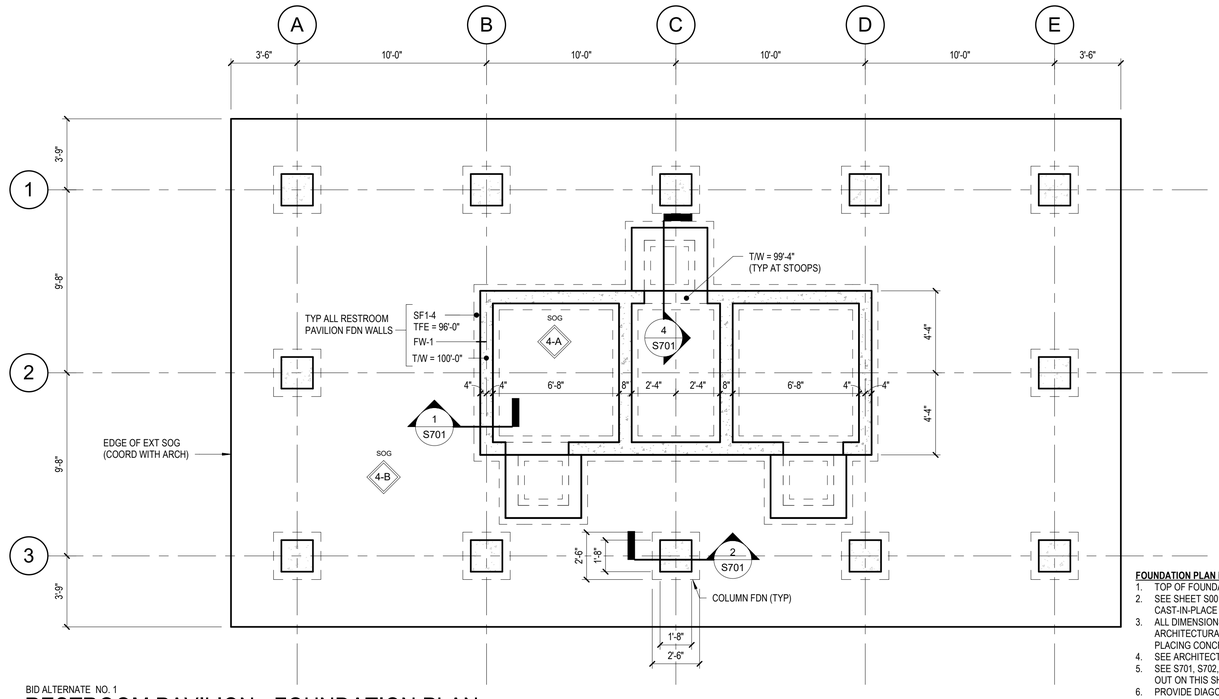


BID ALTERNATE NO. 1

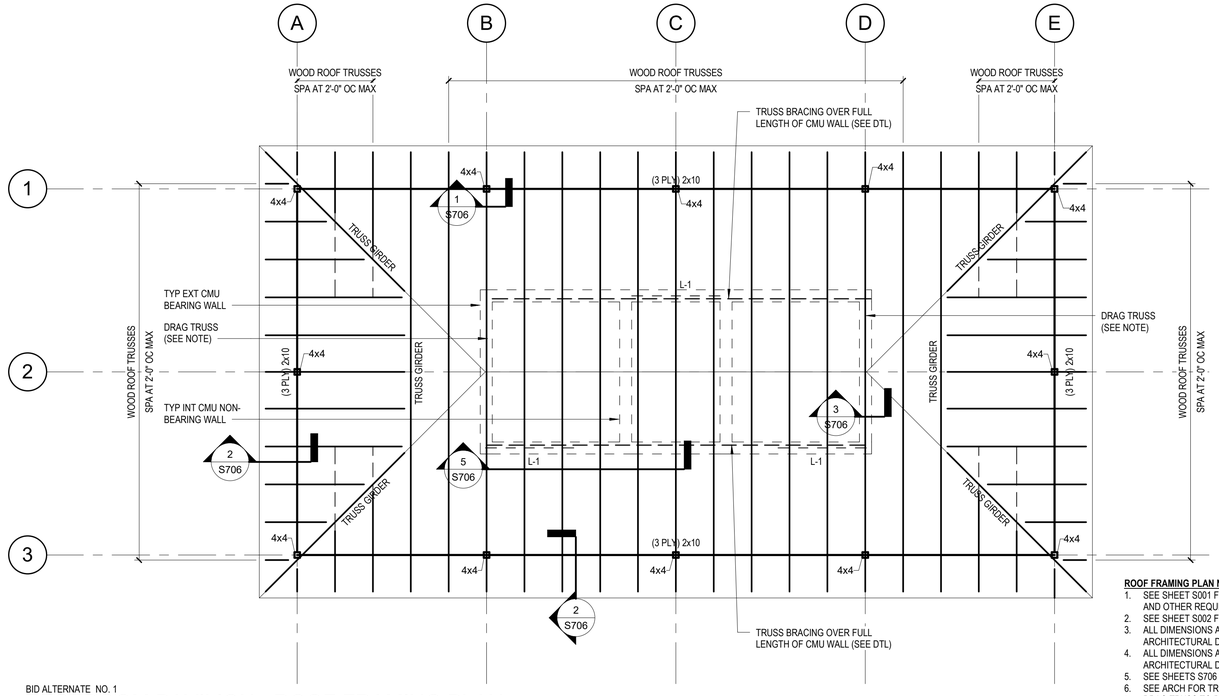
1 S102 RESTROOM PAVILION - FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

FOUNDATION PLAN NOTES:

1. TOP OF FOUNDATION WALL ELEVATION IS 100'-0", UNO.
2. SEE SHEET S001 FOR STRUCTURE NOTES PERTAINING TO GENERAL REQUIREMENTS, FOUNDATIONS AND EARTHWORK, CAST-IN-PLACE CONCRETE, AND OTHER REQUIREMENTS ASSOCIATED WITH THE WORK SHOWN ON THIS SHEET.
3. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR TO CONFORM WITH THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS. VERIFY ALL STOOP AND DOOR LOCATIONS AND SIZES WITH ARCH DRAWINGS PRIOR TO PLACING CONCRETE.
4. SEE ARCHITECTURAL DRAWINGS FOR FLOOR PITCHES, DEPRESSIONS, ETC.
5. SEE S701, S702, AND S703 FOR TYPICAL FOUNDATION AND SLAB-ON-GRADE DETAILS THAT ARE NOT SPECIFICALLY CALLED OUT ON THIS SHEET.
6. PROVIDE DIAGONAL REINFORCING BARS IN SOG AT RE-ENTRANT CORNERS THAT DO NOT HAVE CONTROL OR CONSTRUCTION JOINTS. SEE S703 FOR 'SOG AT RE-ENTRANT CORNERS' DETAIL.

NORTH



BID ALTERNATE NO. 1

2 S102 RESTROOM PAVILION - ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"

ROOF FRAMING PLAN NOTES:

1. SEE SHEET S001 FOR STRUCTURE NOTES PERTAINING TO GENERAL REQUIREMENTS, SOLID SAWN LUMBER, ENGINEERED LUMBER, AND OTHER REQUIREMENTS ASSOCIATED WITH THE WORK SHOWN ON THIS SHEET.
2. SEE SHEET S002 FOR DESIGN LOADS
3. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR TO CONFORM WITH THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS.
4. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR TO CONFORM WITH THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS. VERIFY ALL ROOF OPENINGS PRIOR TO FABRICATING PRECAST PLANK.
5. SEE SHEETS S706 AND S707 FOR TYPICAL ROOF FRAMING DETAILS THAT ARE NOT SPECIFICALLY CALLED OUT ON THIS SHEET.
6. SEE ARCH FOR TRUSS PROFILES. VERIFY BOTTOM CHORD CLEAR HEIGHT WITH ARCH.
7. DRAG TRUSS TO BE DESIGNED FOR A MIN 270 PLF DRAG LOAD OVER LENGTH OF CMU WALL.

NORTH

MARK	DATE	DESCRIPTION

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PROJECT No: 24-0389.00

RESTROOM PAVILION

S102

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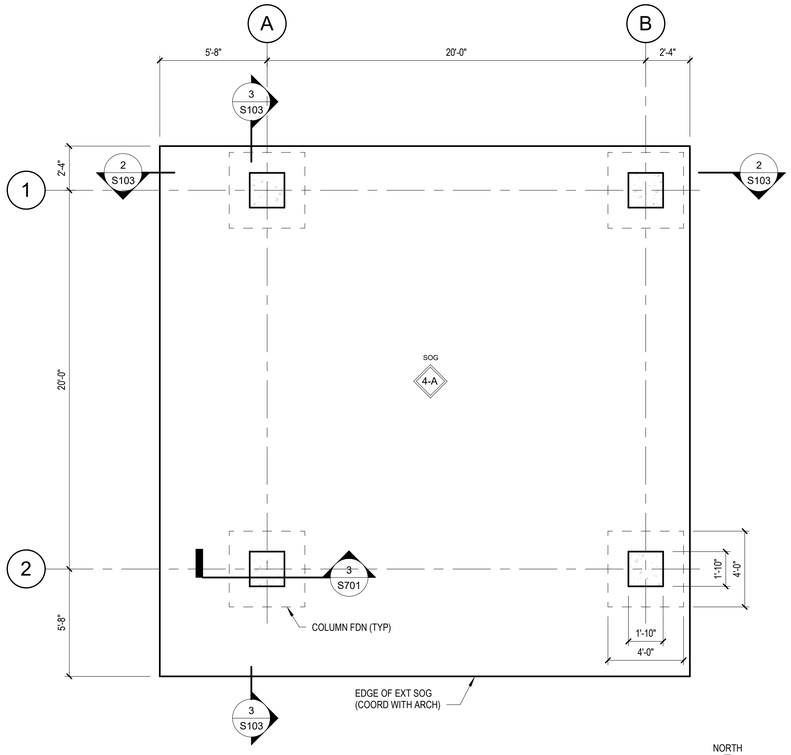
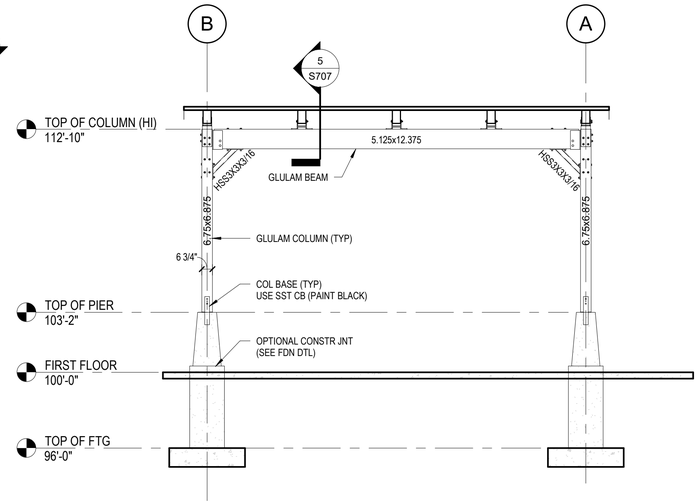


BID ALTERNATE NO.2

1 S103 SHELTER - FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

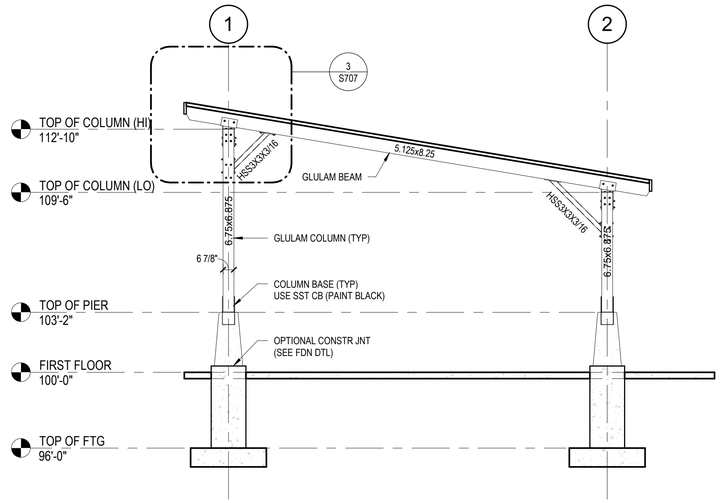
NORTH



BID ALTERNATE NO.2

2 S103 SHELTER - NORTH FRAMING ELEVATION

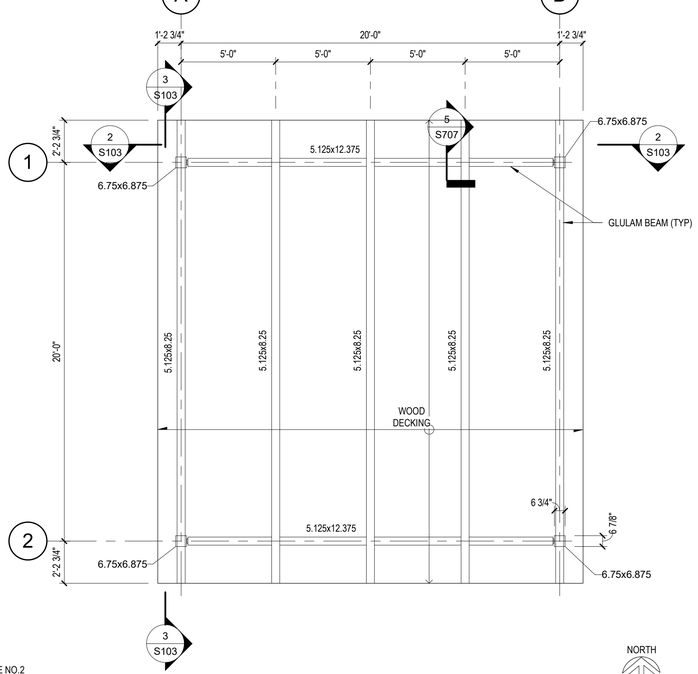
SCALE: 1/4" = 1'-0"



BID ALTERNATE NO.2

3 S103 SHELTER - WEST FRAMING ELEVATION

SCALE: 1/4" = 1'-0"



BID ALTERNATE NO.2

4 S103 SHELTER - ROOF FRAMING PLAN

SCALE: 1/4" = 1'-0"

NORTH

FOUNDATION PLAN NOTES:

1. SEE SHEET S001 FOR STRUCTURE NOTES PERTAINING TO GENERAL REQUIREMENTS, FOUNDATIONS AND EARTHWORK, CAST-IN-PLACE CONCRETE, AND OTHER REQUIREMENTS ASSOCIATED WITH THE WORK SHOWN ON THIS SHEET.
2. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR TO CONFORM WITH THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS. VERIFY ALL STOOP AND DOOR LOCATIONS AND SIZES WITH ARCH DRAWINGS PRIOR TO PLACING CONCRETE.
3. SEE ARCHITECTURAL DRAWINGS FOR FLOOR PITCHES, DEPRESSIONS, ETC.
4. SEE S701, S702, AND S703 FOR TYPICAL FOUNDATION AND SLAB-ON-GRADE DETAILS THAT ARE NOT SPECIFICALLY CALLED OUT ON THIS SHEET.
5. PROVIDE DIAGONAL REINFORCING BARS IN SOG AT RE-ENTRANT CORNERS THAT DO NOT HAVE CONTROL OR CONSTRUCTION JOINTS. SEE S703 FOR 'SOG AT RE-ENTRANT CORNERS' DETAIL.

ROOF FRAMING PLAN NOTES:

1. SEE SHEET S001 FOR STRUCTURE NOTES PERTAINING TO GENERAL REQUIREMENTS, SOLID SAWN LUMBER, ENGINEERED LUMBER, AND OTHER REQUIREMENTS ASSOCIATED WITH THE WORK SHOWN ON THIS SHEET.
2. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED BY THE CONTRACTOR TO CONFORM WITH THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS.
3. SEE SHEET S706 AND S707 FOR TYPICAL ROOF FRAMING DETAILS THAT ARE NOT SPECIFICALLY CALLED OUT ON THIS SHEET.
4. WOOD DECKING SHALL BE 3x6 (NOMINAL) TONGUE-AND-GROOVE WOOD DECKING. FASTEN TO GLULAMS WITH TWO (2) 20d NAILS PER COURSE. TOENAIL TO ADJACENT PLANK WITH 8d NAILS SPACED AT 30" ON CENTER FOR LENGTH OF DECKING. APPLY A 3/8" BEAD OF 3M ADHESIVE NO. 5200 TO THE TOP OF EACH TONGUE-AND-GROOVE JOINT..

MARK	DATE	DESCRIPTION

MALONE PARK

PARK STRUCTURES

CITY OF NEW BERLIN, WI

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PROJECT No: 24-0389.00

SHELTER

S103

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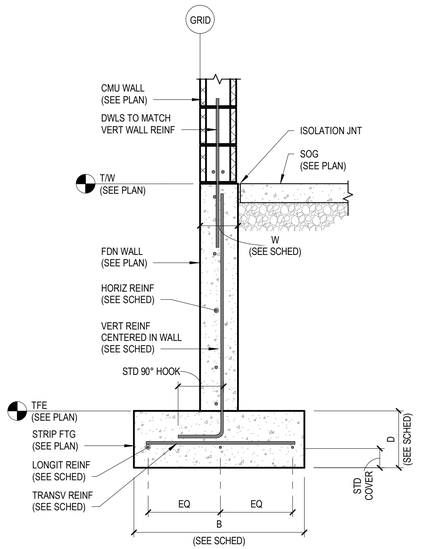
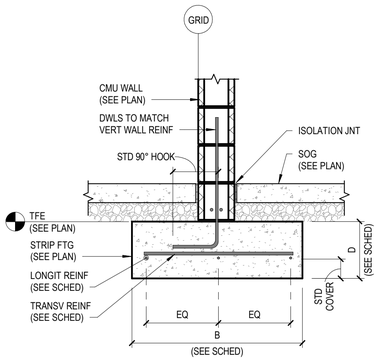
FOOTING SCHEDULE							
MARK	FOOTING TYPE	B	W	D	LONGIT REINF	TRANSV REINF	COMMENTS
SF1-4	STRIP FOOTING	1'-4"	<varies>	1'-0"	(2) #4	#4 AT 1'-0" OC	
SF2-0	STRIP FOOTING	2'-0"	<varies>	1'-0"	(3) #4	#4 AT 1'-0" OC	
SF2-6	STRIP FOOTING	2'-6"	<varies>	1'-0"	(4) #4	#4 AT 1'-0" OC	

FOUNDATION WALL SCHEDULE						
MARK	WALL TYPE	W	LEDGE W	VERT REINF	HORIZ REINF	COMMENT
FW-1	1	8"	--	#5 AT 1'-6" OC	#5 AT 1'-6" OC	
FW-2	2	7 5/8"	--	(MATCH WALL)	#5 AT 1'-6" OC	



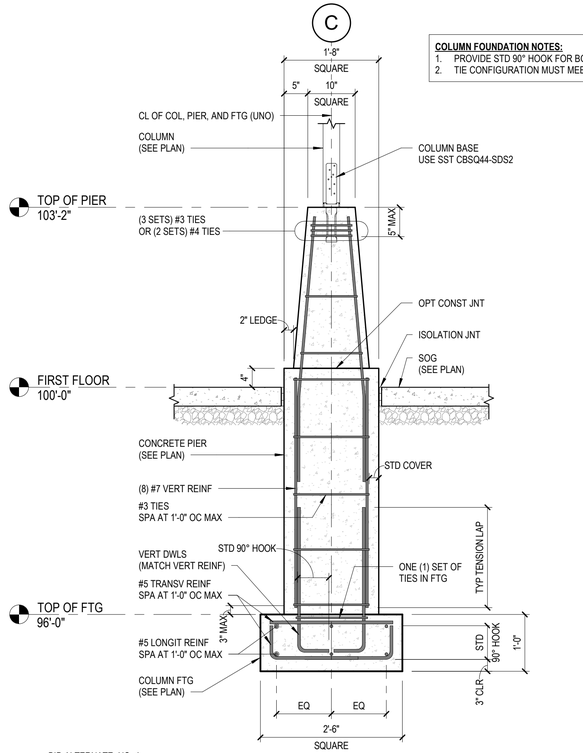
WALL TYPE 1



WALL TYPE 2

1 S701 WALL FOUNDATION

SCALE: NTS



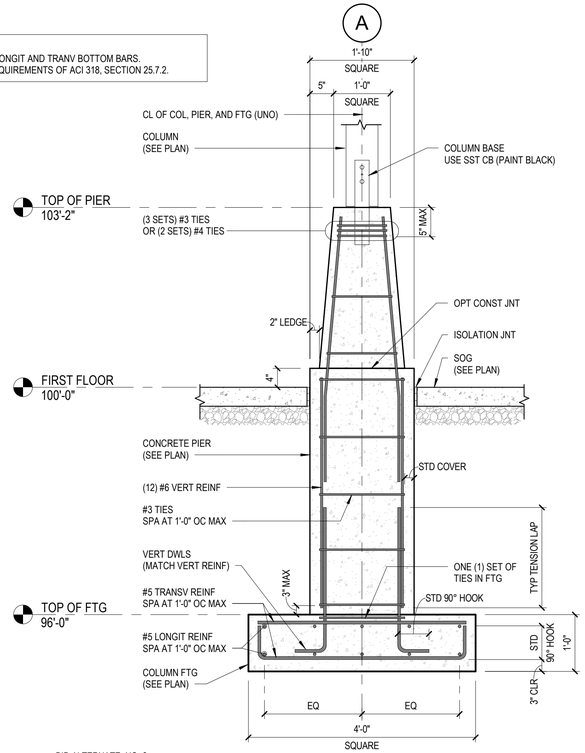
BID ALTERNATE NO. 1

2 S701 COLUMN FOUNDATION (1)

SCALE: 3/4" = 1'-0"

COLUMN FOUNDATION NOTES:

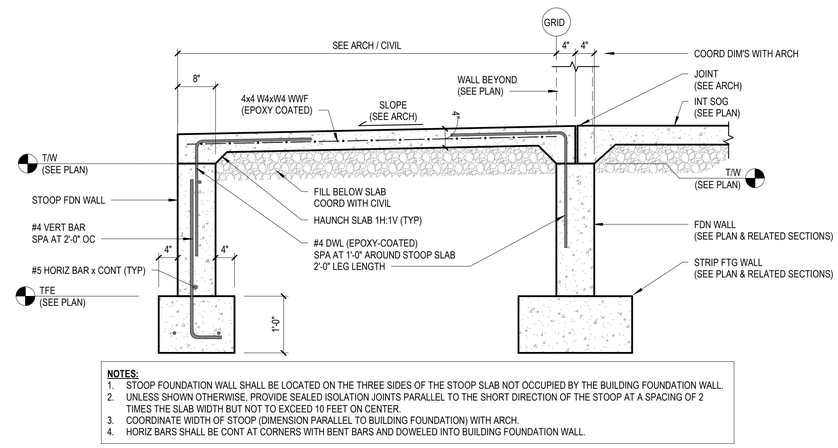
1. PROVIDE STD 90° HOOK FOR BOTH LONGIT AND TRANV BOTTOM BARS.
2. TIE CONFIGURATION MUST MEET REQUIREMENTS OF ACI 318, SECTION 25.7.2.



BID ALTERNATE NO. 2

3 S701 COLUMN FOUNDATION (2)

SCALE: 3/4" = 1'-0"

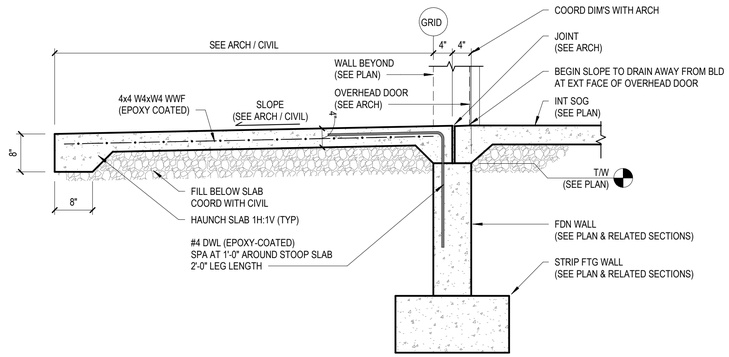


NOTES:

1. STOOP FOUNDATION WALL SHALL BE LOCATED ON THE THREE SIDES OF THE STOOP SLAB NOT OCCUPIED BY THE BUILDING FOUNDATION WALL.
2. UNLESS SHOWN OTHERWISE, PROVIDE SEALED ISOLATION JOINTS PARALLEL TO THE SHORT DIRECTION OF THE STOOP AT A SPACING OF 2 TIMES THE SLAB WIDTH BUT NOT TO EXCEED 10 FEET ON CENTER.
3. COORDINATE WIDTH OF STOOP (DIMENSION PARALLEL TO BUILDING FOUNDATION) WITH ARCH.
4. HORIZ BARS SHALL BE CONT AT CORNERS WITH BENT BARS AND DOWELED INTO BUILDING FOUNDATION WALL.

4 S701 STOOP AT EXTERIOR DOOR

SCALE: NTS



5 S701 STOOP AT EXTERIOR OVERHEAD DOOR

SCALE: NTS

MARK	DATE	DESCRIPTION

MALONE PARK

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PROJECT No: 24-0389.00

FOUNDATION DETAILS

S701

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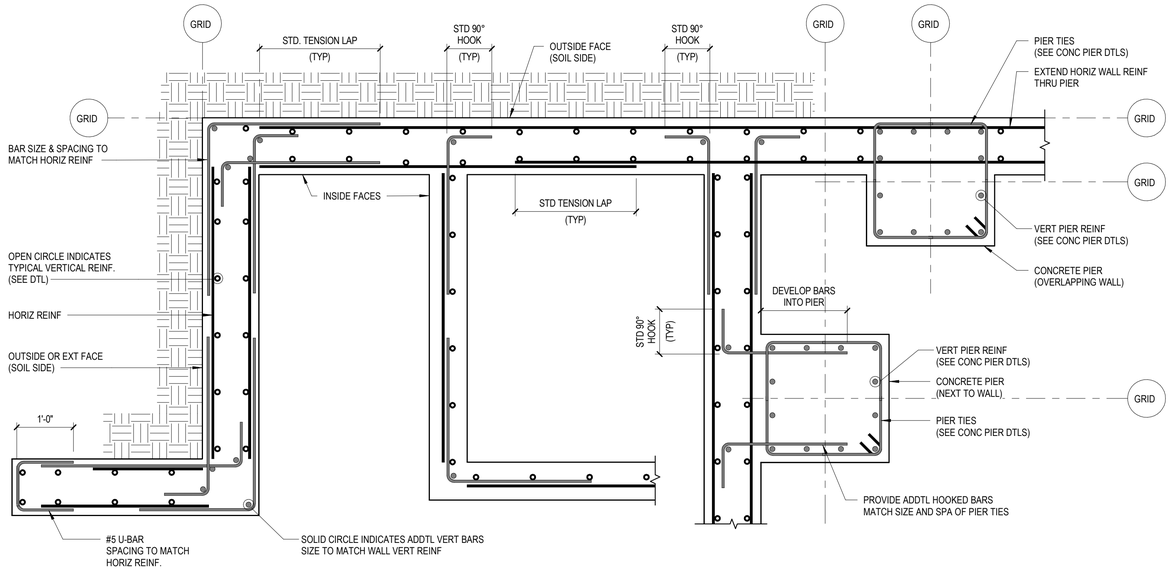
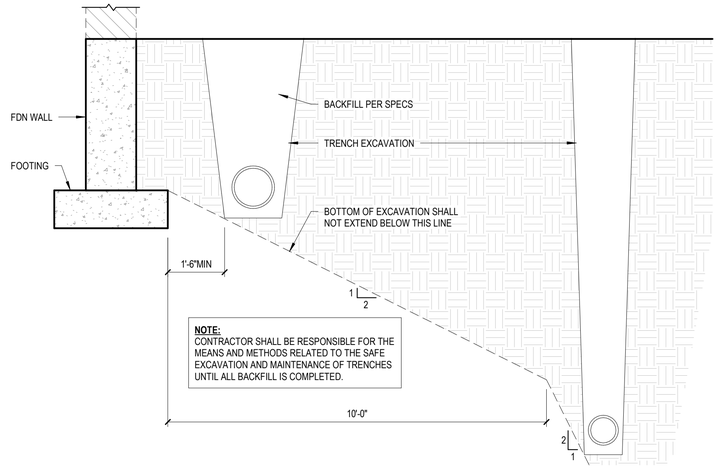


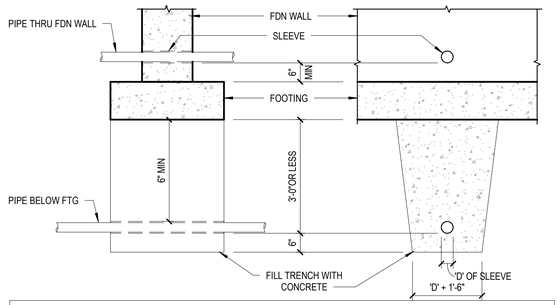
1 S702 TYPICAL FOUNDATION WALL PLAN

SCALE: NTS



2 S702 TYPICAL UTILITY PARALLEL TO FOUNDATION

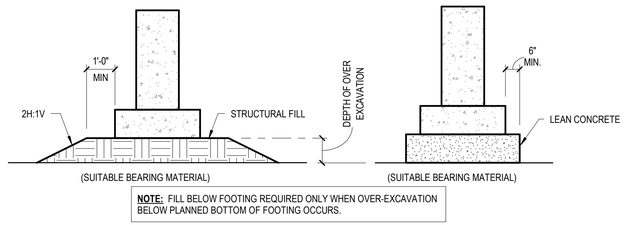
SCALE: NTS



NOTE:
1. SEAL PIPE SLEEVES WATERTIGHT.
2. FOR SLEEVES THAT PASS THROUGH THE PROPOSED FOOTING THICKNESS ±6-INCHES, STEP THE FOOTING DOWN SO THE SLEEVES PASS THROUGH THE WALL.
3. IF UTILITY RUNNING PERPENDICULAR TO FOOTING IS MORE THAN 3'-0" BELOW BOTTOM OF FOOTING, IT IS NOT NECESSARY TO STEP THE FOOTING AND SLEEVE PIPE THRU WALL AS SHOWN. PROVIDE RELIEVING ARCH ABOVE PIPE PER IPC. DETAIL IS SIMILAR FOR OTHER UTILITIES SUCH AS ELECTRICAL CONDUIT.

3 S702 TYPICAL UTILITY PERPENDICULAR TO FOUNDATION

SCALE: NTS



NOTE: FILL BELOW FOOTING REQUIRED ONLY WHEN OVER-EXCAVATION BELOW PLANNED BOTTOM OF FOOTING OCCURS.

4 S702 TYPICAL FILL BELOW FOOTING

SCALE: NTS

MARK	DATE	DESCRIPTION

MALONE PARK

PARK STRUCTURES

CITY OF NEW BERLIN, WI

Eau Claire Office
3433 Oakwood Hills Parkway
Eau Claire, Wisconsin 54701
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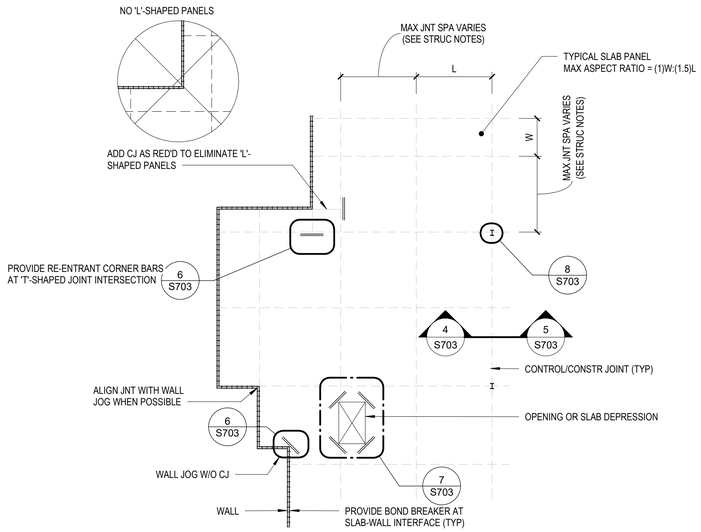
03/21/2025

PROJECT No: 24-0389.00

FOUNDATION DETAILS

S702

3/19/2025 8:54:34 AM Autodesk Docs://New Berlin - Malone Park/NEW BERLIN MALONE PARK_STRUC_R22_jacobz4LNRN.rvt



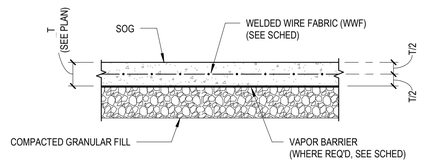
SLAB ON GRADE JOINTING AND ADDITIONAL REINFORCEMENT NOTES

1. SEE STRUCTURAL NOTES FOR MAXIMUM CONTROL JOINT SPACING.
2. CONTRACTOR TO SUBMIT SLAB ON GRADE JOINT PLAN THREE WEEKS PRIOR TO SLAB POUR.
3. LIMIT SLAB PANEL ASPECT RATIO TO 1.5:1.
4. MINIMIZE "L" SHAPED PANELS WHEN AT ALL POSSIBLE OR PROVIDE ADDITIONAL JOINTING OR RE-ENTRANT CORNER BARS.
5. WHENEVER POSSIBLE LOCATE JOINTS UNDER NON-LOAD-BEARING WALL AND FIXTURES.
6. SAW CUTTING SHALL BE DONE AS SOON AS THE CONCRETE HAS HARDENED SUFFICIENTLY TO PERMIT CUTTING WITHOUT CHIPPING, SPALLING, OR TEARING, BUT NOT MORE THAN 12 HOURS AFTER POURING.

1 S703 TYPICAL SOG PLAN

SCALE: NTS

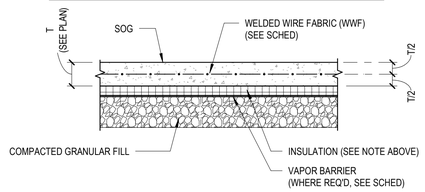
SLAB-ON-GRADE SCHEDULE					
SOG MARK	THICKNESS	REINF	VAPOR BARRIER	INSULATION	COMMENT
4-A	4"	6x6 - D4xD4 WWF	Y	N	TYP ALL INT SOG
4-B	4"	6x6 - D4xD4 WWF	N	N	TYP ALL EXT SOG



2 S703 TYPICAL SOG SECTION

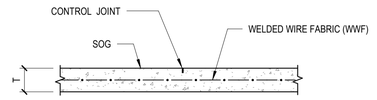
SCALE: NTS

NOTE: INSULATION SHALL BE EXTRUDED POLYSTYRENE INSULATION BOARD. MINIMUM 100 PSI COMPRESSIVE STRENGTH.



3 S703 INSULATED SOG SECTION

SCALE: NTS

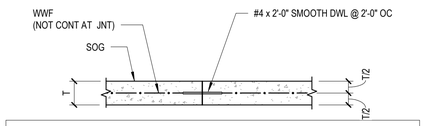


NOTES:

1. CONTROL JOINT SHALL BE CREATED WITH EITHER A SAWCUT (1/8" WIDTH, T/4 DEPTH) OR A SLAB CONTRACTION (CONTROL) JOINT DEVICE.
2. FILL JOINT WITH POLYURETHANE SEALANT AT EXPOSED CONCRETE.
3. COMPLETE SAWCUT WITHIN 4 TO 12 HOURS AFTER SLAB IS FINISHED AND:
   A. BEFORE CONCRETE STARTS TO COOL;
   B. AS SOON AS SURFACE IS FIRM ENOUGH NOT TO BE TORN OR DAMAGED;
   C. BEFORE RANDOM-DRYING-SHRINKAGE CRACKS CAN FORM.

4 S703 SOG CONTROL JOINT

SCALE: NTS

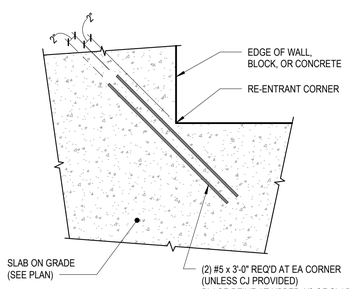


NOTES:

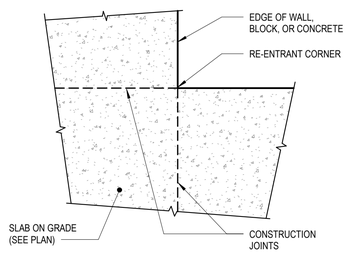
1. GREASE ONE END OF DOWEL AND PROVIDE SUPPORT TO ENSURE HORIZONTAL ALIGNMENT.
2. PLACE FIRST DOWEL WITHIN 6" OF SLAB EDGE.
3. 1/4" PLATE DWL @ 2'-6" OC MAY BE USED AS AN ALTERNATIVE TO THE #4 DWL.
4. FILL JOINT WITH POLYURETHANE SEALANT AT EXPOSED CONCRETE.

5 S703 SOG CONSTRUCTION JOINT

SCALE: NTS



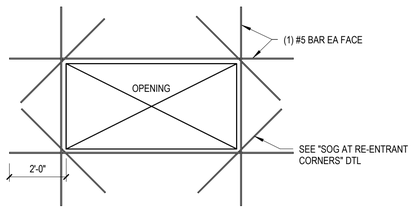
RE-ENTRANT CORNERS WITHOUT JOINTS



RE-ENTRANT CORNERS w/ JOINTS

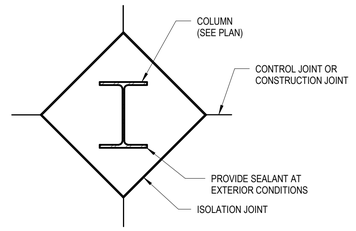
6 S703 SOG AT RE-ENTRANT CORNERS

SCALE: NTS



7 S703 SOG AT OPENING OR DEPRESSION

SCALE: NTS



NOTE: USE SIMILAR DETAIL AT OTHER COLUMN SHAPES

8 S703 SOG ISOLATION JOINT AT COUMN

SCALE: NTS

MARK	DATE	DESCRIPTION

MALONE PARK

PARK STRUCTURES

CITY OF NEW BERLIN, WI

Eau Claire Office
3433 Oakwood Hills Parkway
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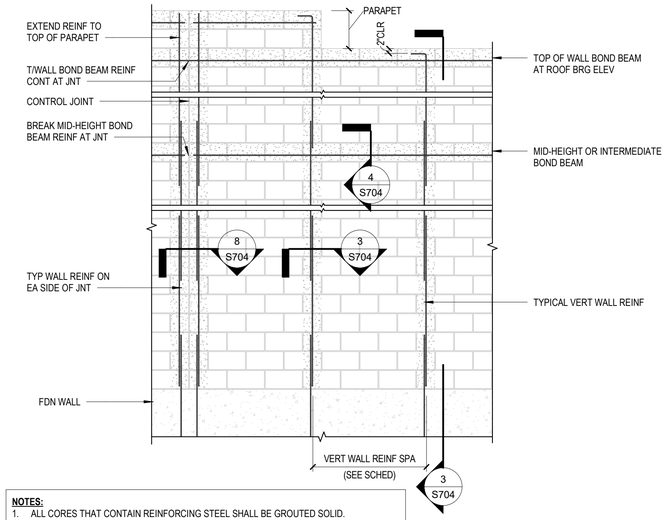
03/21/2025

PROJECT No: 24-0389.00

SLAB-ON-GRADE DETAILS

S703

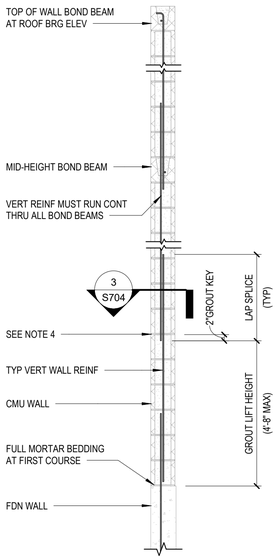
3/19/2025 8:54:35 AM Autodesk Docs://New Berlin - Malone Park/NEW BERLIN MALONE PARK_STRUC_R22_jacobs24LNRN.rvt



NOTES:
1. ALL CORES THAT CONTAIN REINFORCING STEEL SHALL BE GROUTED SOLID.
2. SEE MASONRY NOTES AND OTHER DETAILS FOR REINFORCING STEEL SIZE AND SPA.
3. FOR MULTI-STORY STRUCTURES, BOND BEAMS AT FLOOR BEARING ELEVATIONS SHALL BE TREATED SIMILAR TO THE TOP OF WALL BOND BEAM WITH REINFORCING CONTINUOUS THROUGH CONTROL JOINTS.

1 S704 TYPICAL MASONRY WALL REINFORCING (ELEVATION)

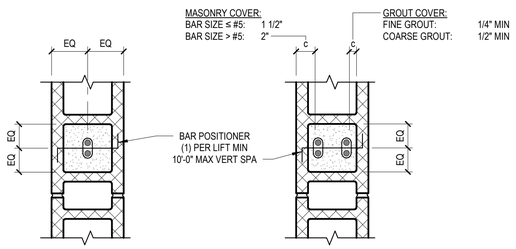
SCALE: NTS



NOTES:
1. ALL CORES THAT CONTAIN REINFORCING STEEL SHALL BE GROUTED SOLID.
2. SEE UNIT MASONRY NOTES AND OTHER DETAILS FOR REINFORCING STEEL SIZE AND SPA.
3. FOR MULTI-STORY STRUCTURES, BOND BEAMS AT FLOOR BEARING ELEVATIONS SHALL BE TREATED SIMILAR TO THE TOP OF WALL BOND BEAM WITH REINFORCING CONTINUOUS THROUGH CONTROL JOINTS.
4. LAY WALL TO THIS HEIGHT; PLACE NEXT REINF BAR OR BARS; PLACE GROUT TO 2" BELOW TOP. SPACES TO BE GROUTED SHALL BE FREE OF MORTAR DROPPINGS, DEBRIS, LOOSE AGGREGATES, AND ANY MATERIAL DELETERIOUS TO MASONRY GROUT. SEQUENCING TYPICAL FOR ENTIRE WALL HEIGHT.

2 S704 TYPICAL MASONRY WALL REINFORCING SECTION

SCALE: NTS



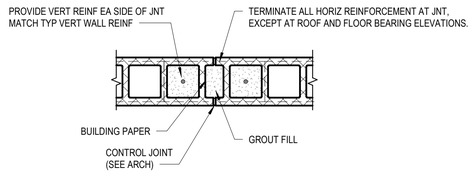
NOTES:
1. SECURE VERTICAL REINFORCING WITH BAR POSITIONERS.
2. LOCATE BAR POSITIONERS AT SPLICES, TOP AND BOTTOM OF WALLS, AND AT INTERVALS NOT EXCEEDING 10'-0".
3. TOLERANCES FOR PLACEMENT OF REINFORCING BARS:
   - A. PARALLEL TO WALL: ±1/2" (WALL SIZE ≤ 8" NOM); ±1" (WALL SIZE > 8" NOM)
   - B. PERPENDICULAR TO WALL: ±1/2" (CENTERED BAR POSITION); +1/2" (EF BAR POSITION, TOWARD INSIDE); -1/4" (EF BAR POSITION, TOWARD OUTSIDE)

CMU DEVELOPMENT AND LAP SPLICE LENGTH SCHEDULE
(f_m' = 2,000 PSI)

BAR SIZE	CENTERED BAR POSITION						EACH FACE BAR POSITION
	6" UNIT	8" UNIT	10" UNIT	12" UNIT	14" UNIT	16" UNIT	
#3	12"	12"	12"	12"	12"	12"	12"
#4	17"	12"	12"	12"	12"	12"	22"
#5	27"	19"	15"	12"	12"	12"	34
#6	52"	37"	29"	23"	20"	19"	54"
#7	--	51"	40"	32"	27"	24"	63"
#8	--	72"	61"	49"	41"	36"	72"
#9	--	--	78"	63"	53"	46"	81"

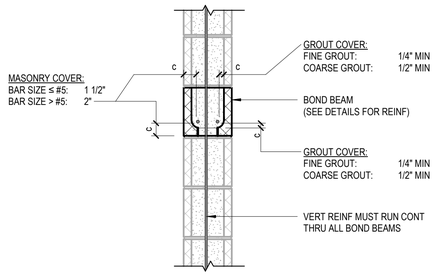
3 S704 REBAR LAP AND PLACEMENT DETAIL

SCALE: NTS



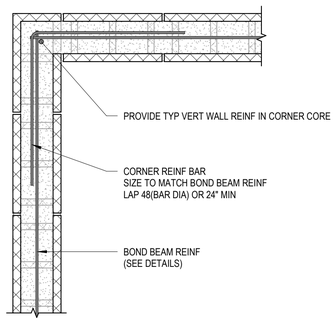
8 S704 TYPICAL MASONRY CONTROL JOINT

SCALE: NTS



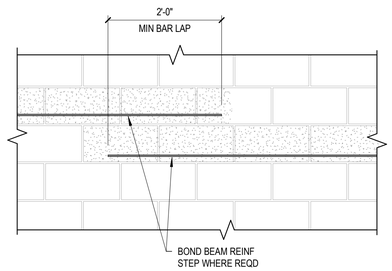
4 S704 TYPICAL BOND BEAM

SCALE: NTS



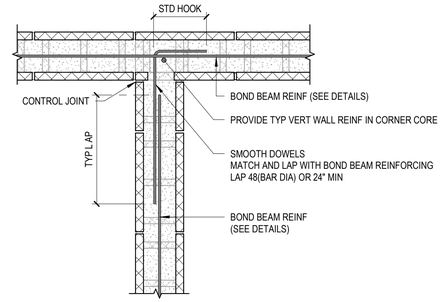
6 S704 BOND BEAM AT CORNER

SCALE: NTS



5 S704 TYP BOND BEAM STEP DETAIL

SCALE: NTS



7 S704 BOND BEAM AT INTERSECTION

SCALE: NTS

MARK	DATE	DESCRIPTION

MALONE PARK
PARK STRUCTURES
CITY OF NEW BERLIN, WI

Eau Claire Office
3433 Oakwood Hills Parkway
Eau Claire, Wisconsin 54701
(715) 834-3161

River Falls Office
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03/21/2025

PROJECT No: 24-0389.00

FRAMING DETAILS

S704

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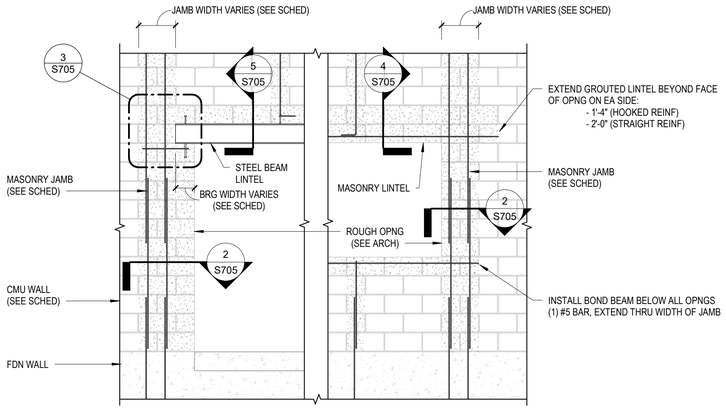
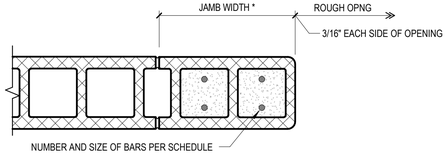
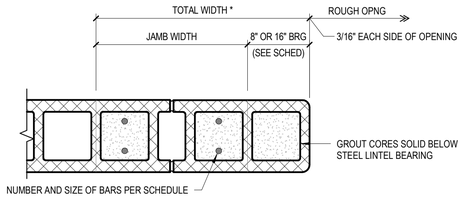




JAMB FOR MASONRY LINTEL



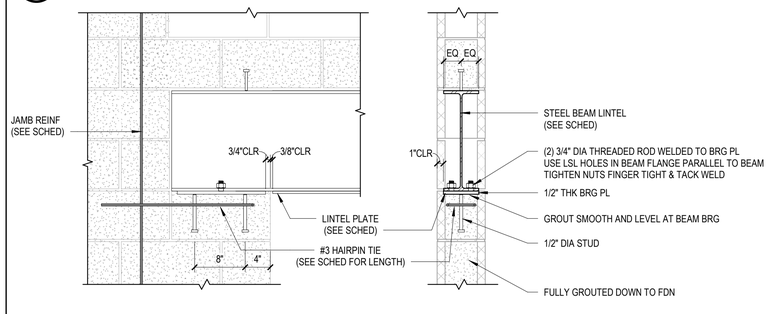
JAMB FOR STEEL LINTEL

NOTES:
1. GROUT ALL REINFORCED CELLS SOLID.
2. CONTINUE REINFORCEMENT TO FULL HEIGHT OF WALL.

* MASONRY CONTROL JOINTS NOT TO BE LOCATED WITHIN THIS DISTANCE.

1 S705 TYPICAL MASONRY WALL REINFORCING AT OPENING

SCALE: NTS

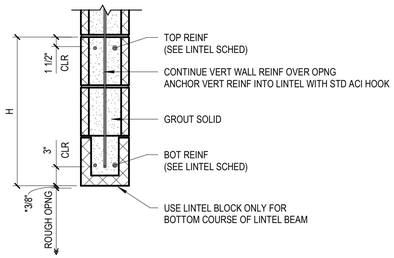


ELEVATION AT BEARING **SECTION A**

NOTES:
1. BEARING IS SHOWN WITH BEARING LENGTH OVER TWO CORES. LINTEL MAY BEAR ON ONE CORE (SEE SCHED).

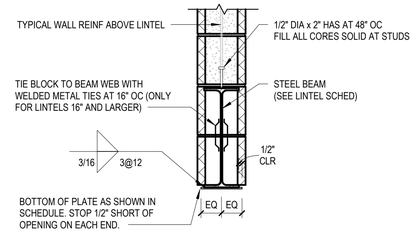
2 S705 MASONRY WALL JAMB DETAIL

SCALE: NTS



NOTES:
1. DETAIL FOR MASONRY LINTELS THAT DO NOT REQ STIRRUP REINF.
2. SEE LINTEL SCHED FOR END BEARING LENGTH. PROVIDE 8" (MIN) END BEARING, UNO.
3. SEE LINTEL SCHED FOR JAMB REINF AT BEARING. PROVIDE (1) #4 BAR (MIN), UNO.

* THE ACTUAL ROUGH OPENING WILL TYPICALLY BE 3/8" LARGER THAN LISTED.



NOTES:
1. CENTER MASONRY LEDGE ON BEAM AT ALL LINTELS. USE LEDGE SIZE AS SHOWN IN SCHEDULE.

3 S705 STEEL LINTEL BEARING

SCALE: NTS

4 S705 MASONRY LINTEL DETAIL

SCALE: NTS

5 S705 STEEL LINTEL DETAIL

SCALE: NTS

LINTEL SCHEDULE

MARK	TYPE	LINTEL	JAMB		REMARKS
			SIZE	REINF PER CORE	
L-1	MASONRY	8"Wx8"D BOND BEAM (1) #5 (BOT)	1 CORE	(1) #5, CENTERED	
L-2	MASONRY	8"Wx16"D BOND BEAM (1) #5 (BOT), (1) #4 TOP	2 CORES	(1) #5, CENTERED	
L-3	MASONRY	8"Wx24"D BOND BEAM (1) #5 (BOT), (1) #4 TOP	2 CORES	(1) #5, CENTERED	
W12x35	STEEL	W12x35	1 CORES	(1) #5, CENTERED	BEAR ON ONE (1) CORE, REINF ONE (1) CORE. USE 3/8" LINTEL PL

MARK	DATE	DESCRIPTION

MALONE PARK
PARK STRUCTURES
CITY OF NEW BERLIN, WI

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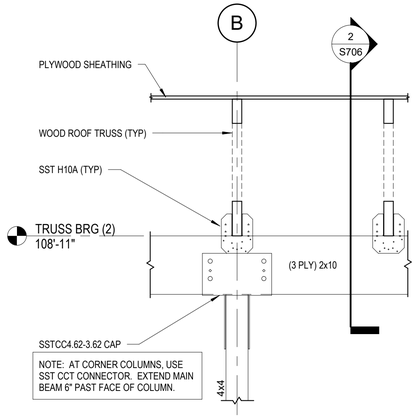
PROJECT No: 24-0389.00

FRAMING DETAILS

S705

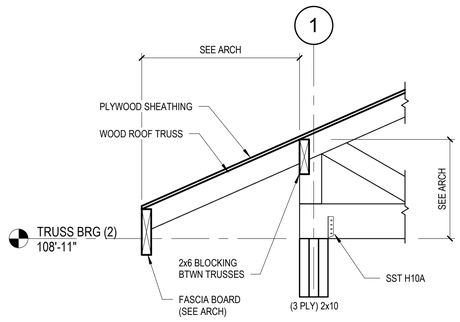
3/19/2025 8:54:36 AM Autodesk Docs://New Berlin - Malone Park/NEW BERLIN MALONE PARK_STRUC_R22_jacobs24LNRN.rvt



BID ALTERNATE NO. 1

1 S706 SECTION AT BEAM

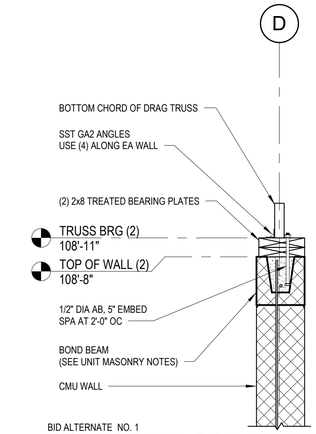
SCALE: 1" = 1'-0"



BID ALTERNATE NO. 1

2 S706 TRUSS BEARING ON BEAM

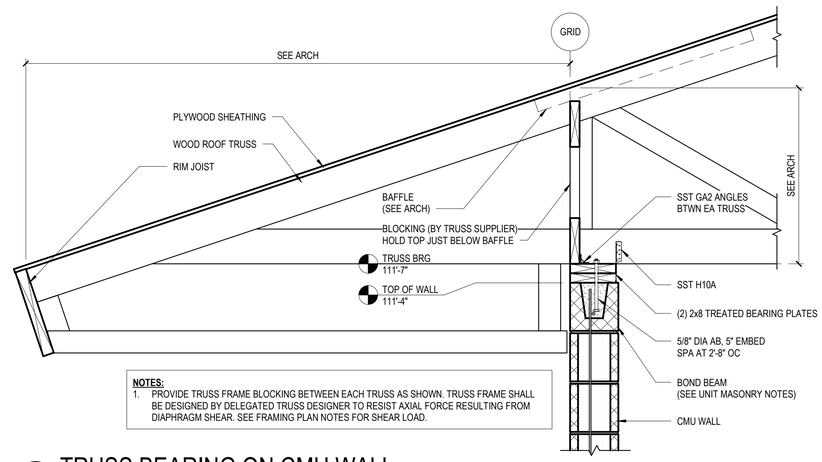
SCALE: 1" = 1'-0"



BID ALTERNATE NO. 1

3 S706 DRAG TRUSS BRG ON CMU WALL

SCALE: 1" = 1'-0"



NOTES:

1. PROVIDE TRUSS FRAME BLOCKING BETWEEN EACH TRUSS AS SHOWN. TRUSS FRAME SHALL BE DESIGNED BY DELEGATED TRUSS DESIGNER TO RESIST AXIAL FORCE RESULTING FROM DIAPHRAGM SHEAR. SEE FRAMING PLAN NOTES FOR SHEAR LOAD.

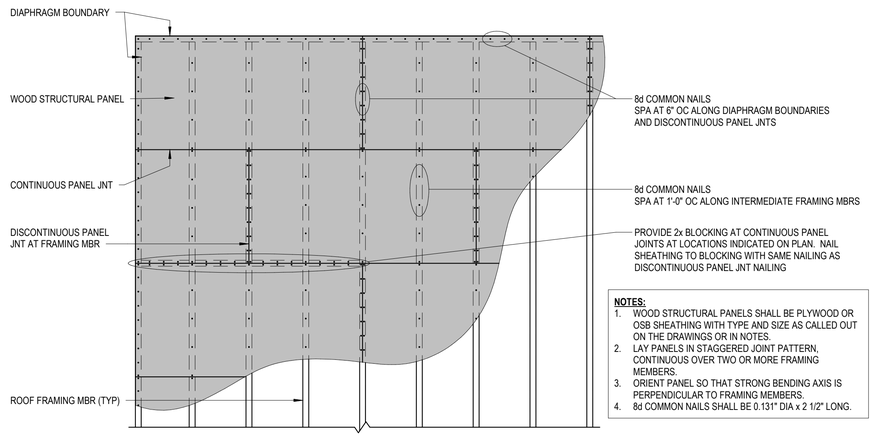
4 S706 TRUSS BEARING ON CMU WALL

SCALE: 1" = 1'-0"

BID ALTERNATE NO. 1

5 S706 TRUSS BRACING ALONG CMU WALL

SCALE: 3/4" = 1'-0"

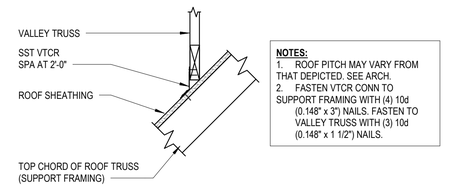


NOTES:

1. WOOD STRUCTURAL PANELS SHALL BE PLYWOOD OR OSB SHEATHING WITH TYPE AND SIZE AS CALLED OUT ON THE DRAWINGS OR IN NOTES.
2. LAY PANELS IN STAGGERED JOINT PATTERN, CONTINUOUS OVER TWO OR MORE FRAMING MEMBERS.
3. ORIENT PANEL SO THAT STRONG BENDING AXIS IS PERPENDICULAR TO FRAMING MEMBERS.
4. 8d COMMON NAILS SHALL BE 0.131" DIA x 2 1/2" LONG.

6 S706 TYPICAL ROOF SHEATHING ATTACHMENT

SCALE: 3/8" = 1'-0"

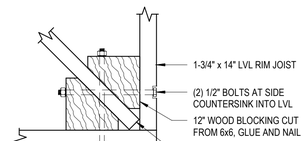


NOTES:

1. ROOF PITCH MAY VARY FROM THAT DEPICTED. SEE ARCH.
2. FASTEN VTCR CONN TO SUPPORT FRAMING WITH (4) 10d (0.148" x 3") NAILS. FASTEN TO VALLEY TRUSS WITH (3) 10d (0.148" x 1 1/2") NAILS.

7 S706 VALLEY TRUSS CONN

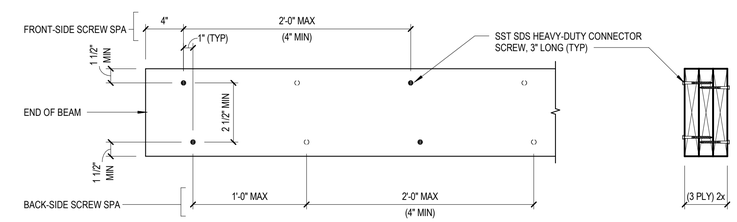
SCALE: 1" = 1'-0"



NOTE: GC SHALL COORDINATE TRUSS PLATES AND BOLT HOLES

8 S706 TYPICAL HIP CONNECTION

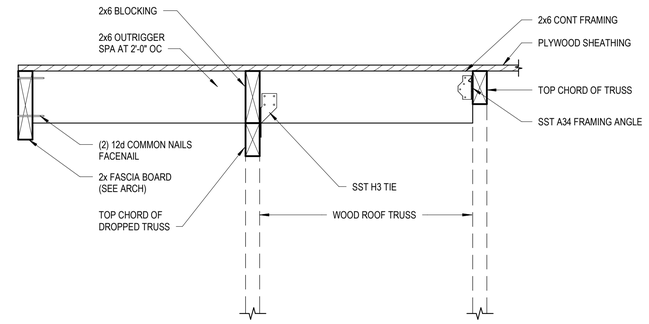
SCALE: 1 1/2" = 1'-0"



NOTE: INDIVIDUAL SCREW LOCATIONS MAY BE ADJUSTED UP TO ONE-HALF OF THE REQUIRED SCREW SPACING TO AVOID CONFLICTS WITH OTHER HARDWARE OR TO AVOID LUMBER DEFECTS. PROVIDE 4" MINIMUM SPACING BETWEEN ADJACENT FASTENERS.

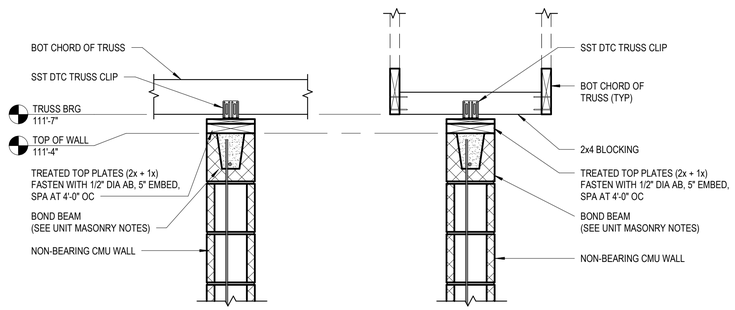
9 S706 TYPICAL MULTI-PLY BEAM FASTENING

SCALE: 1 1/2" = 1'-0"



10 S706 OUTRIGGER FRAMING

SCALE: 1 1/2" = 1'-0"



11 S706 LATERAL SUPPOT AT TOP OF NON-BRG CMU WALL

SCALE: 1" = 1'-0"

MARK	DATE	DESCRIPTION

MALONE PARK

PARK STRUCTURES

CITY OF NEW BERLIN, WI

Eau Claire Office
3433 Oakwood Hills Parkway
Eau Claire, Wisconsin 54701
(715) 834-3161

River Falls Office
215 N. Second Street Suite 204
River Falls, Wisconsin 54022

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03/21/2025

PROJECT No: 24-0389.00

FRAMING DETAILS

S706

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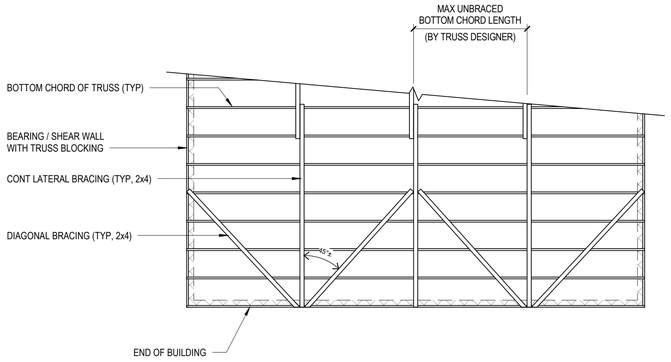
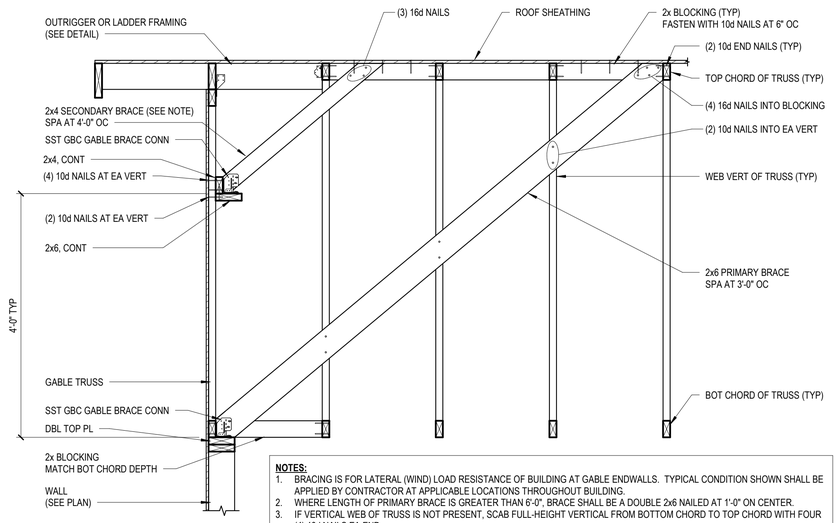


PLAN VIEW

NOTES:
1. BRACING IS PERMANENT BUILDING STABILITY BRACING FOR LATERAL (WIND) LOAD RESISTANCE OF BUILDING. TYPICAL CONDITION SHOWN SHALL BE APPLIED BY CONTRACTOR AT APPLICABLE LOCATIONS THROUGHOUT BUILDING. SPACING OF CONTINUOUS LATERAL BRACING TO BE DETERMINED BY TRUSS DESIGNER BASED ON THE MAXIMUM UNBRACED LENGTH OF THE TRUSS BOTTOM CHORD.
2. BRACING SHALL FORM A BRACED BAY ACROSS WIDTH OF BUILDING BETWEEN BEARING / SHEAR WALLS WITH DIAGONAL BRACING.
3. LOCATE BRACED BAYS AT EACH END OF BUILDING AND AT 20' INTERVALS THROUGHOUT LENGTH OF BUILDING.
4. FASTEN DIAGONAL BRACING AND CONTINUOUS LATERAL BRACING AT EACH TRUSS CHORD WITH TWO (2) 3 1/2" COMMON NAILS.
5. Ssplice CONTINUOUS LATERAL BRACING BY OVERLAPPING TWO TRUSS CHORDS.
6. UTILIZE SIMILAR BRACING AT PIGGYBACK TRUSSES.

1 S707 TYPICAL BOTTOM CHORD TRUSS BRACING

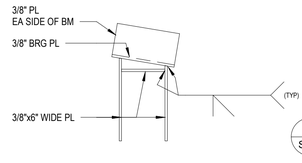
SCALE: 3/16" = 1'-0"



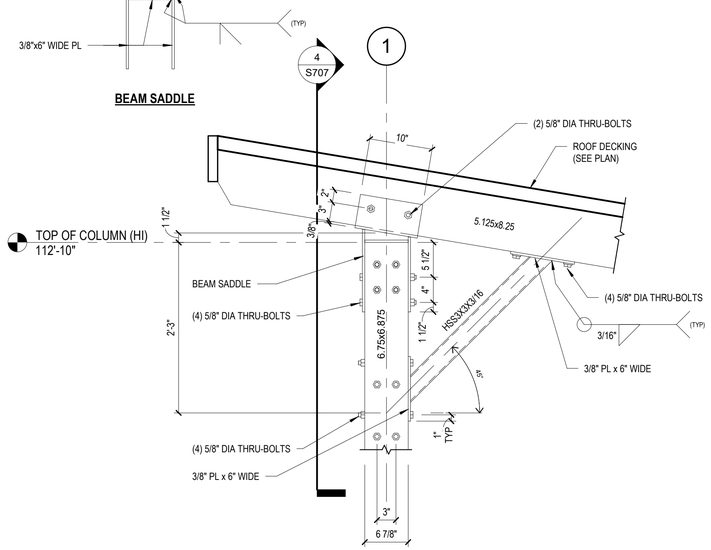
NOTES:
1. BRACING IS FOR LATERAL (WIND) LOAD RESISTANCE OF BUILDING AT GABLE ENDWALLS. TYPICAL CONDITION SHOWN SHALL BE APPLIED BY CONTRACTOR AT APPLICABLE LOCATIONS THROUGHOUT BUILDING.
2. WHERE LENGTH OF PRIMARY BRACE IS GREATER THAN 6'-0", BRACE SHALL BE A DOUBLE 2x6 NAILED AT 1'-0" ON CENTER.
3. IF VERTICAL WEB OF TRUSS IS NOT PRESENT, SCAB FULL-HEIGHT VERTICAL FROM BOTTOM CHORD TO TOP CHORD WITH FOUR (4) 10d NAILS EA END.
4. INSTALL SECONDARY BRACE WHERE TRUSS HEIGHT IS GREATER THAN 6'-0".

2 S707 TYPICAL GABLE ENDWALL BRACING

SCALE: 3/4" = 1'-0"



BEAM SADDLE

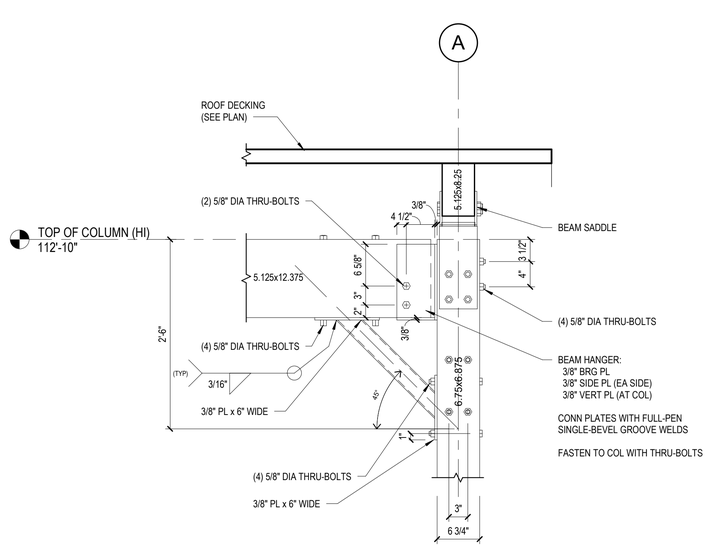


NOTE: THRU-BOLTS SHALL BE ASTM F1554 GRADE 55 THREADED ROD WITH NUTS AND WASHERS.

BID ALTERNATE NO. 2

3 S707 BEAM-COLUMN-BRACE CONNECTION

SCALE: 1" = 1'-0"

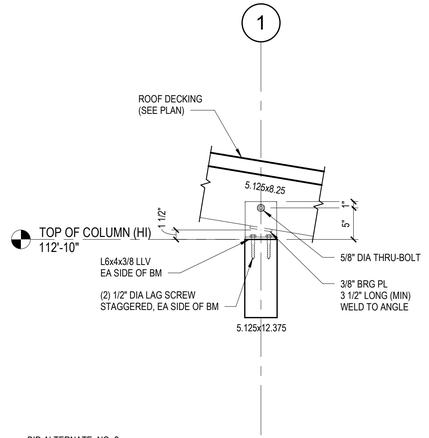


NOTE: THRU-BOLTS SHALL BE ASTM F1554 GRADE 55 THREADED ROD WITH NUTS AND WASHERS.

BID ALTERNATE NO. 2

4 S707 BEAM-COLUMN BRACE CONNECTION

SCALE: 1" = 1'-0"



BID ALTERNATE NO. 2

5 S707 BEAM-BEAM CONNECTION

SCALE: 1" = 1'-0"

MARK	DATE	DESCRIPTION

MALONE PARK

PARK STRUCTURES

CITY OF NEW BERLIN, WI

Eau Claire Office
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03/21/2025

PROJECT No: 24-0389.00

FRAMING DETAILS

S707

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GENERAL MECHANICAL SYMBOLS

- REVISION NUMBER - SHOWN ON PLANS
- POINT WHERE NEW CONNECTS TO EXISTING
- NUMBER OF DETAIL ON SHEET / NUMBER OF SHEET WHERE DETAIL APPEARS
- KEYNOTE
- CONTINUATION SYMBOL
- ROOM NAME AND NUMBER (Room / 1)
- ITEM TO BE DEMOLISHED
- AREA NOT IN CONTRACT
- 2" — PIPE SIZE TAG (DIAMETER)
- ABOVE GROUND PIPING
- 1/8" / 12" SLOPE — PIPE SLOPE TAG
- BELOW GROUND PIPING
- INVERT: -105' - 1" — PIPE INVERT ELEVATION TAG
- (E) — EXISTING PIPE TAG
- PIPING BEING DEMOLISHED

FIRE PROTECTION SYMBOLS

- FP-D — FIRE PROTECTION DRY
- FP-O — FIRE PROTECTION OTHER
- FP-PA — FIRE PROTECTION PRE-ACTION
- FP-W — FIRE PROTECTION WET
- FP-DOM-W — COMBINATION FIRE & DOMESTIC
- UPRIGHT SPRINKLER HEAD
- PENDENT SPRINKLER HEAD
- RECESSED SPRINKLER HEAD
- CONCEALED SPRINKLER HEAD
- DRY SPRINKLER HEAD
- SIDEWALL SPRINKLER HEAD
- EXTENDED COVERAGE SIDEWALL SPRINKLER HEAD
- 48"x18" S/A — DUCTWORK 48" AND GREATER

ABBREVIATIONS

Ø	ROUND	LVR	LOUVER
ABV	ABOVE	LWT	LEAVING WATER TEMPERATURE
AC	AIR CONDITIONING	M/A	MIXED AIR
AD	AREA DRAIN	MAX	MAXIMUM
ADD	ADDENDUM	MBH	ONE THOUSAND BTU PER HOUR
AFF	ABOVE FINISHED FLOOR	MCF	ONE THOUSAND CUBIC FEET
AFUE	ANNUAL FUEL UTILIZATION EFFICIENCY	MD	MOTORIZED DAMPER
ALT	ALTERNATE	MECH	MECHANICAL
AP	ACCESS PANEL	MFR	MANUFACTURER
ARCH	ARCHITECT/ARCHITECTURAL	MIN	MINIMUM
BFF	BELOW FINISHED FLOOR	MISC	MISCELLANEOUS
BLW	BELOW	MTR	MOTOR
BTU	BRITISH THERMAL UNITS	MU/A	MAKE-UP/AIR
BTUH	BRITISH THERMAL UNITS PER HOUR	NC	NOISE CRITERIA
CAP	CAPACITY	NC	NORMALLY CLOSED
CB	CATCH BASIN	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NUMBER
CLG	CEILING	NO	NORMALLY OPEN
CO	CLEAN OUT	NTS	NOT TO SCALE
CW	COLD WATER	O	OXYGEN
D	DEGREE	O/A	OUTSIDE AIR
DB	DRY BULB	ORD	OVERFLOW ROOF DRAIN
DIA	DIAMETER	PD	PRESSURE DROP
DN	DOWN	PIV	POST INDICATOR VALVE
DW	DISTILLED WATER	PLBG	PLUMBING
EA	EACH	PRESS	PRESSURE
EAT	ENTERING AIR TEMPERATURE	PRV	PRESSURE REDUCING VALVE
ELEC	ELECTRICAL	PSI	POUNDS PER SQUARE INCH
EQUIP	EQUIPMENT	PSIG	POUNDS PER SQUARE INCH GAUGE
EWC	ELECTRIC WATER COOLER	PWR	POWER
EWT	ENTERING WATER TEMPERATURE	R	DUCT RISER
E/A	EXHAUST AIR	R/A	RETURN AIR
EXIST	EXISTING	RCP	RADIANT CEILING PANEL
F	DEGREES FAHRENHEIT	RD	ROOF DRAIN
FCO	FLOOR CLEAN OUT	REC	RECESSED
FD	FLOOR DRAIN	RED	REDUCER
FDC	FIRE DEPARTMENT CONNECTION	RH	RELATIVE HUMIDITY
FL	FLOOR	RL/A	RELIEF AIR
FM	FORCED MAIN	RM	ROOM
FO	FUEL OIL	RPM	REVOLUTIONS PER MINUTE
FOV	FUEL OIL VENT	RW	RAIN WATER
FOR	FUEL OIL RETURN	SF	SQUARE FOOT
FOS	FUEL OIL SUPPLY	S/A	SUPPLY AIR
FPM	FEET PER MINUTE	SAN	SANITARY
FS	FLOOR SINK	SF	SQUARE FOOT
FT	FOOT/FEET	SD	SMOKE DAMPER
FTR	FIN TUBE RADIATION	SM	SURFACE MOUNT
GF	GAS-FIRED	SP	STANDPIPE
GC	GENERAL CONTRACTOR	SP	STATIC PRESSURE
GPM	GALLONS PER MINUTE	STM	STEAM
GW	GREASE WASTE	T	THERMOSTAT
HB	HOSE BIB	TD	TEMPERATURE DROP
HP	HORSE POWER	TDR	TRENCH DRAIN
HTG	HEATING	TEMP	TEMPERATURE
HTR	HEATER	TYP	TYPICAL
HW	HOT WATER	UG	UNDERGROUND
HYD	HYDRANT	VAC	VACUUM
ID	INDIRECT	V	VENT
IN	INCH	VAV	VARIABLE AIR VOLUME
INV	INVERT	VENT	VENTILATION
LB	POUND	VTR	VENT THROUGH ROOF
LB/HR	POUNDS PER HOUR	W	WASTE
LAT	LEAVING AIR TEMPERATURE	WB	WET BULB
LP	LOW PRESSURE	WCO	WALL CLEAN OUT
LPG	LIQUEFIED PETROLEUM GAS	WH	WALL HYDRANT

PLUMBING AND PIPING SYMBOLS

- CHWR — CHILLED WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CD — CONDENSATE DRAINAGE
- CWR — CONDENSER WATER RETURN
- CWS — CONDENSER WATER SUPPLY
- GWR — GEOTHERMAL WATER RETURN
- GWS — GEOTHERMAL WATER SUPPLY
- HWR — HEATING WATER RETURN
- HWS — HEATING WATER SUPPLY
- G — NATURAL GAS
- PG — PROPANE GAS
- REF-L — REFRIGERANT-LIQUID
- REF-S — REFRIGERANT-SUCTION
- REF-HG — REFRIGERANT-HOT GAS
- STM — STEAM
- CDR — CONDENSATE RETURN
- CWV — COMBINATION WASTE & VENT
- CA — COMPRESSED AIR
- CW — DOMESTIC COLD WATER
- H-CW — HARD COLD WATER
- S-CW — SOFT COLD WATER
- F-CW — FILTERED COLD WATER
- RO — REVERSE OSMOSIS WATER
- HW — HOT WATER
- HW 140° — HOT WATER 140°
- HW-R — HOT WATER RECIRCULATION
- HW-R 140° — HOT WATER RECIRCULATION 140°
- GV — GREASE VENT
- GW — GREASE WASTE
- IW — INDIRECT WASTE
- OV — OIL VENT
- OW — OIL WASTE
- PD — PUMP DISCHARGE
- V — SANITARY VENT
- SS — SANITARY SEWER
- FM — FORCED MAIN
- SD — STORM DRAINAGE
- OSD — OVERFLOW STORM DRAINAGE

PIPE DROP, PIPE RISE, PIPE TEE, CAP, 4" x 2" REDUCING 45 DEGREE TEE, CO, 45 DEGREE TEE

PIPE ACCESSORY TAGS

- 4" FCO — CLEANOUT
- 2" CHECK — SWING CHECK
- 2" CHECK — CHECK VALVE
- (ALTERNATE CHECK VALVE SYMBOL)
- 2" BALANCE — BALANCING VALVE
- 2" CIRC — CIRCUIT SETTER
- 1" RECIRC — RECIRC. VALVE
- 2" GATE — GATE VALVE
- 2" QUICK — QUICK OPENING
- 2" SHUTOFF — BALL VALVE
- 2" STRAINER
- 1/2" PRIMER — TRAP PRIMER
- 2" M-CNTRL — ELEC. CONTROL
- TMV-XX — THERMOSTATIC MIXING
- 1/2" TMV — EMERG. THERMOSTATIC
- 2" PRV — PRESS REDUCING
- 2" DOM. WM — DOM. WATER METER
- 1 1/2" DOM. WM — IRRIGATION WATER METER
- 1" GAS-CNTRL — EMERG. GAS SHUTOFF
- 1" PLUG — PLUG VALVE
- 1" GAS COCK — GAS SHUTOFF COCK
- 1" REG — PRESS REGULATOR
- DOUBLE CHECK VALVE
- REDUCED PRESSURE ZONE

PLUMBING FIXTURE TAGS

FLOOR DRAIN (4" FD-1) — TYPE (SEE SCHEDULE) — DRAIN SIZE — (4" AD-2) AREA DRAIN NO TRAP

TRAP PRIMER (4" FD-3P) — "P" - INDICATES PRIMER CONNECTION — (4" SD-12) FLOW CONTROL DRAIN

DEEP TRAP (4" FD-3) — 8 DFU — FIXTURE UNITS — (4" SD-15) STORM DRAIN

INTEGRAL CLEANOUT

HUB DRAIN (4" FD-14) — ROOF AREA SERVED BY DRAIN — (6" SD-1) 4000 SF — COMBINATION DRAINS

FLOOR SINK (4" FS-4) — RISER VIEW REFERENCE TAG — X/PXXX — TYPICAL PLUMBING RISER

EQUIPMENT ABBREVIATIONS

AC	AIR CONDITIONING UNIT	ET	EXPANSION TANK
ACCU	AIR COOLING CONDENSING UNIT	EWH	ELECTRIC WATER HEATER
AHU	AIR HANDLING UNIT	FCU	FAN COIL UNIT
AS	AIR SEPARATOR	FP	FIRE PUMP
B	BOILER	GI	GREASE INTERCEPTOR
CH	CHILLER	GRV	GRAVITY ROOF VENTILATOR
CT	COOLING TOWER	HWP	HEATING WATER PUMP
CUH	CABINET UNIT HEATER	HRU	HEAT RECOVERY UNIT
CHWP	CHILLED WATER PUMP	PRV	POWER ROOF VENTILATOR
DBP	DOMESTIC WATER BOOSTER PUMP	RE	RETURN/EXHAUST FAN
DC	DUCT MOUNTED COIL	RTU	ROOFTOP UNIT
DCP	DOMESTIC WATER CIRCULATING PUMP	SP	SUMP PUMP
EF	EXHAUST FAN	UH	UNIT HEATER
EDC	ELECTRIC DUCT COIL	WH	WATER HEATER

HVAC SYMBOLS

- 18"x12" — SQUARE DUCT SIZE TAG (WIDTH x HEIGHT)
- 18"/12" — OVAL DUCT SIZE TAG (WIDTH / HEIGHT)
- 18"Ø — ROUND DUCT SIZE TAG (DIAMETER)
- (E) — EXISTING DUCT TAG
- DUCT BEING DEMOLISHED
- 18"x18" S/A — SUPPLY AIR
- 18"x18" S-O/A — CONDITIONED OUTSIDE AIR
- 18"x18" O/A — OUTSIDE AIR
- 18"x18" R/A — RETURN AIR
- 18"x18" T/A — TRANSFER AIR
- 18"x18" E/A — EXHAUST AIR
- 18"x18" L/A — RELIEF AIR
- 18"x18" GE/A — GREASE EXHAUST AIR
- 18"x18" CE/A — CONDENSATE EXHAUST AIR
- 18"x18" SE/A — SMOKE EXHAUST AIR
- 6"Ø FLUE — EXHAUST GAS FLUE
- 6"Ø C/A — COMBUSTION AIR
- DROP — RECTANGULAR SUPPLY/OUTSIDE AIR DUCT RISE
- DROP — ROUND SUPPLY/OUTSIDE AIR DUCT RISE
- DROP — RECTANGULAR RETURN/TRANSFER AIR DUCT RISE
- DROP — ROUND RETURN/TRANSFER AIR DUCT RISE
- DROP — RECTANGULAR EXHAUST/RELIEF AIR DUCT RISE
- DROP — ROUND EXHAUST/RELIEF AIR DUCT RISE

GRILLES, REGISTERS & DIFFUSERS TAG

TYPE (SEE SCHEDULE) — SD1 | 400 — CFM; 10"Ø | 24x24 — NECK SIZE / MODULE SIZE; 22 | H-5/7/14 — THROW-150FPM/ 100FPM/ 50FPM; THROW PATTERN; MAX NC RATING

3-CONE DIFFUSER

PERFORATED DIFFUSER WITH DEFLECTORS

ROUND DIFFUSER WITH ADJUSTABLE PATTERNS — SD9 | 400 — 12"Ø | ---

LOUVERED DOUBLE DEFLECTION GRILLE — SG5 | 500 — 12"x10"

LINEAR BAR GRILLE — SLB3 | 400 — 48"x2 1/2"

RG2 | 500 — 12"x10" | 24x24 — 18 — EGGCRATE RETURN GRILLE

RG11 | 500 — 12"x10" | 24x12 — LOUVERED GRILLE

LINEAR DIFFUSER TAG

TYPE (SEE SCHEDULE) — LSD1 | 200 — CFM; [1]4' - 0" | 9"/5" — NUMBER OF SLOTS / ACTIVE SLOT LENGTH (PLENUM LENGTH) / NECK SIZE; 8' - 0"AFF — ELEVATION (CENTER OF FACE)

LSD1 | 200 — [1]4' - 0" | 9"/5" — SECTION TOTAL TRACK LENGTH — 18' - 0"

LINEAR SLOT DIFFUSER — LSD1 | 200 — [1]4' - 0" | 9"/5"

MECHANICAL EQUIPMENT TAGS

HEATING COIL FLOW — VAV-XX — Htg: 3.7 GPM VAV BOX

BOTTOM OF EQUIPMENT ELEVATION — VAV-XX — 10' - 0"

EXISTING EQUIPMENT TO REMAIN — (E)VAV-XX

EXISTING RELOCATED EQUIPMENT — (R)VAV-XX

EQUIPMENT BY OTHERS (REFER TO OTHER DISCIPLINE FOR ADDITIONAL INFORMATION) — VAV-XX

RTU-XX — OPERATING WEIGHT NOT INCLUDING CURB — 590 lb

RTU-XX — 4.0 ton — NOMINAL COOLING CAPACITY — ROOFTOP UNIT

RTU-XX — FUEL INPUT GAS PIPE FLOW — 115000 Btu/h 115 CFH

DAMPER TAGS

- SMOKE DAMPER
- FIRE DAMPER
- COMB. FIRE/ SMOKE DAMPER
- MANUAL BALANCING DAMPER
- MOTORIZED DAMPER
- BACKDRAFT DAMPER

DATA DEVICE TAGS

EQUIPMENT ID — RTU-XX

- TEMPERATURE SENSOR (TS) — SYMBOL
- HUMIDITY SENSOR (HS) — CO2 — CO2 DETECTOR
- TEMP & CO2 SENSOR (TC) — CO — CO DETECTOR
- TEMP & HUMIDITY SENSOR (TH) — NOx — NOx DETECTOR
- THERMOSTAT (T)
- HUMIDISTAT (H)

PANEL NAME — HVAC-CP-X — BMS CONTROL PANEL

PROJECT GENERAL NOTES

A. COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUIT, LIGHTS, CABLE TRAY, STRUCTURE, AND EQUIPMENT TO PREVENT CONFLICTS.

B. FINAL PRODUCT SHALL BE A COMPLETE AND FUNCTIONING SYSTEM, AND SHALL CONFORM TO ALL REQUIREMENTS OF APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING BUT NOT LIMITED TO THE INTERNATIONAL BUILDING CODE AND INTERNATIONAL MECHANICAL CODE.

C. LOCATE EQUIPMENT REQUIRING ACCESS 2'-0" MAXIMUM ABOVE CEILING.

D. ALL ROOF MOUNTED EQUIPMENT SHALL BE A MINIMUM 10'-0" FROM EDGE OF ROOF.

E. LOCATE DUCTWORK, PIPING AND MECHANICAL EQUIPMENT AWAY FROM THE SPACE ABOVE ELECTRICAL PANELS. TRANSFORMERS AND OTHER ELECTRICAL EQUIPMENT.

F. PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES AND DUCTS THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.

G. MAINTAIN CLEAR ACCESS TO SERVICE EQUIPMENT AND OTHER ACCESSORIES REQUIRING SERVICE, VISUAL INSPECTION OR HAND OPERATION. WHERE INDICATED OR REQUIRED, PROVIDE ACCESS PANELS OF THE TYPE SELECTED TO SUIT MATERIALS IN WHICH INSTALLED.

H. ADJUST PIPING AND DUCTWORK SIZES TO PROPERLY CONNECT TO MECHANICAL EQUIPMENT.

I. PIPE SIZES SHOWN SHALL BE CONTINUED IN THE DIRECTION OF FLOW UNTIL ANOTHER SIZE IS SHOWN.

J. FOR DETAILS, EQUIPMENT CONNECTIONS, AND PIPE SIZES NOT SHOWN ON THE SEGMENTS, REFER TO DETAILS, SCHEDULES, AND SPECIFICATIONS.

K. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, AT A LEVEL OF QUALITY AND WORKMANSHIP CONSISTENT WITH THE SPECIFICATIONS.

L. LOCATIONS OF PIPING, DUCTWORK AND EQUIPMENT AS INDICATED ON THE DRAWING, ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD. WORK SHALL BE COORDINATED WITH ALL OTHER TRADES TO AVOID INTERFERENCE IN THE FIELD.

M. INSTALL EXPOSED PIPING AND DUCTWORK AS HIGH AS PRACTICAL IN ROOMS WITHOUT CEILINGS.

N. THE CONTRACTOR'S WORK SCHEDULE SHALL BE SUBMITTED TO AND APPROVED BY THE OWNER.

O. PRIOR TO STARTING WORK, SUBMIT SHOP DRAWINGS FOR ALL MECHANICAL EQUIPMENT, PLUMBING FIXTURES, AND DIFFUSERS.

P. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND SHALL ARRANGE FOR ALL INSPECTIONS AS REQUIRED.

Q. PROVIDE ONE YEAR WARRANTY FOR ALL WORKMANSHIP AND MATERIALS AFTER THE DATE OF FINAL ACCEPTANCE.

FIRE PROTECTION GENERAL NOTES

A. PROVIDE A COMPLETE DRY TYPE FIRE PROTECTION SYSTEM AS REQUIRED TO ACCOMMODATE THE FLOOR PLAN AND CEILING TYPES INCLUDING DRY PIPE VALVE, MAINS, BRANCHES, HEADS, VALVES, AND ACCESSORIES AS REQUIRED. THE SYSTEM SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS OF THE STATE BUILDING CODE, LOCAL FIRE DEPARTMENT, AND ALL FEDERAL, STATE, AND LOCAL AUTHORITIES, NFPA, AND FACTORY MUTUAL.

B. THE SPRINKLER SYSTEM SHALL BE DESIGNED BASED UPON ACTUAL WATER FLOW TEST DATA OBTAINED AT OR NEAR THE JOB SITE.

C. REFER TO REFLECTED CEILING PLANS FOR ADDITIONAL INFORMATION REGARDING SPRINKLER HEAD LOCATION AND PIPE, UNLESS NOTED OTHERWISE.

D. DIVISION 21 CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR PROPER INSTALLATION OF THE FIRE PROTECTION SYSTEMS ALARM DEVICES INVOLVED WITH FIRE SPRINKLER SYSTEM.

E. ALL SPRINKLER SYSTEM PIPING SHALL BE CONCEALED ABOVE THE SUSPENDED CEILING SYSTEM, UNLESS NOTED OTHERWISE. WRITTEN AUTHORIZATION SHALL BE OBTAINED FROM THE ARCHITECT PRIOR TO EXPOSING ANY PIPING IN ANY ROOM WHICH HAS A SUSPENDED CEILING.

F. THIS CONTRACTOR SHALL PROVIDE ALL ADDITIONAL SPRINKLER HEADS AS REQUIRED TO ENSURE AN APPROVED FIRE PROTECTION SYSTEM AT NO ADDITIONAL COST TO THE OWNER.

G. AUXILIARY DRAINS SHALL BE EXPOSED WITH 1" DRAIN VALVES. WHEN 5 OR MORE GALLONS ARE TRAPPED, THIS CONTRACTOR SHALL PROVIDE FIXED PIPING TO AN ADEQUATELY SIZED RECEPTOR WHICH IS CAPABLE OF ACCEPTING THE FULL FLOW OF THE DRAIN. WHEN LESS THAN 5 GALLONS ARE TRAPPED, A HOSE BIB SHALL BE PROVIDED AT THE DRAIN VALVE.

H. AUXILIARY DRAINS SHALL NOT BE LOCATED ABOVE PLASTER OR GYPSUM BOARD CEILING SYSTEMS. ONLY BY A SPECIFIC WRITTEN INSTRUCTION FROM THE ENGINEER WILL A VARIANCE BE PROVIDED.

I. AN INSPECTOR'S TEST CONNECTION SHALL BE PROVIDED FOR EACH FIRE SPRINKLER ZONE. THIS CONTRACTOR SHALL PROVIDE FIXED PIPING FROM THE TEST CONNECTION TO AN ADEQUATELY SIZED RECEPTOR WHICH IS CAPABLE OF ACCEPTING THE FULL FLOW OF THE TEST. EXTERIOR DISCHARGE OF THE TEST CONNECTION SHALL BE PERMITTED ONLY BY SPECIFIC WRITTEN INSTRUCTION FROM THE ENGINEER.

J. SHOW ALL ROOM NUMBERS ON SHOP DRAWING PLANS.

K. ROUTE SPRINKLER PIPING SUCH THAT IT DOES NOT RUN ABOVE ELECTRICAL PANELS, SWITCHGEAR, OR SIMILAR EQUIPMENT. SPRINKLER MAINS SHALL NOT RUN THROUGH ELECTRICAL OR COMMUNICATION ROOMS. SPRINKLER HEADS IN THESE ROOMS SHALL BE SERVED BY A DEDICATED BRANCH LINE FOR EACH ROOM.

L. THIS DRAWING INDICATES A GENERAL PIPING ARRANGEMENT AND SUGGESTED SIZING ONLY. THIS CONTRACTOR SHALL DETERMINE THE ACTUAL PIPE SIZING REQUIRED AND COORDINATE WORK WITH ALL OTHER TRADES TO AVOID CONFLICTS.

M. THIS CONTRACTOR SHALL PREPARE HYDRAULIC CALCULATIONS BASED UPON THE CONFIGURATION OF THE ACTUAL SYSTEM DESIGN AS SHOWN ON THIS CONTRACTOR'S SHOP DRAWINGS.

N. COORDINATE INSTALLATION OF PIPING, DUCTWORK, CONDUIT, LIGHTS, CABLE TRAY, STRUCTURE, AND EQUIPMENT TO PREVENT CONFLICTS.

O. PROVIDE SLEEVES AND/OR OPENINGS TO RUN PIPES THROUGH FOUNDATIONS, FLOORS, WALLS, AND ROOF.

HVAC GENERAL NOTES

A. CONTRACTOR SHALL LOCATE THERMOSTATS AND TEMPERATURE SENSORS AT 5'-0" AFF, A MINIMUM OF 8" FROM LIGHT SWITCH.

B. REFER TO HVAC DRAWINGS FOR THERMOSTAT AND TEMPERATURE SENSOR LOCATIONS.

C. CONDENSATE DRAINS SHALL BE SUPPLIED FOR ALL COOLING EQUIPMENT. CONTRACTOR SHALL ENSURE PROPER INSTALLATION AND DRAINAGE AS REQUIRED BY FEDERAL, STATE, AND LOCAL CODES. CONDENSATE PIPING SHALL BE TYPE "L" COPPER.

D. ALL SUPPLY, RETURN, AND EXHAUST DUCTWORK SHALL BE RATED FOR PRESSURE CLASS OF 2" W.G. UNLESS NOTED OTHERWISE.

E. COORDINATE THE EXACT LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND GRILLES WITH NEW AND EXISTING LIGHTING.

F. PROVIDE DIFFUSERS AND REGISTERS WITH 4-WAY BLOW PATTERN UNLESS OTHERWISE NOTED.

G. PROVIDE A 4" HOUSEKEEPING PAD FOR EACH PIECE OF MECHANICAL EQUIPMENT. COORDINATE SIZES WITH MECHANICAL EQUIPMENT SELECTED.

H. THIS CONTRACTOR SHALL BE REQUIRED TO REPLACE FILTERS ON HVAC EQUIPMENT AFTER ALL DUST PRODUCING CONSTRUCTION HAS BEEN COMPLETED AND PRIOR TO THE FINAL PUNCH.

I. IN HIGH-HUMIDITY AREAS, INCLUDING SHOWER ROOMS, ALL DUCTWORK SHALL BE CONSTRUCTED OF ALUMINUM.

PLUMBING GENERAL NOTES

A. PITCH UNDERFLOOR SANITARY WASTE PIPING AT 1/4" PER FOOT, UNLESS NOTED OTHERWISE.

B. FIELD VERIFY LOCATION AND INVERTS OF SITE UTILITIES PRIOR TO INSTALLATION.

C. ROUTE DOMESTIC WATER AND SANITARY SEWER SERVICES TO SITE UTILITIES 5'-0" FROM BUILDING UNLESS NOTED OTHERWISE. REFER TO CIVIL PLANS.

D. WASTE AND VENT PIPING BELOW FLOOR AND THROUGH FLOOR SHALL BE 2" MINIMUM.

E. PROVIDE CLEANOUT IN ACCESSIBLE LOCATION AT THE BASE OF ALL PLUMBING RISERS.

MECHANICAL SHEET INDEX

M000	MECHANICAL TITLE SHEET
F101	CONCESSION BUILDING FIRE PROTECTION PLAN
M101	CONCESSION BUILDING HVAC PLAN
M201	RESTROOM PAVILION HVAC PLAN - BID ALTERNATE 1
P100	CONCESSION BUILDING UNDERFLOOR PLUMBING PLAN
P101	CONCESSION BUILDING ABOVE FLOOR PLUMBING PLAN
P201	RESTROOM PAVILION PLUMBING PLANS - BID ALTERNATE 1
P601	PLUMBING DETAILS & SCHEDULES
P901	RISER DIAGRAMS

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Date

Revision

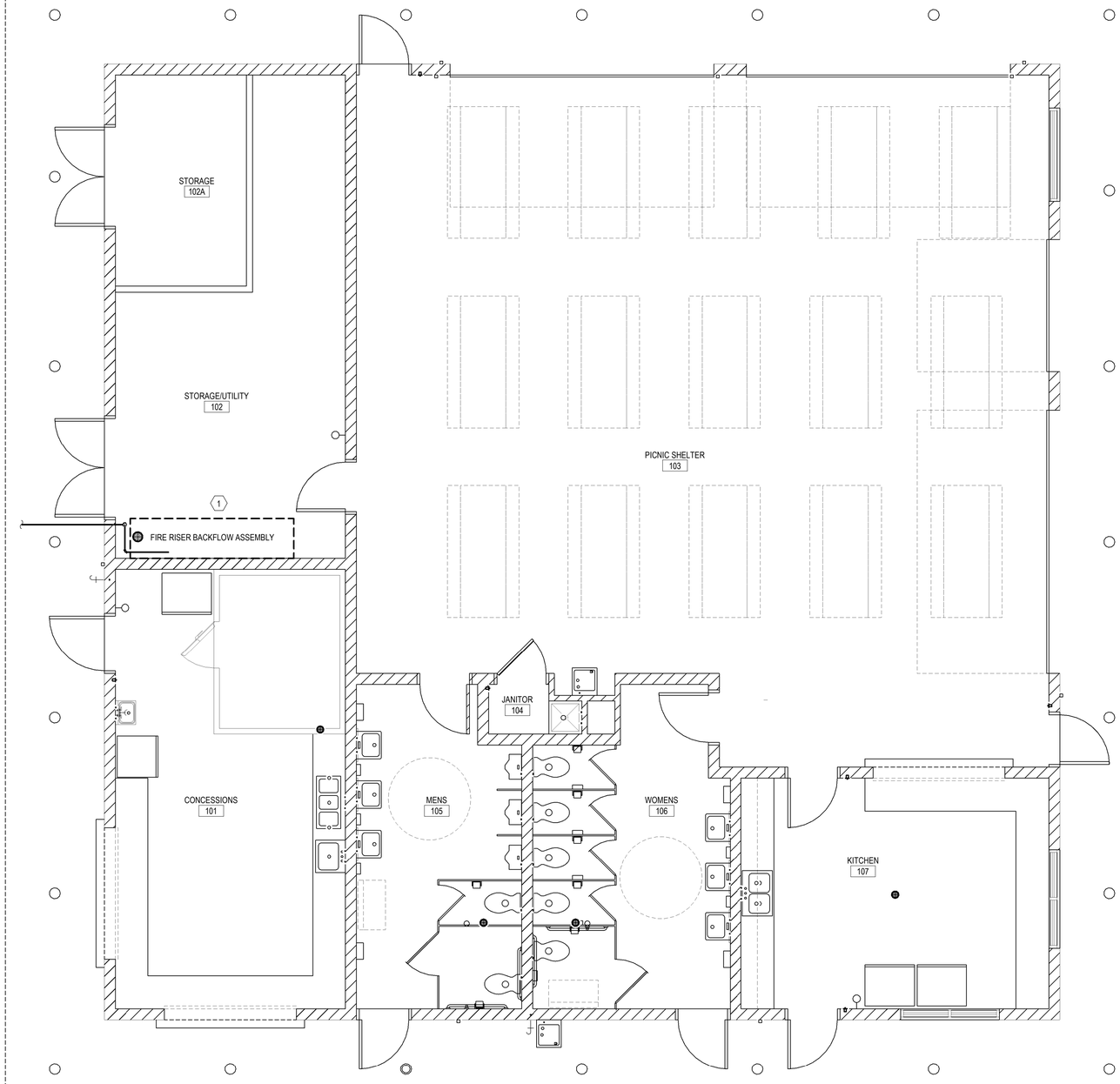
MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

Drawn By: PAS
Checked By: LAO
Date: 03/21/2025
Project No: 24-0389

Sheet Number

M000



1 F101 CONCESSION BUILDING FIRE PROTECTION PLAN
1/4" = 1'-0"

AUTOMATIC SPRINKLER SYSTEM DESIGN CRITERIA

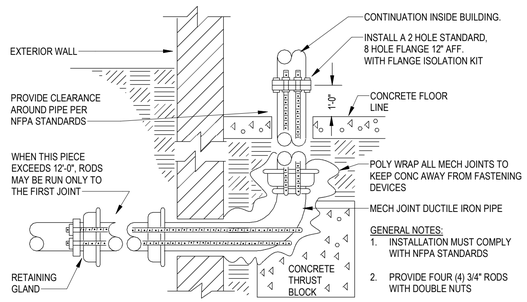
SYMBOL	OCCUPANCY HAZARD CLASSIFICATION	DESIGN DENSITY (GPM/SF)	DESIGN AREA
LH	LIGHT HAZARD OCCUPANCY	0.10	1500 SF
OH1	ORDINARY HAZARD, GROUP 1 OCCUPANCY	0.15	1500 SF
OH2	ORDINARY HAZARD, GROUP 2 OCCUPANCY	0.20	1500 SF

OCCUPANCY HAZARD CLASSIFICATION SCHEDULE...

LOCATION NO.	LOCATION NAME	AREA	OCCUPANCY HAZARD CLASSIFICATION SYMBOL
Level 1			
101	CONCESSIONS	373 SF	OH1
102	STORAGE/UTILITY	301 SF	OH1
102A	STORAGE	32 SF	OH1
103	PICNIC SHELTER	1644 SF	LH
104	JANITOR	11 SF	OH1
105	MENS	187 SF	LH
106	WOMENS	209 SF	LH
107	KITCHEN	261 SF	LH
Grand total: 8		3019 SF	

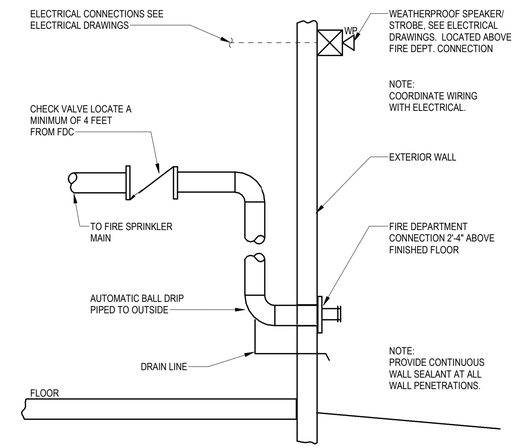
KEYNOTES

1 HEAT TRACE SHALL BE PROVIDED ON ABOVE PIPING UPSTREAM OF DRY PIPE VALVE. PROVIDE ON PIPING PRIOR TO INSTALLATION OF INSULATION. HEAT TRACE SHALL BE CHROMOLAX, OR EQUAL, SRL8. REFER TO ELECTRICAL PLANS FOR POWER INFORMATION.

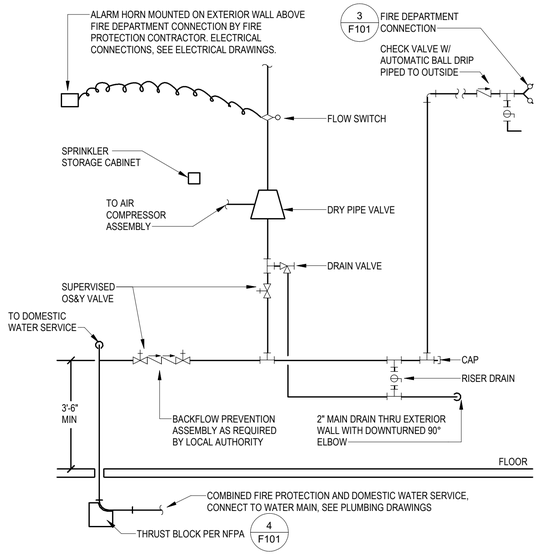


NOTE: ACCEPTABLE ALTERNATIVE TO MECHANICAL JOINTS AND FITTINGS FOR LEAD-IN PIPING IS STAINLESS STEEL, SINGLE PIECE 90 DEGREE FITTING AS DESCRIBED IN SPECIFICATION.

4 F101 WATER SERVICE LINE EXTENSION DETAIL
NOT TO SCALE



3 F101 FIRE DEPARTMENT CONNECTION DETAIL
NOT TO SCALE



2 F101 FIRE PROTECTION ASSEMBLY DETAIL
NOT TO SCALE

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MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

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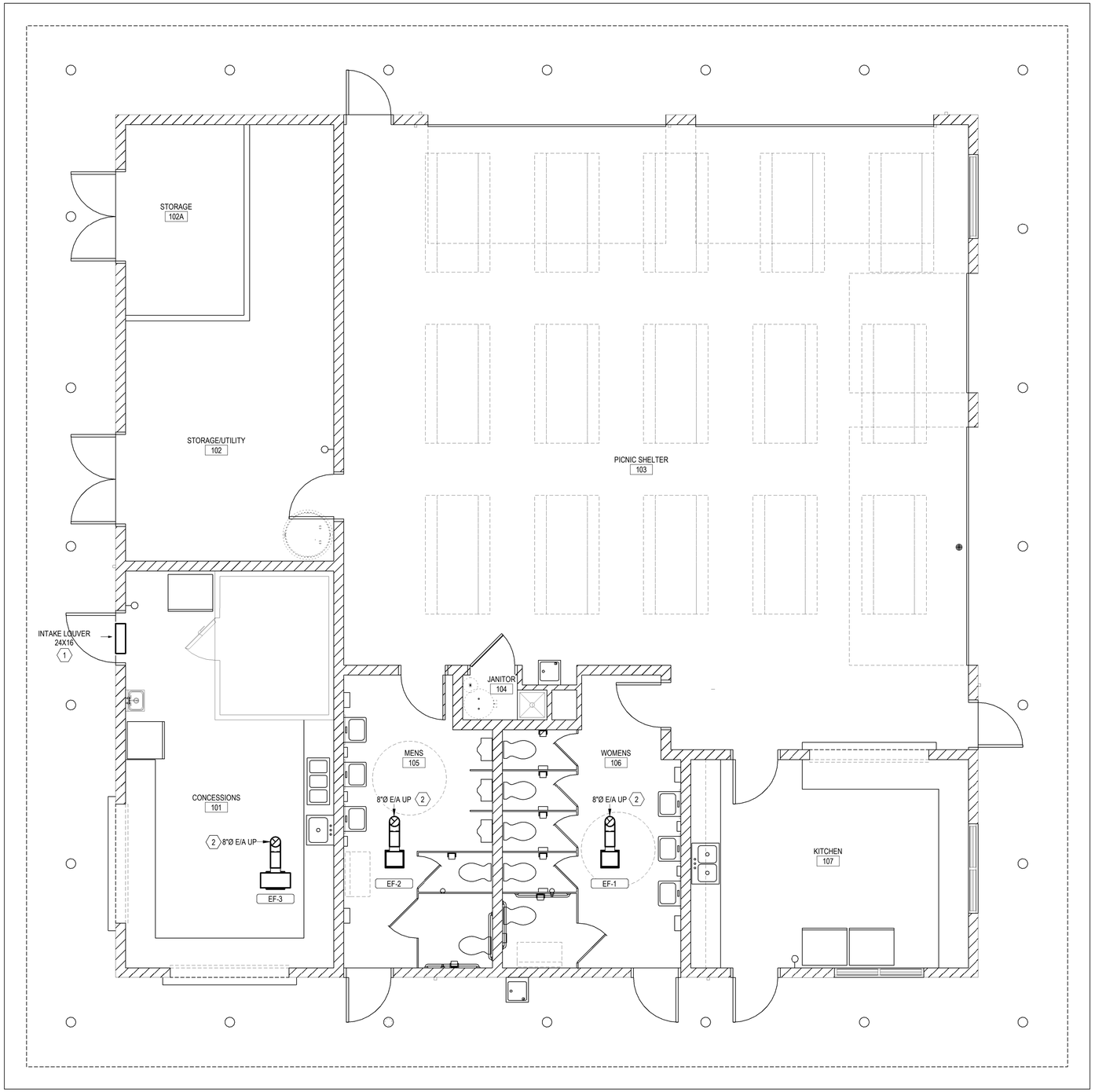
F101

EXHAUST FAN SCHEDULE

ID	LOCATION NAME	NO.	MANUFACTURER	MODEL NO.	TYPE	ARRANGEMENT	CONNECTED AIRFLOW	FAN DESIGN AIRFLOW	FAN MIN AIRFLOW	FAN ESP	FAN RPM	FAN DRIVE TYPE	MOTOR POWER	MOTOR RPM	MOTOR ECM	UNIT WEIGHT	VOLT	PH	INTERLOCK ID	REMARKS
EF-1	WOMENS	106	GREENHECK	CSP-A390-VG	CEILING	ROUND OUTLET	250 CFM	250 CFM	0 CFM	0.25 in-wg	1049	DIRECT	0.05 hp	940	Yes	25 lb	120 V	1		PROVIDE WITH SPEED CONTROL, ROOF CAP, AND OCCUPANCY SENSOR.
EF-2	MENS	105	GREENHECK	CSP-A390-VG	CEILING	ROUND OUTLET	250 CFM	250 CFM	0 CFM	0.25 in-wg	1049	DIRECT	0.05 hp	940	Yes	25 lb	120 V	1		PROVIDE WITH SPEED CONTROL, ROOF CAP, AND OCCUPANCY SENSOR.
EF-3	CONCESSIONS	101	GREENHECK	CSP-A700-VG	CEILING	ROUND OUTLET	400 CFM	400 CFM	0 CFM	0.25 in-wg	858	DIRECT	0.06 hp	940	Yes	40 lb	120 V	1	INTAKE LOUVER	PROVIDE WITH SPEED CONTROL, ROOF CAP, AND REVERSE ACTING THERMOSTAT CONTROL.



1 M101 CONCESSION BUILDING HVAC FLOOR PLAN
1/4" = 1'-0"

HVAC SHEET NOTES

A CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A COMPLETE AND WORKING SYSTEM.
B INSTALL, SUPPORT, & BRACE NEW DUCTWORK AND ACCESSORIES PER SMACNA GUIDELINES.
C DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. CONTRACTOR SHALL MAKE ALLOWANCE FOR ANY INTERIOR LINING, INSULATION, ETC.
D ALL NEW DUCT ELBOWS SHALL BE RADIUS TYPE. WHERE NECESSARY, CONTRACTOR MAY SUBSTITUTE MITERED ELBOWS WITH TURNING VANES.
E PROVIDE FLAT BLADE MANUAL VOLUME DAMPERS AT ALL TERMINAL DUCT BRANCHES AND AS INDICATED.
F INSTALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. ROOFTOP EQUIPMENT SHALL BE LOCATED NO CLOSER THAN 10'-0" FROM THE ROOF EDGE.
G ALL PRIMARY CONDENSATE DRAIN PIPING SHALL BE INSULATED TO A MINIMUM THICKNESS OF 1/2" AND SHALL INCLUDE A VAPOR RETARDANT OUTSIDE THE INSULATION. SEAL ALL JOINTS AND PENETRATIONS.
H COORDINATE ALL EXTERIOR PENETRATIONS INCLUDING ROOF PENETRATIONS WITH OTHER TRADES TO PROVIDE A COMPLETE AND FULLY WEATHER-PROOF INSTALLATION.
I ALL TRANSFER DUCTWORK SHALL BE INTERNALLY LINED WITH MINIMUM 1/2" ACOUSTIC LINING.
J CONTRACTOR SHALL ENGAGE A TESTING AND BALANCE FIRM CERTIFIED BY AABC TO PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN AABC'S "NATIONAL STANDARDS.
K FOR TESTING AND BALANCING HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS" AND PROVIDE TWO COPIES OF THE CERTIFIED TAB REPORTS.

KEYNOTES

1 MOUNT LOUVER ABOVE DOOR, COORDINATE EXACT LOCATION WITH ARCHITECT. INTERLOCK WITH EF-5.
2 UP THRU ROOF, TERMINATE WITH MANUFACTURER'S ROOF CAP.

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MALONE PARK
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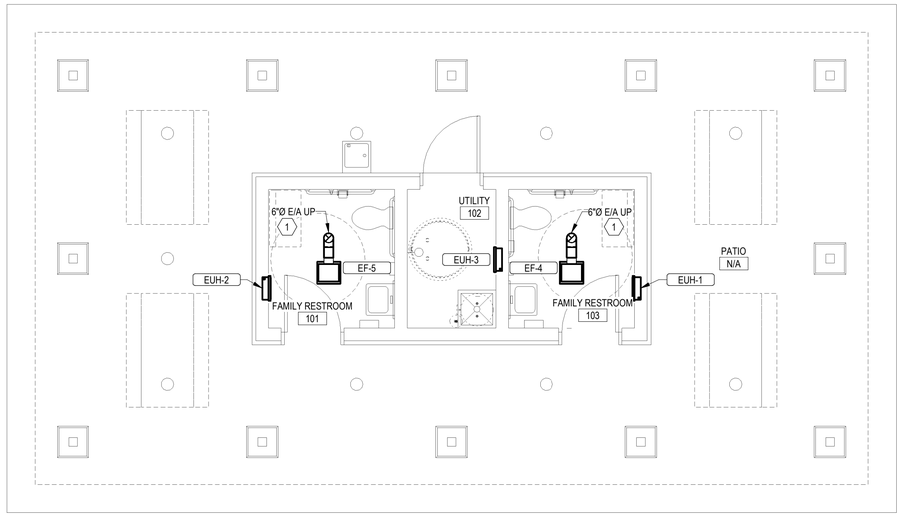
M101

EXHAUST FAN SCHEDULE

	LOCATION							FAN											INTERLOCK	
ID	NAME	NO.	MANUFACTURER	MODEL NO.	TYPE	ARRANGEMENT	CONNECTED AIRFLOW	DESIGN AIRFLOW	MIN AIRFLOW	ESP	RPM	DRIVE TYPE	MOTOR POWER	MOTOR RPM	MOTOR ECM	UNIT WEIGHT	VOLT	PH	ID	REMARKS
EF-4	FAMILY RESTROOM	103	GREENHECK	SP-A70	CEILING	ROUND OUTLET	50 CFM	50 CFM	0 CFM	0.25 in-wg	850	DIRECT	0.01 hp	940	Yes	12 lb	120 V	1		PROVIDE WITH SPEED CONTROL, ROOF CAP, AND OCCUPANCY SENSOR.
EF-5	FAMILY RESTROOM	101	GREENHECK	SP-A70	CEILING	ROUND OUTLET	50 CFM	50 CFM	0 CFM	0.25 in-wg	850	DIRECT	0.01 hp	940	Yes	12 lb	120 V	1		PROVIDE WITH SPEED CONTROL, ROOF CAP, AND OCCUPANCY SENSOR.

ELECTRIC UNIT HEATER SCHEDULE

	LOCATION						FAN			ELECTRIC HEATING COIL			HEATING ELEMENT					
								MOTOR			AIRSIDE							
ID	NAME	NO.	MANUFACTURER	MODEL NO.	TYPE	ARRANGEMENT	DESIGN AIRFLOW	QTY	ECM	CAP	EAT(db)	LAT(db)	QTY	POWER	SCR	VOLT	PH	REMARKS
EUH-1	WOMEN	103	BERKO	FRC1612F	CABINET	RECESSED MOUNT	100 CFM	1	No	6142 Btu/h	55.0 °F	111.9 °F	1	1.8 kW	No	120 V	1	
EUH-2	MEN	101	BERKO	FRC1612F	CABINET	RECESSED MOUNT	100 CFM	1	No	6142 Btu/h	55.0 °F	111.9 °F	1	1.8 kW	No	120 V	1	
EUH-3	UTILITY	102	BERKO	FRC1612F	CABINET	RECESSED MOUNT	100 CFM	1	No	6142 Btu/h	55.0 °F	111.9 °F	1	1.8 kW	No	120 V	1	



1 M201 RESTROOM PAVILION HVAC FLOOR PLAN - BID ALTERNATE 1
1/4" = 1'-0"

HVAC SHEET NOTES

A CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE A COMPLETE AND WORKING SYSTEM.

B INSTALL, SUPPORT, & BRACE NEW DUCTWORK AND ACCESSORIES PER SMACNA GUIDELINES.

C DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS. CONTRACTOR SHALL MAKE ALLOWANCE FOR ANY INTERIOR LINING, INSULATION, ETC.

D ALL NEW DUCT ELBOWS SHALL BE RADIUS TYPE. WHERE NECESSARY, CONTRACTOR MAY SUBSTITUTE MITERED ELBOWS WITH TURNING VANES.

E PROVIDE FLAT BLADE MANUAL VOLUME DAMPERS AT ALL TERMINAL DUCT BRANCHES AND AS INDICATED.

F INSTALL EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. ROOFTOP EQUIPMENT SHALL BE LOCATED NO CLOSER THAN 10'-0" FROM THE ROOF EDGE.

G ALL PRIMARY CONDENSATE DRAIN PIPING SHALL BE INSULATED TO A MINIMUM THICKNESS OF 1/2" AND SHALL INCLUDE A VAPOR RETARDANT OUTSIDE THE INSULATION. SEAL ALL JOINTS AND PENETRATIONS.

H COORDINATE ALL EXTERIOR PENETRATIONS INCLUDING ROOF PENETRATIONS WITH OTHER TRADES TO PROVIDE A COMPLETE AND FULLY WEATHER-PROOF INSTALLATION.

I ALL TRANSFER DUCTWORK SHALL BE INTERNALLY LINED WITH MINIMUM 1/2" ACOUSTIC LINING.

J CONTRACTOR SHALL ENGAGE A TESTING AND BALANCE FIRM CERTIFIED BY AABC TO PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN AABC'S "NATIONAL STANDARDS.

K FOR TESTING AND BALANCING HEATING, VENTILATING, AND AIR CONDITIONING SYSTEMS" AND PROVIDE TWO COPIES OF THE CERTIFIED TAB REPORTS.

KEYNOTES

1 UP THRU ROOF, TERMINATE WITH MANUFACTURER'S ROOF CAP.

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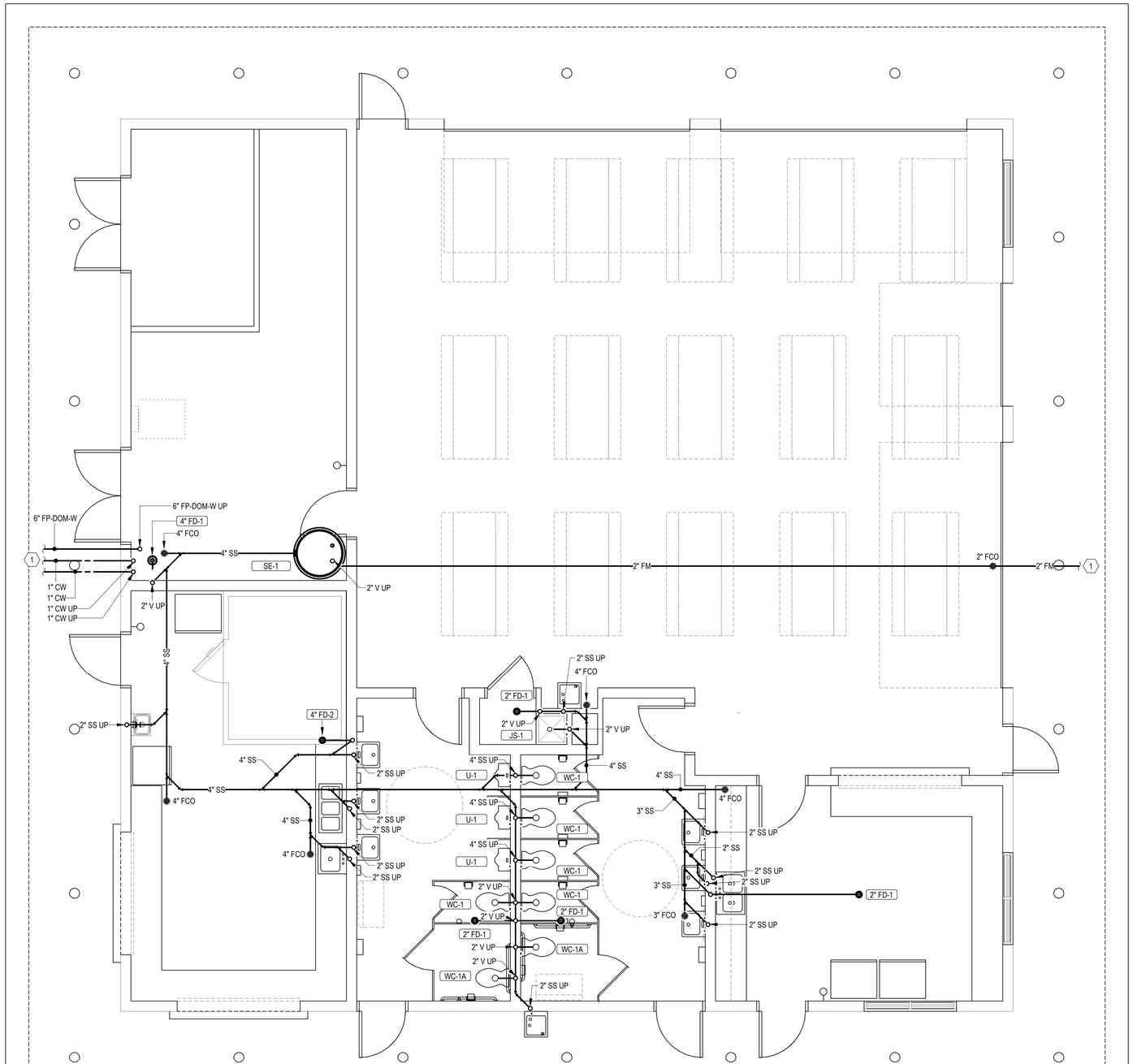

1 P100 CONCESSION BUILDING UNDERFLOOR PLUMBING PLAN
1/4" = 1'-0"

PLUMBING SHEET NOTES

A THIS PLAN IS DIAGRAMMATIC IN NATURE AND SHALL NOT BE SCALED TO DETERMINE THE LOCATION OR DIMENSION OF THE WORK. CONTRACTOR SHALL VERIFY EXACT LOCATION OF PIPING AND PENETRATIONS.
B REPAIR WALL SURFACE AFTER INSTALLATION AND INSPECTION OF EACH PLUMBING FIXTURE AND PIPING INSTALLED.
C ALL WALL-MOUNTED ACCESS PANELS SHALL BE LOCKABLE TYPE.
D ABOVE-GRADE WASTE PIPE SHALL BE RUN AT 2% GRADE. BELOW-GRADE WASTE PIPE SHALL BE RUN AT 1% GRADE.
E ALL CONDENSATE DRAIN PIPE SHALL BE RUN AT 1% GRADE.
F MAINTAIN MINIMUM 10-0" SEPARATION BETWEEN FLUE AND PLUMBING VENT OUTLETS AND ANY FRESH AIR INTAKE. COORDINATE WITH HVAC CONTRACTOR.
G FLOORS SHALL SLOPE TO DRAINS AT 1% MINIMUM SLOPE. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION.
H PROVIDE ALL FLOOR DRAINS, FLOOR SINKS, TRENCH DRAINS, ETC. WITH TRAP GUARD DEVICES (ASSE 1072 COMPLIANT).
I PROVIDE WALL CLEAN OUTS IN ALL VENT RISERS ON BRANCHES LONGER THAN 5'-0" AND ON BRANCHES SERVING SINKS OR URINALS.
J SEE RISER DIAGRAMS FOR PIPE SIZING.

KEYNOTES

1 SEE CIVIL FOR CONTINUATION.

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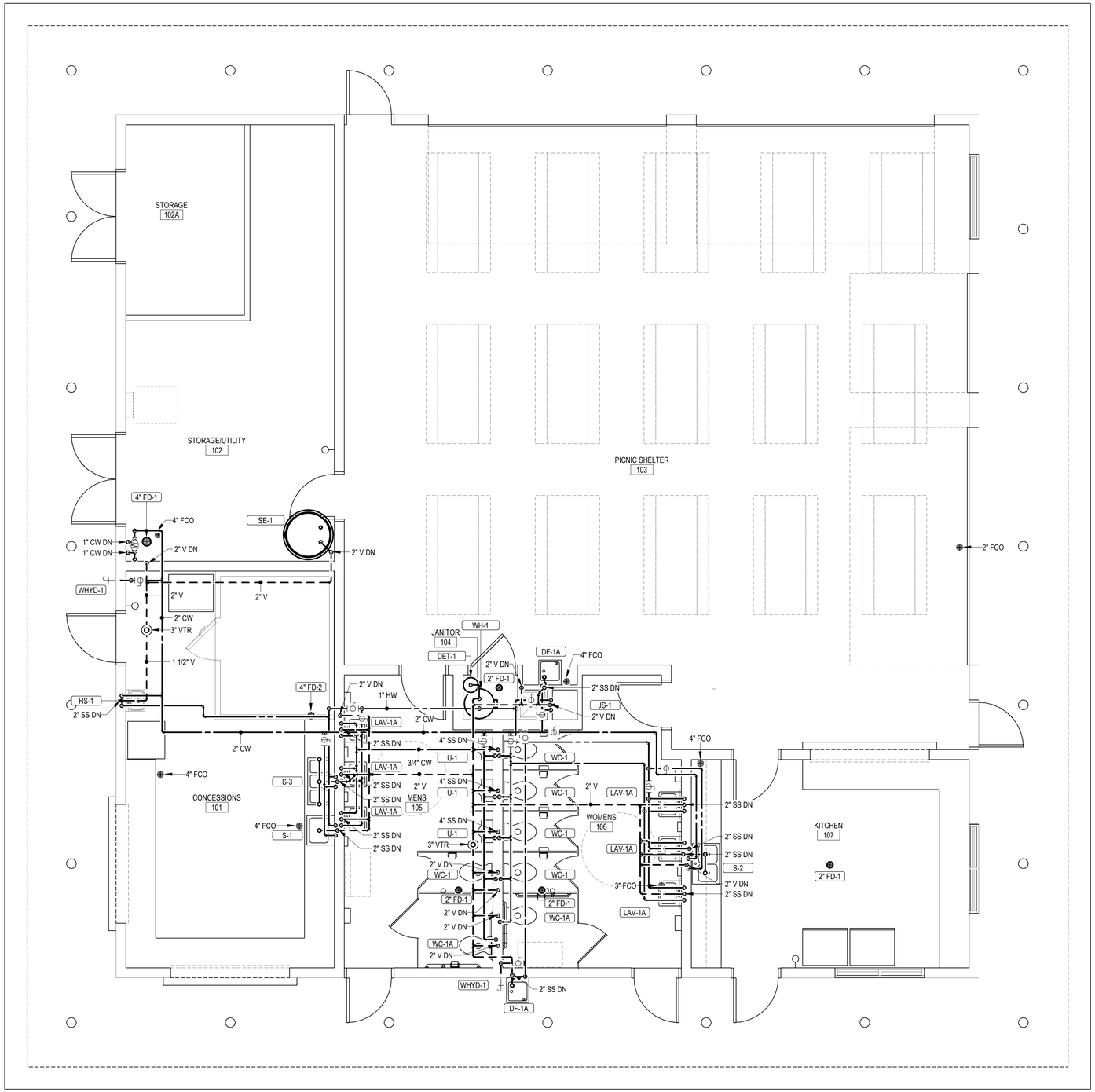
P100



1 P101 CONCESSION BUILDING ABOVE FLOOR PLUMBING PLAN
1/4" = 1'-0"

PLUMBING SHEET NOTES

A THIS PLAN IS DIAGRAMMATIC IN NATURE AND SHALL NOT BE SCALED TO DETERMINE THE LOCATION OR DIMENSION OF THE WORK. CONTRACTOR SHALL VERIFY EXACT LOCATION OF PIPING AND PENETRATIONS.

B REPAIR WALL SURFACE AFTER INSTALLATION AND INSPECTION OF EACH PLUMBING FIXTURE AND PIPING INSTALLED.

C ALL WALL-MOUNTED ACCESS PANELS SHALL BE LOCKABLE TYPE.

D ABOVE-GRADE WASTE PIPE SHALL BE RUN AT 2% GRADE. BELOW-GRADE WASTE PIPE SHALL BE RUN AT 1% GRADE.

E ALL CONDENSATE DRAIN PIPE SHALL BE RUN AT 1% GRADE.

F MAINTAIN MINIMUM 10-0" SEPARATION BETWEEN FLUE AND PLUMBING VENT OUTLETS AND ANY FRESH AIR INTAKE. COORDINATE WITH HVAC CONTRACTOR.

G FLOORS SHALL SLOPE TO DRAINS AT 1% MINIMUM SLOPE. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION.

H PROVIDE ALL FLOOR DRAINS, FLOOR SINKS, TRENCH DRAINS, ETC. WITH TRAP GUARD DEVICES (ASSE 1072 COMPLIANT).

I PROVIDE WALL CLEAN OUTS IN ALL VENT RISERS ON BRANCHES LONGER THAN 5'-0" AND ON BRANCHES SERVING SINKS OR URINALS.

J SEE RISER DIAGRAMS FOR PIPE SIZING.

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Project No. 24-0389 .

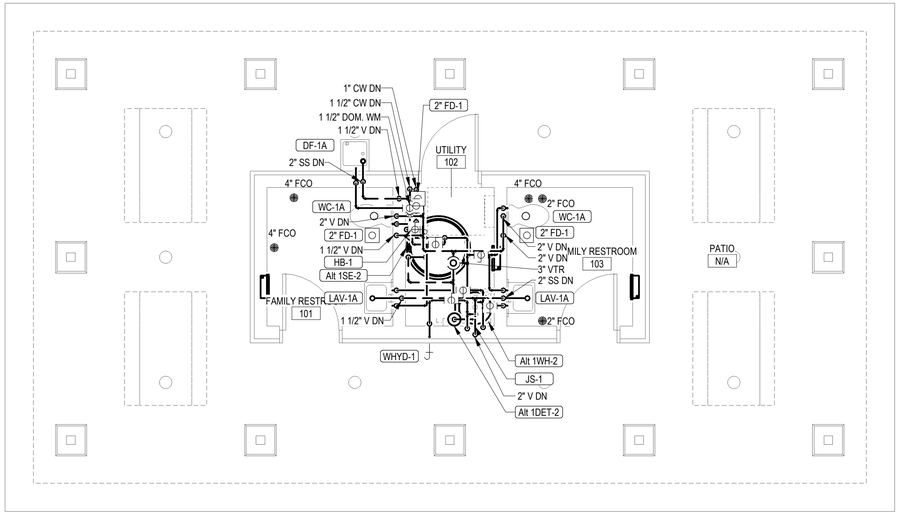
Date
Revision

MALONE PARK
CITY OF NEW BERLIN, WI
PARK STRUCTURES

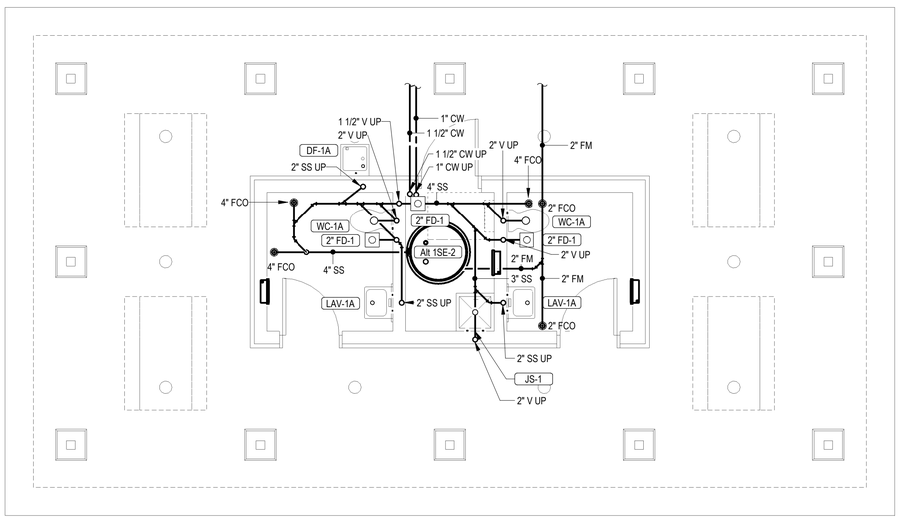
Drawn By:	PAS
Checked By:	LAO
Date:	03/21/2025
Project No:	24-0389

Sheet Number

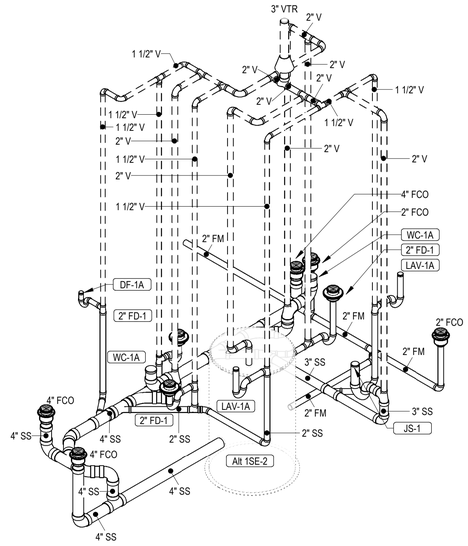
P101



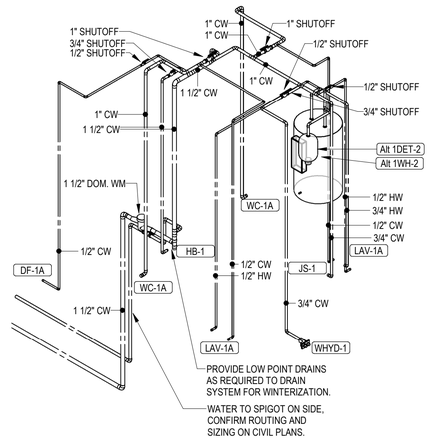
2 P201 RESTROOM PAVILION ABOVE FLOOR PLUMBING PLAN - BID ALTERNATE 1
1/4" = 1'-0"



1 P201 RESTROOM PAVILION UNDERFLOOR PLUMBING PLAN - BID ALTERNATE 1
1/4" = 1'-0"



4 P201 RESTROOM PAVILION WASTE & VENT RISER DIAGRAM - BID ALTERNATE 1



3 P201 RESTROOM PAVILION DOMESTIC WATER RISER DIAGRAM - BID ALTERNATE 1

PLUMBING SHEET NOTES

A THIS PLAN IS DIAGRAMMATIC IN NATURE AND SHALL NOT BE SCALED TO DETERMINE THE LOCATION OR DIMENSION OF THE WORK. CONTRACTOR SHALL VERIFY EXACT LOCATION OF PIPING AND PENETRATIONS.

B REPAIR WALL SURFACE AFTER INSTALLATION AND INSPECTION OF EACH PLUMBING FIXTURE AND PIPING INSTALLED.

C ALL WALL-MOUNTED ACCESS PANELS SHALL BE LOCKABLE TYPE.

D ABOVE-GRADE WASTE PIPE SHALL BE RUN AT 2% GRADE. BELOW-GRADE WASTE PIPE SHALL BE RUN AT 1% GRADE.

E ALL CONDENSATE DRAIN PIPE SHALL BE RUN AT 1% GRADE.

F MAINTAIN MINIMUM 10-0" SEPARATION BETWEEN FLUE AND PLUMBING VENT OUTLETS AND ANY FRESH AIR INTAKE. COORDINATE WITH HVAC CONTRACTOR.

G FLOORS SHALL SLOPE TO DRAINS AT 1% MINIMUM SLOPE. SEE ARCHITECTURAL PLANS FOR MORE INFORMATION.

H PROVIDE ALL FLOOR DRAINS, FLOOR SINKS, TRENCH DRAINS, ETC. WITH TRAP GUARD DEVICES (ASSE 1072 COMPLIANT).

I PROVIDE WALL CLEAN OUTS IN ALL VENT RISERS ON BRANCHES LONGER THAN 5'-0" AND ON BRANCHES SERVING SINKS OR URINALS.

J SEE RISER DIAGRAMS FOR PIPE SIZING.

KEYNOTES

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MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

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DOMESTIC FIXTURE SCHEDULE

ID	DESCRIPTION	MANUFACTURER	MODEL	MATERIAL DESCRIPTION	FINISH	TRIM				FLOW FIXTURE	FLUSH FIXTURE	WASTE ROUGH-IN PIPE SIZE	VENT PIPE SIZE	COLD WATER ROUGH-IN PIPE SIZE	HOT WATER ROUGH-IN PIPE SIZE	SPECIFICATION
						MANUFACTURER	MODEL	TYPE	MOTION SENSOR CONTROL	WATER FLOW	VOL. PER FLUSH					
DF-1A	DRINKING FOUNTAIN - ADA	ELKAY	EDFP214C	STAINLESS STEEL	STAINLESS STEEL CABINET	--	--	--	No	0.1 GPM		2"	1 1/2"	1/2"		SINGLE LEVEL WALL HUNG NON-REFRIGERATED DRINKING FOUNTAIN. THE UNIT SHALL BE COMPLETE WITH CABINET, MOUNTING FRAME, SELF CLOSING FRONT BUTTON CONTROL, FLEXIGUARD SAFETY BUBBLER, FULLY AUTOMATIC, COMPLETE AND READY TO OPERATE. MOUNT UNIT AT ADA COMPLIANT HEIGHT.
HS-1	HAND SINK	ELKAY	SEHS-17X	STAINLESS STEEL	STAINLESS STEEL	--	--	--	No	2.5 GPM		1 1/2"	2"	1/2"	1/2"	SINGLE COMPARTMENT, WALL HUNG, 18 GAUGE, WITH STRAINER AND FAUCET INCLUDED, P-TRAP, TAILPIECES, SUPPLIES AND STOPS.
JS-1	JANITOR SINK	FIAT	MSB-2424	MOLDED STONE	--	CHICAGO FAUCET CO	897-CP	MANUAL	No	2.5 GPM		3"	2"	3/4"	3/4"	SERVICE BASIN WITH CAP ON TWO SIDES, WITH CHROME PLATED 3" DRAIN AND CAST IRON TRAP. FAUCET SHALL INCLUDE PAIL HOOK AND ATMOSPHERIC VACUUM BREAKER SPOUT. FURNISH 5'-0" LENGTH OF 5-PLY GARDEN HOSE AND FITTINGS.
LAV-1A	LAVATORY - WALL HUNG - ADA	AMERICAN STANDARD	LUCERNE	WHITE VITREOUS CHINA	WHITE	CHICAGO FAUCET CO	802-V336CP	METERING	No	0.5 GPM		2"	1 1/2"	1/2"	1/2"	WALL HUNG LAVATORY WITH BACKSPLASH, FAUCET HOLES ON 4" CENTERS. DECK-MOUNTED MANUAL METERING FAUCET WITH VANDAL RESISTANT SPRAY, EXTERNAL ASSE 1070 COMPLIANT THERMOSTATIC MIXING VALVE, GRID DRAIN, LOOSE KEY ANGLE STOPS AND SUPPLIES. INSULATE WATER AND WASTE WITH ADA INSULATION KIT. MOUNT AT ADA COMPLIANT HEIGHT.
S-1	1-COMPARTMENT SINK	ELKAY	LRAD222260	STAINLESS STEEL	STAINLESS STEEL	ELKAY	LK406HA08T6	MANUAL	No	2.5 GPM		2"	2"	1/2"	1/2"	ONE COMPARTMENT, 16 GAUGE. DUAL LEVER SWIVEL FAUCET WITH 8" SPOUT. ONE BASKET ASSEMBLY, P-TRAP, TAILPIECES, SUPPLIES AND STOPS.
S-2	DUAL BOWL SINK	ELKAY	LRAD292260	STAINLESS STEEL	STAINLESS STEEL	ELKAY	LK406HA08T6	MANUAL	No	1.0 GPM		2"	2"	1/2"	1/2"	TWO COMPARTMENT, 16 GAUGE. DUAL LEVER SWIVEL FAUCET WITH 8" SPOUT. TWO BASKET ASSEMBLY, P-TRAP, TAILPIECES, SUPPLIES AND STOPS.
S-3	3-COMPARTMENT SINK	ELKAY	DI-3C-101410X	STAINLESS STEEL	STAINLESS STEEL	ELKAY	LK810HA10T6	MANUAL	No	2.5 GPM		2"	2"	1/2"	1/2"	THREE COMPARTMENT, 16 GAUGE. DUAL LEVER SWIVEL FAUCET WITH 10" SWING SPOUT. THREE TWIST TYPE LEVERWASTE, COMPARTMENT CONTINUOUS WASTE, SUPPLIES AND STOPS.
U-1	URINAL	AMERICAN STANDARD	WASHBROOK	WHITE VITREOUS CHINA	WHITE	SLOAN	186-1.0	MANUAL	No		1 gal	2"	1 1/2"	3/4"		WALL HUNG URINAL WITH WASHOUT ACTION, TOP SPUD, SIZE 18" WITH INTEGRAL EXTENDED SHIELDS SUPPORTED BY THROUGH GOING BOLTS AND C.P. NUTS. MANUAL FLUSHOMETER.
WC-1	WATER CLOSET - FLOOR - FLUSH VALVE	AMERICAN STANDARD	2234.00	WHITE VITREOUS CHINA	WHITE	SLOAN	111-1.6	MANUAL	No		1.6 gal	4"	2"	1"		ELONGATED FLOOR MOUNTED WATER CLOSET, 1-1/2" TOP SPUD, WITH CHURCH 295CT ELONGATED OPEN FRONT SEAT. MANUAL FLUSHOMETER.
WC-1A	WATER CLOSET - FLOOR - FLUSH VALVE - ADA	AMERICAN STANDARD	3043.001	WHITE VITREOUS CHINA	WHITE	SLOAN	111-1.6	MANUAL	No		1.6 gal	4"	2"	1"		ELONGATED FLOOR MOUNTED WATER CLOSET, 1-1/2" TOP SPUD, WITH CHURCH 295CT ELONGATED OPEN FRONT SEAT. MANUAL FLUSHOMETER. PROVIDE ADA COMPLIANT HEIGHT WATER CLOSET.
WHYD-1	EXTERIOR WALL HYDRANT	WOODFORD	67	--	--	--	--	--	No	2.5 GPM				3/4"		NON-FREEZE TYPE WALL HYDRANT, WITH DOUBLE CHECK BACKFLOW PREVENTER, VALVE ON THE INSIDE OF THE WALL. SPOUT WITH BACKFLOW PREVENTER, AND LOOSE KEY SOCKET ON THE OUTSIDE OF THE WALL. MAKE ARRANGEMENTS WITH THE GENERAL CONTRACTOR TO PROVIDE THE NECESSARY RECESS IN THE WALL. WHERE A RISER TO A WALL HYDRANT OCCURS IN AN OUTSIDE WALL THE CONTRACTOR SHALL INSULATE THE CHASE WITH 2" STYROFOAM INSULATION ON ALL SIDES OF THE CHASE, EXCEPT THE INSIDE WALL OF THE CHASE. PROVIDE SHUTOFF VALVE IN ACCESSIBLE LOCATION.

SEWAGE EJECTOR SCHEDULE

	ID	LOCATION NAME	LOCATION NO.	MANUFACTURER	MODEL NO.	ARRANGEMENT	PUMP DESIGN FLOW	PUMP HEAD	MOTOR QTY	MOTOR POWER	MOTOR RPM	COVER TYPE	INCLUDE BASIN	BASIN MATERIAL	BASIN RISER SIZE	BASIN DIAMETER	BASIN HEIGHT	UNIT WEIGHT	FLA	MCA	MOCP	VOLT	PH	REMARKS
	SE-1	STORAGE/UTILITY	102	WEIL	2516-550	DUPLEX GRINDER	40.0 GPM	60.0 FT	2	5.00 hp	3450	H-20 STEEL	Yes	FIBERGLASS	2"	36"	60"	90 lb	28 A	28 A	60 A	240 V	1	COMPLETE DUPLEX GRINDER AUTO-VALVE SYSTEM WITH PUMP(S), WEIL 8804 COVER, WEIL 8159 NEMA-4X CONTROL PANEL, WEIL 8230 TETHERED LEVEL CONTROL WITH REMOTE ALARM, SOLENOID VALVE(S), AND CHECK VALVE(S).
Alt 1	SE-2	UTILITY	102	WEIL	2436C-694	DUPLEX GRINDER	20.0 GPM	40.0 FT	2	1.50 hp	1750	H-20 STEEL	Yes	FIBERGLASS	2"	36"	60"	90 lb	40 A	45 A	50 A	120 V	1	COMPLETE DUPLEX GRINDER AUTO-VALVE SYSTEM WITH PUMP(S), WEIL 8804 COVER, WEIL 8159 NEMA-4X CONTROL PANEL, WEIL 8230 TETHERED LEVEL CONTROL WITH REMOTE ALARM, SOLENOID VALVE(S), AND CHECK VALVE(S).

FLOOR DRAIN SCHEDULE

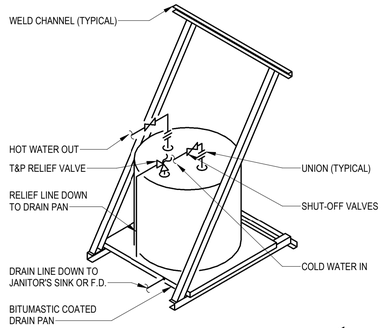
ID	DESCRIPTION	MANUFACTURER	MODEL	MATERIAL DESCRIPTION		WASTE	VENT	SPECIFICATION	REMARKS
				DRAIN BODY	STRAINER	PIPE SIZE	PIPE SIZE		
FD-1	FLOOR DRAIN	WATTS	FD-100-A	EPOXY COATED CAST IRON	NICKEL BRONZE	2"	2"	EPOXY COATED CAST IRON FLOOR DRAIN WITH ANCHOR FLANGE, REVERSIBLE CLAMPING COLLAR WITH PRIMARY & SECONDARY WEEPHOLES, ADJUSTABLE ROUND HEEL PROOF NICKEL BRONZE STRAINER, AND NO HUB OUTLET.	
FD-1	FLOOR DRAIN	WATTS	FD-100-A	EPOXY COATED CAST IRON	NICKEL BRONZE	4"	2"	EPOXY COATED CAST IRON FLOOR DRAIN WITH ANCHOR FLANGE, REVERSIBLE CLAMPING COLLAR WITH PRIMARY & SECONDARY WEEPHOLES, ADJUSTABLE ROUND HEEL PROOF NICKEL BRONZE STRAINER, AND NO HUB OUTLET.	
FD-2	HUB DRAIN	WATTS	FD-100-DD	EPOXY COATED CAST IRON	NICKEL BRONZE	4"	2"	EPOXY COATED CAST IRON FLOOR DRAIN WITH ANCHOR FLANGE, REVERSIBLE CLAMPING COLLAR WITH PRIMARY & SECONDARY WEEPHOLES, ADJUSTABLE CAST IRON HUB FUNNEL, AND NO HUB OUTLET.	

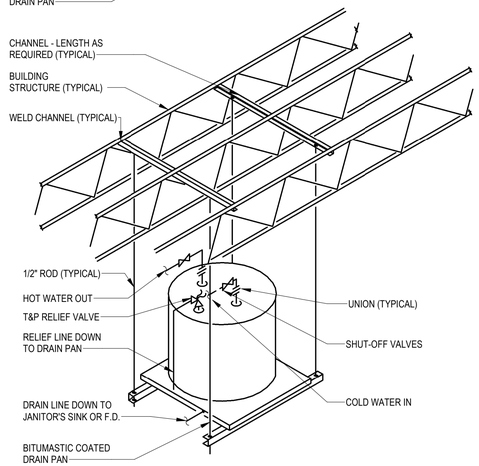
ELECTRIC WATER HEATER SCHEDULE

	ID	LOCATION NAME	LOCATION NO.	MANUFACTURER	MODEL NO.	TYPE	ELECTRIC HEAT EXCHANGER HEATING CAP	STORAGE RECOVERY	STORAGE VOL	MAX TEMP RISE	HEATING ELEMENT QTY	HEATING ELEMENT POWER	HEATING ELEMENT SCR	EF	ASME	UNIT WEIGHT	FLA	MCA	MOCP	VOLT	PH	REMARKS
	WH-1	JANITOR	104	AO SMITH	DRE-80-30	STORAGE	30.0 kW	132.8 gal/h	80.0 gal	93 °F	1	30.0 kW	Yes	0.9	Yes	879 lb	125 A	125 A	150 A	240 V	1	PROVIDE ASSE 1017 COMPLIANT MIXING VALVE; POWERS SERIES LFSH OR EQUAL.
Alt 1	WH-2	UTILITY	102	AO SMITH	DEL-6	STORAGE	2.5 kW	11.0 gal/h	6.0 gal	93 °F	1	2.5 kW	Yes	0.9	Yes	100 lb	10 A	13 A	15 A	240 V	1	PROVIDE ASSE 1017 COMPLIANT MIXING VALVE; POWERS SERIES LFSH OR EQUAL.

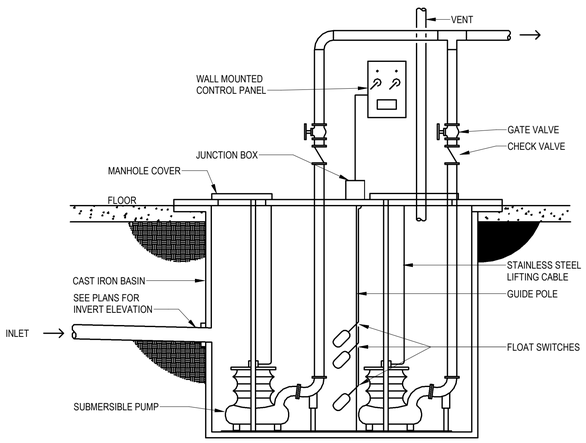
DOMESTIC EXPANSION TANK SCHEDULE

	ID	LOCATION NAME	LOCATION NO.	MANUFACTURER	MODEL NO.	SYSTEM	TYPE	ARRANGEMENT	VOL	MAX ACCEPTANCE FACTOR	ACCEPTANCE VOL	PRESS RELIEF	PRECHARGE PRESS	UNIT DIMENSIONS DIAMETER	UNIT DIMENSIONS HEIGHT	ASME	UNIT WEIGHT	REMARKS
	DET-1	JANITOR	104	AMTROL	ST-12C	DOM. WATER	FIXED DIAPHRAM	INLINE	6.4 gal	0.50	3.2 gal	100 psi	55 psi	12"	18"	Yes	70 lb	
Alt 1	DET-2	PATIO	N/A	AMTROL	ST-5C	DOM. WATER	FIXED DIAPHRAM	INLINE	2.0 gal	0.45	0.9 gal	100 psi	55 psi	8"	14"	Yes	27 lb	





5 P601 WATER HEATER ON PLATFORM
NOT TO SCALE



4 P601 SEWAGE EJECTOR PIPING DETAIL - DUPLEX
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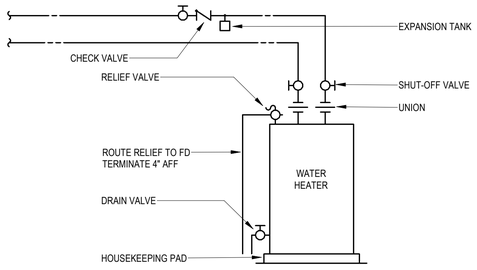

3 P601 WATER HEATER PIPING DETAIL - SINGLE
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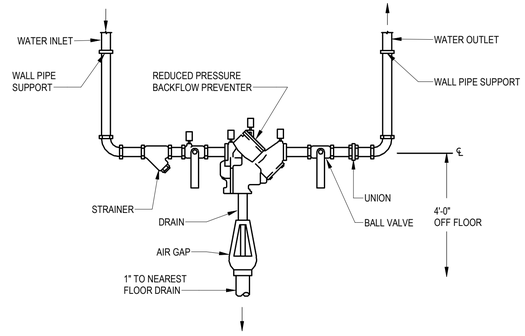

2 P601 BACKFLOW PREVENTER DETAIL
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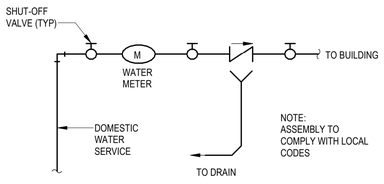

1 P601 WATER SERVICE PIPING DETAIL
NOT TO SCALE

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CITY OF NEW BERLIN, WI

PARK STRUCTURES

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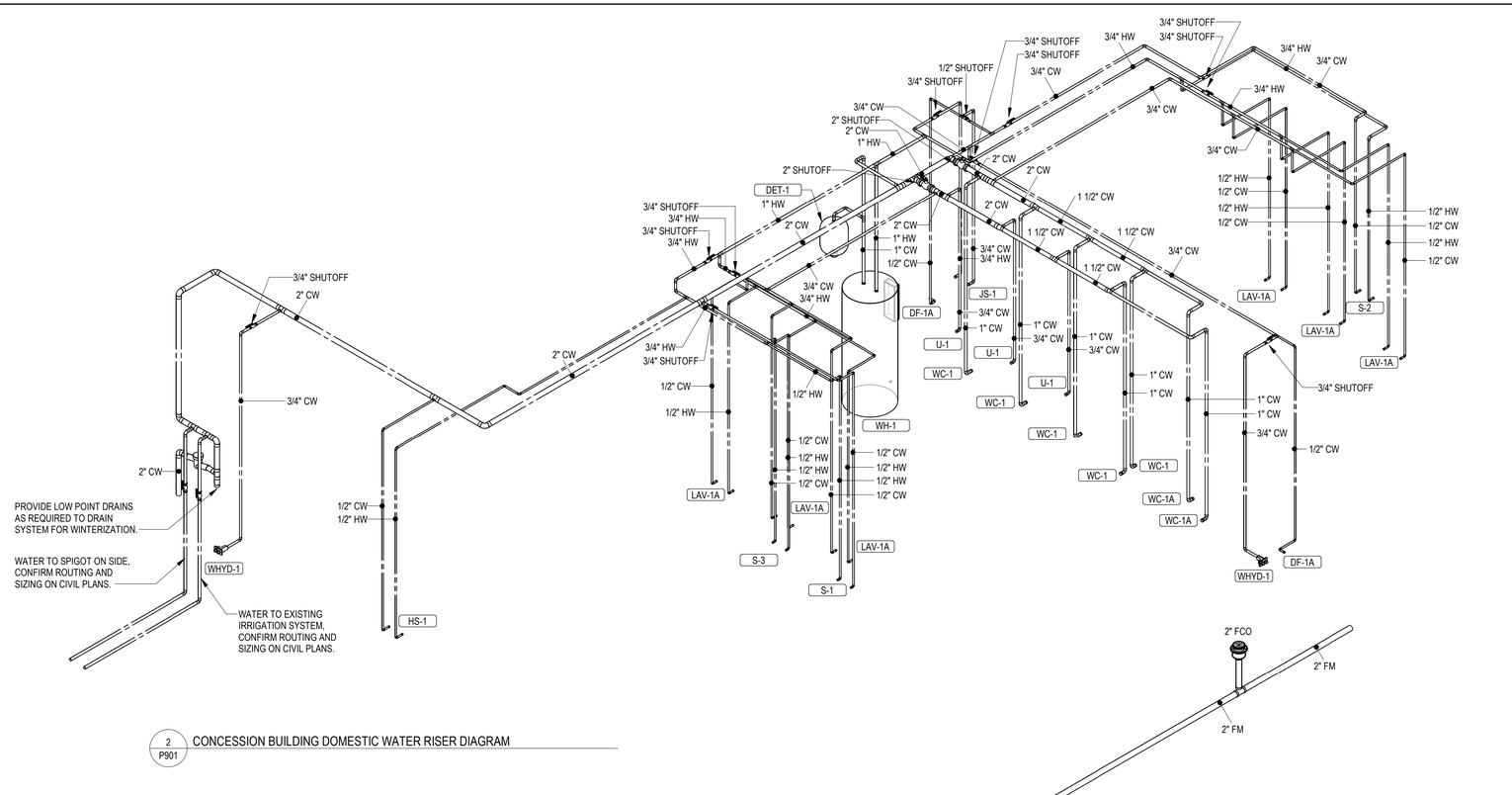

2 P901 CONCESSION BUILDING DOMESTIC WATER RISER DIAGRAM

1 P901 CONCESSION BUILDING WASTE & VENT RISER DIAGRAM

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ELECTRICAL ABBREVIATIONS LIST

1P	1 POLE (2P, 3P, 4P, ETC.)	MCB	MAIN CIRCUIT BREAKER
A	AMPERE	MCC	MOTOR CONTROL CENTER
AC	ABOVE COUNTER	MDC	MAIN DISTRIBUTION CENTER
ACLG	ABOVE CEILING	MDP	MAIN DISTRIBUTION PANEL
ADO	AUTOMATIC DOOR OPENER	MFR	MANUFACTURER
AF	AMP FRAME	MFS	MAIN FUSED DISCONNECT SW
AFF	ABOVE FINISHED FLOOR	MH	MANHOLE
AFG	ABOVE FINISHED GRADE	MIC	MICROPHONE
AFI	ARC FAULT CIRCUIT INTERRUPTER	MIN	MINIMUM
		MISC	MISCELLANEOUS
AHU	AIR HANDLING UNIT	MLO	MAIN LUGS ONLY
AL	ALUMINUM	MMS	MANUAL MOTOR STARTER
ALT	ALTERNATE	MOA	MULTIOUTLET ASSEMBLY
AMP	AMPERE	MSP	MOTOR STARTER PANELBOARD
AMPL	AMPLIFIER	MSS	MOTOR STARTER SWITCH
ANNUN	ANNUNCIATOR	MSBD	MAIN SWITCHBOARD
APPROX	APPROXIMATELY	MT	MOUNT
AQ-STAT	AQUASTAT	MT.C	EMPTY CONDUIT
ARCH	ARCHITECT, ARCHITECTURAL	MTS	MANUAL TRANSFER SWITCH
AS	AMP SWITCH	MTR	MOTOR, MOTORIZED
AT	AMP TRIP	N.C.	NORMALLY CLOSED
ATS	AUTOMATIC TRANSFER SWITCH	NEC	NATIONAL ELECTRICAL CODE
AUTO	AUTOMATIC	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
AUX	AUXILIARY		
AV	AUDIO VISUAL	NFDS	NON-FUSED SAFETY DISCONNECT SWITCH
AWG	AMERICAN WIRE GAUGE		
BATT	BATTERY	NIC	NOT IN CONTRACT
BD	BOARD	NL	NIGHT LIGHT
BLDG	BUILDING	N.O.	NORMALLY OPEN
BMS	BUILDING MANAGEMENT SYSTEM	NPF	NORMAL POWER FACTOR
C	CONDUIT	NTS	NOT TO SCALE
CAB	CABINET	OH	OVERHEAD
CAT	CATALOG	OL	OVERLOADS
CATV	CABLE TELEVISION	PA	PUBLIC ADDRESS
CB	CIRCUIT BREAKER	PB	PULL BOX OR PUSHBUTTON
CCTV	CLOSED CIRCUIT TELEVISION	PE	PNEUMATIC ELECTRIC
CKT	CIRCUIT	PED	PEDESTAL
CLG	CEILING	PF	POWER FACTOR
COMB	COMBINATION	PH	PHASE
CMPR	COMPRESSOR	PIV	POST INDICATING VALVE
CONN	CONNECTION	PNL	PANEL
CONST	CONSTRUCTION	PP	POWER POLE
CONT	CONTINUATION OR CONTINUOUS	PR	PAIR
CONTR	CONTRACTOR	PRI	PRIMARY
CONV	CONVECTOR	PROJ	PROJECTION
CP	CIRCULATING PUMP	PRV	POWER ROOF VENTILATOR
CRT	CATHODE-RAY TUBE	PT	POTENTIAL TRANSFORMER
CT	CURRENT TRANSFORMER	PVC	POLYVINYL CHLORIDE (CONDUIT)
CTR	CENTER	PWR	POWER
CU	COPPER	QUAN	QUANTITY
DCP	DOMESTIC WATER CIRCULATING PUMP	RCPT	RECEPTACLE
DEPT	DEPARTMENT	REQD	REQUIRED
DET	DETAIL	RM	ROOM
DIA	DIAMETER	RSC	RIGID STEEL CONDUIT
DISC	DISCONNECT	RTU	ROOF TOP UNIT
DIST	DISTRIBUTION	SC	SURFACE CONDUIT
DN	DOWN	SEC	SECONDARY
DPR	DAMPER	SHT	SHEET
DS	SAFETY DISCONNECT SWITCH	SIM	SIMILAR
DT	DOUBLE THROW	S/N	SOLID NEUTRAL
DWG	DRAWING	SPEC	SPECIFICATION
EC	ELECTRICAL CONTRACTOR	SPKR	SPEAKER
ELEC	ELECTRIC, ELECTRICAL	SP	SPARE
ELEV	ELEVATOR	SPP	SINGLE POINT POWER
ELU	EMERGENCY LIGHTING UNIT	SR	SURFACE RACEWAY
EM	EMERGENCY	SS	STAINLESS STEEL
EMS	ENERGY MANAGEMENT SYSTEM	SSW	SELECTOR SWITCH
EMT	ELECTRICAL METALLIC TUBING	S/S	STOP/START PUSHBUTTONS
EP	ELECTRIC PNEUMATIC	STA	STATION
EQUIP	EQUIPMENT	STD	STANDARD
EWC	ELECTRIC WATER COOLER	SURF	SURFACE MOUNTED
EXIST	EXISTING	SW	SWITCH
EXH	EXHAUST	SWBD	SWITCHBOARD
EXP	EXPLOSION PROOF	SYM	SYMMETRICAL
FA	FIRE ALARM	SYS	SYSTEM
FABP	FIRE ALARM BOOSTER POWER SUPPLY PANEL	TEL	TELEPHONE
		TEL/DATA	TELEPHONE/DATA
FACP	FIRE ALARM CONTROL PANEL	TERM	TERMINAL
FCU	FAN COIL UNIT	TL	TWIST LOCK
FIXT	FIXTURE	TR	TAMPER RESISTANT
FLR	FLOOR	T-STAT	THERMOSTAT
FLUOR	FLUORESCENT	TTC	TELEPHONE TERMINAL CABINET
FU	FUSE	TV	TELEVISION
FUDS	FUSED SAFETY DISCONNECT SWITCH	TVTC	TELEVISION TERMINAL CABINET
GA	GAUGE	TYP	TYPICAL
GAL	GALLON	UC	UNDER COUNTER
GALV	GALVANIZED	UE	UNDERGROUND ELECTRICAL
GC	GENERAL CONTRACTOR	UG	UNDERGROUND
GEN	GENERATOR	UH	UNIT HEATER
GFI	GROUND FAULT CIRCUIT INTERRUPTER	UT	UNDERGROUND TELEPHONE
GFP	GROUND FAULT PROTECTOR	UTIL	UTILITY
GND	GROUND	UV	ULTRAVIOLET
GRS	GALVANIZED RIGID STEEL (CONDUIT)	V	VOLT
GYP BD	GYPSUM BOARD	VA	VOLT-AMPERES
HOA	HANDS-OFF-AUTOMATIC SWITCH	VDT	VIDEO DISPLAY TERMINAL
HORIZ	HORIZONTAL	VERT	VERTICAL
HP	HORSEPOWER	VFD	VARIABLE FREQUENCY DRIVE
HPF	HIGH POWER FACTOR	VOL	VOLUME
HT	HEIGHT	W	WATT
HTG	HEATING	W/	WITH
HTR	HEATER	WG	WIRE GUARD
HV	HIGH VOLTAGE	WH	WATER HEATER
HVAC	HEATING, VENTILATING AND AIR CONDITIONING	W/O	WITHOUT
		WP	WEATHERPROOF
IC	INTERRUPTING CAPACITY	XFMR	TRANSFORMER
IG	ISOLATED GROUND	XFR	TRANSFER
IMC	INTERMEDIATE METAL CONDUIT		
INCAND	INCANDESCENT		
IR	INFRARED		
I/W	INTERLOCK WITH	∠	ANGLE
J-BOX	JUNCTION BOX	@	AT
KV	KILOVOLT	▲	DELTA
KVA	KILOVOLT-AMPERE	'	FEET
KVAR	KILOVOLT-AMPERE REACTIVE	"	INCHES
KW	KILOWATT	#	NUMBER
KWH	KILOWATT HOUR	Ø	PHASE
LOC	LOCATE OR LOCATION	C	CENTER LINE
LT	LIGHT	P	PLATE
LTG	LIGHTING		
LTNG	LIGHTNING		
LV	LOW VOLTAGE		
MAX	MAXIMUM		
MAG.S	MAGNETIC STARTER		
M/C	MOMENTARY CONTACT		
MC	MECHANICAL CONTRACTOR		

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
	LIGHTING FIXTURES, TYPICAL, RECTANGULAR FILLED CIRCLES INDICATE RECESSED, OPEN CIRCLES INDICATE SURFACE DIAGONAL LINE INDICATES LENSED OUTER DOTS INDICATE SUSPENDED
	LIGHTING FIXTURES, TYPICAL, ROUND CENTER DOT INDICATES PENDANT DIAGONAL LINE INDICATES LENSED CHEVRON INDICATES WALL WASH
	WALL-MOUNTED FIXTURES, TYPICAL
	STRIP FIXTURE
	DIRECTIONAL LIGHT, TRACK, FLOOD
	LINEAR LIGHT, TAPE LIGHT
	EMERGENCY LIGHTING UNIT, CEILING-MOUNTED, INTEGRAL BATTERY
	EMERGENCY LIGHTING UNIT, CEILING-MOUNTED, REMOTE BATTERY
	EMERGENCY LIGHTING UNIT, WALL-MOUNTED, INTEGRAL BATTERY
	EMERGENCY LIGHTING UNIT, WALL-MOUNTED, REMOTE BATTERY
	EXIT LIGHT, CEILING-MOUNTED, SHADING AND ARROWS INDICATE FACES AND DIRECTION
	EXIT LIGHT, WALL-MOUNTED, SHADING AND ARROWS INDICATE FACES AND DIRECTION
	EXIT/ELU COMBO
	POLE/AREA LIGHTS
	POST-TOP AREA LIGHT
	BOLLARD LIGHT
	DIAGONAL HATCH INDICATES LIGHT ON A CRITICAL CIRCUIT
	SOLID HATCH INDICATES LIGHT ON AN EMERGENCY OR LIFE SAFETY CIRCUIT
S	SINGLE POLE SWITCH
S3	3-WAY SWITCH
S4	4-WAY SWITCH
SK	KEYED SWITCH
SP	SWITCH W/PILOT
SD	DIMMER SWITCH
SOS	OCCUPANCY SENSOR W/ MANUAL SWITCH
DT2	OCCUPANCY SENSOR (OS) CEILING ARROWS INDICATE COVERAGE DIRECTION; "VS" = VACANCY SENSOR; "DL" = DAYLIGHT SENSOR
ST	TIMER SWITCH
STD	TIME DELAY SWITCH
STC	TIME CONTROL SWITCH
F P	FIRE ALARM PULL STATION
F B	FIRE ALARM BELL
F H	FIRE ALARM HORN W/STROBE
F S	FIRE ALARM SPEAKER W/STROBE
F B	FIRE ALARM BELL W/STROBE
F C	FIRE ALARM CHIME W/STROBE
	FIRE ALARM DOOR HOLDER
	FIRE ALARM DOOR CLOSER
	SPRINKLER FLOW SWITCH
	SPRINKLER VALVE TAMPER SWITCH
	THERMAL DETECTOR
	DUCT SMOKE DETECTOR
	CEILING SMOKE DETECTOR
	NURSE CALL EMERG. STATION
	NURSE CALL CODE BLUE STATION
	NURSE CALL DUTY STATION
	NURSE CALL STAFF STATION
	NURSE CALL PATIENT STATION
1	NURSE CALL DOME LIGHT (1-COLOR)
2	NURSE CALL DOME LIGHT (2-COLORS)
4	NURSE CALL DOME LIGHT (4-COLORS)

SYMBOL	DESCRIPTION
	SINGLE RECEPT.
	DUPLEX RECEPT.
48"	DUPLEX RECEPT. (DESIGNATES SPECIFIC MOUNTING HEIGHT)
GFI	GFI DUPLEX RECEPT. (FEED THROUGH)
GFI WP	GFI WEATHERPROOF RECEPT.
	SPLIT DUPLEX RECEPT.
	DUPLEX ISOLATED GROUND RECEPT.
	DUPLEX RECEPT. ON EMERG. CIRCUIT
CLNG	FLOOR DUPLEX RECEPT.
CLNG	CEILING DUPLEX RECEPT.
	FOURPLEX RECEPT.
	FOURPLEX RECEPT. ON EMERG. CIRCUIT
	240V RECEPTACLE
	RECEPT. ON CORD REEL
	RECEPT. ON DROP CORD
	SPECIAL RECEPT.
J	JUNCTION BOX
CLNG J	FLOOR JUNCTION BOX
CLNG J	CEILING JUNCTION BOX
PS - D2	MULTIOUTLET ASSEMBLY
	SAFETY DISC. SW. (NON-FUSED)
	SAFETY DISC. SW. (FUSED)
P	POWER POLE (OPEN OFFICE STYLE)
	STATIC GROUND RECEPTACLE
P	UTILITY SERVICE POWER POLE
XX-1	MOTOR IDENTITY (SEE SCHEDULE)
XX-1	EXISTING TO REMAIN
XX-1	RELOCATED
XX-1	DEMOLISHED
T1	TRANSFORMER
	TELEPHONE OUTLET
	FLOOR TELEPHONE OUTLET
1V2D	VOICE/DATA OUTLET # OF VOICE AND # OF DATA OUTLETS. FOR EXAMPLE 1V2D = 1 VOICE, 2 DATA
	FLOOR DATA OUTLET
CLNG	CEILING DATA OUTLET
M	MICROPHONE OUTLET
	CATV OUTLET
TV	TV OUTLET
V	VOLUME CONTROL
S	CEILING SPEAKER
	WIRELESS ACCESS POINT
	CCTV CAMERA
	MOTORIZED CCTV CAMERA
BB	DOOR BELL
BZ	DOOR BUZZER
DC	DOOR CHIME
D	DOOR SIGNAL
	AUTO DOOR PUSH PAD
ES	ELECTRIC STRIKE
ML	MAGNETIC LOCK
CL	COMBINATION LOCK
DS	DOOR CONTACT
CR	CARD READER
	SECURITY KEYPAD
MD	MOTION DETECTOR

ELECTRICAL SYMBOL NOTES

S3 1d — LIGHTING FIXTURE TAG DESCRIPTORS:
TOP VALUE: FIXTURE TYPE ID.
BOTTOM VALUE, NUMBER: CIRCUIT NUMBER, REFER TO DRAWINGS FOR PANEL.
BOTTOM VALUE, LOWERCASE LETTER: SWITCH DESIGNATION.
ABSENCE OF A SWITCH ID INDICATES FIXTURE IS CONTROLLED BY THE ONLY SWITCH IN THE SPACE.
"x" IN PLACE OF THE SWITCH ID INDICATES NIGHT LIGHT, UNSWITCHED.

EXW1 / 1 — EXIT LIGHTS. STEM INDICATES WALL MOUNTING. NO STEM INDICATES CEILING MOUNTING. SHADED AREA INDICATES ILLUMINATED FACE(S). ARROW INDICATES DIRECTIONAL ARROW ON ILLUMINATED FACE(S). THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER. EXAMPLE: THE WALL MOUNTED EXIT LIGHT TYPE "E1" WITH SINGLE FACE AND DIRECTIONAL ARROW IS CONNECTED TO CIRCUIT 1.

1d — DEVICES. THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER. THE SWITCH DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE: SPLIT DUPLEX RECEPTACLE IS CONNECTED TO CIRCUIT 1 AND ONE RECEPTACLE OUTLET IS CONTROLLED BY SWITCH "d".

S ? d — THE CONTROL DEVICE DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE: SINGLE POLE SWITCH "d" TO CONTROL LIGHTING FIXTURES INDICATED BY "d".

D e — WALL BOX DIMMER WITH SIZE AS INDICATED AT DEVICE. EXAMPLE: 600 WATT WALL BOX DIMMER TO CONTROL LIGHTING FIXTURES INDICATED BY "e". SEE SPECIFICATIONS FOR WATTAGE IF NOT INDICATED.

ELEC-1 2,4 — SPECIAL CONNECTIONS. THE EQUIPMENT IS INDICATED BY A NUMBER IN A CIRCLE. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE LOAD DESCRIPTION AND TYPE OF CONNECTION. THE CIRCUIT DESIGNATION IS INDICATED BY NUMBER(S) ADJACENT TO THE SYMBOL. EXAMPLE: EQUIPMENT NO. ELEC-1; 1 PHASE CONNECTION TO CIRCUITS 2, 4.

PANELBOARDS. PANELBOARD DOORS MAY BE SHOWN TO INDICATE OPENING SIDE OF RECESSED PANELBOARDS. SEE PANELBOARD IDENTIFICATION FOR DESIGNATION CODES.

FLOOR CLEARANCE AREA

MOTOR CONNECTIONS. THE MOTOR IS INDICATED BY A NUMBER WITHIN OR CHARACTERS ADJACENT TO THE MOTOR SYMBOL. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE MOTOR DESCRIPTION AND ELECTRICAL REQUIREMENTS.

T1 — TRANSFORMERS. THE TRANSFORMER TYPE IS INDICATED BY A NUMBER FOLLOWING THE UPPER CASE LETTER "T". SEE THE TRANSFORMER SCHEDULE OR THE SINGLE LINE DIAGRAM FOR THE TRANSFORMER DESCRIPTION AND REQUIREMENTS. EXAMPLE: TRANSFORMER TYPE "T1".

CONDUIT IN CEILING, FLOOR OR WALL AS REQUIRED BY FIELD CONDITIONS

CONDUIT IN FLOOR

#12 — CONDUIT SHOWN WITHOUT SLASH MARKS SHALL CONTAIN 1 # 12 CONDUCTOR PER PHASE, NEUTRAL, AND GROUND IN 1/2" CONDUIT UNLESS SPECIFIC EQUIPMENT REQUIRES A DIFFERENT SIZE.

#10 — CONDUIT SHOWN SHALL CONTAIN 1 # 10 CONDUCTOR PER PHASE IN ELECTRICAL CODE SIZED MINIMUM CONDUIT UNLESS A CONDUCTOR AND CONDUIT SIZE IS SHOWN ADJACENT.

P4N-102 1, 3, 5 — HOME RUN TO BRANCH CIRCUIT PANELBOARD. THE PANELBOARD DESIGNATION IS SHOWN ADJACENT TO THE HOME RUN ARROW AS A NUMERATOR AND THE CIRCUIT DESIGNATION IS SHOWN AS THE DENOMINATOR. CIRCUIT BREAKER SIZES (AMPS/NUMBER OF POLES) ARE SHOWN IN THE PANELBOARD SCHEDULE WITH THE CORRESPONDING PANELBOARD AND CIRCUIT DESIGNATION. EXAMPLE: HOME RUN TO PANELBOARD P4N-102; CIRCUITS 1, 3, 5.

GRAPHICAL REPRESENTATION OF PHASING, TYPICAL FOR ALL SYMBOLS.

EXISTING TO REMAIN
EXISTING TO BE REMOVED
NEW
ITEM TO BE REMOVED
AREA NOT IN CONTRACT

1 — REVISION NUMBER - SHOWN ON PLANS

- / --- — NUMBER OF DETAIL ON SHEET / NUMBER OF SHEET WHERE DETAIL APPEARS

1 — KEYED NOTE (SEE SCHEDULE)

Room 6 — ROOM NAME AND NUMBER

PANELBOARD IDENTIFICATION

P4N-102

1. EQUIPMENT DESIGNATION:
L = LIGHTING
P = POWER
D = DISTRIBUTION
S = SWITCHBOARD
M = MOTOR CONTROL CENTER
R = RELAY PANEL

2. VOLTAGE DESIGNATION:
1 = 120/240V - 1PH
2 = 240V - 3PH
3 = 208Y/120V - 3PH
4 = 480Y/277V - 3PH
5 = 120/208 - 1PH
6 = SPECIAL

3. SYSTEM DESIGNATION:
N = NORMAL
E = EMERGENCY
C = POWER CONDITIONED
U = UNINTERRUPTIBLE POWER SOURCE

SHORTHAND CIRCUIT REFERENCE:
THE DIGITS TO THE LEFT OF THE DASH OR SLASH IN CIRCUIT DESIGNATIONS REFERS TO THE LAST DIGITS OF THE PANEL NAME.

FOR EXAMPLE,"02-19" OR "02/19" REFER TO PANELBOARD P4N-102 CIRCUIT 19.

5. PANEL NO. DESIGNATION:
01 = PANELBOARD #1
02 = PANELBOARD #2
03 = PANELBOARD #3
ETC.

4. FLOOR DESIGNATION:
B = BASEMENT
G = GROUND
1 = FIRST FLOOR
2 = SECOND FLOOR
ETC.

ELECTRICAL GENERAL NOTES

A CONDUCTORS OPERATING AT 50 VOLTS OR GREATER SHALL BE IN RACEWAY. RACEWAY WITHIN THE STRUCTURE ABOVE THE FLOOR SLAB SHALL BE METAL. RACEWAY BELOW THE FLOOR SLAB AND UNDERGROUND RACEWAY OUTSIDE THE STRUCTURE SHALL BE PVC.

B LOW VOLTAGE CABLES OR CONDUCTORS OPERATING AT LESS THAN 50 VOLTS SHALL BE IN METAL RACEWAY WHERE INSTALLED WITHIN WALLS OR INACCESSIBLE SPACES. LOW VOLTAGE CABLES MAY BE RUN IN CABLE TRAY WHERE NOTED. LOW VOLTAGE CABLES MAY BE RUN IN CABLE SUPPORT HOOKS ABOVE ACCESSIBLE CEILINGS WHERE NOTED. LOW VOLTAGE CABLE SHALL BE PLENUM RATED IN PLENUM SPACES.

B LOW VOLTAGE CABLES OR CONDUCTORS OPERATING AT LESS THAN 50 VOLTS SHALL BE IN METAL RACEWAY. LOW VOLTAGE CABLES MAY BE RUN IN CABLE TRAY WHERE NOTED. LOW VOLTAGE CABLE SHALL BE PLENUM RATED IN PLENUM SPACES.

C COORDINATE LOCATIONS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND DETAILS. ARCHITECTURAL ELEVATIONS AND DETAILS TAKE PRECEDENCE OVER LOCATIONS SHOWN ON ELECTRICAL DRAWINGS.

D PROVIDE CABLE OR CONDUIT AND WIRE AS REQUIRED TO ACHIEVE CIRCUITING SHOWN. SIZE CONDUCTORS PER NEC AMPACITY AND WIRE FILL CRITERIA. PROVIDE DEDICATED NEUTRAL AND GROUND CONDUCTORS FOR CIRCUITING UNLESS NOTED OTHERWISE. INCREASE BRANCH CIRCUIT AND/OR FEEDER CONDUCTORS INCLUDING EQUIPMENT GROUNDING CONDUCTORS PROPORTIONALLY FOR NO MORE THAN 3% VOLTAGE DROP ON BRANCH CIRCUITS AND 2% ON FEEDERS PER ENERGY CODE.

E IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE INSTALLATION OF ELECTRICAL SYSTEMS AND THOSE REQUIRING ELECTRICAL CONNECTIONS TO MAINTAIN NEC REQUIRED CLEARANCES, INCLUDED BY NOT LIMITED TO AREAS ABOVE ACCESSIBLE CEILINGS.

F COORDINATE WITH OTHER TRADES FOR PROPER INSTALLATION OF EQUIPMENT. CONSULT THE DRAWINGS OF OTHER TRADES OR CRAFTS TO AVOID CONFLICTS WITH EQUIPMENT, ETC. CONFLICTS SHALL BE RESOLVED PRIOR TO ROUGH-IN AND AT NO ADDITIONAL COST TO THE OWNER.

G LEAVE THE SITE CLEAN AND READY FOR OCCUPANCY. REMOVE DIRT, DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT AND WIRE SCRAPS AND MISCELLANEOUS SPARE EQUIPMENT AND MATERIALS USED IN THIS DIVISION OF THE WORK DURING CONSTRUCTION. COMPONENTS SHALL BE FREE OF DUST, GRIT AND FOREIGN MATERIALS AND LEFT AS NEW BEFORE FINAL ACCEPTANCE OF WORK.

H THE SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY OR MAY NOT BE USED IN THIS SET OF DRAWINGS.

I PERFORM WORK TO COMPLY WITH THE STANDARD PRACTICES FOR GOOD WORKMANSHIP PUBLISHED BY NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA). COMPLY WITH THE LATEST ENFORCED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC), LOCAL CODES, AMENDMENTS, AND ORDINANCES.

J FIELD COORDINATE FINAL MECHANICAL AND EQUIPMENT LOCATIONS ALONG WITH CONNECTION REQUIREMENTS AND CONTROL WIRING PRIOR TO ROUGH-IN. ADJUST CORRESPONDING CIRCUIT BREAKER RATINGS AND BRANCH CIRCUITING ACCORDINGLY.

K ELECTRICAL WORK SHALL BE PERFORMED UNDER THE SUPERVISION OF A LICENSED MASTER ELECTRICIAN. PROCURE PERMITS AND LICENSES AND PAY FEES ASSOCIATED WITH THIS WORK.

L MATERIALS FURNISHED FOR THIS PROJECT SHALL BE NEW, COMMERCIAL GRADE, FREE OF DEFECTS, AND LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY UNO.

M PROVIDE COMPLETE OPERATION & MAINTENANCE MANUAL INCLUDING APPROVED SUBMITTAL DRAWINGS, WARRANTY INFORMATION FOR PRODUCT SUPPLIED,AND MANUFACTURES OPERATION AND MAINTENANCE INSTRUCTIONS.

N THE CONTRACTOR IS RESPONSIBLE FOR MAKING FINAL WIRING TERMINATIONS TO PRE-INSTALLED RECEPTACLES IN OFFICE FURNITURE. CONTRACTOR IS RESPONSIBLE FOR WIRING AND INSTALLING VOICE/DATA DEVICES IN OFFICE FURNITURE. COORDINATE PLACEMENT OF DEVICES WITH FURNITURE LAY-OUT.

O SECURITY SYSTEM TO BE PROVIDED UNDER SEPARATE CONTRACT. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO PROVIDE CONDUIT PROVISIONS, BACK BOXES, ROUGH-INS, SLEEVES AND POWER TO HEAD END EQUIPMENT FOR EXACT REQUIREMENTS PRIOR TO START OF WORK.

P CONDUIT AND WIRE SHALL NOT BE INSTALLED BELOW FLOOR SLAB UNLESS INDICATED ON PLAN BY DASHED CONDUIT.

Q CONTRACTOR SHALL BE RESPONSIBLE FOR WIRING ELECTRICAL ITEMS SHOWN ON DRAWINGS EXCEPT FOR ITEMS LISTED IN NOTE 'R' BELOW.

R TV OUTLETS, VOLUME CONTROLS, NURSE CALL DOME LIGHTS, NURSE CALL DEVICES, TELEPHONE OUTLETS, DATA OUTLETS, AND FIRE ALARM DEVICES SHALL CONSIST OF A BACK BOX WITH CONDUIT STUBBED ABOVE THE ACCESSIBLE CEILING, SEE STUB UP DETAIL.VERIFY SIZE OF BACK BOX REQUIRED WITH DEVICE TO BE INSTALLED. LOCATE BACK BOXES 6" FROM ADJACENT POWER RECEPTACLE INTENDED FOR COMPUTER USE.

S FURNISH AND INSTALL CONDUIT FROM BACK BOXES FOR THE FOLLOWING DEVICES INTO THE ACCESSIBLE CEILING SPACE IN THE CORRIDOR, UNLESS NOTED OTHERWISE:
1/2"C TV OUTLETS
1/2"C VOLUME CONTROLS
1/2"C DOOR SECURITY DEVICES (CARD READERS, DOOR STRIKES ETC..)
1/2"C NURSE CALL DOME LIGHTS
3/4"C NURSE CALL DEVICES
3/4"C TELEPHONE OUTLETS
3/4"C INFORMATION OUTLETS
3/4"C FIRE ALARM DEVICES

ELECTRICAL REMODEL NOTES

A BRANCH CIRCUITING INDICATED ON PLANS AND SCHEDULES IS BASED UPON EXISTING PLANS AND SITE OBSERVATION, CONTRACTOR TO FIELD VERIFY.

B PROVIDE TYPED CIRCUIT BOARD DIRECTORIES TO REFLECT AS-CONSTRUCTED CONDITIONS. FIELD VERIFY DURING CONSTRUCTION AND REVISE ACCORDINGLY.

C PROVIDE NECESSARY DEMOLITION TO FACILITATE NEW CONSTRUCTION WORK ASSOCIATED WITH THIS PROJECT. COORDINATE OUTAGES WITH OWNER MINIMUM 72 HOURS IN ADVANCE. OWNER RETAINS RIGHT TO FIRST SALVAGE. PROVIDE DISPOSAL OF REMOVED MATERIAL. MAINTAIN CIRCUIT CONTINUITY AS REQUIRED.

D IT IS THE INTENT OF THESE DIAGRAMMATIC DRAWINGS TO PROVIDE THE PROJECT SCOPE INCLUDING, BUT NOT LIMITED TO PHASED DEMOLITION AND NEW CONSTRUCTION. EXISTING INFORMATION INDICATED ON THESE PLANS DOES NOT REPRESENT ALL EXISTING CONDITIONS. THIS CONTRACTOR SHALL BECOME FAMILIAR WITH EXISTING CONDITIONS, SCOPE OF PHASING, AND PROJECT INTENT PRIOR TO BID SUBMISSION. NO EXTRA WILL BE ALLOWED DUE TO THE LACK OF KNOWLEDGE OF EXISTING CONDITIONS TO COORDINATE RELOCATION OF ELECTRICAL SYSTEMS AS REQUIRED.

E PROVIDE CUTTING, PATCHING, AND RESTORATION OF FINISHES NECESSARY FOR WORK SURFACES DAMAGED BY THIS WORK AND SPACES AROUND CONDUITS PASSING THROUGH FLOORS AND WALLS SHALL BE NEATLY PATCHED AND FINISHED TO MATCH NEW/EXISTING. STRUCTURAL MEMBERS SHALL NOT BE CUT OR PENETRATED IN ANY MANNER. THE SPACES AROUND THE CONDUITS SHALL BE SEALED TO PREVENT ENTRANCE OF MOISTURE. PROVIDE FIRE STOPPING PER UL APPROVED METHODS.

F REMOVE ABANDONED WIRING COMPLETE. AT CONTRACTORS OPTION, UTILIZE EXISTING ABANDONED RACEWAY TO EXTENT AVAILABLE. EXPOSED ABANDONED RACEWAY SHALL BE REMOVED.

G COORDINATE WORK IN PHASES WITH GENERAL CONTRACTOR AND OWNER TO FACILITATE DEMOLITION AND NEW CONSTRUCTION.

H REMOVE ELECTRICAL RELATED EQUIPMENT (I.E JUNCTION BOXES, RECEPTACLES, SWITCHES, DEVICES, ETC...) AFFECTED/ABANDONED AS A RESULT OF DEMOLITION AND NEW CONSTRUCTION.

ELECTRICAL SHEET INDEX

SHEET	DESCRIPTION
E000	ELECTRICAL TITLE SHEET
E201	CONCESSION BUILDING ELECTRICAL PLAN
E202	RESTROOM PAVILION ELECTRICAL PLAN - BID ALTERNATE 1
E801	ELECTRICAL SCHEDULES
SHEET COUNT: 4	

AYRES
MECHANICAL, ELECTRICAL, PLUMBING (MEP)
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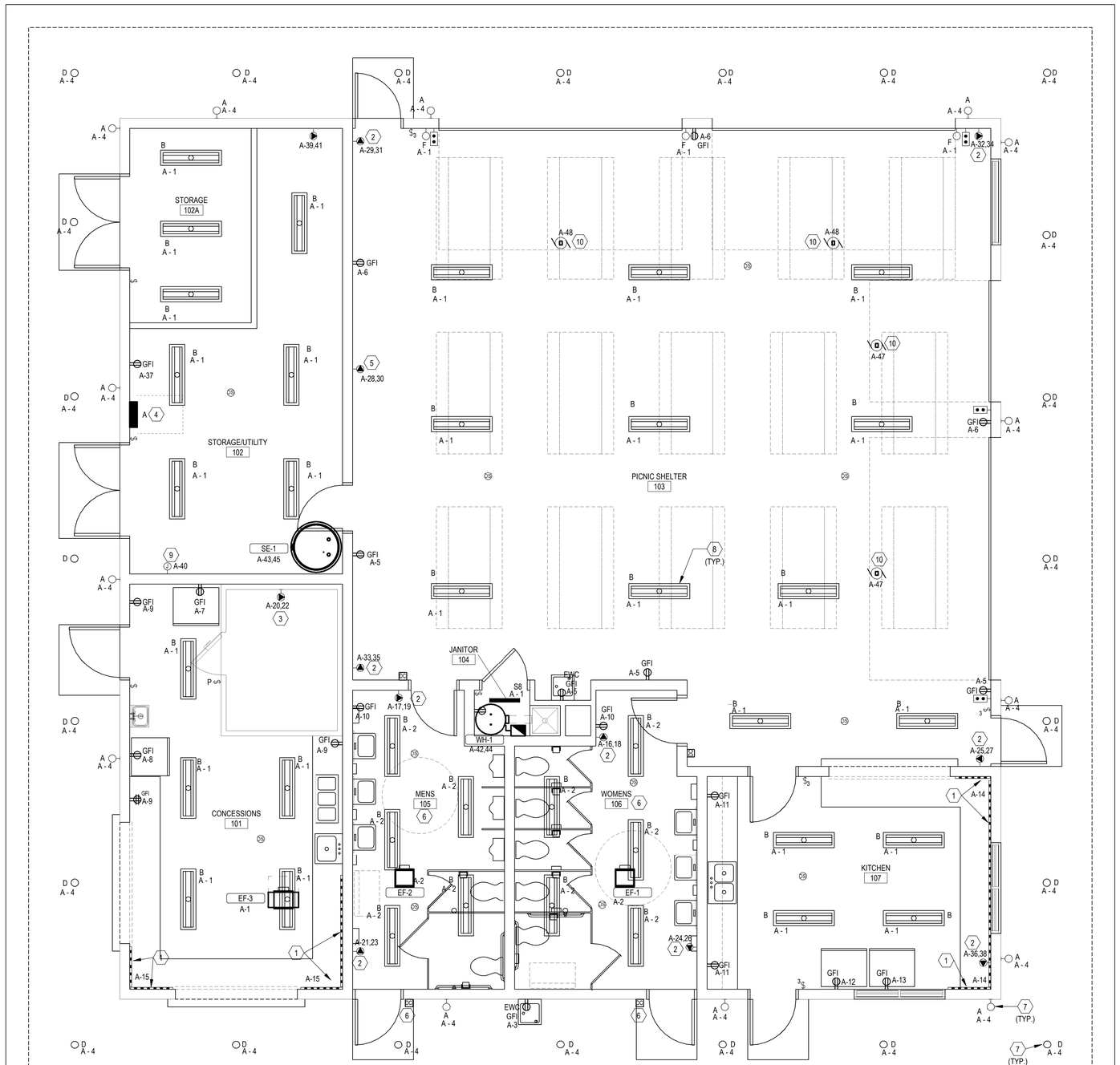
Date
Revision

MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

Drawn By:	ALE
Checked By:	ALB
Date:	03/21/2025
Project No:	24-0389
Sheet Number	

E000



1 E201 PICNIC PAVILION ELECTRICAL PLAN
1/4" = 1'-0"

POWER GENERAL NOTES

A. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ROUGH IN, INSTALLATION AND TRIM. PROVIDE NECESSARY WIRE, CONNECTORS, GROUNDING, CONDUIT, ETC FOR A COMPLETE ELECTRICAL SYSTEM INSTALLATION. REFER TO EQUIPMENT SUPPLIED DRAWINGS BY BUILDING INSTALLER FOR ADDITIONAL INFORMATION.

KEYNOTES

1. MOUNT DUPLEX RECEPTACLE IN WIREMOLD EVERY TWO FEET. WIREMOLD TO BE MOUNTED ABOVE COUNTER AND BELOW WINDOW.
2. PROPOSED LOCATION OF FUTURE WALL HUNG ELECTRIC UNIT HEATER. 240V, 10KW, 42A.
3. SPECIAL PURPOSE RECEPTACLE FOR WALK IN COOLER. COORDINATE REQUIREMENTS PRIOR TO ROUGH IN.
4. PROVIDE NEW 120/240V PANEL.
5. PROVIDE 50A SPECIAL RECEPTACLE MOUNTED AT 48" AFF.
6. RESTROOM DOORS HAVE ELECTRIC STRIKE THAT IS CONNECTED TO A TIMECLOCK THAT AUTOMATICALLY OPENS AND LOCKS THE DOORS AND TURNS ON AND OFF THE LIGHTING, HEAT AND EXHAUST FAN. COORDINATE WITH CITY ON WHAT NEEDS TO BE ON A TIMECLOCK. TIMECLOCK PROVIDED BY CITY.
7. DOWNLIGHTS AND BUILDING WALL MOUNTED LIGHTS ARE CONTROLLED VIA TIMECLOCK. COORDINATE WITH CITY.
8. INTERIOR LIGHTS CONTROLLED VIA OCCUPANCY SENSORS LOCATED IN CEILING.
9. JUNCTION BOX FOR HEAT TRACE ON FIRE PROTECTION RISER. PROVIDE CHROMOLAX SRL8. ACCOUNT FOR APPROX 30 FEET AROUND FIRE PROTECTION RISER. PROVIDE COMGINATION SINGLE POINT TEMPERATURE CONTROL AND POWER CONNECTION BOX TYPE UBC LINE SENSING TYPE. COORDINATE IN FIELD LOCATION. POWER FROM PANEL SHOWN.
10. GARAGE DOOR MOTOR. 3/4 HP, 120V. PROVIDE POWER TO DOOR OPENER AND LOW VOLTAGE WIRING TO OPEN/CLOSE PUSHBUTTON NEXT TO DOOR.

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Date
Revision

MALONE PARK
CITY OF NEW BERLIN, WI
PARK STRUCTURES

Drawn By:	ALE
Checked By:	ALB
Date:	03/21/2025
Project No:	24-0389

Sheet Number

E201

SCHEDULE: B

Location: UTILITY 102
Supply From:
Mounting: SURFACE
Enclosure: NEMA 1

Volts: 120/240
Phases: 1
Wires: 3
Ground Bus: Yes

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MCB
Mains Rating: 200 A
Bus Rating: 200 A

Notes:

CCT	Circuit Description	Load Type	Rating	Poles	A	B	A	B	Poles	Rating	Load Type	Circuit Description	CCT
1	PATIO LIGHTS	L	20 A	1	229 VA		440 VA		1	20 A	MTR; ...	RESTRM RECEPTS/LIGHTS	2
3	UTILITY RECEPT/EWC RECEPT	R	20 A	1		360 VA		720 VA	1	20 A	R	PATIO RECEPTS	4
5	PATIO GEN RECEPTS	R	20 A	1	720 VA		0 VA		2	50 A	PN	PATIO SPECIAL RECEPT	6
7	PATIO SPECIAL RECEPT 50A	PN	50 A	2		0 VA		0 VA					8
9					0 VA		4800 VA		1	20 A	MN	SUMP PUMP	10
11	WATER HEATER	C	30 A	2		1250 VA		1800 VA	1	20 A	C	EUH-2	12
13					1250 VA		1800 VA		1	20 A	C	EUH-3	14
15	ELECTRIC HAND DRYER RESTROOM	PN	20 A	1		1000 VA		1800 VA	1	20 A	C	EUH-1	16
17	ELECTRIC HAND DRYER RESTROOM	PN	20 A	1	1000 VA								18
19													20
21													22
23													24
25													26
27													28
29													30
31													32
33													34
35													36
37													38
39													40
41													42
				Total...	10239 VA			0 VA					
				Total...	85 A			0 A					

Load Classification	Connected Load	Load Factor	Calculated Load	Panel Totals	
MTR	24 VA	125.00%	30 VA		
L	285 VA	125.00%	356 VA	**Total Conn. Load:**	17169 VA
MN	4800 VA	100.00%	4800 VA	**Total Est. Demand:**	19221 VA
R	2160 VA	100.00%	2160 VA	**Total Conn.:**	72 A
PN	2000 VA	100.00%	2000 VA	**Total Est. Demand:**	80 A
C	7900 VA	125.00%	9875 VA		

Notes:
MTR = MOTOR (INCLUDES LARGEST MOTOR)
L = LIGHTING (CONTINUOUS)
R = RECEPTACLE
C = CONTINUOUS
PN = POWER NON-SEASONAL (NON-CONTINUOUS)
VT = VERTICAL TRANSPORTATION

SCHEDULE: C

Location: SHELTER N/A
Supply From:
Mounting: SURFACE
Enclosure: NEMA1

Volts: 120/208
Phases: 1
Wires: 3
Ground Bus:

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MCB
Mains Rating: 100 A
Bus Rating: 100 AMPS

Notes:

CCT	Count	Circuit Description	Load Type	Rating	Poles	A	B	A	B	Poles	Rating	Load Type	Circuit Description	Count	CCT
1	4	SHELTER LIGHTING	L	20 A	1	112 VA		720 VA		1	20 A	R	SHELTER RECEPT	4	2
3	--	SPARE	--	20 A	1		0 VA		0 VA	1	20 A	--	SPARE	--	4
5	--	SPACE	--	--	1	--		--		1	--	--	SPACE	--	6
7	--	SPACE	--	--	1		--		--	1	--	--	SPACE	--	8
				Total...		832 VA			0 VA						
				Total...		7 A			0 A						

Load Classification	Connected Load	Load Factor	Calculated Load	Panel Totals	
L	112 VA	125.00%	140 VA		
R	720 VA	100.00%	720 VA	**Total Conn. Load:**	832 VA
				Total Est. Demand:	860 VA
				Total Conn.:	4 A
				Total Est. Demand:	4 A

Notes:
MTR = MOTOR (INCLUDES LARGEST MOTOR)
L = LIGHTING (CONTINUOUS)
R = RECEPTACLE
C = CONTINUOUS
PN = POWER NON-SEASONAL (NON-CONTINUOUS)
VT = VERTICAL TRANSPORTATION

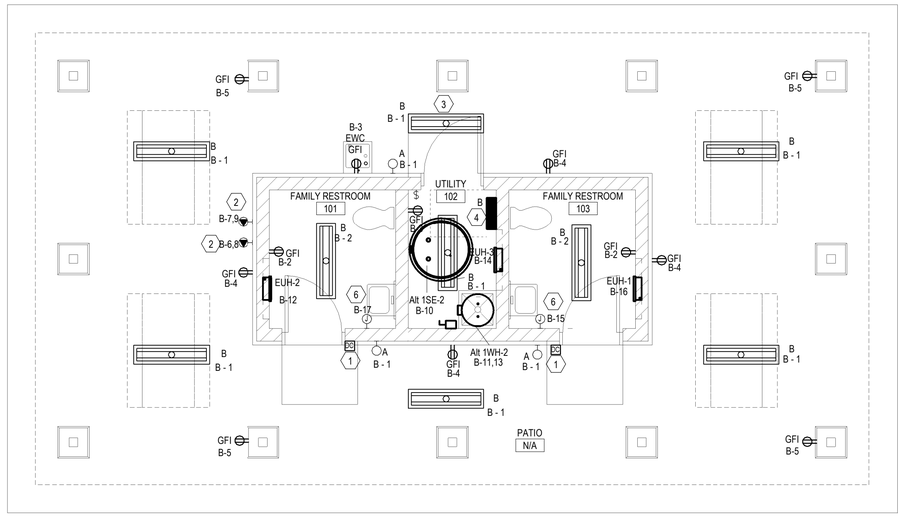
KEYNOTES

1 RESTROOM DOORS HAVE ELECTRIC STRIKE THAT IS CONNECTED TO A TIMECLOCK THAT AUTOMATICALLY OPENS AND LOCKS THE DOORS AND TURNS ON AND OFF THE LIGHTING, HEAT AND EXHAUST FAN. COORDINATE WITH CITY ON WHAT NEEDS TO BE ON A TIMECLOCK. TIMECLOCK PROVIDED BY CITY.
2 TWO 50A SPECIAL RECEPTACLES MOUNTED ON WALL AT 48" AFF. COORDINATE WITH CITY FOR MORE INFORMATION.
3 PAVILLION/SHELTER LIGHTING CONTROLLED VIA TIMECLOCK. TIMECLOCK PROVIDED BY THE CITY.
4 PROVIDE 120/240V PANEL.
5 SMALL 120/240V PANEL LOCATED HIGH ON LH COLUMN AS SHOWN.
6 PROVIDE CONNECTION TO 120V HAND DRYER. VERIFY MOUNTING HEIGHT AND ELECTRICAL REQUIREMENTS PRIOR TO ROUGH IN.

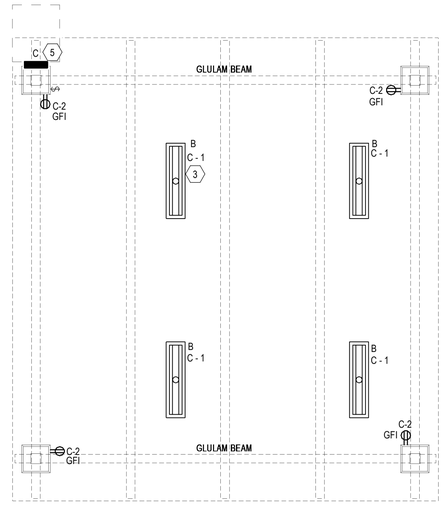
POWER GENERAL NOTES

A. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ROUGH IN, INSTALLATION AND TRIM. PROVIDE NECESSARY WIRE, CONNECTORS, GROUNDING, CONDUIT, ETC FOR A COMPLETE ELECTRICAL SYSTEM INSTALLATION. REFER TO EQUIPMENT SUPPLIED DRAWINGS BY BUILDING INSTALLER FOR ADDITIONAL INFORMATION.

B. REFER TO SHEET E801 FOR EQUIPMENT SCHEDULES.



1 E202 RESTROOM PAVILION ELECTRICAL PLAN - BID ALTERNATE 1
1/4" = 1'-0"



2 E202 SHELTER ELECTRICAL PLAN - BID ALTERNATE 2
1/4" = 1'-0"

AYRES
MECHANICAL, ELECTRICAL, PLUMBING (MEP)
1700 West Highway 36 - Suite 700
Roseville, Minnesota 55113
(651) 639-9606 Fax (651) 639-9618
Project No. 24-0389 .

Date
Revision

MALONE PARK
CITY OF NEW BERLIN, WI
PARK STRUCTURES

Drawn By: ALE
Checked By: ALB
Date: 03/21/2025
Project No: 24-0389

Sheet Number
E202

ELECTRICAL EQUIPMENT SCHEDULE

ID	LOCATION NAME	ROOM #	EQUIPMENT INFORMATION MOTOR POWER	FLA	MCA	MOCP	VOLT	PH	CIRCUIT INFORMATION PANEL	CCT #	WIRE & CONDUIT SIZE	INTERLOCK ID	REMARKS
Ceiling Fan													
EF-1	WOMENS	106	0.05 hp	1 A	1 A	15 A	120 V	1	A	2	2#12,#12G,1/2"C		
EF-2	MENS	105	0.05 hp	1 A	1 A	15 A	120 V	1	A	2	2#12,#12G,1/2"C		
EF-3	CONCESSIONS	101	0.06 hp	2 A	2 A	15 A	120 V	1	A	1	2#12,#12G,1/2"C	INTAKE LOUVER	
Electric Unit Heater													
EUH-1	WOMEN	103	0.00 hp	15 A	15 A	20 A	120 V	1	B	16	2#12,#12G,1/2"C		
EUH-2	MEN	101	0.00 hp	15 A	15 A	20 A	120 V	1	B	12	2#12,#12G,1/2"C		
EUH-3	UTILITY	102	0.00 hp	15 A	15 A	20 A	120 V	1	B	14	2#12,#12G,1/2"C		
OVERHEAD DOOR OPENER													
OD-1	PICNIC SHELTER	103	0.75 hp	11 A	14 A	25 A	120 V	1	A	47	2#10,#10G,1/2"C		
OD-2	PICNIC SHELTER	103	0.75 hp	11 A	14 A	25 A	120 V	1	A	47	2#10,#10G,1/2"C		
OD-3	PICNIC SHELTER	103	0.75 hp	11 A	14 A	25 A	120 V	1	A	48	2#10,#10G,1/2"C		
OD-4	PICNIC SHELTER	103	0.75 hp	11 A	14 A	25 A	120 V	1	A	48	2#10,#10G,1/2"C		
Pump													
SE-1	STORAGE/UTILITY	102	5.00 hp	28 A	28 A	60 A	240 V	1	A	43,45	3#6,#10G,1"C		
SE-2	UTILITY	102	1.50 hp	40 A	45 A	50 A	120 V	1	B	10	2#8,#10G,3/4"C		
Water Heater													
WH-1	JANITOR	104		125 A	125 A	150 A	240 V	1	A	42,44	3#1/0,#1/0,2"C		
WH-2	UTILITY	102		10 A	13 A	15 A	240 V	1	B	11,13	3#12,#12G,1/2"C		

SCHEDULE: A

Location: STORAGE/UTILITY 102
Supply From:
Mounting: SURFACE
Enclosure: NEMA 1

Volts: 120/240
Phases: 1
Wires: 3
Ground Bus: Yes

A.I.C. Rating: 10,000 AMPS SYMMETRICAL
Mains Type: MCB
Mains Rating: 200 A
Bus Rating: 200 A

Notes:

CCT	Count	Circuit Description	Load Type	Rating	Poles	A	B	A	B	Poles	Rating	Load Type	Circuit Description	Count	CCT
1	33	UTILITY/STOR/SHELTER LTS EF-3	MTR; L	20 A	1	870 VA		306 VA		1	20 A	MTR; L	RESTRM LTG & EXHAUST FANS	12	2
3	1	WATER COOLER POWER	R	20 A	1		180 VA		438 VA	1	20 A	L	EXTERIOR WALL MTD & RECESED...	38	4
5	4	SHELTER RECEPTS	R	20 A	1	720 VA		540 VA		1	20 A	R	SHELTER RECEPTACLES	3	6
7	1	CONCESSIONS FREEZER	R	20 A	1		180 VA		180 VA	1	20 A	R	CONCESSIONS REFRIG	1	8
9	3	CONCESSIONS RECEPTS	R	20 A	1	540 VA		360 VA		1	20 A	R	RESTRM RECEPTS	2	10
11	2	KITCHEN RECEPTS	R	20 A	1		360 VA		180 VA	1	20 A	R	KITCHEN FREEZER	1	12
13	1	KITCHEN REFRIG	R	20 A	1	180 VA		720 VA		1	20 A	RCPT2	KITCHEN WIREMOLD	3	14
15	4	CONCESSIONS WIREMOLD	RCPT2	20 A	1		1620 VA		5000 VA	2	20 A	PN	FUTURE UNIT HEATER	1	16
17	1	FUTURE UNIT HEATER	PN	20 A	2	5000 VA		5000 VA							18
19							5000 VA		0 VA	2	20 A	PN	WALK IN COOLER PWR	1	20
21	1	FUTURE UNIT HEATER	PN	20 A	2	5000 VA		0 VA							22
23							5000 VA		5000 VA	2	20 A	PN	FUTURE UNIT HEATER	1	24
25	1	FUTURE UNIT HEATER	PN	20 A	2	5000 VA		5000 VA							26
27							5000 VA		6000 VA	2	50 A	PN	SPECIALTY RECEPT SHELTER	1	28
29	1	FUTURE UNIT HEATER	PN	20 A	2	5000 VA		6000 VA							30
31							5000 VA		5000 VA	2	20 A	PN	FUTURE UNIT HEATER	1	32
33	1	FUTURE UNIT HEATER	PN	20 A	2	500 VA		5000 VA							34
35							500 VA		5000 VA	2	20 A	PN	FUTURE UNIT HEATER	1	36
37	1	UTILITY RM RECEPT	R	20 A	1	180 VA		5000 VA							38
39	1	FUTURE UNIT HEATER	PN	20 A	2		500 VA		258 VA	1	20 A	PN	HEAT TRACE	1	40
41						500 VA		15000 VA		2	20 A	C	WH-1	1	42
43	1	SE-1	MN	20 A	2		2912 VA		15000...						44
45						2912 VA		0 VA		1	20 A	--	SPARE	--	46
47	2	GARAGE DOOR OPENER MTR	MTR	20 A	1		3312 VA		3312 VA	1	20 A	MTR	GARAGE DOOR OPENER MTR	2	48
49	--	SPARE	--	20 A	1	0 VA		0 VA		1	20 A	--	SPARE	--	50
51	--	SPACE	--	--	1		--		--	1	--	--	SPACE	--	52
53	--	SPACE	--	--	1	--		--		1	--	--	SPACE	--	54
55	--	SPACE	--	--	1		--		--	1	--	--	SPACE	--	56
57	--	SPACE	--	--	1	--		--		1	--	--	SPACE	--	58
59	--	SPACE	--	--	1		--		--	1	--	--	SPACE	--	60
					Total...	69328 VA			0 VA						
					Total...	578 A			0 A						

Load Classification	Connected Load	Load Factor	Calculated Load	Panel Totals	
MTR	6686 VA	106.19%	7100 VA		
L	1552 VA	125.00%	1940 VA	**Total Conn. Load:**	144260 VA
MN	5824 VA	100.00%	5824 VA	**Total Est. Demand:**	152562 VA
R	3600 VA	100.00%	3600 VA	**Total Conn.:**	601 A
PN	94258 VA	100.00%	94258 VA	**Total Est. Demand:**	636 A
C	30000 VA	125.00%	37500 VA		

Notes:
MTR = MOTOR (INCLUDES LARGEST MOTOR)
L = LIGHTING (CONTINUOUS)
R = RECEPTACLE
C = CONTINUOUS
PN = POWER NON-SEASONAL (NON-CONTINUOUS)
VT = VERTICAL TRANSPORTATION

LIGHT FIXTURE SCHEDULE

ID	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	VOLTAGE	MOUNTING	LAMP	COLOR TEMP	LUMENS	WATTS
A	EXTERIOR WALL MOUNTED LIGHT	LITHONIA LIGHTING	WPX2 LED 40K MVOLT DBLXD	120	SURFACE	LED	4000K	6000	47W
B	1X4 SURFACE LED	LITHONIA LIGHTING	CSS L48 4000LM MVOLT 35K 80CRI	120	SURFACE	LED	3500K	4000	36W
S8	2FT LED STRIP	LITHONIA LIGHTING	ZL1N L24 3500 FST MVOLT 35K 80CRI MB	120	SURFACE	LED	3500K	3500	31W
D	RECESSED DOWNLIGHT	LITHONIA LIGHTING	LDN6 35/30 LO6 BR LSS MVOLT GZ10	120	RECESSED	LED	3500K	3000	35W
F	WALL MOUNTED LIGHT	LITHONIA LIGHTING	TWX1 LED P1 30K MVOLT DWHXD	120	SURFACE	LED	3000K	1600	11W

AYRES
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(651) 639-9606 Fax (651) 639-9618
Project No. 24-0389 .

Date
Revision

MALONE PARK
CITY OF NEW BERLIN, WI
PARK STRUCTURES

Drawn By: ALE
Checked By: ALB
Date: 03/21/2025
Project No: 24-0389

Sheet Number
E801

CONSTRUCTION SERVICES

W233 N2847 ROUNDY CIRCLE WEST
PEWAUKEE, WI 53072

OFFICE: 262.542.9000
WEBSITE: www.vjscs.com

BUILDING WITH PURPOSE

BID PACKAGE 1 – ADDENDUM 1
City of New Berlin
Malone Park

April 15, 2025

Project Number: 1171492

This addendum is issued to explain, modify or correct original specifications and drawings and is hereby made part of the contract documents. This addendum must be attached to the documents/specifications in your possession. Acknowledge receipt of this addendum in the space provided on the Bid Form.

SUBJECT: BID Package 1; Addendum 1

SPECIFICATIONS:

1. None.

DRAWINGS

1. None.

PRE-BID CLARIFICATIONS

1. Details for the Stainless-Steel countertop shall be derived from note #13 on sheet A101 and building sections 1/A302 and 2/A302 as well as described in Specification Section 12 36 00 Countertops. Sinks S-1 and S-3 are specified in the Plumbing drawings to be drop-in, self rimming fixtures. All Stainless-Steel countertops with shelf and P.Lam. countertops and casework are custom, made to fit the building. P.Lam countertop and casework details are found on sheet A500.
2. A pre-bid walkthrough will be held at 9am (CDT) on Monday April 21st, 2025. The meeting will start at the parking lot North of baseball diamonds 2 and 3 for an introduction. From there, the bidders will be able to walk the site and ask questions regarding the scope of work scheduled for bid April 30th, 2025.

ATTACHMENTS:

1. Pre-Bid Walkthrough Meeting Location

Attachment #1: Pre-Bid Walkthrough Meeting Location

END OF ADDENDUM 1

CONSTRUCTION SERVICES

W233 N2847 ROUNDY CIRCLE WEST
PEWAUKEE, WI 53072

OFFICE: 262.542.9000
WEBSITE: www.vjscs.com

BUILDING WITH PURPOSE

BID PACKAGE 1 – ADDENDUM 2
City of New Berlin
Malone Park

April 21, 2025

Project Number: 1171492

This addendum is issued to explain, modify or correct original specifications and drawings and is hereby made part of the contract documents. This addendum must be attached to the documents/specifications in your possession. Acknowledge receipt of this addendum in the space provided on the Bid Form.

SUBJECT: BID Package 1; Addendum 2

SPECIFICATIONS:

1. None.

DRAWINGS

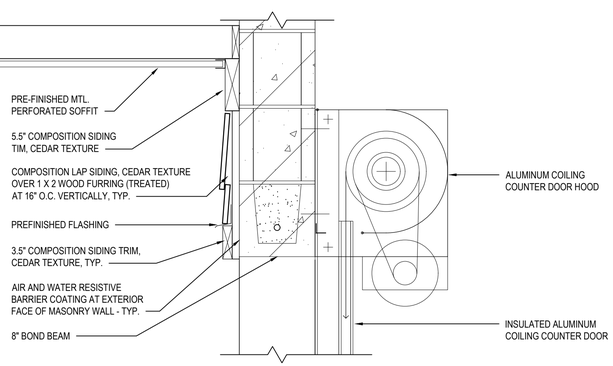
1. Included architectural drawing.
    1. Drawing Sheet: A701

PRE-BID RFI CLARIFICATIONS

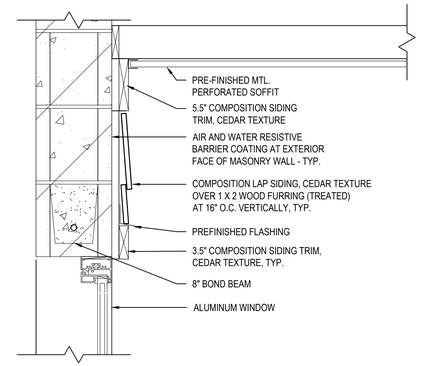
1. Page A701 as referenced on A302 for details appears to be missing from the plan set. Will this be issued? Addendum will be issued. (See attached)
2. Section 08 51 13 – Aluminum windows is issued but no operable windows appear to be included on plans. 08 43 13 also references operable sash, but none are indicated on plans. Please advise. There are no operable windows
3. Frame type B indicates 3 ½" perimeter mullions, but specifications indicate standard 2". Please provide clarification. 2" mullions shall be used refer to specifications.
4. 08 80 00 – 2.05 Laminated Glass – Not indicated on plans. Please confirm this makeup does not apply to this project. There is no laminated glass used on this project.
5. Do all (3) buildings have utility meters on them, or where are they fed from? All 3 buildings will have their own utility meters. Contractor shall coordinate connections with local utility providers for gas, electric, and fiber optic for feed locations.

ATTACHMENTS:

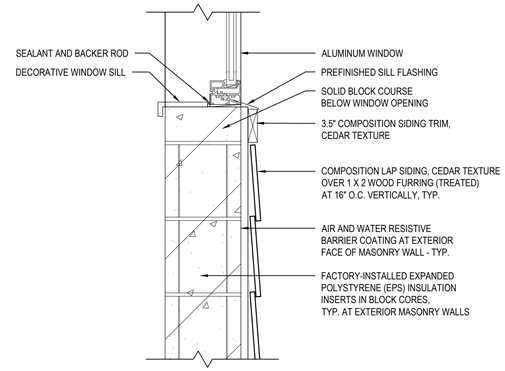
1. Architectural Drawing: Drawing Sheet: A701



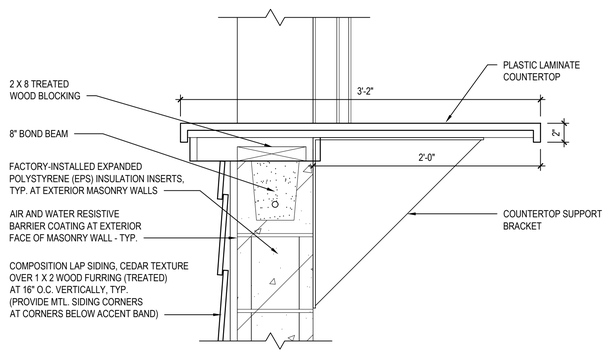
1 A701 COILING COUNTER DOOR DETAIL
SCALE: 1 1/2" = 1'-0"



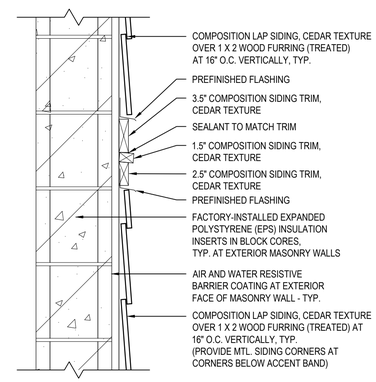
3 A701 WINDOW HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



4 A701 WINDOW SILL DETAIL
SCALE: 1 1/2" = 1'-0"



2 A701 COUNTER DETAIL
SCALE: 1 1/2" = 1'-0"



5 A701 SIDING TRANSITION DETAIL
SCALE: 1 1/2" = 1'-0"

AYRES ASSOCIATES
20975
SWENSON DR.
SUITE 200
WAUKESHA, WI 53186

Revision	Date
REVISED:	3/21/2025

MALONE PARK
CITY OF NEW BERLIN, WI

PARK STRUCTURES

Drawn By: MP
Checked By: MP
Date: 3/21/2025
Project No. 24-0389.00

Sheet Number

A701

File: I:\08\24038900 New Berlin – Malone Park\3.Production\AutoCad\A302.dwg Layout: A701 User: LiddellR Plotted: Apr. 15, 2025 – 12:19pm

END OF ADDENDUM 2

CONSTRUCTION SERVICES

W233 N2847 ROUNDY CIRCLE WEST
PEWAUKEE, WI 53072

OFFICE: 262.542.9000
WEBSITE: www.vjscs.com

BUILDING WITH PURPOSE

BID PACKAGE 1 – ADDENDUM 3
City of New Berlin
Malone Park

April 28, 2025

Project Number: 1171492

This addendum is issued to explain, modify or correct original specifications and drawings and is hereby made part of the contract documents. This addendum must be attached to the documents/specifications in your possession. Acknowledge receipt of this addendum in the space provided on the Bid Form.

SUBJECT: BID Package 1; Addendum 3

SPECIFICATIONS:

1. None.

DRAWINGS

1. None.

PRE-BID CLARIFICATIONS

1. Supplemental information for fencing and netting layout. Supplemental information is for reference only. Per Section 32 31 10 of the project specifications contractor shall submit shop drawings for fence, gate, and appurtenances sealed by a professional engineer registered in the state of Wisconsin. Shop drawing submittals shall include plan layout; fence height, location and sizes of posts, rails, braces, gates and footings; product data; and erection procedures, as well as documentation of design in accordance with the specified standards.

2. Fiberglass reinforced panels as specified in Section 06 83 16 should be installed in the Concessions #101 and Kitchen #107.

ATTACHMENTS:

1. Fence and Netting Calculations - 29 sheets

RICE ENGINEERING
105 School Creek Trail | Luxemburg, WI 54217
(P) 920.617.1042 | (F) 920.617.1100

369181A Malone Park
Barrier Netting Calculations

Project Location:
New Berlin, Wisconsin
REI Project # R25-02-046

Prepared for:
Beacon Athletics - Madison, WI
2/10/2025

Design Criteria:

1. Design Loads per IBC 2015.
2. Steel anchor plates and bars to be minimum **ASTM A-572 steel.**
3. Steel tubes to be minimum **A500 Gr. B, Fy = 42 ksi.**
4. Field and shop welding shall be **E70 or better.**
5. Concrete rebar shall be **grade 60, stirrups Fy=40 ksi**.
6. Concrete strength to be **f'c = 4,000 psi, normal weight cracked.**
7. Cement or epoxy based grout shall be a minimum **f'c= 6,000 psi, non-metallic, non-shrink.**
8. Anchor bolts to be **F1554-36**.
9. Cables to be galvanized 7x19 **ASTM 641.**
10. Soils allowable bearing capacity to be **1500 psf**.
11. Design of material separation to prevent reaction between dissimilar materials **not designed by Rice Engineering Inc.**
12. Groundwater assumed to be below bottom of footing for design. Notify Rice Engineering if groundwater is present.

Index:

Page:	Description:	Date:	Revision:
E1	Elevation & Plan	2/10/25	
1	Wind Loads	2/10/25	
2	Net Loading	2/10/25	
3	Cable Forces	2/10/25	
4	Deflection	2/10/25	
5	Cable Strength	2/10/25	
6	Base Plate	2/10/25	
	RISA Connection	2/10/25	
A1-A1A	Backstop Foundation	2/10/25	

Disclaimer:

This Certification is limited to the structural design of structural components of this Barrier Netting system.

It does NOT include responsibility for:

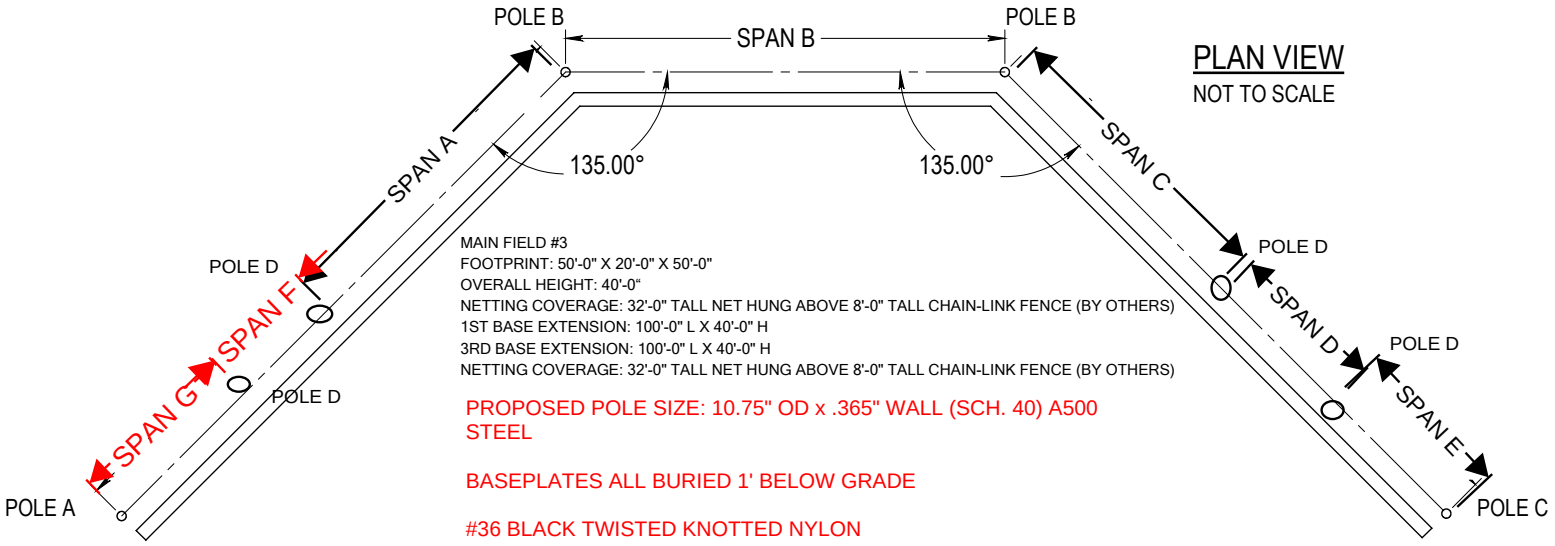
- Structural design of hardware, clevises, and turnbuckles.
- Miscellaneous plates, ties and hardware.
- Design of air and water infiltration prevention.
- The manufacture, assembly, or installation of the system.
- Quantities of materials or dimensional accuracy of drawings

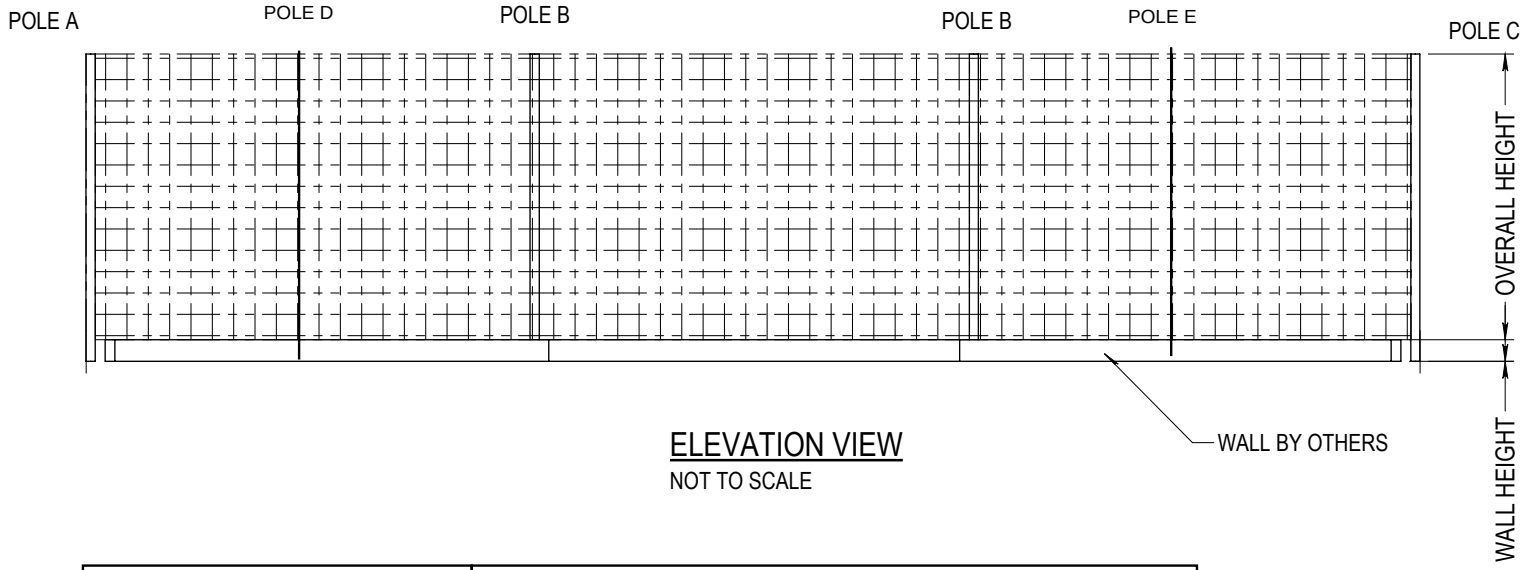
Cover Page **1** of **1**

Engineers Design Approval Stamp:

PRELIMINARY DESIGN
NOT FOR CONSTRUCTION

Elevation	Detail Ref.	Sheet No: E1





SPAN A	50'
SPAN B	20'
SPAN C	50'
SPAN D	50'
SPAN E	50'
SPAN F	50'
SPAN G	50'
OVERALL HEIGHT	40'
FENCE HEIGHT	8'

RICE ENGINEERING Template:	105 School Creek Trail Luxemburg, WI 54217 Phone: (920) 617-1042 Fax: (920) 617-1100 www.rice-inc.com	Project Description: **369181A Malone Park**	Job No: R25-02-046	
			Engineer: BMC	Sheet No: E1
			Date: 2/5/2025	Rev:
			Chk By:	Date:

ASCE 7-10 Net Wind Loads	Detail Ref.	Sheet No: 1

Inputs:

Risk Category	I		Table 1.5-1
Element Height	$z := 40$	ft	Table-30.3-1
Exposure	$E := "C"$		
Wind Velocity	$V := 105$	mph	Figure 26.5-1A, Figure 26.5-1B Figure 26.5-1C
Topographic Factor	$K_{zt} := 1.0$		Figure 26.8-1
Directionality Factor	$K_d := 0.85$		Table 26.6-1
Gust Factor:	$G := 0.85$		*per 26.9.1*
Force Coefficient:	$C_f := 1.2$		Figure 29.5-2

Calculations:

All Calculations Below This Line Are Automatic

Velocity pressure Coefficients:

$K_{zz} = 0.90$ psf

Velocity pressures:

$q_z := 0.00256 \cdot K_{zz} \cdot K_{zt} \cdot K_d \cdot V^2 = 21.59$

Calculated Pressures (ASD):

$\Phi := 0.6$ *ASD Conversion Factor*

$W := -\Phi \cdot q_z \cdot G \cdot C_f = -13.21$ psf

Other Structures		All Heights
Figure 29.5-2	Force Coefficients, C_f	Open Signs & Lattice Frameworks

ϵ	Flat-Sided Members	Rounded Members	
		$D\sqrt{q_z} \le 2.5$ ($D\sqrt{q_z} \le 5.3$)	$D\sqrt{q_z} > 2.5$ ($D\sqrt{q_z} > 5.3$)
< 0.1	2.0	1.2	0.8
0.1 to 0.29	1.8	1.3	0.9
0.3 to 0.7	1.6	1.5	1.1

Notes:

1. Signs with openings comprising 30% or more of the gross area are classified as open signs.
2. The calculation of the design wind forces shall be based on the area of all exposed members and elements projected on a plane normal to the wind direction. Forces shall be assumed to act parallel to the wind direction.
3. The area A_f consistent with these force coefficients is the solid area projected normal to the wind direction.
4. Notation:

   ϵ: ratio of solid area to gross area;

   D: diameter of a typical round member, in feet (meters);

   q_z: velocity pressure evaluated at height z above ground in pounds per square foot (N/m^2).

Net Loading	Detail Ref.	Sheet No: 2

Inputs:

Net Properties: #36 Twisted Notted Nylon - 1.75"Sq

$WT_{net} := 0.0385$ psf — *Net weight per ft. sq.*

$\%Solid := 0.09$ — *Ratio of solid to total area*

$F_{max} := 340$ lb — *max. breaking strength*

$Net_{spa} := 1.75$ in — *o.c. spacing of strands*

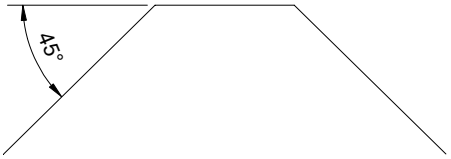
Net Geometry:

$Angle_C := 0deg$

$Angle_S := 45deg$

Design Wind Load:

$WL := 13.21$ psf



Calculations:

All Calculations Below This Line Are Automatic

Model Load Calculations:

$WL_n := WL \cdot psf \cdot \%Solid = 0.0083\,psi$

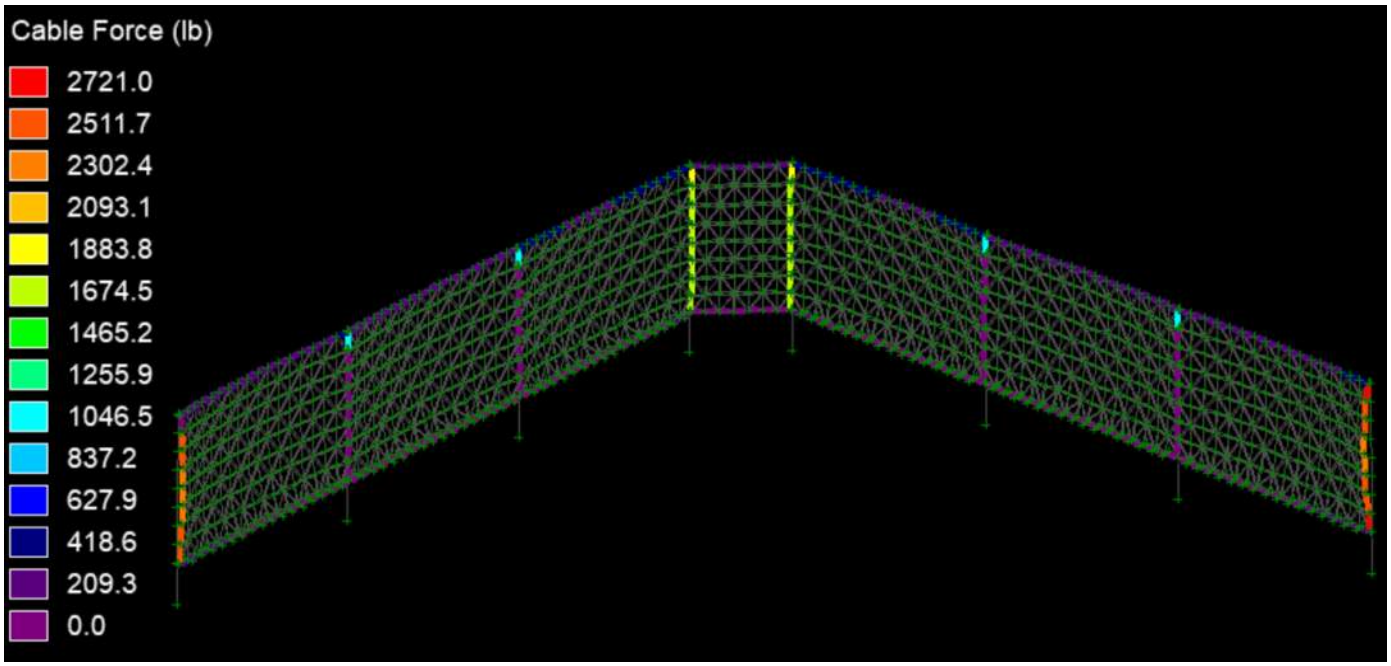
$Coef_C := \cos(Angle_C) = 1$

$Coef_S := \cos(Angle_S) = 0.707$

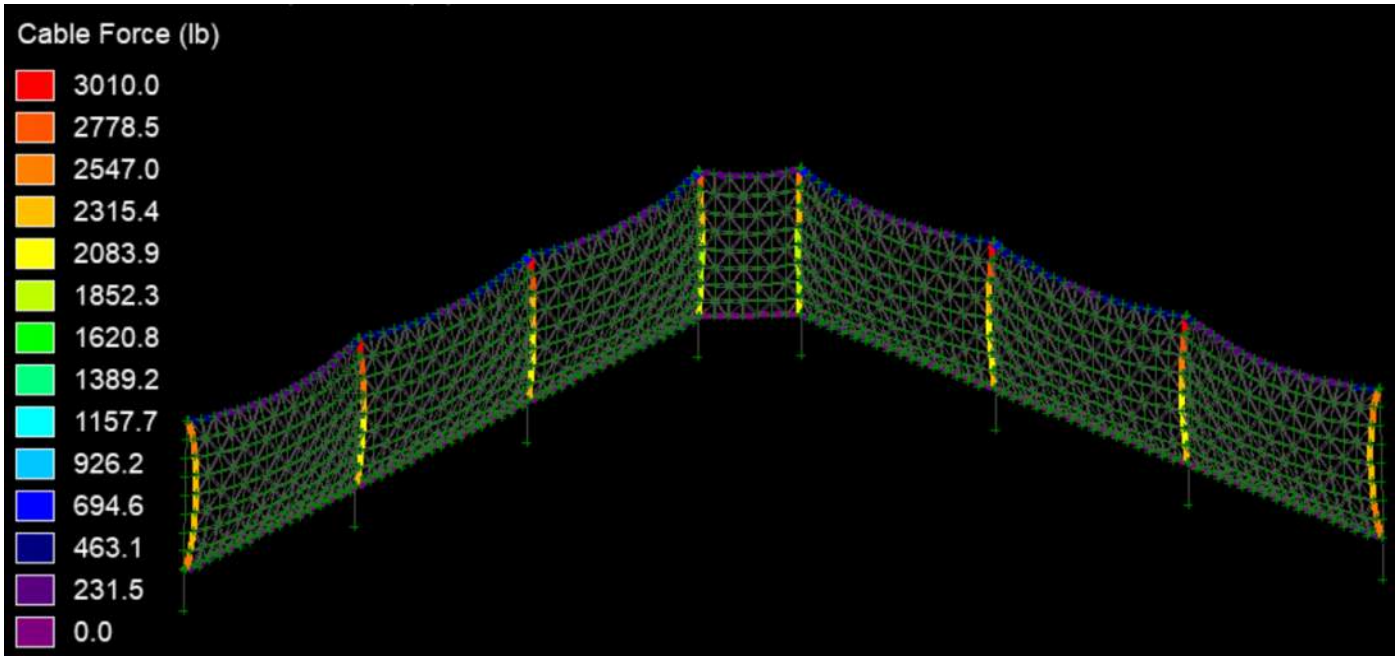
NDN Load Coef.

Cable Force	Detail Ref.	Sheet No: 3

+Y:



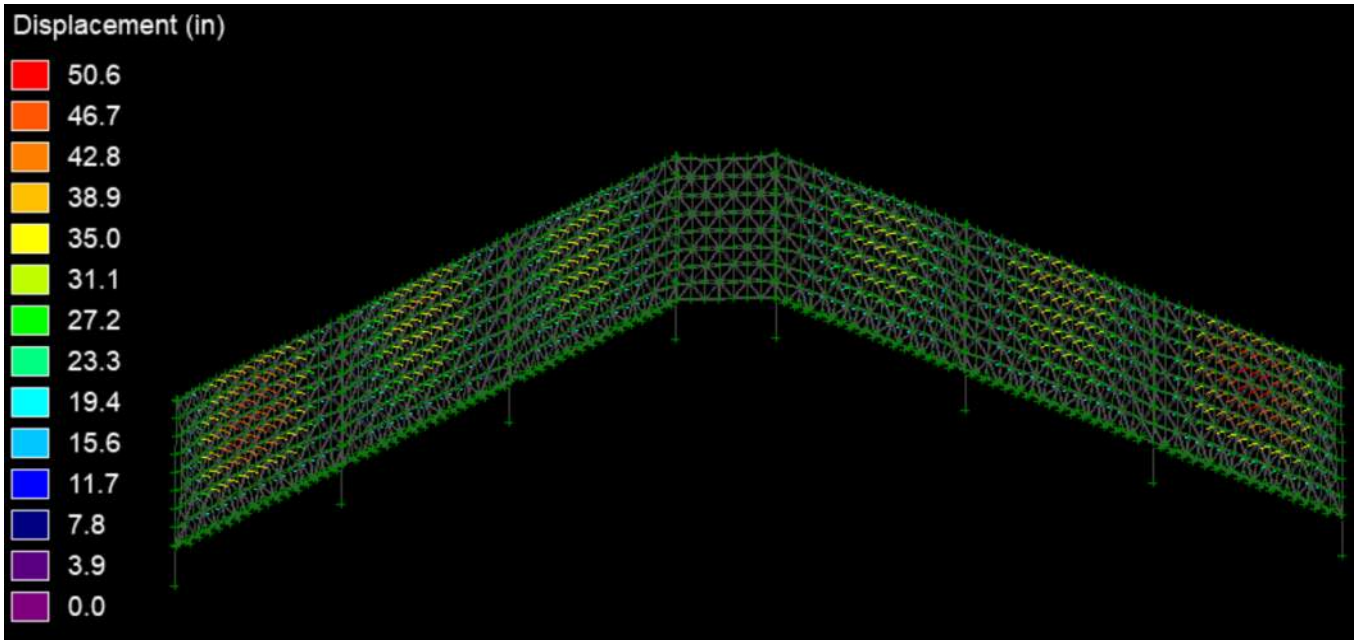
-Y:



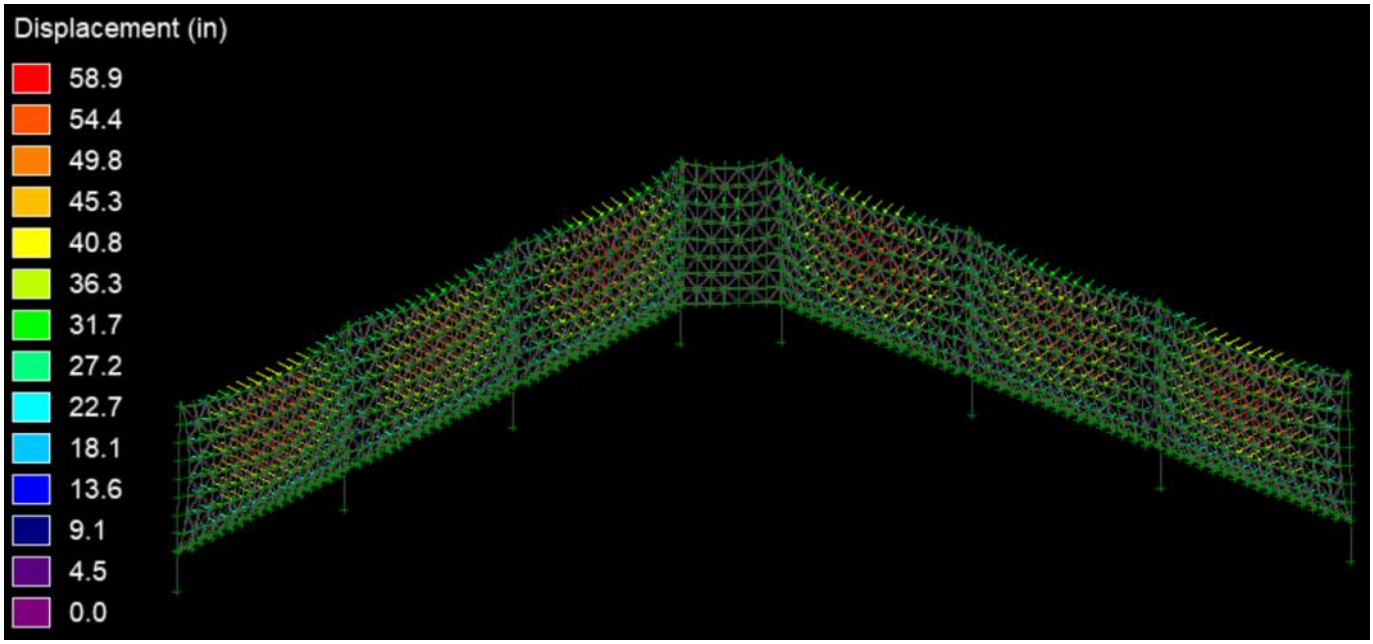
$F_{max} := 3010\,lbf$

RICE ENGINEERING Template: REI-MC-5854	105 School Creek Trail Luxemburg, WI 54217 Phone: (920)845-1042 Fax: (920)845-1048 www.rice-inc.com	Project Description: **369181A Malone Park**	Job No:	R25-02-046	
			Engineer: BMC	Sheet No: 3	
			Date: 2/5/2025	Rev:	
			Chk By:	Date:	

+Y:


Displacement (in)
50.6
46.7
42.8
38.9
35.0
31.1
27.2
23.3
19.4
15.6
11.7
7.8
3.9
0.0

-Y:


Displacement (in)
58.9
54.4
49.8
45.3
40.8
36.3
31.7
27.2
22.7
18.1
13.6
9.1
4.5
0.0

Cable Strength Check	Detail Ref.	Sheet No: 5

ASCE 19-10: Structural Applications Of Steel Cables for Buildings

Inputs:

$T_n := 3010 \cdot lbf$ *Maximum Cable Tension*

$l := 50 \cdot ft$ *Length of Cable*

$N_f \equiv 1.0$ *Fitting Reduction Factor (Table 3-1)*

$N_d \equiv 1.0$ *Deflector Reduction Factor (Table 3-2)*

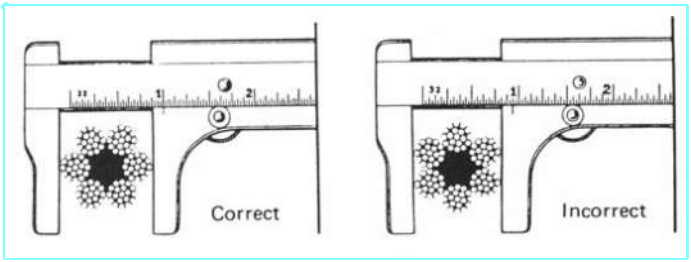
TYPE OF CABLE

cboMaterial = Galvanized Cable

cboType = 7x19

D_{r_str} = 1/4" = $0.25 \cdot in$ *Diameter of Cable*

MEASURING WIRE ROPE



Calculations:

All Calculations Below This Line Are Automatic

$FS \equiv 2.2$ *Factor of Safety per ASCE 19-10; 3.3.1 Design Strength*

$D_r = 0.25 \cdot in$ *Diameter of Wire Rope*

$WT_r = 0.12 \cdot \frac{lbf}{in}$ *Weight*

$F_{br} = 7000\ lbf$ *Breaking Strength*

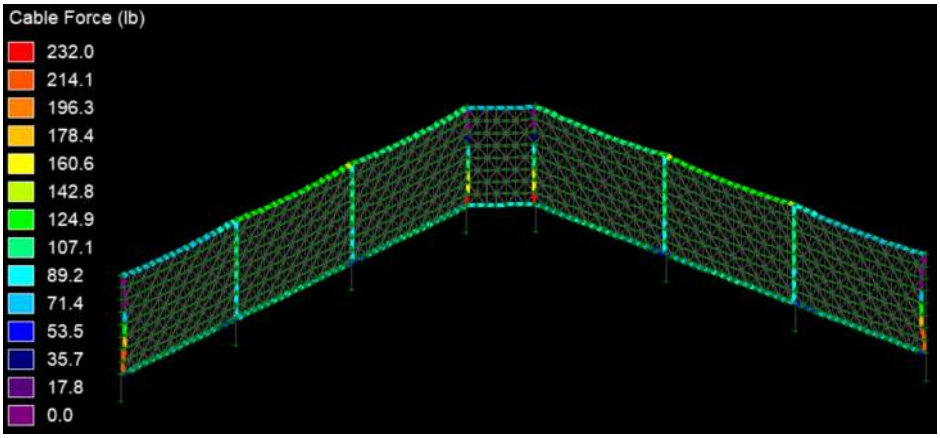
$A_r := 0.25 \cdot \pi \cdot D_r^2 = 0.05 \cdot in^2$ *Area of Cable (Approx)*

$\Delta_{AllowableSag} := 0.02 \cdot l = 12\ in$ *Allowable Deflection*

$S_d := \frac{F_{br} \cdot \min(N_f, N_d)}{FS} = 3181.82 \cdot lbf$ *Allowable Tension*

$I_{cable} := \left(\frac{T_n}{S_d}\right)$ = "0.95 < 1.00 PASS"

Required Pretension



Generic Material Properties

"Material"	"Modulus of Elasticity"	"Density"
"Steel"	20000000·psi	0.284·pci
"Dyneema"	16000000·psi	0.035·pci

Use Min 1/4" (6.35 mm) Diameter 7x19 Galvanized Steel Wire Rope

Nominal Breaking Strength = 7,000 lb

Pretension Cable as shown above.

RICE ENGINEERING

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Luxemburg, WI 54217
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Project Description: **369181A Malone Park**

Job No:	R25-02-046		
Engineer:	BMC	Sheet No:	5
Date:	2/5/2025	Rev:	
Chk By:		Date:	

Template: REI-MC-4719

$t_w := 0.3125$ in

$d := 10.75$ in

$M := 730833$ in·lb

$T_{tot} := 0$ lb

$V_{tot} := 3305$ lb

$r_w := 0.5d$

$A_w := 27.66$

$A_w = 27.66$ in^2

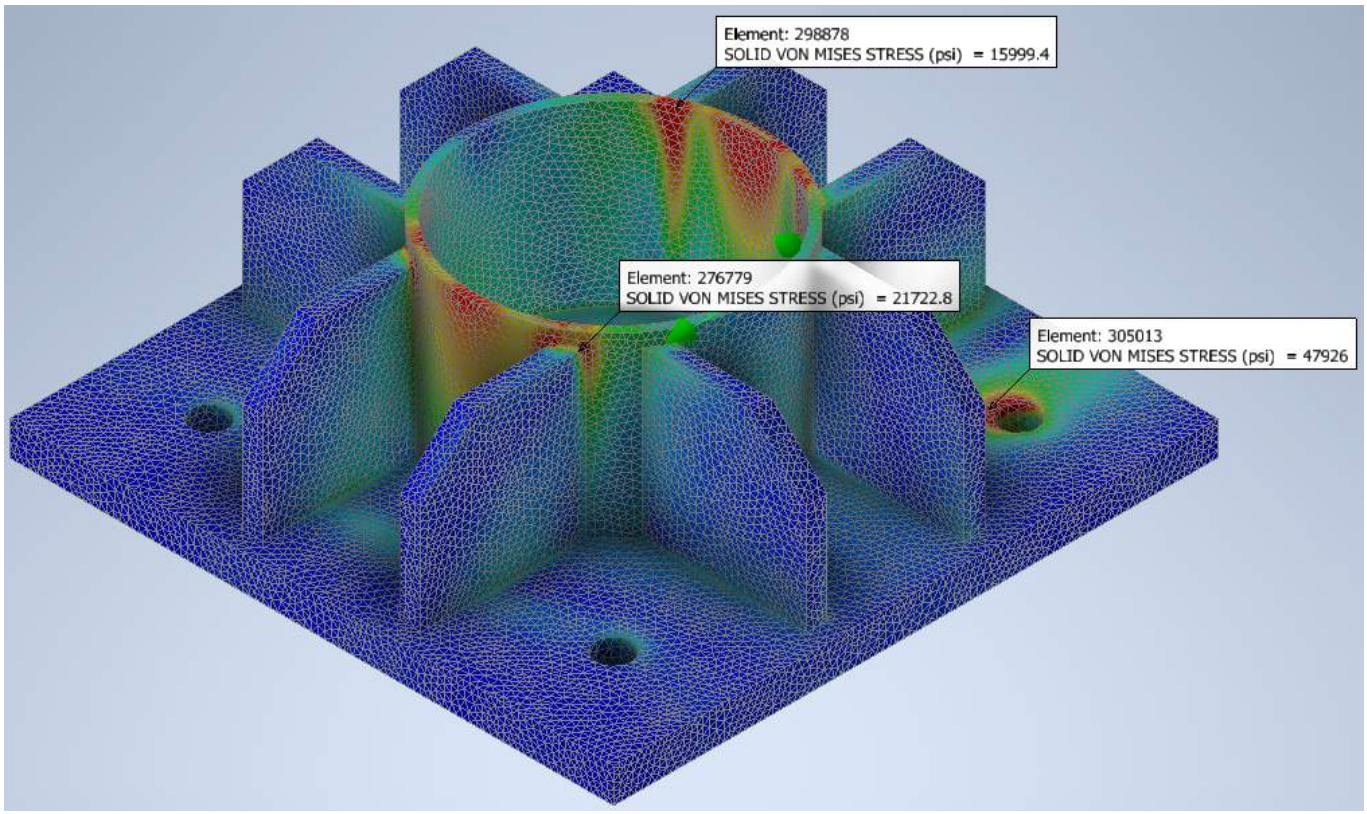
$S_w := \frac{874.066}{10.5021}$

$S_w = 83.23$ in^3

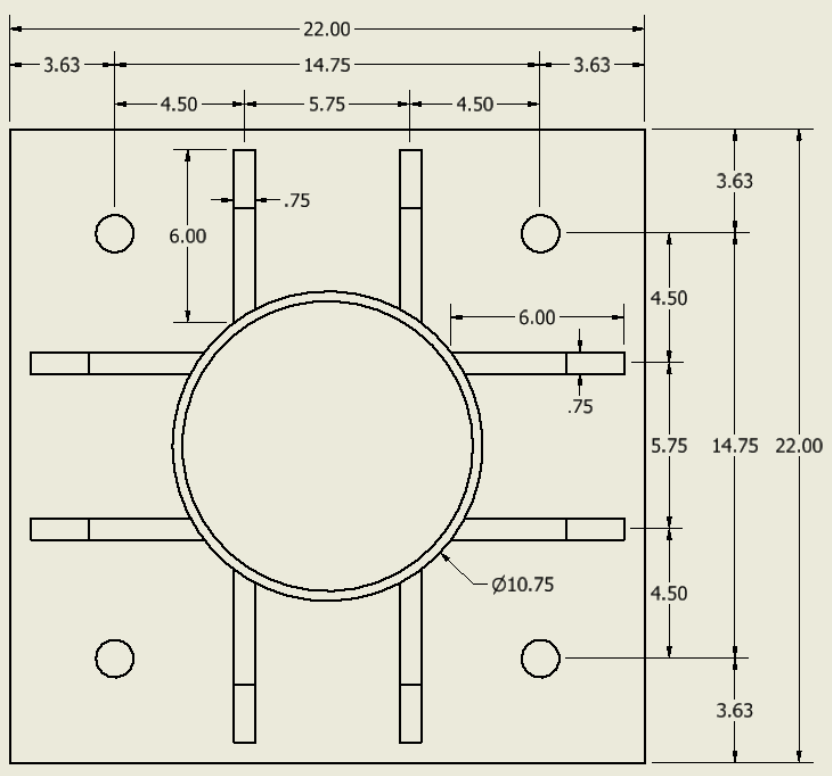
$$f_w := \sqrt{\left(\frac{V_{tot}}{A_w}\right)^2 + \left[\left(\frac{T_{tot}}{A_w}\right) + \left(\frac{M}{S_w}\right)\right]^2}$$

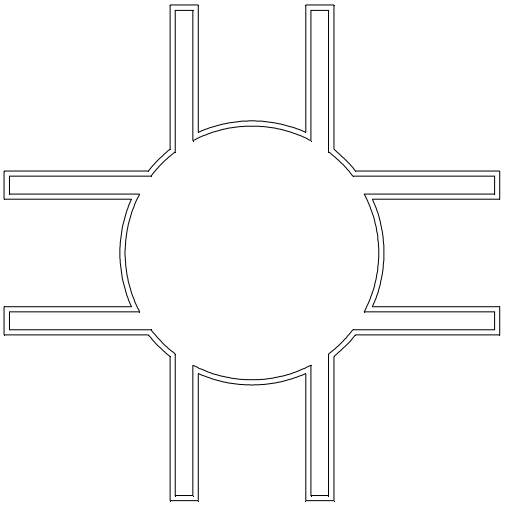
$f_w = 8782$ psi

$F_w := 21000$ psi



Pole Base Plate	Detail Ref.	Sheet No: 6 A

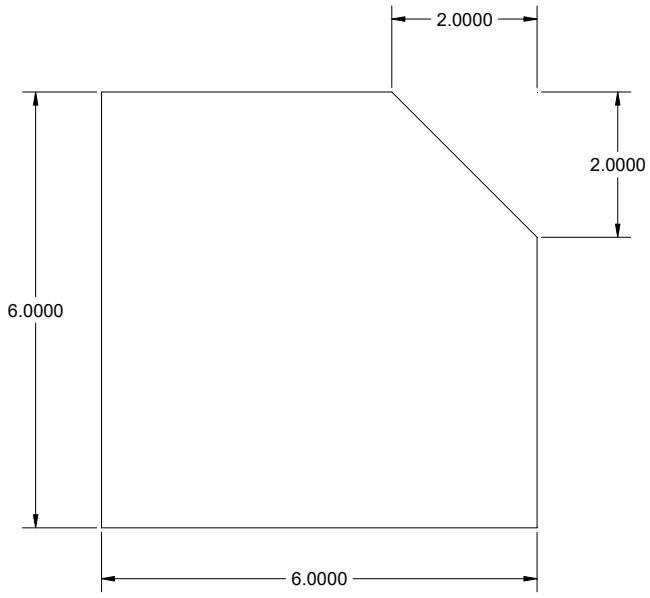




Area= 27.66 in^2

Ix= 874.07 in^4

Use 22" x 22" x 1-1/4" Thick Base Plate (50ksi) with 5/16" thk weld All Around as shown to attach pole to plate.
Use (8) 6"x6"x3/4" thick guesst plates (50ksi). 2"x2" chamfer
E70xx Wire



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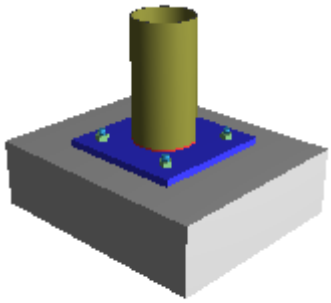
			Engineer: BMC	Sheet No:	6 A
			Date: 2/5/2025	Rev:	
			Chk By:	Date:	

Connection 1: Base Plate Report

Single Column Base Plate Connection



Material Properties:				
Column	PIPE_10.0	A500 Gr.B Round	F_y = 42.00 ksi	F_u = 58.00 ksi
Base Plate	P1.25x22.00x22.00	A572 Gr.50	F_y = 50.00 ksi	F_u = 65.00 ksi

Input Data:		
Axial	1.28 kips	*Axial load on the column*
Strong Axis Shear	5.51 kips	*Shear load on the column that causes strong axis bending*
Weak Axis Shear	0.00 kips	*Shear load on the column that causes weak axis bending*
Strong Axis Moment	101.50 kips-ft	*Column moment about the strong axis*
Weak Axis Moment	0.00 kips-ft	*Column moment about the weak axis*

Note: Unless specified, all code references are from AISC 360-10

Limit State	Required	Available	Unity Check	Result
Geometry Restrictions				**PASS**
Load Distribution (Strong Axis)				**n/a**
Load Distribution (Weak Axis)				**n/a**
Concrete Bearing			**0.00**	**PASS**

SEE SHEET 6 FOR BASE PLATE CHECK

Anchor Bolt Tension (Strong Axis)	32.82 kips	40.04 kips	**0.82**	**PASS**
Anchor Bolt Shear	5.51 kips	48.04 kips	**0.11**	**PASS**
Anchor Bolt Bearing on Base Plate	5.51 kips	48.04 kips	**0.11**	**PASS**

SEE SHEET 6 FOR WELD CHECK

Connection 1: Components Report

Anchor Bolts	*1 1/4" F1554 Gr.36*	
Anchor Properties		
Type	F1554 Gr.36	
Head Type	Hex Bolt	*Type of Anchor Head*
Torque Type	Untorqued Anchor	*Torque Type of Anchor bolt*
d	1.25 in	*Diameter*
A_{se}	0.00 in	*Effective cross-sectional area of the anchor*
A_{brg}	0.00 in	*Net bearing area of the head of anchor bolt*
h_{ef}	9.00 in	*Effective embedment depth*
Strength		
F_u	58.00 ksi	*Anchor strength*
F_{uta}	58.00 ksi	*Specified tensile strength of anchor steel*

Pole Foundation	Detail Ref.	Sheet No: A1

Input Variables:

Pole:

$H := 40$ ft *(height)*

$w := \frac{13.21}{144} \cdot 10.75 = 0.99$ pli

$F := 2832 + w \cdot H \cdot 12 = 3305$ lb *(reaction force)*

$M := 617227 + \frac{w \cdot (H \cdot 12)^2}{2} = 730833$ in·lb

Steel:

$F_y := 42000$ psi *(Steel yield strength)*

Soils:

$S := 1500$ psf *(Soil Bearing Capacity)*

$P := 100$ psf *(Passive Soil Pressure)*

Pier Foundations:

$f_c := 4000$ psi *(concrete compressive strength)*

$d := 10.67$ ft *(initial pier depth)*

$D := 3$ ft *(pier diagonal dimension)*

$I_{pole} := 151$ in^4

$S_{pole} := 28.1$ in^3

$Z_{pole} := 36.9$ in^3

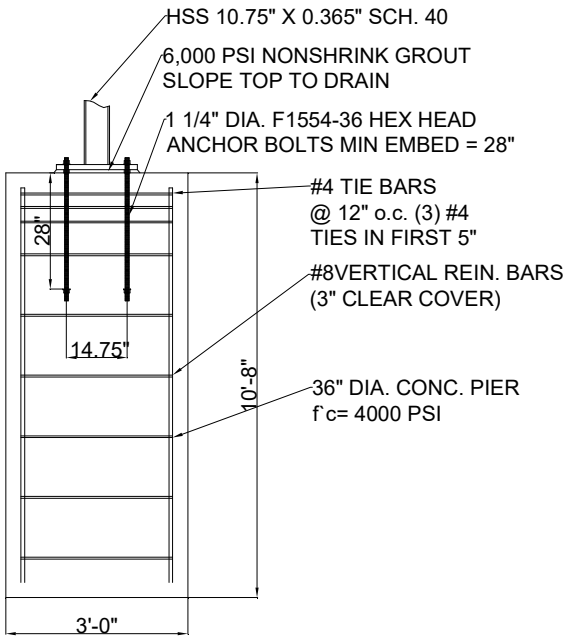
$A_{pole} := 11.5$ in^2

$D_{pole} := 10.75$ in

$t_{pole} := 0.340$ in

$E := 29 \cdot 10^6$ psi

$\Omega := 1.67$



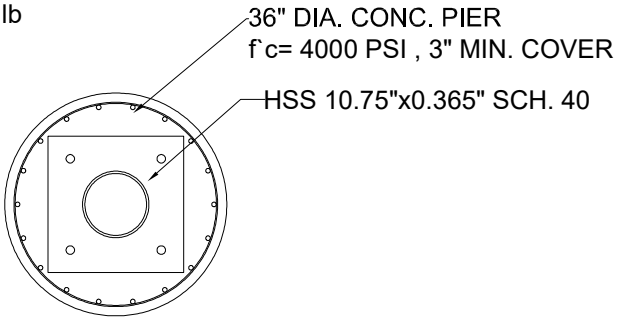
Calculations:

$\lambda_p := \frac{0.07 \cdot E}{F_y} = 48.33$ $\lambda_r := \frac{0.31 \cdot E}{F_y} = 214.05$ therefore compact

$\lambda := \frac{D_{pole}}{t_{pole}} = 31.62$ $M_n := F_y \cdot Z_{pole} \cdot \frac{1}{\Omega} = 928023.95$ in·lb

USE 10.75" x 0.365" (SCH 40)
A500 Gr.B Round, Fy = 42 ksi

$I := \frac{M}{M_n} = 0.79$



Chk rebar:

$A_{smin} := \left[0.005 \cdot \pi \cdot \left(\frac{D \cdot 12}{2}\right)^2\right]$ $A_{smin} = 5.09$ in^2

Calculate Tension Steel for Anchor Reinforcement

$T_u := 32.82 \cdot 2 = 65.64$ from RISA LRFD load

$N_r := 18$

$A_{st} := \frac{2.5 \cdot T_u}{0.9 \cdot 60} = 3.04$

Min. Edge Dist.

$edge := 6 \cdot 1.25 = 7.5$ in

$A_{sreq} := A_{smin} + A_{st} = 8.13$ in^2

$A_{sprov} := N_r \cdot 0.79 = 14.22$ in^2

$l_d := \frac{60000 \cdot 1.0 \cdot 1.0}{20 \cdot \sqrt{f_c}} \cdot 1.0 = 47.43$

for #8 bar into 4ksi concrete

$l_{dred} := l_d \cdot \frac{A_{sreq}}{A_{sprov}} = 27.11$ not less than 12"

Use (4) 1 1/4" Diameter Cast In Place Hex Head Anchor Bolts F1554-36
Min. Embed = 28"
Min. Edge Dist = 7-1/2"
Min. Spacing = 14-3/4" O.C.

Use (18) #8 Bars Vertical

Use 36" Dia. Conc. Piers, 10'-8" deep 4,000 psi N.W. Cracked Concrete and Grade 60 rebar

RICE ENGINEERING
Template:

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Project Description:	Job No:	R25-02-046	
369181A Malone Park	Engineer:	BMC	Sheet No: A1
	Date:	2/5/2025	Rev:
	Chk By:		Date:

Pole Foundation	Detail Ref.	Sheet No: A1 A

Pier Foundation Design:

$$S_c := \frac{P \cdot 2 \cdot d}{3} \qquad S_c = 711.33$$

$$A_c := \frac{2.34 \cdot F}{S_c \cdot D} \qquad A_c = 3.62$$

$$h_1 := \frac{M}{F \cdot 12} \qquad h_1 = 18.43$$

$$d_{reqd} := \left(\frac{A_c}{2}\right) \cdot \left[1 + \sqrt{1 + 4.36 \cdot \left(\frac{h_1}{A_c}\right)}\right] \qquad d_{reqd} = 10.53$$

Use 36" Dia. Conc. Piers, 10'-8" Deep

IBC Table 1806.2 Presumptive Load Bearing Values

Class of Materials	Vertical Foundation Pressure (psf)	Lateral Bearing Pressure (psf/f below natural grade)	Lateral Sliding Resistance	
			Coefficient of Friction	Cohesion (psf)
1. Crystline Bedrock	12000	1200	0.7	—
2. Sedimentary and foilated rock	4000	400	0.35	—
3. Sandy Gravel and/ or gravel (GW and GP)	3000	200	0.35	—
4. Sand, silty sand, clayey sand, silty gravel (SW, SP, SM, SC, GM, and GC)	2000	150	0.25	—
5. Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)	1500	100	—	130

BEACON ATHLETICS

NEW BERLIN PARKS/REC/FORESTRY

MALONE PARK

NEW BERLIN, WI

Beacon Project No: 0369181

Beacon Quote No: N10950

SUBMITTAL SET

CONTACT INFORMATION

FOR ANY QUESTIONS OR CONCERNS REGARDING THE INSTALLATION, ASSEMBLY, USE OR MAINTENANCE OF THIS SYSTEM, PLEASE DO NOT HESITATE TO CONTACT:

LUKAS SOLEM - PROJECT MANAGER

EMAIL: LUKES@BEACONATHLETICS.COM
901 DEMING WAY, SUITE 101, MADISON, WI 53717
PHONE: 608 - 824 - 1547
FAX: 608 - 836 - 0724
WWW.BEACONATHLETICS.COM

SHEET INDEX

SD-1	TITLE SHEET
SD-2	LAYOUT & ELEVATION
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SD-4	POLE ORIENTATION & FOOTING DETAIL
SD-5	FIELD VERIFIED DIMENSIONS
SD-6	WING POLE CONNECTIONS
SD-7	INTERMEDIATE POLE CONNECTIONS
SD-8	CORNER POLE CONNECTIONS
SD-9	CABLE END DETAIL
FD-1	POLE A FABRICATION
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FD-3	POLE C FABRICATION
FD-4	BASE PLATE FABRICATION

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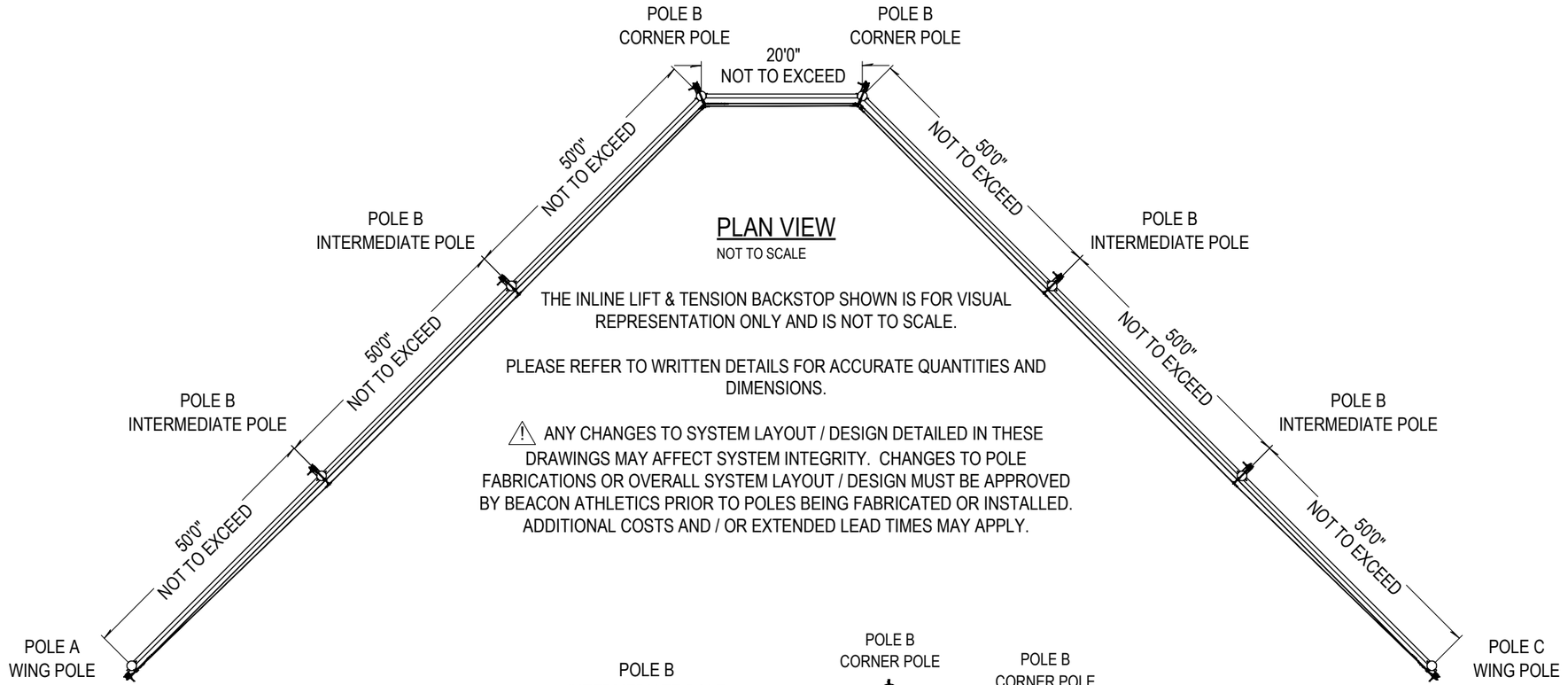
SUBMITTAL SET

TITLE SHEET

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME: MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY: JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950

SD-1



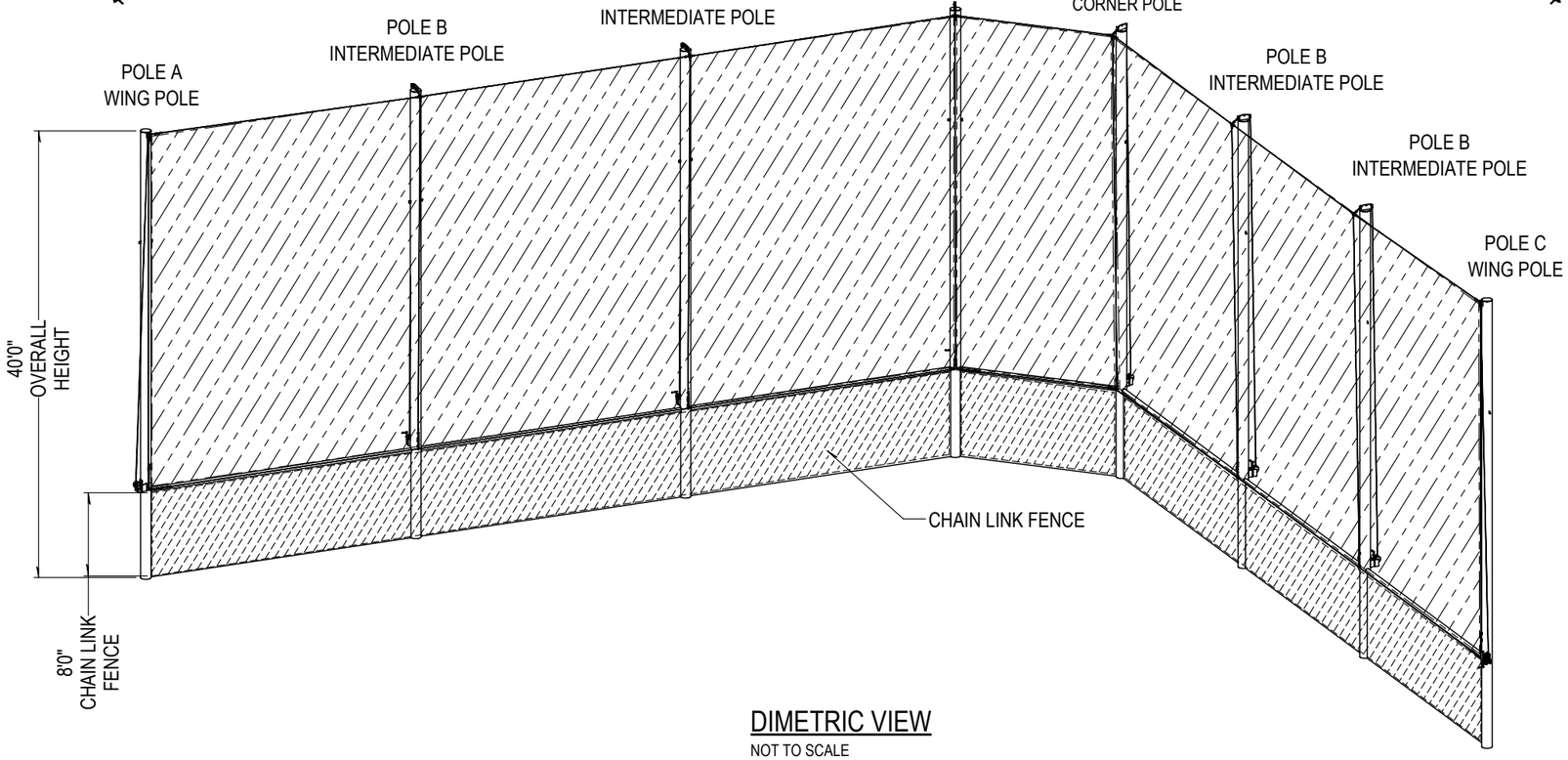
PLAN VIEW

NOT TO SCALE

THE INLINE LIFT & TENSION BACKSTOP SHOWN IS FOR VISUAL REPRESENTATION ONLY AND IS NOT TO SCALE.

PLEASE REFER TO WRITTEN DETAILS FOR ACCURATE QUANTITIES AND DIMENSIONS.

⚠ ANY CHANGES TO SYSTEM LAYOUT / DESIGN DETAILED IN THESE DRAWINGS MAY AFFECT SYSTEM INTEGRITY. CHANGES TO POLE FABRICATIONS OR OVERALL SYSTEM LAYOUT / DESIGN MUST BE APPROVED BY BEACON ATHLETICS PRIOR TO POLES BEING FABRICATED OR INSTALLED. ADDITIONAL COSTS AND / OR EXTENDED LEAD TIMES MAY APPLY.



DIMETRIC VIEW

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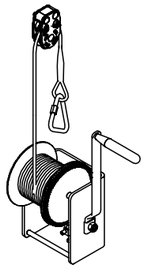
SUBMITTAL SET

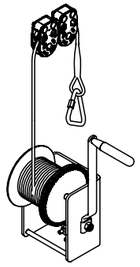
LAYOUT & ELEVATION

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME: MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
SD-2

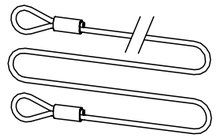


CORNER POLE
WINCH ASSEMBLY

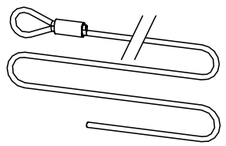


WING POLE
WINCH ASSEMBLY

TENSIONING CHAIN
ASSEMBLY



VERTICAL & HORIZONTAL CABLES
(FINISHED ON BOTH ENDS)



VERTICAL & HORIZONTAL CABLES
(FINISHED ON ONE END)

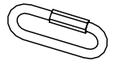
EYE EYE TURNBUCKLE

THIMBLE

DELTA LINK

CABLE TIE

SNAP HOOK



QUICK LINK

ROPE CLIP

BACKSTOP PARTS LIST

NOT TO SCALE

PART SIZE / RATIO NOT TO SCALE.

⚠ INSPECT ALL HARDWARE PACKAGES IMMEDIATELY UPON DELIVERY AND COMPARE AGAINST PARTS LISTS PROVIDED. DAMAGED AND / OR MISSING HARDWARE PACKAGES MUST BE DOCUMENTED AND REPORTED TO BEACON ATHLETICS WITHIN 10 BUSINESS DAYS FROM DATE OF DELIVERY RECEIPT. CUSTOMER IS RESPONSIBLE FOR COST OF REPLACEMENT ORDERS FOR ALL CLAIMS MADE AFTER 10 BUSINESS DAYS.

QTY	DESCRIPTION
4	49' X 1/4" GALV STEEL CABLE FINISHED ONE END/ HORIZONTALS - 1ST AND 3RD
2	39' X 1/4" GALV STEEL CABLE FINISHED ONE END/ HORIZONTALS - HOME
4	29' VERTICAL CABLE (FINISHED ON ONE END)
4	WALL ANCHOR
20	ZINC PLATED THIMBLES
20	WIRE ROPE CLIPS
30	5/16" WIDE JAW QUICK LINKS
2	3/8" DELTA LINK
10	1/2"-13 GALV. EYE EYE TURNBUCKLES (9" TAKEUP)
47	3/8" GALV. EYEBOLTS
200	120# CABLE TIES (8" LONG)
180	1/4" STEEL SNAP HOOKS

T.B.D

INSTALLATION TOOL LIST

- MARKING PAINT
- 4’ LEVEL
- CRESCENT WRENCH
- AUTOMATIC DRILL W/ DRIVER BITS
- ZIP-TIE CUTTER
- WOOD FOR POLE STABILIZATION
- HAMMER, STAKES, AND SCREWS FOR POLE STABILIZATION
- PLUMB BOB
- PPE EQUIPMENT
- EQUIPMENT TO UNLOAD 1000+ LBS POLES
- EQUIPMENT W/ 36” AUGER FOR FOUNDATIONS
- EQUIPMENT TO LIFT POLE IN PLACE (CRANE, TELEHANDLER, BOOM LIFT)
- 100’ MEASURING TAPE
- 25’ MEASURING TAPE
- STRINGLINE & STAKES
- BASE PLATE TEMPLATE

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SUBMITTAL SET

BACKSTOP PARTS LIST & INSTALLATION TOOL LIST

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME:MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
SD-3

POLE ORIENTATION

NOT TO SCALE

WING POLES

Ⓐ 1 HOLE VERTICAL ANCHOR SET PARALLEL WITH FENCE. 1 HOLE VERTICAL ANCHORS ARE USED AS LIFTING TABS FOR INSTALLATION.
Ⓑ NOTICE THE ORIENTATION OF WINCH MOUNT.
Ⓒ 2 HOLE VERTICAL ANCHOR ON WING POLE WILL BE PERPENDICULAR WITH FENCE.

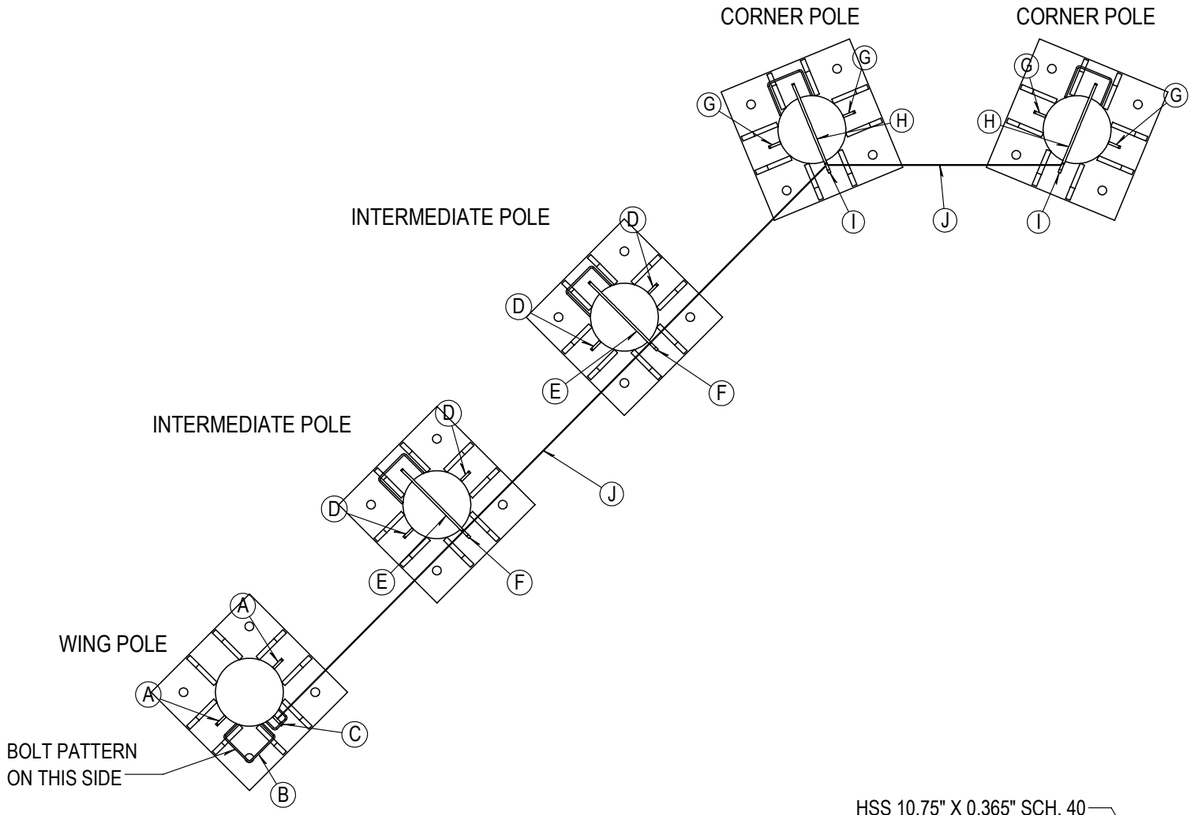
INTERMEDIATE POLES

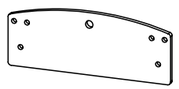
Ⓓ 1 HOLE VERTICAL ANCHORS ARE USED AS LIFTING TABS FOR POLE INSTALLATION.
Ⓔ OVER THE TOP BLOCK MOUNT PERPENDICULAR TO CHAIN LINK FENCE.
Ⓕ 2 HOLE VERTICAL ANCHOR ON CORNER POLE BISECTS BACKSTOP FENCE CORNER ANGLE.

CORNER POLES

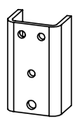
Ⓖ 1 HOLE VERTICAL ANCHORS ARE USED AS LIFTING TABS FOR POLE INSTALLATION.
Ⓗ OVER THE TOP BLOCK MOUNT BISECTS BACKSTOP FENCE CORNER ANGLE.
Ⓘ 2 HOLE VERTICAL ANCHOR ON CORNER POLE BISECTS BACKSTOP FENCE CORNER ANGLE.

Ⓙ PATH OF BOTTOM CABLE SHOWN FOR PERSPECTIVE.



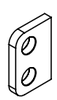


OVER THE TOP BLOCK MOUNT

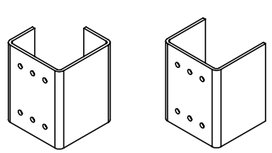


FOOT BLOCK MOUNT

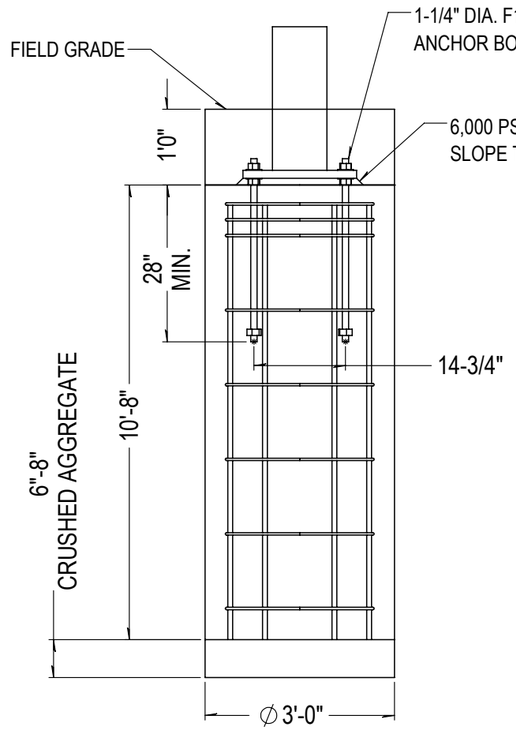
LIFTING TABS

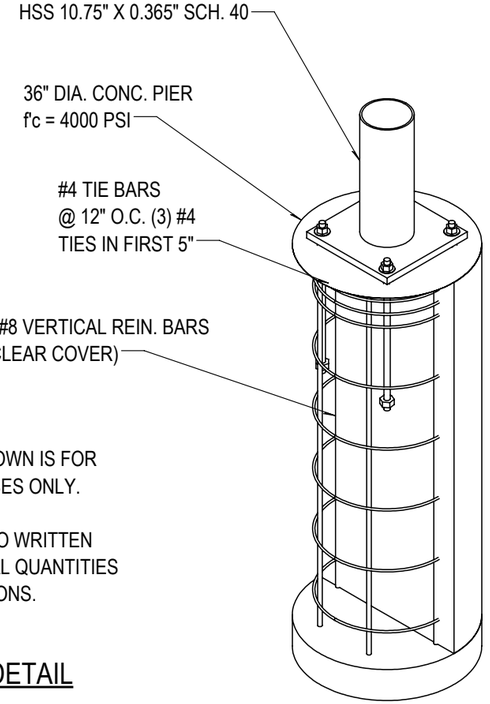


2 HOLE VERTICAL ANCHOR



WINCH MOUNTS





THE FOOTING SHOWN IS FOR VISUAL PURPOSES ONLY.

PLEASE REFER TO WRITTEN DETAILS FOR ACTUAL QUANTITIES & DIMENSIONS.

FOOTING DETAIL

NOT TO SCALE

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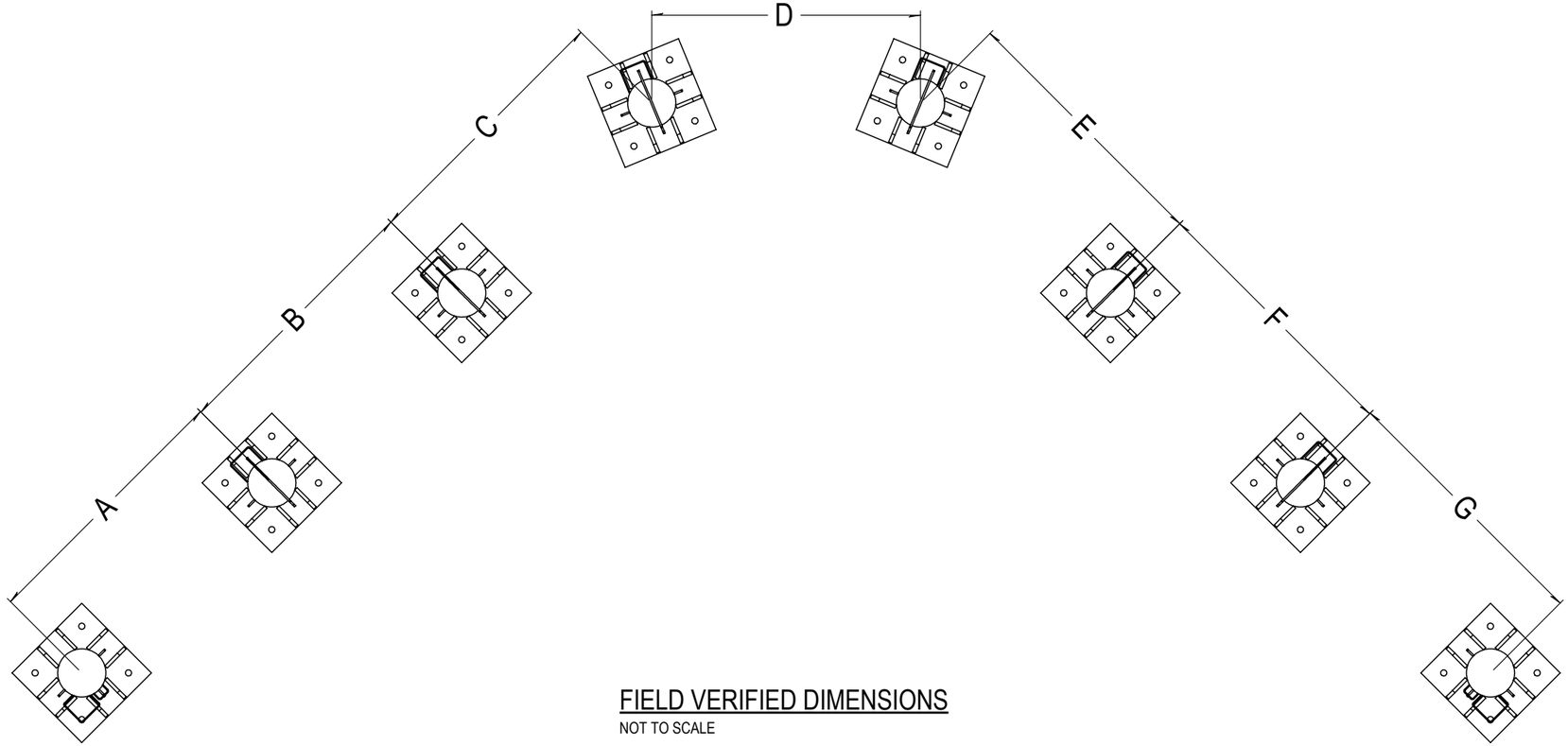
SUBMITTAL SET

POLE ORIENTATION & FOOTING DETAIL

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME: MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
SD-4



FIELD VERIFIED DIMENSIONS
NOT TO SCALE

CABLE SIZING

READ DIRECTIONS THOROUGHLY BEFORE PROCEEDING TO BACKSTOP ASSEMBLY

PRECISE SIZING OF THE TOP STEEL CABLES WILL HAVE ONE OF THE BIGGEST IMPACTS ON THE AESTHETICS AND FUNCTIONALITY OF THE BACKSTOP SYSTEM.

WHEN MAKING TOP CABLES, LEAVE A 12" TAIL ON BOTH ENDS FOR ADJUSTABILITY. SEE CABLE END DETAIL VIEW.

ALWAYS ASSEMBLE, RAISE & TENSION CABLES TO CONFIRM SIZING BEFORE INSTALLING NETS.

FIELD VERIFIED DIMENSIONS (USED FOR CABLE FABRICATION)	
SPAN	DIMENSION (X'-XX")
A	
B	
C	
D	
E	
F	
G	
CHAIN LINK FENCE HEIGHT	

⚠ IMPORTANT ⚠

ONCE POLES HAVE BEEN INSTALLED, FIELD VERIFIED DIMENSIONS OF THE SYSTEM MUST BE PROVIDED TO BEACON ATHLETICS IN ORDER TO BEGIN NET FABRICATIONS.

DISTANCES TO BE MEASURED FROM CENTER OF WALL ANCHORS.

PLEASE REFERENCE QUOTE NUMBER N10950 WHEN PROVIDING BEACON ATHLETICS PROJECT MANAGER WITH DIMENSIONS.

LUKAS SOLEM - PROJECT MANAGER
EMAIL: LUKES@BEACONATHLETICS.COM
PHONE: 608-824-1547

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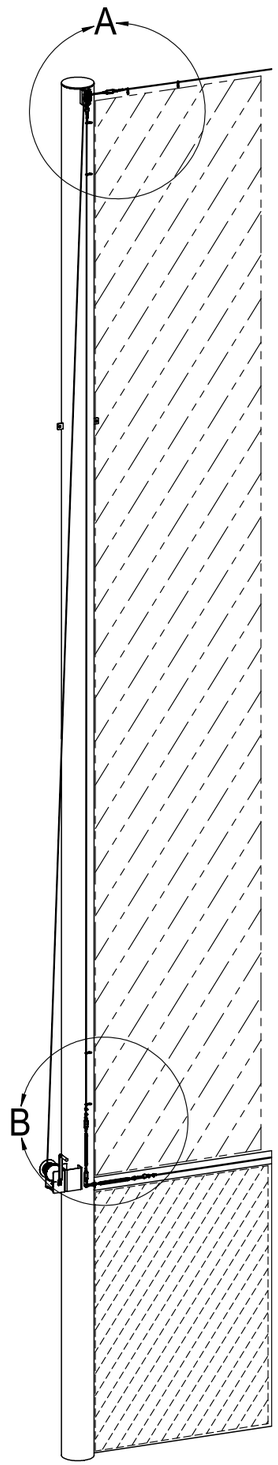
SUBMITTAL SET

FIELD VERIFIED DIMENSIONS

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME: MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950

SD-5



WING POLE CONNECTIONS

NOT TO SCALE

PROPER INSTALLATION & TENSIONING OF CABLES IS CRITICAL TO THE AESTHETICS AND FUNCTIONALITY OF THE SYSTEM. USE TURNBUCKLES TO TENSION CABLES FULLY.

VERTICAL CABLES COME FINISHED ON ONE END. SEE SD-9 FOR CABLE END ASSEMBLY DETAILS.

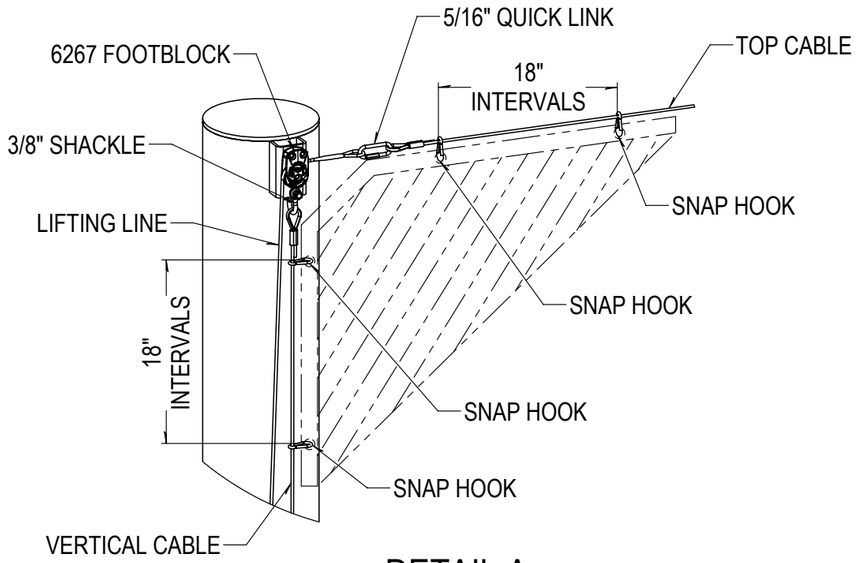
CONNECT CORNER OF NET TO TOP & VERTICAL CABLES USING SNAP HOOKS.

BOTTOM OF NET CAN BE ROLLED AND CINCHED USING CABLE TIES TO ACHIEVE DESIRED NET TENSION. CONNECT NET TO BOTTOM CABLE USING CABLE TIES EVERY 12".

BOTTOM FACE OF 2 HOLE VERTICAL ANCHOR TO BE SET APPROXIMATELY LEVEL WITH THE TOP OF CHAIN LINK FENCE.

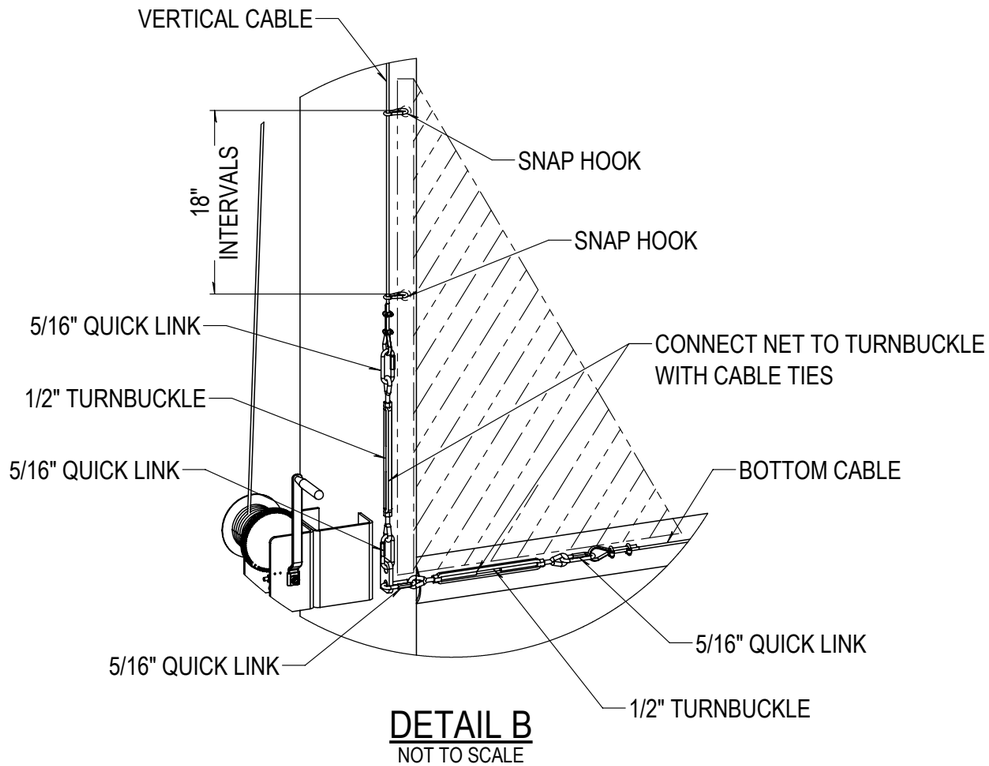
CARE SHOULD BE TAKEN TO PROTECT THE NET FROM THE TOP LOOPS OF THE CHAIN LINK FENCE. BEACON ATHLETICS RECOMMENDS INSTALLING FENCE CAP OR SLIT DRAIN ALONG THE TOP OF FENCE TO COVER LOOPS. CONNECT BOTTOM CABLE TO TOP OF FENCE/FENCE CAP USING CABLE TIES EVERY 30" - 36".

⚠ TO AVOID ADDITIONAL COSTS AND TIME ASSOCIATED WITH MECHANICAL LIFTS, HARDWARE CAN BE ASSEMBLED ON THE POLE BEFORE POLE INSTALLATION. WHEN INSTALLING POLES, SECURE ANY LOOSE HANGING CABLES & HARDWARE TO POLE TO PREVENT DAMAGE.



DETAIL A

NOT TO SCALE



DETAIL B

NOT TO SCALE

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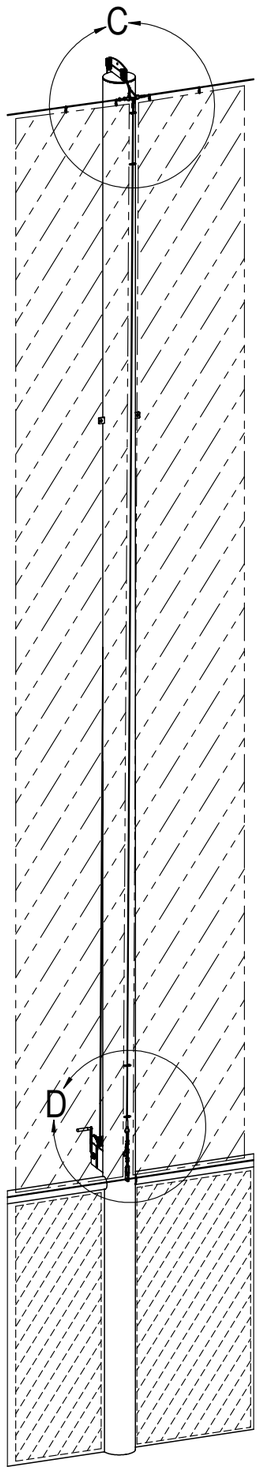
SUBMITTAL SET

WING POLE CONNECTIONS

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME: MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
SD-6



INTERMEDIATE POLE CONNECTIONS

NOT TO SCALE

PROPER INSTALLATION & TENSIONING OF CABLES IS CRITICAL TO THE AESTHETICS AND FUNCTIONALITY OF THE SYSTEM. USE TURNBUCKLES TO TENSION CABLES FULLY.

VERTICAL CABLES COME FINISHED ON ONE END. SEE SD-9 FOR CABLE END ASSEMBLY DETAILS.

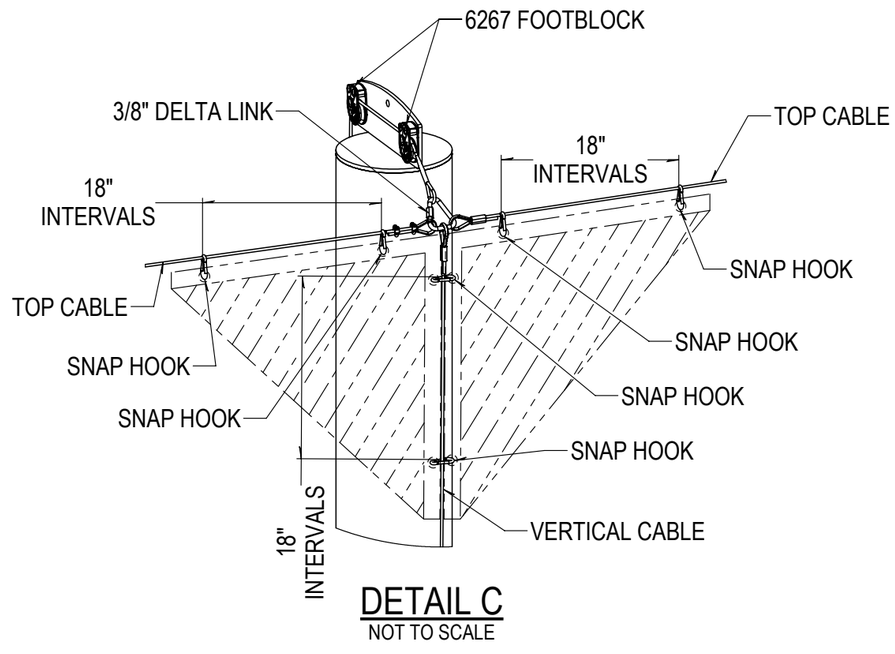
CONNECT CORNER OF NET TO TOP & VERTICAL CABLES USING SNAP HOOKS.

BOTTOM OF NET CAN BE ROLLED AND CINCHED USING CABLE TIES TO ACHIEVE DESIRED NET TENSION. CONNECT NET TO BOTTOM CABLE USING CABLE TIES EVERY 12".

BOTTOM FACE OF 2 HOLE VERTICAL ANCHOR TO BE SET APPROXIMATELY LEVEL WITH THE TOP OF CHAIN LINK FENCE.

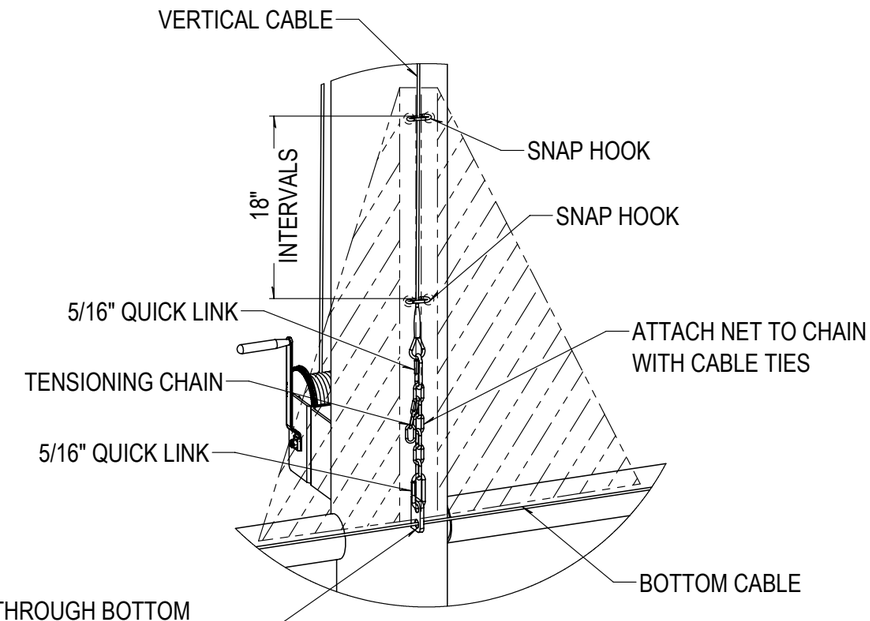
CARE SHOULD BE TAKEN TO PROTECT THE NET FROM THE TOP LOOPS OF THE CHAIN LINK FENCE. BEACON ATHLETICS RECOMMENDS INSTALLING FENCE CAP OR SLIT DRAIN ALONG THE TOP OF FENCE TO COVER LOOPS. CONNECT BOTTOM CABLE TO TOP OF FENCE/FENCE CAP USING CABLE TIES EVERY 30" - 36".

⚠ TO AVOID ADDITIONAL COSTS AND TIME ASSOCIATED WITH MECHANICAL LIFTS, HARDWARE CAN BE ASSEMBLED ON THE POLE BEFORE POLE INSTALLATION. WHEN INSTALLING POLES, SECURE ANY LOOSE HANGING CABLES & HARDWARE TO POLE TO PREVENT DAMAGE.



DETAIL C

NOT TO SCALE



DETAIL D

NOT TO SCALE

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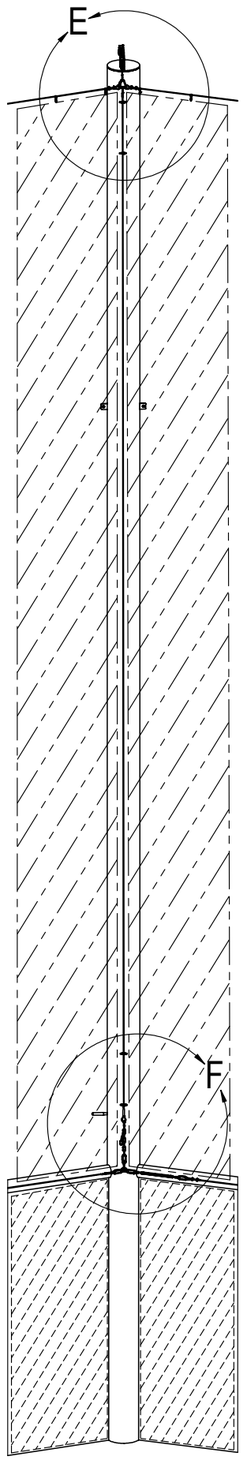
SUBMITTAL SET

INTERMEDIATE POLE CONNECTIONS

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME:MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
SD-7



CORNER POLE CONNECTIONS

NOT TO SCALE

PROPER INSTALLATION & TENSIONING OF CABLES IS CRITICAL TO THE AESTHETICS AND FUNCTIONALITY OF THE SYSTEM. USE TURNBUCKLES TO TENSION CABLES FULLY.

VERTICAL CABLES COME FINISHED ON ONE END. SEE SD-9 FOR CABLE END ASSEMBLY DETAILS.

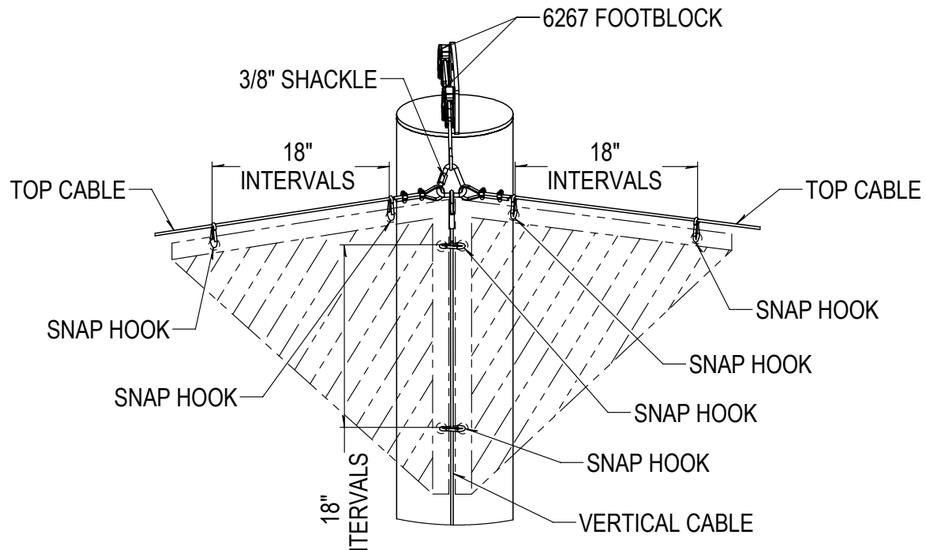
CONNECT CORNER OF NET TO TOP & VERTICAL CABLES USING SNAP HOOKS.

BOTTOM OF NET CAN BE ROLLED AND CINCHED USING CABLE TIES TO ACHIEVE DESIRED NET TENSION. CONNECT NET TO BOTTOM CABLE USING CABLE TIES EVERY 12".

BOTTOM FACE OF 2 HOLE VERTICAL ANCHOR TO BE SET APPROXIMATELY LEVEL WITH THE TOP OF CHAIN LINK FENCE.

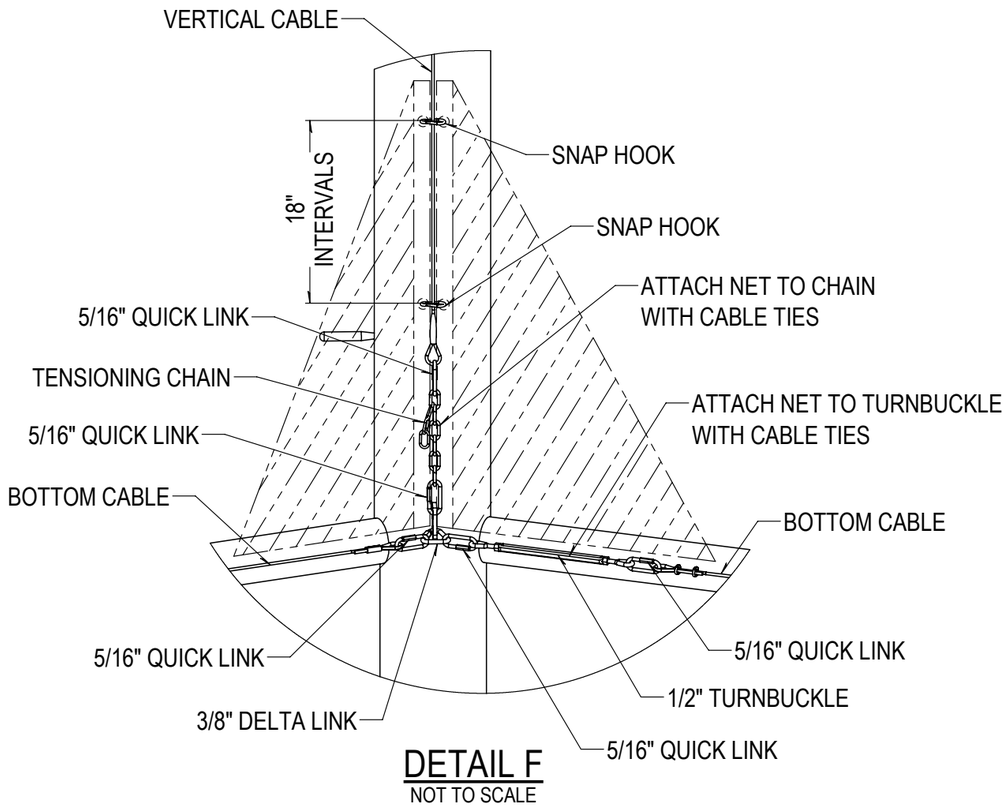
CARE SHOULD BE TAKEN TO PROTECT THE NET FROM THE TOP LOOPS OF THE CHAIN LINK FENCE. BEACON ATHLETICS RECOMMENDS INSTALLING FENCE CAP OR SLIT DRAIN ALONG THE TOP OF FENCE TO COVER LOOPS. CONNECT BOTTOM CABLE TO TOP OF FENCE/FENCE CAP USING CABLE TIES EVERY 30" - 36".

⚠ TO AVOID ADDITIONAL COSTS AND TIME ASSOCIATED WITH MECHANICAL LIFTS, HARDWARE CAN BE ASSEMBLED ON THE POLE BEFORE POLE INSTALLATION. WHEN INSTALLING POLES, SECURE ANY LOOSE HANGING CABLES & HARDWARE TO POLE TO PREVENT DAMAGE.



DETAIL E

NOT TO SCALE



DETAIL F

NOT TO SCALE

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SUBMITTAL SET

CORNER POLE CONNECTIONS

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME: MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
SD-8

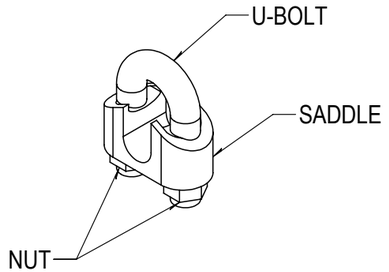
INSTRUCTIONS:

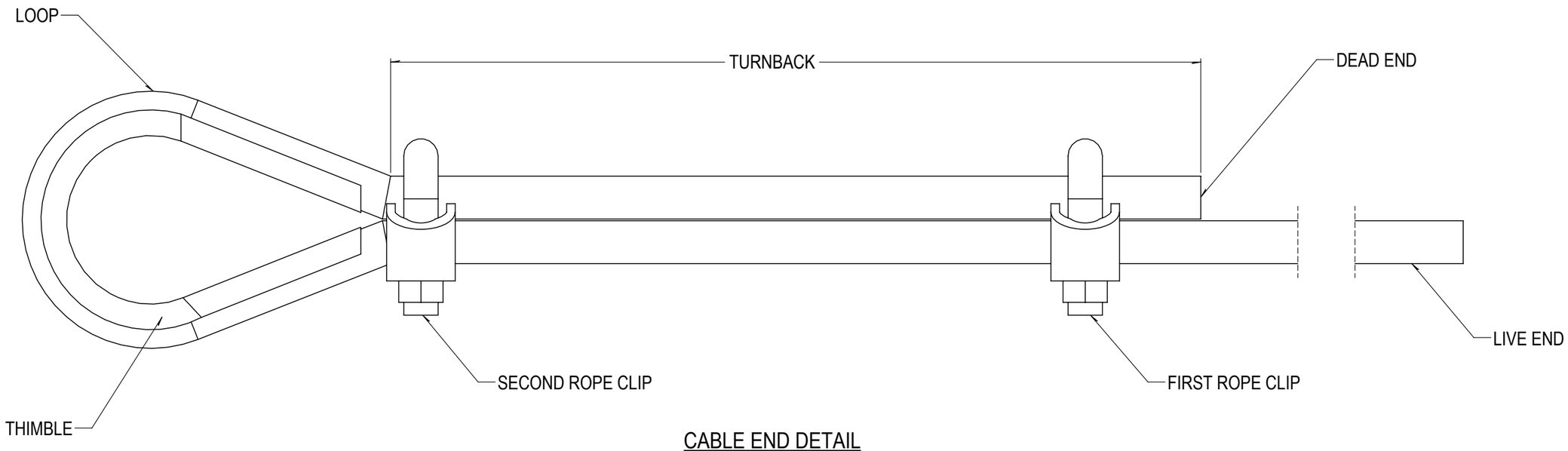
- SET FIRST CLIP ONE BASE WIDTH AWAY FROM THE TURNBACK END WITH U-BOLT OVER DEAD END OF THE CABLE AND THE SADDLE OVER THE LIVE END.
- SET SECOND CLIP AS CLOSE AS POSSIBLE TO THE LOOP END.
- WHEN THREE CLIPS ARE REQUIRED, SET ADDITIONAL CLIP EQUALLY SPACED BETWEEN THE FIRST TWO CLIPS.
- TIGHTEN NUTS ON CLIPS TO THE SPECIFIED TORQUE AND BY ALTERNATING BETWEEN THE TWO NUTS.

CABLE END ASSEMBLY TABLE

CLIP SIZE (IN.)	ROPE SIZE (IN.)	MINIMUM NO. OF CLIPS	AMOUNT OF ROPE TO TURN BACK IN INCHES	TORQUE IN FT. LBS.
3/16	3/16	2	3-3/4	7.5
1/4	1/4	2	4-3/4	15
5/16	5/16	2	5-1/4	30
3/8	3/8	2	6-1/2	45
7/16	7/16	2	7	65
1/2	1/2	3	11-1/2	65

ROPE CLIP ASSEMBLY





CABLE END DETAIL

NOT TO SCALE

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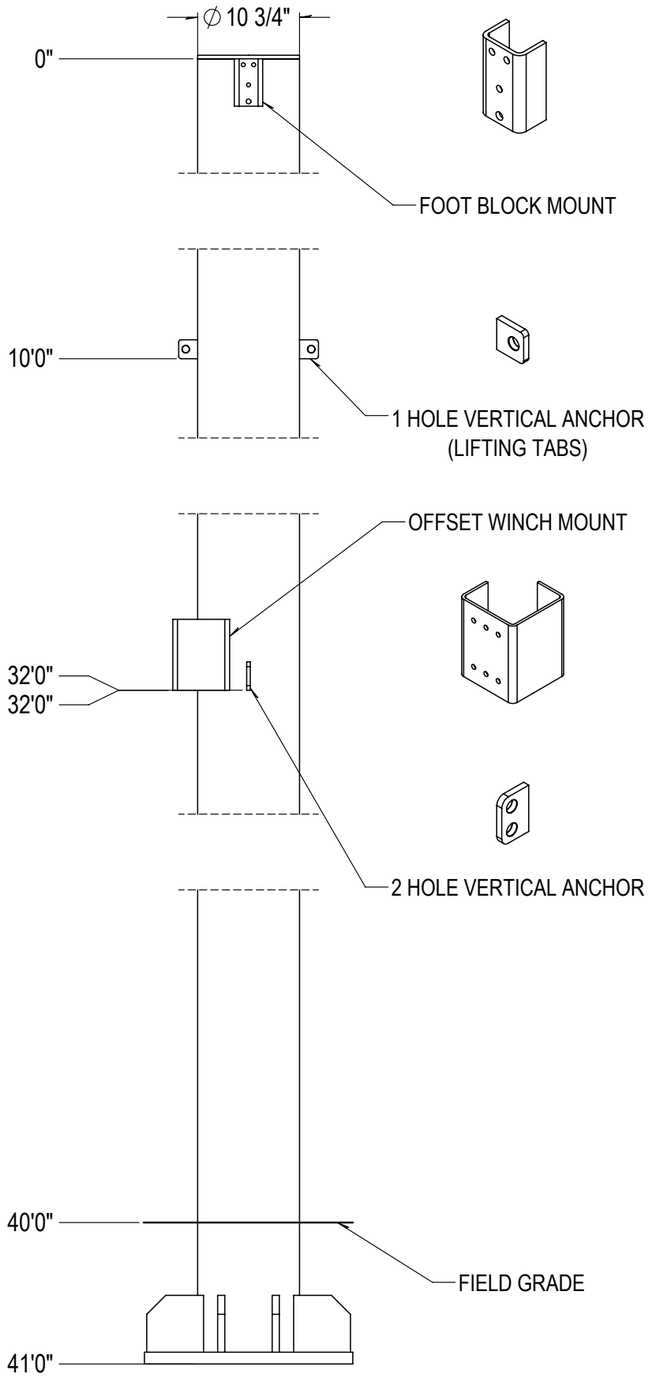
SUBMITTAL SET

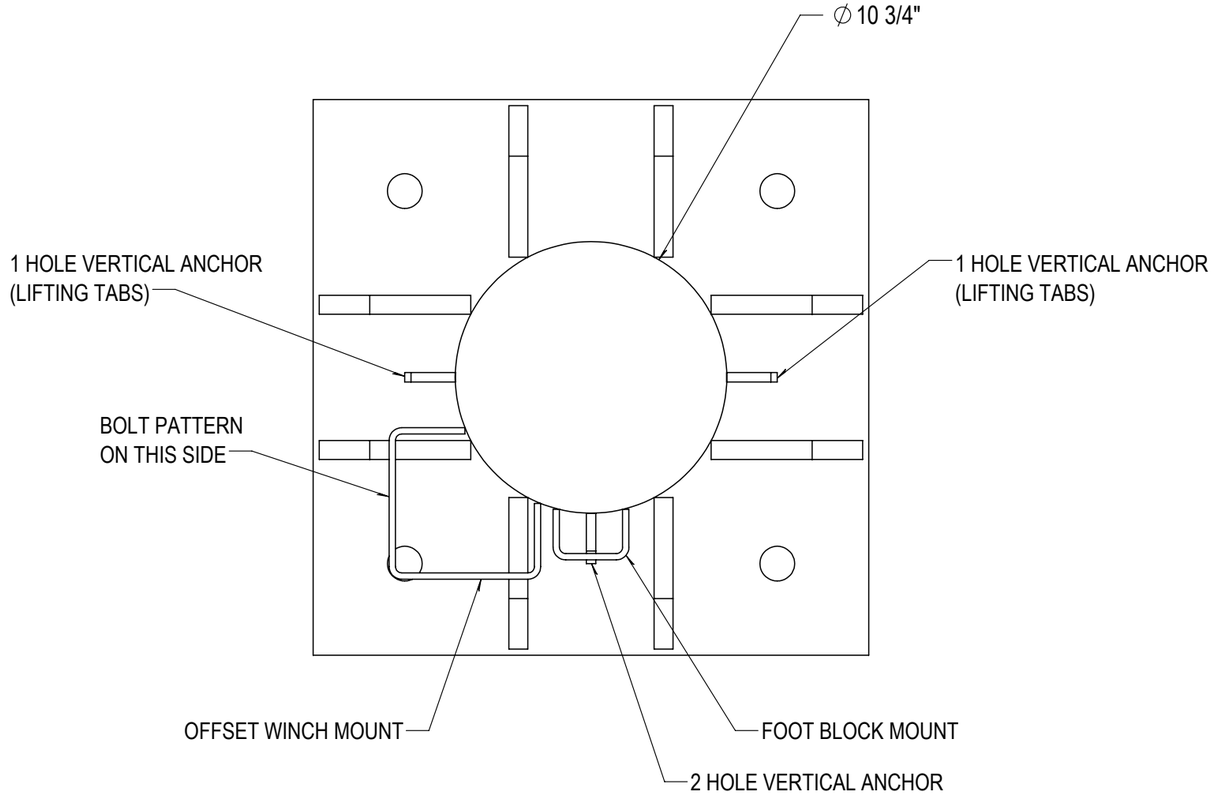
CABLE END DETAIL

CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME:MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
SD-9



ELEVATION VIEW
NOT TO SCALE



TOP VIEW
NOT TO SCALE

QTY (PER POLE)	DESCRIPTION	PART NUMBER
1	10.75" OD X .365" WALL (SCH 40) A500 STEEL W/ BLACK PAINTED FINISH	--
1	WELDED TOP CAP	--
1	FOOT BLOCK MOUNT	PNET-130-05
2	1 HOLE VERTICAL ANCHOR (LIFTING TABS)	PNET-110-03
1	OFFSET WINCH MOUNT	PNET-130-03
1	2 HOLE VERTICAL ANCHOR	PNET-110-06
1	BEACON LABEL (PLACED 5' ABOVE FIELD GRADE)	--
USE 1/4" FILLET WELDS AROUND PERIMETER OF ALL PARTS UNLESS OTHERWISE SPECIFIED		
LABEL POLE “A” AT BOTTOM INSIDE DIAMETER		
FINISHED POLE QTY: ONE (1)		
APPROXIMATE POLE WEIGHT (PER POLE): 1875 LBS		

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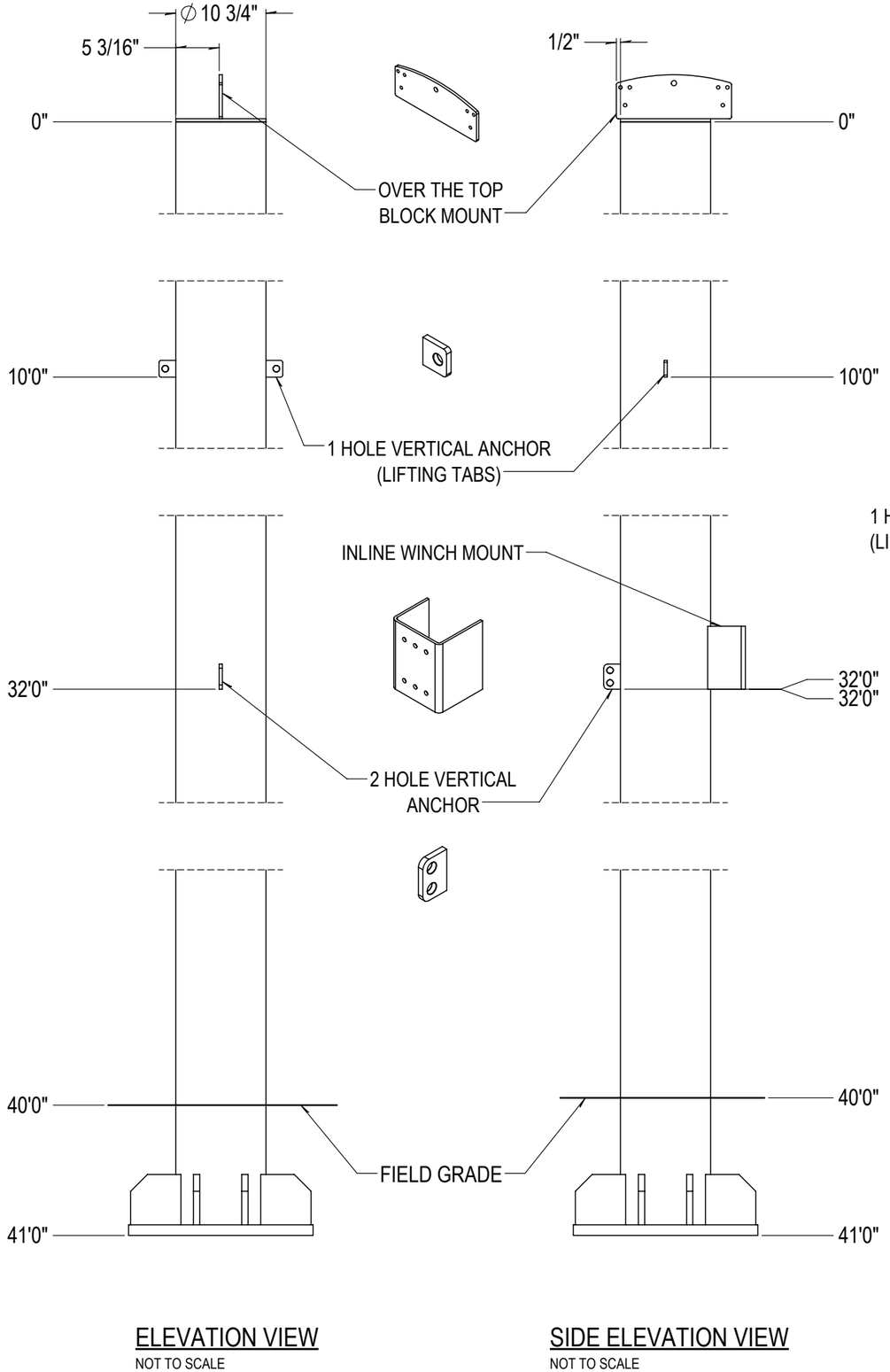
SUBMITTAL SET

POLE A FABRICATION (FIRST BASE WING POLE)

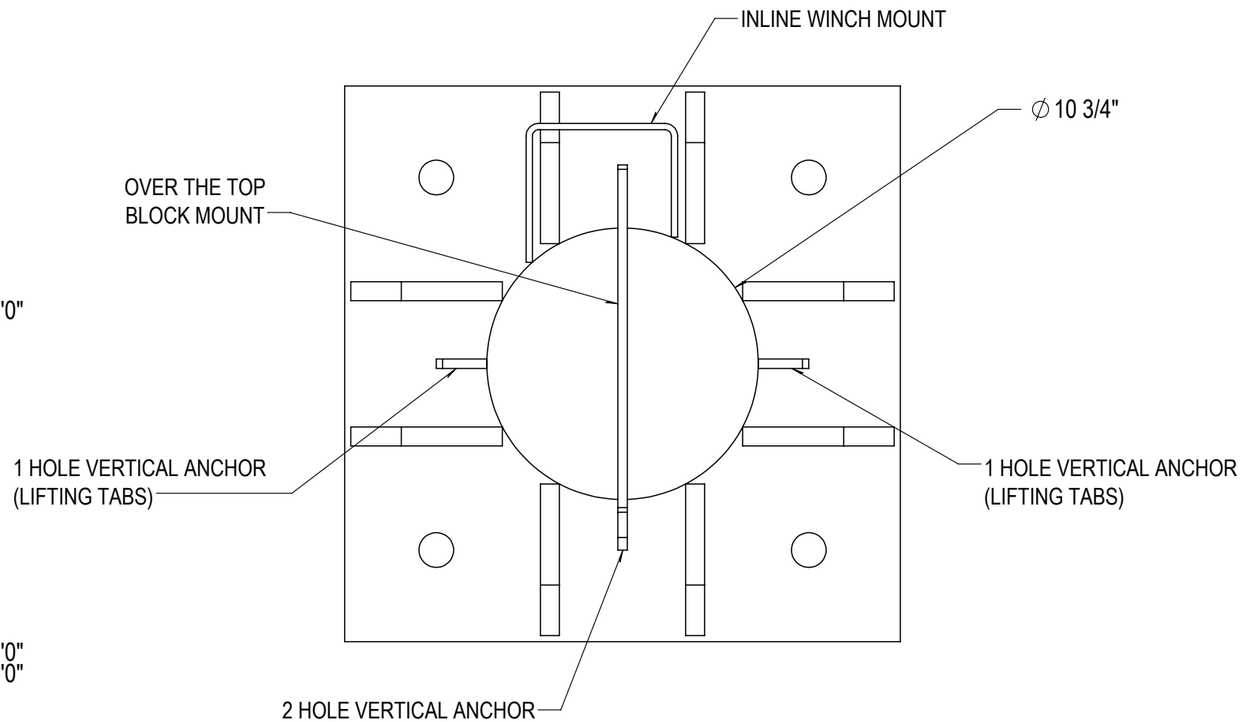
CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME: MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
FD-1



ELEVATION VIEW
NOT TO SCALE

SIDE ELEVATION VIEW
NOT TO SCALE



TOP VIEW
NOT TO SCALE

QTY (PER POLE)	DESCRIPTION	PART NUMBER
1	10.75" OD X .365" WALL (SCH 40) A500 STEEL W/ BLACK PAINTED FINISH	--
1	WELDED TOP CAP	--
1	OVER THE TOP BLOCK MOUNT	PNET-110-13
2	1 HOLE VERTICAL ANCHOR (LIFTING TABS)	PNET-110-03
1	INLINE WINCH MOUNT	PNET-130-04
1	2 HOLE VERTICAL ANCHOR	PNET-110-06
1	BEACON LABEL (PLACED 5' ABOVE FIELD GRADE)	--
USE 1/4" FILLET WELDS AROUND PERIMETER OF ALL PARTS UNLESS OTHERWISE SPECIFIED		
LABEL POLE “B” AT BOTTOM INSIDE DIAMETER		
FINISHED POLE QTY: SIX (6)		
APPROXIMATE POLE WEIGHT (PER POLE): 1875 LBS		

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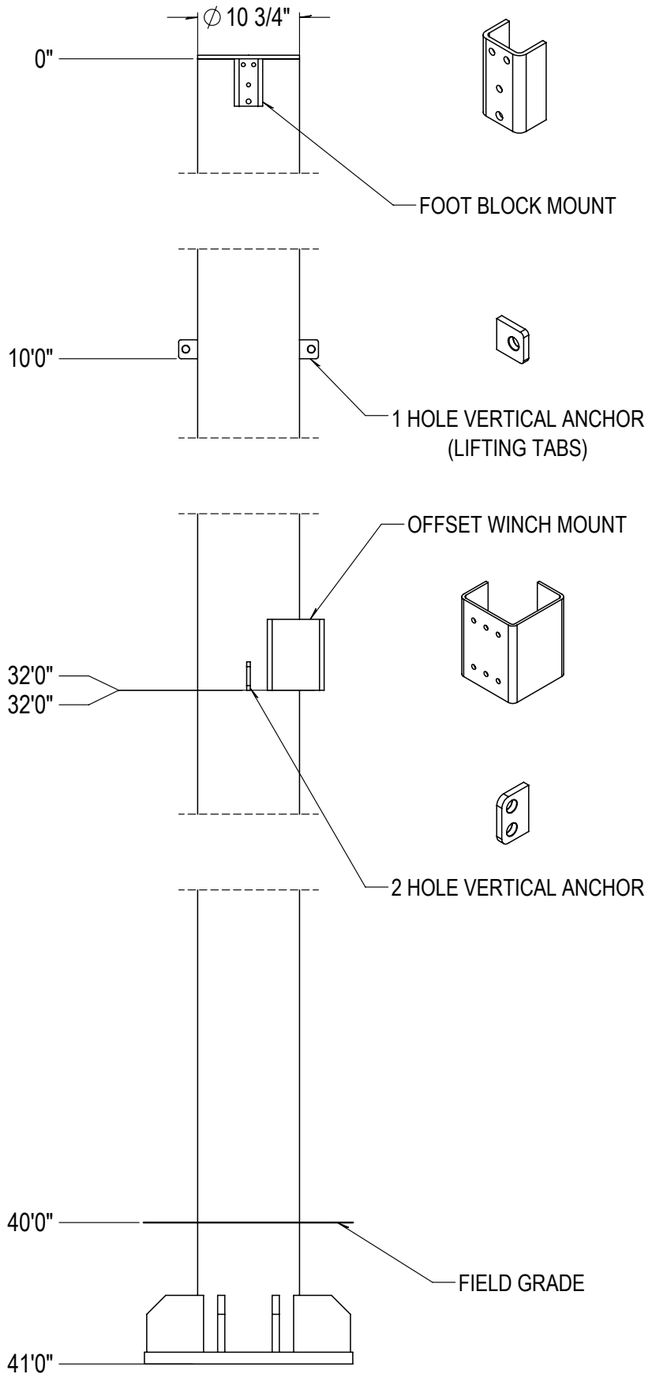
SUBMITTAL SET

POLE B FABRICATION (CORNER & INTERMEDIATE POLE)

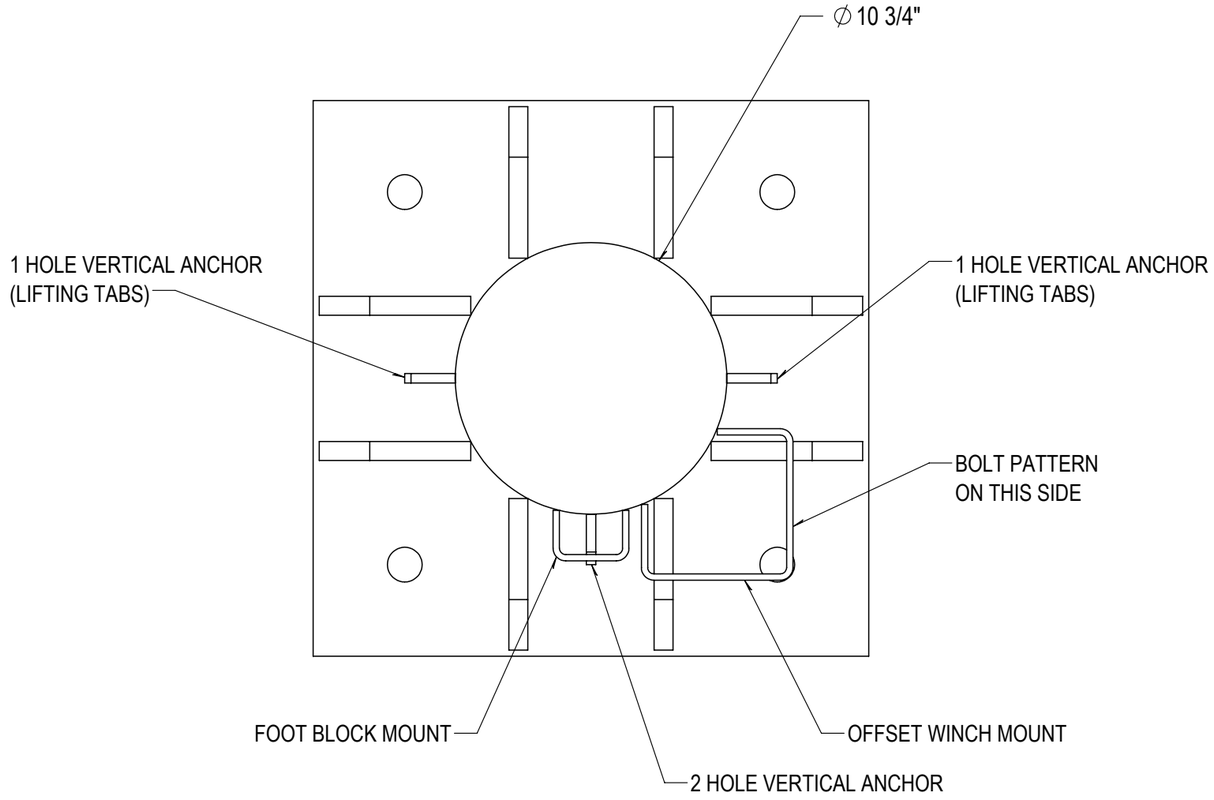
CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME:MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950

FD-2



ELEVATION VIEW
NOT TO SCALE



TOP VIEW
NOT TO SCALE

QTY (PER POLE)	DESCRIPTION	PART NUMBER
1	10.75" OD X .365" WALL (SCH 40) A500 STEEL W/ BLACK PAINTED FINISH	--
1	WELDED TOP CAP	--
1	FOOT BLOCK MOUNT	PNET-130-05
2	1 HOLE VERTICAL ANCHOR (LIFTING TABS)	PNET-110-03
1	OFFSET WINCH MOUNT	PNET-130-03
1	2 HOLE VERTICAL ANCHOR	PNET-110-06
1	BEACON LABEL (PLACED 5' ABOVE FIELD GRADE)	--
USE 1/4" FILLET WELDS AROUND PERIMETER OF ALL PARTS UNLESS OTHERWISE SPECIFIED		
LABEL POLE “C” AT BOTTOM INSIDE DIAMETER		
FINISHED POLE QTY: ONE (1)		
APPROXIMATE POLE WEIGHT (PER POLE): 1875 LBS		

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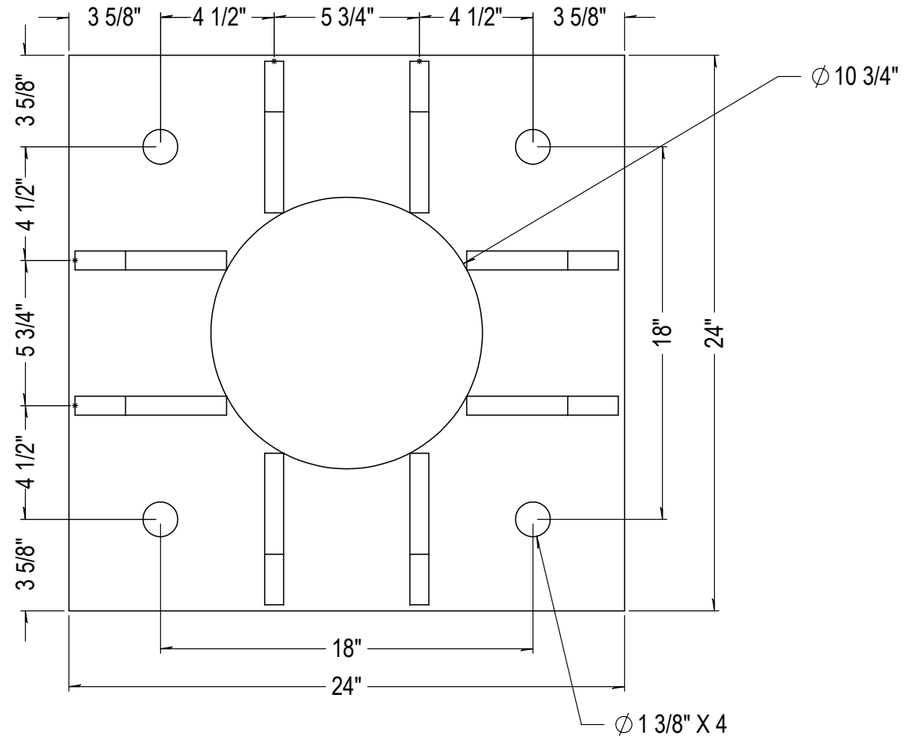
SUBMITTAL SET

POLE C FABRICATION (THIRD BASE WING POLE)

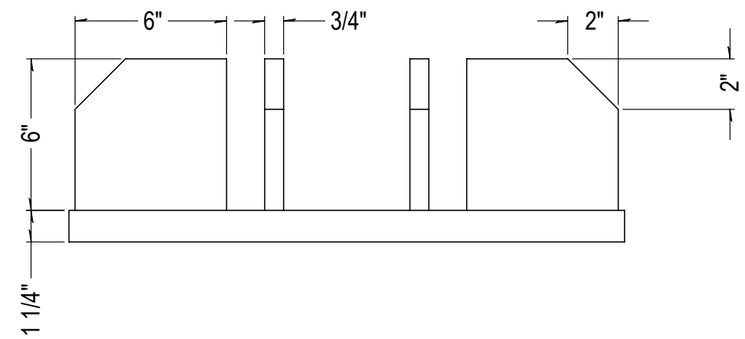
CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME:MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
FD-3



TOP VIEW

NOT TO SCALE



ELEVATION VIEW

NOT TO SCALE

DESCRIPTION
22" X 22" X 1-1/4" THK BASE PLATE (50KSI) WITH 5/16" THK WELD ALL AROUND
USE (8) 6" X 6" X 3/4" THK GUSSET PLATES (50KSI) 2" X 2" CHAMFER
FINISHED BASE PLATE QTY: EIGHT (8)

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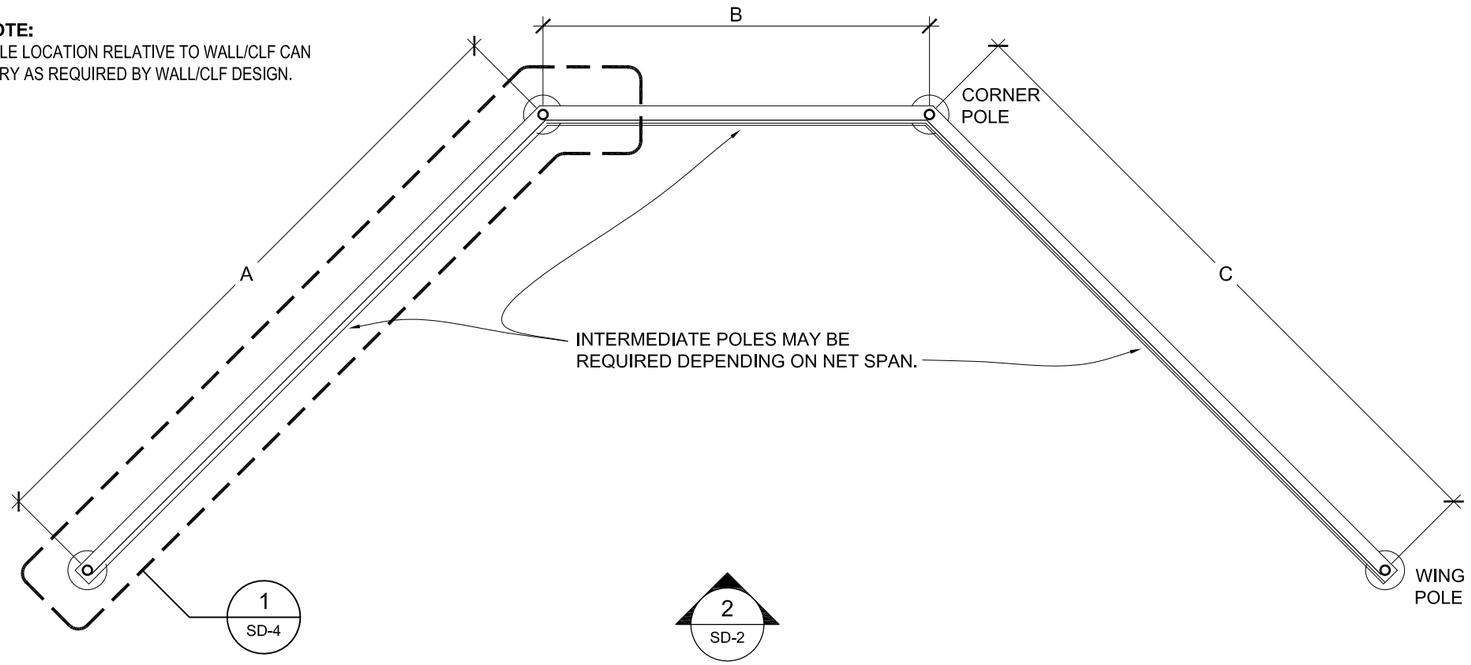
SUBMITTAL SET

BASE PLATE FABRICATION

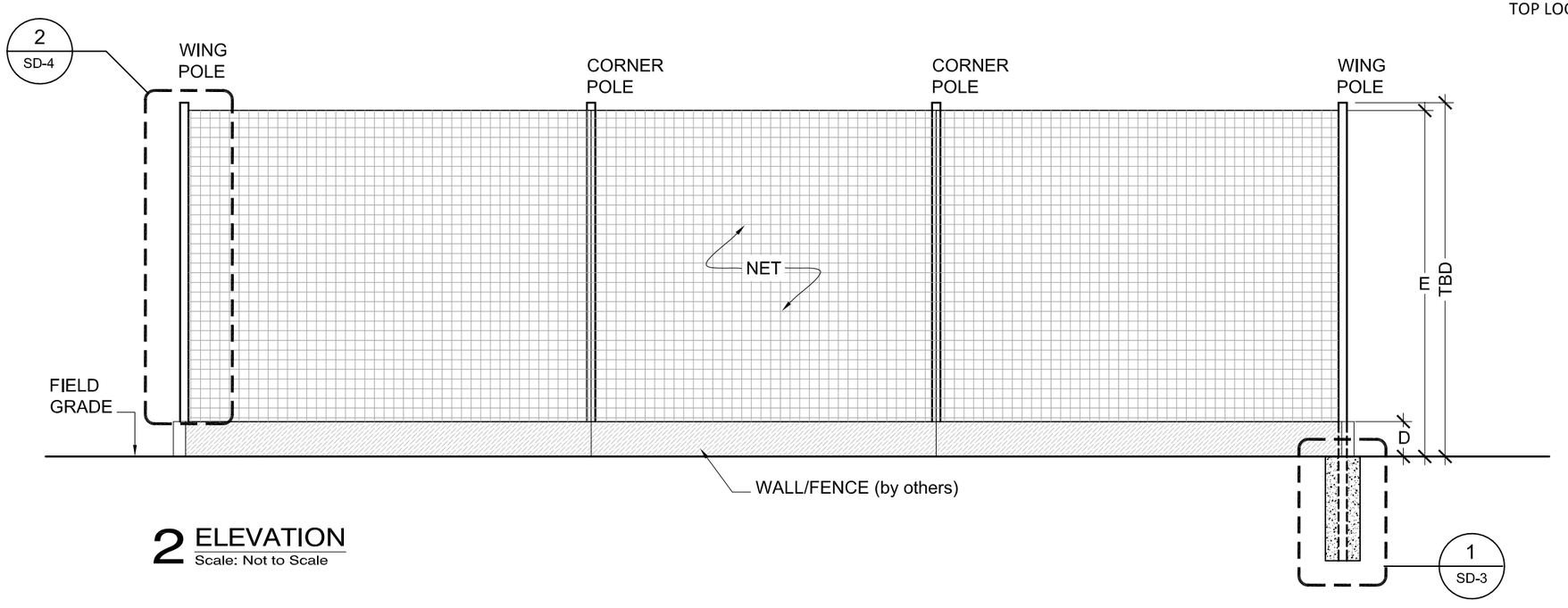
CUSTOMER NAME: NEW BERLIN PARKS/REC/FORESTRY
PROJECT NAME:MALONE PARK
PROJECT LOCATION: NEW BERLIN, WI

DRAWN BY:JD
DATE: 02/14/2025
PROJECT NO: 0369181
DRAWING NO: N10950
FD-4

NOTE:
POLE LOCATION RELATIVE TO WALL/CLF CAN VARY AS REQUIRED BY WALL/CLF DESIGN.



1 PLAN VIEW
Scale: Not to Scale



2 ELEVATION
Scale: Not to Scale

BACKSTOP DIMENSIONAL CHART

PLAN ID	DESCRIPTION	REQUIRED DIMENSION
A	Wing Pole to Corner Pole	
B	Corner Pole to Corner Pole	
C	Corner Pole to Wing Pole	
D	Wall or Fence height from field grade	
E	Net height from field grade	

NOTES:

BASED ON THE DIMENSIONS PROVIDED ABOVE, POLE SPECIFICATIONS, LENGTHS, AND FOUNDATION SIZE(S) WILL BE DETERMINED BY BACKSTOP ENGINEERING.

STAMPED ENGINEERING CALCULATIONS FOR POLE SPECIFICATIONS AND FOUNDATION DETAIL BASED ON CLIENT-PROVIDED SITE SOILS DATA, PREVAILING CODE, AND DESIGN WIND SPEED CAN BE PROVIDED AS REQUIRED BY THE PROJECT PLANS.

RECOMMENDATIONS:

MAINTAIN A MINIMUM CLEAR DISTANCE OF 36” IN FRONT OF AND IN BACK OF THE NET TO AVOID DAMAGE. REPEATED RUBBING AND/OR SNAGGING OF THE NET AGAINST OTHER OBJECTS, INCLUDING - BUT NOT LIMITED TO - WALLS, LIGHT POLES, AND FENCING MAY CAUSE PREMATURE TEARING AND NET FAILURE.

IF THE BOTTOM OF THE NET WILL BE NEAR THE TOP OF A CHAIN LINK FENCE, USE A PLASTIC FENCE CAP OR SLIT DRAIN TILE TO PROTECT THE BOTTOM OF THE NET FROM SNAGGING ON THE TOP LOOPS OF THE CHAIN LINK FABRIC.

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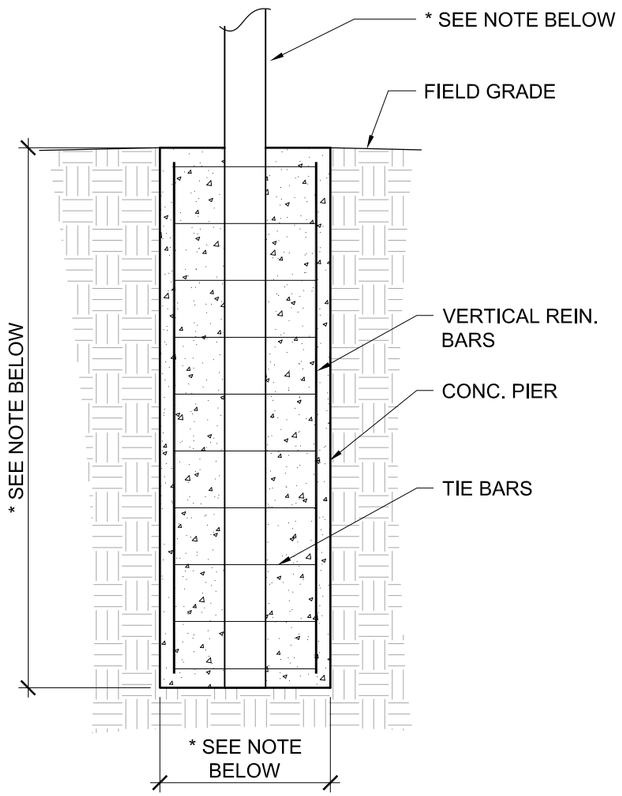
DRAWING TITLE:
BEACON INLINE BACKSTOP LIFTING & TENSIONING MODEL# BSP-L
PLAN AND ELEVATION

CUSTOMER NAME: -
PROJECT NAME: -
PROJECT LOCATION: -

REVISION #	DATE	BY
REV 1	5/4/15	TMB
REV 2	9/21/15	TMB
REV 3	11/15/16	EH

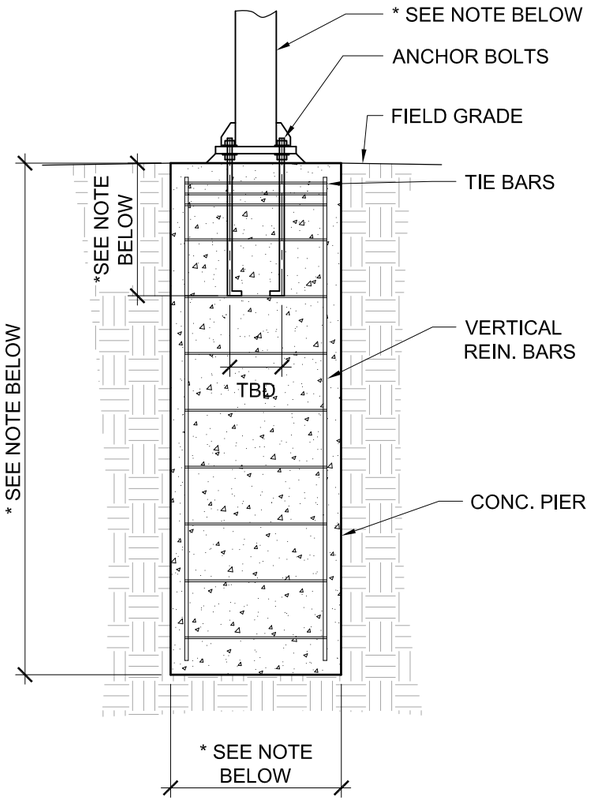
SCALE:	SEE DWG
DRAWN BY:	JP
DATE:	08/04/14
PROJECT NO:	
DRAWING NO:	**SD-2**



*NOTE:
MANUFACTURER CAN PROVIDE SIGNED AND SEALED STRUCTURAL ENGINEERING REPORT TO INCLUDE POLE, CABLE AND FOOTING DETAIL AS REQUIRED.

1 FOOTING - DIRECT BURY OPTION

Scale: 3/8"=1'-0"



*NOTE:
MANUFACTURER CAN PROVIDE SIGNED AND SEALED STRUCTURAL ENGINEERING REPORT TO INCLUDE POLE, CABLE AND FOOTING AS REQUIRED.

FOOTING - PLATE MOUNT OPTION

Scale: 3/8"=1'-0"

PLEASE SELECT PREFERRED FOOTING OPTION

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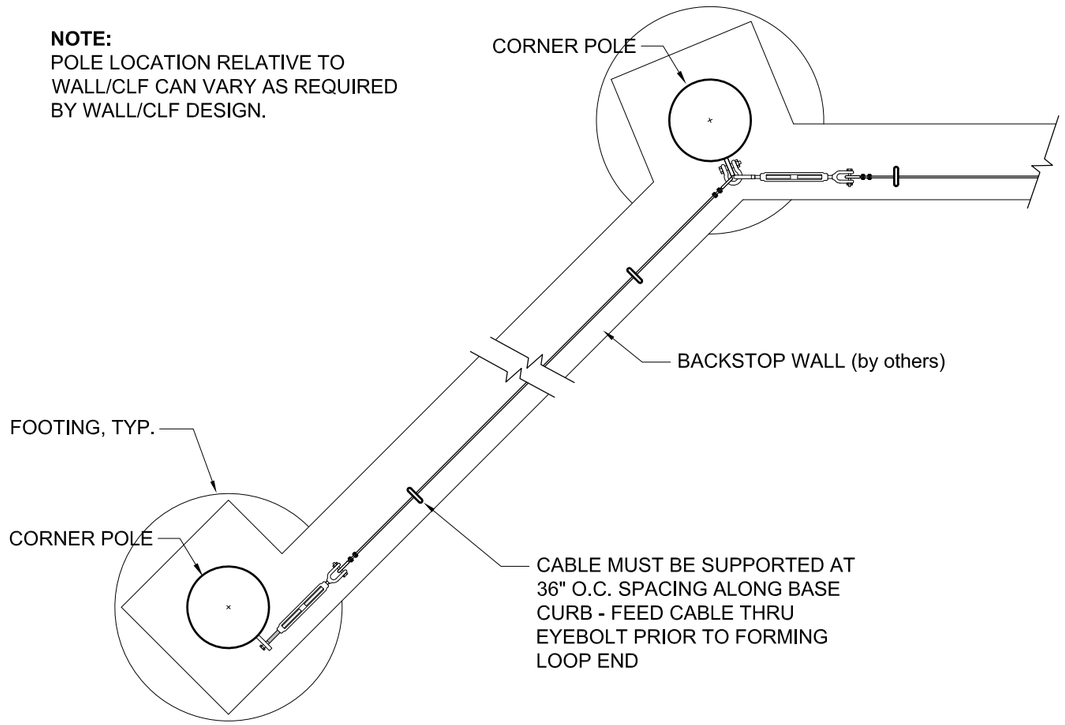
DRAWING TITLE:
BEACON INLINE BACKSTOP LIFTING & TENSIONING MODEL# BSP-L
FOOTING DETAIL

CUSTOMER NAME: -
PROJECT NAME: -
PROJECT LOCATION: -

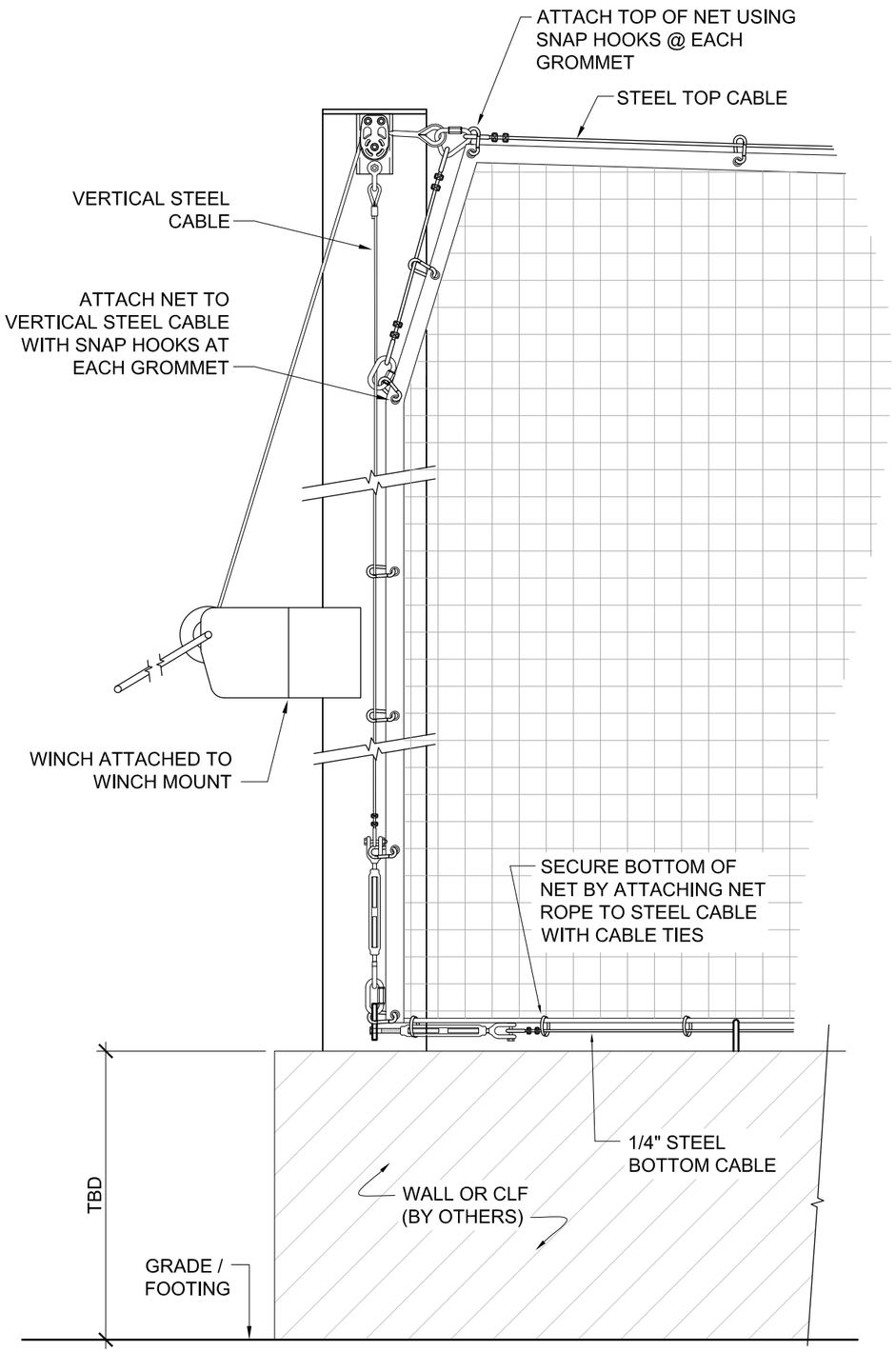
REVISION #	DATE	BY
REV 1	5/4/15	TMB
REV 2	9/21/15	TMB
REV 3	11/15/16	EH

SCALE:	SEE DWG
DRAWN BY:	JP
DATE:	08/04/14
PROJECT NO:	
DRAWING NO:	**SD-3**

NOTE:
POLE LOCATION RELATIVE TO WALL/CLF CAN VARY AS REQUIRED BY WALL/CLF DESIGN.



1 ENLARGED PLAN VIEW
Scale: 3/4"=1'-0"



2 WING POLE DETAIL
Scale: 1"=1'-0"

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DRAWING TITLE:
BEACON INLINE BACKSTOP LIFTING & TENSIONING MODEL# BSP-L
WALL ATTACHMENT AND WING POLE DETAILS

CUSTOMER NAME: -
PROJECT NAME: -
PROJECT LOCATION: -

REVISION #	DATE	BY
REV 1	5/4/15	TMB
REV 2	9/21/15	TMB
REV 3	11/15/16	EH

SCALE:	SEE DWG
DRAWN BY:	JP
DATE:	08/04/14
PROJECT NO:	
DRAWING NO:	**SD-4**

END OF ADDENDUM 3

STAFF REPORT
EXECUTIVE SUMMARY

APPLICANT/PROJECT:	**City of New Berlin / Lions Park Design**
LOCATION:	**14750 W. Cleveland Avenue**
REQUEST:	**Approval of the Design Contract for Lions Park**
D.C.D. RECOMMENDATION:	**Recommend to the Common Council the awarding of a Professional Services Design Contract to the most responsive, qualified consultant, raSmith Inc., for the design of Lions Park in an amount of $29,200 with contingencies the not-to-exceed total project cost are $60,000 from account 04252900 61136 C2025.**

1. The City of New Berlin solicited proposals for design services, which will consist of preparing final construction plans, specifications, estimates and bidding documents for improvements at Lions Park.
    a. This project consists of the design of approximately 12 new pickleball courts and associated site improvements at Lions Park. The Community Center will be demolished in fall of 2025 and these facilities will be in the location of the current building.
    b. Features such as site amenities, fencing, windscreens, shade structures, lighting and site work/landscaping shall be incorporated into the design.
2. On April 14, 2025, the City received 3 proposals for Professional Engineering Services for the design of Lions Park. Staff reviewed the proposals and have determined that raSmith, Inc. is the most responsive, qualified consultant.
3. The project proposal is attached, along with the composite scoring sheet.

DETAILS IN ATTACHED STAFF REPORT

CITY OF NEW BERLIN
DEPARTMENT OF COMMUNITY DEVELOPMENT
PLAN COMMISSION STAFF REPORT

Meeting of May 5, 2025

City of New Berlin / Lions Park
14750 W. Cleveland Avenue

DATE STAFF REPORT CREATED: 4/8/2025

APPLICANT: City of New Berlin

REQUEST / DESCRIPTION OF PROJECT: This project consists of the design of approximately 12 new pickleball courts and associated site improvements at Lions Park. The Community Center will be demolished in fall of 2025 and these facilities will be in the location of the current building. Features such as site amenities, fencing, windscreens, shade structures, lighting and site work/landscaping shall be incorporated into the design.

PROPOSALS RECEIVED: 3

SELECTED CONSULTANT: raSmith, Inc.

FISCAL IMPACT: Estimated Design Cost $29,200

SOURCE OF FUNDS: $60,000 04252900 61136 C2025 Lions Park

D.C.D. RECOMMENDATION: Recommend to the Common Council the awarding of a Professional Services Design Contract to the most responsive, qualified consultant, raSmith, Inc., for the design of Lions Park in an amount of $29,200 with contingencies the not-to-exceed total project cost are $60,000 from account 04252900 61136 C2025. **See Executive Summary.**

Attachments:
Selected Proposal – Project Approach
Request for Proposal
Composite Scoring Sheet

Project Approach

Scope of Services

Per the RFP dated March 14, 2025 and additional follow-up questions over email, we understand that the City of New Berlin is requesting design services for 12 new pickleball courts and associated site improvements at Lions Park. We utilized the Location Map (included in the attachments) for our reference in preparing this proposal.

We understand that the existing Community Center building will be demolished this fall before the pickleball courts are constructed. Building demolition and restoration of the area to remain (new park structure, picnic area, and DPW storage) are not within the scope of this proposal. We assume that the existing topographic survey will take place prior to building demolition.

The City has informed us that a wetland delineation will not be needed for the project, so we have not provided a fee for this effort. We also assume that an environmental investigation is not needed for the project. If these services are required, we can assist in soliciting an RFP from a firm who does such work.

A. Data Collection – Prepare a topographic survey of an approximate 2.5-acre area designated per the red boundary in the image at the right. The survey will include all visible improvements, spot elevations depicting existing grades at one-foot contours, and all visible utilities including rims and measure downs. If needed, an additional area for the survey can be provided, upon request, for an additional fee. The scope includes:

1. One (1) Diggers Hotline request for utility marks and record utility plans.
2. Work will be performed utilizing the NAD83 (2011) and NAVD88 Datums.
3. Benchmarks will be set for future construction.
4. Conduct an initial site visit and photo-document existing conditions.
5. Review as-built/record documentation and reports provided by the City.
6. A boundary survey or setting of monuments is not included. These services can be provided upon request for an additional fee.

B. Preliminary Design – This project phase includes advancing the City's concept plan and developing preliminary civil engineering and landscape architectural plans and documents for City review and approval. This effort will require a high-level site analysis that will confirm site drainage patterns, schematic infrastructure layouts, required utility improvements, overall site project limits, and site computations as understood to be required by the City of New Berlin.

1. Prepare the following preliminary civil engineering and landscape architectural plans to a 60% design level:

   a. An Existing Conditions and Demolition Plan showing existing exterior pavements, utilities, trees/landscaping, and site features to be either salvaged, removed, and/or abandoned based on the survey with topographic and utility data.

   b. A Site Layout and Paving Plan showing proposed site improvements including paving and general layout information. We understand that the City has laid out a concept plan for the courts, so the proposed site layout will follow their parameters. We assume: a layout of 12 pickleball courts for design, the existing parking lot will remain in place, the parking lot will undergo only maintenance (striping, pavement patching, seal coating, etc.), and no parking lot resurfacing or regrading will take place as part of this project.

   c. A Site Grading and Utility Plan showing proposed one-foot contours and key spot elevations, and proposed private storm sewer system improvements in plan view, as necessary. We assume that the site utility design will be limited to the private storm sewer system only for the construction of the pickleball courts, and that the demolition of

existing utilities at the existing Community Center building will be outside of the scope of this project. We assume that no new fire hydrants will be required for the project and that new electrical service will be run to the proposed court light poles.

d. A Landscape Plan showing the restoration limits. We assume landscape improvements will be limited to only the turf restoration.

2. If required, prepare a preliminary stormwater management concept in accordance with the City of New Berlin, Wisconsin Department of Natural Resources (WDNR), and Milwaukee Metropolitan Sewerage District (MMSD) requirements. This task includes investigation into determining whether stormwater management will be required for this project.

3. Provide a construction cost estimate for the City based on the Preliminary Design plans.

C. Final Construction Plans and Bidding Documents – This project phase includes responding to review comments and preparing final civil engineering and landscape architectural plans and documents for final City approval, permit applications, and bidding/construction. This phase also includes applying for the necessary permit applications related to civil design.

1. Based on the City-approved Preliminary Design plans, prepare the final design plans, which will include the same sheets as outlined in the Preliminary Design phase with the addition of an Erosion Control Plan and Site Construction Detail Plans.

2. Provide a construction cost estimate for the City based on the Final Construction plans.

3. Prepare final specifications for site- and landscape-related work items including fencing. For additional pickleball court amenities such as nets, windscreens, and lighting, we will note a selected product "or approved equivalent" on the plans.

4. Prepare bidding documents based upon City of New Berlin standards.

5. Prepare calculations, as necessary, for submittal to reviewing agencies for approval.

6. Prepare and submit a Water Resources Application for Project Permits to the WDNR for review and approval, if applicable, based on the area of land disturbance.

7. Prepare and submit a Department of Safety and Professional Services (DSPS) – General Plumbing Permit Application for review and approval.

8. Record drawing preparation upon completion of construction is not included within this scope, but can be provided for an additional fee.

D. Stormwater Management, if required (option) – This project phase includes developing a stormwater management plan, if required. It is listed as an option that will only be included within the scope of work if it is determined to be required during the Preliminary Design phase.

There are various regional stormwater ponds within the City of New Berlin. It will be investigated if our project site is tributary to any of these regional ponds. If so, stormwater management may not be required for this project. Additionally, the demolition of the Community Center may allow for a swap of the impervious area (i.e., the proposed pickleball courts) in which case, the project may be exempt from stormwater management.

If required, we will prepare a Stormwater Management Plan and a Stormwater Maintenance Agreement (SWMA) and submit to the City of New Berlin and MMSD for review and approval. This task will be completed concurrently with the Final Construction Plans and Bidding Documents task.

E. Bidding Phase – This project phase includes providing limited assistance during bidding.

1. Prepare the official bidding notice and submit the notice to the City.

2. Provide digital construction plans and bidding documents to be uploaded to Questcdn.com for perspective bidders.

3. Provide plan and specification clarifications to perspective bidders (assume eight hours).

4. Evaluate the bids received, prepare a letter of recommendation for the award, and submit it to the City.

F. Meetings and Coordination – This project phase includes the following administration tasks:

1. Attend up to five meetings with the City (approximately three virtual, two in person). It is anticipated that these meetings may include:

Project Approach

a. A pre-design meeting to discuss the expectations for the pickleball facility.

b. A meeting during or following the preliminary design submittal.

c. A meeting during or following the final construction plan submittal.

2. The deliverables will include:

a. Five hard copies and an electronic copy of the construction plans in AutoCAD and PDF format.

b. Three hard copies of the bidding documents and an electronic copy in PDF format.

c. No bidding documents and construction plans will be produced for distribution to perspective bidders.

Completion Schedule

We will work with you to meet the project deadlines and establish an acceptable schedule that will be mutually agreed upon before beginning our services. Once authorization has been given to commence survey work, the Data Collection phase will last approximately three to four weeks. We have read and understood that the schedule provided in the RFP requires the preliminary designs to be completed by August 22, 2025 and the final designs to be completed by October 31, 2025. We are prepared to accommodate this schedule.

Professional Fees

The above services will be provided for the lump sum (LS) fees shown below. Services will be billed each month based on the work completed.

A. Data Collection – $3,200 LS
B. Preliminary Design – $6,000 LS
C. Final Construction Plans and Bidding Documents – $9,500 LS
D. Stormwater Management, if required (option) – $4,500 LS
E. Bidding Phase – $3,000 LS
F. Meetings and Coordination – $3,000 LS

Usual and customary expenses such as mileage, printing, delivery, and postage are not included in the above fee and will be billed at cost as a reimbursable expense.

This proposal does not include any services beyond those described in the above scope of services.

Client Responsibilities/Assumptions

A. The terms and conditions set forth herein are valid for 30 days from the date of this proposal and are conditioned upon our completion of all services within 270 days.

B. The Owner shall provide any existing data relevant to the proposed project including, but not limited to, electronic AutoCAD base files of Survey, Site Plan, and any original Design Plans. Verification of information provided by others is not a part of the Scope of Services; therefore, any problems arising out of the use of such information shall not be raSmith's responsibility.

C. We strongly recommend that the Owner undertake a geotechnical investigation of the site. We do not assume responsibility for problems associated with undetermined soil conditions. Geotechnical work should be performed by an outside consultant.

D. Stormwater regulations may require soil classification field testing by a licensed soils scientist to determine required infiltration areas. To expedite the project, infiltration areas can be conceptually designed using assumed values for subsoil characteristics. The area required for infiltration may increase substantially once field values are determined. We strongly recommend that the Owner undertake the soil classification field testing early in the project. Soil scientist services and fees are not included in this proposal. This work is in addition to the recommended geotechnical investigation.

E. The Owner shall pay for all project review and permit fees.

F. There are neither navigable streams present in the project area nor is there any flood plain involvement on the project. The wetlands in the area will not be impacted, and a wetland delineation report will not be needed. We assume that there is not Primary Environmental Corridor in the project vicinity.

G. After work has commenced, any revisions requested by the Owner, Developer, or Architect or necessitated by conditions beyond our control will be considered extra work requiring additional compensation.

H. The project may be phased. We will design the site for the full-build (12 courts) scenario. The plans will depict the construction of the full-build scenario, and we will use a Bluebeam markup of the full-build scenario to depict the phasing, if required.

CITY OF NEW BERLIN
REQUEST FOR PROPOSAL
LIONS PARK DESIGN

The City of New Berlin (City) desires to retain the professional services of an engineering consultant to complete the design and preparation of final plans and specifications, as well as related site improvements for Lions Park, which includes the construction of new pickleball courts.

Qualified consultants are invited to submit proposals to accomplish the scope of work hereinafter defined. The consultant will be expected to work directly with the City. The Department of Community Development will be the lead agent for the Project.

1. Project Description and Scope of Services

    A. This project consists of the design of approximately 12 new pickleball courts and associated site improvements at Lions Park. The Community Center will be demolished in fall of 2025 and these facilities will be in the location of the current building.

    B. Features such as site amenities, fencing, windscreens, shade structures, lighting and site work/landscaping shall be incorporated into the design.

2. Data Collection

    A. A field survey of the park shall be completed by the selected consultant as necessary to complete the designs for the limits of work.

    B. The selected consultant shall compile existing topographic, cadastral and utility as-built information as needed from the City of New Berlin data files and private utilities.

    C. The field survey shall be completed based upon state plane coordinates. The Elevation Datum the City of New Berlin uses is ‘NAVD 1988 (US Survey Feet)’. The X/Y Coordinate system the City uses is NAD 1983 (2011) State Plane Wisconsin South 4803. Verify the accuracy of City topographic data by comparing to field survey data.

    D. The selected consultant shall provide geotechnical and/or environmental reports as needed. Increased impervious over 5,000 square feet triggers MMSD requirements. Disturbance over 1 acre triggers WDNR requirements.

3. Preliminary Design

    A. Based upon the field survey data and the information compiled from the City, prepare park designs including the features outlined in the Project Description and Scope of Services.

    B. Submit the preliminary designs to the City for review and approval.

4. Final Construction Plans and Bidding Documents

    A. Upon receiving approval of the preliminary designs by the City, complete the final construction plans and bidding documents.

    B. Prepare appropriate construction details.

    C. Prepare a construction erosion control plan.

    D. Apply for any applicable DNR permits.

    E. Prepare bidding documents based upon City of New Berlin standards.

    F. Submit the final construction plans and bidding documents to the City for review and approval.

5. Bidding Phase

    A. Prepare the official bidding notice and submit the notice to the City.

    B. Provide digital construction plans and bidding documents to be uploaded to Questcdn.com for perspective bidders.

    C. Provide plan and specification clarifications to perspective bidders.

    D. Evaluate bids received, prepare a letter of recommendation for award and submit it to the City.

6. Administration

    A. Attend up to five meetings with the City (approximately three virtual, two in person). It is anticipated that these meetings may include:

        1. Preliminary design submittal.

        2. Final construction plan submittal.

    B. Prepare and submit construction cost estimates to the City.

    C. Deliverables shall include:

        1. Five hard copies and an electronic copy of the construction plans in AutoCad and PDF format.

        2. Three hard copies of the bidding documents and an electronic copy in PDF format.

        3. No bidding documents and construction plans will be produced for distribution to perspective bidders.

7. Schedule

   A. Based on the evaluation of the Proposals received, a consultant will be selected. A proposed contract will then be prepared and negotiated with the most responsive, responsible consultant.

   B. The following time schedule is anticipated:

1.	Receipt of all Proposals	April 14, 2025
2.	Staff selection of Consultant	April 21, 2025
3.	Plan Commission	May 5, 2025
4.	Common Council award of contract	May 13, 2025
5.	Preliminary designs completed	August 22, 2025
6.	Preliminary designs to the Plan Commission	October 6, 2025
7.	Final Designs completed	October 31, 2025
8.	Bidding Phase Completed	Winter 2026

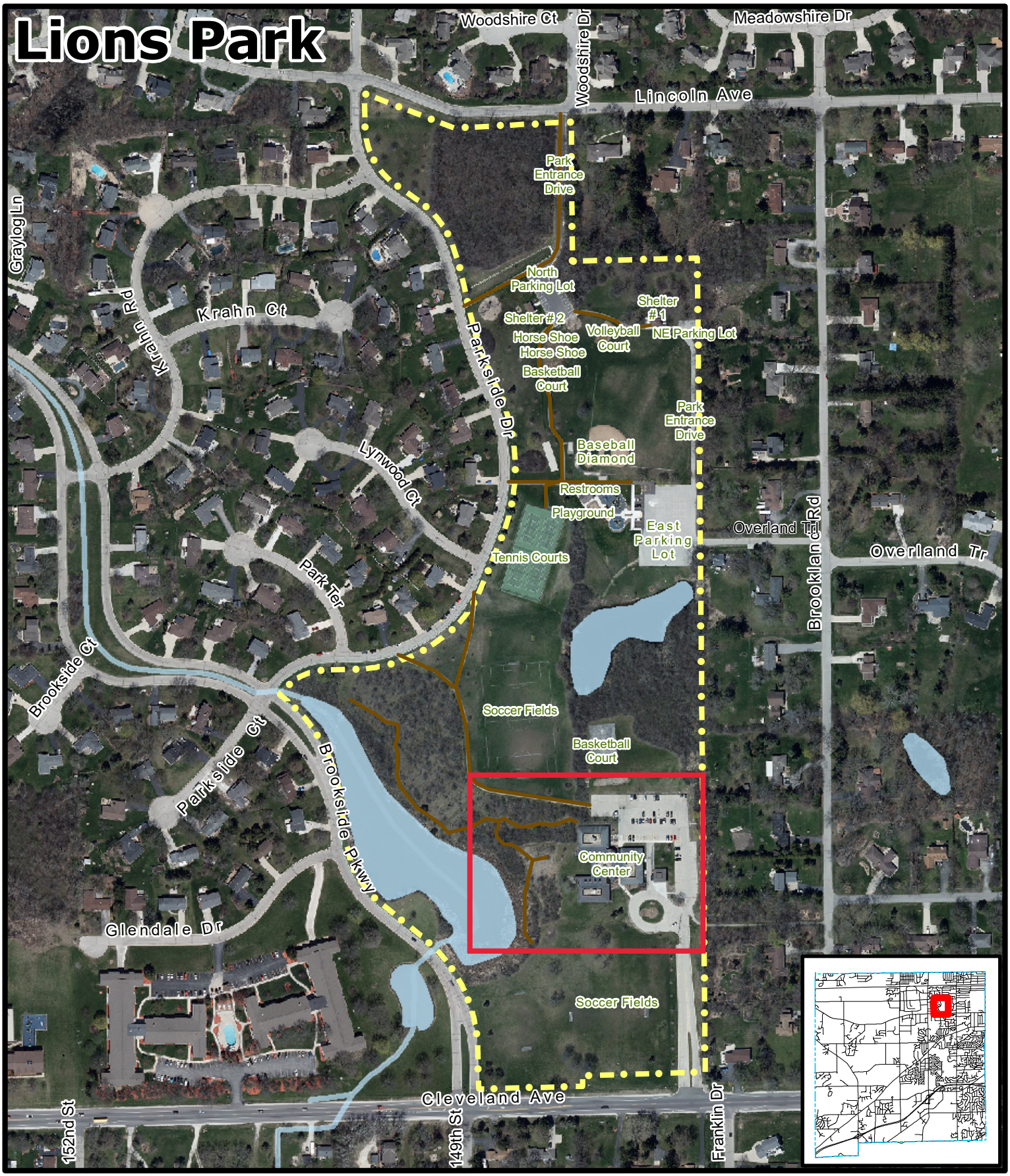
   C. Submittal

      1. Five copies of proposals should be submitted to the Department of Community Development by 10:00 AM., Monday, April 14, 2025. Late submittals will not be accepted and will be returned unopened. Proposals should be mailed or delivered to:

         New Berlin City Hall - Department of Community Development
         Attn: Kristen Hogan, Principal Planner
         3805 South Casper Drive
         New Berlin, WI 53151

      2. Proposals will be evaluated based on the consultant's professional qualifications, the experience and qualification of the project team, Consultant present and committed work load, project approach, consultant effort, and cost.

      3. All questions regarding proposals should be directed to Kristen Hogan at the following e-mail address: khogan@newberlin.org.



City of New Berlin
city living with a touch of country

Legend

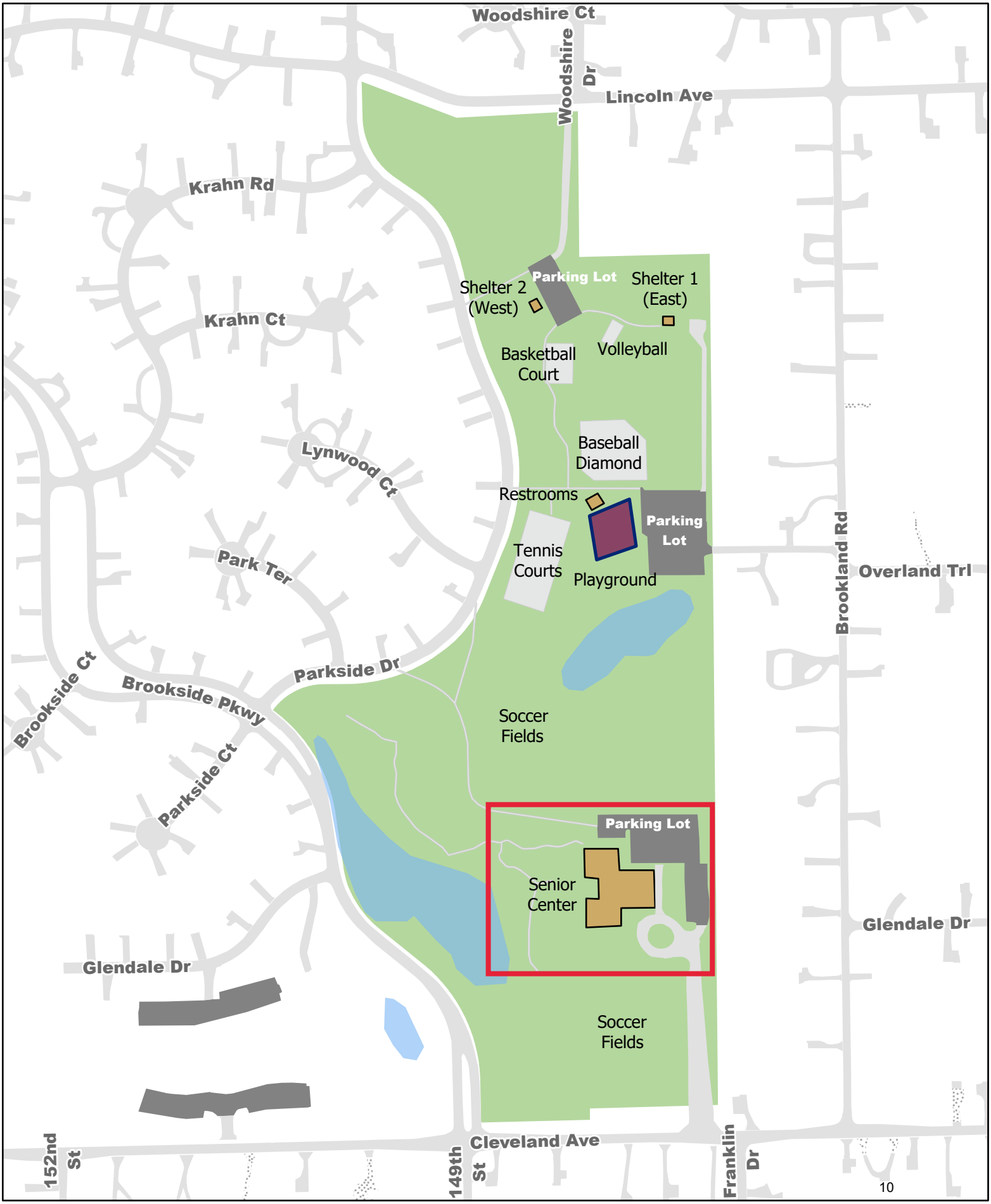
Park
Trails
Water

N

0 100 200
Feet

The information and depictions herein have been produced using data available through photogrametric means by the City of New Berlin. The informations and depictions herein are for informational purposes and the City of New Berlin specifically disclaims accuracy in this reproduction and specifically admonishes and advises that any and all depiction, measurements, distances depicted herein and as to which specific or precise accuracy is required should be determined by procurement of certified maps, surveys, plats, Flood Insurance Studies, or other official means.

Lion's Park


Woodshire Ct
Woodshire Dr
Lincoln Ave
Krahn Rd
Krahn Ct
Parking Lot
Shelter 2 (West)
Shelter 1 (East)
Basketball Court
Volleyball
Baseball Diamond
Lynwood Ct
Restrooms
Parking Lot
Tennis Courts
Playground
Park Ter
Brookland Rd
Overland Trl
Brookside Ct
Brookside Pkwy
Parkside Dr
Soccer Fields
Parkside Ct
Parking Lot
Senior Center
Glendale Dr
Glendale Dr
Soccer Fields
152nd St
Cleveland Ave
149th St
Franklin Dr
10

Lions Park - Pickleball Design

COMPOSITE SHEET

CRITERIA	MULTIPLIER
Experience and Qualifications of Project Team	20
Consultant present and committed work load	20
Project Approach	20
Consultant Effort (ie. Hours to complete)	20
Cost	20

NUMBER OF EVALUATORS: 4

CONSULTANT	Evaluator 1	Evaluator 2	Evaluator 3	Evaluator 4	Average	Ranking
raSmith	4.2	4.2	4.4	3.8	4.2	1
JSD	3.8	3.6	3.4	3.4	3.6	3
Parkitecture	4	4	3.8	3.9	3.9	2

STAFF REPORT
EXECUTIVE SUMMARY

APPLICANT/PROJECT:	**Frank Grotkiewicz / 2-Lot Certified Survey Map**	
LOCATION:	**19300 W. Observatory Road (Tax Key # 1229.994.003)**	
REQUEST:	**Approval of a 2-Lot Certified Survey Map**	
REVIEW SCHEDULE:	**CSM Received:**	**3/21/2025**
	Completeness Determination:	**3/21/2025**
	90-day time limit expires:	**6/19/2025**
	Final Common Council Action:	**5/13/2025**

D.R.C. RECOMMENDATION: **Recommend to Common Council approval of the 2-Lot Certified Survey Map for the property located at 19300 W. Observatory Road (Tax Key # 1229.994.003), subject to the application, plans on file and the following conditions:**

1. **Applicant shall correct all drafting errors and requested changes identified by Staff on the final CSM prior to the City signing.**
    a. **Update Clerk on page 4 to Rubina Medina.**
2. **A final copy of the CSM shall be submitted and reviewed prior to City signing. All owners and surveyor must sign prior to City signing the CSM. Surveyor Stamp is required.**
3. **The CSM shall be recorded with Waukesha County Register of Deeds prior to the issuance of any new zoning or building permits.**
4. **Applicant and/or property owner shall apply for and obtain appropriate building, plumbing and electrical permits prior to any construction on any parcel.**
5. **The property, which is located outside of the current MMSD Sewer Service District, will require private on-site waste treatments sites (POWTS) for each lot that is created that will meet Waukesha County requirements.**
6. **Private water supply wells meeting the requirements of the Wisconsin Department of Natural Resources will also be required.**
7. **Payment of $1,937.60 for Lot #2 in Public Site & Open Space fees is required before the City shall sign the CSM.**

DETAILS IN ATTACHED STAFF REPORT

CITY OF NEW BERLIN
DEPARTMENT OF COMMUNITY DEVELOPMENT
PLAN COMMISSION STAFF REPORT

Meeting of May 5, 2025

Frank Grotkiewicz / 2-Lot Certified Survey Map
19300 W. Observatory Road (Tax Key # 1229.994.003)

DATE STAFF REPORT CREATED: April 3, 2025

APPLICANT / OWNER(S): Frank Grotkiewicz

REQUEST / DESCRIPTION OF PROJECT: Approval of the 2-Lot Certified Survey Map for the property located at 19300 W. Observatory Road (Tax Key # 1229.994.003).

DATE OF APPLICATION / DATE FILED WITH CITY CLERK: 3/21/2025

DATE OF COMPLETENESS DETERMINATION: 3/21/2025

PRE-APPLICATION CONFERENCE HELD: No
Date(s) of Meeting(s): Several meetings at DCD front counter.
Site Visit(s): 4/14/2025

CONCEPTUAL PLAN: Yes, a CSM has been submitted.

SIZE OF DEVELOPMENT / PARCEL(S): Current Lot: 38.205 acres

CURRENT ZONING: R-1/R-2 (Rural Conservation Single-Family Residential District), C-1 (Upland Resource Conservancy District) & C-2 (Shoreland Wetland Holding District).

CURRENT LAND USE: One single-family residential lot.

PROPOSED ZONING: N/A

PROPOSED LAND USE: Two single-family residential lots.

PROPOSED LOT SIZE:
Lot 1: 33.206 acres (After CSM is recorded)
Lot 2: 5 acres (After CSM is recorded)

PROPOSED DENSITY: N/A

ADJACENT ZONING AND LAND USE:

North:	Zoning: R-1/R-2, Rural Conservation Residential C-1, Upland Resource Conservancy District / C-2, Shoreland Wetland Holding District	Land Use: Single-Family Residential
South:	Zoning: R-1/R-2, Rural Conservation Residential & A-2, Agricultural and Rural Holding	Land Use: Agricultural

East:	Zoning: R-1/R-2, Rural Conservation Residential/C-1, Upland Resource Conservancy District	Land Use: Single-Family Residential / Agricultural
West:	Zoning: A-2, Agricultural and Rural Holding/ C-1, Upland Resource Conservancy District /C-2, Shoreland Wetland Holding District	Land Use: Single-Family Residential / Agricultural

CONFORMANCE WITH COMPREHENSIVE PLAN AND MUNICIPAL CODE: Yes, the request meets the intent of this Chapter.

Chapter 12: Neighborhood "B": West Lincoln Avenue & Western Area: Yes, this submittal meets the intent of this Chapter.

Planning Context / Vision / Development Policies:

Vision:

- *The area of New Berlin generally west of Calhoun Road should be a regional model of rural development. Any development shall occur as a mix of conservation development, farms, large areas of preserved open spaces, rural trails and facilities, and small scale neighborhood-oriented retail. Development in this area will incorporate environmental protection as a basic value, including its importance as an aquifer recharge area.*

Land use:

- *Future Land Use Map: Country Residential*

ZONING CODE (Chapter 275): Yes, this request meets the requirements of Section 275-33B(1) of the Zoning Code.

DEVELOPMENT CODE (CHAPTER 235): Yes

PUBLIC HEARING REQUIRED: No

CONDITIONAL USE REQUIRED: No

USE / SITE /ARCHITECTURAL REVIEW:
Use Approval Required: No
Site Plan Required: Yes, a Certified Survey Map was submitted.
Architectural Review Required: No

PROPOSED ARCHITECTURE: N/A

UNIQUE SITE CHARACTERISTICS:
Environmental Corridor: Yes, Secondary Environmental Corridor.
Wetland On Property: Yes
Conservancy Districts (C-1, C-2): Yes, C-1 and C-2 to remain unchanged.
NRCS Map Classification: Not Inventoried
Floodplain: No
Topography / Geologic: The site slopes down from east to west.

BIKE & PEDESTRIAN FACILITIES PLAN: No improvements identified.

PARK & OPEN SPACE PLAN: No improvements identified.

NATURAL RESOURCES PROTECTION:
Limits of Disturbance (LOD): N/A
Woodland, Tree, and Vegetation Protection: N/A
Wildlife Management Plan: N/A

ENVIRONMENTAL IMPACT: No impact. Applicant will need to adhere to 30' setback from wetlands.

STORM WATER MANAGEMENT / DRAINAGE: Applicant is required to adhere to all City of New Berlin Codes, Ordinances and Plans regarding storm water conveyance and maintenance as identified by the Department of Community Development.

SANITARY SEWER PROVISION:
Within Current Sewer Service Area: No
Sewer Shed Capacity Available: N/A
Adequate Linkage: N/A
Onsite System Required: Yes

WATER USAGE CALC.: 250 GPD per new connection average.

TRAFFIC IMPACT: A net increase of one lot will occur with the proposed land division. The ITE estimates the following for a single-family lot:
Weekday AM Peak –0.77 trips per unit
Weekday PM Peak –1.02 trips per unit
Weekend Peak –0.93 trips per unit

SCHOOL DISTRICT IMPACT: 0.46 total estimated students
Elementary –0.23 students
Middle –0.11 students)
High School –0.12 students
Notice Sent to Affected School District(s): No

PREVIOUS ACTION:

1973	Existing home was built.
1981	Construction of Agriculture building.
2009	Concept subdivision.
8/15/2022	Plan Commission approved a 1-Lot CSM.
8/23/2022	Common Council approved a 1-Lot CSM.
5/17/2023	Demo permit to demolish existing house.
8/14/2023	Building permit for new single-family home.

CONSISTENCY WITH PREVIOUS ACTION: Yes

FINDINGS:

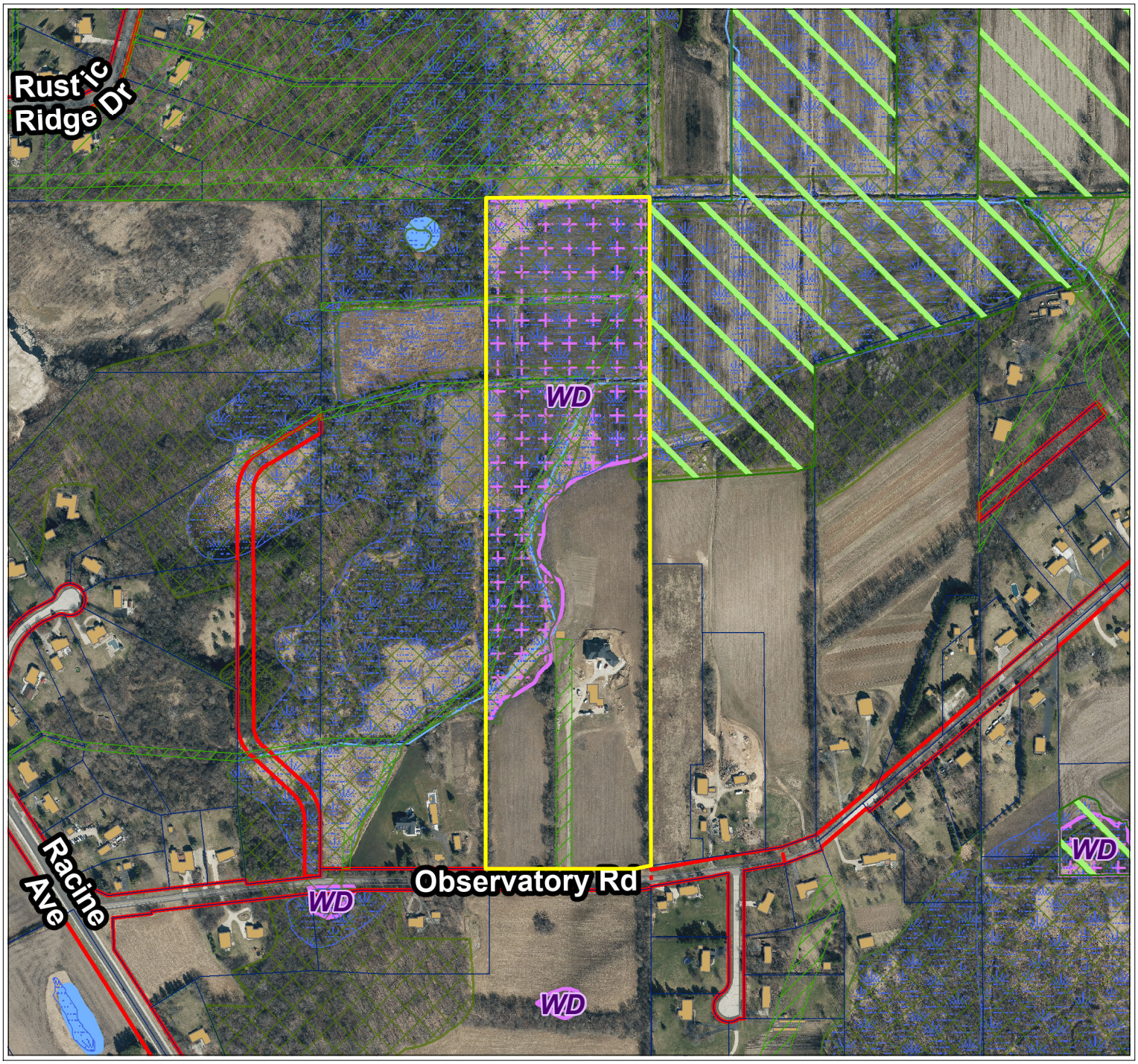
1. The applicant owns one large lot and would like to subdivide to create a second parcel.
2. Under Section 275-33D, in the R-1/R-2 District, the minimum lot size is 5 acres and the minimum lot width requirement is 200'.
3. A wetland delineation was conducted on October 19, 2022, by Wetland & Waterway Consulting LLC. The wetlands have been registered on the City's maps.

D.R.C. RECOMMENDATION: Recommend to Common Council approval of the 2-Lot Certified Survey Map for the property located at 19300 W. Observatory Road (Tax Key # 1229.994.003), subject to the application, plans on file and the following conditions: **See Executive Summary.**

ATTACHMENTS:
Location Map
CSM

City of New Berlin
Community Development

LD-2500450
Grotkiewicz 2-Lot CSM
19300 W. Observatory Rd



Legend

- Parcels
- Road Right-of-Way
- FEMA Flood Zone (2023)
- Flood Zone
- FEMA Flood - Zone A
- FEMA Flood - Zone AE
- Zoning Boundaries
- Zoning Wetland Registration
- Wetland Registration Type
- Registered Wetland
- Outside Wetland
- Environmental Corridor
- Corridor Type
- Isolated Natural Resource Area
- Primary Environmental Corridor
- Secondary Environmental Corridor
- Wetland
- Sewer Service Area (MMSD)
- Sewershed
- Current
- Ultimate

N

0 210 420 Feet

City of New Berlin
Department of Community Development
3805 S Casper Dr.
New Berlin WI 53151
(262) 797-2445
www.newberlin.org

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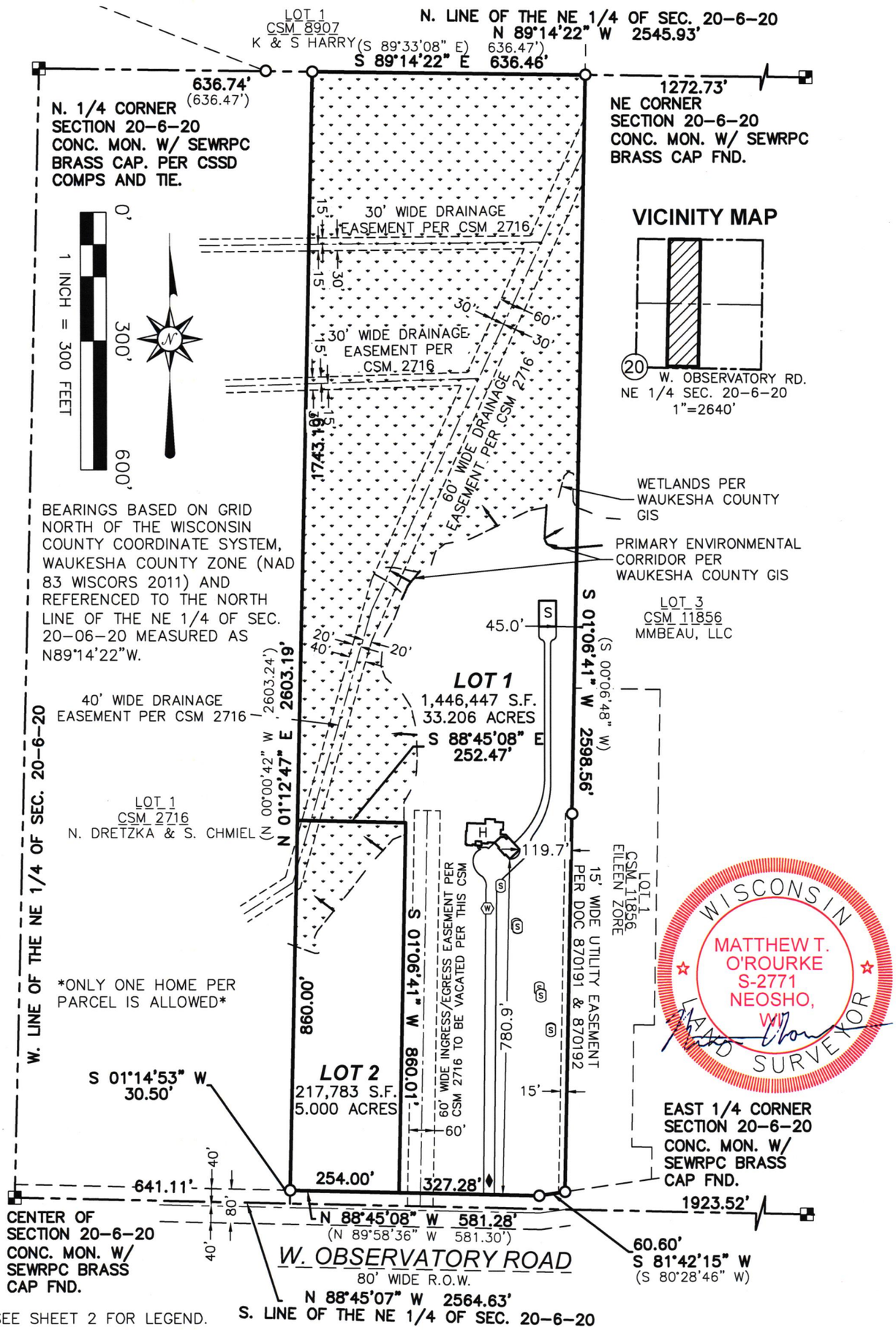
PRELIMINARY

WAUKESHA CO. CERTIFIED SURVEY MAP NO. _____

LOT 1 OF CSM 12409, RECORDED IN THE WAUKESHA COUNTY REGISTER OF DEEDS OFFICE, JANUARY 10, 2023, IN VOL 128, PAGES 188-191AS DOCUMENT NO. 4705089, BEING PART OF THE NW 1/4 AND SW 1/4 OF THE NE 1/4 OF SECTION 20, TOWN 6 NORTH, RANGE 20 EAST, CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN.



- SEE SHEET 2 FOR LEGEND.

PREPARED FOR:
FRANK GROTKIEWICZ &
KATELYNN SEEFELDT
19300 W. OBSERVATORY ROAD
NEW BERLIN, WI 53151

DATED 03/17/2025
JOB# 22093
SHEET 1 OF 4

THIS INSTRUMENT WAS DRAFTED BY MATTHEW T. O'ROURKE, S-2771

WAUKESHA CO. CERTIFIED SURVEY MAP NO. ____

LOT 1 OF CSM 12409, RECORDED IN THE WAUKESHA COUNTY REGISTER OF DEEDS OFFICE, JANUARY 10, 2023, IN VOL 128, PAGES 188-191AS DOCUMENT NO. 4705089, BEING PART OF THE NW 1/4 AND SW 1/4 OF THE NE 1/4 OF SECTION 20, TOWN 6 NORTH, RANGE 20 EAST, CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN.

SURVEYOR'S CERTIFICATE:

I, MATTHEW T. O'ROURKE, PROFESSIONAL LAND SURVEYOR, HEREBY CERTIFY:

THAT I HAVE SURVEYED, DIVIDED AND MAPPED A REDIVISION OF LAND BEING LOT 1 OF CSM 12409, RECORDED IN THE WAUKESHA COUNTY REGISTER OF DEEDS OFFICE, JANUARY 10, 2023, IN VOLUME 128, PAGES 188–191 AS DOCUMENT NO. 4705089, BEING PART OF THE NW 1/4 AND SW 1/4 OF THE NE 1/4 OF SECTION 20, TOWN 6 NORTH, RANGE 20 EAST, CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN, DESCRIBED AS FOLLOWS:

LOT 1 OF CSM 12409, RECORDED IN THE WAUKESHA COUNTY REGISTER OF DEEDS OFFICE, JANUARY 10, 2023, IN VOLUME 128, PAGES 188–191 AS DOCUMENT NO. 4705089, BEING PART OF THE NW 1/4 AND SW 1/4 OF THE NE 1/4 OF SECTION 20, TOWN 6 NORTH, RANGE 20 EAST, CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN

DESCRIBED LANDS HAVING AN AREA OF 1,664,230 SQUARE FEET OR 38.205 ACRES.

THAT I HAVE MADE SAID SURVEY BY THE DIRECTION OF FRANK GROTKIEWICZ & KATELYNN SEEFELDT OWNER OF SAID LANDS.

THAT SUCH MAP IS A CORRECT REPRESENTATION OF THE EXTERIOR BOUNDARIES OF THE LAND SURVEYED AND THE DIVISION THEREOF.

THAT I HAVE FULLY COMPLIED WITH PROVISIONS OF S. 236.34 OF THE WISCONSIN STATUTES AND THE SUBDIVISION CONTROL ORDINANCE OF THE CITY OF NEW BERLIN IN SURVEYING AND MAPPING THE SAME.

DATED THIS _____ DAY OF_____, 20_____.

_____

MATTHEW T. O'ROURKE, S–2771

LEGEND

■	SECTION CORNER MONUMENT
O	FOUND 1" IRON PIPE OR NOTED
Ⓦ	WELL
Ⓢ	SEPTIC VENT
Ⓒ	SEPTIC CLEANOUT
⩛	WETLANDS
♦	EXISTING DRIVEWAY LOCATION
H	EXISTING HOUSE
S	EXISTING SHED

WAUKESHA CO. CERTIFIED SURVEY MAP NO. _____

LOT 1 OF CSM 12409, RECORDED IN THE WAUKESHA COUNTY REGISTER OF DEEDS OFFICE, JANUARY 10, 2023, IN VOL 128, PAGES 188-191AS DOCUMENT NO. 4705089, BEING PART OF THE NW 1/4 AND SW 1/4 OF THE NE 1/4 OF SECTION 20, TOWN 6 NORTH, RANGE 20 EAST, CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN.

OWNER'S CERTIFICATE;

AS OWNERS WE FRANK GROTKIEWICZ & KATELYNN SEEFELDT CERTIFY THAT WE CAUSED SAID LANDS TO BE SURVEYED, AND MAPPED AS SHOWN ON THIS MAP. WE ALSO CERTIFY THAT THIS CSM IS REQUIRED TO BE SUBMITTED TO THE FOLLOWING FOR APPROVAL: CITY OF NEW BERLIN.

WITNESS THE HAND AND SEAL OF SAID OWNERS:

THIS _____ DAY OF _____, 20_____.

_____ FRANK GROTKIEWICZ

_____ KATELYNN SEEFELDT

STATE OF _____)SS
COUNTY OF _____)

PERSONALLY CAME BEFORE ME THIS _____DAY OF _____, 20_____, THE ABOVE NAMED, FRANK GROTKIEWICZ & KATELYNN SEEFELDT TO ME KNOWN TO BE THE SAME PERSON(S) WHO EXECUTED THE FOREGOING INSTRUMENT AND ACKNOWLEDGED THE SAME.

NOTARY PUBLIC,_____, COUNTY, WI

PRINT NAME,_____

MY COMMISSION EXPIRES. _____

CONSENT OF CORPORATE MORTGAGEE

_____, A CORPORATION DULY ORGANIZED AND EXISTING UNDER AND BY VIRTUE OF THE LAWS OF THE STATE OF _____, MORTGAGEE OF THE ABOVE DESCRIBED LAND, DOES HEREBY CONSENT TO THE SURVEYING AND MAPPING OF THE LAND DESCRIBED ON THIS PLAT, AND DOES HEREBY CONSENT TO THE ABOVE CERTIFICATE OF FRANK GROTKIEWICZ & KATELYNN SEEFELDT OWNERS.

IN WITNESS WHEREOF, THE SAID SEAL OF_____, CORPORATE MORTGAGEE,

THIS, _____DAY OF_____, 20_____, IN THE PRESENCE OF:

_____

NAME/TITLE

_____

NAME/TITLE

CORPORATE MORTGAGEE NOTARY CERTIFICATE

STATE OF _____)
_____COUNTY)SS

PERSONALLY CAME BEFORE ME THIS _____DAY OF_____20____,
_____, AND_____, _____OF THE ABOVE NAMED CORPORATION, TO ME KNOWN TO BE THE PERSONS WHO EXECUTED THE FOREGOING INSTRUMENT, AND TO ME KNOWN TO BE SUCH _____ AND _____ OF SAID CORPORATION, AND ACKNOWLEDGED THAT THEY EXECUTED THE FOREGOING INSTRUMENT AS SUCH OFFICERS AS THE DEED OF SAID CORPORATION, BY ITS AUTHORITY.

(NOTARY SEAL)_____NOTARY PUBLIC,

_____,_____.

MY COMMISSION EXPIRES_____.

WAUKESHA CO. CERTIFIED SURVEY MAP NO. _____

LOT 1 OF CSM 12409, RECORDED IN THE WAUKESHA COUNTY REGISTER OF DEEDS OFFICE, JANUARY 10, 2023, IN VOL 128, PAGES 188-191AS DOCUMENT NO. 4705089, BEING PART OF THE NW 1/4 AND SW 1/4 OF THE NE 1/4 OF SECTION 20, TOWN 6 NORTH, RANGE 20 EAST, CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN.

CITY PLAN COMMISSION APPROVAL

APPROVED BY THE PLAN COMMISSION OF THE CITY OF NEW BERLIN, THIS ____ DAY OF _____, 20____.

_____ DAVID AMENT – CHAIRPERSON

_____ NIKKI JONES – SECRETARY

COMMON COUNCIL APPROVAL

APPROVED BY THE COMMON COUNCIL OF THE CITY OF NEW BERLIN, THIS ____ DAY OF _____, 20____.

_____ DAVID AMENT – MAYOR

_____ MEDINA RUBINA – CITY CLERK

STAFF REPORT
EXECUTIVE SUMMARY

APPLICANT/PROJECT:	**Dave Merrick with Luther Group / 2-Lot Certified Survey Map**	
LOCATION:	**16100 W. Beloit Road (Tax Key #: 1257.998.006) & 16230 W. Beloit Road (Tax Key #: 1257.997)**	
REQUEST:	**Approval of a 2-Lot Certified Survey Map**	
REVIEW SCHEDULE:	**CSM Received:**	**3/21/2025**
	Completeness Determination:	**3/25/2025**
	90-day time limit expires:	**6/23/2025**
	Final Common Council Action:	**5/13/2025**
D.R.C. RECOMMENDATION:	**Recommend to Common Council approval of a 2-Lot Certified Survey Map for the properties located at 16100 W. Beloit Road and 16230 W. Beloit Road, subject to the application, plans on file and the following conditions:**	

1. **Applicant shall correct all drafting errors and requested changes identified by Staff on the final CSM prior to the City signing.**
2. **A final copy of the CSM shall be submitted and reviewed prior to City signing. All owners and surveyor must sign prior to City signing the CSM. Surveyor Stamp is required.**
3. **The CSM shall be recorded with Waukesha County Register of Deeds prior to the issuance of any new zoning or building permits.**
4. **Applicants and/or property owners shall apply for and obtain appropriate building, plumbing and electrical permits prior to any construction on any parcel.**
5. **Coordinate with Waukesha County on revisions to previous TIA regarding current geometrics. If further geometrics are needed within the public right-of-way, this improvement would need to be added to the Development Agreement.**
6. **Applicant shall adhere to Easement Document 4175206 which outlines the required 55' shared access.**

DETAILS IN ATTACHED STAFF REPORT:

CITY OF NEW BERLIN
DEPARTMENT OF COMMUNITY DEVELOPMENT
PLAN COMMISSION STAFF REPORT

Meeting of May 5, 2025

Dave Merrick with Luther Group
2-Lot Certified Survey Map
16100 W. Beloit Road & 16230 W. Beloit Road

DATE STAFF REPORT PREPARED: April 10, 2025

APPLICANT / OWNER(S): Dave Merrick with Luther Group / DIL Partners, LLC & Nbb Partners, LLC

REQUEST / DESCRIPTION OF PROJECT: Approval of a 2-Lot Certified Survey Map for the properties located at 16100 W. Beloit Road & 16230 W. Beloit Road.

DATE OF APPLICATION / DATE FILED WITH CITY CLERK: 3/21/2025

DATE OF COMPLETENESS DETERMINATION: 3/25/2025

PRE-APPLICATION CONFERENCE HELD: Yes
Date(s) of Meeting(s): Most recent meeting on 3/7/2025
Site Visit(s): 4/22/25

CONCEPTUAL PLAN: Yes

SIZE OF DEVELOPMENT / PARCEL(S):
16230 W. Beloit Road - 12.03 acres
16100 W. Beloit Road - 11.02 acres

CURRENT ZONING: O-2 (Business Park Development District), R-4 (Low-Density Single-Family Residential District) & C-2 (Shoreland Wetland Holding District)

CURRENT LAND USE:
16230 W. Beloit Road - Vacant with shared access drive to Spincraft
16100 W. Beloit Road - Spincraft

PROPOSED ZONING: N/A

PROPOSED LAND USE: New Berlin Fabrication Building / Headquarters

PROPOSED LOT SIZE: (After CSM LD-2500487 is recorded)
Proposed Lot 1: 16230 W. Beloit Road - 12.8241 Acres
Proposed Lot 2: 16100 W. Beloit Road – 9.7432 Acres

PROPOSED DENSITY: N/A

ADJACENT ZONING AND LAND USE:

North:	Zoning: R-5	Land Use: Single-Family Residential
South:	Zoning: M-1	Land Use: Business Park
East:	Zoning: O-2/C-2/R-4	Land Use: Spincraft/Froedtert/Children's
West:	Zoning: O-2/C-2/R-4	Land Use: Residential

CONFORMANCE WITH COMPREHENSIVE PLAN AND MUNICIPAL CODE: Yes

Chapter 18: Neighborhood "H": Westridge & Moorland Road: Yes, this submittal meets the intent of this Chapter.

Planning Context / Vision / Development Policies:

Vision:

- *Westridge/Towne Corporate Business Park should be expanded as a major economic center for the City. The Business Park should continue to set an example of high standards in architecture, site planning, and sustainable practices. Primary uses should promote light manufacturing and office complexes. Hotels, clinics, entertainment (i.e. restaurants, shopping center, and cinemas), and retail should serve as supporting uses.*

Land use:

- *Future Land Use Map: Business Park/Industrial*

ZONING CODE (Chapter 275): Yes, this request is consistent with § 275-35B(2) of the Zoning Code.

DEVELOPMENT CODE (Chapter 235): Yes

REZONING REQUIRED: No

CONDITIONAL USE REQUIRED: No

PUBLIC HEARING REQUIRED: No

USE / SITE / ARCHITECTURAL REVIEW:
Use Approval Required: Not for the land division.
Site Plan Required: Yes, see attached CSM.
Architectural Review Required: N/A

PROPOSED ARCHITECTURE: N/A

UNIQUE SITE CHARACTERISTICS:
Environmental Corridor: Yes
Wetland On Property: Yes, Heartland Ecological completed an assured wetland delineation 11/3/2023. WD-2500489 Wetlands to be registered on City's Zoning Maps.
Conservancy Districts (C-1, C-2): Yes, C-2
NRCS Map Classification: Not Inventoried
Floodplain: Yes
Topography / Geologic: Site slopes to the west.

BIKE & PEDESTRIAN FACILITIES PLAN: No improvements identified.

PARK & OPEN SPACE PLAN: No improvements identified.

NATURAL RESOURCES PROTECTION:
Limits of Disturbance (LOD): N/A
Wildlife Habitat Protection: N/A
Wildlife Management Plan: N/A

ENVIRONMENTAL IMPACT: N/A

STORMWATER MANAGEMENT / DRAINAGE PLAN: Applicant is required to adhere to all City of New Berlin Codes, Ordinances and Plans regarding storm water conveyance and maintenance as identified by the Department of Community Development. A storm water report was submitted with application UA-2500541.

SANITARY SEWER PROVISION:
Within Current Sewer Service Area: Yes
Basin Capacity Available: Yes, sanitary sewer will be extended with a Development Agreement.
Adequate Linkage: N/A
Onsite System Required: No

WATER USAGE CALC.: N/A

TRAFFIC IMPACT: The County required an update to the previous TIA with regard to geometrics.

SCHOOL DISTRICT IMPACT: N/A
Notice Sent to Affected School District(s): No

PREVIOUS ACTION:

16100 W. Beloit Road

7/9/2001	Plan Commission gave conceptual approval for a 55,543 SF office and warehouse building (project did not move forward).
8/20/2001	Plan Commission forwarded a recommendation for Common Council approval of a 2-Lot CSM.
8/28/2001	Common Council approved a 2-Lot CSM.
10/3/2005	Plan Commission approved a 160,000 SF speculative industrial building (Project did not move forward).
5/4/2015	Plan Commission approved the 74,000 SF building that was occupied by Spincraft.
2/26/2020	Plan Commission approved a 30,000 SF building addition for Spincraft. (Project for addition did not move forward).

16230 W. Beloit Road

10/11/1952	Single Family home permit (home was demolished 6/18/2008)
4/7/2021	An temporary permit was issued for Super Western to use the site for staging.

CONSISTENCY WITH PREVIOUS ACTION: Yes

FINDINGS:

1. Per § 275-35D, the minimum lot area is 40,000 square feet and the minimum lot width is 200’ in the O-2 District. The proposed lots meets these minimum lot dimensions.
2. Heartland Ecological completed a wetland an assured wetland determination on 11/3/2023. WD-2500489 Wetlands to be registered on City’s Zoning Maps.
3. A Conservation Easement may be required in the future if further development occurs. The environmentally sensitive lands are protected by registered wetlands and floodplains.

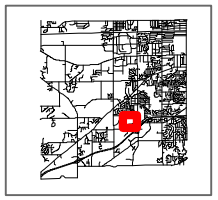
4. A Development Agreement is required for this project for a sanitary sewer extension.

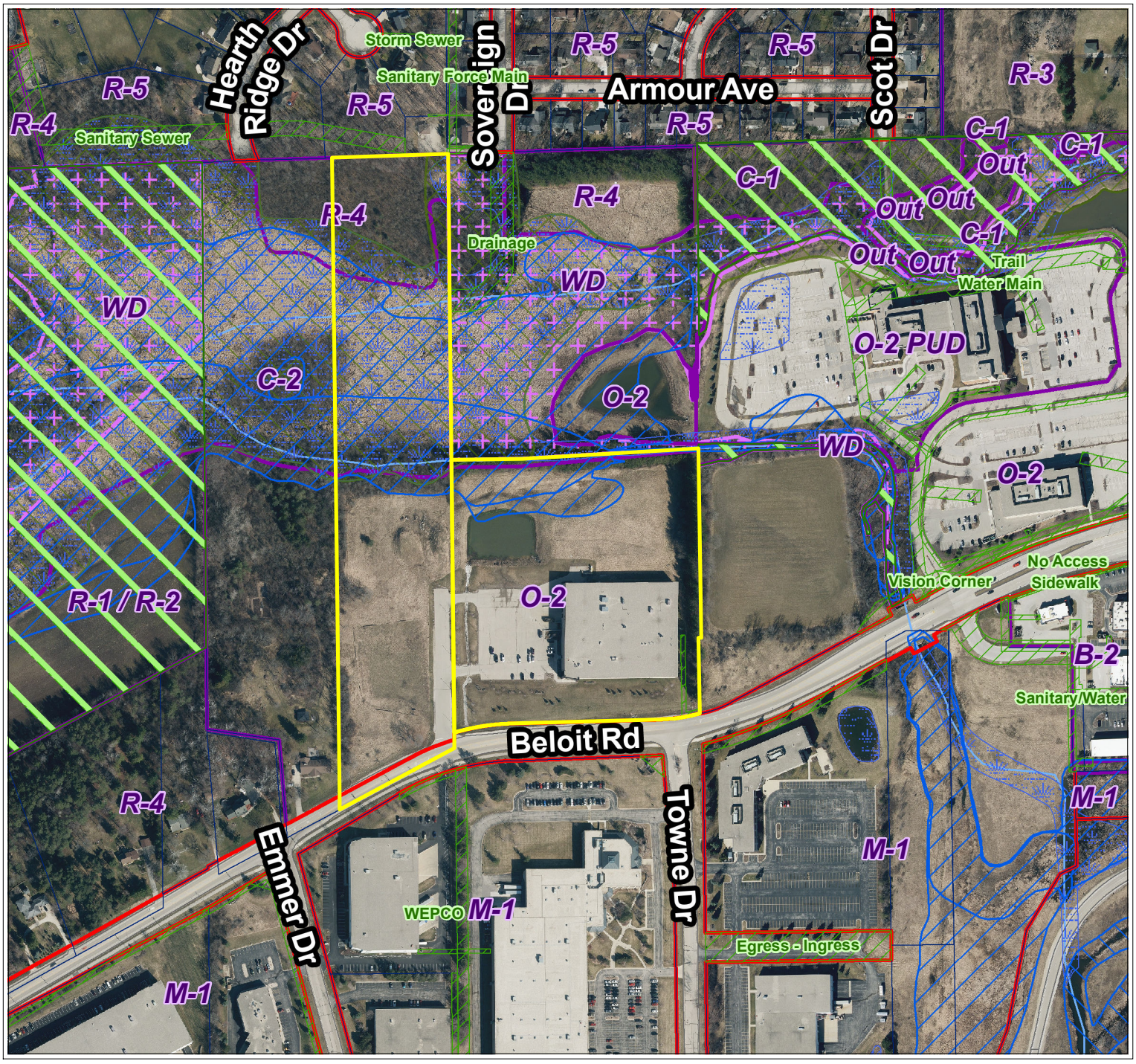
D.R.C. RECOMMENDATION: Recommend to Common Council approval of a 2-Lot Certified Survey Map for the properties located at 16100 W. Beloit Road and 16230 & W. Beloit Road, subject to the application, plans on file and the following conditions: **See Executive Summary.**

ATTACHMENTS:
Location Map
CSM

City of New Berlin
Community Development

LD-2500487 & UA-2500488
New Berlin Fabrication Building
16230 W. Beloit Rd. (Tax Key #:'s: 1257.997 & 1257.998.006)





City of New Berlin
Department of Community Development
3805 S Casper Dr.
New Berlin WI 53151
(262) 797-2445
www.newberlin.org

Legend

- Parcels
- Road Right-of-Way
- FEMA Flood Zone (2023)
- Flood Zone
- FEMA Flood - Zone A
- FEMA Flood - Zone AE
- Zoning Boundaries
- Zoning Wetland Registration
- Wetland Registration Type
- Registered Wetland
- Outside Wetland
- Environmental Corridor
- Corridor Type
- Isolated Natural Resource Area
- Primary Environmental Corridor
- Secondary Environmental Corridor
- Wetland
- Sewer Service Area (MMSD)
- Sewershed
- Current
- Ultimate

N

0 145 290 Feet

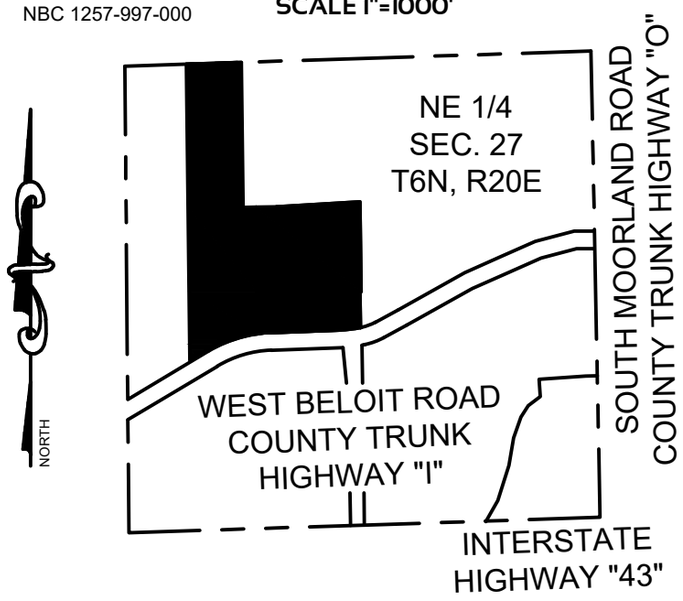
The information and depictions herein have been produced using data available through photogrametric means by the City of New Berlin. The informations and depictions herein are for informational purposes and the City of New Berlin specifically disclaims accuracy in this reproduction and specifically admonishes and advises that any and all depiction, measurements, distances depicted herein and as to which specific or precise accuracy is required should be determined by procurement of certified maps, surveys, plats, Flood Insurance Studies, or other official means.

CERTIFIED SURVEY MAP NO. _____

Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin

Subject Property
Zoning: O2, R-4 & C-2
Tax Key Number:
NBC 1257-998-006
NBC 1257-997-000

VICINITY SKETCH
SCALE 1"=1000'



WISCONSIN
JOHN P. KONOPACKI
S-2461
SUMMIT,
WI
LAND SURVEYOR

DRAFT

MARCH 14, 2025

Prepared for:
DIL PARTNERS LLC
780 Elm Grove Road - Suite 120
Elm Grove, WI 53122

NOTES:

- All measurements have been made to the nearest one-hundredth of a foot.
- All angular measurements have been made to the nearest one second.
- Coordinates referenced to the Wisconsin State Plane Coordinate System, South Zone (N.A.D. 1983/2011). Bearings referenced to the north line of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East which has a bearing of N88°09'00"E.
- Flood Zone Classification: The property lies with in Zone "X", Zone "AE" and "FLOODWAY" of the Flood Insurance Rate Map Community Panel No. 55133C0353H with an effective date of OCTOBER 19, 2023. Zone "X" areas are determined to be outside the 0.2% annual chance floodplain. Zone "AE" are Special Flood Hazard Areas with Base Flood Elevations determined. "Floodway" is the channel of the stream. Depicted by scaled map location and graphic plotting only, subject to map scale uncertainty.
- Vertical Datum: North American Vertical Datum of 1988(12), (NAVD88). Reference Benchmark: Concrete monument with brass cap at the northeast corner of the Northeast 1/4 Section 27, Town 6 North, Range 20 East, Elevation = 873.58.
- Any land below the ordinary high water mark of a lake or a navigable stream is subject to the public trust in navigable waters that is established under article IX, section 1, of the state constitution.
- Wetlands per Waukesha County Interactive Mapping System

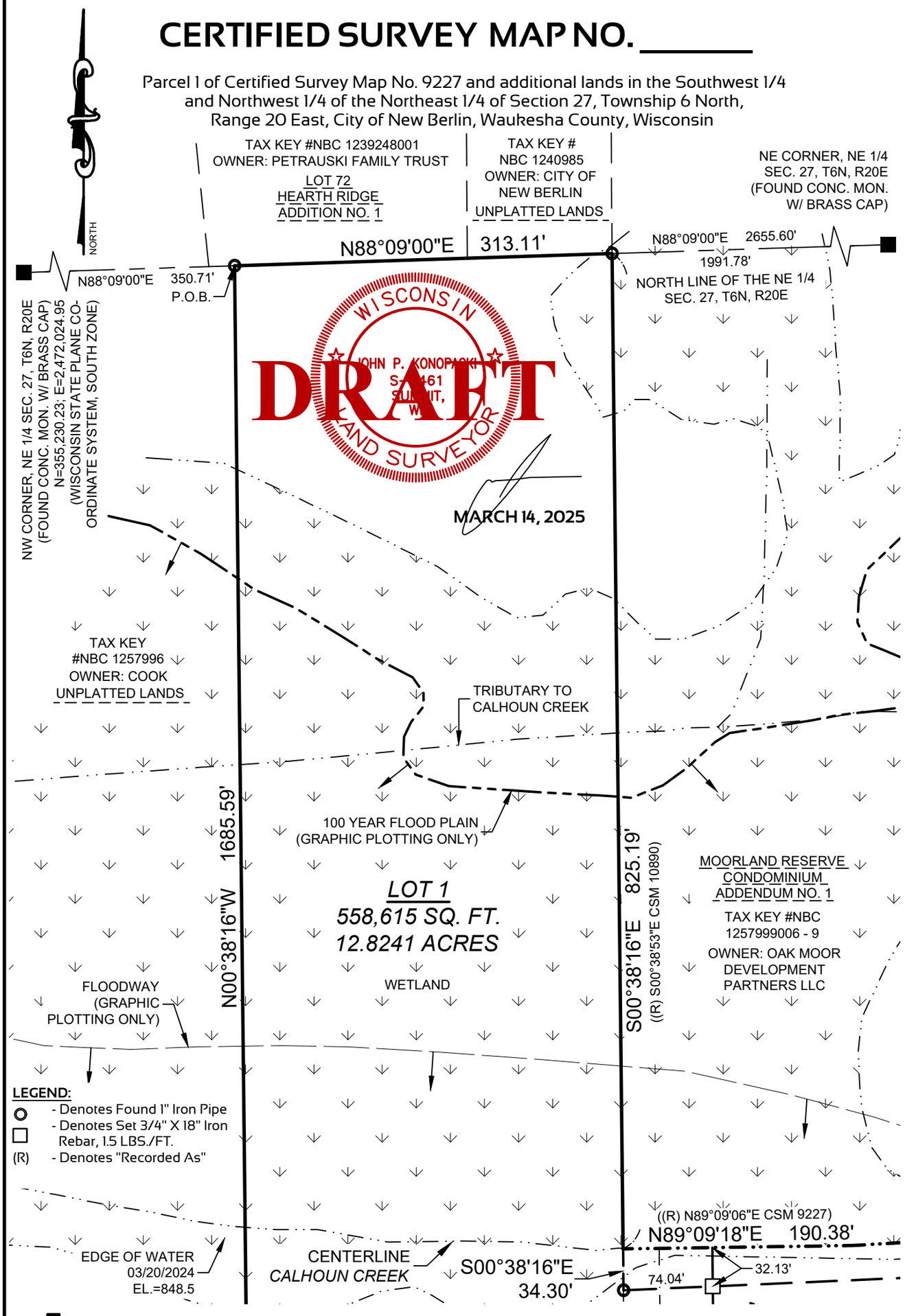
Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

DRAFTED BY: ST
PEG JOB#2557.00
SHEET 1 OF 8

CERTIFIED SURVEY MAP NO. _____

Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin



GRAPHICAL SCALE (FEET)

0 1" = 100' 200'

Prepared By:
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20725 WATERTOWN ROAD I SUITE 100
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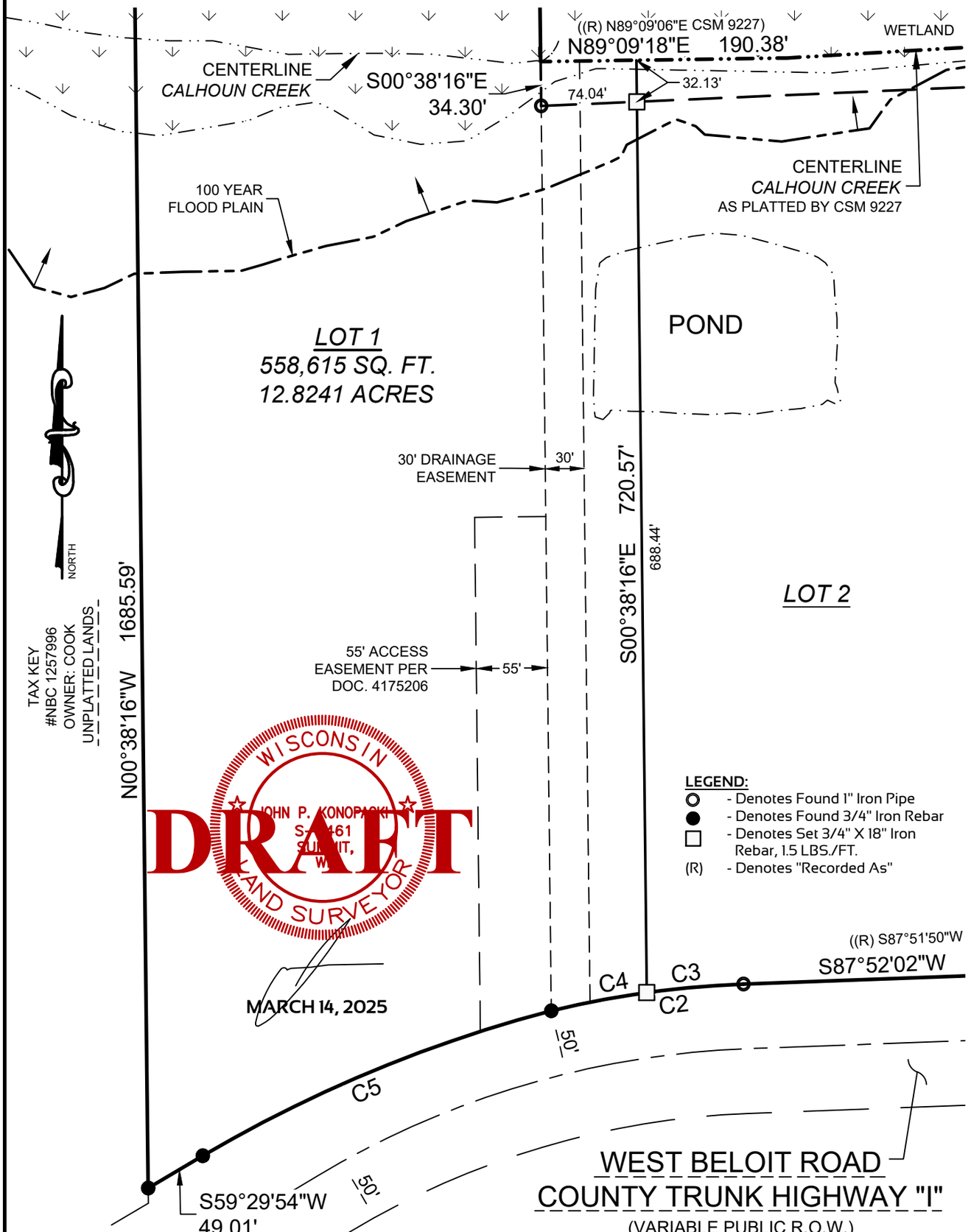
PEG JOB#2557.00

SHEET 2 OF 8

CERTIFIED SURVEY MAP NO. _____

Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin



GRAPHICAL SCALE (FEET)

0 1" = 100' 200'

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
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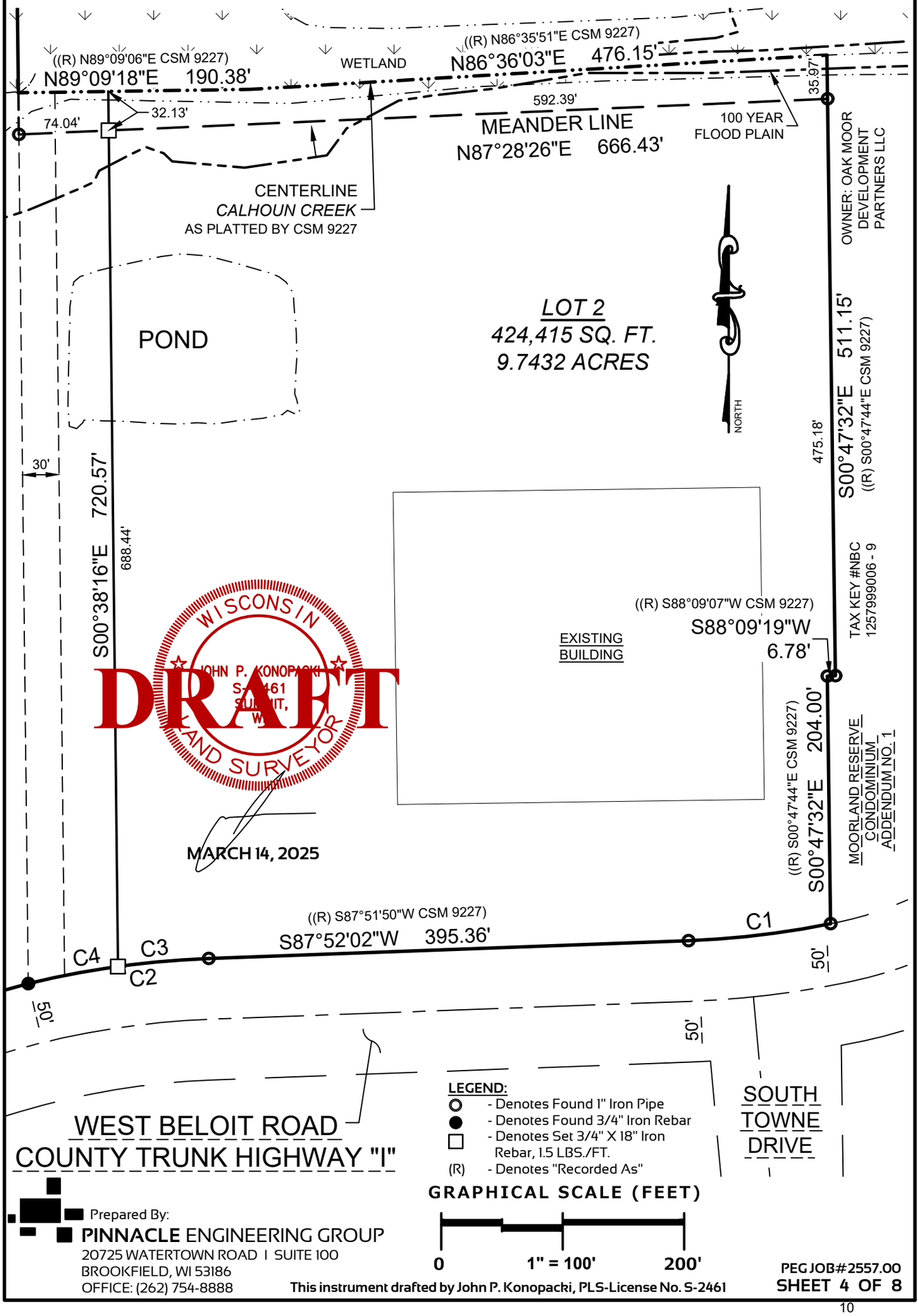
This instrument drafted by John P. Konopacki, PLS-License No. S-2461

PEG JOB#2557.00
SHEET 3 OF 8

CERTIFIED SURVEY MAP NO. _____

Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin



LEGEND:

- ○ - Denotes Found 1" Iron Pipe
- ● - Denotes Found 3/4" Iron Rebar
- □ - Denotes Set 3/4" X 18" Iron Rebar, 1.5 LBS./FT.
- (R) - Denotes "Recorded As"

GRAPHICAL SCALE (FEET)

0 — 1" = 100' — 200'

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
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OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

PEG JOB#2557.00

SHEET 4 OF 8

CERTIFIED SURVEY MAP NO. _____

Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin

SURVEYOR'S CERTIFICATE

STATE OF WISCONSIN)
WAUKESHA COUNTY) SS

I, John P. Konopacki, Professional Land Surveyor, do hereby certify:

That I have surveyed, mapped and divided Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin, described as follows:

Commencing at the northwest corner of the Northeast 1/4 of said Section 27; thence North 88°09'00" East along the north line of said Northeast 1/4, 350.71 feet to the Point of Beginning;

Thence continuing North 88°09'00" East along said north line, 313.11 feet to the west line of Certified Survey Map No. 10890;
Thence South 00°38'16" East along said west line, 825.19 to the north line of Parcel 1 of Certified Survey Map No. 9227 and the platted centerline of Calhoun Creek;
Thence North 89°09'18" East along said centerline, 190.38 feet;
Thence North 86°36'03" East along said centerline, 476.15 feet to the east line of said Parcel 1;
Thence South 00°47'32" East along said east line, 511.15 feet;
Thence South 88°09'19" West along said east line, 6.78 feet;
Thence South 00°47'32" East along said east line, 204.00 feet to the north right of way line of West Beloit Road - County Trunk Highway "I";
Thence southwesterly 117.95 feet along said north right of way line and the arc of said curve to the left, whose radius is 727.50 feet and whose chord bears South 83°13'21" West, 117.82 feet;
Thence South 87°52'02" West along said north right of way line, 395.36 feet to a point of curvature;
Thence southwesterly 150.21 feet along said north right of way line and the arc of said curve to the left, whose radius is 745.00 feet and whose chord bears South 82°05'28" West, 149.95 feet to a point of compound curve;
Thence southwesterly 292.62 feet along said north right of way line and the arc of said compound curve to the left, whose radius is 1060.00 feet and whose chord bears South 67°24'25" West, 291.69 feet;
Thence South 59°29'54" West along said north right of way line, 49.01 feet;
Thence North 00°38'16" West, 1685.59 feet to the Point of Beginning.

Containing 983,030 square feet (22.5673 acres) of land Gross, more or less.

That I have made such survey, land division and map by the direction of DIL PARTNERS LLC and NBB PARTNERS LLC, owners of said land.

That such map is a correct representation of all the exterior boundaries of the land surveyed and the land division thereof made.

That I have fully complied with the requirements of Chapter 236 of the Wisconsin State Statutes and the City of New Berlin Land Division Ordinance in surveying, mapping and dividing the land within the certified survey map.

Date: MARCH 13, 2025

WISCONSIN
JOHN P. KONOPACKI
S-2461
SURVEYOR

DRAFT

John P. Konopacki
Professional Land Surveyor S-2461

CURVE TABLE

CURVE NO.	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD LENGTH	TANGENT	TANGENT
C1	117.95'	727.50'	009°17'23"	S83°13'21"W	((R) S83°13'09.5"W) 117.82'	S87°52'02"W	S78°34'39"W
C2	150.21'	745.00'	011°33'08"	S82°05'28"W	((R) S82°05'16.5"W) 149.95'	S87°52'02"W	S76°18'54"W
C3	75.00'	745.00'	005°46'05"	S84°59'00"W	74.97'	S87°52'02"W	S82°05'57"W
C4	75.21'	745.00'	005°47'03"	S79°12'26"W	75.18'	S82°05'57"W	S76°18'54"W
C5	292.62'	1060.00'	015°49'01"	S67°24'25"W	291.69'	S75°18'55"W	S59°29'54"W

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

PEG JOB#2557.00
SHEET 5 OF 8

CERTIFIED SURVEY MAP NO. _____

Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin

OWNER'S CERTIFICATE

DIL PARTNERS LLC and NBB PARTNERS LLC, Limited Liability Companies duly organized and existing under and by virtue of the laws of the State of Wisconsin, as owners, do hereby certify that said limited liability companies caused the land described on this certified survey map to be surveyed, divided and mapped as represented on this certified survey map.

DIL PARTNERS LLC and NBB PARTNERS LLC, as owners, do further certify that this certified survey map is required by Chapter 236 of the Wisconsin State Statutes to be submitted to the following for approval:

1. City of New Berlin

IN WITNESS WHEREOF, the said **DIL PARTNERS LLC** has caused these presents to be signed by (name - print) _____, (title) _____, at (city)_____, _____ County, Wisconsin, on this _____ day of _____ , 2025.

In the presence of: **DIL PARTNERS LLC**

_____
Name (signature) - Title

STATE OF WISCONSIN)
_____ COUNTY) SS

Personally came before me this _____ day of _____ , 2025, (name) _____, (title) _____, of the above **DIL PARTNERS LLC**, to me known to be the person who executed the foregoing instrument, and to me known to be such _____(title) of said limited liability company, and acknowledged that they executed the foregoing instrument as such officer as the deed of said limited liability, by its authority.

_____
Notary Public
Name:_____
State of Wisconsin
My Commission Expires: _____

IN WITNESS WHEREOF, the said **NBB PARTNERS LLC** has caused these presents to be signed by (name - print) _____, (title) _____, at (city)_____, _____ County, Wisconsin, on this _____ day of _____ , 2025.

In the presence of: NBB PARTNERS LLC

_____
Name (signature) - Title

STATE OF WISCONSIN)
_____ COUNTY) SS

Personally came before me this _____ day of _____ , 2025, (name) _____, (title) _____, of the above **NBB PARTNERS LLC**, to me known to be the person who executed the foregoing instrument, and to me known to be such _____(title) of said limited liability company, and acknowledged that they executed the foregoing instrument as such officer as the deed of said limited liability, by its authority.

_____
Notary Public
Name:_____
State of Wisconsin
My Commission Expires: _____

WISCONSIN
JOHN P. KONOPACKI
S-2461
SUMMIT,
WI
LAND SURVEYOR

DRAFT

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

MARCH 14, 2025

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

CERTIFIED SURVEY MAP NO. _____

Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin

CONSENT OF CORPORATE MORTGAGEE - DIL PARTNERS LLC

_____ , a corporation duly organized and existing under and by virtue of the laws of the State of Wisconsin, mortgagee of the above described land, does hereby consent to the surveying, dividing, mapping and dedication of the land described in the forgoing affidavit of John P. Konopacki, surveyor, and does hereby consent to the above certification of owners.

IN WITNESS WHEREOF, the said _____ , has caused these presents to be signed by _____ , its _____, and its corporate seal to be hereunto affixed this _____ day of _____ , 2025.

_____ _____
Date Name - Title

STATE OF WISCONSIN)
_____ COUNTY) SS

Personally came before me this _____ day of _____ , 2025, _____ , to me known to be the person who executed the foregoing instrument and to me known to be such officer of said corporation and acknowledged the same.

_____
Notary Public
Name:_____
State of Wisconsin
My Commission Expires: _____

CONSENT OF CORPORATE MORTGAGEE - NBB PARTNERS LLC

_____ , a corporation duly organized and existing under and by virtue of the laws of the State of Wisconsin, mortgagee of the above described land, does hereby consent to the surveying, dividing, mapping and dedication of the land described in the forgoing affidavit of John P. Konopacki, surveyor, and does hereby consent to the above certification of owners.

IN WITNESS WHEREOF, the said _____ , has caused these presents to be signed by _____ , its _____, and its corporate seal to be hereunto affixed this _____ day of _____ , 2025.

_____ _____
Date Name - Title

STATE OF WISCONSIN)
_____ COUNTY) SS

Personally came before me this _____ day of _____ , 2025, _____ , to me known to be the person who executed the foregoing instrument and to me known to be such officer of said corporation and acknowledged the same.

_____
Notary Public
Name:_____
State of Wisconsin
My Commission Expires: _____

MARCH 14, 2025

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

PEG JOB#2557.00
SHEET 7 OF 8

CERTIFIED SURVEY MAP NO. _____

Parcel 1 of Certified Survey Map No. 9227 and additional lands in the Southwest 1/4 and Northwest 1/4 of the Northeast 1/4 of Section 27, Township 6 North, Range 20 East, City of New Berlin, Waukesha County, Wisconsin

PLAN COMMISSION APPROVAL

Approved by the Plan Commission of the City of New Berlin on this _____ day of _____ , 2025.

_____ _____
Date

_____
David Ament, Chairman

_____ _____
Date

_____
Nikki Jones, Secretary

COMMON COUNCIL APPROVAL

Approved by the Common Council of the City of New Berlin, Wisconsin, on this _____ day of _____ , 2025.

_____ _____
Date

_____
David Ament, Mayor

_____ _____
Date

_____
Rubina R. Medina, City Clerk

MARCH 14, 2025

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

PEG JOB#2557.00
SHEET 8 OF 8

MOTION SHEET

TO: Common Council
Mayor Ament
Ald. Horbinski

FROM: Board of Public Works

DATE: May 13, 2025

RE: April 21, 2025, BPW items requiring Common Council action

A.	Discussion and possible action to recommend to Common Council approval of the revised Relocation Order for Sunny Slope Road by resolution and place on file with the County Clerk.
Council Motion:	
	This item was considered at the BPW meeting on April 21, 2025. It was recommended to the Common Council by a unanimous vote. I do hereby make a motion to recommend to the Common Council the approval of Resolution 2025-10 to revise the original Relocation Order for Sunny Slope Road from Grange Avenue to College Avenue.

STAFF REPORT
EXECUTIVE SUMMARY

APPLICANT: **City of New Berlin**

PROJECT: **Sunny Slope Road Relocation Order Revision**

LOCATION: **Sunny Slope Road from Grange Avene to College Avenue**

REQUEST: **Recommendation to the Common Council to approve the revised Relocation Order for Sunny Slope Road by resolution and place on file with the County Clerk.**

D.C.D. RECOMMENDATION: **Request that the Board of Public Works recommends to the Common Council to approve Resolution 2025-10 to revise the original Relocation Order for Sunny Slope Road from Grange Avenue to College Avenue.**

1. **At the time of filing the original Relocation Order in October 2024, the preliminary grading plan showed that parcels 12 and 13 would require a Temporary Limited Easement (TLE). With refining the plan, work adjacent to these two properties will be contained within the existing right-of-way.**
2. **Funding for Right-of-Way Acquisition for this project was approved in the 2025 CIP Budget. Construction is anticipated in 2026.**
3. **Fee purchase of 1.44 Acres, being negotiated by Single Source, Inc. for roadway improvements and necessary public utilities and drainage.**
4. **Temporary Limited Easements revised from .759 Acres to 0.711 Acres are needed to complete construction grading and restoration.**

Attachments:
Resolution No. 2025-10
Relocation Order
Final Plat (Revised)

STATE OF WISCONSIN **CITY OF NEW BERLIN** **WAUKESHA COUNTY**

RESOLUTION 2025-10

DECLARATION OF PUBLIC NECESSITY AND A REVISED RELOCATION ORDER TO RECONSTRUCT SUNNY SLOPE ROAD IN THE CITY OF NEW BERLIN, WAUKESHA COUNTY, WISCONSIN

A revised Relocation Order of the City of New Berlin, Waukesha County, Wisconsin, by its Common Council and for its Relocation Order hereby resolves as follows;

1. That this revised Relocation Order is in accordance with Section 840.09(3m) and 62.22(1m) of the Wisconsin Statutes, and Subsection 32.05(1) of the Wisconsin Statutes, for the purpose of the within described public improvement project.
2. The original Relocation Order and Right-of-Way Plat was approved by the Common Council in 2024 (Resolution 24-17) and filed with the Waukesha County Clerk.
3. The City of New Berlin hereby determines that it is necessary and a public purpose to reconstruct Sunny Slope Road from Grange Avene to College Avenue in the City of New Berlin (the "project");
4. That the City of New Berlin will acquire certain lands of interests as shown on the attached right-of-way plat which is attached hereto as Exhibit A and incorporated herein by reference;
5. That a certified copy of this resolution shall be filed with the Waukesha County Clerk within 20 days of it adoption and final approval.

Passed and adopted by the Common Council this_____day of_____2025.

APPROVED:

_____
David Ament, Mayor

Countersigned / Certified:

_____
Rubina Medina, City Clerk

RELOCATION ORDER

RE1708 10/2018

Project ID	Road name	Highway	County
2244600	South Sunny Slope Road from West College Avenue (CTH HH) to West Grange Avenue	South Sunny Slope Road	Waukesha

Right of way plat date	Plat sheet number(s)	Previously approved Relocation Order date
7/11/2024 (Original) 4/2/2025 (RO 2)	5	7/24/2024

Description of termini of project:

Begin Relocation Order at the Southwest corner of Section 36, Town 6 North, Range 20 East at STA 10+00.00

And

End Relocation Order at the Northwest corner of Section 36, Town 6 North, Range 20 East at STA 62+66.79

To properly establish, layout, widen, enlarge, extend, construct, reconstruct, improve, or maintain a portion of the highway designated above, it is necessary to relocate or change and acquire certain lands or interests in lands as shown on the right of way plat for the above project.

To effect this change, pursuant to authority granted under Sections 62.22 (1) & (1m) and 62.23 (10) & (17), Wisconsin Statutes, the City of New Berlin orders that:

1. The said highway is laid out and established to the lines and widths as shown on the plat.
2. The required lands or interests in lands as shown on the plat shall be acquired by the City of New Berlin, pursuant to the provisions of Section 62.23 (17), Wisconsin Statutes.
3. This order supersedes and amends any previous order issued by the Agency.

Signature Date

Print Name and Title

CONVENTIONAL SYMBOLS

SECTION LINE
QUARTER LINE
SIXTEENTH LINE
NEW REFERENCE LINE
NEW R/W LINE
EXISTING R/W OR HE LINE
PROPERTY LINE
LOT, TIE & OTHER MINOR LINES
SLOPE INTERCEPT
CORPORATE LIMITS
UNDERGROUND FACILITY (COMMUNICATIONS, ELECTRIC, ETC)
NEW R/W (FEE OR HE) (HATCHING VARIES BY OWNER)
TEMPORARY LIMITED EASEMENT AREA
EASEMENT AREA (PERMANENT LIMITED OR RESTRICTED DEVELOPMENT)
TRANSMISSION STRUCTURES
BUILDING
TO BE REMOVED
BRIDGE
CULVERT

SECTION CORNER SYMBOL
SECTION CORNER MONUMENT
GEODETIC SURVEY MONUMENT
SIXTEENTH CORNER MONUMENT
SIGN
OFF-PREMISE SIGN
PROPOSED R/W POINT
NON-MONUMENTED R/W POINT
FOUND IRON PIN (1-INCH UNLESS NOTED)

	COMPENSABLE	NON-COMPENSABLE
ELECTRIC POLE		
TELEPHONE POLE		
PEDESTAL (LABEL TYPE) (TV, TEL, ELEC, ETC.)		

ACCESS RESTRICTED BY ACQUISITION
NO ACCESS (BY STATUTORY AUTHORITY)
ACCESS RESTRICTED (BY PREVIOUS PROJECT OR CONTROL)
NO ACCESS (NEW HIGHWAY)
PARCEL NUMBER 25
UTILITY NUMBER 40
PARALLEL OFFSETS

CONVENTIONAL UTILITY SYMBOLS

WATER	W
GAS	G
TELEPHONE	T
OVERHEAD TRANSMISSION LINES	OH
ELECTRIC	E
CABLE TELEVISION	TV
FIBER OPTIC	FO
SANITARY SEWER	SAN
STORM SEWER	SS
ELECTRIC TOWER	

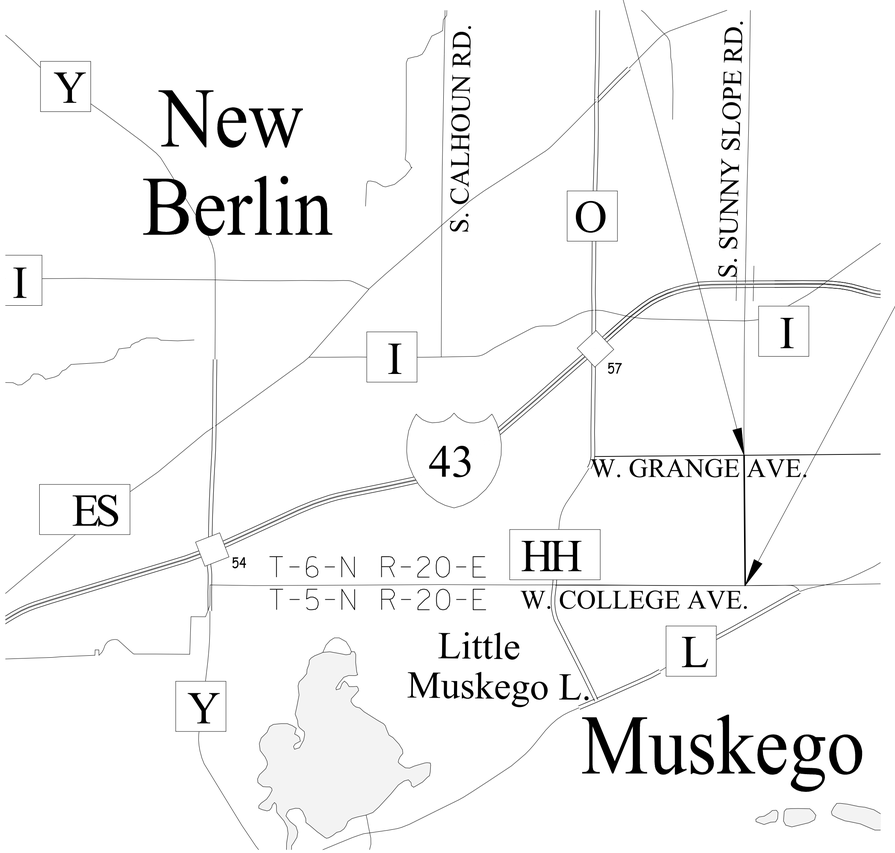
CONVENTIONAL ABBREVIATIONS

ACCESS RIGHTS	AR	POINT OF COMPOUND CURVE	PCC
ACRES	AC	POINT OF INTERSECTION	PI
AHEAD	AH	PROPERTY LINE	PL
ALUMINUM	ALUM	RECORDED AS	(100')
AND OTHERS	ET AL	REEL / IMAGE	R/I
BACK	BK	REFERENCE LINE	R/L
BLOCK	BLK	REMAINING	REM
CENTERLINE	C/L	RESTRICTIVE DEVELOPMENT EASEMENT	RDE
CERTIFIED SURVEY MAP	CSM		
CONCRETE	CONC	RIGHT	RT
COUNTY	CO	RIGHT OF WAY	R/W
COUNTY TRUNK HIGHWAY	CTH	SECTION	SEC
DISTANCE	DIST	SEPTIC VENT	SEPV
CORNER	COR	SQUARE FEET	SF
DOCUMENT NUMBER	DOC	STATE TRUNK HIGHWAY	STH
EASEMENT	EASE	STATION	STA
EXISTING	EX	TELEPHONE PEDESTAL	TP
GAS VALVE	GV	TEMPORARY LIMITED EASEMENT	TLE
GRID NORTH	GN		
HIGHWAY EASEMENT	HE	TRANSPORTATION PROJECT PLAT	TPP
IDENTIFICATION	ID	UNITED STATES HIGHWAY	USH
LAND CONTRACT	LC	VOLUME	V
LEFT	LT		
MONUMENT	MON		
NATIONAL GEODETIC SURVEY	NGS		
NUMBER	NO		
OUTLOT	OL		
PAGE	P		
POINT OF TANGENCY	PT		
PERMANENT LIMITED EASEMENT	PLE		
POINT OF BEGINNING	POB		
POINT OF CURVATURE	PC		

CURVE DATA ABBREVIATIONS

LONG CHORD	LCH
LONG CHORD BEARING	LCB
RADIUS	R
DEGREE OF CURVE	D
CENTRAL ANGLE	Δ /DELTA
LENGTH OF CURVE	L
TANGENT	T
DIRECTION AHEAD	DA
DIRECTION BACK	DB

END RELOCATION ORDER
SOUTH SUNNY SLOPE ROAD
STA 62+66.79
NORTHWEST CORNER OF
SECTION 36, T 6 N, R 20 E



N

BEGIN RELOCATION ORDER
SOUTH SUNNY SLOPE ROAD
STA 10+00.00
SOUTHWEST CORNER OF
SECTION 36, T 6 N, R 20 E

LAYOUT
SCALE 0 1MI

TOTAL NET LENGTH OF CENTERLINE = 0.997 MI.

RA SMITH PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
2244600		
RA SMITH SURVEY NUMBER 5169289	1	5

PLAT OF RIGHT OF WAY REQUIRED FOR
SOUTH SUNNY SLOPE ROAD
W. COLLEGE AVE. (CTH HH) TO W. GRANGE AVE.

SOUTH SUNNY SLOPE ROAD	WAUKESHA COUNTY

NOTES:

POSITIONS SHOWN ON THIS PLAT ARE WISCONSIN STATE PLANE COORDINATES, SOUTH ZONE, NAD 83 (2011) US SURVEY FEET. VALUES SHOWN ARE GRID COORDINATES, GRID BEARINGS, AND GROUND DISTANCES. GROUND DISTANCES MAY BE CONVERTED TO GRID DISTANCES BY MULTIPLYING BY THE GRID FACTOR SHOWN ON EACH RESPECTIVE DETAIL SHEET.

DIMENSIONING FOR THE NEW RIGHT-OF-WAY IS MEASURED ALONG AND PERPENDICULAR TO THE NEW REFERENCE LINES.

A TEMPORARY LIMITED EASEMENT (TLE) IS A RIGHT FOR CONSTRUCTION PURPOSES, AS DEFINED HEREIN, INCLUDING THE RIGHT TO OPERATE NECESSARY EQUIPMENT THEREON, THE RIGHT OF INGRESS AND EGRESS, AS LONG AS REQUIRED FOR SUCH PUBLIC PURPOSE, INCLUDING THE RIGHT TO PRESERVE, PROTECT, REMOVE, OR PLANT THEREON ANY VEGETATION THAT THE HIGHWAY AUTHORITIES MAY DEEM DESIRABLE. ALL TLEs ON THIS PLAT EXPIRE AT THE COMPLETION OF THE CONSTRUCTION PROJECT FOR WHICH THIS INSTRUMENT IS GIVEN.

RIGHT-OF-WAY BOUNDARIES ARE DEFINED WITH COURSES OF THE PERIMETER OF THE HIGHWAY LANDS REFERENCED TO THE U.S. PUBLIC LAND SURVEY SYSTEM OR OTHER "SURVEYS" OF PUBLIC RECORD.

FOR THE CURRENT ACCESS/DRIVEWAY INFORMATION, CONTACT THE CITY OF NEW BERLIN

PARCEL AND UTILITY IDENTIFICATION NUMBERS MAY NOT POINT TO ALL AREAS OF ACQUISITION, AS NOTED ON THE DETAIL PAGES.

INFORMATION FOR THE BASIS OF EXISTING HIGHWAY RIGHT-OF-WAY POINTS OF REFERENCE ARE LISTED ON THE DETAIL PAGES.

raSmith
CREATIVITY BEYOND ENGINEERING
16745 W. Bluemound Road, Brookfield WI 53005
262-781-1000 Fax 262-781-8466
www.rasmithnational.com

WISCONSIN
SHANE M. ZODROW
S-2869
GREENDALE
WI
LAND SURVEYOR

DATE: 7/11/2024 Shane M Zodrow
LAND SURVEYOR

CAUTION:
THIS PLAT IS FOR ILLUSTRATIVE PURPOSES ONLY. DEEDS MUST BE CHECKED TO DETERMINE PROPERTY BOUNDARIES.

REVISION DATE	CITY OF NEW BERLIN
4/2/2025	APPROVED FOR THE CITY OF NEW BERLIN DATE: 7/24/24 Tamara Simonson (Signature) TAMARA M. SIMONSON, P.E.

SCHEDULE OF LANDS & INTERESTS REQUIRED

AREAS SHOWN IN THE TOTAL ACRES COLUMN MAY BE APPROXIMATE AND ARE DERIVED FROM TAX ROLLS OR OTHER AVAILABLE SOURCES AND MAY NOT INCLUDE LANDS OF THE OWNER WHICH ARE NOT CONTIGUOUS TO THE AREA TO BE ACQUIRED.

OWNERS NAMES ARE SHOWN FOR REFERENCE PURPOSES ONLY, AND ARE SUBJECT TO CHANGE PRIOR TO TRANSFER OF LAND AND INTERESTS TO THE CITY OF NEW BERLIN.

PARCEL NUMBER	SHEET NUMBER	OWNER(S)	INTEREST REQUIRED	TOTAL ACRES	R/W REQUIRED ACRES			TOTAL REMAINING ACRES	T.L.E. TEMP. ACRES	P.L.E. PERM. ACRES	PARCEL NUMBER
					NEW	EXISTING	TOTAL				
1	4.04	JAMES S HARMEYER	FEE,TLE	1.716	0.171	0.167	0.338	1.378	0.071	-	1
2	4.04	BRIAN A & KRISTA L ST LAWRENCE	TLE	0.746	-	-	-	0.746	0.006	-	2
3	4.04	DAVID W. AND BARBARA A. RUEHLE JOINT TRUST	FEE,TLE	19.293	0.543	0.532	1.075	18.218	0.227	-	3
4	4.04	ROY A BRUEGGEMANN AND ELAINE BRUEGGEMANN	FEE,TLE	4.949	0.158	-	0.158	4.791	0.075	-	4
-	-	-	-	-	-	-	-	-	-	-	-
6	4.04	COMMON SCHOOL DISTRICT NO. 14, CITY OF NEW BERLIN	FEE,TLE	15.007	0.568	0.557	1.125	13.882	0.188	-	6
7	4.05	THEOFILA C KROKOWSKI LIVING TRUST	TLE	17.383	-	-	-	17.383	0.015	-	7
8	4.05	DENNIS J O'REILLY	TLE	0.470	-	-	-	0.470	0.030	-	8
9	4.05	ENGLE JOINT REVOCABLE TRUST	TLE	0.536	-	-	-	0.536	0.048	-	9
-	-	-	-	-	-	-	-	-	-	-	-
11	4.05	MAHMUD MUBSHAR & BUSHRA MUBSHAR	TLE	0.821	-	-	-	0.821	0.051	-	11
12(2)	4.05	ELIMINATED	-	-	-	-	-	-	-	-	12(2)
13(2)	4.05	ELIMINATED	-	-	-	-	-	-	-	-	13(2)
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
500(2)	4.04,4.05	AT&T WISCONSIIN - TELEPHONE, FIBER OPTIC	RELEASE OF RIGHTS								
501	4.04	WE ENERGIES - GAS	RELEASE OF RIGHTS								
502(2)	4.04,4.05	WE ENERGIES - ELECTRIC	RELEASE OF RIGHTS								
503	4.04	KARRINGTON WOODS LLC - SANITARY & WATER	RELEASE OF RIGHTS								

4

4

REVISION DATE
4/2/2025(2)

DATE 7/11/2024

GRID FACTOR

SCALE, FEET
0 N/A N/A

HWY: S SUNNY SLOPE RD

COUNTY: WAUKESHA

RA SMITH PROJECT NUMBER: 2244600

RA SMITH SURVEY NUMBER: 5169289

PLAT SHEET 4.02

PS&E SHEET

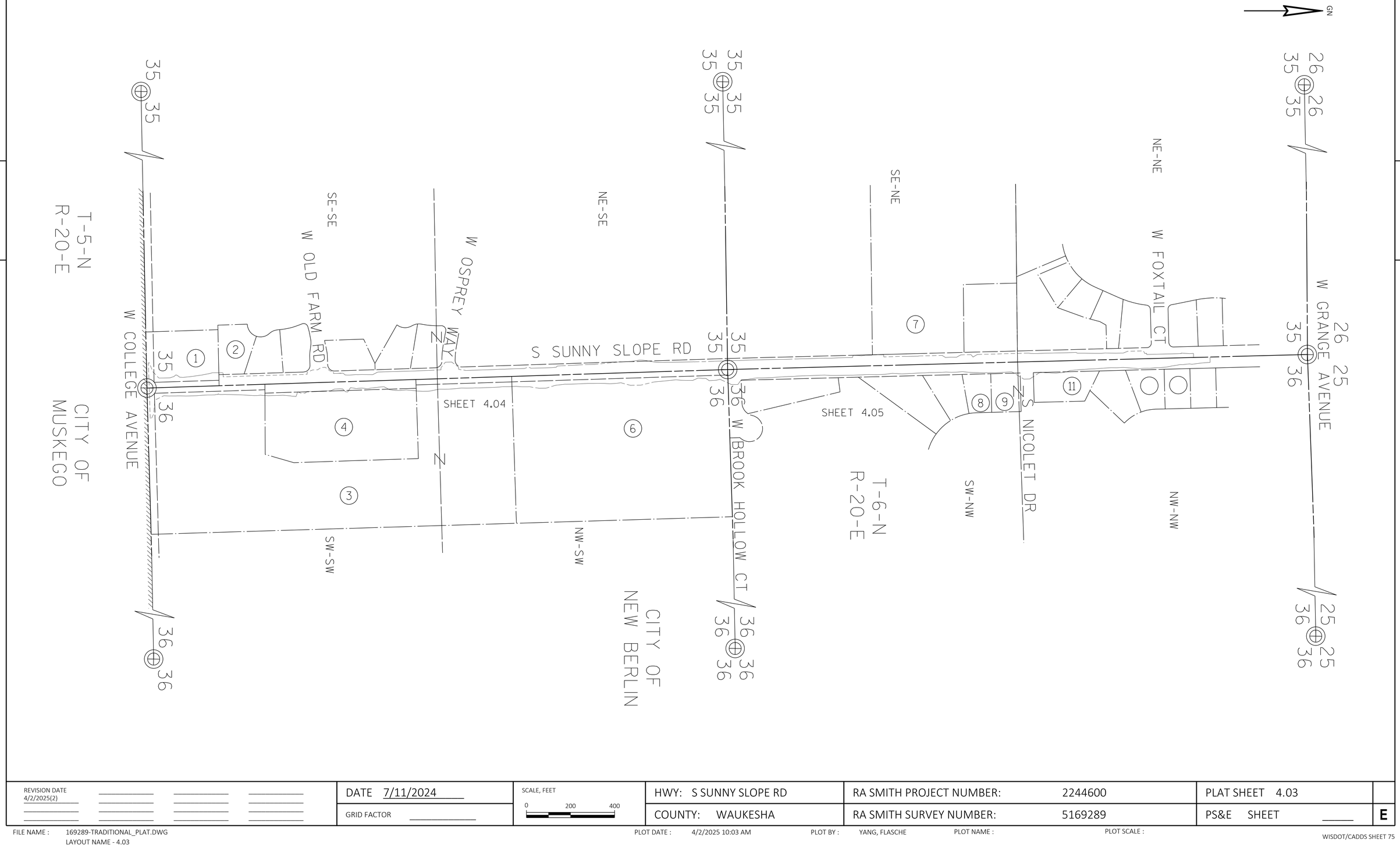
E

FILE NAME : 169289-TRADITIONAL_PLAT.DWG
LAYOUT NAME - 4.02

PLOT DATE : 4/2/2025 10:03 AM PLOT BY : YANG, FLASCHE PLOT NAME : PLOT SCALE :

WISDOT/CADDS SHEET 75

4



REVISION DATE 4/2/2025(2)	DATE 7/11/2024	SCALE, FEET 0 200 400	HWY: S SUNNY SLOPE RD	RA SMITH PROJECT NUMBER: 2244600	PLAT SHEET 4.03
	GRID FACTOR		COUNTY: WAUKESHA	RA SMITH SURVEY NUMBER: 5169289	PS&E SHEET ____ E

FILE NAME : 169289-TRADITIONAL_PLAT.DWG
LAYOUT NAME - 4.03

PLOT DATE : 4/2/2025 10:03 AM PLOT BY : YANG, FLASCHE PLOT NAME : PLOT SCALE :

WISDOT/CADDS SHEET 75

(500) AT&T WISCONSIN - TELEPHONE, FIBER OPTIC
NO RECORD
OF EASEMENT
PARCEL 3 AND 6

(501) WE ENERGIES - GAS
NO RECORD
OF EASEMENT
PARCEL 1

(502) WE ENERGIES - ELECTRIC
40' EASEMENT DOC. 1357951
PARCEL 4
NON-DESCRIPT EASEMENT DOC.
239424 V.274 P.235
PARCEL 3, 4, AND 6
35' EASEMENT DOC. 2221463
R.2453 I.0738
PARCEL 6
NON-DESCRIPT EASEMENT DOC.
192326 P.268
PARCEL 2

(503) KARRINGTON WOODS LLC - SANITARY & WATER
35' EASEMENT DOC. 2221463
R.2453 I.0738
PARCEL 6

COMPUTED
Y:344721.49
X:2477517.97

COMPUTED
Y:347369.11
X:2477471.14

GN

CONCRETE MONUMENT WITH BRASS CAP
Y:344775.87
X:2480187.33

CONCRETE MONUMENT WITH BRASS CAP
Y:347410.22
X:2480103.43

BEGIN RELOCATION ORDER-10+00.00

S88°49'59"W 2669.91'

S89°06'19"W 2632.61'

MATCH LINE
SEE SHEET 4.05

CITY OF MUSKEGO

W COLLEGE AVE

S88°49'59"W 50.00'

S88°21'53"W 50.00'

N88°21'53"E 2655.04'

33'

RW04 10+32.84 50.00'

10+32.64 108.30'

10+38.61 60.00'

RW03 15+33.97 50.00'

15+33.70 60.00'

RW02 22+20.75 50.00'

22+20.75 65.00'

RW01 26+55.52 50.00'

26+55.53 60.00'

RW00 36+00.00 50.00'

36+36.01

N88°49'59"E 50.00'

N88°49'59"E 50.00'

N88°08'55"E 50.00'

S88°08'55"E 2670.92'

PI 36+35.69

10+33.58 50.00'

10+33.88 76.36'

RW05 10+51.05 50.00'

RW06 13+28.02 50.00'

13+28.13 60.00'

13+55.00 60.00'

13+55.00 50.00'

20+52.13 50.00'

23+00.00 65.00' 60.00'

27+40.00 65.00' 60.00'

28+50.00 65.00' 55.00'

31+50.00 65.00' 55.00'

33+00.00 65.00' 55.00'

36+00.00 55.00'

36+36.14 10.21'

16+85.00 65.00' 55.00'

16+25.00 65.00' 60.00'

17+25.00 55.00' 50.00'

1 HARMEYER

2 ST. LAWRENCE

3 RUEHLE JOINT TRUST

4 BRUEGGEMANN

3 RUEHLE JOINT TRUST

6 COMMON SCHOOL DISTRICT NO. 14, CITY OF NEW BERLIN

CITY OF NEW BERLIN

THOMSON HOLLOW SUBDIVISION

W OLD FARM RD

W OSPREY WAY

S SUNNY SLOPE RD

SW-SW

NE-SE

SE-SE

NW-SW

T7N-T6N LINE

LOT 25

LOT 24

LOT 23

LOT 22

LOT 2

LOT 1

OUTLOT 2

LOT 1
CSM 4980
V.40 P.249
DOC. 1357951

2308.24'

294.45'

R/L=SEC LN

SEC LN=N01°49'27"W 2635.69'

15' UTILITY EASEMENT PER THOMSON HOLLOW SUBDIVISION

50' LANDSCAPE EASEMENT PER THOMSON HOLLOW SUBDIVISION

30' SANITARY EASEMENT PER THOMSON HOLLOW SUBDIVISION

15' CITY OF NEW BERLIN TRAIL EASEMENT DOC. 4315950 P.299

SLOPE INTERCEPT

35' KARRINGTON WOODS LLC SANITARY & WATER EASEMENT DOC. 2221463 R.2453 I.0738

FEE 0.291 AC.

TLE, SLOPES 0.118 AC.

TLE, SLOPES 0.046 AC.

TLE, SLOPES 0.029 AC.

FEE 0.252 AC.

TLE, SLOPES 0.109 AC.

TLE, SLOPES

TLE, SLOPES

ROAD	BASIS OF EXISTING R/W	R/W WIDTH	YEAR
S SUNNYSLOPE RD	CSM 4890	40'	1986
S SUNNYSLOPE RD	TOWN PLAT RECORD	49.50'	1950
S SUNNYSLOPE RD	THOMSON HOLLOW SUBD.	100'	2017
COLLEGE AVE	TOWN PLAT RECORD	66'	1950
W OLD FARM RD	THOMSON HOLLOW SUBD.	VARIES	2017
W OSPREY WAY	THOMSON HOLLOW SUBD.	60'	2017

R/W COURSE TABLE		
100-101	S01°49'27"E	980.19'
101-102	S01°49'27"E	434.78'
102-103	S01°49'27"E	686.78'
103-104	S01°49'27"E	501.13'
105-106	N01°49'27"W	294.44'

COMPUTED
Y:344851.63
X:2482841.29

COMPUTED
Y:347496.51
X:2482772.96

REVISION DATE
4/2/2025(N.C.)

DATE 7/11/2024

GRID FACTOR 0.99993100

SCALE, FEET
0 100 200

HWY: S SUNNY SLOPE RD

COUNTY: WAUKESHA

RA SMITH PROJECT NUMBER: 2244600

RA SMITH SURVEY NUMBER: 5169289

PLAT SHEET 4.04

PS&E SHEET ____

E

FILE NAME : 169289-TRADITIONAL_PLAT.DWG
LAYOUT NAME - 4.04

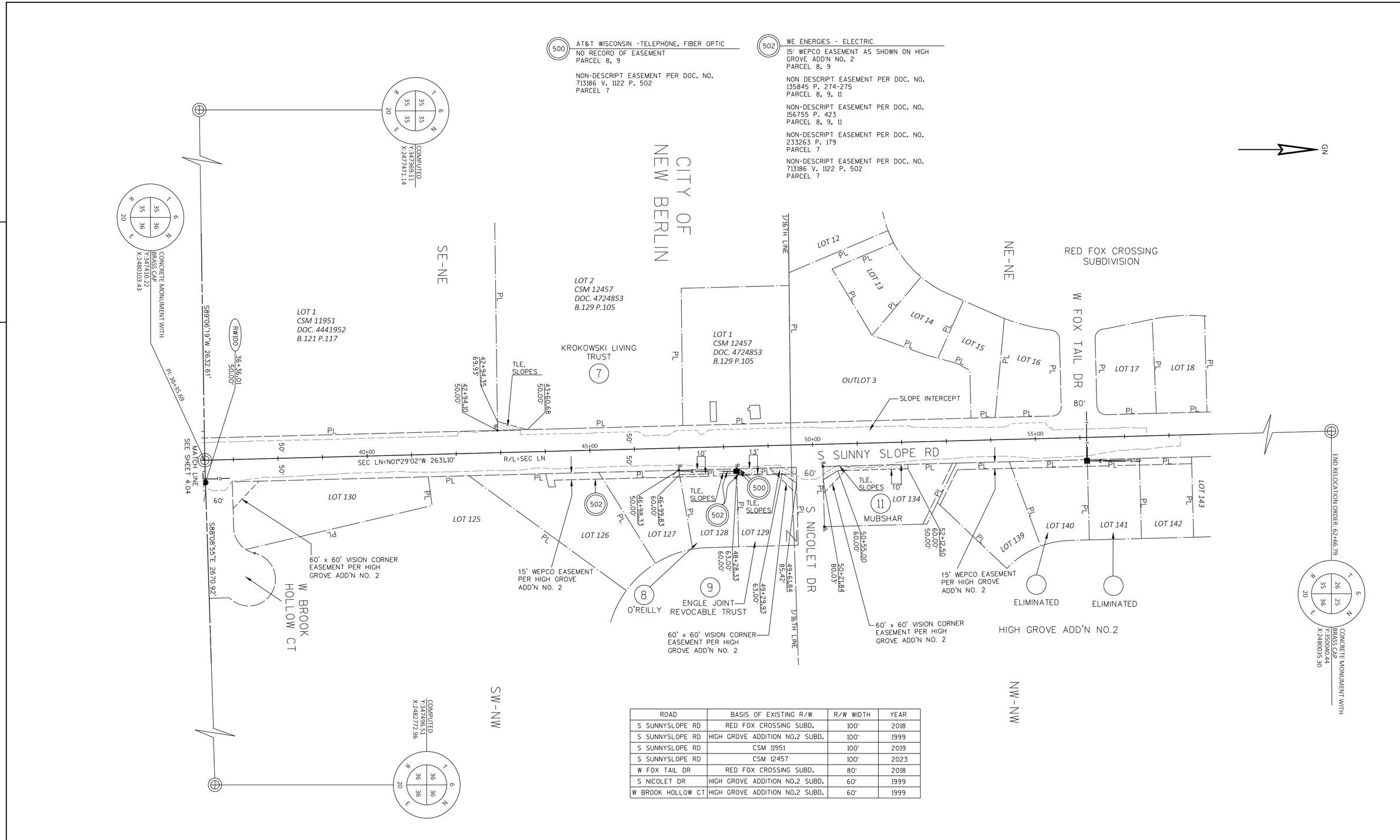
PLOT DATE : 4/2/2025 10:04 AM

PLOT BY : YANG, FLASCHE

PLOT NAME :

PLOT SCALE :

WISDOT/CADDS SHEET 75



ROAD	BASIS OF EXISTING R/W	R/W WIDTH	YEAR
S SUNNYSLOPE RD	RED FOX CROSSING SUBD.	100'	2018
S SUNNYSLOPE RD	HIGH GROVE ADDITION NO.2 SUBD.	100'	1999
S SUNNYSLOPE RD	CSM 11951	100'	2019
S SUNNYSLOPE RD	CSM 12457	100'	2023
W FOX TAIL DR	RED FOX CROSSING SUBD.	80'	2018
S NICOLET DR	HIGH GROVE ADDITION NO.2 SUBD.	60'	1999
W BROOK HOLLOW CT	HIGH GROVE ADDITION NO.2 SUBD.	60'	1999

REVISION DATE 4/2/2025(2)	DATE 7/11/2024	SCALE, FEET 0 100 200	HWY: S SUNNY SLOPE RD	RA SMITH PROJECT NUMBER: 2244600	PLAT SHEET 4.05
	GRID FACTOR 0.99993100		COUNTY: WAUKESHA	RA SMITH SURVEY NUMBER: 5169289	PS&E SHEET E

FILE NAME : 169289-TRADITIONAL_PLAT.DWG
LAYOUT NAME - 4.05
PLOT DATE : 4/2/2025 10:04 AM PLOT BY : YANG, FLASCHE PLOT NAME : PLOT SCALE :
WISDOT/CADDS SHEET 75

Delivered to: City of New Berlin
Date: 4-2-2025

RECORD OF REVISIONS TO RIGHT OF WAY PLAT

PROJECT NO.: 2244600
HIGHWAY: Sunny Slope Road
COUNTY: Waukesha

RELOCATION ORDER NO. 2

***LIST REASON FOR CHANGE IN LAST COLUMN**

DC = DESIGN CHANGES
OR = OWNER REQUEST
AR = REAL ESTATE AGENT REQUEST
OC = OWNERSHIP/NAME CHANGE
UR = UTILITY REQUEST CHANGE
PR = POLITICAL REQUEST
PC = PLAT CORRECTION
LD = LAND DEVELOPMENT
PP = PHASE PLAT

D = Detail Sheet
S = Schedule Sheet
L = Legal Description

PARCEL NO.	SHEET NO.	DATE	DESCRIPTION OF REVISIONS	D	S	L	*
n/a	All	4/2/2025	Added Relocation Order 2 date of 4/2/2025 to all sheets. Suffix of (2) after date indicates changes from original 7/11/2024 plat were made on that sheet. Suffix of (N.C.) after date indicates no changes on that sheet.				DC
12	4.05	4/2/2025	Eliminated parcel due to elimination of TLE.	X	X		DC
13	4.05	4/2/2025	Eliminated parcel due to elimination of TLE.	X	X		DC
500	4.05	4/2/2025	Removed reference to parcels 12 and 13 from utility parcel 500.	X	X		DC
502	4.05	4/2/2025	Removed reference to parcels 12 and 13 from utility parcel 502.	X	X		DC

City of New Berlin

city living with a touch of country

DATE: May 12, 2025

TO: Rubina Medina
City Clerk

FR: Mayor Dave Ament

RE: Mayoral Appointments for the May 13, 2025 Common Council Mtg

Board of Review
Donald Starr
18375 W Lynette Dr
starrd3@mac.com
(262)549-0968
(Re-Appointment)

Expiration Date
5/31/2030

For Office Purposes Only						
TT	Eml	Web	Provox	Ltr	Ethcs	HB

Committee of the Whole
MEETING MINUTES

April 22, 2025 - 6:00 PM
Council Chambers
3805 S. Casper Drive

MINUTES

1. CALL MEETING TO ORDER

Council President Harenda called the meeting to order at 6:00 PM.

2. ROLL CALL; DECLARATION OF QUORUM; PUBLIC NOTICE

Deputy City Clerk Megan Godshall took the roll call as follows:
Present: Alderperson Hopkins, Alderperson Maxey, Alderperson Harenda, Alderperson Stribl, Alderperson Horbinski, Alderperson Kroupa
Excused: Alderperson Scott La Fever, Mayor Dave Ament

Staff Present: City Attorney Thomas Schmitzer, Deputy City Clerk Megan Godshall

The Deputy City Clerk confirmed that a quorum was present and that the meeting was properly posted in compliance with open meetings law.

3. APPROVAL OF MINUTES

A. April 8, 2025, Committee of the Whole Meeting Minutes

MOTION: Motion to Approve

VOTE: Motion by: Alderperson Stribl
Second by: Alderperson Maxey
Motion Passed 6-0

4. UTILITY & FINANCE

A. Discussion and possible action to recommend to the Common Council approval of the April 23rd, 2025, Water Utility claims in the amount of $141,227.91. Sewer Utility claims in the amount of $829,739.11 and General City claims in the amount of $1,397,556.58. City Water Usage EFT OF $17,297.57 and WE Energies EFT of $90,204.84

MOTION: Motion to Approve

VOTE: Motion by: Alderperson Kroupa
Second by: Alderperson Hopkins
Motion Passed 6-0

5. LICENSES & PERMITS

A. Discussion and possible action to recommend to Common Council approval of Kowalske Brewing, doing business as Component Brewing, to sell beer at Malone Park for the Malone Park Beer Gardens to be held on May 24th, June 14th, July 12th, September 6th, and October 11th, 2025 from 12:00 pm to 6:00 pm, as outlined in Form AB-105. The application, along with the Council's recommendation, will be forwarded to the Wisconsin DOR, Division of Alcohol Beverages, for final approval and issuance.

MOTION: Motion to Approve

VOTE: Motion by: Alderperson Stribl
Second by: Alderperson Kroupa
Motion Passed 6-0

B. Discussion and possible action to recommend to Common Council approval of Kowalske Brewing, doing business as Component Brewing, to sell beer at the New Berlin Historical Society for the Historical Park Beer Gardens to be held on June 15th, July 13th, September 7th and October 12th, 2025 from 1:00 pm to 4:00 pm, as outlined in Form AB-105. The application, along with the Council's recommendation, will be forwarded to the Wisconsin DOR, Division of Alcohol Beverages, for final approval and issuance.

MOTION: Motion to Approve

VOTE: Motion by: Alderperson Maxey
Second by: Alderperson Hopkins
Motion Passed 6-0

C. Discussion and possible action to recommend to Common Council approval of Kowalske Brewing, doing business as Component Brewing, to sell beer at the New Berlin Public Library for the Public Library Beer Garden event to be held on August 16th, 2025 from 12:00 pm to 6:00 pm, as outlined in Form AB-105. The application, along with the Council's recommendation, will be forwarded to the Wisconsin DOR, Division of Alcohol Beverages, for final approval and issuance.

MOTION: Motion to Approve

VOTE: Motion by: Alderperson Kroupa
Second by: Alderperson Maxey
Motion Passed 6-0

D. Discussion and possible action to recommend to the Common Council approval of LaMarvon J. Jackson as the new alcohol license agent of Family Entertainment LLC dba Marcus Ridge Cinema for the current license year, which expires on June 30, 2025

MOTION: Motion to Approve

VOTE: Motion by: Alderperson Stribl
Second by: Alderperson Kroupa
Motion Passed 6-0

6. MISCELLANEOUS

A. Fire Department Update

Fire Chief Mark Polzin, Deputy Chief Chris Pierce and Division Chief Mark O'Connor gave a presentation to the
Council and those in attendance.

B. Election of Alderperson to Serve on the Plan Commission - Pursuant to Section 275-15(B)(1), one alderperson shall be elected to serve on the Plan Commission by a two-thirds vote of the Common Council

Council President introduced the item and opened the floor for nominations. Alderwoman Kroupa nominated Alderman Stribl to serve on the Plan Commission. No other nominations were submitted, the floor was closed.

MOTION: Motion to close the nominations

VOTE: Motion by: Alderperson Horbinski
Second by: Alderperson Kroupa
Motion Passed 6-0

MOTION: Motion to appoint Alderman Stribl to serve on Plan Commission

VOTE: Motion by: Alderperson Hopkins
Second by: Alderperson Maxey
Motion Passed 6-0

C. Recommend to the Common Council that a public hearing be set for June 2, 2025 at 6:00 p.m. to be held before the Plan Commission to rescind PUD Overlay Ordinance #

2679 – Mandel Neighborhood Development Plan PUD (also amended by Ordinance # 2688) and adoption of Planned Unit Development Ordinance # 2701 that approves the rezoning of the properties from B-1/PUD (Shopping Center District), Rm-1/PUD (Multiple-Family Residential District:), I-1/PUD (Institutional District) / C-2/PUD (Shoreland-Wetland Holding District) to Rm-1/PUD and C-2/PUD as The Conservancy Neighborhood Development PUD Ordinance for the parcels located at 1640 S. Moorland Road (includes Tax Keys #'s 1158.989.001, 1158.989.002 & 1158.989.003).

MOTION: Motion to approve

VOTE: Motion by: Alderperson Hopkins
Second by: Alderperson Stribl
Motion Passed 6-0

D. Recommend to the Common Council that a joint public hearing be set for June 2, 2025 at 6:01 p.m. to be held before the Plan Commission to amend the Future Land Use Map within the City's Comprehensive Plan (Chapter 10 – Land Use and Chapter 19 – "Neighborhood I" National Avenue West) for the properties located at 16370 W. Small Road (Tax Key #: 1285.994.003) and 16380 W. Small Road (Tax Key #: 1285.994.002) from Residential Estate to Suburban Commercial with a PUD overlay and to rezone the properties located at 16370 W. Small Road (Tax Key #: 1285.994.003) and 16380 W. Small Road (Tax Key #: 1285.994.002) from B-2 and R-3 to B-2/PUD.

MOTION: Motion to approve

VOTE: Motion by: Alderperson Kroupa
Second by: Alderperson Horbinski
Motion Passed 6-0

7. ADJOURN

MOTION: Motion to adjourn at 6:46 PM

VOTE: Motion by: Alderperson Stribl
Second by: Alderperson Kroupa
Motion Passed 6-0

Respectfully Submitted,
Megan Godshall, Deputy City Clerk

RENEWAL ALCOHOL LICENSE APPLICANTS

The establishments listed below hereby submit their application to the Common Council of the City of New Berlin for an alcohol license, as described herein and in their accompanying application materials, pursuant to the applicable provisions of the Wisconsin Statutes and the Ordinances of the City of New Berlin, for the licensing period ending June 30, 2026. Licenses shall be issued by the City Clerk contingent upon the fulfillment of all statutory and municipal requirements, such as, but not limited to, the successful completion of all required inspections and the payment of all applicable fees.

	Trade Name & Premise Description	Agent Name	Applying for License
1.	Armeli's Restaurant & Pizzeria 16201 W. National Ave. New Berlin, WI 53151	Anthony Armeli N53 W34468 Road Q Okauchee, WI 53069	"Class B" - Combo
	Location:	Premise Description: First-floor dining and bar. Outside patio and basement storage.	
2.	Big Tuna Japanese Restaurant 3624 S. Moorland Rd. New Berlin, WI 53151	Yong Cheng Jiang 1120 Chester St Brookfield, WI 53005	"Class B" - Combo
	Location:	PREMISE DESCRIPTION: COOLER, CABINET, ENTIRE RESTAURANT AREA	
3.	China Dragon Restaurant 15820 W. National Ave. New Berlin, WI 53151	Xiao H. Huang 13438 W. Kirkwood Dr. New Berlin, WI 53151	"Class B" - Combo
	Location:	PREMISE DESCRIPTION: SALES OF ALCOHOLIC BEVERAGES ARE DONE IN A) THE MAIN DINING ROOM B) THE BACK FUNCTION/DINING ROOM AND C) THE SEPARATE BAR AREA BETWEEN THE TWO ROOMS	
4.	Costco Wholesale #1212 15300 W. Grange Avenue New Berlin, WI 53151	John Checa 906 E. Glenbrook Rd Milwaukee, WI 53217	"Class A" Retail - Combo
	Location:	PREMISE DESCRIPTION: ONE STORY 155,488 SQ FT BUILDING LOCATED IN THE CITY OF NEW BERLIN. PRODUCT RECEIVED THROUGH RECEIVING DOCK. PRODUCT STOCKED WITHIN 24 HRS OF RECEIVING AND MERCHANDISED WITHIN THE PERIMETERS OF THE RETAIL BUILDING. RECORDS ARE ELECTRONICALLY STORED IN RECEIVING & OFFICE AREAS. RETAIL HOURS ARE MONDAY TO FRIDAY 10AM TO 8:30PM, SATURDAY 9:30AM TO 6PM. SUNDAY 10AM TO 6PM.	
5.	Krause Food Service 12401 W. National Ave. New Berlin, WI 53151	Jean T. Davies 6552 Forest Lane Waterford, WI 53185	RESERVE "Class B" - Combo
	Location:	PREMISE DESCRIPTION: THE SERVICE OF ALCOHOLIC BEVERAGES WILL TAKE PLACE IN THE LOWER LEVEL OF THE FACILITY. THIS INCLUDES TWO DINING AREAS (LOWER LOUNGE & DINING ROOM). THIS PREMISES IS ONLY THESE LOCATIONS AND DOES NOT INCLUDE THE ENTIRE FACILITY. STORAGE WILL BE IN A LOCKED LIQUOR CABINET AREA IN THE LOWER LEVEL.	
6.	Lagniappe Brasserie 17001 W. Greenfield Ave. New Berlin, WI 53151	Andrew P. Tenaglia 985 Post Rd. Brookfield, WI 53005	"Class B" - Combo
	Location:	PREMISE DESCRIPTION: STORED IN LOCKED STOREROOM. SERVED AND CONSUMED AT BAR, IN DINING ROOM AND OUTSIDE PATIO.	

RENEWAL ALCOHOL LICENSE APPLICANTS

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7.	Moorland Road Golf Center 5900 S. Moorland Rd. New Berlin, WI 53151	Michael J. Vance 525 Cheyenne Ave Grafton, WI 53024	Class "B" - Beer
	Location:	PREMISE DESCRIPTION: BEVERAGES ARE ONLY SOLD WITHIN THE CLUBHOUSE AND SKYBOX ON OUR PROPERTY. EVERYTHING IS STORED EITHER WITHIN OUR FRONT BEVERAGE COOLER OR OUR STOCK ROOM IN THE BACK OF THE CLUBHOUSE.	
8.	New Berlin Ale House 16000 W. Cleveland Ave. New Berlin, WI 53151	Tracy J. Posnanski 445 N Columbia Blvd Brookfield, WI 53005	"Class B" - Combo
	Location:	PREMISE DESCRIPTION: BAR ROOMS, CONCOURSE, BOWLING HALL, BASEMENT, COOLERS, OFFICE	
9.	Nickels Pub 13915 W. Greenfield Ave. New Berlin, WI 53227	David A. Nappier 10141 W. Coldsrping Rd #3 Greenfield, WI 53228	"Class B" - Combo
	Location:	PREMISE DESCRIPTION: BLOCK BUILDING, STORAGE IN BACK, BAR IN FRONT.	
10.	Quickmart 19400 W. College Ave New Berlin, WI 53146	Satinder K. Dhillon 9879 W Saint Stephan Dr Franklin, WI 53132	"Class A" Retail - Combo
	Location:	PREMISE DESCRIPTION: FRONT COUNTER, SOUTHWEST CORNER ALONG WEST WALL, AND WALK IN COOLER	
11.	Speedway #4230 14001 W. Greenfield Ave. New Berlin, WI 53151	Lisa R. Kaniasty 20179 West Good Hope Rd G13 Lannon, WI 53046	"Class A" Retail - Combo
	Location:	PREMISE DESCRIPTION: MAIN SALES FLOOR, COOLERS, UTILITY/STORAGE CLOSET.	
12.	Speedway #4540 15555 W. Beloit Rd. New Berlin, WI 53227	Adam J. Novak 9730 W Montana Ave West Allis, WI 53227	"Class A" Retail - Combo
	Location:	PREMISE DESCRIPTION: MAIN SALES FLOOR, COOLERS, UTILITY/STORAGE CLOSET.	

RENEWAL ALCOHOL LICENSE APPLICANTS

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13. Texas Roadhouse
15425 W. Rock Ridge Rd.
New Berlin, WI 53151

Stephanie Schubring
3944 Oakmont Trail
Waukesha, WI 53188

RESERVE "Class B" - Combo

Location: PREMISE DESCRIPTION: 6,923 SF SINGLE STORY BUILDING WITH RESTAURANT AND BAR