



**CITY OF NEW BERLIN
PLAN COMMISSION MEETING**

Monday, May 2, 2022

6:00 PM

Zoom Meeting

<https://us02web.zoom.us/j/81985426963>

The Council has satisfied the requirements as directed by the Common Council on June 22, 2021 and Ordinance No. 2651 to hold this meeting via electronic means. The full text of this ordinance and the minutes from the above mentioned meeting can be viewed at www.newberlin.org

Any comments that the public wishes to make may be communicated to the city via email at citizencomments@newberlin.org and will be forwarded to the Mayor and City Council. Interested parties may also participate by:

- Downloading the ZOOM app located at <https://zoom.us/> and utilize this unique ID to join: 819 8542 6963
- Following this direct link to the meeting: <https://us02web.zoom.us/j/81985426963>
- Dial by phone: (312) 626-6799 and use Meeting ID: 819 8542 6963

AGENDA

PRIVILEGE OF THE FLOOR

CALL TO ORDER; PLEDGE OF ALLEGIANCE

ROLL CALL; DECLARATION OF QUORUM

APPROVAL OF MINUTES

April 11, 2022 Plan Commission Meeting Minutes

PLAN COMMISSION SECRETARY'S REPORT

CONTINUED BUSINESS

NEW BUSINESS

(3) KH PK-2200052 - Approval of the contract for the 2022 Buena Park Improvement Project.

(4) MH UA-2200591 - Rusell Raposa on behalf of Spa, Paw & Tail - 5055 S Emmer Dr - Use, Site and Architecture Approval to construct two outdoor dog exercise areas with 9' fencing and a 8' by 10' storage shed.

PENDING

(7) KH UA-2200499 Kohler Pit Interim Grading Plan - 4635 S. Racine Ave. - Use and Site Approval for an Interim Grading Plan for Kohler Pit.

COMMUNICATIONS

ADJOURN

PLEASE NOTE:

- ✓ It is possible that action will be taken on any of the items on the agenda and that the agenda may be discussed in any order. It is also possible that members of and possible a quorum of other governmental bodies of the municipality may be in attendance at the above-stated meeting to gather information; no action will be taken by any governmental body at the above-stated meeting other than the governmental body specifically referred to above in this notice.
- ✓ Also, upon reasonable notice, efforts will be made to accommodate the needs of disabled individuals through appropriate aids and services. For additional information or to request this service, contact City Clerk Rubina R. Medina (262) 786-8610.



**CITY OF NEW BERLIN
PLAN COMMISSION MEETING MINUTES
Monday, April 11, 2022**

Regular Meeting

Via Zoom

6:00 PM

Please note: Minutes are unofficial until approved by the Plan Commission at the next regularly scheduled meeting.

This Commission has satisfied the requirements as directed by the Common Council on June 22, 2021 and Ordinance No. 2651 to hold this meeting via electronic means. The full text of this ordinance and the minutes from the above mentioned meeting can be viewed at www.newberlin.org

To participate in the meeting, view the meeting, and/or ask questions, the public was able to do so by downloading the ZOOM app located at <https://zoom.us/> and utilize Meeting ID # 878 3688 2099: to join.

All votes were taken via a voice roll call vote.

PUBLIC HEARING(S)

ITEM: (3) NJ CU-2200213 Maria Koerner on behalf of WE Energies - 17990 W. Cleveland Ave. - Conditional Use Approval to construct a building addition to contain and protect gas facilities. (PUBLIC HEARING 6:00 PM)

Deputy Clerk/Licensing Specialist, Rubina Medina reviewed the procedures to be conducted as this meeting was held via zoom.

Mayor Ament read the rules for a public hearing and called the public hearing to order at 6:00 PM.

Deputy Director of Community Development, Nikki Jones read the Public Hearing Notice and gave a brief presentation to the Commission.

Mayor Ament asked if there were any citizens in attendance that had questions for clarification. No questions were asked.

Mayor Ament asked if any citizens in attendance wished to speak in favor of the application. There were none.

Mayor Ament asked if any citizens in attendance wished to speak in opposition of the application. There were none.

Mayor Ament asked the Commissioners if they had any questions for clarification and/or comments. Commissioners did have questions for clarification which were answered by staff.

The Public Hearing Adjourned at 6:07 PM.

PRIVILEGE OF THE FLOOR

Mayor Ament asked if there was anyone in attendance that wanted to take part in Privilege of the Floor. There was none.

Rubina Medina stated that no comments were received via email.

CALL TO ORDER; PLEDGE OF ALLEGIANCE

Mayor Ament called the Plan Commission meeting to order at 6:07 PM and led the Pledge of Allegiance.

ROLL CALL; DECLARATION OF QUORUM

Present: Mayor Ament, Ald. Stribl, McGrath, Rafel, Biller, Felda & Anderson.

Rubina Medina stated that there is a quorum and the meeting was properly noticed in accordance with the open meetings law.

City Staff present: Director of Community Development Greg Kessler, Deputy Director of Community Development Nikki Jones, Principal Planners Kelly Wall & Kristen Hogan. Principal Planner & Emergency Management Coordinator Morgan Henn, City Engineer Tammy Simonson, City Attorney Mark Blum, and Deputy City Clerk/Licensing Specialist Rubina Medina.

APPROVAL OF MINUTES

ITEM: March 7, 2022 Meeting Minutes

MOTION: Motion to approve the minutes from the March 7, 2022 meeting.

VOTE: Motion by: Ald. Stribl
Second by: Commissioner Rafel
Passed 5-0 with Commissioner Biller & Felda abstaining

PLAN COMMISSION SECRETARY'S REPORT

No Report.

NEW BUSINESS

ITEM: (2) MH/KH CU-2200213 Welcome Miller Park - 15551 W. Cleveland Ave. - Conditional Use Approval to reoccupy the existing building for a gas station and construct a new fuel pump canopy and car wash in the B-2 Zoning District. (PUBLIC HEARING 3/7/2022)

Morgan Henn read the DRC Recommendation.

MOTION: **Motion to approve the request to withdraw the Conditional Use application to re-occupy the existing building for a gas station and construct a new fuel pump canopy and car wash in the B-2 Zoning District. (Public Hearing 3/7/2022).**

VOTE: Motion by: Commissioner Rafel
Second by: Commissioner Anderson
Passed 7-0

ITEM: (2) KH PK-2200051 - Approval of the contract for the 2022 Lions Park Improvement Project.

Kristen Hogan read staff's recommendation.

MOTION: Motion to recommend to the Common Council the awarding of a Construction Contract to the lowest responsive, responsible bidder, Workman Enterprises for construction of Lions Park Improvement Project in an amount of \$81,555, from account 04252900 61122 C2021, subject to the application, plans on file, and staff's condition.

VOTE: Motion by: Mayor Ament
Second by: Commissioner Biller
Passed 6-0 with Ald. Stribl abstaining

ITEM: (7) KH UA-2200499 Kohler Pit Interim Grading Plan - 4635 S. Racine Ave. - Use and Site Approval for an Interim Grading Plan for Kohler Pit.

Kristen Hogan read staff's recommendation.

MOTION: Motion to table the Use, Site and Architecture for Kohler Pit Interim Grading Plan located at 4635 S. Racine Avenue, subject to the application, plans on file.

VOTE: Motion by: Ald. Stribl
Second by: Commissioner Felda
Passed 7-0

ITEM: (3) NJ CU-2200213 Maria Koerner on behalf of WE Energies - 17990 W. Cleveland Ave. - Conditional Use Approval to construct a building addition to contain and protect gas facilities. (PUBLIC HEARING 6:00 PM)

Nikki Jones read staff's recommendation.

MOTION: Motion to recommend to Plan Commission approval of the Conditional Use application to construct a building addition to contain and protect gas facilities located at 17990 W. Cleveland Ave.

VOTE: Motion by: Commissioner Anderson
Second by: Commissioner Biller
Passed 7-0

ADJOURN

ITEM: Motion to adjourn the Plan Commission meeting at 6:19 pm.

VOTE: Motion by: Ald. Stribl
Second by: Commissioner Rafael
Passed 7-0

Respectfully Submitted,
Rubina Medina
Deputy City Clerk/Licensing Specialist



May 9, 2022

TO: Common Council
Mayor Ament
Alderman Stribl

FROM: Plan Commission

RE: Items from the Plan Commission Meeting from May 2, 2022 requiring Common Council action.

- (3) KH PK-2200052 – Approval of the contract for the 2022 Buena Park Improvement Project

Council Motion:

This item was considered at the Plan Commission meeting on May 2, 2022. It was recommended to the Common Council on a vote of 6-0. I do hereby move that the Common Council approve the awarding of a Construction Contract to the lowest responsive, responsible bidder: Ray Stadler Construction, for the construction of Buena Park Improvement Project in an amount of \$725,622.90 from account 04252900 61131 C2022 and the Professional Services Agreement for Inspection Services to Stantec for Inspection Services for the Buena Park Improvement Project in the amount of \$37,209.00 from account 04252900 61131 C2022. With contingencies, not-to-exceed total project cost of \$960,000.00.

STAFF REPORT

EXECUTIVE SUMMARY

APPLICANT/PROJECT: City of New Berlin / Buena Park Construction Contract

LOCATION: Buena Park – 16301 W. Coachlight Drive

REQUEST: Approval of the Construction Contract for Buena Park Improvement Project

D.C.D. RECOMMENDATION: Recommend to the Common Council the awarding of Construction Contract to the lowest responsive, responsible bidder:

- Ray Stadler Construction for the construction of Buena Park Improvement Project in an amount of \$725,622.90 from account 04252900 61131 C2022.

And the Professional Services Agreement for Inspection Services:

- Stantec for Inspection Services for the Buena Park Improvement Project in the amount of \$37,209.00 from account 04252900 61131 C2022.

With contingencies, the not-to-exceed total project cost is \$960,000.00.

1. CIP Accounts:
 - a. Buena Park 04252900 61131 C2022
 - b. The contract with Ray Stadler Construction will include furnishing all labor, equipment, and materials necessary for demolition of an existing restroom building, construction of a prefabricated open-air shelter and restroom/shelter building, including: grading, concrete sidewalk, asphalt trail, and new water, sanitary and electrical connections to the new restroom/shelter building.
 - c. Demolition of the existing shelter will be completed in 2022 by City crews.
2. On April 20, 2022, the City of New Berlin received 2 bids for the Buena Park Improvement Project. The apparent low bidder is Ray Stadler Construction. The bid was above the engineer's estimate and the bidder has satisfied the bidder's prequalification requirements.
 - a. Total Base Bid: \$725,622.90
3. Three inspection firms were solicited for proposals for Inspection Services. The City of New Berlin received 1 proposal for Inspection Services for the Buena Park Improvement Project. There was a 4 person review team that individually rated the proposals on Experience and Qualifications of the Project Team, Project Approach, Knowledge of Standards, and Cost. The scores were then tallied and averaged. The selected consultant is Stantec.
 - a. Total Cost: \$37,209.00

DETAILS IN ATTACHED STAFF REPORT

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

Meeting of May 2, 2022

City of New Berlin / Buena Park Construction Contract
16301 W. Coachlight Drive

DATE STAFF REPORT CREATED: April 6, 2022

APPLICANT: City of New Berlin

REQUEST / DESCRIPTION OF PROJECT: This project consists of the removal of the existing park structures and the purchase and installation of new park structures to comply with ADA standards. Reconstruction of trails to comply with ADA standards and to connect to park amenities.

BIDS RECEIVED: The City of New Berlin received 2 bids. A summary of the bids received is attached. (1 bid was rejected, as it did not include Addendum #1)

SELECTED CONTRACTOR(S): Ray Stadler Construction

INSPECTION: Three inspection firms were solicited for proposals. The City of New Berlin received 1 proposal and recommends selecting Stantec for construction inspection services. The proposal from Stantec is attached.

FISCAL IMPACT: Total Project Costs: \$960,000.00
Ray Stadler Construction Total Base Bid: \$725,622.90
Stantec – Inspection Total Cost: \$37,209.00

SOURCE OF FUNDS: Buena Park 04252900 61131 C2022

CONFORMANCE WITH COMPREHENSIVE PLAN AND CIP REQUEST: Yes

COMPREHENSIVE PLAN: The design is consistent with the Park and Open Space Plan, which is an element of the City's Comprehensive Plan, while also addressing the deficiencies outlined in the ADA (Americans with Disabilities Act) Study and the individual park demands. The proposed upgrades will reduce the long term maintenance costs, add more functionality for park users, address remaining ADA items, add more storage capacity and make the restrooms more convenient and accessible to our park patrons. A detailed list of these deficiencies can also be found in the 2022 CIP request for this project. The proposed design addresses each of these deficiencies and brings the park into compliance.

CIP REQUEST: The design work for this project was completed in the spring of 2022.

BACKGROUND INFORMATION:

1. The proposed park design complies with all current CPSC (Consumer Product Safety Commission), ASTM (American Society for Testing and Materials) and ADA (Americans with Disabilities Act) standards and address all issues outlined in the ADA (Americans with Disabilities Act) Study.
2. The design is consistent with the Park and Open Space Plan, which is an element of the City's Comprehensive Plan, while also addressing the deficiencies outlined in the ADA (Americans

with Disabilities Act) Study and the individual park demands.

- a. The proposed upgrades will reduce the long term maintenance costs, add more functionality for park users, address remaining ADA items, add more storage capacity and make the restrooms more convenient and accessible to our park patrons. A detailed list of these deficiencies can also be found in the 2022 CIP request for this project. The proposed design addresses each of these deficiencies and brings the park into compliance.
3. The Department of Community Development's goal is to guide the preservation, acquisition and development of land for the use of park and recreational activities for the community. By developing short term plans and long term goals, the City can identify and accommodate necessary changes to the parks, open space and outdoor recreational needs for the residents of New Berlin.
4. The duties of the Department of Community Development as they relate to park planning and design include:
 - a. Maintain an inventory and analyze the needs of the community by updating the City's Park and Open Space Plan, at a minimum every five years, and incorporate into the City's overall Comprehensive Plan.
 - b. Guide in the acquisition, dedication, preservation, and development of lands for public parks, facilities, and grounds in conjunction with the Plan Commission.
 - c. Coordinate the planning, engineering, design and development, with consultation from the Plan Commission and other appropriate boards and commissions, for all existing and proposed public parks, facilities and grounds.
 - d. Provide linkages between parks, open spaces, and public destinations.

D.C.D. RECOMMENDATION:

Recommend to the Common Council the awarding of Construction Contract to the lowest responsive, responsible bidder:

- Ray Stadler Construction for the construction of Buena Park Improvement Project in an amount of \$725,622.90 from account 04252900 61131 C2022.

And the Professional Services Agreement for Inspection Services:

- Stantec for Inspection Services for the Buena Park Improvement Project in the amount of \$37,209.00 from account 04252900 61131 C2022.

With contingencies, the not-to-exceed total project cost is \$960,000.00.

Attachments:

Summary of Bids Received
Inspection Quote
Contract Specifications & Plan Set

PK-2200052 Buena Park Improvements 2022
 Bid Results
 April 20, 2022 @ 9:00 AM

Bidder	Bid Bond	Pre- qualification	Base Bid	Rank
Ray Stadler Construction Co.	X	X	\$ 725,622.90	1
Workman Enterprises	X	X	\$ 1,195,972.00	2
Engineer's Estimate			\$ 454,213.00	



Stantec Consulting Services, LLC.
12075 Corporate Parkway, Suite 200
Mequon, WI 53092

April 15, 2022
File: 193805852

Attention: Kristen Hogan
Principal Planner
City of New Berlin
3805 S. Casper Dr.
New Berlin, WI 53151

Dear Kristen,

Reference: Request for a Price Quote for Construction Oversight Services Associated with the Buena Park Improvement Project

Thank you for the opportunity to continue serving the City by providing Construction Oversight for the Buena Park Improvement Project. If selected, the following individuals will be conducting construction oversight for the project: (Please see Attachment A for inspection related project experience)

- Christian Moring, PE / Engineer of Record
- Matt Sieracki, PE / Lead Inspector
- Corey Worthel, PLS / Staking & Inspection
- Sarah McDonald, PLA / Prefabricated Buildings Coordination & Installation
- Rashad Tiam Watt / Secondary Inspector

Scope of Services

- Attend pre-construction meeting, along with preparation of pre-construction meeting agenda and minutes
- Oversight of the operations of the contractor(s) while engaged in construction of the Project including Full-time review of Utilities, Concrete paths, Curb & gutter, Park Structures, and Asphalt paving of the project including:
 - Observation of Installation procedures
 - Review of Shop Drawings and return of review notes to Contractor
 - Review of removals with Owner
 - Field check elevations of installed utilities.
 - Record quantities of materials installed
 - Review materials for compliance to City standard specifications and plans
 - Perform erosion control inspections (in addition to Contractor's inspections and Contractor's preparation of weekly logs)
 - Facilitate dispute resolutions between Contractor and Owner
 - Maintain log of activities during observation including photo diaries and daily event reports
 - Review Contractor Change Order requests and generate Change Order documents as necessary

Reference: Request for a Price Quote for Construction Oversight Services Associated with the Buena Park Improvement Project

- Review Contractor Pay Requests and recommend payment to Owner
- Participate in final project walk-through and preparation of punch-list
- Construction Staking / Surveying
- Review Material Testing reports, per the contractor

Scope shall not include:

- As Built Drawings
- Material Testing reports
- Re-design or Re-calculation
- Dictating of Means/Methods of to the Contractor

Additional assumptions:

- The budget includes an inspector being on site during all times of work. This assumes that Contractor will provide accurate and timely (min. 48-hour) notifications of planned working days.
- Our proposal provides for either the Professional Engineer of Record or Landscape Architect to be on site for critical milestones in the construction process, including but not limited to:
 - Preconstruction meeting
 - Delivery and inspection of prefabricated buildings
 - Substantial completion of prefabricated building installations
 - Substantial project completion & project walkthrough

Time and Materials at the Following Billing Rates:

Engineer of Record:	\$141.00/hr
Lead Inspector:	\$141.00/hr
Surveyor / Staking:	\$153.00/hr
Landscape Architect of Record:	\$153.00/hr
Secondary Inspector:	\$120.00/hr

Estimated Hours and Fee:

Engineer of Record:	3 - 5 hrs.	\$423 - \$705
Lead Inspector:	132 - 208 hrs.	\$18,612 - \$29,328
Surveyor / Staking:	12 - 20 hrs.	\$1,836 - \$3,060
Landscape Architect of Record:	12 - 16 hrs.	\$1,836 - \$2,448
Secondary Inspector:	6 - 8 hrs.	\$720 - \$960

Anticipated Reimbursables(mileage) \$800

Total Estimated Time and Materials Budget Not to exceed: \$24,135 - \$37,209

Reference: Request for a Price Quote for Construction Oversight Services Associated with the Buena Park Improvement Project

We would like to emphasize that this is a time and materials estimate ONLY, and that Stantec is not able to control the contractor or how they conduct the work. If the contractor does not meet expected schedules or the work is not per specifications, requests for additional fees may result.

To that same point, if construction progresses efficiently and per the project specifications, the fees invoiced for construction services may amount to less than the estimated fee above.

Stantec will provide weekly updates in regard to the final estimated construction services fee.

We are willing to negotiate final Construction Observation Scope and Costs to align with the City's vision and budget.

Project specific charges, such as subconsultants; travel, accommodations and meals; project specific printing of deliverables; consumables; usage charges for specialized field equipment and company owned, leased or rented project vehicles; external testing lab charges and other external services charges; specialized computer software costs; and other significant project specific expenses will be invoiced in addition to labor fees.

Where not stated as being included in the fees, project specific subconsultant, contractor, lab and other similar third-party charges will be charged as invoiced to STANTEC.

Unless otherwise noted, the fees in this agreement do not include any value added, sales, or other taxes that may be applied by Government on fees for services. Such taxes will be added to all invoices as required.

Where the SERVICES or services conditions change, STANTEC shall submit to the CLIENT in a timely manner, documentation of the revisions to this Task Order adjusting the Contract Services Time and Price as required.

Regards,

Sarah McDonald



Sarah McDonald PLA, CLARB, ASLA
Associate, Senior Landscape Architect | Urban Planner
Phone: (262) 643 9050
Sarah.McDonald@stantec.com



Christian Moring PE
Civil Engineer
Phone: (262) 665 3012
Christian.Moring@stantec.com

Attachment A: Team Resumes

Sarah McDonald

PLA, CLARB, ASLA

Landscape Architect | Urban Planner

Sarah has a passion for designing spaces that improves the relationship between people's quality of life and the built environment. Sarah's professional experience spans the realm of urban design, landscape design, and green infrastructure for a wide range of project markets.

EDUCATION

MS Urban and Regional Planning, University of Wisconsin-Madison, Madison, WI, 2012

BS Landscape Architecture, University of Wisconsin-Madison, Madison, WI, 2008

REGISTRATIONS

Licensed Landscape Architect #701-14, State of Wisconsin

Licensed Landscape Architect #41858, Council of Landscape Architectural Registration Boards, 2016/03

PROJECT EXPERIENCE

CONSTRUCTION OBSERVATION

River Point | City of Manitowoc, Wisconsin | 2022

Cotton Mill Park | City of Beaver Dam, Wisconsin | 2021

Biwer Park and Playground Improvements | City of New Berlin | 2020

Walgreens Corporate Campus, Deerfield, Illinois | 2019

Riveredge Nature Center Salamander Grotto, Saukville, Wisconsin | 2019

Erb Park and Playground* | Appleton, Wisconsin | 2017

Wisconsin Dells Cafe Zones / Streetscaping* | Wisconsin Dells, Wisconsin | 2017

Wisconsin Dells Oak Street Plaza* | Wisconsin Dells, Wisconsin | 2016

Holmen Library* | Holmen, Wisconsin | Landscape Architect | 2016

Pulaski Road Streetscape Improvements* | Alsip, Illinois | 2014

OSF Milestone-Berkley* | Peoria, Illinois | 2008

Monarch Landing* | Naperville, Illinois | 2008

ADDITIONAL RECENTLY CONSTRUCTED PLAYGROUND WORKS

Lions Park and Playground Improvements | New Berlin | 2021

Witter Park Aquatic Center and Park Master Plan* | Wisconsin Rapids, Wisconsin | Under Construction

Jones Park Master Plan* | Appleton, Wisconsin | 2019

Mead Park Splash Pad and Park Master Plan* | Wisconsin Rapids, Wisconsin | 2017

Christian Moring PE

Civil Engineer

Christian is a professional civil engineer with more than five years of experience with various management, design and field observation projects. His design experience includes site utility, grading, pavement, and permitting. Christian has compiled numerous Stormwater Management Plans and Stormwater Pollution Prevention Plans for private developments, as well as served municipalities in the review of such items. He has also put together numerous public and private specification manuals for such projects. In the field, he has served as the Resident Engineer for several utility and roadway rehabilitation programs for municipalities in Illinois and Wisconsin.

EDUCATION

BS Civil Engineering, University of Iowa, Iowa City, IA, 2017

REGISTRATIONS

Professional Engineer #062.073447, Illinois Department of Financial and Professional Regulation

Professional Engineer #48772-6, Wisconsin Department of Safety and Professional Services

MEMBERSHIPS

Member, American Public Works Association – Wisconsin Chapter

Member, American Society of Civil Engineers

Certifications and Training

Documentation of Contract Quantities, Illinois Department of Transportation, 2017

Erosion and Sediment Control - Inspection, Illinois Department of Transportation, 2018

Erosion and Sediment Control - Design, Illinois Department of Transportation, 2018

PROJECT EXPERIENCE

CONSTRUCTION OBSERVATION

Water & Sewer Extension | Village of Johnson Creek, Wisconsin | 2022

Southeast Neighborhood Utility Reconstruction | Village of Johnson Creek, Wisconsin | 2021

Main Street Pulverize and Overlay | Village of Newburg, Wisconsin | 2021

Biwer Park and Playground Improvements | City of New Berlin, Wisconsin | 2020

2018 Collector Street Resurfacing Program* | City of Elgin, Illinois | 2018

2018 Sewer Cleaning and Lining Program* | City of Elgin, Illinois | 2018

2018 Road Program* | Village of Barrington Hills, Illinois | 2018

2017 Neighborhood Street Resurfacing Program* | City of Elgin, Illinois | 2017

Downtown Streetscape Utility Project* | Village of Algonquin, Illinois | 2017

** denotes projects completed with other firms*

Matt Sieracki P.E.

Civil Engineer

6 years of experience · Mequon, Wisconsin

Matt brings experience in construction management, including roadway reconstruction, lift station replacements, and underground utilities. He also has direct experience working as a contractor, and on Wisconsin DOT projects – giving him an understanding of a range of standards and specifications.

EDUCATION

Bachelor of Science, Civil Engineering, University of Wisconsin-Platteville, Wisconsin, 2016

REGISTRATIONS

Professional Engineer #E-47853, State of Wisconsin

PROJECT EXPERIENCE

CONSTRUCTION MANAGEMENT

River Point | City of Manitowoc, Wisconsin | 2022

Beaver Dam River Corridor Improvements | Beaver Dam, Wisconsin | 2020,2021

Annual Town of Grafton Road Reconstruction | Town of Grafton | Grafton Wisconsin | 2017, 2019, 2020

North Wilson Drive Reconstruction | Village of Shorewood | Shorewood, Wisconsin | 2018

Lawton Terrace Sanitary Sewer | City of Manitowoc | Manitowoc, WI | 2018

Roosevelt Drive Reconstruction | Village of Menomonee Falls | Menomonee Falls, Wisconsin | 2017

Mirro Building Demolition Project Management | City of Manitowoc | Manitowoc, Wisconsin | 2017

Carthage College Lake Michigan Shoreline Repairs | Kenosha, Wisconsin | 2017

Sommers Lift Station No. 1 Replacement* | Sommers, Wisconsin | 2016

STH 158 Roadway Maintenance* | Wisconsin Department of Transportation | Kenosha, Wisconsin | 2015

** denotes projects completed with other firms*

Corey Worthel PLS

Professional Land Surveyor
44 years of experience

Corey is Professional Land Surveyor with over 40 years of experience in construction surveying, staking, inspection, and documentation.

REGISTRATIONS

Professional Land Surveyor #2889, State of Wisconsin
Professional Land Surveyor #3440, State of Illinois

MEMBERSHIPS

Wisconsin Society of Land Surveyors
Illinois Professional Land Surveyors Association

WORK EXPERIENCE

CONSTRUCTION LAYOUT / SURVEYING

Property Surveys (Boundary, ALTA, CSM, and TOPO)
Construction Layout Staking
Platting and Easement Documents
Construction Observation and Testing for Asphalt, Concrete, Water, Sanitary, and Storm Utility Installations
Inspection and Review of Field Grading and Compaction Work

Rashad Tiam Watt

Landscape Designer

1 years of experience · Mequon, Wisconsin

Rashad is a multi-disciplinary designer that focuses on creating solutions for outdoor spaces. Rashad is passionate about the intersectionality of equity, sustainability, and urban design.

PROJECT EXPERIENCE

Biwer and Lions Park Improvements | New Berlin, WI |
Landscape Designer

CONSTRUCTION OBSERVATION

Biwer and Lions | New Berlin, WI | Construction
Documentation

The Rivers School Conservatory | Weston, MA
Landscape Architecture Intern

Smith Playground | Allston, Boston, MA | Landscape
Architecture Intern

Adelaide of Newton Centre - Memory Care | Newton, MA
| Landscape Architecture Intern

Clifton Place Apartments | Cambridge, MA | Landscape
Architecture Intern

Coolidge Corner - Webster Street | Brookline, MA |
Landscape Architecture Intern

PROJECT NO. PK-2200052

BUENA PARK IMPROVEMENTS – 2022

CITY OF NEW BERLIN

City of New Berlin
Planning Services Division
3805 S. Casper Drive
New Berlin, WI 53151

SPECIFICATIONS
AND
CONTRACT DOCUMENTS
FOR

PROJECT NO. PK-2200052

BUENA PARK IMPROVEMENTS - 2022

CITY OF NEW BERLIN, WISCONSIN

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BUENA PARK IMPROVEMENTS - 2022

CITY OF NEW BERLIN, WISCONSIN

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26 24 16.....	PANELBOARDS
26 27 26.....	WIRING DEVICES
26 28 16.....	ENCLOSED SWITCHES AND CIRCUIT BREAKERS
26 50 00.....	LIGHTING
31 11 00.....	CLEARING AND GRUBBING
31 23 00.....	EXCAVATION AND FILL
31 23 13.....	SUBGRADE PREPARATION
31 23 19.....	DEWATERING
32 11 23.....	AGGREGATE BASE
32 12 16.....	HOT MIX ASPHALT PAVEMENT
32 13 14.....	CONCRETE WALKS AND PADS
32 16 13.....	CONCRETE CURBS AND GUTTERS
32 17 23.....	PAVEMENT MARKINGS
33 05 05.....	TRENCH EXCAVATION AND BACKFILL
33 12 12.....	WATER SERVICES
33 31 14.....	SANITARY SERVICES

PROJECT DRAWINGS

G0.01.....	TITLE SHEET
C1.01.....	DEMOLITION & EROSION CONTROL PLAN – WEST
C1.02.....	DEMOLITION & EROSION CONTROL PLAN - EAST
C2.01.....	SITE PLAN – WEST
C2.02.....	SITE PLAN - EAST
C3.01.....	GRADING PLAN – WEST
C3.02.....	GRADING PLAN – EAST
C4.01.....	UTILITY PLAN - EAST
C8.01.....	CIVIL DETAILS
C8.02.....	CIVIL DETAILS
C8.03.....	CIVIL DETAILS
A1.01.....	ARCHITECTURAL FLOOR PLANS
A1.02.....	ARCHITECTURAL FLOOR PLANS
A2.01.....	ARCHITECTURAL ELEVATIONS
A2.02.....	ARCHITECTURAL ELEVATIONS
S1.01.....	FOUNDATION AND STRUCTURAL NOTES
S2.01.....	STRUCTURAL DETAILS
S2.02.....	STRUCTURAL DETAILS
M1.01.....	PLUMBING FLOOR PLANS
M1.02.....	HVAC FLOOR PLANS
E0.01.....	ELECTRICAL SYMBOLS SHEET
E2.01.....	ELECTRICAL LIGHTING PLAN – RESTROOM BUILDING
E3.01.....	ELECTRICAL POWER PLAN – RESTROOM BUILDING

E7.01.....ELECTRICAL SCHEDULES & DIAGRAMS

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PROJECT NO. PK-2200052
BUENA PARK IMPROVEMENTS - 2022
New Berlin, Wisconsin

ADVERTISEMENT FOR BIDS

PRE-BID MEETING: An optional pre-bid meeting for the Project will be held in the Council Chambers of City Hall, 3805 S. Casper Drive, New Berlin, WI, at 10:00 a.m., local time, on April 18th, 2022 for the Buena Park Improvements – 2022 Project. While attendance is not required, it is highly recommended due to the prefabricated structure requirements of the Contract.

BID OPENING: The City of New Berlin hereby gives notice that sealed bids will be received by the City Clerk, City Hall, 3805 S. Casper Drive, New Berlin, WI, until 9:00 a.m., local time, on April 20th, 2022 for the Buena Park Improvements - 2022 Project. Bids will be opened and publicly read aloud immediately after the specified closing time. Interested parties are invited to attend. Bids submitted after this time will not be accepted.

BIDDING DOCUMENTS: Complete digital project bidding documents are available at <http://tinyurl.com/NewBerlinBids> or www.questcdn.com. You may download the digital plan documents for \$20 by inputting Quest project # 8167437 on the website's Project Search page. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with this digital project information. No paper plan sets will be provided. Please contact Kristen Hogan at 262-797-2445 if you have any questions.

LEGAL PROVISIONS: The Contract letting shall be subject to the provisions of Sections 62.15, 66.29, 66.293, and 779.15 of the Wisconsin Statutes. Per Section 16.856 of the Wisconsin State Statutes the Prevailing Wage Rate does not apply to this project.

BID SECURITY: Bid security in the amount of not less than 5% of the bidder's maximum bid price and in the form of a bid bond, certified check or cashier's check (payable to the City of New Berlin) is required with the bid.

RIGHT TO REJECT BIDS: The City reserves the right to reject any and all bids, the right to waive irregularities and informalities in bidding, the right to disregard all nonconforming, non-responsive, unbalanced or conditional bids, and the right to accept the bid which best serves the interests of the City.

CONTRACT SECURITY: The bidder to whom a Contract is awarded shall furnish a Performance Bond for the full amount of the Contract within 10 days of award or execution of the Contract. The Performance Bond shall contain a provision to increase the Performance Bond by the amount of any change orders that might increase the amount of the Contract price. If such bidder fails to execute and file such Contract and Performance Bond, within the 10-day period, the check, bond, or bank draft accompanying the bid shall be forfeited to the City of New Berlin as liquidated damages.

BID WITHDRAWAL: The City reserves the right to postpone the award of the contract and no bids shall be withdrawn for a period not exceeding 60 days after the date and time set forth in the Bid Opening. The City further reserves the right to retain the bid security of the three (3) lowest bidders during that time.

DESCRIPTION OF WORK: The bid consists of furnishing all labor, equipment, and materials necessary for demolition of an existing restroom building, construction of a prefabricated open-air shelter and restroom/shelter building, including: grading, concrete sidewalk, asphalt trail, and new water, sanitary and electrical connections to the new restroom/shelter building.

Published by authority of the City of New Berlin, Department of Community Development, Gregory Kessler, Director of Community Development.

City of New Berlin
3805 S. Casper Drive
New Berlin, WI 53151
Waukesha County

Georgia Stanford, City Clerk

David Ament, Mayor

PUBLISH: Wednesday, April 6, 2022
Wednesday, April 13, 2022

SUBCONTRACTOR LIST

The following Subcontractors will be utilized for portions of the Project Work (only list those > \$1,000). Changes shall not be made subsequent to the Bid unless the change(s) is approved by the City.

[illegible]

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BIDDER'S QUALIFICATION STATEMENT - CONFIDENTIAL

Submitted to: **City of New Berlin**

Date: 4/8/2022

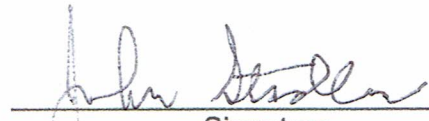
RE: SUBMISSION OF PREQUALIFICATION FORMS FOR THE YEAR

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

John Stadler

Printed Name

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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 John Stadler

Vice-President William Stadler

Secretary John Stadler

Treasurer William Stadler

Licensed to do business in Wisconsin on expires on 6/8/2022

In what State Incorporated WI When 9/22/1959

2. EXPERIENCE

A. List of major contracts which firm has completed during past five years:

Year	Description of Work	Contract Amount	Location of Work	For Whom Performed, Name, and Mailing Address
2021	Renovation	388,737.00	Wauwatosa	City of Wauwatosa 7725 W. North Ave.
2021	New Const.	108671.00	Watertown	City of Watertown 106 Jones St.
2017	Well #6	1,586,099.00	Saukville	Village of Saukville 639 E. Green Bay Ave.
2020	Pleasant View New Shelter	544.000	City of Franklin	9229 loomis Rd
2017	Classroom Remodel	382,000.00	Pewaukee WCTC	WCTC 800 Main St Pewaukee
2019	LA KITCHEN BACKSTAGE	1,237,500.00	WCTC	" "
2018	Beachhouse remodel	774,579.00	Menomonee Falls	WAUKESHA COUNTY 515 W MOORELAND BLVD.
2018	New Pavilion	454,229.00	WAUKESHA	WAUKESHA COUNTY 515 W MOORELAND BLVD
2017	New Pavilion	529,766.00	Greenfield	CITY OF GREENFIELD 7325 W Forest Home Ave.
2017	Library Renovation to classroom	977,450.00	Pewaukee	WCTC 800 MAIN ST. Pewaukee

B. List of Construction Experience of Principal Individuals in organization:

Individual's Name	Present Position or Office	Years of Experience	Description of Work
JOHN STADLER	PRESIDENT	41	CONSTRUCTION
BILL STADLER	VICE PRESIDENT	38	CONSTRUCTION

C. Average number of employees during the last 12 months:

Office 3 Skilled 5 Unskilled 0

Has firm ever worked on a project in which State or Federal grants have been used to fund the work?

Yes X No

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

3. EQUIPMENT

A. List below major pieces of equipment owned and available when needed for the proposed work:

Quantity	Item	Description, Size Capacity, etc.	Condition (good or fair)	Years of Service
3	SKIDSTEER	BOBCAT 743 153 1753	GOOD	5
1	Dump Truck	CHEVY 3500	GOOD	18
1	STAKE TRUCK	CHEVY 3500	GOOD	16
1	Concrete breaker		GOOD	15
1	AIR COMPRESSOR		GOOD	15

4. CONTRACTUAL RESPONSIBILITY

- A. Has firm ever failed in the past ten years to complete on time work awarded to it?
Yes _____ No X
- B. Has any officer or partner of firm ever failed in the past ten years to complete on time a construction contract handled in his own name?
Yes _____ No X
- C. Has any officer or partner of firm ever been an officer or partner of some other organization during the past ten years that failed to complete on time a construction contract?
Yes _____ No X
- D. Has firm asked to be relieved from a bid submitted by it to a public awarding authority during the past ten years?
Yes _____ No X
- E. Has firm ever been charged with or convicted of a violation of any wage schedule?
Yes _____ No X
- F. If the answer to any of the above questions is "YES," give details below:

CITY OF NEW BERLIN
PRE-QUALIFICATION STATEMENT
CONTRACTUAL RESPONSIBILITY SECTION

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
Concrete	100%
General Contracting	100%

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

5. BONDING RESPONSIBILITY

A. (1) Names and addresses of bonding companies which generally execute bid and surety bonds for your firm: J. RYAN BONDING P.O. Box 465
HUDSON WI 54016-0465 800-535-0006
JRYANBONDING.COM Fax 800-501-0989

(2) Names and addresses of all bonding companies other than those listed in A (1) above which have written bid and surety bonds during the last five years for your firm:

B. Has any bonding company ever taken over a contract, or made any payments, because of firm's failure to carry out a contract?

Yes _____ No X

If so, state:

- (1) Date: _____
(2) Name of Bonding Co.: _____
(3) Bonding Company's Mailing Address: _____
(4) Full particulars in each instance: _____

6. CONTRACTOR'S FINANCIAL STATEMENT

Please provide your last audited financial statement. If this is not available, please provide the following:

- A. Your firm's current assets as of latest balance sheet date.
Current Assets: \$ 205,002.29 Give Date: 11/31/22
- B. Your firm's current liabilities as of latest balance sheet date.
Current Assets: \$ 26,843.24 Give Date: 11/31/22
- C. Who prepared such balance sheet? Laura Stadler
- D. Do you have the appropriate equipment/assets available that you can assign to this project?
yes

Additional information may be requested if needed.

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: Tobin & Hanson

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

ATTACH
STATEMENT OF FINANCIAL CONDITIONS



To the Stockholders
Ray Stadler Construction Co., Inc.
Wauwatosa, Wisconsin

Management is responsible for the accompanying financial statements of Ray Stadler Construction Co., Inc., which comprise the balance sheets as of March 31, 2021 and 2020 and the related statements of income for the years then ended, in accordance with accounting principles generally accepted in the United States of America. We have performed a compilation engagement in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the AICPA. We did not audit or review the financial statements nor were we required to perform any procedures to verify the accuracy or completeness of the information provided by management. Accordingly, we do not express an opinion, a conclusion, nor provide any form of assurance on these financial statements.

Management has elected to omit substantially all of the disclosures and the statement of cash flows required by accounting principles generally accepted in the United States of America. If the omitted disclosures and statement of cash flows were included in the financial statements, they might influence the user's conclusions about the Company's financial position, results of operations, and cash flows. Accordingly, the financial statements are not designed for those who are not informed about such matters.

We are not independent with respect to Ray Stadler Construction Co., Inc..

Tobin & Hanson, S.C.
June 01, 2021

Ray Stadler Construction Co., Inc.

Wauwatosa, Wisconsin

Financial Statements

For the Years Ended March 31, 2021 and 2020

Ray Stadler Construction Co., Inc.
Profit & Loss
April 2020 through March 2021

	Apr '20 - Mar 21	Apr '19 - Mar 20
Ordinary Income/Expense		
Income		
201 · Construction Sales	591,016.86	720,111.00
Total Income	591,016.86	720,111.00
Cost of Goods Sold		
300 · Purchases-Subcontractors	256,676.75	420,897.55
301 · Purchases-Materials	125,132.45	132,321.38
302 · Purchase Discounts	0.00	-14.75
303 · Construction Labor	43,519.53	14,638.51
304 · Welfare Fund Expense	15,885.55	10,756.13
305 · Pension Fund Expense	6,253.84	3,832.22
306 · Social Security Taxes	2,940.00	1,120.00
307 · Unemployment Taxes	380.00	100.00
308 · Auto Expense	6,220.65	8,232.01
309 · Vehicles-Repairs & Maint.	1,472.49	540.63
312 · Depreciation-Equipment	678.07	918.00
313 · Insurance	23,835.00	22,660.00
314 · Repairs & Maint.-Equipment	139.72	29.64
315 · Small Tools	903.26	120.50
316 · Shop materials & supplies	45.13	31.67
317 · Personal Property Taxes	87.65	12.45
318 · Real Estate Taxes	0.00	0.00
Total COGS	484,170.09	616,195.94
Gross Profit	106,846.77	103,915.06
Expense		
320 · Utilities	1,627.28	1,652.61
321 · Janitorial Services	5,593.92	4,993.75
322 · Building Maintenance	0.00	107.03
325 · Rent	7,950.31	8,221.47
326 · Bad Debts	6,850.00	0.00
327 · Telephone	5,924.69	8,646.75
328 · Depreciation-Leasehold Improvem	1,122.53	1,120.00
339 · Officer's Salaries	54,250.06	58,419.61
341 · Social Security Taxes-Admin	3,692.25	4,468.94
342 · Unemployment Taxes-Admin	467.43	398.33
3422 · Welfare Fund Expense-Admin	21,340.00	24,875.00
3424 · Pension Fund Expense-Admin	8,402.16	8,865.83
343 · Office Expense	6,467.04	4,593.13
344 · Depreciation-Furniture	0.00	34.00
345 · Professional Fees	15,180.00	6,170.00
346 · Postage	330.00	385.00
347 · Dues & Subscriptions	1,071.98	1,256.00
353 · Officers Life Insurance	4,776.70	4,776.70
Total Expense	145,046.35	138,984.15
Net Ordinary Income	-38,199.58	-35,069.09
Other Income/Expense		
Other Income		
405 · Other Income	2,521.68	0.00
408 · PPP Forgiveness	33,530.00	0.00
508 · Deferred Tax Benefit FIT	5,600.00	6,000.00
509 · Deferred Tax Benefit SIT	2,300.00	2,500.00
Total Other Income	43,951.68	8,500.00
Net Other Income	43,951.68	8,500.00
Net Income	5,752.10	-26,569.09

See accountants' compilation report

Ray Stadler Construction Co., Inc.
Balance Sheet
As of March 31, 2021

	Mar 31, 21	Mar 31, 20
ASSETS		
Current Assets		
Checking/Savings		
101 · Checking	90,472.04	23,642.31
Total Checking/Savings	90,472.04	23,642.31
Accounts Receivable		
104 · Accounts Receivable	41,133.95	93,910.04
Total Accounts Receivable	41,133.95	93,910.04
Other Current Assets		
106 · Prepaid Insurance	0.00	95.00
108 · Prepaid Officers Life Insurance	2,019.60	2,019.60
110 · Costs in excess of billings	0.00	2,262.00
124 · Due from (to) John Stadler	550.89	53.94
125 · Due from Dan Stadler	0.00	20.05
126 · Due from Bill Stadler	9,737.03	654.11
127 · Due from Jerome Stadler	2,116.47	387.00
Total Other Current Assets	14,423.99	5,491.70
Total Current Assets	146,029.98	123,044.05
Fixed Assets		
111 · Trucks	85,132.79	85,133.00
112 · Accumulated Depreciation Trucks	-85,132.79	-85,133.00
115 · Machinery & Equipment	100,092.74	100,093.00
116 · Accumulated Depreciation Machin	-98,558.77	-97,881.00
117 · Furniture & Fixtures	4,149.77	4,150.00
118 · Accumulated Depreciation Office	-4,149.77	-4,150.00
119 · Leasehold Improvements	38,557.99	38,558.00
120 · Accumulated Depreciation Leaseh	-30,015.66	-28,892.00
Total Fixed Assets	10,076.30	11,878.00
Other Assets		
129 · Deferred tax asset	45,000.00	37,100.00
Total Other Assets	45,000.00	37,100.00
TOTAL ASSETS	201,106.28	172,022.05

See accountants' compilation report

Ray Stadler Construction Co., Inc.
Balance Sheet
As of March 31, 2021

	Mar 31, 21	Mar 31, 20
LIABILITIES & EQUITY		
Liabilities		
Current Liabilities		
Accounts Payable	0.00	3,178.26
132 · Accounts Payable		
Total Accounts Payable	0.00	3,178.26
Other Current Liabilities		
128 · A/P Adjustments	16,878.99	0.00
131 · Billings in excess of costs	60,086.40	50,525.00
141 · Accrued Property Taxes	2,002.00	2,037.00
142 · Accrued Insurance	105.00	0.00
Total Other Current Liabilities	79,072.39	52,562.00
Total Current Liabilities	79,072.39	55,740.26
Total Liabilities	79,072.39	55,740.26
Equity		
161 · Capital Stock	50,000.00	50,000.00
162 · Retained Earnings	66,281.79	92,850.88
Net Income	5,752.10	-26,569.09
Total Equity	122,033.89	116,281.79
TOTAL LIABILITIES & EQUITY	201,106.28	172,022.05

See accountants' compilation report

CITY OF NEW BERLIN
PRE-QUALIFICATION STATEMENT
GENERAL DATA SECTION

GENERAL DATA

List below all previous work experience with the City of New Berlin:

Project	Trade	Year
Well #8	General	
Lions Park rest Rooms	General	2007

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

CITY OF NEW BERLIN
PRE-QUALIFICATION STATEMENT
AFFIDAVIT SECTION

AFFIDAVIT

STATE OF WISCONSIN

} ss

Milwaukee County

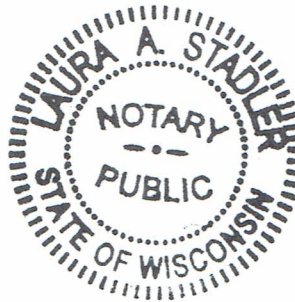
John Stadler, being duly sworn, deposes and says that he is the President (Official capacity/title) of the firm Ray Stadler Construction Co and that the answers to the foregoing questions and all statements therein contained are true and correct, and that any Owner, Bonding Company, or other agency herein 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 8 day of April, 2022

Laura A. Stadler Notary Public
Milwaukee County, Wisconsin

My Commission Expires: 6/12/25



ATTACH
STATEMENT OF FINANCIAL CONDITIONS

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SUBCONTRACTOR'S QUALIFICATION STATEMENT

Submitted to
The City of New Berlin

Submit one copy of qualification for each Subcontractor.

The undersigned certifies, under oath, the truth and correctness of all statements and of all answers to questions made hereinafter.

NAME OF PERSON SUBMITTING STATEMENT:

NAME OF FIRM:

ADDRESS:

TELEPHONE NUMBER: _____

LOCATION OR PRINCIPAL OFFICE:

CHECK ONE:

Corporation ____ Partnership ____ Individual ____ Jt Venture ____

Limited Liability Company _____ Other _____

Signature

TYPE OF WORK SPECIALIZATION: _____ CONSTRUCTION

1. How many years, for the type of work specialization stated above, has your organization been in business as a Contractor?
2. How many years has your organization been in business under its present business name?

3. If a corporation, provide the following information:
 - a. Date of incorporation:
 - b. State of incorporation:
4. If individual or partnership, provide the following information:
 - a. Date of organization:
 - b. Name and address of all partners (state whether general or limited partnership):
5. If Joint Venture, Limited Liability Company or other organization than a corporation or partnership, describe the organization and name principals:
6. List the percentage of work normally performed with your own work force. List those trades below:
7. Have you ever failed to complete any work awarded to you? If so, state when, where, and why:
8. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a pool contract? If so, state the circumstances:

9a. List the names of the project, owner, architect, general contractor or construction manager, contract amount, current percent complete, and scheduled completion date of the major construction projects your organization has in progress at this time:

9b. Expects to have in progress at the time of the performance period for this project:

10. List your trade references:

11. List your banking references:

12. List your bonding references:

- a. Name and address of bonding company:
- b. Limits of bonding capacity:
- c. Average bond premium cost:

13. Attach your Statement of Financial Conditions, including the latest regular dated financial statement or balance sheet, which must contain the following items:

- a. 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.

- b. 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).
- c. Date of statement or balance sheet:
- d. Name of firm preparing statement:

14. List below all previous work experience with the City of New Berlin:

15. State your method for estimating your expenses for this type of work:

16. How do you pre-qualify your subcontractors and suppliers:

17. Describe your Quality Control Program:

18. How do you normally staff your projects (job-site management organization)? What is the total number of full-time employees of your firm:

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given 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 under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *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.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *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 at the Site.
44. *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 thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, 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 Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. 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 Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. 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 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean 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, shall mean 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, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. 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 Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement 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 Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;
 - 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.

2.06 *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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial 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 for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall 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 component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement 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, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier 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 editions; or
 2. 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.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor 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. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- 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 the Work is to be performed 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.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

- 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
- 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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; or
- 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.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

- 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
- 2. is of such a nature as to require a change in the Contract Documents; or
- 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 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

- B. *Engineer's Review*: After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments*:

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition 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 meet any one or more of the categories described in Paragraph 4.03.A; and
 - 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 Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final 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
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *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.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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; or
 - 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 any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) 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 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. 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, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. 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 or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds 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 shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed 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:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims 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.
- B. The policies of insurance required by this Paragraph 5.04 shall:
 - 1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners,

employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of

them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their 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 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. 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:
1. loss 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 perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *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. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *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 at all times maintain good discipline and order at the Site.
- B. 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 shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *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.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall 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 shall 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.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it 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; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) 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
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
 - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or

entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *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 a particular 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 shall be disclosed by Owner 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 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.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. 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 opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *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. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner

and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *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.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. 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 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 by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall 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 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 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 property to stresses or pressures that will endanger it.

6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *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. 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. 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. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. 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.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.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 (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).

- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of 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.

6.16 *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 threatened 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 thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will 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 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.

- b. 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 6.17.D.
- B. 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. *Submittal Procedures:*

- 1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
- 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
- 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

- 1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. 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, conform to the information given in 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 (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the

Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

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.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper 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.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 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 or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. 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 performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury 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 6.20.A shall 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.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed 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 Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe

access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER’S RESPONSIBILITIES

8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner’s duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner’s identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner’s responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

- A. Owner’s responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *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.

8.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *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 Documents.

8.12 *Compliance with Safety Program*

- 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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *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 Documents.

9.02 *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 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 9.09. 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.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. 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, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents 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 shall 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 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 Paragraph 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the 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; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of

executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *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.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).
- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
 - 1. deny the Claim in whole or in part;
 - 2. approve the Claim; or
 - 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall 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. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
 - 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 shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall 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, who 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 shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including 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, and hand tools not owned by the workers, 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.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - 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 property insurance established in accordance with Paragraph 5.06.D), 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 shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall 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 telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, 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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 4. 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.
 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 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:*
1. Contractor agrees that:
 - a. 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
 - b. 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 on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a 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 on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- 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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 2. there is no corresponding adjustment with respect to any other item of Work; and
 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

- B. The value of any Work covered by a Change Order or of any Claim for 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, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall 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 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five 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 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will 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 therewith as applicable.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- 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 and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

- E. 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.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay 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 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. 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, or both, 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, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *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, 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 shall 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.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay 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 correction or removal (including but not limited to all costs of repair or replacement of work of others).

- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *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 terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If 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. 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 correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. 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.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, 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.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay 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) 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 pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *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 rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, 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.
- C. 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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *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. 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 shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, 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 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 9.07, 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 Documents; 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, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, 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 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. 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;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 Contractor's Warranty of Title

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- 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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. 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 tentative list.

14.05 *Partial Utilization*

- 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 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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04.A through D for that part of the Work.
2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

14.06 *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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and

- d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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 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.

B. Engineer's Review of Application and Acceptance:

1. 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 Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. 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. Payment Becomes Due:

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will 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 established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
3. Contractor's repeated disregard of the authority of Engineer; or
4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);

2. 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
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.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 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed 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.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven 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;
 3. 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) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven 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 15.03.

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, seven 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 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or

2. agrees with the other party to submit the Claim to another dispute resolution process; or
3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents 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.

17.03 *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 Documents. 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.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SPECIAL PROVISIONS
PROJECT NO. PK-2200052
BUENA PARK IMPROVEMENTS – 2022

I. Specifications

All work is to conform to the City of New Berlin Infrastructure Standards, adopted July 18, 2016, except as amended below. The City of New Berlin Infrastructure Standards is available on the City website at: <http://www.newberlin.org/index.aspx?nid=773>

II. Time for Start of Work and Completion

The City of New Berlin is requesting that the work start no later than **June 6, 2022** and be substantially completed by **October 14, 2022**. Final completion shall be no later than **November 18, 2022**. After November 18, 2022, a fee of \$250.00 per day will be charged to the Contractor for inspection services. The anticipated Contract Award date and Notice to Proceed date for this Contract will be **May 10, 2022**. Once the Contractor begins work under this Contract, the work shall continue until complete.

III. General

The City reserves the right to accept all or part of the work as funding allows. Due to funding limitations, the City reserves the right to delete any of the work to satisfy the budget limitations. The Contractor will not receive extra compensation due to the deletion of any of the work, even if the amount deleted exceeds 15% of the original Contract amount.

The majority of the work, as indicated per these specifications and as directed by the Engineer under this Contract shall consist of demolition of an existing restroom building, construction of a prefabricated open-air shelter and restroom/shelter building, including grading, concrete sidewalk, asphalt trail, and new water, sanitary and electrical connections to the new restroom/shelter building. This project will consist of furnishing all labor, materials, and equipment necessary, unless specified to be done by others, for the construction of the Buena Park Improvements - 2022 Project in the City of New Berlin, Wisconsin.

Project Drawings are attached at the back of these Documents. Payment for increased or decreased quantities and extra work shall be governed by an agreed upon price and accompanying change order.

IV. Prequalification

Contractor and all subcontractors shall either submit an Annual Qualification Statement to the City or a project-specific Qualification Statement as part of the Bid Package. The City reserves the right to deny the services of any subcontractor.

V. Testing

The Contractor shall, at no cost to the City, provide for all materials to be pre-tested by a

qualified private testing laboratory verifying that the materials are in conformance with the specifications. The City may have tests performed throughout the project to verify that the materials remain in conformance. If the materials are not in conformance, the testing costs and all subsequent testing costs until conformance is achieved shall be deducted from the Contractor. Contractor shall submit testing documentation for all tests performed prior to the start of Work.

VI. Cleaning

Sweeping due to material under this Contract tracking or spilling on adjacent streets shall be removed immediately and at the end of each workday. The cost for sweeping will be considered incidental to this Contract.

VII. Traffic Control & Safety

All streets shall remain open for local access at all times. Use of flag personnel for orderly movement of traffic may be needed. The Contractor is responsible for providing all signs, cones, barrels, barricades, flag personnel, or any other items necessary to protect the public, workers, and the work. All signage shall conform to the Wisconsin Manual on Uniform Traffic Control Devices, Current Edition.

DOCUMENT 00 91 13

ADDENDUM 1

BUENA PARK IMPROVEMENTS - 2022
CITY PROJECT NO. PK-2200052
STANTEC PROJECT NO. 193805852
NEW BERLIN, WISCONSIN

April 19, 2022

Number of Pages: 3 (includes this sheet)

To: All Planholders of Record

From: City of New Berlin
3805 S. Casper Dr.
New Berlin, WI 53151
(262) 797-2445 – Kristen Hogan, Principal Planner
khogan@newberlin.org

The following changes, additions, and deletions are hereby made a part of the Bidding Documents.

QUESTIONS AND ANSWERS

Question #1: Will Permit fees be covered by the City?

Answer #1: No fees for City of New Berlin Permits will be charged for this work. Please reference Paragraph 1.04 of Specification Section 01 31 00.

Question #2: What are the specifications for the door system components of the restroom building?

Answer #2: Please reference Part 2, Paragraph B.5, of Specification Section 03 00 01.

Question #3: What are the specifications for the restroom partitions?

Answer #3: Please reference Part 2, Paragraph B.6, of Specification Section 03 00 01.

Question #4: What is the required ventilation system for the bathroom?

Answer #4: Please reference Part 2, Paragraph E.6, of Specification Section 03 00 01.

Question #5: What is the specification for the concrete floor slab sealant?

Answer #5: Please reference Paragraph 3.02.A.6, of Specification Section 03 00 01.

Question #6: Need details on the ceiling, what is there? flat on trusses or exposed? Mechanical room open ceiling? would need access panel if not. and truss layout with perlins?

Answer #6: The building is constructed with glulam beams and does not include trusses. CMU walls are full height with a glulam beam atop each wall. The ceiling will be vaulted with a tongue & groove ceiling finish.

Question #7: Any testing is by the owner correct?

Answer #7: Uncertainty what testing is being referenced in the question. See specifications for further information, as an example under Section 03 30 10 Reinforced Cast-In-Place Concrete, testing is to be paid for by the contractor.

Question #8: Electrical service is by owner correct?

Answer #8: Electrical service needs to be paid for by the owner but coordinated by the contractor. See EJCDC Standard General Conditions 6.08 Page 27.

Question #9: Just to get it in writing, Permit fees are waived correct.

Answer: #9: Yes.

Question #10: The plumbing plan does not call out for hot water recirculating system that is code now in Wisconsin.

Answer #10: Romtec (bidders) will provide a complete engineered plan set that will be reviewed and approved by the building department. Romtec (bidders) shall design all plumbing to meet Wisconsin code.

Question #11: Floor finish is a epoxy paint.

Answer #11: See response to Question 5.

DOCUMENT 03 00 01 – RESTROOM BUILDING

1. Page 03 00 01-3. Add the following paragraph after Part 2, Paragraph E:

F. Paint

1. The following paint material shall be used on the interior walls of the bathroom and mechanical rooms.

- a. Pre-Catalyzed Waterbased Epoxy, Extra White, Sherwin Williams Pro Industrial, or approved equal.
2. The following paint material shall be used on the exterior siding.
 - a. Acrylic Latex Paint, Meadowlark, Sherwin Williams Emerald Rain Refresh, or approved equal.

DOCUMENT 03 00 2 – SHELTER BUILDING

1. Page 03 00 02-2. Replace Part 2, Paragraph B, with the following:
 - B. Structure
 1. The following roof components shall be the approved building supplier, or Equal.
 - a. Glulam beam shall be 24F-V4 and architectural grade.
 - b. Tongue & groove decking shall be 2x6 V-edge deck boards, select deck Douglas fir.
 - c. Steel truss plates and brackets shall be painted black.

DOCUMENT 04 22 00 – CONCRETE UNIT MASONRY

1. Page 04 22 00-2. Remove Paragraph 2.01.A.4.
2. Page 04 22 00-2. Remove "Provide bullnose edges at all outside corners" from Paragraph 2.01.D.1.

LIST OF ATTACHMENTS

None.

END OF DOCUMENT

CITY OF NEW BERLIN
PROJECT NO. PK-2200052
BUENA PARK IMPROVEMENTS – 2022

PROPOSAL

To the City of New Berlin
New Berlin, WI 53151

Having become familiar with the local conditions affecting the cost of the work and with the Contract Documents, including Advertisement for Bids, Form of Bonds, etc., Plans, Specifications, any Addenda and Exhibits issued and attached to the Contract Documents on file in the Office of the City Engineer of New Berlin, Wisconsin, the undersigned hereby proposes to perform everything required to be performed and to provide and furnish all the labor, materials, necessary tools, expendable equipment and all utility and transportation services necessary to perform and complete in a workmanlike manner all of the work required for and the work described in the following Bidding Schedule, all in accordance with the Plans and Specifications for the sum set forth in the following Bidding Schedule:

Bid Schedule					
Bid Item	Description	Unit Cost	Unit	Quantity	Total Cost
1	MOBILIZATION	952	LS	1	952
2	TEMPORARY CONSTRUCTION FENCE	4.24	LF	777	3,294.48
3	TRAFFIC CONTROL	1,765.68	LS	1	1,765.68
4	SILT FENCE	2.184	LF	888	1,939.39
5	INLET PROTECTION, TYPE B	58.24	EA	2	116.48
6	INLET PROTECTION, TYPE C	61.60	EA	4	246.40
7	TRACKING PAD	1568	EA	2	3136.00
8	TEMPORARY CONCRETE WASHOUT AREA	326.00	EA	2	652.00
9	REMOVE BATHROOM & EXISTING SERVICES	3195.00	LS	1	3195.00
10	REMOVE CONCRETE CURB AND GUTTER	12.32	LF	80	985.60
11	REMOVE BITUMINOUS PAVEMENT	12.32	SY	390	4804.80
12	REMOVE PAVEMENT STRIPING	1450.40	LS	1	1450.40
13	RELOCATE ADA SIGN & POST, R7-8 & R7-8b	196.00	LS	1	196.00
14	TREE PROTECTION	3.64	LF	720	2,620.80
15	TOPSOIL STRIPPING AND STOCKPILING	8232.00	LS	1	8232.00
16	GRADING	15,033.76	LS	1	15,033.76
17	BASE AGGREGATE DENSE 1 1/4-INCH	39.20	CY	175	6,860.00
18	HMA PAVEMENT 4 LT 58-28 S (Surface)	159.62	TON	120	19,154.40
19	HMA PAVEMENT 3 LT 58-28 S (Binder)	166.61	TON	10	1,666.10
20	TACK COAT	4.20	GAL	3	12.60
21	CONCRETE SIDEWALK 5-INCH	7.05	SF	1535	10,821.75
22	DETECTABLE WARNING FIELD	20.84	SF	24	500.16
23	CONCRETE CURB AND GUTTER, SPECIAL	76.44	LF	80	6,115.20
24	PAVEMENT MARKINGS	2,218.40	LS	1	2,218.40
25	WATER SERVICE	20,255.00	LS	1	20,255.00
26	SANITARY SERVICE	24,335.00	LS	1	24,335.00
27	RESTROOM BUILDING INSTALLATION		LS	1	501,913.60
28	SHELTER BUILDING INSTALLATION	83149.90	LS	1	82,925.32
				Total:	725,368.33

Write Out Total:

Seven Hundred Twenty Five Thousand Three
Hundred Eighty Eight Dollars and 33/100 —

Accompanying this Proposal is a (Certified Check) (Bid Bond) (Bank Draft) in the amount of Five Percent (5%) of amount bid payable to the City of New Berlin, Wisconsin, which (protects) it is agreed will be forfeited to said City of New Berlin if the Undersigned failed to execute the Contract in conformity with the Form of Contract incorporated in the Contract Document, and furnish bond as specified within ten days from the notifications of the award of the Contract to the undersigned.

In submitting this Proposal, it is understood and agreed by the undersigned that the right is reserved by the Owner to reject any or all proposals. It is further understood and agreed that this Proposal may not be withdrawn for a period of (60) sixty days from the opening thereof.

If awarded a Contract under this Proposal the undersigned agrees to start work within ten (10) calendar days after the receipt from the Owner of a formal Notice to Proceed. The undersigned further agrees to commence work at the site on a date to be specified in a written order from the Owner, which date will not be prior to that established by the calendar days stated above, except by mutual agreement between the undersigned and the Owner, and agrees to fully complete all work covered by November 18, 2022. The undersigned understands and agrees that the Owner reserves the right to defer issuance of a written order to commence work for a period not to exceed thirty (30) days after the date herein established by the undersigned as a proposed starting date.

The Contractor hereby declares that he has read each and every stipulation within the "Specifications" including all Codes referred to, and that he fully understands them and that he hereby agrees to faithfully comply therewith.

It is agreed that if the Contractor is permitted to finish the work after the time stated in this Proposal, the City of New Berlin may deduct from any money due the Contractor a sum of 250.00 dollars for every calendar day beyond the above specified time which shall elapse before the work is satisfactorily completed unless a written extension is approved by the City Engineer.

4/20/2022

DATE

OFFICIAL ADDRESS

6202 W. State Street

Wauwatosa, WI 53213

Ray Stadler Construction Co.,

FIRM NAME

BY:

John Stadler

President

TITLE

BY:

TITLE

Acknowledge ADDENDUM 1 4/19/2022

NOTE: Bidders should not add any conditions or qualifying statements to this bid as otherwise the bid may be declared irregular as being not responsive to the Advertisement for Bids.

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**CONTRACT
PK-2200052**

This Contract made this _____ day of _____, 2022, by and between _____, herein called the "Contractor", and the City of New Berlin, a municipal corporation, located in Waukesha County, Wisconsin, herein called the "Owner".

WITNESSETH: That the Contractor and the Owner for the consideration stated herein, agree as follows:

ARTICLE I. SCOPE OF WORK

The Contractor shall perform everything required to be performed and shall provide and furnish all the labor, materials, equipment, necessary tools, expendable equipment, insurance provided by the specifications, contributions to social security and all utility and transportation service required to perform and complete in a workmanlike manner the projects as defined in these Contract documents, all in strict accordance with the specifications and in strict compliance with the Contractor's proposal and other Contract documents, herein mentioned as component parts of this Contract. The Contractor shall do everything required by this Contract and other documents constituting a part thereof and in the manner specified therein.

The anticipated Contract Award date and Notice to Proceed date for this Contract will be May 10, 2022. The City of New Berlin is requesting that the work start no later than **June 6, 2022** and be substantially completed by **October 14, 2022**. Final Completion shall be no later than **November 18, 2022**.

ARTICLE II. CONTRACT PRICE

Owner shall pay to the Contractor for the performance of this Contract, subject to any additions or deductions provided therein, in current funds, the approved not to exceed Contract price of:

_____.

The above total shall be the basis for establishing the amount of the performance bond and is not to be construed to be a lump sum contract price. The foregoing quantities of the unit price items are approximately only and it is understood and agreed that payment will be made only on the actual quantities of work completed in place, measured on the basis defined in the Contract documents and at the unit prices stated above.

PAYMENT

The Contractor shall review pay quantities with the Engineer on a minimum bi-weekly basis. No more than two weeks shall pass between when the work has taken place and the quantity verification between the Engineer and Contractor. If more than two weeks pass, the quantities as measured by the inspector and confirmed by the Engineer shall be conclusive.

The Owner will retain 5% of the estimate of the value of the Work or Contract until 50% of the Work is completed. If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, Owner, on recommendation of Engineer, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no additional retainage on account of Work subsequently completed, in which case the remaining progress payments prior to Substantial Completion will be in an amount equal to 100 percent of the Work completed less the aggregate of payments previously made and the retainage calculated. If the Work is certified as unsatisfactory by the Engineer, Owner will continue to retain part of the payments up to 10% of the value of the Work completed.

Owner, in case the work under this Contract is not completed within the time required, or within an extended time approved in writing by the Owner, is authorized to take charge of the work and finish it at the expense of the Contractor and his sureties and to apply the amounts retained from estimates to the completion of the work.

The final payment shall be made within 60 days after completion and acceptance of the work included in this Contract and all payments shall be due when certificates are issued for them. However, the owner may withhold payments prior to final acceptance of the work for reasons set forth in the general or special specifications.

ARTICLE III. COMPONENT PARTS OF THIS CONTRACT

This Contract consists of the following component parts, all of which are as fully a part of it as if set out verbatim herein, or, if not attached, as if the same were hereto attached.

- Advertisement for Bids
- Subcontractor List
- Bidder's Qualification Statement
- Subcontractor's Qualification Statement
- Special Provisions
- Bid Proposal
- Contract
- Bid, Performance & Payment Bonds
- Certificates of Insurance
- Endorsements
- Specifications
- Project Drawings
- City of New Berlin Infrastructure Standards

The Contract Documents form a complete unit and requirements called for by one as binding as if called for by all. In case of conflict between plans and specifications, the specifications shall govern. Special provisions shall control over general conditions.

ARTICLE IV. PAYMENT FOR LABOR AND MATERIAL

Per Section 16.856 of the Wisconsin State Statutes the Prevailing Wage Rate does not apply to this project.

ARTICLE V. LIQUIDATED DAMAGES

In the event that the services to be provided by Contractor under this Contract are not completed by the date of final completion set forth herein, then, in that event Contractor shall be responsible to pay to City as liquidated damages the sum of \$250.00 per day for each day or portion of a day that the work remains uncompleted thereafter. This payment is not a penalty, but rather an acknowledgment by the parties of the expenses the City will incur if the deadline is not met. The parties acknowledge that the City shall have the right to offset said liquidated damages as against any sums which might otherwise be due Contractor under this Contract. The liquidated damages provided for herein shall not be in lieu of any other claims or damages which the City may otherwise be entitled to. The City shall make the final determination of whether Contractor has completed its Contract responsibilities.

ARTICLE VI. OBSTRUCTION OF STREETS

If the Contractor shall in any manner obstruct a street or sidewalk, he or she shall put up and maintain barriers and lights to prevent accidents consistent with the requirements of WisDOT, and shall be liable for all damages caused by failure to do so; and such Contractor shall further be liable for all damages caused by the negligent digging up of the streets, alleys, or public grounds or which may result from his carelessness in the execution of such work (Section 62.15 (11), Wisconsin Statutes). The Contractor shall also be bound by any further requirements of the specifications on this point.

ARTICLE VII. HOLD HARMLESS CLAUSE

And the Contractor covenants and agrees that he will indemnify and save harmless the owner and defend the same against any and all liability, claims, loss, damages, interest, actions, suits, judgements, costs, expenses, attorney's fees, and the like, to whomsoever owned or by whomsoever brought or obtained which may in any manner result from, or arise out of the performance of the work herein mentioned, expressly including the negligence of the Contractor and/or the owner (or the negligence of the agents, servants, employees, workmen or independent Contractors of either of them) in carrying out and supervising the said work in any respect whatever.

ARTICLE VIII. CONTRACT BOND

At the time that the Contract is executed, the Contractor shall furnish to the Owner a performance/labor and material payment bond, each in the amount of 100% of the Contract price issued by a surety company licensed to do business in this state conditioned for the faithful performance of the Contract and the payment to every person entitled thereto of all claims for labor performed and materials furnished under the Contract to be used or consumed in making the public improvement or performing the public work as provided in the Contract and as specified in the Contract all as required by Section 289.14 (1), Wisconsin Statutes.

ARTICLE IX. INSURANCE & ENDORSEMENT

Personal income tax payments, social security contributions, insurance and all other governmental reporting and contributions required as a consequence of the Contractor receiving payment under this Contract shall be the sole responsibility of the Contractor. The Contractor shall be required to carry insurance coverage of the type and with the minimum limits set forth below. The Contractor shall be solely responsible to meet Contractor insurance needs as specified below during the terms of this Contract or any extension thereof.

General Liability:

General Aggregate	\$2,000,000
Products Comp/Ops Aggregate	\$2,000,000
Personal/Advertising Injury	\$1,000,000
Each occurrence	\$1,000,000
Fire Damage (Any One Fire)	\$ 50,000
Medical Expense (Any One Person)	\$ 5,000

Automobile Liability:

CSL	\$1,000,000
Bodily Injury (Per Accident)	\$1,000,000
Property Damage (Per Accident)	\$1,000,000

Umbrella Liability:

Umbrella Form - Each Occurrence	\$2,000,000
Umbrella Form - Aggregate	\$2,000,000
Self-Insured Retention	\$ 10,000

Workers' Compensation and Employers' Liability

Each Accident	\$ 500,000
Disease Policy Limit	\$1,000,000
Disease Each Employee	\$ 500,000

The Contractor shall not commence work until he has obtained all insurance required by the City of New Berlin. A Policy Endorsement shall be signed by an authorized Principal of the Insurer and provided to the City Engineer as evidence thereof naming the City as an additional insured and showing the Contractor is covered by the above required types and amount of insurance, providing for a thirty (30) day written notice to the City prior to change, termination or cancellation. Such notice provisions shall be stated in the unconditional affirmative. Phrases such as "shall endeavor to notify" are unacceptable and shall be rejected. The additional insurance must be on a primary and noncontributory basis. Said coverages shall be documented in the form of a policy endorsement(s) in form acceptable to the City of New Berlin.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed in three original counterparts the day and year first above written.

Contractor

Address

(SEAL)
ATTEST:

By: _____

By: _____

Title

By: _____

Mayor

(SEAL)
ATTEST:

By: _____

Clerk

Provision has been made to pay the liability that will accrue under this Contract.

Approved as to form:

By: _____

Treasurer

Attorney

Date: _____

Date: _____

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PENAL SUM FORM

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (Name and Address):
RAY STADLER CONSTRUCTION CO., INC.
6202 W State St
Milwaukee, WI 53213

SURETY (Name and Address of Principal Place of Business):
Granite Re, Inc.
14001 Quailbrook Drive
Oklahoma City, OK 73134

OWNER (Name and Address):
City of New Berlin
16301 W. Coachlight Drive
New Berlin, WI 53151

BID

Bid Due Date: 4/20/2022

Description (Project Name and Include Location): Buena Park Improvements;
Project No. PK-2200052

BOND

Bond Number: GR25753

Date (Not earlier than Bid due date): 4/11/2022

Penal sum Five Percent of Amount Bid

(Words)

\$ 5.00%

(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

RAY STADLER CONSTRUCTION CO., INC.

(Seal)

Bidder's Name and Corporate Seal

By:

Signature

Print Name

Title

Attest:

Signature

Title

SURETY

Granite Re, Inc.

(Seal)

Surety's Name and Corporate Seal

By:

Signature (Attach Power of Attorney)

Print Name

Connie Smith

Attorney-in-Fact

Title

Attest:

Signature Karla K. Heffron

Witness

Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

GRANITE RE, INC.
GENERAL POWER OF ATTORNEY

Know all Men by these Presents:

That GRANITE RE, INC., a corporation organized and existing under the laws of the State of MINNESOTA and having its principal office at the City of OKLAHOMA CITY in the State of OKLAHOMA does hereby constitute and appoint:

MICHAEL J. DOUGLAS; CHRIS STEINAGEL; CHRISTOPHER M. KEMP; KARLA HEFFRON; SAMUEL DUCHOW; ROBERT DOWNEY; JULIA DOUGLAS; CONNIE SMITH; KORY MORTEL; ELIOT MOTU its true and lawful Attorney-in-Fact(s) for the following purposes, to wit:

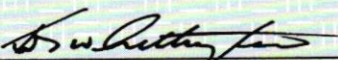
To sign its name as surety to, and to execute, seal and acknowledge any and all bonds, and to respectively do and perform any and all acts and things set forth in the resolution of the Board of Directors of the said GRANITE RE, INC. a certified copy of which is hereto annexed and made a part of this Power of Attorney; and the said GRANITE RE, INC. through us, its Board of Directors, hereby ratifies and confirms all and whatsoever the said:

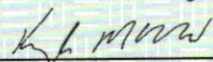
MICHAEL J. DOUGLAS; CHRIS STEINAGEL; CHRISTOPHER M. KEMP; KARLA HEFFRON; SAMUEL DUCHOW; ROBERT DOWNEY; JULIA DOUGLAS; CONNIE SMITH; KORY MORTEL; ELIOT MOTU may lawfully do in the premises by virtue of these presents.

In Witness Whereof, the said GRANITE RE, INC. has caused this instrument to be sealed with its corporate seal, duly attested by the signatures of its President and Assistant Secretary, this 3rd day of January, 2020.

STATE OF OKLAHOMA)
) SS:
COUNTY OF OKLAHOMA)



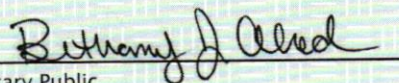

Kenneth D. Whittington, President


Kyle P. McDonald, Assistant Secretary

On this 3rd day of January, 2020, before me personally came Kenneth D. Whittington, President of the GRANITE RE, INC. Company and Kyle P. McDonald, Assistant Secretary of said Company, with both of whom I am personally acquainted, who being by me severally duly sworn, said, that they, the said Kenneth D. Whittington and Kyle P. McDonald were respectively the President and the Assistant Secretary of GRANITE RE, INC., the corporation described in and which executed the foregoing Power of Attorney; that they each knew the seal of said corporation; that the seal affixed to said Power of Attorney was such corporate seal, that it was so fixed by order of the Board of Directors of said corporation, and that they signed their name thereto by like order as President and Assistant Secretary, respectively, of the Company.

My Commission Expires:
April 21, 2023
Commission #: 11003620




Notary Public

GRANITE RE, INC.

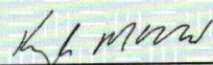
Certificate

THE UNDERSIGNED, being the duly elected and acting Assistant Secretary of Granite Re, Inc., a Minnesota Corporation, HEREBY CERTIFIES that the following resolution is a true and correct excerpt from the July 15, 1987, minutes of the meeting of the Board of Directors of Granite Re, Inc. and that said Power of Attorney has not been revoked and is now in full force and effect.

"RESOLVED, that the President, any Vice President, the Assistant Secretary, and any Assistant Vice President shall each have authority to appoint individuals as attorneys-in-fact or under other appropriate titles with authority to execute on behalf of the company fidelity and surety bonds and other documents of similar character issued by the Company in the course of its business. On any instrument making or evidencing such appointment, the signatures may be affixed by facsimile. On any instrument conferring such authority or on any bond or undertaking of the Company, the seal, or a facsimile thereof, may be impressed or affixed or in any other manner reproduced; provided, however, that the seal shall not be necessary to the validity of any such instrument or undertaking."

IN WITNESS WHEREOF, the undersigned has subscribed this Certificate and affixed the corporate seal of the Corporation this
11th day of April, 2022.




Kyle P. McDonald, Assistant Secretary

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PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company:

Signature _____ (Seal)

:
Name and Title: _____

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____

Signature and Title

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title: _____

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title
(Attach Power of Attorney)

Attest: _____

Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, of the Default. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract; or

2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or

2 Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has

denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after 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 period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as

required by the Contract or to perform and complete or comply with the other terms thereof.

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PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

CONTRACT

Date:

Amount:

Description (Name and Location):

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company:

SURETY

Signature _____ (Seal)

(Seal)

:
Name and Title: _____

Surety's Name and Corporate Seal

By: _____

Signature and Title
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____

Signature and Title

CONTRACTOR AS PRINCIPAL

Company:

SURETY

Signature: _____ (Seal)

(Seal)

Name and Title: _____

Surety's Name and Corporate Seal

By: _____

Signature and Title
(Attach Power of Attorney)

Attest: _____

Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and

2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and

3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if

any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, 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 shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

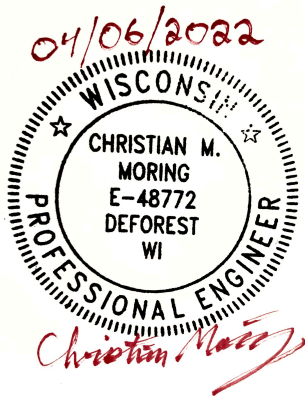
15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and 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.

15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

SECTION 00 01 05

CERTIFICATIONS PAGE



CIVIL ENGINEER
April 6, 2022



LANDSCAPE ARCHITECT
April 6, 2022

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SECTION 01 10 00

SUMMARY

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Basic description of the Project and Work restrictions.

1.02 SUMMARY OF WORK

- A. Project Name: Buena Park Improvements – 2022, for the City of New Berlin, Wisconsin.
- B. Description of Work: Project consists of demolition of an existing restroom building, construction of a prefabricated open-air shelter and restroom/shelter building, including grading, concrete sidewalk, asphalt trail, and new water, sanitary and electrical connections to the new restroom/shelter building. This project will consist of furnishing all labor, materials, and equipment necessary, unless specified to be done by others, for the construction of the Buena Park Improvements – 2022, located in the City of New Berlin, Wisconsin.

1.03 COMPLETION DATES

- A. Final Completion: Set forth in the Contract.

1.04 LIQUIDATED DAMAGES

- A. Provisions for liquidated damages, if any, are set forth in the Contract.

1.05 WORK RESTRICTIONS

- A. Use of Site:
 - 1. Location of construction facilities, staging areas, product stockpiles, material storage, and temporary construction are shown on the Drawings and shall be removed upon completion of Work.
 - 2. Contractor responsible for snow removal and disposal from the Owner's property if necessary to maintain access and working space during construction.
 - 3. One lane of the adjacent roadway must be maintained and open to traffic at all times.
 - 4. If additional space is needed, obtain, and pay for such space off Site.

1.06 OTHER WORK AT SITE

- A. City staff may choose to perform work at or adjacent to the project site, during the project Contract.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Administrative and procedural requirements for allowances, Alternates, pricing of Work, and request for payment procedures.

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 ALTERNATES

Not Used.

1.04 PAYMENT PROCEDURES

- A. Reference Article II – Payment section of the Contract for payment procedures.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. General requirements for overall Project coordination.

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.
 - 2. Contractor is responsible for the cost of all tests and inspections, corrections, removal and replacement of any defective work.

1.03 UTILITIES

- A. Each Contractor, when performing work near Public Service lines, cables, or pipes, shall notify the companies owning them so that they may cooperate to avoid damage or accidents.
- B. Notify Diggers Hotline before starting construction in a given area requesting utility locates in the Site.
- C. Project Utility Sources: Coordinate Work with the following utility owners. The following utilities are known to be on the Site and are shown on the Drawings in a general way:
 - 1. Water: Owner.
 - 2. Sanitary Sewer: Owner.
 - 3. Storm Sewer: Owner.
 - 4. Electric: WE-Energies.
- D. Owner requires a 48-hours notice for all utility interruptions.

1.04 PERMITS

- A. Permits to be pulled by respective trades complete this work. No fees for City of New Berlin Permits will be Charged. Notify Engineer and Owner if circumstances change that would require reassessment of permit needs.

1.05 COOPERATION AND COORDINATION WITH OTHER CONTRACTORS

- A. The Contractor shall work in harmony with other Contractors, or with utilities, municipality, tenets, or Owner's forces engaged in collateral work. In case of dispute, the decision of the Engineer shall be final and binding upon the parties affected.

1.06 NOTICE TO PROCEED

- A. Contractor shall notify all appropriate governmental and regulatory units, including emergency services departments, at least 3 working days prior to his commencing operations of his intent to start work.
- B. Contractor shall notify the Owner, the Engineer, Municipality, and all utilities and/or underground facilities locators, whose property may be affected by the Contractor's operations, at least 3 working days prior to his commencing operations of his intent to start work.
- C. Continuing notice shall be given to the Owner and Inspector each time construction is resumed after shutdown.

1.07 SURVEYING AND CONSTRUCTION OBSERVATION

- A. Contractor is responsible for construction staking prior to beginning work.
- B. Provide Engineer a minimum of 48-hours notice in advance of the need for establishing lines, grades, measurements, grade checks, and observation of Work.
- C. The Owner will provide survey files as necessary to accomplish the work.
 - 1. The Contractor shall check for accuracy of the survey and shall be responsible for the protection and preservation of such stakes. Any expense incurred for additional staking caused by Contractor's neglect will be charged to the Contractor and deducted from sums due to him under this Contract.
 - 2. The Contractor shall be responsible for all lines, elevations, and measurements of all work executed by them under the contract. Contractor must exercise proper precaution to verify figures before laying out work, and will be held responsible for any error resulting from their failure to exercise such precaution.
- D. Construction Observation
 - 1. All services rendered by the Owner's Architect and Engineer will consist of professional opinions and recommendations in accordance with the generally accepted construction Engineering practices. Under no circumstances is it the intent of the site representative to directly control the physical activities of the Contractor or the Contractor's workers accomplishment of work on this project. The purpose of the field representatives at the site is to provide monitoring of the Contractor's work, and does not include any superintending, supervising, or direction of the actual work.

1.08 PROJECT MEETINGS

- A. Administrative Requirements:
 - 1. Project Superintendent or persons designated by the Contractor to attend and participate in the Project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the Project meetings.
 - 2. Engineer will set the time, sites, and prepare the agenda for the meetings.
 - 3. Engineer will prepare meeting minutes and distribute 1 copy to Contractor. Notify Engineer of inaccuracies or discrepancies in the meeting minutes within 5 calendar days of receipt of the minutes.
 - 4. The attendance and cooperation of subcontractors and suppliers may be required.
- B. Preconstruction Conference:
 - 1. Provisions for the Preconstruction Conference are set forth in the General Conditions.

2. Requirements for preconstruction submittals are set forth in the General Conditions. Submittal procedures shall be consistent with Section 01 33 00.
- C. Progress Meeting Procedures:
 1. Engineer will schedule construction progress meetings throughout the duration of the Project to assess the progress of the Work, identify and discuss Project related issues, and discuss near-term construction activities.

1.09 COMPLETION

- A. Time of completion is an ESSENTIAL CONDITION of the contract. The Contractor shall work regularly, diligently and uninterruptedly at such a rate of progress that will ensure full completion of the contract within the time specified.
- B. The contract time shall commence to run as of the date the Notice to Proceed is issued to the Contractor.
- C. It is expressly understood and agreed, by and between the Contractor and the Owner, that the contract time for substantial completion of the work described herein and set in the contract, is a reasonable time for the completion of the same. Bidders agree to fully complete and have ready for final inspection all Work as called for by the date specified in the Contract.
- D. It is also understood that the Contractor will start work no later than June 6th, 2022, unless authorized by the Engineer.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General procedures and requirements for submittals during the course of construction.

1.02 SEQUENCING AND SCHEDULING

- A. Schedule submittals consistent with the Contractor's schedule of shop drawings.

1.03 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

Not Used.

PART 3 EXECUTION

3.01 CONSTRUCTION SCHEDULE

- A. Submit preliminary schedule and progress schedule consistent with the General Conditions.
- B. Prepare schedules on 11 inch by 17 inch sheets showing overall sequence of construction. Organize the schedule by work activity. Identify separate stages of each work activity:
 - 1. List work items in chronological sequence. Show beginning and completion dates of each activity. Include all activities with an estimated duration of 3 days or longer.
 - 2. Format schedule as a horizontal bar chart. Provide separate bars for each activity or trade.
 - 3. Provide space for revisions and notations.
 - 4. Identify interrelations between activities.
 - 5. Include estimated times for preparation of submittals by Contractor, processing and review of submittals by Engineer, fabrication, delivery, installation, testing, start-up, instruction of Owner, and clean-up.
- C. As Work progresses, revise, update, and resubmit schedule as requested by Engineer. At a minimum, update schedule with each Application for Payment. Show all activities started or finished since previous schedule was submitted and show percentage of completion for each activity.

3.02 EMERGENCY CONTACT LIST

- A. Before any Work at the Site is started, submit a typed list on 8-1/2 inch by 11 inch paper outlining 24 hour on-call contacts for the Project. This list shall include the Contractor's safety representative, key representatives from the Contractor, subcontractors, and suppliers. Include the following information for each contact:

1. Company name.
2. Contact person(s).
3. Local and mobile phone numbers.

3.03 SHOP DRAWINGS AND MANUFACTURERS' INFORMATION

- A. Conform to the requirements of the General Conditions, except as modified herein.
- B. The minimum sheet size shall be 8-1/2 inches by 11 inches. Non-legible copies will not be reviewed.
- C. Submit pdf shop drawings containing the following information:
 1. Date of submission and date of any previous submittals.
 2. Project Title.
 3. Names Of: Contractor, subcontractor, supplier, and manufacturer.
 4. Identification of product and Specification Section number.
 5. Identification of revisions from previous submittals.
 6. A 4 inch by 4 inch blank space for the Engineer's stamp.
- D. Engineer's review will be in conformance with the requirements of the General Conditions, except as modified herein.
- E. Engineer will stamp shop drawings and indicate requirements for Contractor's review or resubmittal as follows:
 1. "Reviewed" – Appears that items covered by the submittal will, after installation or incorporation into the Work, conform to the Contract Documents and appears to be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. "Reviewed as Noted" – Appears that items covered by the submittal will, after installation or incorporation into the Work, conform to the Contract Documents and appears to be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents, except as noted by Engineer.
 3. "Revise and Resubmit" – Appears that items covered by the submittal will not, after installation or incorporation into the Work, conform to the Contract Documents and will not be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Work cannot proceed until the submittal is revised and resubmitted conforming to the resubmittal procedures described in the General Conditions.
- F. Engineer will return reviewed submittals to Contractor by electronic pdf delivery methods.

3.04 TEST REPORTS

- A. Submit electronic copies of all inspections, tests, and approvals required in the Specification.

3.05 MATERIAL AND SAFETY DATA SHEETS

- A. Furnish Owner with current copies of Material Safety Data Sheets for all chemicals and products on Site.

3.06 WARRANTIES

- A. Conform to the requirements of Section 01 78 36.

END OF SECTION

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SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Information required for conformance to regulatory requirements.
- B. Quality assurance.
- C. Procedures to measure and report the quality and performance of the Work.

1.02 REFERENCE STANDARDS

- A. Whenever reference to the Development Handbook, such reference shall mean "Development Handbook – City of New Berlin Infrastructure Standards, Latest Edition and all subsequent revisions and supplements. The word "Engineer" is understood to refer to the Engineer for the Owner.
- B. Whenever reference is made to the Wisconsin Department of Transportation Specifications, such reference shall mean "Standard Specifications for Construction," Latest Edition (WisDOT Spec.) and all subsequent revisions and supplements. The word "Engineer" is understood to refer to the Engineer for the Owner.

1.03 SUBMITTALS

- A. Prior to start of Work, submit testing laboratory name for various specified tests for approval by Engineer.
- B. Laboratory test results or analysis.
- C. Manufacturer's certificates of quality control or performance.

1.04 WORKMANSHIP

- A. Comply with industry standards of the region, except where more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.

1.05 TESTS AND INSPECTIONS

- A. Conform to the requirements of the General Conditions, except as modified herein.
- B. Notify Engineer 48 hours prior to expected time for operations requiring tests and inspections.
- C. Provide incidental labor and facilities to obtain and handle samples at Site or source, transport samples to laboratory, facilitate tests and inspections for storing and curing of test samples.

1.06 LABORATORY REPORTS

- A. After each inspection and test, submit pdf copies of Laboratory Report(s) to Engineer.

- B. Include: Date issued, Project Title and number, name of inspector, date and time of sampling or inspection, identification of product and Specifications Section, location in the Project, type of inspection or test, date of test, results of tests, and conformance with Contract Documents.

1.07 LABORATORY RESPONSIBILITIES

- A. Test samples and perform field tests.
- B. Provide qualified personnel. Cooperate with Engineer and Contractor in performance of services.
- C. Ascertain compliance with the requirements of the Contract Documents.
- D. When requested by Engineer, provide interpretation of test results.

1.08 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Laboratory may not approve or accept any portion of the Work.
- C. Laboratory may not assume any duties of Contractor.
- D. Laboratory has no authority to stop Work.

1.09 MANUFACTURER'S CERTIFICATES

- A. If requested by Engineer, submit manufacturer's certificate with shop drawings certifying that products meet or exceed specified requirements executed by responsible officer.

1.10 MANUFACTURER'S FIELD SERVICES

- A. Provide qualified representative to observe field conditions; conditions of surfaces and installation; quality of workmanship; start-up of equipment; and test, adjust, and balance of equipment.

1.11 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

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities and miscellaneous temporary facilities required during construction.

1.02 PRICE AND PAYMENT PROCEDURES

- A. A Bid Item has been provided for **Mobilization**. Measurement is **Lump Sum**. This will be considered payment in full for all work and costs of this Bid Item. The amount of the Lump Sum Bid shall not exceed **5 percent** of the Total Base Bid:
1. Partial payment of the Lump Sum Bid Item "Mobilization" will be made using a percentage based on the following:

	Cumulative Percent of Mobilization Item Paid
First Partial Payment	50
Percent of original contract amount earned -25	70
Percent of original contract amount earned – 50	90
Percent of original contract amount earned -100	100

- B. A Bid Item has been provided for **Temporary Construction Fence**. Measurement and payment is per **Lineal Foot** installed per Plan.
- C. A Bid Item has been provided for **Traffic Control**. Measurement is **Lump Sum**:
1. This shall be considered payment in full for all labor, equipment, and materials associated with the required traffic control devices for the entire Project.
 2. This Bid Item shall include but not be limited to furnishing, installing, and relocating the traffic control due to various lane closures, daily maintenance, and ultimate removal of all such devices used over the duration of the Contract or as directed by the Engineer:
 3. Partial payment of the Lump Sum Item "Traffic Control" will be made using a percentage based on the following:

	Cumulative Percent of Traffic Control Item Paid
First Partial Payment	50
Percent of original Contract amount earned – 25	70
Percent of original Contract amount earned – 50	90
Percent of original Contract amount earned – 100	100

- D. All other Work and costs of this Section shall be incidental to the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- A. Wisconsin Department of Transportation "Standard Specifications for Construction," Latest Edition (WisDOT Spec.).
- B. The Wisconsin Manual on Uniform Traffic Control Devices (WMUTCD), including the Field Manual on Temporary Traffic Control Zone Layouts – Latest edition.
- C. Wisconsin Department of Transportation Traffic Engineering Manual.

1.04 SUBMITTALS

- A. Construction Staging Plan consistent with Section 01 33 00, including the following information:
 - 1. Sequence of construction and traffic control.
 - 2. Streets closed or restricted during any stage of construction.
 - 3. Provisions for routing any detoured traffic as permitted.
 - 4. Specific signs, striping, and other traffic control devices to be utilized.
- B. Traffic Management Plan consistent with Section 01 33 00, including the following information:
 - 1. Haul and access routes.
 - 2. Permits or applications required by local authorities.
 - 3. Temporary facilities required.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 MOBILIZATION

- A. Move personnel, equipment, materials, and all other items required to complete the Work at the Site.
- B. Establish Contractor offices, building, or other facilities necessary for Work on the Project.
- C. Temporarily hold or relocate utilities and any miscellaneous structures, such as signs, power poles, guy wires, and mailboxes disturbed.

3.02 SIGNS, MAILBOXES, ETC. REMOVAL AND REPLACEMENT

- A. Park signs to remain during construction. Grade around existing signs to the degree possible. Notify owner of conflicts prior to executing work.
- B. Remove existing mailboxes and posts, and temporarily install in locations determined by Engineer or as shown on Drawings. Replace mailboxes prior to Final Completion. Removal, temporary reinstallation, and replacement shall occur such that mail delivery is not interrupted. Mailboxes, posts, and appurtenances damaged during construction shall be replaced with new at no charge to Owner.

3.03 TEMPORARY UTILITIES

- A. Provide and maintain all temporary facilities, utilities, and controls as long as needed for the safe and proper completion of the Work. Remove all temporary facilities, utilities, and controls as rapidly as progress will permit or as directed by Engineer.
- B. Temporary Water for Construction:
 - 1. Obtain water for construction from Owner at a hydrant. Obtain a meter and backflow prevent or assembly from Owner. Return to Owner at completion. There is no charge for meter use during construction.
 - 2. Contractor will pay for the costs of the water.

3.04 CONSTRUCTION FACILITIES

- A. Sanitary Facilities:
 - 1. Comply with all governing regulations, including safety and health codes, for sanitary fixtures and facilities.
 - 2. Provide self-contained toilet units, or water and sewer connected temporary toilet facilities, consistent with governing regulations. Contractor may not use Owner's toilet facilities.
 - 3. Provide and maintain adequate supply of toilet tissue, paper towels, paper cups, and similar disposable materials appropriate for each facility. Provide appropriate covered waste containers for used material.

3.05 TRAFFIC CONTROL

- A. General:
 - 1. The Contractor shall provide and maintain all traffic control devices in accordance with the approved Construction Staging Plan. All traffic control devices and other protective measures shall conform to WMUTCD.
 - 2. The Contractor will not be permitted to park vehicles as to obstruct a traffic control device. The parking of workers' vehicles will not be allowed within the Project limits, unless so approved by the Engineer.
 - 3. The Contractor will not be permitted to store materials or equipment within 30 feet of through traffic, unless approved by the Engineer. If materials or equipment must be stored within 30 feet of through traffic, the Contractor shall provide barricades or barriers, as directed by the Engineer, to warn and protect traffic. Contractor will not be permitted to store materials or equipment on the roadway.
 - 4. The Contractor shall conduct his work in a manner which will allow access to all properties within and adjacent to the Project by fire, police, and emergency vehicles.
 - 5. The Contractor is responsible to maintain all unpaved surfaces. The surface shall be watered and bladed as directed by the Engineer.
- B. Vehicle Warning Light:
 - 1. All Contractors', subcontractors', and suppliers' mobile equipment, which are working in the lane closure or within 15 feet of the lane closure, shall be equipped with operable warning lights which meet the appropriate requirements of the SAE Specifications. This would include any vehicle which enters the traveled roadway at any time. The SAE Specification requirements are as follows:
 - a. 360-Degree Rotating Lights - SAE Specification J845.
 - b. Flashing Lights - SAE Specification J595.
 - c. Flashing Strobe Lights - SAE Specification J1318.

C. Temporary Lane Closures:

1. Temporary Lane Closures shall conform to the following:

- a. A "short-term" lane closure, or traffic restriction, shall be one that is in-place only during the Contractor's work hours.
- b. Temporary "short-term" lane closures by the Contractor, consistent with time restrictions, will be permitted during those hours and at those locations approved by the Engineer. Requests for "short-term" lane closures shall be made at least 24 hours prior to such closures. The Contractor shall furnish, erect, and maintain all traffic control devices required for these closures. No direct compensation will be made for temporary lane closures.
- c. Application of traffic control devices shall be in accordance with the Field Manual.
- d. Lane closures will not be permitted during inclement weather, nor any other time when, in the opinion of the Engineer, the lane closures will be a hazard to traffic.
- e. When a temporary lane closure is used by the Contractor, the closure shall be incidental work and no direct compensation will be made therefore.

3.06 TEMPORARY BARRIERS AND ENCLOSURES

A. Temporary Barriers:

1. Provide temporary covers, enclosures, markers, and barriers as necessary to protect Work.
2. Damage to the Site caused by removal of temporary fencing, including postholes, shall be promptly repaired by Contractor. During removal at no time shall the Work remain unattended if a dangerous condition exists because of incomplete removal or Site repairing.

B. Temporary Fence:

1. Install as shown on the Drawings.
2. Maintain and repair fence throughout the duration of the Project.
3. Provide Owner and Engineer with keys or combinations to any locks that may be used to secure fencing gates.

END OF SECTION

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Managing storm water runoff and other Project related water discharges to minimize sediment pollution during construction.
- B. Related Sections
 - 1. Section 31 23 00 – Excavation and Fill.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. Bid Items have been provided for temporary measures to control soil erosion and sedimentation. Payment at the Bid Unit Price will be considered compensation in full for all Work necessary to complete the Bid Item in full, including installation, maintenance, sediment removal, repairs, and removals.
 - 2. Measurement will be based upon the units as listed below for Bid Items removed, abandoned, or salvaged complete as specified. No measurement will be made of any removals that are not required. The actual quantity installed multiplied by the appropriate Bid Unit Price will be compensation in full for all Work and costs of the following Bid Items. 80-percent partial payment will be made upon installation and 20-percent payment will be made upon removal and restoration.
 - a. **Silt Fence:** Measurement will be by the **lineal foot**, along the base of the fence, from outside to outside of the end posts for each section of fence.
 - b. **Inlet Protection:** Measurement will be by **each**.
 - c. **Tracking Pads:** Measurement will be by **each**.
 - d. **Temporary Concrete Washout:** Measurement will be per **each** washout installed.
 - 3. All other Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

- A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction," Latest Edition (WisDOT Spec.)
 - 1. 628 – Erosion Control
- B. City of New Berlin Erosion Control Ordinance.

1.04 SUBMITTALS

- A. Contractor Prepared Schedules and Plans
 - 1. Erosion Control Schedule: Conforming to Section 01 33 10 and submitted each week that construction is active.
- B. Certification and Sampling

1. Furnish a manufacturer's certification stating that the material supplied conforms to the requirements of this Section. The certification shall include or have attached typical results of tests for the specified properties, representative of the materials supplied.

1.05 QUALITY ASSURANCE

- A. Erosion Control Supervisor: Provide an Erosion Control Supervisor to direct the erosion control operations and ensure compliance with Federal, State, and Local ordinances and regulations.
- B. Certified Installers: Provide a certified installer to install or direct installation of erosion or sediment control practices.

1.06 SEQUENCING AND SCHEDULING

- A. Install sediment control measures prior to grading activities.
- B. Schedule and coordinate the Work so that permanent erosion and sediment control BMPs, such as permanent seeding, are directly incorporated into the supplement permanent erosion and sediment control BMPs with temporary BMPs. Place temporary BMPs when permanent erosion control cannot be achieved. Coordinate construction operations so that erosion and sediment control measures (permanent or temporary) are installed and maintained concurrently with the rest of the Work of the Project.
- C. Coordinate and schedule the Work of subcontractors such that erosion and sediment control measures are fully executed for each operation and in a timely manner over the duration of the Project. Develop a chain of responsibility for all subcontractors and operators on the Project to ensure that permit provisions are adhered to.
- D. Infiltration areas and constructed infiltration systems should not be constructed until the contributing drainage area and/or adjacent construction has been completely stabilized. When this timing of construction is not possible, the Contractor shall insure sediment from exposed soil areas of the Project does not enter into the infiltration area or system.
- E. Stabilization timeframes shall conform to the City of New Berlin Erosion Control Ordinance.
- F. Prior to Project shutdown for the winter or other periods of a week or more, the Site shall be adequately protected from erosion and off-Site damage by covering exposed soils with mulch and establishing perimeter controls.
- G. If the Contractor fails to install erosion or sediment measures, the Engineer may withhold payment from related work until the control measures are undertaken by the Contractor
 1. When the Contractor fails to conduct the quality control program or fails to take action ordered by the Engineer to remedy erosion or sediment control problems, the Engineer shall issue a Written Order to the Contractor.
 2. The Contractor shall respond within 24 hours with sufficient personnel, equipment, materials, and conduct the required Work or be subject to a \$1,000 per calendar day deduction for noncompliance.

PART 2 PRODUCTS

2.01 SILT FENCE: Conform to WisDOT Spec. 628.

2.02 TRACKING PADS: Conform to WisDOT Spec. 628.

2.03 STORM DRAIN INLET PROTECTION

- A. Inlet protection for paved streets with concrete curb and gutter. WisDot Type C Inlet Protection:
The following methods are acceptable:
 - 1. Conform to the details on the Drawings.
 - 2. Catch Basin Inserts:
 - a. Road Drain by Wimco, LLC (www.roaddrain.com).
 - b. Lange Industries (www.langeindustries.com), or approved equal.
 - c. Filter bag insert conforming to WisDOT Spec. 628 and FDM, subject to Site and approved by the Engineer.
- B. Inlet protection for non-paved surfaces without curb or areas where vegetation will be established. WisDOT Type B: The following methods are acceptable:
 - 1. Conform to the details on the Drawings.
 - 2. Silt fence ring, or approved equal:
 - a. Place wire mesh cage in a circular or square confirmation to form a minimum 5 foot diameter zone of protection.
 - b. Geotextile shall be monofilament/monofilament meeting the requirements of WisDOT Spec. 628.
 - c. Loose aggregate or a rock log(s) around perimeter of ring to anchor geotextile.

2.04 DUST CONTROL

- A. Water clear and free from suspended fine sediment.
- B. The Owner may elect to have the Contractor apply a chloride solution for dust control

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with all applicable laws, ordinances, regulations, permit requirements, orders and decrees pertaining to erosion/sediment control and stormwater discharge during the conduct of the Work.
- B. Take necessary precautions against damage to the Project by action of the elements.
- C. Take necessary actions to prevent off Site damage resulting from Work conducted on the Project or Project related stormwater runoff.
- D. Minimize the amount of disturbed land that is susceptible to erosion at any time. Delineate areas not to be disturbed.
 - 1. Exclude vehicles and construction equipment from area not to be disturbed to preserve natural vegetation.
 - 2. Maintain and preserve riparian and naturally vegetated buffer strips (10 feet minimum distance) along water courses.

3.02 INSTALLATION

- A. General: Install temporary stormwater management and sediment control devices in conformance with the details, typical sections, and elevations shown on the Drawings.

- B. The location of temporary stormwater and sediment control devices may be adjusted from that shown on the Drawings to accommodate actual field conditions and increase the effectiveness of the installation.
- C. Silt Fence: Conform to WisDOT Section 628 and WisDOT FDM.
 - 1. Install in the locations shown on the Drawings using the machine sliced installation method, unless directed otherwise by the Engineer.
 - 2. Use additional measures, such as rock aggregate, placed along the base of the silt fence where the silt fence geotextile cannot be trenched in, i.e. tree roots, frost, bedrock.
 - 3. Use short sections of silt fence placed in J-hook patterns to
 - a. Supplement the perimeter silt fence at corner locations and areas where sediment deposition will occur. No more than 100 feet of silt fence shall be installed per 1/4 acre of drainage.
 - b. Break up flow path along silt fence running across contours to be no more than 100 feet between hooks or as directed by the Engineer.
 - 4. Silt fence longer than 600 feet shall be constructed in separate independent units with each unit having a length less than 600 feet. Avoid splices whenever possible. If necessary, make splices at an opposing fence post and according to the manufacturer's specifications.
- D. Tracking Pads
 - 1. Install at locations shown on the Drawings.
 - 2. Construct tracking pads before grading begins on the Site.
 - 3. Inspect tracking pads daily for mud accumulation to minimize vehicle tracking of sediment onto public roadways. Remove fugitive rock or wood mulch from adjacent roadways daily.
- E. Storm Drain Inlet Protection
 - 1. Provide effective storm drain inlet protection over the life of the Project until all sources with potential for discharging to inlets have been paved or stabilized.
 - 2. Place devices so that driving hazards or obstructions are not created. The devices must be cleaned out regularly and all devices must have an emergency overflow to reduce flooding potential.
- F. Temporary Concrete Washout Area
 - 1. Install, maintain and remove according to the EPA's Concrete Washout guidance (EPA 833-F-11-006).

3.03 MAINTENANCE

- A. Conform to the City of New Berlin Erosion Control Ordinance, and as follows:
 - 1. Inspect, maintain, and repair any washouts or accumulations of sediment that occur as a result of the grading or construction. Restoration consists of grade repair, turf re-establishment, and street sweeping of mud and debris tracked from the Site.
 - 2. Inspection of all erosion and sediment control items will take place immediately after each runoff event and at least daily during prolonged rainfall. Any required repairs shall be made immediately. A logbook shall be kept by the contractor for the inspector/engineer to view at any time.
 - 3. The Contractor shall maintain the temporary sediment control devices until they are no longer necessary and are removed:
 - a. Maintenance consists of keeping the devices functioning properly.
 - b. The Contractor shall repair or replace plugged, torn, displaced, damaged, or non-functioning devices.
 - 4. Upon final acceptance of the Project and establishment of permanent erosion control measures, the Contractor shall remove all temporary erosion control measures.

5. Temporary mulching and temporary seeding/mulching are very effective at controlling erosion. However, these are considered temporary measures. These measures may need to be re-established several times throughout the duration of the Work.
6. If an erosion control device has been reduced in capacity by 30 percent or more, the Contractor shall restore such features to their original condition.
7. Control dust blowing and movement on Site and roads as directed by Engineer to prevent exposure of soil surfaces, to reduce on and off-Site damage, to prevent health hazards, and to improve traffic safety.

END OF SECTION

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SECTION 01 70 00
EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for overall execution of the Work and closeout of the Contract for Final Payment.

1.02 PRICE AND PAYMENT PROCEDURES

- A. 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 the Conditions of the Contract and Division 01 Sections:
 - 1. Record Documents,
 - 2. Written Notification of Substantial Completion,
 - 3. Executed Certificate of Substantial Completion, Written Notification of Final Completion, Spare Parts, Operation and Maintenance Manuals, instructions, schedules, warranties, guarantees, Bonds, certificates, certificates of inspection, and other documents.
 - 6. Final Application for Payment, including accompanying documentation.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

- A. Acceptance of Conditions: By commencing Work, Contractor construes acceptance of the adjacent work as satisfactory to receive subsequent Work.
- B. Existing Conditions: Before commencing Work, inspect work completed by others that is adjacent to Work. If adjacent conditions prevent completion of Work, Contractor will not commence Work until the conditions are corrected.
- C. Inspect each product immediately prior to installation. Remove damaged products from Site.

3.02 GENERAL INSTALLATION REQUIREMENTS

- A. Comply with the manufacturer's instructions for installation of manufactured products to the extent that these instructions are applicable and more explicit or more stringent than requirements indicated in the Contract Documents.
- B. Secure Work true to line and level, within recognized industry tolerances, with anchorage devices designed and sized to withstand stresses, vibration, and rocking. Allow for expansion and movement of building.

- C. Install each element of work during weather conditions and Project status to ensure coordination of the Work. Isolate each element of work from incompatible work as necessary to prevent deterioration.

3.03 SITE MAINTENANCE

- A. Maintain stockpiles, excavations, access roads, and all other work areas free from dust. Employ dust abatement techniques whenever a dust nuisance or hazard occurs, or as directed by Engineer. Comply with local ordinances.
- B. Protect trees, unless specifically indicated on Drawings.
- C. Clean access roads and haul routes with mechanical street sweeper.
- D. If Contractor fails to maintain Site, Engineer will provide Written Notice of Contractor's defective Work. Contractor will be given 12 hours from the Notice to clean Site. After the 12-hour period, Owner may correct the defective Work consistent with Article 13.09 of the Conditions of the Contract.

3.04 CLEANING AND PROTECTION

- A. Clean and protect Work in progress and adjoining Work during handling and installation. Apply protective covering on installed Work where it is required to ensure freedom from damage or deterioration.

3.05 CUTTING AND PATCHING

- A. Complete all cutting, fitting, and patching as necessary to join the new Work to existing conditions.
- B. Remove or cut existing work only as necessary to join the new Work to the existing construction or as required by the Contract Documents.
- C. Patch defective and incomplete surfaces caused or exposed by Work of the Project.
- D. Repair any damage to existing conditions and patch to match.
- E. Existing construction designated by the Contract Documents to remain that is loosened, cracked, or otherwise damaged or defaced beyond repair as a result of Work by the Contractor will be considered unsuitable for the use intended and shall be removed and replaced by the Contractor.

END OF SECTION

SECTION 01 78 36

WARRANTIES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Warranties for the Work of this Project.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measure 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. Bind in commercial quality, 8.5 by 11-inches, 3-ring side binders with hardback, cleanable, plastic covers.
- B. Table of Contents: Provide neatly typed, Table of Contents matching that of the Project Specifications with each item identified with the number and title of the Specification Section in which specified and the name of the product or work item.
- C. Label cover of each binder with typed or printed title "WARRANTIES" with title of Project; name, address, and telephone number of Contractor and equipment supplier; and name of responsible principal.
- D. Separate each warranty keyed to the Table of Contents listing. Provide full information using separate typed sheets as necessary. List subcontractor, supplier, and manufacturer with name, address, and telephone number of responsible principal.

1.04 PREPARATION OF WARRANTIES

- A. Obtain warranties executed in duplicate by responsible subcontractors and suppliers within 10 days of completion of the application item or Work. Leave date of beginning of time of warranty blank until the Date of Substantial Completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties until delivery time indicated below.

1.05 DELIVERY

- A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.

- B. Within 10 days after Engineer's declared and written confirmation of the Date of Substantial Completion.
- C. For items of Work when acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

1.06 LENGTH OF WARRANTY

- A. Minimum length of all equipment warranties shall extend through the Correction Period.
- B. Length of Warranties: Conform to the requirements of the Specifications.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 02 41 13

SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Complete or partial removal and disposal or salvage of at grade, above grade, and below grade structures and miscellaneous items.
- B. Related Sections
 - 1. Section 31 23 00 – Excavation and Fill.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. Bid Items have been provided for removal items. Payment at the Bid Unit Price will be considered compensation in full for all Work necessary to complete the Bid Item in full, including removal, salvage, storage, disposal, required backfill and compaction, reinstallation, and all related work.
 - 2. Measurement will be based upon the units as listed below for items removed, abandoned, or salvaged complete as specified. No measurement will be made of any removals that are not required. The actual quantity removed multiplied by the appropriate Bid Unit Price will be compensation in full for all Work and costs of the following Bid Items:
 - a. **Remove Asphaltic Surface:** Per **square yard** without regard to thickness, including integral bituminous curb.
 - b. **Remove Bathroom and Existing Services:** Shall be paid as a **lump sum** for all work to remove and dispose of the existing bathroom, including the structure, foundation, utility services, and internal furnishings.
 - c. **Remove Concrete Curb and Gutter:** Per **lineal foot** regardless of the type.
 - d. **Remove Pavement Striping:** Shall be paid as a **lump sum** for all work to remove existing striping.
 - e. Sawcutting shall be incidental.
 - 3. All other Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

- A. Wisconsin Department of Transportation "Standard Specifications for Highway and Structure," Latest Edition (WisDOT Spec.)
 - 1. 201 – Clearing and Grubbing.
 - 2. 204 – Removing or Abandoning Miscellaneous Structures.
 - 3. 690 – Sawing.

1.04 DEFINITIONS

- A. Remove: To take away or eliminate from the Site by any method selected by the Contractor, including disposal of material.

- B. Salvage: To dismantle, disassemble, or remove carefully without damage so the item can be re-assembled, replaced, or reused in a workable condition equal to that existing before removal.
- C. Abandon: To fill, bulkhead, or close off pipes and structures so that no settlement or flow can occur.

1.05 REGULATORY REQUIREMENTS

- A. All materials designated for removal shall be disposed of outside the Project Site at locations to be selected by the Contractor.
- B. All materials designated for salvage shall be stockpiled or temporary stored on sites to be provided by the Contractor.

1.06 SCHEDULING

- A. Prior to starting Work, submit for review by the Engineer and approval by the Owner, a schedule showing the commencement, order, and completion dates of the various parts of this Work.
- B. Fill holes or depressions resulting from removal or salvage immediately.
- C. Provide temporary surface restoration for traffic continuity where removal or salvage operations are completed within streets, driveways, or parking lots.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.01 GENERAL

- A. Dispose of all items removed, except for those items identified to be salvaged or recycled. Said disposal shall be in accordance with all laws, regulations, statutes, etc.
- B. Perform removal work without damage to adjacent retained work. Where such Work is damaged, the Contractor shall patch, repair, or otherwise restore same to its original condition at no expense to the Owner.
- C. Remove debris from the work area as often as necessary, but not less than at least once at the end of each workday. Debris shall be placed in approved containers to prevent the spread of dust and dirt.
- D. Execute the Work in a careful and orderly manner with the least possible disturbance to the public and occupants of buildings.
- E. Fill holes resulting from removals consistent with Section 31 23 00.

3.02 EXAMINATION

- A. Meet with owners of signs to determine requirements for salvage, storage, and replacement.

- B. Develop plan acceptable to Engineer and postal service for maintaining mail service. If relocations of mailboxes are necessary.

3.03 PROTECTION

- A. Take all necessary precautions to adequately protect personnel and public and private property in the areas of Work. All temporary construction fencing shall be in place prior to the start of any removal work.
- B. All street signs, traffic control signs, guy wires, mailboxes, posts, wood fence, etc. which may interfere with construction shall be removed, stored safely, and replaced.
- C. Approved barriers or warning signs shall be provided as necessary.
- D. Provide and maintain temporary protection of existing structures designated to remain where removal work is being done, connections made, materials handled, or equipment moved.
- E. Do not close or obstruct walkways or roadways. Do not store or place materials in passageways or other means of egress. Conduct operations with minimum traffic interference.
- F. Take reasonable precautions to limit damage to existing turf.
- G. Holes or depressions created by removals shall not be left open for more than 1 day. Any hole within 10 feet of sidewalks shall be filled, suitably marked, or covered immediately.
- H. Avoid disturbance to any material beyond the limits required for new construction.

3.04 SAWING PAVEMENT

- A. All pavements including butt joints, shoulders, curb & gutter, and driveways shall be saw cut full depth.
- B. Saw cut pavements in neat straight lines, at right angles to the street or drive to produce a clean joint.
- C. If saw cuts are damaged during construction; saw cut edges again immediately prior to paving at the Contractor's cost.
- D. Sawing pavement shall conform to the requirements of WisDOT Spec. 690.
- E. Sawcutting locations shall be as marked in the field by the Engineer.

3.05 REMOVE BATHROOM

- A. Buildings removed and materials resulting from building removal become the Contractor's property. Dispose of unclaimed and removed material as specified in Section 3.11.
- B. Remove buildings and building materials safely and according to the requirements of the Wisconsin department of workforce development, applicable ordinances of the municipality, WisDOT Spec. 204, and the WDNR.
- C. When removing a building also remove that portion of its foundation, including any masonry floors, to an elevation not less than 2 feet below the ground surface.

- D. Before backfilling, remove debris not suitable for backfilling.

3.06 REMOVE CONCRETE PAVEMENT

- A. Remove in accordance with WisDOT Spec. 204, except as modified below:
 - 1. Saw cut concrete pavement and concrete base prior to mechanical pavement removal equipment. Remove concrete in such a manner that the remaining pavement is not damaged.
 - 2. Prior to restoring trench areas, the edges of the trench shall be trimmed back to a vertical face on a straight line which is parallel with the centerline of the trench.

3.07 REMOVE BITUMINOUS PAVEMENT, PATH, DRIVEWAY

- A. Remove in accordance with WisDOT Spec. 204, except as modified below:
 - 1. Saw cut bituminous pavement at the removal limits prior to that removal, unless otherwise approved by the Engineer.
 - 2. Prior to restoring trench areas, the edges of the trench shall be trimmed back to a vertical face on a straight line which is parallel with the centerline of the trench.

3.08 REMOVE CURB AND GUTTER

- A. Removal of integral bituminous curb shall be included with removal of asphaltic pavement surface.
- B. Saw cut at removal limits.
- C. Concrete curb and Concrete Gutter: Do not disturb any material beyond the limits required to form for new construction (assumed 12-inches maximum from the back of new work and 6-inches beyond the edge of new driveways).

3.09 REMOVE PAVEMENT MARKING

- A. Completely remove marking from locations the plans show or as the Engineer directs. Contractor may use one or a combination of air blasting, water blasting, grooving, and grinding. Do not damage pavement and limit scaring.
- B. Provide a dust control system and remove accumulated sand or other materials.
- C. Collect, haul, and dispose of dust or residue from removals.

3.10 FIELD QUALITY CONTROL

- A. Salvaged items to be reinstalled shall be of the same shape, dimension, location, and quality of the original item prior to construction.
- B. Items damaged during removal or salvaging operations shall be replaced with new material of equal type and quality of the damaged item when it was new.

3.11 DISPOSING OF MATERIAL

- A. Conform to WisDOT section 204.
- B. Dispose of all materials outside of the Site at disposal location selected by Contractor in compliance with state and local regulations. Burying of material and debris is not allowed within the Site.

END OF SECTION

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SECTION 03 00 01
SPECIAL – RESTROOM BUILDING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Furnishing the sealed architectural, structural, mechanical, and electrical plan sets and furnishing the structural, mechanical, and electrical building components as a complete, pre-designed restroom building package as shown on drawings and as specified herein.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment

1. A Bid Item has been provided for the **Restroom Building Installation**. Measurement and Payment at the **Lump Sum** price will be considered compensation in full for all Work necessary to complete the Bid Item in full, including:
 - a. Building Package installation
 - b. Cast-in-place concrete foundations, footings, interior slabs
 - c. Concrete slab & block sealer
 - d. Mortar
 - e. Concrete grout
 - f. Rebar
 - g. Latex epoxy paint
 - h. Caulk for siding
 - i. Plumbing rough in, installation and trim
 - j. Electrical rough in, installation and trim
 - k. Switches & outlets
 - l. Typical fasteners; for example: roofing nails, staples, etc.
 - m. Fasteners not included in product packaging
 - n. Wood sealant for all decking, glulam beams, posts, and extensions
2. All other Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 SUBMITTALS

- A. Contractor shall submit product data sheets and relevant information about the specified supplied products below for review and approval.

1.04 QUALITY ASSURANCE

- A. Certified Installers: Provide a certified installer to install or direct installation.
- B. Contractor's work shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from the date of acceptance. Acceptance is the date that installation work for the building package is completed, including any relevant final punch list. In the event that final acceptance of the completed building is delayed for reasons beyond building installer's control, the warranty shall be one (1) year from the completion of building installer's installation work and demobilization.

- C. The Contractor shall pass through to owner all relevant manufacturers warranties for individual products and components supplied by building installer.

PART 2 PRODUCTS

A. Approved Building Supplier

1. Romtec, Inc or approved equal
 - a. 18240 North Bank Road, Roseburg, OR 97470
 - b. Tel: 541-496-3541 Fax: 541-496-0803 Email: cdooley@romtec.com
 - c. Web: www.romtec.com

B. Structure

1. Concrete Masonry Units (CMU) shall be supplied by Romtec, Inc or approved equal
 - a. Walls shall be constructed of 8"W x 16"L x 8"H smooth face mortar joint concrete masonry units (concrete masonry blocks).
 - b. Blocks shall be manufactured to ASTM C90 designation for load bearing concrete masonry units.
 - c. Block color to be Gray.
2. Exterior finish shall be fiber cement, LP-Smart lap siding supplied by Romtec, Inc or approved equal.
3. Interior of restroom walls to be finished with white FRP panels supplied by Romtec, Inc or approved equal.
4. Sanitary tile cove base on interior restroom walls to be supplied by Romtec, Inc or approved equal.
5. Door system components shall be supplied by Romtec, Inc or approved equal.
 - a. Doors shall be Steelcraft® SL18 standard laminated honeycomb core and 18-gauge galvanized steel or approved equal.
 - b. Door frame shall be pre-welded Steelcraft® 3-Sided flush frame, 16-gauge galvanized A-60 steel or approved equal.
 - c. Doors and frames are powder coated black.
 - d. Masonry door clips (3/16" dia.) for door frame shall be fitted between the doorframe and concrete blocks to bond frame to wall. Door clips allow full internal grouting of the frame during installation.
 - e. Hinges shall meet ANSI A5112 with non-removable pin and two ball bearings.
 - f. Door to have 0.038" gauge, stainless steel protection plates.
 - g. Doors to have aluminum alloy 6063, T5 temper mill finish saddle thresholds, model 424E.
 - h. Restroom doors to have electric strike tied to astronomical time clock.
 - i. Restroom door hardware to be Schlage Rhodes color 626 or approved equal.
 - j. Mechanical room door lock shall be Grade 2, standard duty commercial cylindrical lever locks with no exposed mounting screws.
 - 1) Hager 341C latch protection plate with lock cut out or approved equal.
 - k. Restroom doors to have 18" x 18" louvered vents.
6. Bradley HDPE restroom partitions shall be supplied by Romtec, Inc or approved equal.
 - a. Partition color shall be Starry Night (S225).

C. Roofing

1. The following roof components shall be supplied by Romtec, Inc or approved equal.
 - a. Glulam beam shall be 24F-V4 and architectural grade.
 - b. Tongue & groove decking shall be 2x6 V-edge deck boards, select deck Douglas Fir.
2. Timber truss and post, 20' roof extension.
 - a. Steel truss plates and brackets are painted black.
3. Roofing shall be Fabral, 26-gauge, Horizon 16, standing seam panels, with 16 in. coverage width.

- a. Roofing package shall include inside and outside foam closures, matching trim (eaves, gables, and ridge) and fasteners, sheet metal flashing (all sides), and 30# felt (under metal).
 - b. Roofing color to be selected by the Owner from the manufacturers standard color chart.
- D. Plumbing fixtures & Accessories
 - 1. The following plumbing fixtures and accessories shall be supplied by Romtec, Inc or approved equal.
 - 2. Toilet shall be 1358563 Kohler K-96057-0 white highcliff ultra top spud ADA elong toilet bowl or approved equal.
 - a. Flush valve shall be 8235 Sloan 3080053 111XL Regal exposed 1x11-1/2 1.6GPF flush valve.
 - 3. Urinal shall be Kohler Stanwell K-25048-ET-0 or approved equal.
 - a. Flush valve shall be Sloan Regal 180-1.5 XL.
 - 4. Lavatory shall be Kohler K-2005-0 white VC Kingstone 211/4X181/8X121/4 or approved equal.
 - a. Faucets shall be push button style that has separate meters for hot and cold. 1039859 Chicago 802-VE2805- 665ABCP chrome 2H DM 4CC 2 VP push button handle metering faucet with 4 rigid spout lead free.
 - 5. Grab bars shall be stainless steel.
 - 6. Mirror shall be 18" x 36", framed with one-piece, roll-formed stainless steel with 3/4" face and neatly mitered corners.
 - 7. Surface mounted baby changing station shall be solid light grey (9631) molded bacterial-resistant, high density polyethylene. Steel to steel support hinges with pneumatic gas shock mechanism. Unit shall have integrated liner dispenser and bag hooks. Unit shall have an anti-microbial safety belt. Unit shall be operable with less than 5lbs. of force and complies with ASTM F2285 Standard.
 - 8. Mop sink shall be 24" x 24" with faucet, holder and guard. 189085 Mustee 63M 24x24x10 white durastone mop service sink or approved equal.
 - 9. Surface mount, stainless steel, bi-level drinking fountain with bottle filler. Elkay VRCTL8WSK or approved equal.
 - 10. Exterior spigot with water key located near the drinking fountain.
- E. Electrical
 - 1. The following electrical fixtures shall be supplied by Romtec, Inc or approved equal.
 - 2. Light fixtures shall be supplied by Romtec, Inc or approved equal.
 - a. Exterior lights to be Lithonia WPX1LED.
 - b. Lighting under roof extension shall be CNY-LED-P2-40K-MVOLT-DDB-M4.
 - c. Exterior lights controlled by astronomical timer.
 - d. Interior ceiling mount, 48" LED light fixtures.
 - e. Restroom lights controlled by motion sensor.
 - 3. Water heater shall be 1094130 Rheem 615691 PROE15-1-RH-POU, 15-gallon electric supplied by Romtec, Inc or approved equal.
 - 4. Electric locks on bathroom doors tied to astronomical timer supplied by Romtec, Inc or approved equal.
 - 5. Bathroom exhaust fans supplied by Romtec, Inc or approved equal.
 - 6. Mechanical exhaust package with inline fans supplied by Romtec, Inc or approved equal.
 - a. Direct drive exhaust fans by Greenheck.
 - 7. Wall mount, Xlerator, XL-GR hand dryers supplied by Romtec, Inc or approved equal.
 - 8. Main breaker panel shall be supplied by Romtec, Inc or approved equal.
 - a. Breaker Panel shall be Square D type QO 30 circuit minimum 200 Amp 120/240 single phase.

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with all applicable laws, ordinances, regulations, permit requirements, orders, and decrees during the conduct of the Work.
- B. Take necessary precautions against damage to the Project by action of the elements.

3.02 INSTALLATION

- A. Cast In-Place Concrete for Building Package.
 - 1. All equipment, labor, trades, and materials for cast-in-place concrete shall be provided by the Contractor.
 - a. Includes all materials and labor for building package foundations/footings and interior slabs.
 - 2. Footings for the building package are to be dug by the Contractor and poured on-site to meet local code for permanent structures. A prefabricated, modular mat placed on compacted base is not an accepted equal to a site specific, site poured, engineered foundation.
 - 3. Engineered fill shall be $\frac{3}{4}$ " minus crushed aggregate around footings, foundations, and slabs, or as required in the final approved plans.
 - 4. Slab vapor barrier shall be 6-mil continuous plastic under the concrete slab, or as required in the final approved plans.
 - 5. The foundation shall be installed as designed with all cast in-place concrete poured to dimensions specified, or as required in the final plans.
 - a. Footings will be built to minimum 48" depth or greater if required by local frost depth or permitting authority.
 - b. Minimum compressive strength of foundation concrete shall be 3,000 psi at 28 days, 4" +/- 1" slump, with max $\frac{3}{4}$ " aggregate, cured in accordance with ACI 308, or as required in approved final plans.
 - c. Exterior slabs shall have a fine broom finish with joints required in flat work as shown on plans.
 - d. Interior slabs shall have a troweled smooth finish with joints required in flat work as shown on plans.
 - e. Steel rebar shall be installed as specified in final plans.
 - 6. The Contractor shall supply and install concrete slab sealer.
 - a. Concrete slab sealer shall be a water-based, transparent curing, sealing and dust proofing compound with two (2) coats to be applied per manufacturer's instructions.
- B. Structure
 - 1. Masonry (concrete) grout shall be supplied and installed by the Contractor.
 - a. Grout shall have a minimum compressive strength of 2,500 psi at 28 days, 9 +/- 1" slump, with max $\frac{1}{2}$ " aggregate.
 - b. Fine or coarse grout may be used in accordance with 2009 UBC.
 - c. All CMU block must be fully grouted and may not be wetted.
 - 2. Rebar for walls shall be supplied and installed by the Contractor.
 - a. All walls shall have # 4 and # 5 rebar. See final approved plans for spacing.
 - b. All rebar used in the building must meet ASTM A615 manufacturing standards and is to be placed per the final approved plans.
 - 3. Interior floors to be epoxy concrete finish supplied by the Contractor. Color to be selected by owner
 - 4. Sealant for all exposed wood shall be supplied and installed by the Contractor.
 - 5. Sealant for all exterior CMU block is required, to be supplied and installed by the Contractor.
 - 6. Exterior lap siding finish to be supplied and installed by the Contractor.

C. Plumbing

1. Plumbing rough-in, installation and trim within 10' of the building footprint shall be provided by the Contractor.
 - a. Building to include PEX piping throughout building
 - b. Building water shutoff valve, drain, and all rough piping shall be as shown on final building plans. Final installation location to be determined onsite.
 - c. Install the building package plumbing fixtures per the final approved plans.
 - d. Piping shall be installed per the final approved plans with minimum pipe sizing per 2009 Uniform Plumbing Code Section 610.
2. Floor drains in the building shall be supplied and installed by the Contractor.

D. Electrical

1. Electrical rough-in, installation and trim shall be provided by the Contractor.
 - a. All underground and/or overhead service to building shall be as specified in the final site plan.
 - b. Exterior wall plates TAYMAC ML500G
 - c. The Contractor is responsible for outlets, GFIs and Switches 20 amp commercial/industrial grade in white color. Outlet and switch plate covers nylon, smooth finish in color.
 - d. The Contractor is responsible for all necessary wire, connectors, grounding, conduit, and related items to install the building package electrical components and meet all relevant national, state, and local codes.
 - e. The Contractor shall supply and install all switches and outlets required to complete the building package installation.

END OF SECTION

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SECTION 03 00 02
SPECIAL – SHELTER BUILDING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Furnishing the sealed architectural and structural plan sets, and furnishing the structural building components as a complete, pre-designed shelter building package as shown on drawings and as specified herein.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment

1. A Bid Item has been provided for the **Shelter Building Installation**. Measurement and Payment at the **Lump Sum** price will be considered compensation in full for all Work necessary to complete the Bid Item in full, including:
 - a. Building Package installation
 - b. Cast-in-place concrete foundations, footings, interior slabs
 - c. Typical fasteners; for example: roofing nails, staples, etc.
 - d. Fasteners not included in product packaging
 - e. Wood sealant for all decking, glulam beams, posts, and extensions
2. All other Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 SUBMITTALS

- A. Contractor shall submit product data sheets and relevant information about the specified supplied products below for review and approval.

1.04 QUALITY ASSURANCE

- A. Certified Installers: Provide a certified installer to install or direct installation.
- B. Contractor's work shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from the date of acceptance. Acceptance is the date that installation work for the building package is completed, including any relevant final punch list. In the event that final acceptance of the completed building is delayed for reasons beyond building installer's control, the warranty shall be one (1) year from the completion of building installer's installation work and demobilization.
- C. The Contractor shall pass through to owner all relevant manufacturers warranties for individual products and components supplied by building installer.

PART 2 PRODUCTS

A. Approved Building Supplier

1. Romtec, Inc or approved equal
 - a. 18240 North Bank Road, Roseburg, OR 97470
 - b. Tel: 541-496-3541 Fax: 541-496-0803 Email: cdooley@romtec.com

- c. Web: www.romtec.com
- B. Structure
 - 1. Steel rafter, purlin, and column structure.
 - a. Steel components to be primed and painted black.
- C. Roofing
 - 1. Roofing shall be Fabral, 26 gauge, Horizon 16 standing seam roof panels.
 - a. Color: To be determined by Owner, chosen from available list of manufactures standard colors.

PART 3 EXECUTION

3.01 GENERAL

- A. Comply with all applicable laws, ordinances, regulations, permit requirements, orders, and decrees during the conduct of the Work.
- B. Take necessary precautions against damage to the Project by action of the elements.

3.02 INSTALLATION

- A. Cast In-Place Concrete for Building Package.
 - 1. All equipment, labor, trades, and materials for cast-in-place concrete shall be provided by the Contractor.
 - a. Includes all materials and labor for building package foundations/footings and interior slabs.
 - 2. Footings for the building package are to be dug by the Contractor and poured on-site to meet local code for permanent structures. A prefabricated, modular mat placed on compacted base is not an accepted equal to a site specific, site poured, engineered foundation.
 - 3. Engineered fill shall be $\frac{3}{4}$ " minus crushed aggregate around footings, foundations, and slabs, or as required in the final approved plans.
 - 4. Slab vapor barrier shall be 6-mil continuous plastic under the concrete slab, or as required in the final approved plans.
 - 5. The foundation shall be installed as designed with all cast in-place concrete poured to dimensions specified, or as required in the final plans.
 - a. Footings will be built to minimum 24" depth or greater if required by local frost depth or permitting authority.
 - b. Minimum compressive strength of foundation concrete shall be 3,000 psi at 28 days, 4" +/- 1" slump, with max $\frac{3}{4}$ " aggregate, cured in accordance with ACI 308, or as required in approved final plans.
 - c. Slabs shall have a fine broom finish with joints required in flat work as shown on plans.
 - d. Steel rebar shall be installed as specified in final plans.
 - 6. The Contractor shall supply and install concrete slab sealer.
 - a. Concrete slab sealer shall be a water-based, transparent curing, sealing and dust proofing compound with two (2) coats to be applied per manufacturer's instructions.

END OF SECTION

SECTION 03 10 00
CONCRETE FORMWORK

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Furnish and install formwork for cast-in-place concrete.

1.02 PRICE AND PAYMENT PROCEDURES

- A. 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 Concrete Institute (ACI)
 - 1. ACI 347 - Recommended Practice for Concrete Formwork.
- B. The work under this Section shall comply with the "Standard Specifications for Highway and Structure Construction, State of Wisconsin," Latest Edition and all current Supplements (WisDOT Spec.).

1.04 SUBMITTALS

- A. Submittals shall conform to Section 01 33 00.
- B. Submit product data for form ties.

1.05 QUALITY ASSURANCE

- A. The design, engineering, and proper construction of all formwork shall be the responsibility of the Contractor.
- B. Design formwork in accordance with ACI 347.

1.06 PRODUCT HANDLING

- A. Do not store forms or equipment on finished slabs.

PART 2 PRODUCTS

2.01 FORM MATERIAL

- A. Form facing material shall be smooth faced, undamaged plywood or other panel type material approved by the Engineer.
- B. The form facing material shall produce a smooth, hard, uniform texture on the concrete.

- C. The arrangement of the facing material shall be orderly and symmetrical with the number of seams kept to a minimum.
- D. Facing material with raised grain, torn surfaces, worn edges, patches, dents, or other defects which will impair the texture of the concrete surface shall not be used.
- E. Circular column forms shall consist of a continuous laminated fiber tube with exterior moisture protection and non-adhering interior surface similar to "A-Coated Sonotube" as manufactured by Sonoco Products, or approved equal.

2.02 FORM TIES

- A. Form ties shall be factory fabricated, adjustable length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.
- B. The portion of the tie remaining in the concrete after removal of the tie shall be at least 1 inch from the surface of the concrete.
- C. Provide waterseals on all wall ties used in water containment structures and exterior walls.

2.03 FORM COATINGS

- A. Form coatings or release agents shall be commercially formulated chemical release agents containing no lubrication oil, conventional form oil, fuel oil, or kerosene.
- B. The form coating shall not penetrate, stain, or leave a residual film on the concrete surface and shall not attract dirt or other deleterious material.

2.04 ACCESSORIES

- A. Chamfer strips shall be 3/4 inch by 3/4 inch wood or plastic strips.
- B. Provide all anchorages, braces, and special forms required to construct cast-in-place concrete components shown on the Drawings.

PART 3 EXECUTION

3.01 GENERAL

- A. Establish a benchmark in an accessible location and use as a reference point for various construction levels.
- B. Verify lines, levels, and centers before proceeding with formwork.
- C. Insure that dimensions agree with the Drawings. Report any discrepancies to the Engineer before proceeding with Work.

3.02 FORMWORK DESIGN

- A. The design, engineering, and construction of the formwork shall be the responsibility of the Contractor.
- B. Formwork shall be designed in accordance with ACI 347.

- C. Formwork shall be designed, erected, supported, braced, and maintained to safely support all vertical and lateral loads that might be applied until such loads can be supported by the concrete structure.
- D. Formwork shall be cambered to compensate for anticipated deflections in the formwork prior to hardening of the concrete.
- E. Positive means of adjustment of shores and struts shall be provided and all settlement shall be taken up during concrete placing operations. Forms shall be securely braced against lateral deflections.

3.03 FORMWORK CONSTRUCTION

- A. Provide forms for all concrete work. Earth cuts shall not be used as forms for vertical surfaces.
- B. Construct forms to conform to slopes, lines, and dimensions shown on the Drawings.
- C. Forms shall be sufficiently tight to prevent loss of mortar from the concrete.
- D. Place chamfer strips at all exposed corners.
- E. Install all required openings, frames, pipe sleeves, cavities, slots, and other embedded items.
- F. Cut all holes in forms required for installation or embedment of concrete reinforcement bars and ties.
- G. Provide sharp clean corners at intersecting planes without visible edges or offsets. Back joints with extra studs or girts to maintain true, square corners.
- H. Temporary openings shall be provided at the base of column forms and wall forms to facilitate cleaning and observation immediately before concrete is placed. Construct closures to ensure a tight fit flush with the adjoining surfaces.
- I. Provide runways for moving equipment. Runways shall be provided with struts or legs and shall be supported directly on the formwork. Runways shall not rest on the reinforcing steel.
- J. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris before concrete is placed.

3.04 TOLERANCES

- A. Construct formwork so that concrete surfaces will conform with the following tolerances:
 - 1. Variation from plumb:
 - In any 10 feet of length 1/4 inch.
 - Maximum for entire length 1/2 inch.
 - 2. Variation from the level or specified grade:
 - In any 10 feet of length 1/4 inch.
 - Maximum for entire length 1/2 inch.
 - 3. Variation of the linear building lines from established position in plan and related position of columns, walls, and partitions:
 - In any 20 feet of length 1/2 inch.
 - Maximum for entire length 1 inch.
 - 4. Variation in the sizes and locations of sleeves, floor openings, and wall openings: $\pm$ 1/4 inch.

5. Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls:
 - Minus 1/4 inch.
 - Plus 1/2 inch.
6. Footings (tolerances apply to concrete dimensions only, not to positioning of reinforcing steel):
 - a. Variations in dimensions in plan:
 - Minus 1/2 inch.
 - Plus 1 inch.
 - b. Misplacement 1 inch.
 - c. Thickness:
 - Decrease in thickness 1/2 inch.
 - Increase in thickness No limit
7. Variations in steps:
 - a. In flight of stairs:
 - Rise $\pm 1/8$ inch.
 - Tread $\pm 1/4$ inch.
 - b. In consecutive steps:
 - Rise $\pm 1/16$ inch.
 - Tread $\pm 1/8$ inch.

3.05 FORM SURFACE PREPARATION

- A. Clean surfaces of forms and embedded material of all accumulated mortar or grout from previous concreting and of all other foreign material before concrete is placed.
- B. Before placing the reinforcing steel or the concrete, the surfaces of the forms shall be covered with an acceptable coating material that will effectively prevent absorption of moisture, prevent bond with the concrete, and not stain the concrete surfaces.
- C. Excess form coating material shall not stand in puddles in the forms.
- D. Form coating material shall not come in contact with hardened concrete against which fresh concrete is to be placed.
- E. Spray form coating on all concrete form surfaces, including wood forms for wall openings, keyway strips, and chamfer strips.

3.06 RE-USE OF FORMS

- A. Clean and repair surfaces of forms to be re-used.
- B. Do not use split, frayed, delaminated, or otherwise damaged form facing material.

3.07 FORM REMOVAL

- A. Formwork for columns, walls, sides of beams, and other parts not supporting the weight of the concrete may be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations, but not less than 24 hours after completing concrete placement and finishing.
- B. Forms and shoring used to support the weight of concrete in beams, slabs, and other structural members shall not be removed in less than 10 days and not until the concrete has attained 3,500 psi minimum compressive strength. Compressive strength shall be determined by field-cured specimens.

- C. Once forms and shoring supporting beams, slabs, and other structural members have been removed, concrete structural members at each level shall be reshored the same day such that all superimposed loads are uniformly distributed and transferred directly to the foundation through temporary supports. No construction or other live loads shall be permitted on the members, unless sufficient support is in place or concrete has attained full design strength and loads do not exceed the design maximum, as approved by the Engineer.
- D. The Contractor shall be responsible for all damage resulting from removal of forms or premature overloading of structural members.
- E. Wood forms for wall openings shall be loosened as soon as possible without damage to the concrete.

END OF SECTION

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SECTION 03 20 00

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. The Work in this Section includes the furnishing all labor, equipment, materials, including anchorages and supports, and performing all operations, including fabrication, delivery, and installation, required for concrete reinforcement as shown in strict accordance with the Construction Drawings and as herein specified.

B. Related Sections:

1. Section 03 10 00 – Concrete Formwork.
2. Section 32 13 14 – Concrete Walks and Pads.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and Payment

1. Payment for concrete reinforcement shall be incidental to the cost of cast-in-place concrete.
2. All other work and costs of this Section will be considered included in the cost of the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

A. Reference Standards: The following publications form a part of this Specification to the extent referenced. The publications are referenced in the text by basic designation only:

1. ACI: American Concrete Institute, ACI 315 - Details and Detailing of Concrete Reinforcement.
2. The work under this Section shall comply with the "Standard Specifications for Highway and Structure Construction, State of Wisconsin," Latest Edition and all current Supplements (WisDOT Spec.)
3. CRSI: Concrete Reinforcing Steel Institute Manual of Standard Practice.

1.04 SUBMITTALS

A. Submit all required items for approval before Work is started in accordance with Section 01 33 00.

B. Action Submittals:

1. Shop Drawings: Submit complete shop drawings and bar lists of all material to be furnished and installed under this Section. Show bar sizes, spacings, locations, and quantities of reinforcing and bending details:
 - a. Make shop drawings in accordance with ACI 315 and the CRSI Manual of Standard Practice. Drawings shall show in detail the location, size, spacing, bends, and quantities of each and all reinforcing bars to be placed in the structure. Bars shall have unique identifying labels or marks for each size, length, bend configuration, etc.

C. Informational Submittals:

1. Certifications: Submit mill certifications for all reinforcement bars.
2. Product Data: Submit product data on threaded dowel inserts.

1.05 QUALITY ASSURANCE

- A. Comply with ACI 301, except as modified in this Section.

1.06 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate installation with the representatives of the other trades on site and Owner's Representative to facilitate Work and avoid conflicts in construction sequence and concrete installation.
- B. Sequencing:
 - 1. The Contractor is responsible for ensuring that all necessary sleeves and utilities are in place prior to installation of concrete work.
- C. Scheduling
 - 1. Prior to starting Work, submit for review by the project Landscape Architect/Owner's Representative, and approval by the Owner, a schedule showing the commencement, order and completion date of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance:
 - 1. Deliver reinforcement to the Site bundled, tagged, and marked.
- B. Storage and Handling:
 - 1. All reinforcement shall be clearly tagged/piece marked by the fabricator prior to final storage. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement drawings.
 - 2. Store reinforcement in a manner to prevent damage from drainage and accumulation of dirt and excessive rust.
 - 3. Do not store reinforcement, supports, or equipment on finished slabs.
 - 4. Store metal bar supports in a weather-proof shelter.
- C. Waste Management and Disposal:
 - 1. Dispose of all waste generated from packaging and installation as required by local ordinances.
 - 2. Any excess material is the property of the Contractor and shall be disposed of off Site.
 - 3. Recycle all materials that are recyclable and dispose of all organic materials at composting facilities.

1.08 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of other construction contiguous with concrete by field measurements before fabrication and indicate measurements on shop drawings.
- B. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating reinforcement without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
- C. If practical, provide allowance for trimming and fitting at Site.

PART 2 PRODUCTS

2.01 MATERIAL

- A. Reinforcing Bars: Deformed billet steel bars conforming to ASTM A615, Grade 60.
- B. Welded Wire Reinforcement: Steel wire spot welded at intersections conforming to ASTM A185. Use flat sheets only.

2.02 ACCESSORIES

- A. Bar Supports for Elevated Slabs, Walls, Columns, and Beams: All bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place shall be plastic protected, conforming to CRSI Class 1 protection for bar supports.
- B. Ground Supported Reinforcing: All ground supported reinforcement shall be supported by chairs on precast concrete blocks. Precast concrete blocks shall have a minimum compressive strength of 4,000 psi.
- C. Tie Wire: Shall be black annealed wire, 16 gauge or heavier.
- D. Threaded Dowel Inserts: Threaded dowel inserts shall be manufactured of minimum Grade 60 steel and shall be capable of achieving 125 percent of specified yield strength of reinforcement steel for the bar size indicated.

2.03 FABRICATION

- A. Fabricate reinforcing steel to required shapes and dimensions.
- B. Do not rebend or straighten reinforcing steel.
- C. Fabricate bars in accordance with the fabricating tolerances given in ACI 315.

PART 3 EXECUTION

3.01 PLACING

- A. Place reinforcing steel in accordance with ACI 117, the Drawings, approved shop drawings, and as specified herein. Notify Engineer of any discrepancies or conflicts as soon as they are discovered.
- B. Reinforcing steel shall have the following concrete cover, unless specifically noted differently on the Drawings:
 - 1. Concrete cast against earth 3 inches.
 - 2. All other concrete 2 inches.
- C. Properly position reinforcing steel and wire it together at intersections and supports to ensure against displacement during concrete placing. All reinforcing steel shall be tied to wall forms.
- D. Reinforcing steel for slabs on grade shall be supported by placing precast concrete blocks at all locations where chairs are to be located. Chairs or standees shall be placed over concrete blocks.
- E. Dowels shall be wired in place before placing concrete.

- F. All reinforcing steel must be placed and tied before concrete is placed.
- G. Reinforcing steel embedded in hardened or partially hardened concrete shall not be bent after placing.
- H. All reinforcement at the time concrete is placed shall be free of mud, oil, or other materials that may adversely affect or reduce the bond.

3.02 SPLICES

- A. Provide reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying. Provide lap splice lengths as shown on the Drawings.
- B. Splices shall be made only as shown on the Drawings or as authorized by the Engineer.
- C. Threaded or other approved mechanical bar splices shall be used where shown on the Drawings and may be used elsewhere for the convenience of the Contractor at no additional cost to the Owner if specifically requested of and approved by the Engineer.

3.03 TOLERANCES

- A. Bars shall be placed to the tolerances indicated in ACI 117.

END OF SECTION

SECTION 03 30 10
REINFORCED CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install all cast-in-place concrete, including formwork, reinforcement, supports, and accessories.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. Payment for furnishing and installing cast-in-place concrete, including formwork, reinforcement, supports, and accessories will be considered included in the cost of the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. 301 – Specifications for Structural Concrete for Buildings.
 - 2. 315 – Details and Detailing of Concrete Reinforcement.
- B. American Society for Testing Materials (ASTM):
 - 1. C31 – Standard Practice for Making and Curing Concrete test Specimens in the Field.
 - 2. C33 – Standard Specification for Concrete Aggregates.
 - 3. C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 4. C143 – Standard Test Method for Slump of Hydraulic Cement Concrete.
 - 5. C150 – Standard Specification for Portland Cement.
 - 6. C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - 7. C260 – Standard Specification for Air-Entraining Admixtures for Concrete.
 - 8. C494 – Standard Specification for Chemical Admixtures for Concrete.
 - 9. C618 – Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Portland Cement Concrete.

1.04 SUBMITTALS

- A. Submittals shall conform to Section 01 33 00 – Submittal Procedures.
- B. Submit complete shop drawings and bar lists of all reinforcement materials to be furnished and installed under this Section. Show bar sizes, spacings, locations, and quantities of reinforcing and bending details.
- C. Make shop drawings in accordance with ACI 315.
- D. Submit concrete mix designs at least 14 days prior to placement of concrete.
- E. Submit manufacturer's data for concrete admixtures, curing materials, finishing compounds, expansion joint materials, and adhesive anchoring material.

- F. Submit concrete test results.

1.05 QUALITY ASSURANCE

- A. Comply with ACI 301, except as modified in this Section.
- B. The design, engineering, and proper construction of all formwork shall be the responsibility of the Contractor.
- C. The Contractor shall hire an independent testing laboratory, approved by the Engineer, to perform the work listed below. All costs for this testing shall be paid by the Contractor:
 - 1. Test proposed aggregate.
 - 2. Design concrete mixes.
 - 3. Cast and test concrete cylinders for all concrete in accordance with ASTM C31 and C39.
 - 4. Determine slump of concrete from each truck in accordance with ASTM C143.
 - 5. Determine air content of concrete from each truck in accordance with ASTM C231.

1.06 PRODUCT HANDLING

- A. Store reinforcement, supports and accessories at the project site in a manner to prevent damage from water, accumulation of dirt or construction activities.
- B. Do not store forms, shores, reinforcing, equipment or other materials on finished slab surfaces.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Form facing materials shall produce a smooth, hard, uniform texture on the concrete.
- B. Facing materials with raised grain, torn surfaces, worn edges, patches, dents, or other defects which will impair the texture of the concrete surface shall not be used.
- C. Circular column forms shall consist of a continuous laminated fiber tube with exterior moisture protection and non-adhering interior surface, similar to "A-Coated Sonotube" as manufactured by Sonoco Products, or approved equal.
- D. Form ties shall be factory fabricated, adjustable length, removable or snap-off metal form ties designed to prevent form deflection and to prevent spalling concrete surfaces upon removal.
- E. The portion of the tie remaining in the concrete after removal of the tie shall be at least 1 inch from the surface of the concrete. Provide waterseals on all wall ties used in water containment structures and exterior walls.
- F. Form coatings or release agents shall be commercially formulated chemical release agents containing no lubrication oil, conventional form oil, fuel oil, or kerosene.
- G. The form coating shall not penetrate, stain, or leave a residual film on the concrete surface and shall not attract dirt or other deleterious material.

2.02 CONCRETE REINFORCEMENT

- A. Reinforcing Bars: Deformed billet steel bars conforming to ASTM A615, Grade 60.

- B. Welded Wire Fabric: Steel wire spot welded at intersections conforming to ASTM A185. Use flat sheets only.

2.03 CONCRETE MATERIALS

- A. Concrete constituents shall conform to the following minimum requirements:

Cement	Conform to ASTM C150 or C595, Type I - from 1 source of supply
Aggregate	Conform to ASTM C33 - from 1 source of supply
Water	Clean potable and free from deleterious substances
Air Entraining Admixture	Conform to ASTM C260
Water Reducing Admixture	Conform to ASTM C494, Type A
Fly Ash	Conform to ASTM C618, Class C or F

- B. Concrete mixture shall conform to the following minimum requirements:

Coarse aggregate size	ASTM C33 Size No. 67
Minimum compressive strength at 28 days	4000 psi
Maximum water-cement + pozzolan ratio	.45
Minimum cement and pozzolan content	564 lb/cu. yd.
Slump	3 inches $\pm$ 1 inch
Entrained air content	6 percent $\pm$ 1-1/2 percent

2.04 CONCRETE ACCESSORIES

- A. Chamfer strips shall be 3/4 inch by 3/4 inch wood or plastic strips.
- B. Burlap-Polyethylene Sheets: Burlap polyethylene sheets for curing shall consist of burlap weighing not less than 10 oz./lin. yd., 40 inches wide impregnated on 1 side with white opaque reinforced polyethylene 0.006 inch thick.
- C. Curing Compound: Conform to ASTM C309, Type 1-D, Class B, clear or translucent with fugitive dye. Not to be applied to slabs receiving sealer.
- D. Expansion Joint Material: Flexible closed-cell foam, 3/8" or 1/2" thickness. Deck-O-Foam, or equal, with removable tear-off strip.
- E. Void Forms: Void forms shall be Slab Void System as manufactured by Sure Void Products, Inc., Englewood, Colorado (800) 458-5444, or approved equal.

PART 3 EXECUTION

3.01 FORMWORK

- A. Formwork shall be designed and constructed in accordance with ACI 347.
- B. Formwork shall be designed, erected, supported, braced, and maintained to safely support all vertical and lateral loads that might be applied until such loads can be supported by the concrete structure.

- C. Construct forms to conform to slopes, lines, and dimensions shown on the Drawings. Earth cuts shall not be used as forms for vertical surfaces.
- D. Place chamfer strips at all exposed corners. Install and secure all required openings, bolts, pipes, sleeves, plates, and other embedded items prior to placing concrete.

3.02 REINFORCEMENT

- A. Place reinforcing steel in accordance with the Structural Drawings, approved shop drawings, and as specified herein.
- B. Reinforcing steel shall have the following concrete cover, unless specifically noted differently on the Drawings:
 - 1. Concrete cast against earth 3 inches.
 - 2. All other concrete 2 inches.
- C. Properly position reinforcing steel and wire it together at intersections and supports to ensure against displacement during concrete placing. All reinforcing steel shall be tied to wall forms.
- D. All reinforcing steel, including dowels and embedded items, must be placed and tied securely with wire before concrete is placed.
- E. All reinforcement at the time concrete is placed shall be free of mud, oil or other materials that may adversely affect or reduce the bond.
- F. Provide reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying. Provide lap splice lengths as shown on the Drawings.
- G. Bars shall be placed to the following tolerances:
 - 1. Clear distance to formed surface $\pm 1/4$ inch.
 - 2. Spacing dimensions $\pm 1/2$ inch.

3.03 CONCRETE PRODUCTION

- A. Ready-mixed concrete shall be batched, mixed, and transported in accordance with ASTM C94.
- B. Discharge concrete from truck within 60 minutes after cement is added to the mix.
- C. Do not add water at the Site without the permission of the Engineer.

3.04 CONCRETE PLACEMENT

- A. Formwork shall be completed and all reinforcement and embedded items shall be secured in place. Accessories, such as expansion joint materials and waterstop, shall be in place and secured.
- B. All snow, ice, and mud shall be removed prior to placing concrete. Do not place concrete on frozen ground or ground with either standing water or when upper 2 inches of ground is saturated.
- C. Do not place concrete during rain, sleet, or snow.
- D. Deposit concrete continuously or in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section.

- E. Concrete which has partially hardened or has been contaminated by hardened materials shall not be deposited.
- F. Remove rejected concrete from the Site.
- G. Deposit concrete as nearly as practicable in its final position to avoid segregation due to handling or flowing.

3.05 PLACING CONCRETE SLABS

- A. Deposit and consolidate concrete slabs in a continuous operation.
- B. Consolidate concrete placed in slabs by mechanical vibration or other methods acceptable to the Engineer. Bring slab surfaces to the correct level with a straight edge and then strike off. Use bullfloats or darbies to smooth the surface, leaving it free from bumps and hollows.
- C. Screed surface to lines and grades shown. Slope to drains. Do not leave screed stakes in concrete.
- D. Do not sprinkle water on the plastic surface. Do not disturb the slab surfaces prior to start of finishing operations.

3.06 COLD WEATHER PLACING

- A. Do not place concrete when the air temperature is less than 40 degrees F without the specific approval of the Engineer.
- B. Cold weather concrete work shall conform to all requirements of ACI 306.1, except as modified by the requirements of these Contract Documents.
- C. Concrete shall not be placed against any frozen substrate, including subgrade soils and surfaces of formwork.
- D. Concrete shall not be placed around any embedment, including reinforcing steel that is at a temperature below freezing.
- E. The temperature of the concrete delivered at the site shall conform to the following limitations:

Minimum Concrete Temperature		
Air Temperature	< 12 Inches Thick	12 – 36 Inches Thick
Above 30 degrees F	60 degrees F	55 degrees F
0 to 30 degrees F	65 degrees F	60 degrees F
Below 0 degrees F	70 degrees F	65 degrees F

- F. If water or aggregate is heated above 100 degrees F, the water shall be combined with the aggregate in the mixer before cement is added. Cement shall not be mixed with water or with mixtures of water and aggregate having a temperature greater than 100 degrees F.
- G. When the mean daily temperature is less than 40 degrees F, the temperature of the concrete shall be maintained between 50 degree and 70 degrees F for the required curing period.

- H. Arrangements for heating, covering, insulation, or housing the concrete work shall be made in advance of placement and shall be adequate to maintain the required temperature without injury due to concentration of cold or heat. Protection shall remain in place for a minimum of 3 days.
- I. Combustion heaters shall not be used during the first 24 hours, unless precautions are taken to prevent exposure of the concrete to exhaust gases.
- J. Once the cold weather concrete protection is removed, concrete curing must be continued for the remainder of the 10-day curing period.

3.07 HOT WEATHER PLACING

- A. Comply with ACI 305 when hot weather conditions exist.
- B. Maintain concrete temperature at time of placement below 90 degrees F.
- C. When the temperature of the steel is greater than 120 degrees F, steel forms and reinforcement shall be sprayed with water prior to placing concrete.
- D. Keep all surfaces protected from rapid drying. Provide windbreaks, shading, fog spraying, sprinkling, ponding, or wet covering in advance of placement.

3.08 CONCRETE SLAB FINISHING

- A. Float Finish:
 - 1. Apply float finish to all slab surfaces. Consolidate the surface by handfloating.
 - 2. Check and level the surface plane to a tolerance not exceeding 1/4 inch in 10 feet when tested with a 10-foot straight-edge placed on the surface at not less than 2 different angles.
 - 3. Immediately after leveling refloat the surfaces to a smooth, uniform, granular texture.
- B. Trowel Finish:
 - 1. Apply steel trowel finish to all interior floor slabs.
 - 2. Apply float finish to slabs as described above in Paragraph 3.08.A.
 - 3. After floating, begin the first trowel finish operation using a power-driven trowel. Begin final troweling when the surface produces a ringing sound as the trowel is moved over the surface.
 - 4. Consolidate the concrete surface by the final hand troweling operation, free from trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8 inch in 10 feet when tested with a 10-foot straight-edge.
- C. Broom Finish:
 - 1. Apply non-slip broom finish to all exterior sidewalks and aprons.
 - 2. Apply float to slabs as described above in Paragraph 3.08.A.
 - 3. Immediately after floating, slightly roughen the concrete surface by brooming in the direction perpendicular to the main traffic route. Use a fiber-bristle broom for light texturing.

3.09 CONCRETE CURING

- A. Immediately after finishing operations are complete, all slabs shall be covered with burlap-polyethylene sheets, wetted and kept in place for at least 7 days.
- B. Formed surfaces shall be covered with burlap-polyethylene sheets or sprayed with curing compound immediately after form removal. Do not allow compound to contact steel reinforcement.

3.10 PATCHING AND CLEANING

- A. Repair honeycomb and other defective areas, fill surface voids and fill form tie holes and similar defects in accordance with Section 5 of ACI 301. Fill any and all voids in and under footings with concrete of equal strength to that specified for footings.
- B. Upon completion, all exposed concrete surfaces shall be thoroughly cleaned of all concrete spatters, form oil, or other foreign material detrimental to appearance.
- C. All excess concrete debris remaining after completion of placement and form removal shall be removed from the Site and disposed of in a proper and legal manner.

END OF SECTION

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SECTION 04 05 13

MORTAR

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Work under this section includes mortar for unit masonry.
- B. Related Sections
 - 1. 04 22 00 – Concrete Unit Masonry.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. All work and costs of this section will be considered included in the cost of the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- A. The following specifications and standards are incorporated by reference:
 - 1. American Society for Testing Materials (ASTM)
 - a. C144 Standard Specification for Aggregate for Masonry Mortar.
 - b. C150 Standard Specification for Portland Cement.
 - c. C207 Standard Specification for Hydrated Lime for Masonry Purposes.
 - d. C270 Standard Specification for Mortar for Unit Masonry.

1.04 TESTING AGENCY

- A. Employ the service of an independent testing laboratory approved by the Architect or Engineer for testing of mortar specified herein.

1.05 SUBMITTALS

- A. Test Reports: Submit information copies in duplicate of all test reports to the Architect, OWNER, Local Building Official, and SER.

PART 2 PRODUCTS

2.01 MORTAR MATERIALS

- A. Portland Cement: ASTM C150, Type 1 or Type 2. Provide natural color or white cement as required to produce required mortar color.
- B. Masonry Cement: Not allowed.
- C. Hydrated Lime: ASTM C207, Type S.
- D. Aggregates: ASTM C144.

- E. Water shall be clean, potable, and free of deleterious amounts of acids, alkalis, or organic materials.
- F. Colored Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes.
 - 1. Use only pigments with record of satisfactory performance in masonry mortars.
 - 2. Colors:
 - a. At Architectural Precast Concrete: As approved by the Architect.
 - b. At Concrete Unit Masonry: As approved by the Architect.
 - 3. Acceptable Manufacturers and Products:
 - a. Centurion: Centurion Pigments.
 - b. Rockwood Industries, Davis Colors: True Tone Mortar Colors.
 - c. Solomon Grind-Chem Services, Inc.: SGS Mortar Colors.
 - d. Prism Pigments: Mortar Colors.
 - e. Or approved equal.

2.02 MEASURING AND MIXING

- A. The method of measuring materials for the mortar used shall be by their volume or weight, and such that the specified proportions of the mortar can be controlled and accurately maintained. Measurement of sand by shovel shall not be permitted.
- B. Cementitious material and aggregate shall be mixed for at least 3 minutes and not more than 5 minutes in a mechanical batch mixer with the maximum amount of water to produce a workable consistency.
- C. Mix mortar as required for immediate use only. Discard any mixed for a period exceeding 2-1/2 hours. Non-colored mortar only may be re-tempered as required to restore proper consistency.
- D. Mortar Proportions by Volume

Type	Parts by Volume of Portland Cement	Parts by Volume of Hydrated Lime	Aggregate Measured in a Damp, Loose Condition
M	1	1/4	Not less than 2-1/4 times and not more than 3 times the sum of the volumes of cement and lime used
S	1	Over 1/4 to 1/2	
N	1	Over 1/2 to 1-1/4	

- E. Putty made from 92-percent hydrated lime may be used immediately after mixing.

2.03 MORTAR PROPERTIES

- A. Mortar shall conform to the property specifications of ASTM C270 and the following:
 - 1. Compressive Strength: The average compressive strength of three 2-inch cubes of mortar shall not be less than the strength given in the following table for the mortar type specified:

Mortar Type	Average Compressive Strength at 28 Days (psi)
M	2,500
S	1,800
N	750

PART 3 EXECUTION

3.01 REFERENCE MASONRY

- A. Reference Unit Masonry Sections for mortar types, color, installation, and protection requirements.

END OF SECTION

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SECTION 04 05 19
MASONRY ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Accessories related to masonry work as specified herein.
- B. Related Sections
 - 1. 03 20 00 – Concrete Reinforcement.
 - 2. 04 22 00 – Concrete Unit Masonry.

1.02 PRICE AND PAYMENT PROCEDURES

- A. All work and costs of this Section will be considered included in the cost of the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- A. American Society for Testing Materials (ASTM)
 - 1. A153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 2. C476 Standard Specification for Grout for Masonry.

1.04 SUBMITTALS

- A. Product Data: Shall be manufacturers' printed data sheets on each product and application.
- B. Shop Drawings: Provide graphic details of layout and installation.
- C. Samples: Provide samples upon request.
- D. Manufacturers' installation instructions.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products in manufacturers' original sealed packaging.
- B. Store products away from direct sunlight, heat sources, and open flame. Replace damaged material before start of installation.

1.06 WARRANTY

- A. Warranty in accordance with Section 01 78 36.

PART 2 PRODUCTS

2.01 REINFORCEMENT, ANCHORS AND TIES

- A. Acceptable Manufacturers for Reinforcement, Anchors, and Ties:

1. Dur-O-Wal, a Hohmann & Barnard Company.
 2. Heckmann Building Products, Inc.
 3. Masonry Reinforcing Corporation of America (Wire-Bond).
 4. Or approved equal.
- B. Deformed Reinforcing Bars for Wall Reinforcing: Provide under this Section to comply with requirements specified under Section 03 20 00.
- C. Horizontal Reinforcement for Single Wythe Concrete Masonry Unit Walls: Ladder-type reinforcing with perpendicular cross rods spaced not more than 16 inches on center, complete with prefabricated corners and tees.
1. Wire Type and Gauge
 - a. Side Rods: Smooth No. 9 cross wires.
 - b. Cross Rods: Smooth No. 9 cross wires.
 2. Size: Width to position side wires over masonry unit face shells.
 3. Finish
 - a. At interior walls use hot-dipped galvanized, ASTM A153, Class B-2, 1.50 ounce per square foot zinc coating.
 4. Acceptable Manufacturers and Product
 - a. Dur-O-Wal, a Hohmann & Barnard Company: DA3200 Single Wythe Ladur.
 - b. Comparable product of other specified manufacturers.
- D. Horizontal Reinforcing for Cavity Walls with Stud Wall Back-Up: Veneer anchor spaced not more than 16 inches on center.
1. Wire type and gauge:
 - a. Anchor Thickness: 12 gauge.
 - b. Vee-Byna-Tie: 3/16 inch.
 2. Vee-Byna-Tie Length: Length to position ties properly over brick masonry units.
 3. Finish: Hot-dipped galvanized, ASTM A153, Class B-2, 1.50 ounce per square foot zinc coating.
 4. Acceptable manufacturers and product:
 - a. Dur-O-Wal, a Hohmann & Barnard Company: DW-10.
 - b. Comparable product from other specified manufacturers.
- E. Wire Mesh Ties: 1/2-inch square mesh of 16-gauge steel wire, 3-inch wide strip by length as indicated or required to provide not less than 2 inches of embedment in mortar joint.
1. Finish: Hot-dipped galvanized, ASTM A153, Class B-2, 1.50 ounce per square foot zinc coating.
 2. Acceptable Manufacturers and Product:
 - a. Dur-O-Wal, a Hohmann & Barnard Company: DA960 – Wire Mesh Ties and Rolls.
 - b. Comparable product of other specified manufacturers.
- F. Expansion Ties at Concrete, Concrete Block, or Steel: Adjustable tie.
1. Finish: Hot-dipped galvanized, ASTM A153, Class B-2, 1.50 ounce per square foot zinc coating.
 2. Acceptable manufacturer and product:
 - a. Dur-O-Wal, a Hohmann & Barnard Company: DA2200 Joint Stabilizing Anchor.
 - b. Comparable product of other specified manufacturers.

2.02 ACCESSORIES

- A. Backer Rods and Sealants: Provided.
- B. Control Joint: As per detail.
- C. Horizontal Joint Grout Barrier:

1. Corrosion proof and biologically inert grout barrier which maintains positive bond in mortar joint.
2. Acceptable manufacturer and product:
 - a. Dur-O-Wal, a Hohmann & Barnard Company: DA1018 Dur-O-Stop.
 - b. Comparable product of other specified manufacturer.

2.03 GROUTS AND CONCRETE FILL

- A. Grout: ASTM C476, except masonry cement not permitted for vertically reinforced masonry. Compressive strength 3,000 pounds per square inch in 28 days, unless otherwise indicated. Not less than 9-inch slump at mixing and not more than 10-inch slump at placement.

PART 3 EXECUTION

3.01 INSTALLATION OF ACCESSORIES IN MASONRY

- A. Wall Reinforcing: Insert wall reinforcing at courses specified in Section 04 22 00. Overlap reinforcing 6 inches, install prefabricated corner reinforcing, and extend into intersecting walls. Bend and overlap wires at wall ends, vertical control joints, or jambs.

3.02 CONTROL JOINTS

- A. Control Joints: Provide constant width joint as detailed.
- B. Interrupt wall reinforcing at control joints.

3.03 ANCHORAGE OF INTERSECTING WALLS OR PARTITIONS

- A. Partitions Intersecting Bearing Walls and Exterior Walls: Use expansion ties every second course as detailed.
- B. Partition intersection, other than that noted in Paragraph A, use prefabricated corners or tees.

END OF SECTION

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SECTION 04 22 00
CONCRETE UNIT MASONRY

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Work under this Section includes providing labor, materials, and equipment necessary for the complete erection of the concrete block and related materials in accordance with the Drawings and Specifications.
 - 2. Complete masonry Work as shown and detailed on the Drawings and otherwise as required, including but not limited to the following:
 - a. Mortar materials.
 - b. Block and other masonry unit materials.
 - c. Masonry reinforcing materials.
 - d. Miscellaneous bond beams and lintels.
 - e. Grout for reinforced masonry walls.
- B. Related Sections
 - 1. 04 05 13 – Mortar.
 - 2. 04 05 19 – Masonry Accessories.

1.02 PRICE AND PAYMENT PROCEDURES

- A. All work and costs of this Section will be considered included in the cost of the Project and included in the TOTAL BASE BID.

1.03 REFERENCE STANDARDS

- A. The following specifications and standards are incorporated by reference:
 - 1. American Society for Testing Materials (ASTM):
 - a. C33 Standard Specification for Concrete Aggregates.
 - b. C90 Standard Specification for Load-bearing Concrete Masonry Units.
 - c. C140 Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
 - d. C476 Standard Specification for Grout for Masonry.
 - e. C1314 Standard Test Method for Compressive Strength of Masonry Prisms.
 - 2. The Masonry Society
 - a. 402 Building Code Requirements and Specifications for Masonry Structures.

1.04 QUALITY ASSURANCE

- A. Compressive Strength Verification by the Unit Strength Method:
 - 1. Unless noted otherwise, compressive strength of masonry shall be determined by the Unit Strength Method per ASTM C140.

1.05 SUBMITTALS

- A. Test Reports: Submit test reports in duplicate indicating compliance with applicable Specifications for compressive strength, absorption, weight, moisture content, and dimensions for each type of masonry unit.
- B. Block Certificates: Submit manufacturer's Block Certificates as required for each type and size of block used on the Project.

1.06 HANDLING, DELIVERY, AND STORAGE

- A. Handle, transport, and store at the Site in a manner that will avoid damage.
- B. Concrete masonry units shall be protected from wetting prior to use. The units shall be cubed on pallets at the time of manufacture and shall be delivered to the Site with waterproof coverings. It shall be the Contractor's responsibility to see that the units remain covered on the Project.

PART 2 PRODUCTS

2.01 MASONRY UNITS

- A. Concrete masonry units shall be of modular dimensions; shall conform to the ASTM Specifications, and the modifying and additional requirements as indicated below:
 - 1. Hollow Load Bearing Units: ASTM C90.
 - 2. Minimum compressive strength of 2,000 psi.
 - 3. Unless otherwise noted, all units shall be normal weight aggregate (ASTM C33).
 - 4. Bullnose block units shall be furnished and installed at jambs and where indicated on the Drawings.
 - 5. **All CMU shall be Open Core ("H" block) style units.**
- B. Reinforcement
 - 1. Joint reinforcement shall be steel wire ladder type, 3/16-inch diameter manufactured in accordance with ASTM A-82, hot dipped galvanized in accordance with ASTM A153, Class B2.
 - 2. Reinforcing steel shall be ASTM A615 Grade 60 deformed billet bars.
- C. Grout
 - 1. Grout 28-day strength compressive strength f_g shall be 2,500 psi
- D. Special Units:
 - 1. Standard Concrete Block (CMU): Shall be 8 inches high, normal weight, and conforming to the requirements specified above. Provide bullnose edges at all outside corners.
 - a. Acceptable Manufacturers:
 - 1) Amcon Block and Precast, Inc.
 - 2) Anchor Block Company.
 - 3) County Materials Corporation.
 - 4) Or approved equal.

PART 3 EXECUTION

3.01 MORTAR

- A. Mortar proportioning and mixing is specified in Section 04 05 13.
- B. Tempering: The consistency of mortar may be adjusted to the satisfaction of the mason
 1. Use mortar within 2-1/2 hours after mixing.
- C. Lay masonry in mortar of the type specified below, unless otherwise noted:

Kind of Masonry	Masonry Type
Load-bearing masonry in contact with the ground	M
Load-bearing construction and exterior single-wythe masonry	S
Exterior veneer masonry (Brick, stone, etc.)	N
Masonry other than above	N

- D. Mortar Color: As selected by the Architect.

3.02 LAYING UNIT MASONRY

- A. Lay masonry in straight, uniform courses, plumb and true to line and plane, unless otherwise specified or indicated on the Drawings:
 1. Use face shell bedding with full coverage of face shells of hollow units, full bed for solid units.
- B. Build in property anchors, ties, plates, beams, lintels, flashings, inserts, etc. which come in contact with masonry work:
 1. Consult other trades in advance and make provisions for installation of their work in order to build in Work specified under other Sections of these Specifications as the Work progresses.
 2. No cutting or drilling shall be done without the permission and instruction of the General Contractor.
- C. Reinforce concrete block masonry work with wall reinforcing, starting at every second course in bearing walls and every second course in non-bearing walls:
 1. Bond facing units to backing with reinforcing and metal ties as specified.
 2. Corners and ends shall be formed by cutting and bending to fit by use of prefabricated corner units. Place reinforcing in the first and second bed joints above and below opening or recesses where possible.
 3. Terminate reinforcing on each side of control joints.
- D. Fill Solid with Concrete or Grout:
 1. The entire core under bearing plates.
 2. Top course of bearing walls and around openings as shown on Drawings.
- E. Masonry units shall be cut with saws and shall be free from broken or chipped corners. Shells and cross webs of hollow masonry units shall be loaded with mortar. Units shall be shoved in place so that joints are completely filled without pointing. Facing material shall be free from mortar smears.
- F. Wetting of concrete units before laying is not permitted.
- G. Construct bond beams as detailed.

H. Pattern: CMU courses shall be laid in running bond, unless otherwise noted on the Drawings.

I. Control and Expansion Joint:

1. Install control and expansion joints at the following maximum spacings, unless otherwise indicated on Drawings:
 - a. Exterior Walls: 20 feet on center and within 24 inches on 1 side of each interior and exterior corner.
 - b. Interior Walls: 30 feet on center.
 - c. At changes in wall height.
2. Do not continue horizontal joint reinforcement through control and expansion joints.

3.03 JOINTS

- A. Where new mortar joints join masonry that is partially set or totally set, the exposed surface of the set masonry shall be cleaned so as to obtain the best possible bond with the new work.
- B. If it becomes necessary to stop a continuous horizontal run of masonry, step back a minimum of 1/2 unit length in each course. Toothing will not be permitted, except upon written approval of the Architect or Engineer.
- C. Where cutting of exposed units is necessary, the cuts shall be made with a motor-driven masonry saw.
- D. Exposed mortar head and bed joints in block walls shall have a thickness equal to the difference between the actual dimension and nominal dimensions of the unit, either in height or in width.

3.04 TOOLING, CLEANING, POINTING

- A. Tool all unit masonry joints, including block covered by finishes and block below grade.
- B. Tool joints in exposed interior and exterior concrete block.
 1. Unless shown on the Drawings, joints shall be tooled concave and smooth with a 5/8-inch round bar tool for weather tightness and appearance.
- C. After mortar has cured thoroughly, clean exposed masonry. If stiff brushes and water are not adequate, clean masonry with cleaning materials and methods approved by the masonry manufacturer. Cleaning shall not result in discoloration of masonry.
- D. At completion of Work, point holes or defective mortar joints and where necessary cut out and re-point defective joints.

3.05 PROTECTION OF WORK

- A. Protect Facing Material, Sills, and Ledges Against Staining:
 1. Keep top of wall covered with non-staining waterproof coverings at end of day and when Work is not in progress at the wall.
 2. Anchor coverings securely, overhang at least 2 feet on each side of wall.
 3. When Work is resumed, clean off all loose mortar from top surface.
- B. Lay no masonry when the temperature of the outside air is below 40 degrees F or is anticipated to fall below 40 degrees F, unless suitable means are provided to heat the masonry materials and maintain the completed work at a temperature of 40 degrees F.

1. Mortar ingredients should be heated to produce mortar temperatures between 40 degrees F and 120 degrees F. Every effort should be made to produce consecutive batches of mortar with the same temperatures falling within this range. The mortar temperature after mixing and before use should be above 40 degrees F, maintainable either by auxiliary heaters under the mortar board or by more frequent mixing of mortar batches. Heated mortar should not become excessively hot (greater than 120 degrees F).
2. Cold Weather Requirements While Work is Progressing:
 - a. Use dry masonry units with a surface temperature of not less than 40 degrees F. wet or frozen masonry units shall not be laid.
 - b. Air Temperature 40 Degrees F to 32 Degrees F: Sand or mixing water shall be heated to produce mortar temperatures between 40 degrees F and 120 degrees F.
 - c. Air Temperature 32 Degrees F to 25 Degrees F: Sand and mixing water shall be heated to produce mortar temperatures between 40 degrees F and 120 degrees F. Maintain temperatures of mortar on boards above freezing.
 - d. Air Temperature 25 Degrees F to 20 Degrees F: Sand and mixing water shall be heated to produce mortar temperatures between 40 degrees F and 120 degrees F. Maintain temperatures of mortar on boards above freezing. Salamanders or other sources of heat shall be used on both sides of walls under construction. Windbreaks shall be employed when wind is in excess of 15 mph.
 - e. Air Temperature 20 Degrees F and Below: Sand and mixing water shall be heated to produce mortar temperatures between 40 degrees F and 120 degrees F. Enclosure and auxiliary heat shall be provided to maintain temperature above 32 degrees F. Temperature of units when laid shall be not less than 20 degrees F.
3. Concrete block walls indicated to receive vertical reinforcing shall be maintained at a temperature of not less than 40 degrees F for a period of not less than 48 hours after the vertical reinforcing has been grouted. Contractor shall verify and document surface temperatures of the concrete block units prior to placement of grout at vertical reinforcing locations.
4. In order to avoid "thermal shock" in concrete block walls, the heat (either temporary or permanent) shall be turned on or off at a rate not to exceed 20 degrees per hour or approximately 50 degrees F per 24 hours.

3.06 GROUTING MASONRY

- A. Grouting shall be placed by pouring in lifts not exceeding 5 feet in height. It shall be consolidated by vibrating during placement and reconsolidated after excess moisture has been absorbed but before plasticity is lost.
- B. Special care shall be given to holding reinforcing steel in the proper position during the grouting operation. Utilize rebar positioners when necessary.
- C. Install a horizontal joint grout barrier when flow-thru bond beam blocks are utilized. Do not use roofing felt or other materials that will inhibit bonding between the bond beam and the masonry below.
- D. Stop grout placement 1-1/2 inches below bed joints to create a shear key between successive grout pours. Stop grout placement 1/2 inch below the top of masonry at bond beams.

3.07 TESTING

- A. Prism tests on all widths and types of CMU shall be provided in accordance with Division 01. Copies of tests shall be distributed to the Architect/Engineer, the Owner, and the Local Building Inspector.

END OF SECTION

SECTION 12 92 00

SITE FURNISHINGS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. The work in this Section includes the furnishing all labor, equipment, materials, including anchorages and fittings, and performing all operations, including fabrication, delivery, and installation, required for Site Furnishings as shown in strict accordance with the Construction Drawings and as herein specified.

B. Related Sections

1. Section 32 17 23 – Pavement Markings

1.02 PRICE AND PAYMENT PROCEDURES

A. Unit Prices

1. A Bid Item has been provided for Relocate ADA Sign & Post, R7-8 & R7-8b.

B. Measurement and Payment

1. Measurement of the **Relocate ADA Sign & Post, R7-8 & R7-8b** is by **Each**, in accordance with the Drawings. Payment will be made at the Contract price per number installed.
2. Payment for the above items will be compensation in full for all costs of fabricating, finishing, furnishing, assembling, and installing, complete and in place as shown in the Drawings, including all incidentals thereto. Miscellaneous materials required in the details and Specifications, including, but not limited to anchorages, footings, fasteners, touch ups, maintenance and warranty information are considered incidental, unless specified as a Bid Item.

- ###### C. All other work and costs of this Section will be considered included in the cost of the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- ###### A. Reference Standards: The following publications form a part of this Specification to the extent referenced. The publications are referenced in the text by basic designation only:

1. The work under this Section shall comply with the "Standard Specifications for Highway and Structure Construction, State of Wisconsin," Latest Edition and all current Supplements (WisDOT Spec.)
2. ASTM: American Society for Testing and Materials.
3. WMUTCD: Wisconsin Manual on Uniform Traffic Control Devices

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1. Coordinate installation with the representatives of the other trades on Site and Owner's Representative to facilitate Work and avoid conflicts in construction sequence and Site furnishing and other construction.

B. Scheduling

1. Prior to starting Work, submit for review by the Project Landscape Architect/Owner's Representative, and approval by the Owner, a schedule showing the commencement, order and completion date of the Work.

PART 2 PRODUCTS

2.01 MATERIAL

A. Sign Posts

1. Manufacturer / Distributor: Unistrut Corporation, or equal.
2. Series Name: Telespar Square Tube Systems.
3. Style: Solid Square Tubing, 14-Gauge, Non-Perforated, Bronze.
4. Dimensions / Part Sizes: See Detail Drawing on Plans.

B. Sign Panels

1. Manufacturer: 3M, or equal.

C. Sign Anchor System

1. Manufacturer: Omni Anchor
2. Style: 12 gauge, Non-Perforated, Bronze
3. Dimensions / Part Sizes: See Detail Drawing on Plans.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Field Measurements: The Contractor shall verify site conditions and dimensions shown on the Drawings. Notify Owner's Representative of any major differences, obstructions, or utilities that in any way affect Site furnishing installation.

3.02 PREPARATION

- A. Verify placement and alignment for all Site furnishings.

3.03 INSTALLATION

A. General

1. Install items rigid, plumb, level and true to lines, levels and orientation shown in details and shop drawings.
2. Contractor shall take necessary measure to protect Site furnishings and existing work and surfaces from damage, marring or soiling during transport, handling, and installation.
3. Contractor shall transport, position, and install all Site furnishings as indicated in the Drawings and Specifications, and as approved by the Engineer.

END OF SECTION

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 _____ onsin 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.

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.

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 inch 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.

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	0.5
		1-1/2 inches and larger	1.0
Domestic Cold Water (Hard and Soft Water)	P-1	1-1/4 inches and smaller	0.5
		1-1/2 inches and larger	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 Arrestor 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.
- 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. Floor Drain (FD-1): Josam 30000-A series, with 4-inch satin finish bronze strainer, bottom outlet.

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.

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.

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 tapings.
- 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. Water coolers.
- 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, Lavatories and Sinks
 - 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. Water Coolers

1. Elkay.
2. Halsey Taylor.
3. Haws.
4. Oasis.

2.02 WATER CLOSET (WC-1 AND WC-2)

A. Water closet: Furnished by Building Supplier

B. Flush Valve: Furnished by Building Supplier

C. Seat: Furnished by Building Supplier

2.03 URINALS (UR-1 & UR-1A)

A. Urinal: Furnished by Building Supplier

B. Flush Valve: Furnished by Building Supplier

C. Wall Mounted Carrier: Furnished by Building Supplier

D. Provide elastomeric gasket complying with ASME A112.4.3, or approved setting compound, for fixture to flange connection.

2.04 WALL HUNG LAVATORY (L-1)

A. Basin: Furnished by Building Supplier.

B. Mechanical Metering Faucet: Furnished by Building Supplier.

C. Accessories:

1. Chrome plated 17 gage brass P-trap with clean-out plug and wall escutcheon.
2. Open grid strainer with tailpiece.
3. Flexible supplies.
4. Trap and waste insulated and offset to meet ADA compliance for A suffix fixtures.

D. Carrier: Furnished by Building Supplier.

2.05 MOP SINKS (S-1)

A. Basin: Furnished by Building Supplier.

B. Faucet: Furnished by Building Supplier.

2.06 DRINKLING FOUNTAIN (DF-1)

A. Fountain: Furnished by Building Supplier.

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 weather and 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-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. 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
------------	----------

AIR SYSTEM	MATERIAL
Relief, Toilet Exhaust and Transfer	Steel, galvanized

END OF SECTION

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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. 112 - Standard Test Procedure for Polyphase Induction Motors and Generators.
 - 2. 519 - Recommended Practices and Requirements for Harmonic Control In Electric Power Systems.
- E. LPI - Lightning Protection Institute
 - 1. LPI175 - Lightning Protection System Installation Standard.
- F. NECA - National Electrical Contractors Association
 - 1. NECA 1 - Standard Practices for Good Workmanship In Electrical Contracting.
- G. 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).
- H. NFPA - National Fire Protection Association
 - 1. NFPA 70 - National Electrical Code.
- I. OSHA - Occupational Safety and Health Administration
 - 1. 29 CFR 1910 - Occupational Safety and Health Standards.
- J. 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-810 - Capacitors.
 - 11. UL-891 - Dead-Front Switchboards.
 - 12. UL-913 - Intrinsically Safe Apparatus and Associated Apparatus for Use In Class I, II, and III, Division 1, Hazardous (Classified) Locations.
 - 13. UL-935 - Fluorescent-Lamp Ballasts.
 - 14. UL-1008 - Transfer Switch Equipment.
 - 15. UL-1012 - Power Units Other Than Class 2.
 - 16. UL-1029 - High-Intensity-Discharge Lamp Ballasts.
 - 17. UL-1449 - Surge Protection Devices.
 - 18. UL-1479 - Fire Tests of Through-Penetration Firestops.
 - 19. 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 3 hard (paper) copies in a 3-ring binder. Provide a table of contents and each piece of equipment or sub-system shall be tabbed.
 - 5. Provide 2 digital copies in a PDF format saved to a compact disk. The saved files shall be clearly identified and organized in a similar manner to the hard copies
 - a. Data saved on the disks 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.
 - 6. 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 stainless steel screws or a permanent stamped brass 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-foot 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 Carbocrylic 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 Liqueatite 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 splices 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 08 00

COMMISSIONING OF ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. All equipment checks, adjustments, tests, and system energization shall be performed as specified below. If any test specified will void the warranty of any equipment to be tested, the Engineer shall be notified and further instructions received before proceeding with the test.
 - 2. The following items shall be tested
 - a. Grounding system resistance.
 - b. Receptacle outlets.
 - 3. When the Work is complete, a final inspection will be made and the Contractor shall demonstrate that all equipment and systems conform to the Drawings and Specifications.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement Payment
 - 1. All Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 QUALIFICATION OF PERSONNEL

- A. All personnel responsible for testing and commissioning equipment as a part of this Project shall be specially trained for the tasks they are to perform.
- B. Personnel operating test equipment shall have had previous training and experience in using the equipment and shall be thoroughly familiar with the equipment capabilities and limitations.
- C. All tests shall be made by or under the direct supervision of service personnel who are factory-trained in the application and operation of the device being tested.
- D. Evidence of the experience of test personnel in the form of certificates of training or other acceptable documentation shall be made available upon request of the Engineer.
- E. The Engineer reserves the right to require the Contractor to provide different test personnel if those performing the tests do not demonstrate competency in their work.

1.04 SCHEDULING AND REPORTING

- A. All tests shall be scheduled 48 hours in advance with the Engineer and shall be conducted in his presence or the presence of his representative. Test results shall be tabulated neatly and legibly on the test forms, which are included at the end of this Section and which are available from the Engineer. Any other report forms shall be submitted for approval at least 4 weeks before tests are made. Test reports shall include the pertinent readings or observations, a description of the method used, and a list of the equipment employed.
- B. If the materials or equipment fail under test, the test reports shall include the following:
 - 1. Pertinent readings or observations made up to the point of failure.

2. Any abnormal readings.
 3. Any data which might indicate the cause of failure.
 4. The cause of the failure, if determined.
 5. Corrective measures taken.
- C. In all cases of test failure, the Contractor shall demonstrate that the corrective measures proposed are adequate before making any repairs, adjustments, or replacements.
- D. 6 copies of all test reports shall be submitted to the Engineer within 24 hours after completion of the test. In addition, 1 complete set of test reports shall be included in each Operation and Maintenance Manual.

1.05 TESTING EQUIPMENT

- A. Testing equipment used for a given test shall be recommended by the manufacturer for that particular test and shall be approved by the Engineer.
- B. Ground resistance measurements shall be made with a 3 terminal, null balance instrument that has an accuracy of ± 2 percent of full scale reading of selected range, and which provides direct reading down to 0.5 ohm; AEMC Model 3640, AVO (Megger) Catalog No. DET62D, or approved equal. Approved Alternates are the AEMC Model 3711 and the AMPROBE Catalog No. AMPDGC1000 clamp-on ground testers.
- C. Voltage and current measurements shall be made with a true RMS instrument, which has an accuracy of ± 1 percent of full scale. Scale shall be selected so that the reading is not less than one-half scale.
- D. All test equipment shall be provided by the Contractor.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 INSPECTION

- A. All equipment shall be given a thorough visual inspection by the installer to detect insofar as possible any loose or erroneous connections, damaged components, the presence of foreign objects or materials, poor workmanship, incorrect rating of protective devices, or other abnormal conditions.
- B. Every bolted or screwed connection or terminal with a torque rating shall have a torque wrench or torque screwdriver applied to assure tightness before any equipment is energized. This shall apply to both factory made and field made connections and terminations. Any problem or damage resulting from a faulty connection or termination shall be the responsibility of the Contractor.
- C. Covers shall be installed on all pull boxes, junction boxes, and raceway fittings before the final inspection.

3.02 GROUND RESISTANCE MEASUREMENTS

- A. The resistance of each ground rod shall be measured with a 3-terminal connection. Another measurement shall be made after all ground connections are made.

3.03 RECEPTACLE TESTS

- A. After the system is energized, each receptacle shall be checked with a receptacle tester to verify proper connection of the hot, neutral, and grounding conductors.

3.04 COMMISSIONING

- A. Contractor shall demonstrate to the satisfaction of the Engineer that all control and alarm systems are functioning as specified. This shall include but is not limited to motor control circuits, heating controls, and level alarms. Contractor shall make all adjustments necessary to obtain the proper operation of the above systems. This shall include but is not limited to adjusting limit switches and level controls; providing the necessary type and quantity of device, relay, and starter contacts; changing wire connections to device contacts; and calibrating signal devices.

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. Surge Protection Device (SPD)
 - 1. LED status indication of individual phases.
 - 2. Direct bus bar connection.
 - 3. Maximum continuous operating voltage shall be 115 percent of nominal system operating voltage.
 - 4. UL-1449 Suppressed Voltage Rating
 - a. 800 volts for 480Y/277-volt panelboards.
 - b. 400 volts for 208Y/120-volt panelboards.
 - 5. Protection modes shall be L-L, L-N, L-G, N-G.
 - 6. Minimum rated surge current capacity
 - a. 160kA per phase, 80kA per mode for 480Y/277-volt panelboards.
 - b. 80kA per phase, 40kA per mode for 208Y/120-volt panelboards.
 - 7. 10 year replacement warranty minimum.
 - 8. UL-1449, third edition.
 - 9. SPD shall be same manufacturer as panelboard.
- E. 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 Surge Protection Device integral to panelboard where noted on the schedules.
- D. 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 assemblies 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.
- O. Clock outlets shall be 7 feet above the floor.

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 PROCURES

- 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. Luminaire ballasts.
 - 4. 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 or which 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. Luminaires with fluorescent emergency lighting packs shall be switched as indicated on the Drawings. A separate unswitched conductor shall provide power to the emergency lighting pack.

- I. Intermediate framing shall be provided between structural members to support both ends of fluorescent luminaires mounted below gypsum board ceilings.
- J. Pole erection and mounting shall be done according to pole manufacturer's recommendations.
- K. A concrete base shall be provided for each outdoor luminaire, unless noted otherwise. Base types shall be provided as detailed on the Drawings.

END OF SECTION

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SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 GENERAL

1.01 DESCRIPTION

- A. Clearing and grubbing shall consist of, but is not limited to, the following: Clearing brush and trees, removal of rocks, roots, stumps, logs, fences, pipes, debris and any other obstructions interfering with construction.
- B. This section describes cutting and disposing of trees, brush, windfalls, logs, and other vegetation occurring within the clearing limits; and removing and disposing of roots, stumps, stubs, logs, rocks, fences, pipes, debris and other obstructions occurring within the grubbing limits and interfering with construction.
 - 1. All material as described above shall be removed from the site in a timely manner. Debris shall not be allowed to be stockpiled on the site.
 - 2. Owner shall identify trees to be removed.
 - 3. As described above, all material removed from the site in preparation for construction shall become the property of the contractor who is responsible for its proper disposal.

1.02 PRICE AND PAYMENT PROCEDURES

A. MEASUREMENT AND PAYMENT

- 1. A Bid Item has been provided for **Tree Protection**. Measurement will be by the **lineal foot** installed. Payment will constitute compensation in full for installation, maintenance and removal.
- 2. All other work and costs for this Section shall be incidental to this project and included in the TOTAL BASE BID.

1.03 REGULATORY REQUIREMENTS

- A. Conform to all applicable codes for disposal of debris.

1.04 REFERENCES

- A. All work performed and material supplied shall conform to the State of Wisconsin, Standard Specifications for Highway and Structure Construction, latest edition and all current supplements, except as may hereinafter be modified (WisDOT Spec.):
 - 1. 201 – Clearing and Grubbing.

1.05 SEQUENCING AND SCHEDULING

- A. Conform to the requirements of WisDOT Specifications.

PART 2 PRODUCTS

2.01 GENERAL

- A. The contractor shall employ all products necessary for the complete execution of the work.

2.02 TREE PROTECTION

- A. Tree Protection fence shall be orange plastic mesh, 4 feet in height.

PART 3 EXECUTION

3.01 GENERAL

- A. The contractor is responsible to provide protection against damage to adjacent property caused this construction.
- B. The contractor will be required to restore any damage to adjacent property caused by this construction.
- C. Site clearing operations will be conducted to ensure minimum interference with roads, sidewalks and adjacent facilities roads and sidewalks shall be thoroughly cleaned and/or swept on a daily basis.
- D. The contractor is responsible for all required traffic control.

3.02 PROTECTION

- A. Conduct operations so as not to damage surrounding private property.
- B. Protect trees intended to be saved from injury or defacement during operations
 - 1. Restrict widths of utility trenches.
 - 2. Provide protective bracing, sheeting, or box to insure safe Work conditions as incidental to Contract.
- C. Install tree protection (temporary fencing) at the drip lines of trees to be protected prior to any construction activities in order to protect vegetation.

3.03 DISPOSAL

- A. Dispose of all cleared and grubbed material and debris outside the right-of-way at a location selected by the Contractor, except for trees and logs to be salvaged.
- B. Disposal site should be a properly designated landfill area as determined by appropriate governmental agencies or lands under direct control of the Contractor.
- C. Stripped or salvaged materials not used for embankments or restoration shall be disposed off Site. Prior to deposition of stripped or salvaged material, the disposal site shall be cleared of trees and brush. After disposal of stripped or salvaged material, the embankment shall be graded, top soiled with salvaged soil, and seeded in accordance with Section 32 92 00 – Turf and Grasses.
- D. On Site burial of any debris is not permitted.

END OF SECTION

SECTION 31 23 00

EXCAVATION AND FILL

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work Included:
 - 1. Stripping and storage of topsoil.
 - 2. Excavated material unsuitable for fill shall be hauled off site and properly disposed of by Contractor.

1.02 PRICE AND PAYMENT PROCEDURES

- A. MEASUREMENT AND PAYMENT
 - 1. A Bid Item has been provided for **Topsoil Stripping and Stockpiling**. Measurement will be by the **Lump Sum**. Payment at the Bid Unit Price shall include all costs related to performing the work in accordance with these Specifications including specified here in and on the drawings and permit requirements including all topsoil stripping and stockpiling.
 - 2. A Bid Item has been provided for **Grading**. Measurement will be by **Lump Sum**. Payment at shall include all costs related to performing the work in accordance with these Specifications including earth moving, excavating on site material, furnishing and installing clean fill material, disposal of unsuitable material off site, and all related work.
 - 3. All other work and costs for this Section shall be incidental to this project and included in the TOTAL BASE BID.

1.03 QUALITY ASSURANCE

- A. Comply with the following laws, codes, ordinances and regulations:
 - 1. WDNR Chapter Regulations.
 - 2. State of Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, Latest Edition, except as may hereinafter be modified.
 - 3. Local Codes and Ordinances.
 - 4. Wisconsin Construction Site Best Management Practice Handbook.
 - 5. WDNR Technical Standard 1004.

1.04 INITIAL WALK THROUGH

- A. The Contractor shall inspect all installed erosion control practices prior to beginning construction and submit, in writing to the Engineer, a description and location of any and all suspect structures. Subsequent claims for dislocated or damaged castings or valve boxes or dirt in structures will not be given consideration and the Contractor will be required to make repairs.

1.05 REFERENCES

- A. All work performed and material supplied shall conform to the State of Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, Latest Edition, except as may hereinafter be modified (Standard Specifications).

1.06 SEQUENCING AND SCHEDULING

- A. Strip and stockpile topsoil in the areas shown on the Drawings or as recommended by the Contractor and approved by the Engineer.
- B. After stripping and stockpiling topsoil, perform excavation and fill grading to elevations shown on the plans.
- C. Topsoil shall be replaced to a depth of 6 inches.

PART 2 PRODUCTS

2.01 MATERIALS

- A. On-Site Fill: Material that is suitable for backfill as determined by the Engineer and is capable to support the bearing pressure of what it is supporting.
- B. Borrow: Conform to WisDOT Spec. 208
 - 1. The material shall be a soil which is capable of attaining specified compaction levels, excluding soils which contain organics, contain debris or are potentially expansive (CH or MH per the Unified Soil Classification System).
- C. Granular Backfill: Conform to WisDOT Spec. 209.
- D. Select Crushed Material: Conform to WisDOT Spec. 312.
- E. Topsoil and Salvaged Topsoil: Conform to WisDOT Spec 625.

2.02 IMPORTED FILL

- A. Material shall be free of debris, large boulders, organic or other material, which may prevent required compaction.

PART 3 EXECUTION

3.01 PROTECTION OF EXISTING TREES AND SLOPES

- A. Trees to be protected according to Section 31 11 00.
- B. Adjustments in slopes, to avoid injury to standing trees or to match with existing landscape features, especially at the intersection of cuts and fills, shall be made and the transition to such adjusted slopes shall be gradual. The crest of earth cut banks shall be rounded as indicated on the plans or as directed by the Engineer. All earth slopes shall be constructed to a surface that will smoothly merge with adjacent terrain and be in substantial accordance with the Plan.

3.02 LIMITS OF CONSTRUCTION OPERATIONS

- A. The Contractor shall not operate equipment on areas which are not to be graded except as specifically authorized by the Engineer. Any damage caused to areas not within the project limits shall be repaired by the Contractor at his own expense. Grading limits are defined as an average of 8' to 14' on either side of the center line of trail or play areas.

3.03 STRIPPING AND STOCKPILING OF TOPSOIL

- A. Clean areas from which topsoil is to be stripped in accordance with Section 31 11 00.

- B. All topsoil in the excavation area shall be stripped.

3.04 COMMON EXCAVATION

- A. Excavation and grading shall include any and all materials encountered in the performance of the work within the designated grading limits in accordance with these specifications and to lines, grades and cross sections or details shown on the Drawings.
- B. During grading operations and pending final acceptance, the Contractor shall provide continuous maintenance of the entire work and perform all blading and repair work necessary to keep the grade smooth and to the required grade. Washouts caused by erosion shall be refilled and properly compacted.
- C. All excess material will be the property of the Contractor who shall be responsible for hauling and disposing of the non-soil material and placing the soil at locations where fill is required.
- D. Prior to the placement of fill, any and all non-soil materials shall be removed. This work shall also include the removal and satisfactory disposal of surface and base courses, embankment surcharge, masonry walls, foundations of building or other structures, stone fences, stone piles, drain tiles and surplus and unsuitable materials.
- E. Common excavation shall, include any and all materials encountered in the performance of the work within the designated grading limits in accordance with the Specifications and Drawings. This work shall also include the removal and satisfactory disposal of encountered asphalt pavement, concrete pavement, trees, stumps, brush and any other material and maintaining such work in a finished condition until acceptance.
- F. Topsoil or highly organic matter in the pavement sections exceeding excavation limits of 9.0 inches will be considered common excavation. Contractor shall not excavate greater than 9.0 inches in the pavement sections without prior notification and approval of the Engineer or Owner. All areas exceeding 9.0" in the pavement sections will be backfilled with Base Aggregate Dense 3/4 - Inch as specified in Section 32 11 23 or suitable fill material as approved by Engineer.
- G. Contractor shall provide and maintain all temporary sheeting necessary to protect personnel and adjacent property from injury or damage during construction operation.
- H. All construction shall be in accordance with the "Standard Specifications", Sections 205, 207, and 208, the Supplemental Specifications and all other applicable sections.
- I. No material shall be stockpiled in wetlands. All excavated material unsuitable for general fill will become property of the Contractor. Haul material and properly dispose of off-site.
- J. The contractor must have the subgrade checked; proof rolled and approved prior to placement of any base course materials.

3.05 IMPORTED FILL

- A. Fill used on site shall be compacted to a dry density of at least 95 percent of the modified Proctor maximum dry density (ASTM D-1557), or equivalent. The compaction should be accomplished by placing the fill in lifts not exceeding 8 inch loose thickness and mechanically compacted each lift to at least the specified minimum dry density. Field density tests shall be performed on each lift as necessary to ensure that adequate compaction is achieved.

3.06 REPLACEMENT OF TOPSOIL

- A. Topsoil shall be placed in accordance with WisDOT Spec. 625.3.3. The seeding, fertilizing, and stabilization operations shall promptly follow the topsoil replacement to minimize erosion problems.
- B. Place 6-inch depth of topsoil beneath all areas to be seeded or planted. Re-used topsoil shall be screened.
- C. Harrowing or disking or both will be required as necessary to assist in breaking down clods and lumps and to provide a uniform texture to this soil.
- D. All work shall be trimmed, shaped and restored to the finished grade by means of a grader and other equipment, supplemented by hand work where necessary to produce smooth surfaces and slopes and uniform sections.

3.07 DISPOSAL OF EXCESS CUT MATERIAL

- A. All excess Cut Material deemed fit for reuse by the Engineer or Owner shall be disposed of at the City of New Berlin Recycling Center for reuse. Haul away of excess material is included in the cost of Common Excavation, within the measurement/payment section.

END OF SECTION

SECTION 31 23 13

SUBGRADE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Grading, shaping, and compacting subgrade prior to placing a base or surface course.
- B. RELATED SECTIONS
 - 1. Section 31 23 00 – Excavation and Fill.
 - 2. Section 32 11 23 – Aggregate Base.

1.02 PRICE AND PAYMENT PROCEDURES

- A. MEASUREMENT AND PAYMENT
 - 1. No Bid Item has been provided for subgrade preparation. Subgrade preparation and all related Work shall be considered incidental to the Project with no direct compensation made therefore.
 - 2. All other Work and costs of this Section shall be incidental to the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - latest edition including all current supplements (WisDOT Spec):
 - 1. 205 – Roadway and Drainage Excavation.
 - 2. 207 – Embankment.
 - 3. 211 – Preparing the Foundation.

1.04 SEQUENCING AND SCHEDULING

- A. Subgrade preparation shall be performed prior to placement of the aggregate base material.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.01 GENERAL

- A. Subgrade preparations shall be performed to produce the required density, grade, and cross-section.

3.02 PREPARATION

- A. Conform to WisDOT Spec. 207.3.

3.03 COMPACTION

- A. Conform to WisDOT Spec. 207.3.6.2.

3.04 FINISH OPERATIONS

- A. Finished grades shall provide for matching the existing pavement or top of curb elevations.
- B. Subgrade Tolerance:
 - 1. A tolerance of ± 0.1 foot from the proposed subgrade elevations shall be allowed.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install all labor, equipment, material, and related services to dewater all applicable portions of the project.
- B. Provide all necessary dewatering during construction of the entire project.

1.02 PRICE AND PAYMENT PROCEDURES

A. MEASUREMENT AND PAYMENT

- 1. No measurement will be made of the items in this section. All work performed as specified and as shown on the plans will be considered to be incidental to the TOTAL BASE BID.

1.03 SUBMITTALS

- B. Dewatering plan must be submitted prior to the pre-construction meeting.
- C. Submit dewatering plan for all applicable excavations.

1.04 SITE CONDITIONS

- A. Protect the project site and adjacent property to avoid any damage caused by dewatering and pumping.
- B. All dewatering discharge shall be the responsibility of the Contractor.
- C. Insure that no erosion occurs and that no contamination of the adjacent low areas occurs due to dewatering.

PART 2 PRODUCTS

2.01 DEWATERING EQUIPMENT

- A. The choice of dewatering equipment shall be the responsibility of the Contractor.
- B. Dewatering by pumping from manholes will be acceptable if this method is able to keep the excavation dry.
- C. If pumping from manholes is not able to maintain a dry excavation, dewatering shall be accomplished by means of well points, vacuum well points, deep wells, or a combination of these methods.
- D. Contractor shall remove from the site, all sand, silt, and debris accumulated during dewatering operations.

PART 3 EXECUTION

3.01 DEWATERING

- A. All dewatering shall be carried out in accordance with an approved plan. Plan must be approved by the Engineer prior to any dewatering operations.
- B. All dewatering shall be done to insure that no erosion or pollution results.
- C. Dewatering shall be of such magnitude necessary to insure that all excavations are acceptable for the construction requirements.
- D. The Contractor shall insure that the dewatering is operated continuously, 24 hours per day, during the times necessary to construct the excavation and piping.
- E. Upon completion of the operation, the areas shall be cleaned of all debris and equipment and shall be returned to original or better condition.

END OF SECTION

SECTION 32 11 23

AGGREGATE BASE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Production and placement of base aggregate for asphalt, concrete and poured-in-place surfacing (PIP by others).
- B. Related Sections
 - 1. Section 31 23 13 – Subgrade Preparation.

1.02 MEASUREMENT AND PAYMENT

- 1. A Bid Item for **Base Aggregate Dense 1 1/4 - Inch** has been provided on the Bid Form. Measurement and payment will be by the **Cubic Yard** of material compacted in place, and as specified in WisDOT Spec. 305.
- 2. Quantities may be increased or decreased at the time of operations; however, no adjustment in the Bid Unit Price will be allowed.
- 3. All other work and costs of this Section will be considered included in the cost of the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" latest Edition and all current Supplements (WisDOT Specification):
 - 1. 301 – Base, Subbase, and Subgrade Aggregate.

1.04 SUBMITTAL

- A. Submit gradation report on sample of aggregate base to be used.

1.05 SEQUENCING AND SCHEDULING

- A. Construct aggregate base only after all of the following have been completed:
 - 1. Subgrade has been corrected for instability problems and successfully passed a test rolling test performed by the Contractor and witnessed by the Engineer.
 - 2. Subgrade has been checked for conformance to line and grade tolerances (stringline).

PART 2 PRODUCTS

2.01 MATERIALS

- A. Base Aggregate Dense: Conform to the requirements of WisDOT Section 305.2, 100 Percent Crushed Stone, except as modified below:
 - 1. Use 1 1/4 - inch (31.5 mm) limestone aggregate for all concrete sidewalks, concrete pads and asphalt paths.
- B. No recycled concrete is allowed as an aggregate on the project.

PART 3 EXECUTION

3.01 PREPARATION

- A. Prepare the subgrade in accordance with Section 31 23 13.
- B. Subgrade to be completed and approved by the Engineer prior to installation of aggregate base.

3.02 EXAMINATION

- A. Perform removal work without damage to adjacent retained work. Where such work is damaged, the Contractor shall patch, repair, or otherwise restore same to its original condition at no expense to the Owner.
- B. Remove debris from the work area as often as necessary, but not less than at least once at the end of each workday. Debris shall be placed in approved containers to prevent the spread of dust and dirt.
- C. Execute the work in a careful and orderly manner with the least possible disturbance to the public and occupants of buildings.

3.03 PROTECTION

- A. Take all necessary precautions to adequately protect personnel, and public and private property in the areas of work.
- B. All street signs, traffic control signs, guy wires, mailboxes, posts, etc. which may interfere with construction shall be removed, stored safely, and replaced.
- C. Approved barriers or warning signs shall be provided as necessary.
- D. Provide and maintain protection of existing structures and culverts designated to remain where work is being done, connections made, materials handled, or equipment moved.
- E. Do not close or obstruct sidewalks or roadways. Do not store or place materials in passageways or other means of egress. Conduct operations with minimum traffic interference.
- F. Take reasonable precautions to limit damage to existing turf.
- G. Holes or depressions created by removals shall not be left open for more than 1 day. Any hole within 10 feet of road edge shall be filled, suitably marked, or covered immediately.
- H. Avoid disturbance to any material beyond the limits required for new construction.
- I. Keep aggregate base free of ruts and irregularities until covered by surface paving.
- J. Place water on pulverized material for dust control as required eliminating nuisance conditions for adjacent properties.

3.04 CONSTRUCTION REQUIREMENTS

- A. Construct the Base Aggregate Dense in accordance with the requirements of WisDOT Spec. 305.3.

3.05 FIELD QUALITY CONTROL

- A. Deliver weight tickets to City of New Berlin or Engineer daily.

END OF SECTION

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SECTION 32 12 16

HOT MIX ASPHALT PAVEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes

1. Hot plant mixed asphalt-aggregate mixtures for asphalt binder and surface courses and driveways.
2. Asphaltic tack coat.

B. Related Sections

1. Section 32 11 23 – Aggregate Base Course

1.02 PRICE AND PAYMENT PROCEDURES

A. MEASUREMENT AND PAYMENT

1. A Bid Item has been provided for Hot Mix Asphalt
 - a. Method of measurement shall be in accordance with WisDOT Sections 450.4, 455.4, 460.4, and 465.4, except as modified below:
 - 1) **HMA Pavement, 4 LT 58-28 S (Surface)**: Measurement will be by weight in **tons** with tickets furnished by the Contractor on a daily basis.
 - 2) **HMA Pavement, 3 LT 58-28 S (Binder)**: Measurement will be by weight in **tons** with tickets furnished by the Contractor on a daily basis.
 - 3) Asphaltic Binder Material for Mixture: No separate measurement will be made for asphaltic binder material.
 - b. Basis of payment shall be in accordance with WisDOT Sections 450.5, 460.5, and 465.5, except as modified below:
 - 1) Asphaltic Mixtures: Payment at the Contract Bid Unit Price and as outlined in WisDOT Section 450.5 shall be compensation in full for each hot mix asphalt course placed and accepted as stated on the Bid Form and on the typical section of the Drawings.
 - 2) Asphaltic Binder Material for Mixture: No explicit direct payment shall be made. Cost of asphaltic binder material will be incidental to the cost of the mixture.
2. A Bid Item has been provided for **Tack Coat**.
 - a. Method of measurement shall be in accordance with WisDOT Spec. Section 455.4, except as modified below:
 - 1) Cleaning of all debris and dirt from the previous asphaltic surfaces prior to placement of Tack Coat is considered included.
 - 2) Measurement shall be by **gallon** effectively applied.
 - b. Basis of payment shall be in accordance with WisDOT Section 455.5.
3. All other Work and costs of this Section shall be incidental to the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - latest edition including all current supplements (WisDOT Spec.), except as modified herein:
 1. 450 – General Requirements for Asphaltic Pavements.

2. 455 – Asphaltic Materials.
3. 460 – Hot Mix Asphalt Paving.
4. 465 – Asphaltic Surface.

1.04 SUBMITTALS

- A. Submit mix design(s) at the preconstruction conference that will be used on the Project. If mix design is not available at the time of the preconstruction conference, submit mix design at least 15 days before commencement of paving.

1.05 QUALITY CONTROL

- A. Provide and maintain a QC Program conforming to WisDOT Section 460.2.8 – Quality Management Program, except as modified below:
 1. Engineer shall have authority to increase frequency of testing.

1.06 SEQUENCING AND SCHEDULING

- A. Aggregate base to be completed and approved by the Engineer prior to placement of bituminous surfaces.
- B. The Contractor shall provide a 48-hour notice prior to paving operations.
- C. Install asphalt.
- D. The City reserves the right to require the Contractor to test the pavement through asphalt cores if issues with the paving operations warrant testing.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Mixture Designation: Conform to WisDOT Section 460 – Table 460-2.
- B. Aggregate Material: Conform to the gradation requirements of WisDOT Section 460.2.2 and the Construction Details.
- C. Asphaltic Binder In Mixture: Conform to the requirements of WisDOT Section 455.2.
- D. Asphaltic Materials for Tack Coat: Conform to WisDOT Section 455.2.5.

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor to review the proposed paving sequence with the Engineer prior to placement of each hot mix asphalt course (lift).
- B. The proposed sequence shall address the: longitudinal seams, compaction, traffic control, hauling routes, and placement of pavement markings.
- C. Preparation of Asphalt Binder Course
 1. Final clean up of the pavement surface with the use of a power pickup broom and front-end loader.
- D. Joints:
 1. Where new construction meets existing asphalt surfacing, the existing surface shall be uniformly milled or saw-cut straight and asphaltic tack coat applied prior to placement of each hot mix asphalt course (lift). For joint construction, an existing hot mix asphalt surface shall be considered to include any hot mix asphalt surface not paved on the same day as the new construction. The Owner may require milling or sawcutting on surfaces paved the same day, if, in the opinion of the Owner, the mix has cooled to a point where a new milled or sawed edge is necessary.
 2. Proper traffic safety shall be implemented where required to protect joints from damage.

3.02 RESTRICTIONS

- A. All street surfaces shall be checked and approved by the Engineer prior to paving.
- B. Existing asphalt surfaces and aggregate bases must be dry prior and during placement of any asphalt pavements.
- C. Asphalt shall not be placed when the air temperature in the shade and away from artificial heat is 50 degrees or less, unless otherwise approved by the Engineer.
- D. Diesel fuel shall not be used to coat rubber tires or hand tools to prevent asphalt from sticking.

3.03 PREPARATION

- A. Hot Mix Asphalt:
 - 1. Apply tack at the rate of 0.05 gallon per square yard.
 - 2. Tack the full surface of in-place street before paving.
 - 3. Tack full face of existing asphaltic transitions, including patches.

3.04 PAVEMENT DENSITY

- A. Conform to the requirements of WisDOT Section 460.3.3 "Minimum Required Density," except as modified:
 - 1. Measurement of pavement density shall be by nuclear density.
 - 2. Required minimum compaction is 91.5 percent of the target maximum density. Target maximum density shall be determined each day by the Contractor using a Standard Rice Test. Contractor shall provide the target maximum density to the Engineer at the start of paving operations. Contractor shall verify degree of compaction and submit a report to the Engineer as to date paved, date tested, location, and degree of compaction.
 - 3. All costs for the tests and report shall be included in the unit price bid.

3.05 THICKNESS REQUIREMENTS

- A. Conform to WisDOT Spec. 460.3.2, except as modified herein:
 - 1. After compaction, the thickness of each course shall be within 1/8 inch of the thickness shown on the Drawings.
 - 2. The portion of any course constructed more than the maximum allowable of 1/8 inch will be excluded from pay quantities or may require removal and replacement at the direction of the Engineer.
 - 3. The Engineer may require end of Project core samples for verification of pavement thickness and uniformity.

3.06 CONSTRUCTION

- A. The Contractor to review the proposed paving sequence with the Engineer prior to placement of each layer.
- B. The Proposed Sequence Shall Address The: Longitudinal seams, compaction, traffic control, hauling routes, and placement of pavement markings.
- C. Preparation of Lower Layer Pavement:
 - 1. Final clean up of the bituminous surface with the use of a power pickup broom and front-end loader
- D. Joints:
 - 1. Where new construction meets existing bituminous surfacing, the existing surface shall be uniformly milled or saw-cut straight, and bituminous tack coat applied prior to placement of each layer.

2. The longitudinal joint(s) in the upper layer shall be located at the centerline of the pavement and/or at edges of traffic lanes.

END OF SECTION

SECTION 32 13 14

CONCRETE WALKS AND PADS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Cast-in-place concrete sidewalks, carriage walks, pedestrian curb ramps and concrete pads.
- B. Related Sections
 - 1. Section 31 23 00 - Excavation and Fill.
 - 2. Section 31 23 13 - Subgrade Preparation.
 - 3. Section 32 11 23 - Aggregate Base Courses.
 - 4. Section 32 16 13 - Concrete Curbs and Gutters.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. A Bid Item has been provided for **Concrete Sidewalk 5-Inch**. Measurement shall be on the basis of **square feet** of sidewalk constructed. Payment of this Bid Item shall include, concrete materials, subgrade and base preparation, placement of materials, finishing, curing and protection and backfilling.
 - a. Excavation for the Concrete Sidewalk 5-Inch shall be included in the volume of common excavation per Section 31 23 00 – Excavation and Fill.
 - 2. A Bid Item has been provided for **Detectable Warning Field**.
 - a. Measurement shall be per **square foot** of placed of truncated panels, joint sealing material, and protection of truncated panels during construction.
 - b. Payment shall include the following:
 - 1) Truncated panel materials.
 - 2) Placement of truncated panels.
 - 3) Joint sealing material.
 - 4) Protection of truncated panels during construction.
 - 3. All other 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 Testing Materials (ASTM)
 - 1. C260 - Air-Entraining Admixtures for Concrete.
- B. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" – most current Edition and all applicable supplements (WisDOT Spec.):
 - 1. 415 – Concrete Pavement.
 - 2. 416 – Concrete Pavement – Appurtenant Construction.
 - 3. 501 – Concrete.
 - 4. 505 – Steel Reinforcement.
 - 5. 601 – Concrete Curb and Gutter.

C. City of New Berlin Development Handbook

1.04 SUBMITTALS

- A. Submit one (1) 7 day and two (2) 28 day concrete test results for all concrete pours in any given day. All costs for testing will be paid by Contractor.
- B. Submit design mix for concrete that will be used on the Project at the preconstruction conference. If mix design is not available at the time of the preconstruction conference, submit mix design at least 15 days before commencement of concrete walk, pedestrian curb ramps, or picnic pad areas.

1.05 SEQUENCING AND SCHEDULING

- A. Construction of pedestrian curb ramps shall be completed following the placement of the walk or pathway.
- B. Construction of the concrete pad areas, curb ramps and carriage walks shall begin no sooner than 24 hours after placement of the adjacent concrete curb and gutter with completion within 5 days of curb placement.

PART 2 PRODUCTS

1.02 MATERIALS: CONCRETE TO CONFORM TO WISDOT SPEC. 501: CONCRETE:

- A. Portland Cement WisDOT Spec. 501.2.4.1:
 - 1. ASTM C150, Type II.
- B. Aggregates: Conform to WisDOT Spec. 501.2.7
 - 1. No recycled concrete is allowed as an aggregate.
- C. Air-Entraining Admixtures WisDOT Spec. 501.2.5.2:
 - 1. Conforming To: ASTM C260 "Air-Entraining Admixture for Concrete."
 - 2. Not to be added to the concrete mixtures in the field without approval from City Engineer.
- D. Mix Designation and Classification for Concrete:
 - 1. Manual Placement: Grade A.
 - 2. Slip Form Placement: Grade A2.
- E. Pre-Formed Joint Filler: Conform to WisDOT Spec. 415.2.3.
- F. Curing Compound: Conform to WisDOT Spec. 415.2.4.
- G. Pavement Joint Sealer
 - 1. Hot-Poured, for Concrete and Asphalt Pavements
 - 2. ATSM Designation: D3405

1.03 DENSE GRADED BASE

- A. Dense Graded Base shall be required below all concrete:
 - 1. Conform to Section 32 11 23 - Aggregate Base Course.

1.04 PEDESTRIAN CURB RAMPS

- A. Detectable Warning Field shall be by MetaPanel (608) 249-8644 or approved equal:
 - 1. Color: Federal Standard Yellow
- B. Detectable Warning Field Joint Sealant Compound:
 - 1. Dow Corning 888, or approved equal.
 - 2. Dow Corning NS Parking Structure Sealant, or approved equal.

1.05 DOWEL AND TIE BARS

- A. Conform to WisDOT Spec. 505.

PART 3 EXECUTION

3.01 GENERAL

- A. Provide copies of batch tickets for concrete mix at the time of material delivery.
- B. Construct concrete walkway, pad areas, and curb & gutter at the locations and elevations indicated on the Drawings.
- C. Construct walkways to conform to the typical section shown on the Drawings.
- D. Construct concrete curb ramp to conform to the Drawings.
- E. Verify pavement joint layout with Engineer prior to placement of concrete.
- F. Verify locations with Engineer in the field prior to construction.
- G. The completed concrete work shall give the appearance of uniformity in surface contour and texture, and shall be accurately constructed to line and grade. The required joints, edges, and flow lines shall show neat workmanship.
- H. Retempering of concrete which has partially hardened with or without additional materials or water is prohibited.

1.06 FOUNDATION PREPARATIONS

- A. Base Aggregate Dense base course: Prepare the dense graded aggregate base course as required in Section 32 11 16 – Aggregate Base Course.
- B. The foundation shall be approved by the Engineer prior to placement of any concrete material.

3.02 FORMS

- A. Conform to WisDOT Spec. 602.3.2.2.

3.03 JOINT CONSTRUCTION

- A. Concrete Sidewalk
 - 1. Conform to WisDOT Spec. 602.3.2.5, except as modified herein:
 - a. Maximum spacing of expansion joints for sidewalks shall be 60 feet.
 - b. Place expansion joints at intersecting sidewalks, between sidewalk and/or pad areas and back of curb and gutter and at intersections of sidewalks and pad areas.
 - c. Place contraction joints in sidewalks at five foot typical spacing.
 - d. Locate joints as shown on the Construction Details.

1.07 PLACING AND FINISHING

- A. Concrete Sidewalk
 - 1. Conform to WisDOT Spec. 602.3.2.3, except as modified herein:
 - a. Concrete walk may need to be adjusted in the field to avoid utilities, trees and or other obstacles. This adjustment must be approved by the Engineer prior to concrete placement.
 - b. Any surface area allowing the entrapment of water at a depth 1/8 inch or greater will be considered unacceptable.
 - c. Unacceptable work shall be removed and replaced with acceptable work as directed by the Engineer. Acceptance of work by price reduction will not be allowed.
- B. Pedestrian Curb Ramp – Detectable Warning Field:
 - 1. Detectable Warning Field - Conform to the manufacturer's recommendations for placement.
 - 2. Detectable Warning Field shall be placed (wet set) on a minimum of 4 inches concrete and prior to finishing the adjacent concrete surface of the pedestrian ramp. The joint between the panel and concrete shall be finished with 1/2 inch radius edging tool.
 - 3. Conform to WisDOT Standard Detail Drawing for specified Detectable Warning Field surface pattern dimensions. Refer to the Drawings for actual ramp size, shape, and slopes.
 - 4. All joints shall be cleaned and cleared of all debris prior to sealing. The concrete adjacent to the Detectable Warning Field shall be cured for a minimum of 7 days prior to joint sealing. Follow all other manufacturer's recommendations prior to sealing. Use only the product joint sealant specified. The joint sealant shall be applied to all joints between and around the perimeter of the Warning Field panels. The sealant shall be applied so that the depth is not less than 1/4 inch and not greater than 1/2 inch. The joint shall be tooled so that the finished sealant is 1/4 inch below the finished surface.

3.04 CONCRETE CURING AND PROTECTION

- A. Conform to WisDOT Spec. 415.3.12 and 415.3.16, except as modified herein:
 - 1. All surfaces shall be coated with membrane curing compound within 30 minutes after finishing at the specified rate.
 - 2. The membrane curing compound must contain a fugitive dye and be applied in 2 different directions perpendicular to each other.
 - 3. A second application of membrane curing compound shall be applied 4 to 8 hours after the first application at the specified rate.
 - 4. The freshly finished surface shall be protected, surfaces pitted by rain will be considered unacceptable.

5. Removal and replacement of any curb section damaged by traffic, rain, cold weather, or other causes occurring prior to the 72 hour curing period or final acceptance shall the responsibility of the Contractor.
 - B. Mixing and Protection During Cold Weather: Comply with WisDOT Spec. 415.3.15 - Cold Weather Concreting:
 1. A curing material that has water resistance, strength, and insulation properties will be required.
- 3.05 BACKFILLING
- A. Conform to WisDOT Spec. 602.3.2.7, except as modified herein:
 1. Perform backfilling to protect the concrete no sooner than 72 hours after placement of the concrete.

END OF SECTION

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SECTION 32 16 13

CONCRETE CURBS AND GUTTERS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Cast-in-place concrete curbs, and concrete curb and gutter.
- B. Related Sections
 - 1. Section 32 11 23 – Aggregate Base Courses.
 - 2. Section 32 13 14 – Concrete Walks and Pads.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. A Bid Item has been provided for **Concrete Curb and Gutter, Special**. Measurement of curb or curb and gutter shall be by the **lineal foot** measured along the face of the curb at the gutter line. Payment shall include materials, preparation, placement, finishing, curing, protection, reinforcement, and backfilling. Measurement shall not include frames/castings that are located along the face of curb.
 - 2. No separate measurement or payment for modifications at curb ramps, transition sections, catch basins, manholes and radii.
 - 3. All other 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 Testing Materials (ASTM)
 - 1. C260 - Air-Entraining Admixtures for Concrete.
- B. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - latest Edition and all current Supplements (WisDOT Spec.):
 - 1. 415 – Concrete Pavement.
 - 2. 416 – Concrete Pavement – Appurtenant Construction.
 - 3. 501 – Concrete.
- C. City of New Berlin Development Handbook

1.04 SUBMITTALS

- A. Submit one (1) 7-day and two (2) 28-day concrete cylinder test results for all concrete pours in any given day. All costs for testing will be paid by Contractor.
- B. Submit design mix for concrete that will be used on the Project at the preconstruction conference. If mix design is not available at the time of the preconstruction conference, submit mix design at least 15 days before commencement of curb and gutter installation.

1.05 SEQUENCING AND SCHEDULING

- A. Install concrete curb and gutter after concrete pavement has been completed and approved. Minimum cure time of 72 hours is required prior to backfilling curb and gutter.
- B. Concrete curb and gutter construction precedes installation of hot mix asphalt pavement.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Concrete to Conform to WisDOT Section 501: Concrete:
 - 1. Portland Cement:
 - a. Type A air-entraining concrete produced by using Type II air-entraining Portland Cement.
 - 2. Air-Entraining Admixtures:
 - a. Conforming To: ASTM C260 "Air-Entraining Admixture for Concrete."
 - b. Not to be added to the concrete mixtures in the field without approval from City Engineer.
 - 3. Mix Designation and Classification for Concrete Curb and Gutter:
 - a. Manual Placement: Grade A.
 - b. Slip Form Placement: Grade A2.
- B. Pre-Formed Joint Filler: Conform to WisDOT Spec. 415.2.3.
- C. Curing Compound: Conform to WisDOT Spec. 415.2.4.

PART 3 EXECUTION

3.01 GENERAL

- A. Provide copies of batch tickets for concrete mix at the time of material delivery to Site.
- B. Construct concrete curb and gutter at the locations and elevations indicated on the Drawings.
- C. Construct the style or type of curb and gutter as shown on the Drawings.
- D. Construct intersection curb radii and transitions sections to conform to the detail on the Drawings.
- E. Construct transition sections at inlet structures to conform to the detail on the Drawings.
- F. Construct concrete curb ramp depressions to conform to the detail on the Drawings.
- G. Construct curb transitions for driveways to conform to the detail on the Drawings. Locations to be verified by Engineer at the time of construction.
- H. The completed concrete work shall give the appearance of uniformity in surface contour and texture, and shall be accurately constructed to line and grade. The required joints, edges, and flow lines shall show neat workmanship.
- I. Retempering of the concrete which has partially hardened with or without additional materials or water is prohibited.

- J. Full curb and gutter panels shall be removed and replaced for all major cracks, breaks, or chips > 1/2 inch.
- K. All handwork to streets, sidewalks, driveways, and curb and gutter, including around catch basins, shall be mechanically vibrated with absolutely no voids or honey-combing allowed.

3.02 FOUNDATION PREPARATIONS

- A. Support on a compacted aggregate base
 - 1. Conform to typical sections as shown on the Drawings.
 - 2. Conform to Section 32 11 23.
 - 3. No recycled concrete is allowed as an aggregate on the project.

1.02 FORMS

- A. Conform to WisDOT Spec. 601.3.3.

1.03 JOINT CONSTRUCTION

- A. Conform to WisDOT Spec. 601.3.6, except as modified herein:
 - 1. Maximum spacing of expansion joints for slip formed shall be 200 feet.
 - 2. Place expansion joints at the PC and PT of horizontal curves.
 - 3. Place expansion joints 3' from each side of drainage structures
 - 4. Control joints 10 foot intervals.
 - 5. All expansion joints and control joints shall be uniform and cleaned 1/4 inch to 3/8 inch in depth.
 - 6. All expansion and control joints shall be tooled along entire top and front face of curb and gutter.
 - 7. All control joints shall be knifed through entire depth.
 - 8. All expansion joints shall be vertical, tooled, clean and flush with felt, no voids accepted.

1.04 PLACING AND FINISHING

- A. Conform to WisDOT Spec. 601.3.4 and 601.3.5, except as modified herein:
 - 1. The top surface of the curb and gutter shall have a brush finish at right angles to the curb line.

1.05 CONCRETE CURING AND PROTECTION

- A. Conform to WisDOT Section 415.3.12.2 and 415.3.16, except as modified herein:
 - 1. All surfaces shall be coated with membrane curing compound within 30 minutes after finishing at the specified rate.
 - 2. The membrane curing compound must contain a fugitive dye and be applied in 2 different directions perpendicular to each other.
 - 3. A second application of membrane curing compound shall be applied 4 to 8 hours after the first application at the specified rate.
 - 4. The freshly finished surface shall be protected, surfaces pitted by rain will be considered unacceptable.
 - 5. Removal and replacement of any curb section damaged by traffic, rain, cold weather, or other causes occurring prior to the 72 hour curing period or final acceptance shall the responsibility of the Contractor.

- B. Mixing and Protection During Cold Weather: Comply with WisDOT Section 415.3.13 - Cold Weather Concreting:
 - 1. A curing material that has water resistance, strength, and insulation properties will be required.

1.06 BACKFILLING

- A. Initial Backfilling:
 - 1. Follow the 72 hour curing period with completion within 6 days of original placement.
 - 2. After acceptance, the contractor shall immediately backfill behind the curb to preclude any erosion or undermining.
 - 3. Tolerance within 0.3 feet to the top of curb elevation.
- B. Final Grading:
 - 1. Following completion of private utility work by others.
- C. Curb damaged during backfilling is the responsibility of the Contractor.

1.07 WORKMANSHIP

- A. Conform to WisDOT Spec. 601.3, except as modified herein:
 - 1. Any deviation in the design curvature of concrete edges in excess of 3/8 of an inch, measured with a 10 foot straight edge, will be considered unacceptable.
 - 2. Acceptance of work by price reduction will not be allowed.

1.08 INSPECTION

- A. The Engineer shall be on site for the placement of concrete curb and gutter. This shall include the inspection of the base under the curb and gutter, and a check of the alignment and grade of the curb and gutter.

END OF SECTION

SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Pavement markings and symbols for parking stalls and basketball court.
- B. Related Sections
 - 1. Section 32 12 16 – Hot Mix Asphalt Pavement.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. Pavement Markings and Symbols
 - a. **Pavement Markings and Symbols** shall be measured by **lump sum**.
 - 2. A Bid Item for pavement markings and symbols has been provided. Payment shall be compensation in full for all costs incidental thereto, including but not limited to surface preparation, traffic control measures, maintaining the Work, and for replacing marking improperly constructed or that fails during the proving period, together with any other expenses incurred in completing the Work that are not specifically included for payment under the Contract Bid Item.
 - 3. All other Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

- A. State of Wisconsin Department of Transportation "Standard Specifications for Highway and Structure Construction" - latest edition including all current supplements (WisDOT):
 - 1. 646 – Pavement Marking

1.04 SUBMITTALS

- A. 1 copy of the chosen paint batch formulation.
- B. Pavement Marking Contractor Qualifications/Certifications.
- C. WisDOT Certification approvals.

1.05 SEQUENCING AND SCHEDULING

- A. Conform to the requirements of WisDOT Specifications.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver paint and materials to the job side unopened, in manufacturer's containers legibly marked with the contents by color, batch number, date manufactured, and manufacturer's name and address. Do not use material more than one year old.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Paint
 - 1. Conform to WisDOT Approved Products List (APL)

2.02 EQUIPMENT

- A. Use specified equipment, as stated in WisDOT Spec. 646.3.2.2 and 646.3.2.3.

PART 3 PART 3 EXECUTION

3.01 GENERAL

- A. Prepare pavement for paint per WisDOT Spec. 646.3.1.1.
- B. The pavement marking crew shall include at least 1 technical expert knowledgeable in each of the following areas:
 - 1. Equipment operation.
 - 2. Application techniques.
 - 3. Traffic control.
 - 4. Safety regulations.
- C. The filling of tanks, pouring of materials, or cleaning of equipment shall not be performed on unprotected pavement surfaces, unless adequate provisions are made to prevent spillage of material.

3.02 SCHEDULE

- A. Pavement Markings and Symbols
 - 1. Place following completion of asphalt surface course:
 - a. No sooner than 24 hours after placement of asphalt.
 - b. Within 5 working days of completion of asphalt placement.

3.03 PREPARATION

- A. Locations
 - 1. Pavement Markings and Symbols shall be installed according to Construction Drawings.
- B. Pavement Surface
 - 1. Engineer may direct cleaning of surface as necessary immediately prior to marking application:
 - a. Brushing with non-metallic rotary broom.
 - b. Other cleaning method approved by Engineer.
 - c. Air blast following cleaning.
 - 2. Surface must be dry.
 - 3. Minimum surface temperature is 50 degrees F.

3.04 APPLICATION

- A. Apply paint per WisDOT Spec. 646.3.1.2 over all pavement marking locations. Lines shall be 2-inches wide unless otherwise stated on the Project Drawings.

B. General

1. Tolerance

- a. Width: A tolerance of 1/4 inch under or 1/4 inch over the specified width will be allowed for striping provided the variation is gradual and does not detract from the general appearance.
- b. Length: Broken line segments may vary up to 2-3/4 inches from the specified lengths provided the over and under variations are reasonably compensatory.
- c. Alignment: Deviations from the control guide shall not exceed 2 inches.
- d. Establishment of application tolerances shall not relieve the Contractor of his responsibility to comply as closely as practicable with the planned dimensions.

2. Material shall not be applied over longitudinal joints.

3. If same equipment used for different color material with change in color, an amount of material equal to 150 feet shall be wasted prior to beginning application with the new color.

4. Conditions

- a. Markings shall not be applied when wind or other conditions cause a film of dust to be deposited on the pavement surface after cleaning and before the marking material can be applied.
- b. Except when used as a temporary marking, pavement markings shall only be applied in seasonable weather when air temperature is 50 degrees F or higher.

3.05 CORRECTION OF DEFECTS

- A. All pavement markings not conforming to the requirements of the Specifications shall be removed and replaced, or otherwise repaired to the satisfaction of the Engineer.
- B. Where yield computations show a deficiency in material usage of not more than 20 percent, Owner may require satisfactory repair or may accept the Work at a reduced Bid Unit Price that is in direct proportion to the percent of the deficiency.
- C. Where yield computations show a deficiency in material usage in excess of 20 percent, Owner will require removal and replacement to the satisfaction of the Engineer, unless other means are approved by the Engineer.
- D. If removal and replacement is required, at least 90 percent of the deficient line shall be removed.
- E. Width of removal shall be 1 inch wider on all sides than the nominal width of the marking to be removed.
- F. Removal of unacceptable Work shall be accomplished with suitable blasting or grinding equipment, unless other means are authorized by the Engineer. Asphalt street surfacing shall not be damaged by the removal operation.

END OF SECTION

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SECTION 33 05 05
TRENCH EXCAVATION AND BACKFILL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Trenching requirements for underground piping including requirements for excavation, backfill, and compaction.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. No bid item has been included for Trench Backfill. All Work and costs associated with this item including excavation, bedding, backfilling and compaction shall be included in the cost of pipe installation, as described in Sections 33 12 12 and 33 31 14.
 - 2. All other Work and costs of this Section shall be incidental to the Project and included in the TOTAL BASE BID.

1.03 REFERENCES

- A. Standard Specifications for Sewer and Water Construction in Wisconsin, Latest Ed. (Standard Specifications).
- B. American Society of Testing Materials (ASTM):
 - 1. C1479 – Standard Practice for Installation of Precast Concrete Sewer, Storm Drain and Culvert.
 - 2. D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - 3. D698 - Test Method for Laboratory Compaction Characteristics for Soil Using Standard Effort (12,400 ft-lbf/ft).
- C. State of Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, Latest Edition (WisDOT Spec.).
 - 1. 206 - Excavation of Structures.
 - 2. 209 - Granular Backfill.

1.04 SUBMITTALS

- A. Provide the following submittals consistent with Section 01 31 00 – Project Management and Coordination:
 - 1. Product Data for each Borrow Material, if applicable:
 - a. Name and location of source.
 - b. Results of gradation tests.

1.05 DEFINITIONS

- A. Bedding: The soil material adjacent to the pipe which makes contact with the pipe foundation, walls of the trench, and upper level of backfill. The purpose of bedding is to secure the pipe to true line and grade, and to provide structural support to the pipe barrel.
- B. Foundation: Soil material beneath the pipe bedding.

- C. Improved Pipe Foundation: Foundation provided by importing material from sources outside the Site. Required when foundation is soft or unstable.
- D. Pipe Zone: That part of the trench below a distance of 1 foot above the top of the pipe.
- E. Sand Cushion: Aggregate bedding material used around pipe in areas where rock excavation is encountered, where pipe insulation is used, and when crossing existing utilities.

1.06 SEQUENCING AND SCHEDULING

- A. Known existing underground utilities are shown on the Drawings in a general way. Owner does not guarantee the locations as shown on the Drawings. Contractor shall anticipate variations in both the vertical and horizontal locations of underground utility lines from those shown on the Drawings.
- B. Uncover utilities and verify both horizontal and vertical alignments sufficiently in advance of construction to permit adjustments in the Work. Determine location of existing utilities and identify conflicts before excavating trench for pipe installation.
- C. Notify Digger's Hotline before starting construction in a given area, requesting utility locations in the field.
- D. Provide continuance of flow of existing sewer and other facilities.
- E. Backfill and compact all trench excavations promptly after the pipe is laid.

1.07 WARRANTY

- A. Trench settlements that occur during the correction period and are greater than 1 inch as measured by a 10-foot straight edge will be repaired in a manner acceptable to the Owner at the Contractor's expense.

PART 2 PRODUCTS

2.01 PIPE BEDDING MATERIAL

- A. Material shall conform to Chapter 8.43.2 of the Standard Specifications.

2.02 IMPROVED PIPE FOUNDATION MATERIAL

- A. Comply with WisDOT Section 209, Grade 1:
 - 1. Crushing Requirements: At least 50 percent of the material by weight retained on the No. 4 sieve shall have 1 or more crushed faces.

2.03 SAND CUSHION MATERIAL

- A. Material shall conform to WisDOT Section 209, Grade 1:
 - 1. No onsite granular material encountered during construction may be used.
 - 2. 1 inch maximum aggregate size.

2.04 BACKFILL MATERIAL

- A. Granular Backfill (under road or driveway repair ONLY)
 - 1. Use construction methods conforming to WisDOT Spec. 607.3.5.
- B. Excavated Material:
 - 1. As directed by the Engineer.
 - 2. Suitable materials selected from the excavated materials to the extent available and practical.
 - 3. Suitable materials are mineral soils free of rubbish, trees, stumps, branches, debris, frozen soil, oversized stone, concrete and asphalt chunks, and other similar unsuitable material.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to construction, inspect existing utility structures and surface features, and document condition.
- B. Re-inspect foundation soils if rain fall or snow has occurred after initial inspection but prior to placing pipe and bedding.

3.02 PREPARATION

- A. Notify Diggers Hotline to field mark individual utility locations.
- B. Protect as necessary surface features, such as utility poles, trees, structures, pavement, etc., that are not designated on the Drawings to be removed.
- C. Notify utility companies of progress schedule so they can accomplish any necessary relocations and removals that they have agreed to relocate, remove, or support.
- D. Implement traffic control.
- E. Complete temporary removal or relocation of surface features, such as fences, shrubs, signs, and mailboxes.
- F. Strip off existing topsoil from within the trench excavation limits and stockpile. Separate vegetative strippings from salvageable topsoil and dispose of appropriately.
- G. Crossing Under Existing Utility Lines
 - 1. Use extreme care when excavating in the vicinity of underground utility lines to avoid damage to protective coatings or surfaces.
 - 2. Where possible and as authorized by the utility, temporarily remove the utility line, install the new pipe, and reinstall the utility line.
 - 3. Where existing line cannot be removed or is not feasible to remove, securely support, excavate under, backfill under and around the utility line to 100 Percent Standard Proctor Density.
 - 4. Report and repair damaged lines prior to backfilling trench.

3.03 CONSTRUCTION

- A. Trench Excavation:
 - 1. Excavate trench to alignment and grade shown on the Drawings.

2. The trench width at the surface may vary and depends on the depth of trench and nature of the excavated material encountered. However, it shall be of ample width to permit the pipe to be laid and jointed properly and the backfill to be placed and compacted properly.
 3. Correct any part of the trench that is inadvertently excavated below grade with approved material compacted to 100 Percent Standard Proctor Density.
 4. Brace, shore, or sheet trench and provide drainage. Comply with applicable State Regulations relating to industrial safety to a safe angle of repose. Angle of repose may be no less than that required by the Accident Prevention Division of the State Industrial Commission or the requirements of the Occupational Safety and Health Act (OSHA), whichever is most restrictive.
 5. Pile all excavated material in a manner that will not endanger the Work or obstruct sidewalks, driveways, gutters, etc.
 6. Segregate soils in the excavated material that are not suitable for trench backfill and dispose of in a manner that is consistent with the requirements specified herein under "Backfill Above Pipe Zone."
 7. Dispose of excess excavated materials off of right-of-ways and easements in a suitable site selected by the Contractor.
 8. Haul and dispose of materials off of right-of-ways and easements in a suitable site selected by the Contractor.
- B. Water Control:
1. Dewater the ground as necessary to excavate the trench and install the pipe. All pipe and structures shall be laid in a dry condition prior to backfill. Maintain groundwater level a minimum of 1 foot below the pipe invert. Measure the rate of flow from dewatering pumps at the beginning of the dewatering operation(s) and once per week thereafter. Keep a daily log of hours pumped.
- C. Trench Bottom:
1. Excavate to a sufficient depth to insure adequate foundation when the bottom of the trench is soft or where in the opinion of the Engineer unsatisfactory foundation conditions exist. Bring excavation up to pipe grade with thoroughly compacted granular materials meeting the requirements of Improved Pipe Foundation Material.
 2. Provide temporary support, remove, relocate, or reconstruct existing utilities located within the trench excavation. Utility shall designate method employed. Use particular care and provide compacted fill or other stable support for utility crossings to prevent detrimental displacement, rupture, or failure.
 3. Excavate to expose existing utilities that cross in close proximity to the planned pipe line to determine the utilities' exact location sufficiently ahead of pipe installation to plan for the avoidance of grade conflict. Measure to determine the utilities' location relative to the planned pipe line location. A deviation from the alignment, grade, and location to avoid conflict may be ordered by the Engineer.
 4. In locations where rock affects the pipe foundation, excavate the trench 6 to 12 inches below the pipe and place sand cushion material up to the proposed invert elevation. The remainder of the trench up to the top of rock elevation shall be backfilled with granular backfill material:
 - a. Sand Cushion: The removal and disposal of the unsuitable material within the trench and below the invert elevation, and the replacement up to invert elevation with the appropriate bedding material.
 - b. Granular Backfill: The removal and disposal of unsuitable material within the trench, above the invert elevation, and replacement up to the surface with appropriate backfill material. No additional compensation will be allowed for wider or deeper trenches in rock excavations.
 5. Improved Pipe Foundation: When unsatisfactory foundation conditions exist, excavate to a depth consisting of solid materials. Fill to pipe grade with thoroughly compacted granular materials meeting the requirements of Improved Pipe Foundation Material.

3.04 PIPE BEDDING

- A. Use only selected materials free from rock, boulders, debris, or other high void content substances to a level 1 foot above the top of pipe. Remove ledge rock, boulders, and large stones to provide at least 6-inch clearance from pipe.
- B. Dig bell holes of ample dimension at each joint such that the pipe barrel rests continuously on the bedding.

3.05 BACKFILL WITHIN PIPE ZONE

- A. Backfill immediately after pipe is laid. Restrain pipe as necessary to prevent their movement during backfill operations.
- B. Place material completely under pipe haunches in uniform layers not exceeding 4 inches in depth.

3.06 BACKFILL ABOVE PIPE ZONE

- A. Use suitable materials meeting the requirements of Backfill Material.
- B. Place and compact cover material in one or more lifts after compacting bedding material. Place a minimum of 12 inches of cover material over the pipe.
- C. Place in uniform depth layers not to exceed 12 inches before compaction. Complete the compaction of each layer before placing material for the succeeding layer.
- D. Compact each layer by mechanical means until it meets the requirements of WisDOT Section 301. Trenches shall be compacted to a minimum of 95 percent, except to 100 percent in the upper 3 feet.
- E. The method and means of placement and type of compaction equipment used is at the discretion of the Contractor. However, all portions of the trench backfill must meet minimum specified compaction requirements.
- F. Excavated material shall be disposed of outside of the Site.

3.07 RESTRICTED TRENCH WIDTH

- A. Restrict width of trench to prevent damage to specimen trees or adjacent structures.

END OF SECTION

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SECTION 33 12 12

WATER SERVICES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Construction of water service pipe, corporation stops, curb stops and boxes, and all appurtenances.
- B. Related Sections
 - 1. Section 33 05 05 - Trenching and Backfilling.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. **Water Service:** Measurement and payment will be **Lum Sum**. Payment at the lump sum price shall include cost of all pipe, fittings, connections, excavation, pipe laying, backfilling, and testing, as shown on the Construction drawings.
 - 2. All other Work and costs of this Section shall be incidental to the Project and included in the Total Base Bid.

1.03 REFERENCES

- A. Standard Specifications for Sewer and Water Construction in Wisconsin, Latest Ed. (Standard Specifications).
- B. American Society of Testing and Materials (ASTM)
 - 1. A674 - Standard Practice for Polyethylene Encasement for Ductile Iron Pipe for Water or Other Liquids.
 - 2. B88 - Class K Copper Water Service Pipe.
 - 3. D3035 - Standard Specification for Polyethylene (PE) Plastics Pipe (DR-Pr) Based on Controlled Outside Diameter.
 - 4. F1290 - Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings.
- C. American Water Works Association (AWWA)
 - 1. C105 - American National Standard for Polyethylene Encasement for Ductile Iron Pipe Systems.
 - 2. C900 - AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 through 12 Inches, for Water Distribution.
 - 3. C901 - AWWA Standard for Polyethylene (PE) Pressure Pipe and Tubing, 1/2 (13 mm) Through 3 Inches (76 mm), for Water Service.

1.04 SUBMITTALS

- A. Submit the Product Data for the following items consistent with Section 01 33 00:
 - 1. Pipe and fittings.
 - 2. Corporation stop and curb boxes.
 - 3. Service saddles.

PART 2 PRODUCTS

2.01 SERVICE PIPE

- A. High Density Polyethylene (HDPE) Pipe: Conform to AWWA C901 and ASTM D3035, designation code PE 3408, PC 160/DR 11 for sizes less than 4-inches.

2.02 CORPORATION STOP

- A. Approved Manufacturers: Mueller, Ford, A.Y. McDonald, or equal.
- B. Threaded on outlet for flared connection with service pipe.
- C. Threaded on inlet end with standard tapered corporation cock thread.
- D. Saddles are required on all PVC water main.

2.03 CURB STOP

- A. Approved Manufacturers: Mueller, or equal.
- B. Same size and connection type for inlet and outlet.
- C. Full opening through the valve body with no smaller restriction allowed.

2.04 CURB BOX

- A. Approved Manufacturers: Mueller, or equal.
- B. Adjustable in height from 78 to 90-inches.
- C. Stationary rods.
- D. 1-1/4 inch upper section.

2.05 SERVICE SADDLES

- A. Stainless steel.
- B. Approved Manufacturers: Ford or equal.

2.06 TRANSITION FITTINGS

- A. Polycam®, or equal steel transition fittings or Polycam® Flared Nut Aeries 912 shall conform to AWWA C901 for connections to PE Service Pipe.

2.07 TRACER WIRE

- A. #10 solid insulated tracer wire.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Governing Code: Wisconsin Plumbing Code and any local ordinances that may apply.
- B. New services shall be connected at the locations shown on the Drawings or if not shown as directed by the Engineer.
- C. Water Service Line
 - 1. Parallel and upstream of the sewer service line in the same trench where feasible.
- D. Corporation Stop
 - 1. Tap into main only when water main is under pressure.
 - 2. Use 2 layers of pipe tread sealant tape on corporations as a thread lubricant and sealant, or product approved by Owner.
 - 3. Support corporation with 1/2-cubic yard 3/4-inch stabilization rock.
- E. Curb Box
 - 1. Support on full size pre-cast segmental manhole block.
 - 2. Place in a plumb, vertical position.
 - 3. Install to elevation matching finished grade.
 - 4. Grade stakes will be furnished to establish elevations.
- F. Tracer Wire
 - 1. Install tracer wire with HDPE water services.
 - 2. Install tracer wire below pipe.
 - 3. Extend tracer wire vertically along the outside of the curb box.
- G. All trenches shall be backfilled and compacted in accordance to Section 33 05 05.

3.02 POLYETHYLENE (PE) JOINING METHOD

- A. Electrofusion joining processes conforming to ASTM F1290 shall be used to connect PE water service line to all transition fittings or joining pipe.

3.03 FIELD QUALITY CONTROL

- A. Do not backfill trench until the service has been inspected and approved by the Engineer.
- B. Pressure Testing: All water services will be pressure tested per the Standard Specifications.
- C. Tracer Wire Testing: Demonstrate the electrical continuity of tracer wire.

END OF SECTION

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SECTION 33 31 14
SANITARY SEWER SERVICES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Sanitary sewer service pipe and all appurtenances.
- B. Related Sections
 - 1. Section 33 05 05 - Trenching and Backfilling.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and Payment
 - 1. **Sanitary Service:** Measurement and payment will be **Lump Sum**. Payment at the Lump Sum Price shall be compensation in full for all Work and costs, including excavation, pipe, fittings, connections, bedding, backfill, and trench compaction.
 - 2. No Bid Items have been included for service plugs or marking service ends. Payment for these items shall be included in the Sanitary Service bid item.

1.03 REFERENCES

- A. Standard Specifications for Sewer and Water Construction in Wisconsin, Latest Ed. (Standard Specifications).
- B. American Society of Testing Materials (ASTM)
 - 1. C1173 - Specifications for Flexible Transition Couplings for Underground Piping Systems.
 - 2. D1784 - Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (PVC) Compounds.
 - 3. D1785 - Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 - 4. D2564 - Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
 - 5. D2665 - Specification for Poly (Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent (DWV) Pipe and Fittings.
 - 6. D2672 - Specification for Joints for IPS PVC Pipe Using Solvent Cement.
 - 7. D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
 - 8. D3034 - Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - 9. D3212 - Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
 - 10. F477 - Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

1.04 SYSTEM DESCRIPTION

- A. This Work shall consist of the construction of sanitary sewer services in accordance with the requirements of the Contract.
- B. It is the intent of these Specifications to require the same quality of Work be received on the services in the way of grade and alignment and that would be required of main lines and laterals.

1.05 SUBMITTALS

- A. Submit the following items consistent with Section 01 33 00.
 - 1. Product data for the following items.
 - a. Pipe and fittings.
 - b. Transition couplings.
 - c. Tracer wire.
- B. Service Risers: Location of riser, including distance along sewer main from downstream manhole and offset distance from sewer main centerline.
- C. Services: Location of wye from downstream manhole, length of service lines, and depth.

1.06 SITE CONDITIONS

- A. All Work must be confined to within the limits of construction easements or public right-of-way.
- B. Verify sanitary sewer service locations prior to the start of any construction.

1.07 SEQUENCING AND SCHEDULING

- A. Install sanitary sewer, water main, and all pipe deeper than the services prior to the installation of the services.

PART 2 PRODUCTS

2.01 MANUFACTURED UNITS

- A. PSM Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings
 - 1. General: Pipe and fittings shall be made of compounds conforming to ASTM D1784 in accordance with the material requirements of ASTM D3034.
 - 2. Design: Integral bell gasketed joint and a minimum wall thickness conforming to SDR 35.
 - 3. Elastomeric gasket joints providing a water-tight seal conforming to ASTM D3212 or ASTM F477.

2.02 BEDDING MATERIAL

- A. See Section 33 05 05.

2.03 TRACER WIRE SANITARY SEWER SERVICES

- A. Conform to the applicable requirements of NEMA WC3, WC5, and WC7.
- B. Shall be Underwriters Laboratories (UL) listed for use in direct burial applications (e.g. USE, UF, or tracer wire).
- C. Conductor: #12 solid insulated copper tracer wire
- D. Outside Identification: Volts (or V), AWG size, UL, and designation (ex. "tracer wire").
- E. Color: Green

2.04 TRANSITION COUPLING

- A. Coupling consisting of an elastomeric sleeve with incorporating stainless steel tension bands, tightening mechanism, and less than 0.01-inch thick shear ring conforming to ASTM C1173, Type A.
- B. Separate bushings are not allowed without approval from the Engineer.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Governing Code: Wisconsin Plumbing Code and any local ordinances which may apply.
- B. Risers: Support attachment to sewer main wye as shown on Drawings.
- C. Minimum 1/4-inch per foot (2-percent) grade, unless otherwise directed by the Engineer.
- D. All proposed service line locations are shown on the Drawings.
- E. Record Actual Depth and Station at End of Service
 - 1. Exercise care in determining the depth.
 - 2. The depth recording is incorporated into the "Record Drawings."
- F. Tracer Wire
 - 1. Attach tracer wire to the cleanout shown on detail in Drawings.
 - 2. Install Valvco, or approved equal, tracer box with all sanitary sewer services. Install tracer wire in tracer box per manufacture recommendations. Contractor shall use the tracer box appropriate for the tracer wire location (lite duty box in yards, roadway box for streets, concrete/driveway box for driveways, etc.)

3.02 FIELD QUALITY CONTROL

- A. Do not backfill trench until the service has been inspected and approved by the Engineer.
- B. Low pressure air and infiltration testing, where applicable, shall conform to the Standard Specifications.
- C. Tracer Wire Testing: Demonstrate the electrical continuity of the tracer wire.

END OF SECTION

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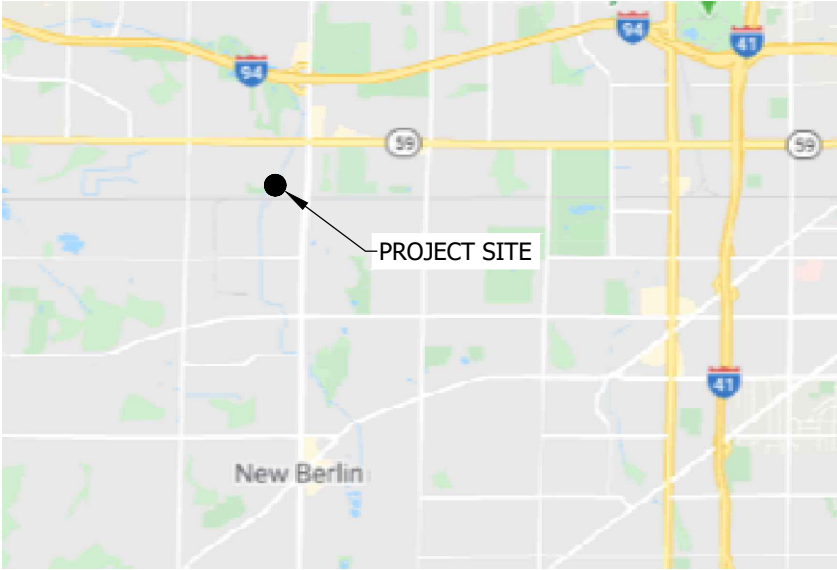
THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. STANTEC SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS. REPRODUCTION OR USE FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC IS FORBIDDEN.

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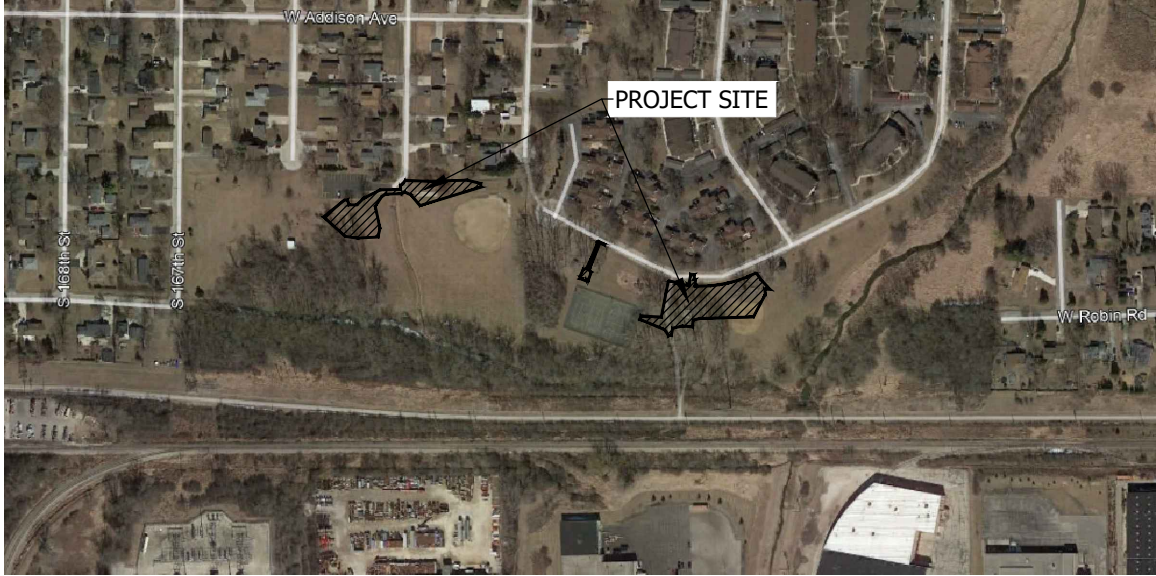
BUENA PARK IMPROVEMENTS - 2022

CITY OF NEW BERLIN

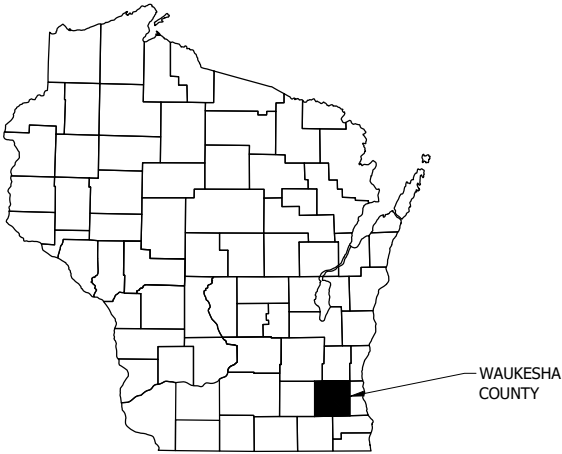
WAUKESHA COUNTY, WISCONSIN



VICINITY MAP
NO SCALE



LOCATION MAP
NO SCALE



WAUKESHA COUNTY



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www.DiggersHotline.com

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NEW BERLIN, WI 53151

PLANNING AND ZONING

KRISTEN HOGAN
PRINCIPAL PLANNER
TEL. 262-797-2445 EXT. 2514
3805 S. CASPER DRIVE
NEW BERLIN, WI 53151

DEPARTMENT OF PUBLIC WORKS

JOSH RADOMSKI
DIRECTOR OF PUBLIC WORKS
TEL. 262-780-4609
16550 W NATIONAL AVENUE
NEW BERLIN, WI 53151

LANDSCAPE ARCHITECT:

STANTEC CONSULTING
SERVICES, INC.
322 E MICHIGAN STREET
SUITE 200
MILWAUKEE, WI 53202

Contact:
SARAH MCDONALD
TEL. 262-665-9774
sarah.mcdonald@stantec.com

CIVIL ENGINEER:

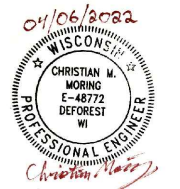
STANTEC CONSULTING
SERVICES, INC.
12075 CORPORATE PARKWAY,
SUITE 200
MEQUON, WI

Contact:
CHRISTIAN MORING
TEL. 262-665-3012
christian.moring@stantec.com

Sheet List Table	
SHEET NUMBER	SHEET TITLE
G0.01	TITLE SHEET
G0.02	TOPOGRAPHIC MAP
C1.01	DEMOLITION & EROSION CONTROL PLAN - WEST
C1.02	DEMOLITION & EROSION CONTROL PLAN - EAST
C2.01	SITE PLAN - WEST
C2.02	SITE PLAN - EAST
C3.01	GRADING PLAN - WEST
C3.02	GRADING PLAN - EAST
C4.01	UTILITY PLAN - EAST
C8.01	CIVIL DETAILS
C8.02	CIVIL DETAILS
C8.03	CIVIL DETAILS
A1.01	ARCHITECTURAL FLOOR PLANS
A1.02	ARCHITECTURAL FLOOR PLANS
A2.01	ARCHITECTURAL ELEVATIONS
A2.02	ARCHITECTURAL ELEVATIONS
S1.01	FOUNDATION AND STRUCTURAL NOTES
S2.01	STRUCTURAL DETAILS
S2.02	STRUCTURAL DETAILS
M1.01	PLUMBING FLOOR PLANS
M1.02	HVAC FLOOR PLANS
E0.01	ELECTRICAL SYMBOLS SHEET
E2.01	ELECTRICAL LIGHTING PLAN - RESTROOM BUILDING
E3.01	ELECTRICAL POWER PLAN - RESTROOM BUILDING
E7.01	ELECTRICAL SCHEDULES & DIAGRAMS



SARAH MCDONALD, PLA
NO. 701



CHRISTIAN MORING, P.E.
NO. E-48772

The locations of existing utility installations as shown on this plan are approximate. There may be other underground utility installations within the project area that are not shown.

Stantec assumes no responsibility for damages, liability or costs resulting from changes or alterations made to this plan without written consent of Stantec.

These drawings have been prepared based on information provided by others. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result.



BID SET

TITLE SHEET

BUENA PARK IMPROVEMENTS - 2022
CITY OF NEW BERLIN
BUENA PARK, NEW BERLIN, WI 53151

DATE OF ISSUANCE

APRIL 6, 2022

NO. REVISION DATE

SURVEY	CHAPUT
DRAWN	CM
DESIGNED	SM
CHECKED	MC
APPROVED	MB
PROJ. NO.	193805852

SHEET NUMBER

G0.01

TOPOGRAPHIC MAP

CLIENT
Stantec Consulting Services, Inc.

SITE ADDRESS
Buena Park, City of New Berlin, Waukesha County, Wisconsin.

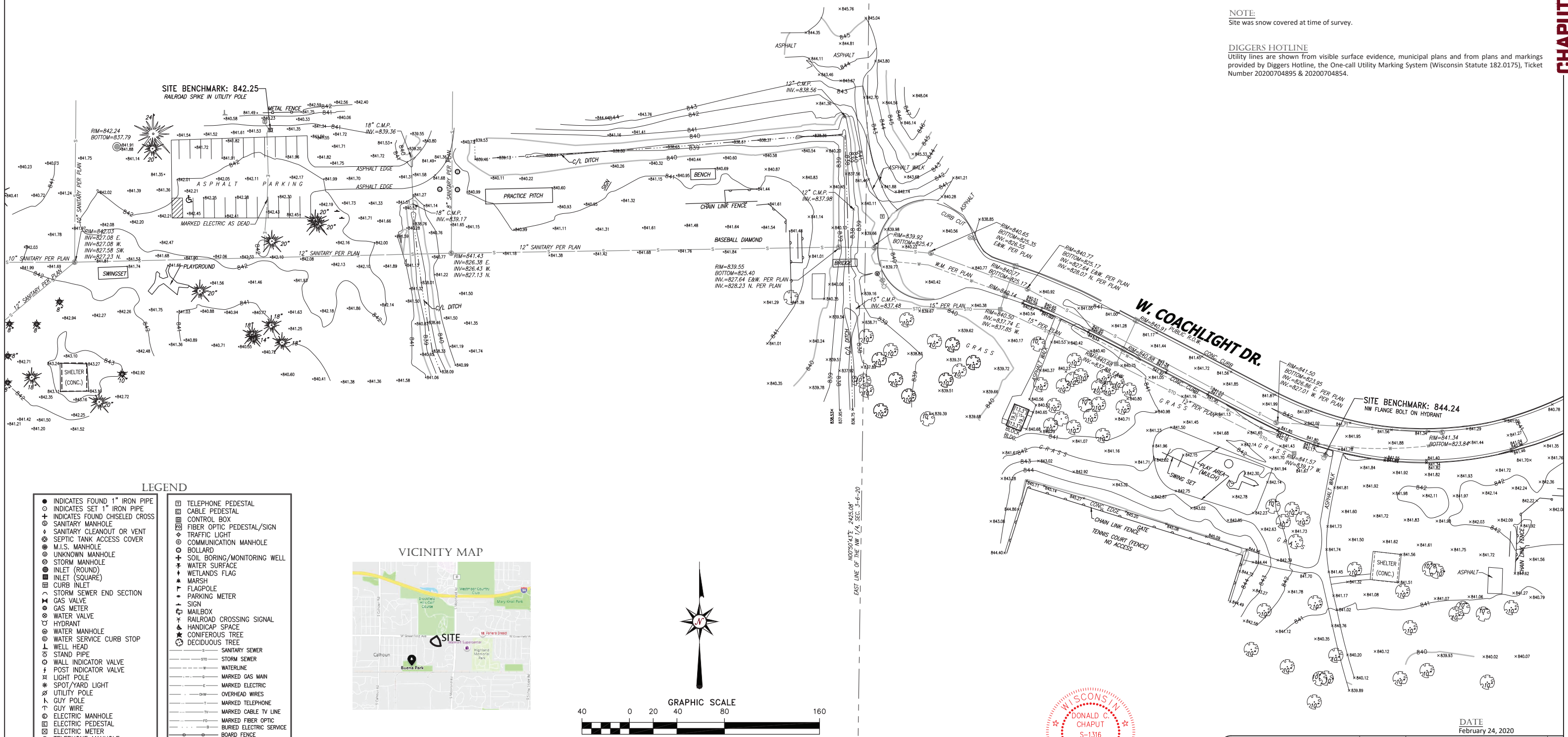
BASIS OF BEARINGS
Bearings are referenced to the Wisconsin State Plane Coordinate System (South Zone), in which the East line of the NW 1/4 bears N00°50'43"E.

VERTICAL DATUM
Vertical datum is based on North American Vertical Datum of 1988.

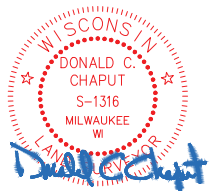
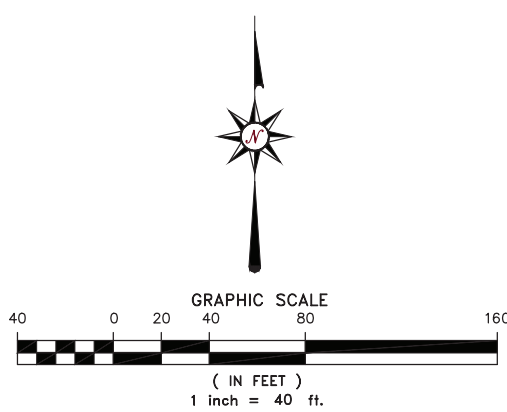
STARTING BENCHMARK: 852.91
CONC. MON. WITH BRASS CAP
SW COR. OF NW 1/4 SEC. 3, T6N, R20E.

NOTE:
Site was snow covered at time of survey.

DIGGERS HOTLINE
Utility lines are shown from visible surface evidence, municipal plans and from plans and markings provided by Diggers Hotline, the One-call Utility Marking System (Wisconsin Statute 182.0175), Ticket Number 20200704895 & 20200704854.



- LEGEND
- INDICATES FOUND 1" IRON PIPE
 - INDICATES SET 1" IRON PIPE
 - ⊕ INDICATES FOUND CHISELED CROSS
 - ⊙ SANITARY MANHOLE
 - ⊕ SANITARY CLEANOUT OR VENT
 - ⊙ SEPTIC TANK ACCESS COVER
 - ⊙ M.I.S. MANHOLE
 - ⊙ UNKNOWN MANHOLE
 - ⊙ STORM MANHOLE
 - ⊙ INLET (ROUND)
 - ⊙ INLET (SQUARE)
 - ⊙ CURB INLET
 - ⊙ STORM SEWER END SECTION
 - ⊙ GAS VALVE
 - ⊙ GAS METER
 - ⊙ WATER VALVE
 - ⊙ HYDRANT
 - ⊙ WATER MANHOLE
 - ⊙ WATER SERVICE CURB STOP
 - ⊙ WELL HEAD
 - ⊙ STAND PIPE
 - ⊙ WALL INDICATOR VALVE
 - ⊙ POST INDICATOR VALVE
 - ⊙ LIGHT POLE
 - ⊙ SPOT/YARD LIGHT
 - ⊙ UTILITY POLE
 - ⊙ GUY POLE
 - ⊙ GUY WIRE
 - ⊙ ELECTRIC MANHOLE
 - ⊙ ELECTRIC PEDESTAL
 - ⊙ ELECTRIC METER
 - ⊙ TELEPHONE MANHOLE
 - ⊙ TELEPHONE PEDESTAL
 - ⊙ CABLE PEDESTAL
 - ⊙ CONTROL BOX
 - ⊙ FIBER OPTIC PEDESTAL/SIGN
 - ⊙ TRAFFIC LIGHT
 - ⊙ COMMUNICATION MANHOLE
 - ⊙ BOLLARD
 - ⊙ SOIL BORING/MONITORING WELL
 - ⊙ WATER SURFACE
 - ⊙ WETLANDS FLAG
 - ⊙ MARSH
 - ⊙ FLAGPOLE
 - ⊙ PARKING METER
 - ⊙ SIGN
 - ⊙ MAILBOX
 - ⊙ RAILROAD CROSSING SIGNAL
 - ⊙ HANDICAP SPACE
 - ⊙ CONIFEROUS TREE
 - ⊙ DECIDUOUS TREE
 - SANITARY SEWER
 - STORM SEWER
 - WATERLINE
 - MARKED GAS MAIN
 - MARKED ELECTRIC
 - OVERHEAD WIRES
 - MARKED TELEPHONE
 - MARKED CABLE TV LINE
 - MARKED FIBER OPTIC
 - BURIED ELECTRIC SERVICE
 - BOARD FENCE
 - CHAIN LINK FENCE
 - WIRE FENCE



DATE
February 24, 2020

Date	Revision description	far
Mar 26, 2020	Additional Topo and Inverts	

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Drawing No. 20200326TOPO34556-far

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NOTES:
CITY STAFF SHALL REMOVE EXISTING
OPEN-AIR SHELTER PRIOR TO PROVIDING
CONTRACTOR WITH NOTICE TO PROCEED.

LEGEND



REMOVALS

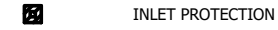
EROSION CONTROL



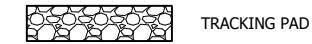
SILT FENCE



TEMPORARY CONSTRUCTION FENCE



INLET PROTECTION



TRACKING PAD



TREE PROTECTION FENCING



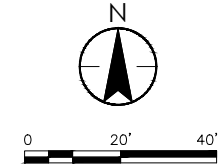
TEMPORARY CONCRETE WASHOUT LOCATION



LIMITS OF DISTURBANCE



FLOODPLAIN ZONE AE (FIRM PANEL: 55133C02338, eff. 11/5/2014)



SITE BENCHMARK: 842.25
RAILROAD SPIKE IN UTILITY POLE

METAL FENCE

SILT FENCE - 50 LF

TEMPORARY CONCRETE WASHOUT
LOCATION TO BE COORDINATED
WITH ENGINEER IN FIELD.

SILT FENCE - 240 LF

TEMPORARY CONSTRUCTION FENCE - 61 FT

BUCKTHORN
REMOVAL BY OWNER

REMOVE EXISTING ADA STRIPING &
SYMBOL

ASPHALT PARKING

TREE PROTECTION TYP.

ASPHALT EDGE

ASPHALT EDGE

PRACTICE PITCH

BENCH

CHAIN LINK FENCE

BASEBALL DIAMOND

SIGN

BOLLARDS & GATE TO BE
REMOVED BY CITY STAFF

SILT FENCE - 156 LF

CONSTRUCTION
TRACKING PAD

C/L DITCH

TEMPORARY CONSTRUCTION
FENCE - 372 LF

SWINGSET

Plot Date: 04/04/2022 - 11:42am
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User: 193805852_BUENA_B34422 193805852_BUENA_2021

- NOTES:
1. CITY STAFF TO REMOVE 2 EXISTING PICNIC SHELTERS PRIOR TO PROVIDING CONTRACTOR WITH NOTICE TO PROCEED.
 2. CONTRACTOR TO REMOVE RESTROOM BUILDING.
 3. WATER TO BE CAPPED AT THE MAIN.

LEGEND



REMOVALS

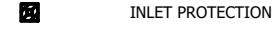
EROSION CONTROL



SILT FENCE



TEMPORARY CONSTRUCTION FENCE



INLET PROTECTION



TRACKING PAD



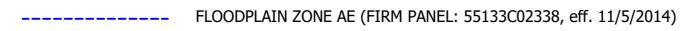
TREE PROTECTION FENCING



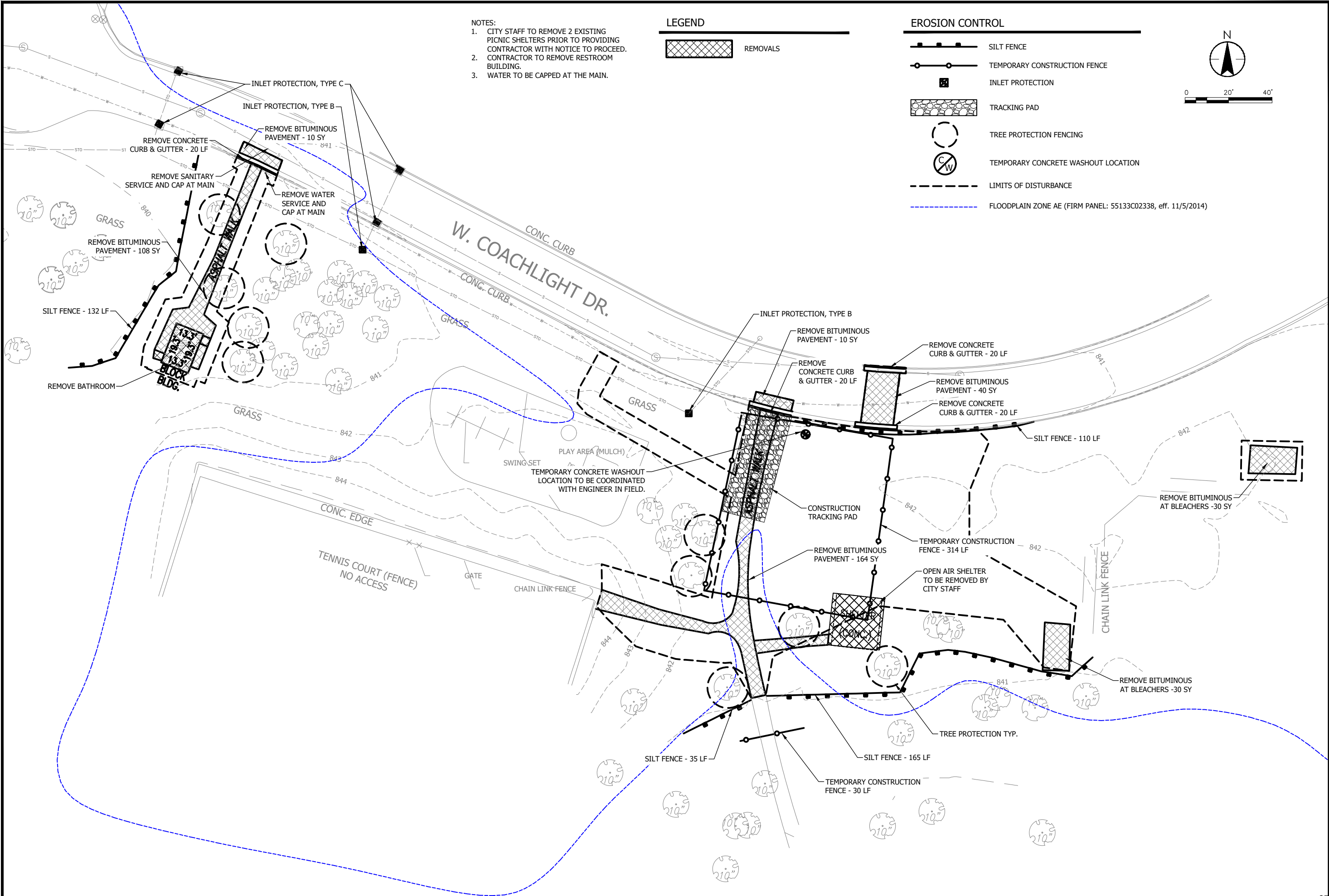
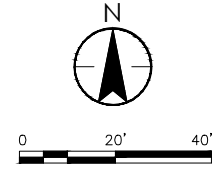
TEMPORARY CONCRETE WASHOUT LOCATION



LIMITS OF DISTURBANCE

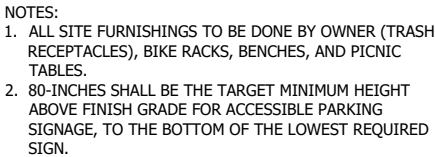


FLOODPLAIN ZONE AE (FIRM PANEL: 55133C02338, eff. 11/5/2014)



SURVEY	CHAPUT
DRAWN	CM
DESIGNED	SM
CHECKED	MC
APPROVED	MB
PROJ. NO.	193805852

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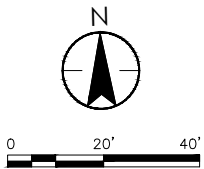


CONCRETE

BITUMINOUS

TURF RESTORATION

LIMITS OF DISTURBANCE
FLOODPLAIN ZONE AE (FIRM PANEL:
55133C02338, eff. 11/5/2014)



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BID SET

SITE PLAN - WEST

BUENA PARK IMPROVEMENTS - 2022
CITY OF NEW BERLIN
BUENA PARK, NEW BERLIN, WI 53151

DATE OF ISSUANCE

APRIL 6, 2022

NO	REVISION	DATE
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SURVEY CHAPUT

DRAWN CM

DESIGNED SM

CHECKED	MC
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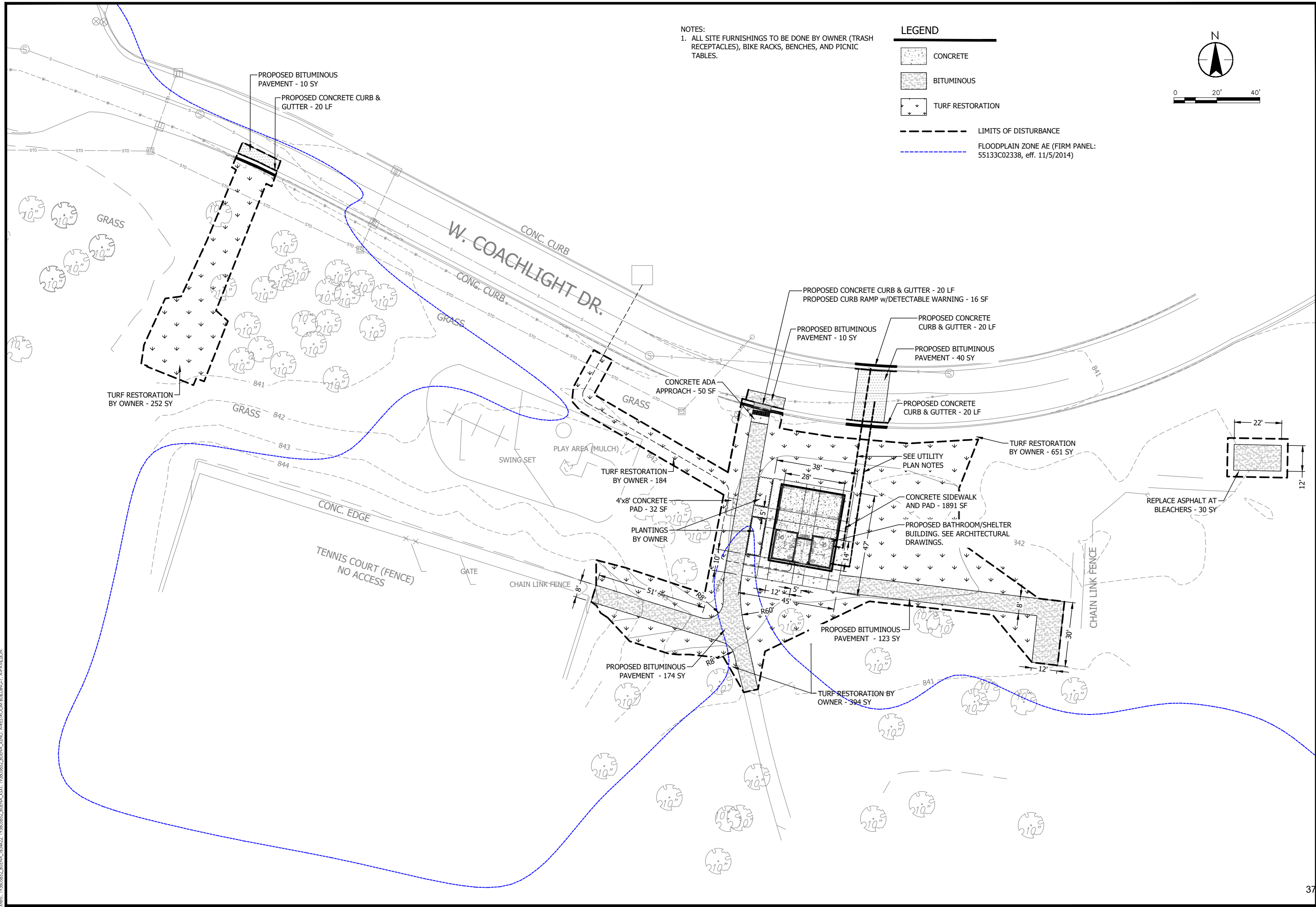
APPROVED MB

PROJ. NO. 193805852

SHEET NUMBER

C2.01

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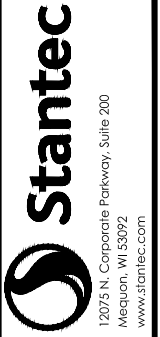


1. SLOPES SHALL NOT EXCEED ADA MAXIMUM STANDARDS. IT IS RECOMMENDED THAT FOR CONSTRUCTION, THE FOLLOWING **MAXIMUM** SLOPES BE APPLIED:

- 7.5% RUNNING SLOPE FOR CURB RAMPS AND RAMPS
- 1.5% CROSS SLOPE IN ALL DIRECTIONS FOR CURB RAMPS AND RAMPS
- 1.5% SLOPE IN ALL DIRECTIONS FOR ACCESSIBLE LANDINGS
- 4.5% MAXIMUM RUNNING SLOPE FOR PEDESTRIAN WALKS
- 1.5% CROSS SLOPE FOR PEDESTRIAN WALKS

~~744.40~~ ~~745.47~~ $\times$ STA:5+67.19
 980.87
~~743.21~~ $\times$ 743.78
 4:1
 ME: XXX.XX

MATCH SPOT ELEVATION

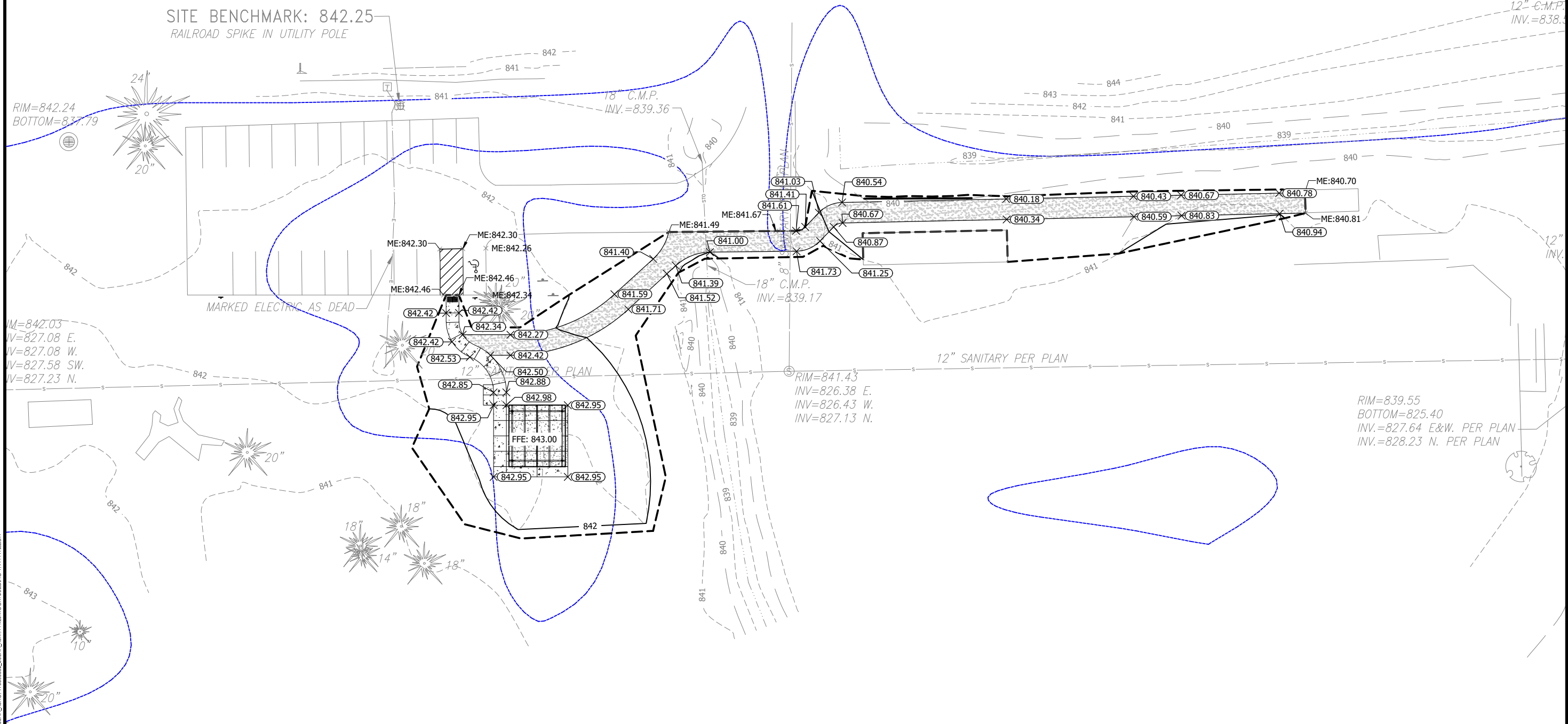


GRADING PLAN - WEST

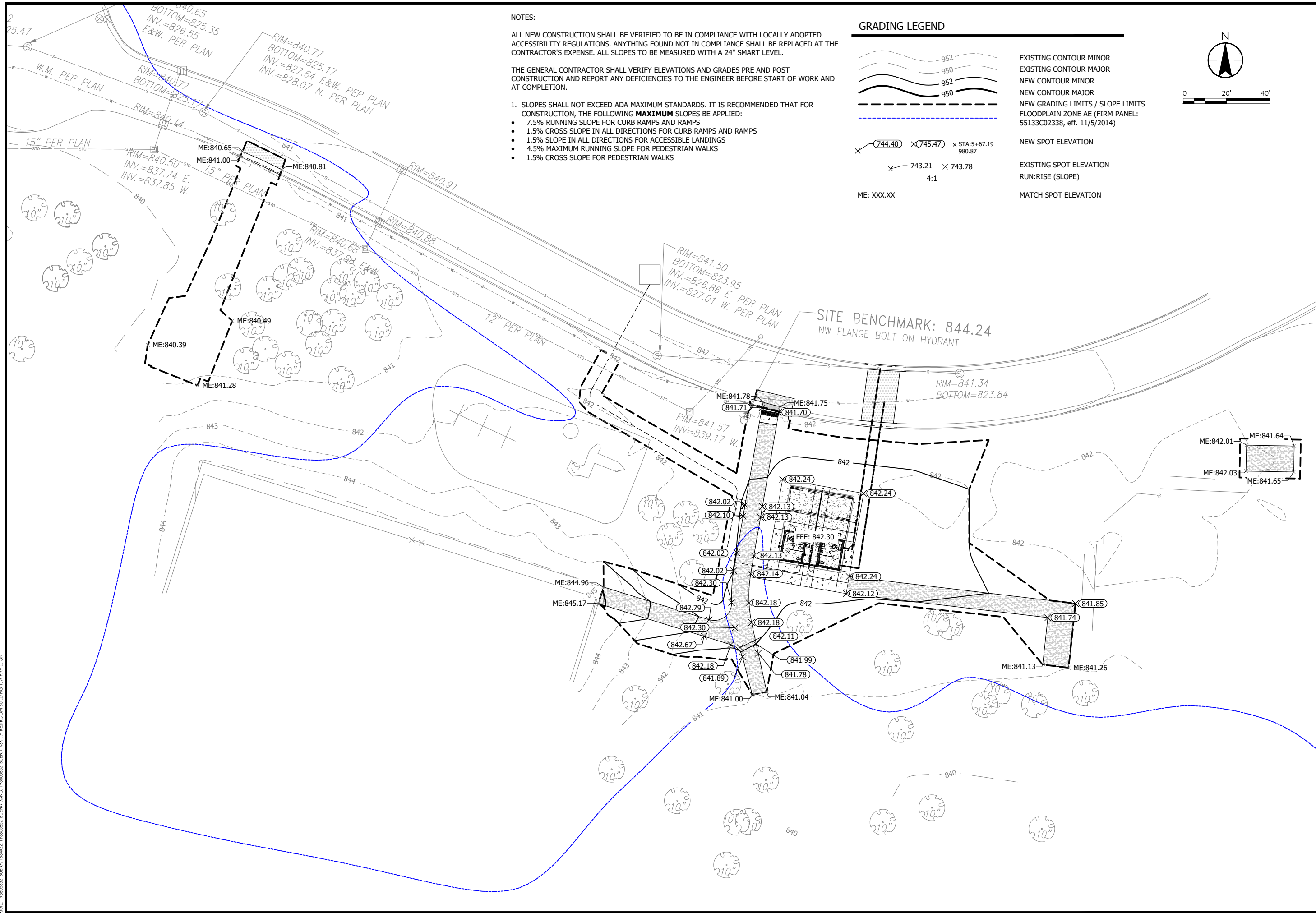
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CITY OF NEW BERLIN
BUENA PARK, NEW BERLIN, WI 53151

0 C3 01

380 SHEET NUMBER
C3.01



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Drawing name: V:\1938\active\193805852\CAD\Drawg\SHEETS\BUENA\193805852_BUENA_C300.dwg
User: j...
Scale: 1/20' = 1"



NOTES:

ALL NEW CONSTRUCTION SHALL BE VERIFIED TO BE IN COMPLIANCE WITH LOCALLY ADOPTED ACCESSIBILITY REGULATIONS. ANYTHING FOUND NOT IN COMPLIANCE SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL SLOPES TO BE MEASURED WITH A 24" SMART LEVEL.

THE GENERAL CONTRACTOR SHALL VERIFY ELEVATIONS AND GRADES PRE AND POST CONSTRUCTION AND REPORT ANY DEFICIENCIES TO THE ENGINEER BEFORE START OF WORK AND AT COMPLETION.

1. SLOPES SHALL NOT EXCEED ADA MAXIMUM STANDARDS. IT IS RECOMMENDED THAT FOR CONSTRUCTION, THE FOLLOWING **MAXIMUM** SLOPES BE APPLIED:

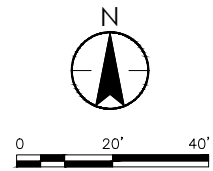
- 7.5% RUNNING SLOPE FOR CURB RAMPS AND RAMPS
- 1.5% CROSS SLOPE IN ALL DIRECTIONS FOR CURB RAMPS AND RAMPS
- 1.5% SLOPE IN ALL DIRECTIONS FOR ACCESSIBLE LANDINGS
- 4.5% MAXIMUM RUNNING SLOPE FOR PEDESTRIAN WALKS
- 1.5% CROSS SLOPE FOR PEDESTRIAN WALKS

EXISTING CONTOUR MINOR
EXISTING CONTOUR MAJOR
NEW CONTOUR MINOR
NEW CONTOUR MAJOR
NEW GRADING LIMITS / SLOPE LIMITS
FLOODPLAIN ZONE AE (FIRM PANEL:
55133C02338, eff. 11/5/2014)

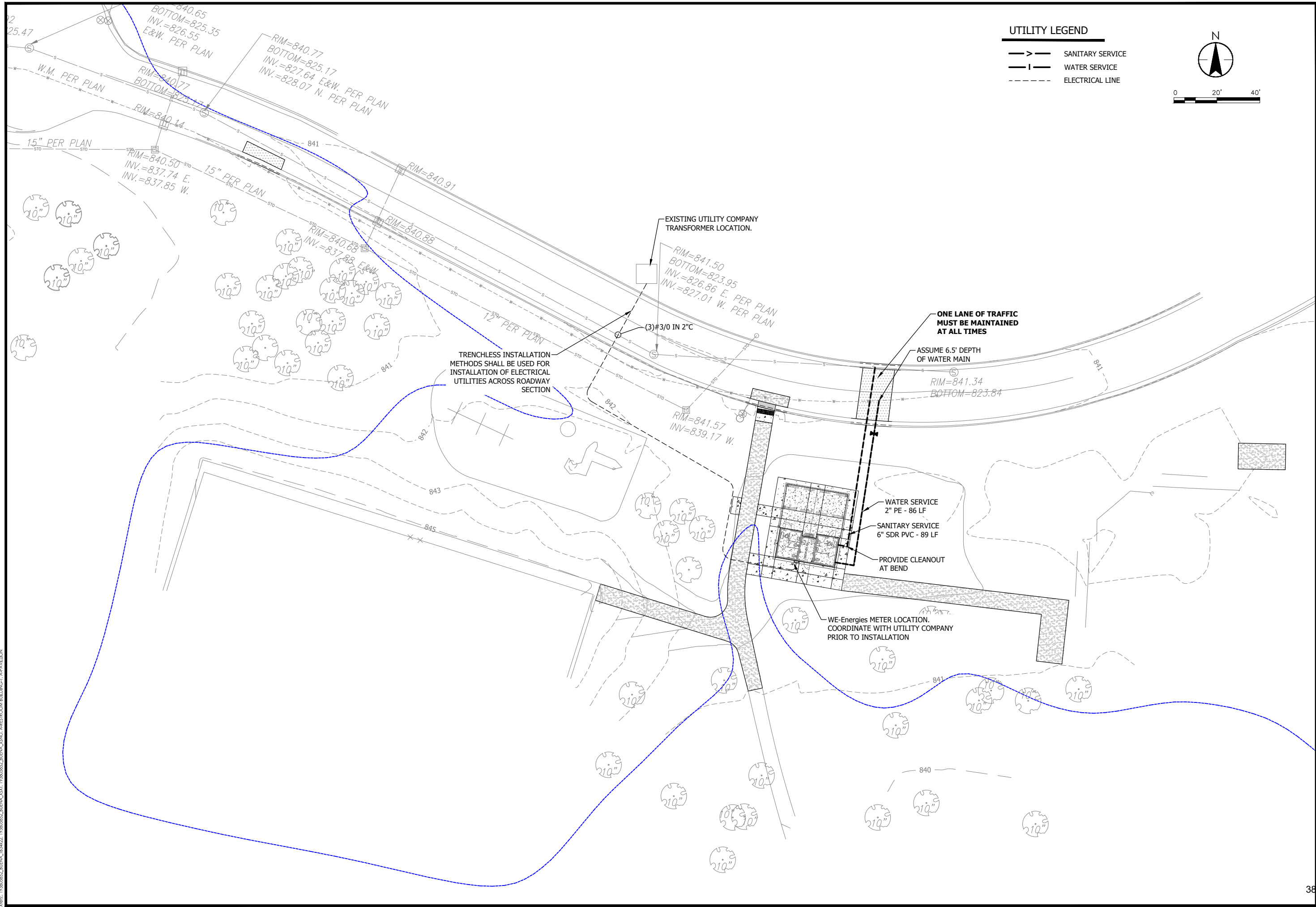
NEW SPOT ELEVATION

EXISTING SPOT ELEVATION
RUN:RISE (SLOPE)

MATCH SPOT ELEVATION



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Drawing name: V:\938\active\193805852\CAD\Draw\SHEETS\BUENA\193805852_BUENA_C40.dwg
User: jlopez@buena.com



BID SET

UTILITY PLAN - EAST

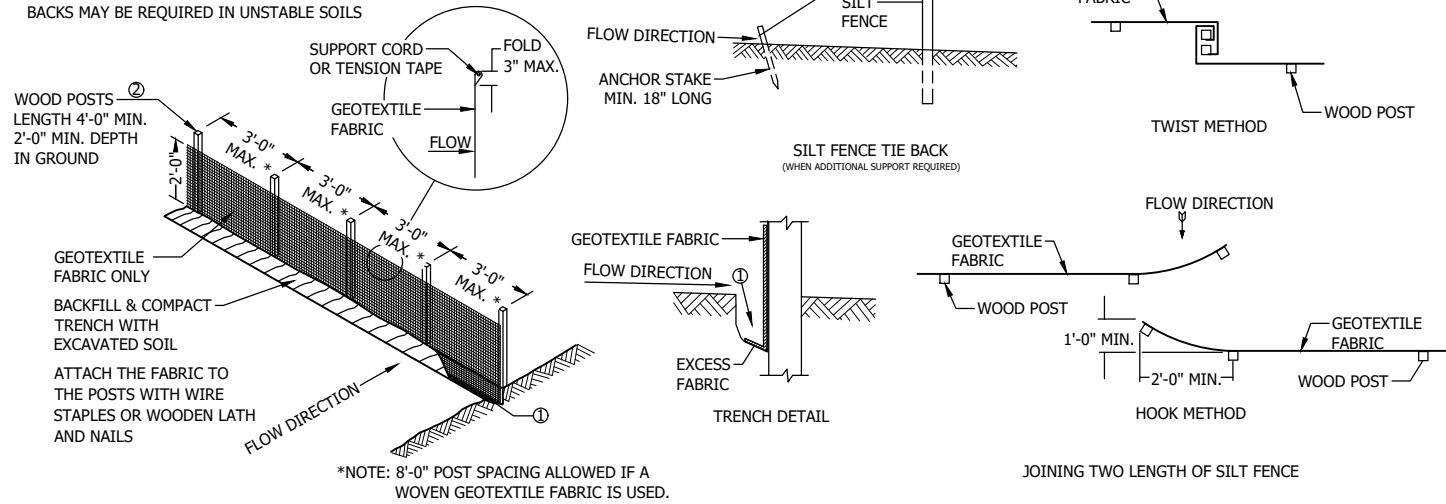
BUENA PARK IMPROVEMENTS - 2022
CITY OF NEW BERLIN
BUENA PARK, NEW BERLIN, WI 53151

DATE OF ISSUANCE	
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DRAWN	CM
DESIGNED	SM
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APPROVED	MB
PROJ. NO.	193805852

GENERAL NOTES

- TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
- WOOD POSTS SHALL BE MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY.
- 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.

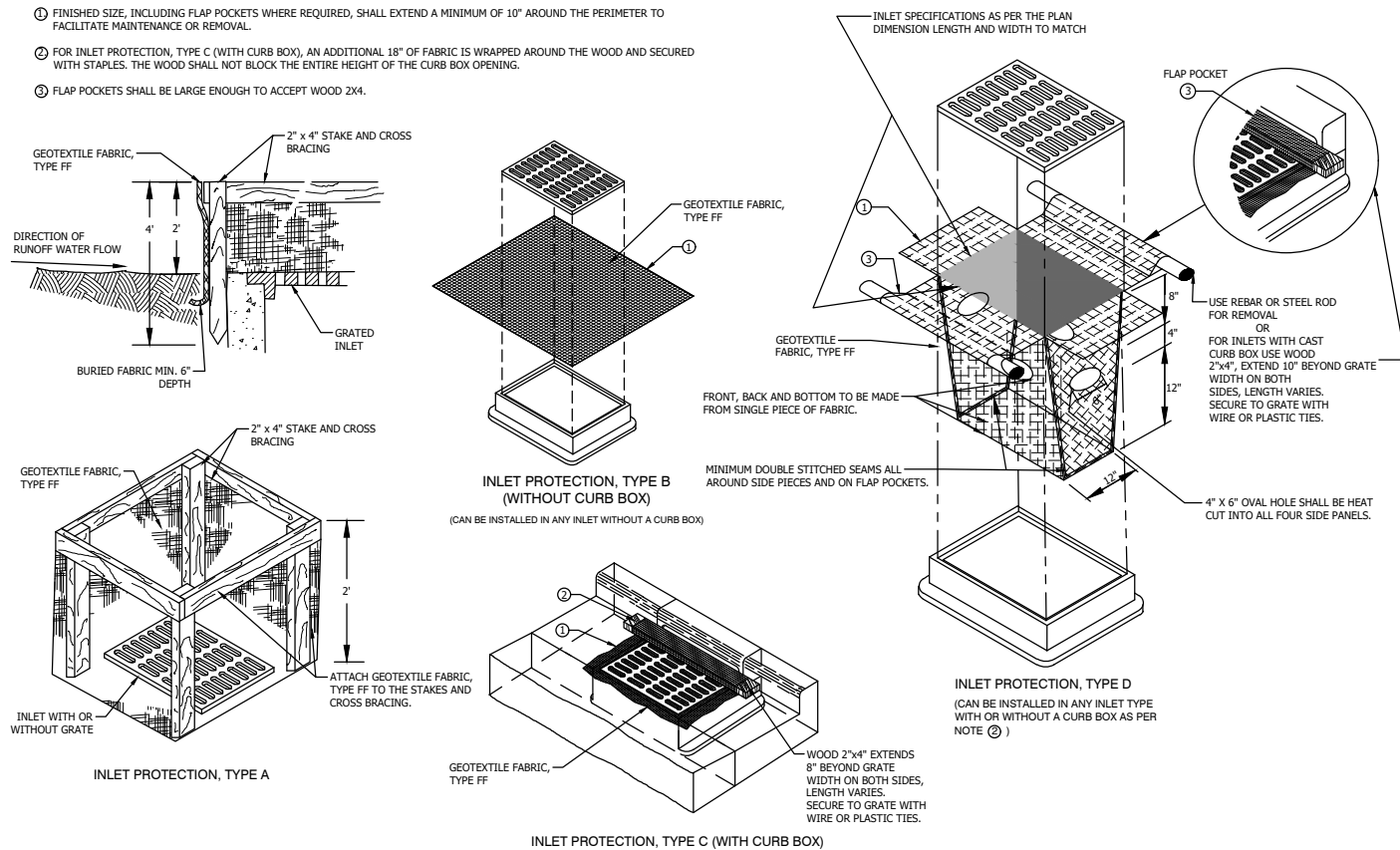
NOTE: ADDITIONAL POST DEPTH OR TIE BACKS MAY BE REQUIRED IN UNSTABLE SOILS



*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

1 SILT FENCE NTS

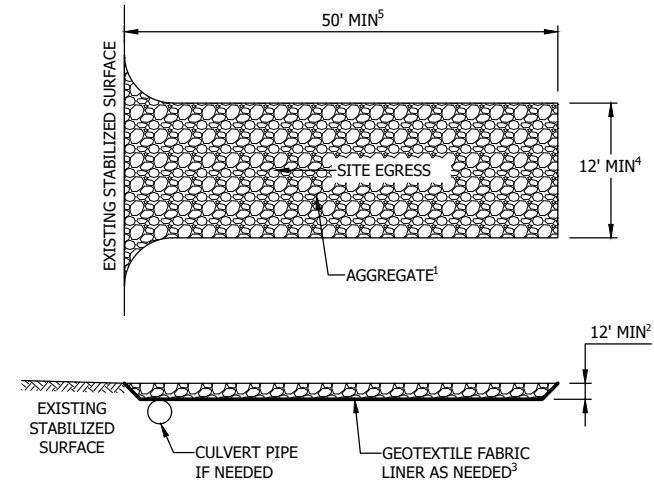
- FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10' AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
- FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
- FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.



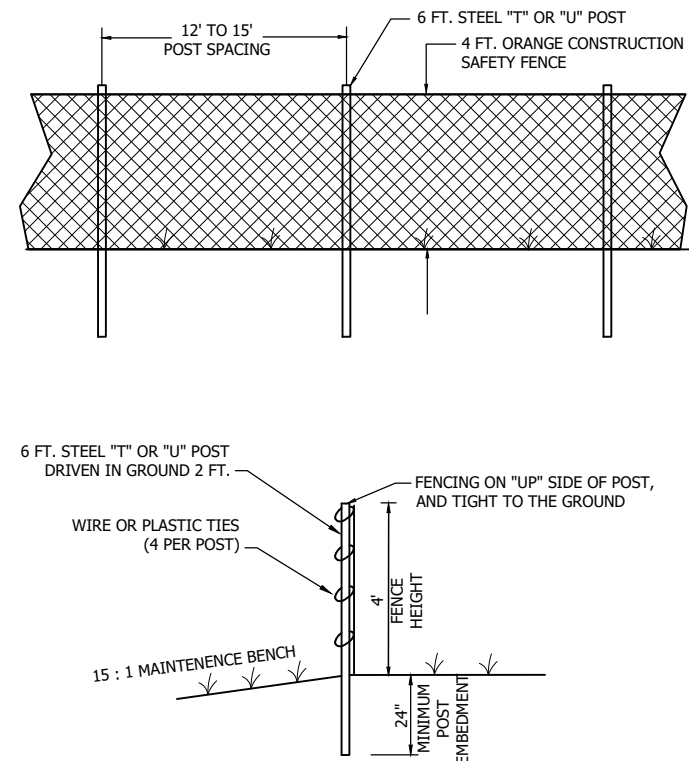
3 INLET PROTECTION - TYPE B NTS

NOTES

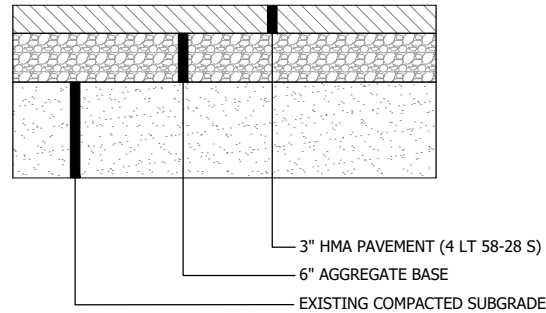
- USE HARD, DURABLE, ANGULAR STONE OR RECYCLED CONCRETE MEETING THE GRADATION IN TABLE 1. WHERE THIS GRADATION IS NOT AVAILABLE, MEET THE GRADATION IN WISCONSIN DEPARTMENT OF TRANSPORTATION (DOT) 2018 STANDARD SPECIFICATIONS, SECTION 312, SELECT CRUSHED MATERIAL.
- SLOPE THE STONE TRACKING PAD IN A MANNER TO DIRECT RUNOFF TO AN APPROVED TREATMENT PLACE.
- SELECT FABRIC TYPE BASED ON SOIL CONDITIONS AND VEHICLES LOADING.
- INSTALL TRACKING PAD ACROSS FULL WIDTH OF THE ACCESS POINT, OR RESTRICT EXISTING TRAFFIC TO A DEDICATED EGRESS LAND A LEAST 12 FEET WIDE ACROSS THE TOP OF THE PAD.
- IF A 50' PAD LENGTH IS NOT POSSIBLE DUE TO SITE GEOMETRY, INSTALL THE MAXIMUM LENGTH PRACTICABLE AND SUPPLEMENT WITH ADDITIONAL PRACTICES AS NEEDED.



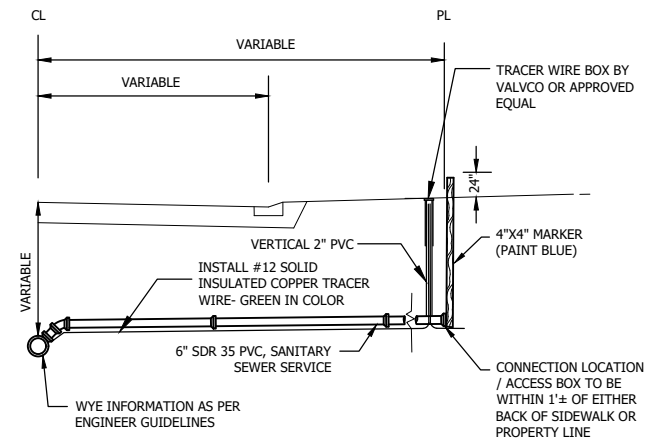
2 TRACKING PAD NTS



4 ORANGE CONSTRUCTION SAFETY FENCE NTS

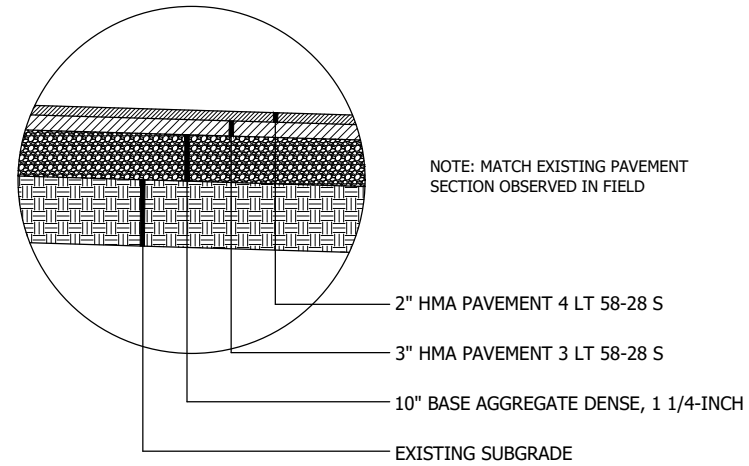


1 BITUMINOUS PATH SECTION
N.T.S.

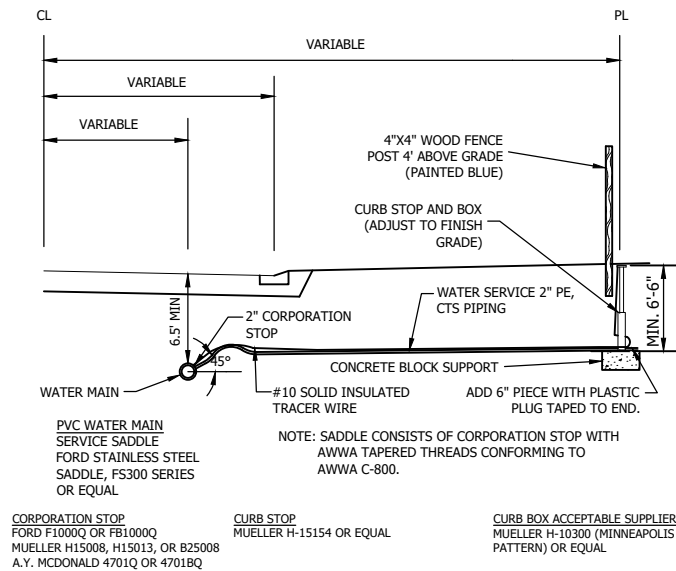


- NOTES:
1. SEWER SERVICES, 6" SDR 35 PVC SEWER PIPE
 2. SLOPE - 1/4" PER FOOT MINIMUM.
 3. PIPE JOINTS SHALL BE NON GASKETED, SOLVENT WELD TYPE.
 4. ALL PIPE SHALL BE BEDDED PER SWS 8.43.2 EXCEPT THE LAST TEN FEET WHERE COARSE FILTER AGGREGATE PER SWS 8.33.3, SIZE NO. 1 WILL BE REQUIRED.
 5. BENDS OF 45° OR LESS SHALL BE USED WITHIN THE LAST 5' OF THE SERVICE IF THE DEPTH OF THE SERVICE WOULD EXCEED 10'.
 6. NO SERVICE RISERS LESS THAN 3 FEET SHALL BE PERMITTED.
 7. A SEPARATE TRACER WIRE WILL EXTEND FROM THE FINISH GRADE AT TRACER WIRE BOX AND FOLLOW SEWER SERVICE TO STRUCTURE FOUNDATION. TRACER WIRE FROM BOX TO FOUNDATION BY OTHERS.
 8. FOR DEPTHS GREATER THAN 22', SERVICE PIPE SHALL BE C900 FROM MAIN TO CONNECTION, WITH TRANSITION FITTING FROM C900 TO SDR 35 INSTALLED AT CONNECTION LOCATION.

2 SEWER SERVICE CONNECTION
N.T.S.

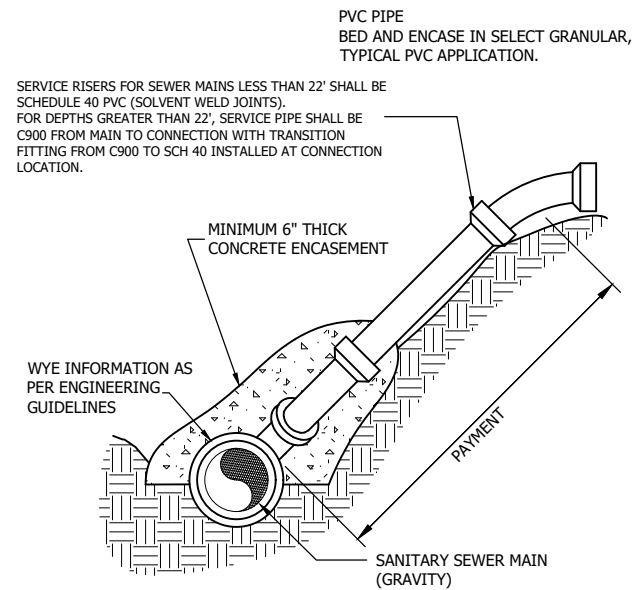


3 TYPICAL PAVEMENT RESTORATION SECTION
N.T.S.

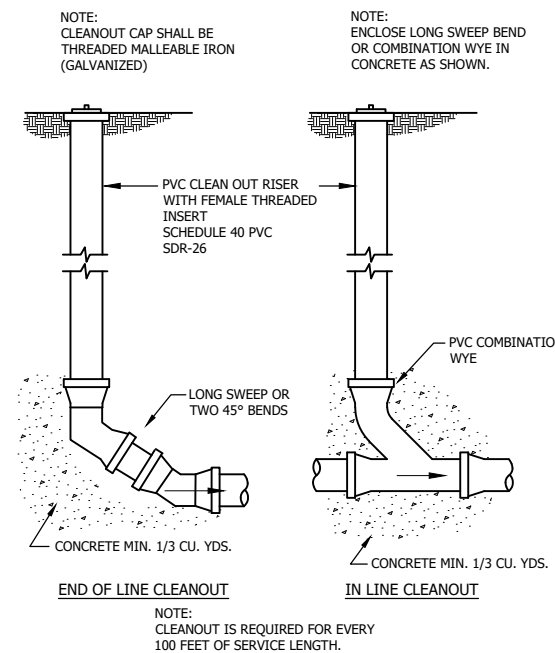


- NOTES:**
1. CURB BOX SHALL BE MINNEAPOLIS PATTERN WITH LID WITH BRASS THREADS AND METAL PLUG
1-1/4" UPPER TAPPED
1-1/2" FOR 3/4" TO 1-1/4" CURB VALVES
2" FOR 1-1/4" TO 2" CURB VALVES
 2. CURB BOX SHALL HAVE A STATIONARY 4" STAINLESS STEEL ROD.
 3. CURB STOP RODS SHALL BE PROVIDED TO SET OPERATING POINT WITH 2-5' FROM FINISHED GRADE.
 4. ALL PIPE SHALL BE BEDDED IN CRUSHED STONE PER SWS 8.43.2 EXCEPT THE LAST TEN FEET WHERE COARSE FILTER AGGREGATE PER SWS 8.33.3, SIZE NO. 1 WILL BE REQUIRED.
 4. IF CURB STOP IS IN DRIVEWAY, CONTRACTOR MUST INSTALL A FORD A-1 CASTING, MARKED WITH "WATER" ON LID.
 5. CURB BOX LID SHALL BE MUELLER #89375 "TW" OR EQUAL.
 6. ALL BRASS FITTINGS SHALL BE "NO LEAD BRASS".
 7. PIPE INSERT STIFFENERS REQUIRED FOR FITTING CONNECTIONS.

4 WATER SERVICE CONNECTION
N.T.S.



5 SERVICE RISER
N.T.S.

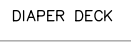


- NOTE:
1. IF CLEAN OUT IS IN DRIVEWAY, CONTRACTOR MUST INSTALL FORD A-1 CASTING, MARKED WITH "SEWER" ON LID.
 2. IF VALVE BOX IS IN ROADWAY, CONTRACTOR MUST INSTALL TOP SECTION OF A VALVE BOX WITH LID MARKED "SEWER".

6 SERVICE LINE CLEANOUT
N.T.S.

THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. REPRODUCTION OR USE FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC IS FORBIDDEN.

Plot Date: 04/04/2022 - 11:45am
Drawing name: V:\1938\active\193805852\CAD\Drawings\BATHROOM\193805852_BUENA_A1(0).dwg
User: 193805852_BUENA_B34222 13172-Buena Park bathroom, 13172-Buena Park Pavilion

LEGEND		
SYMBOL	DESCRIPTION	AREA/ QUANTITY
----	GABLE VENT	4
----	RIDGE VENT	2
	EXTERIOR WALL LIGHTS	4
	INTERIOR CEILING LIGHTS	5
 HD	WALL MOUNT HAND DRYER	2
	MIRROR	2
	DIAPER DECK	2
	FLOOR DRAIN	3
 HB	WALL HYDRANT	1
 HB-1	WALL FAUCET	1
	ELECTRICAL OUTLET	1

NOTE:
INSTALLER TO INCLUDE
CENTRAL DRAIN TO
WINTERIZE THE BUILDING

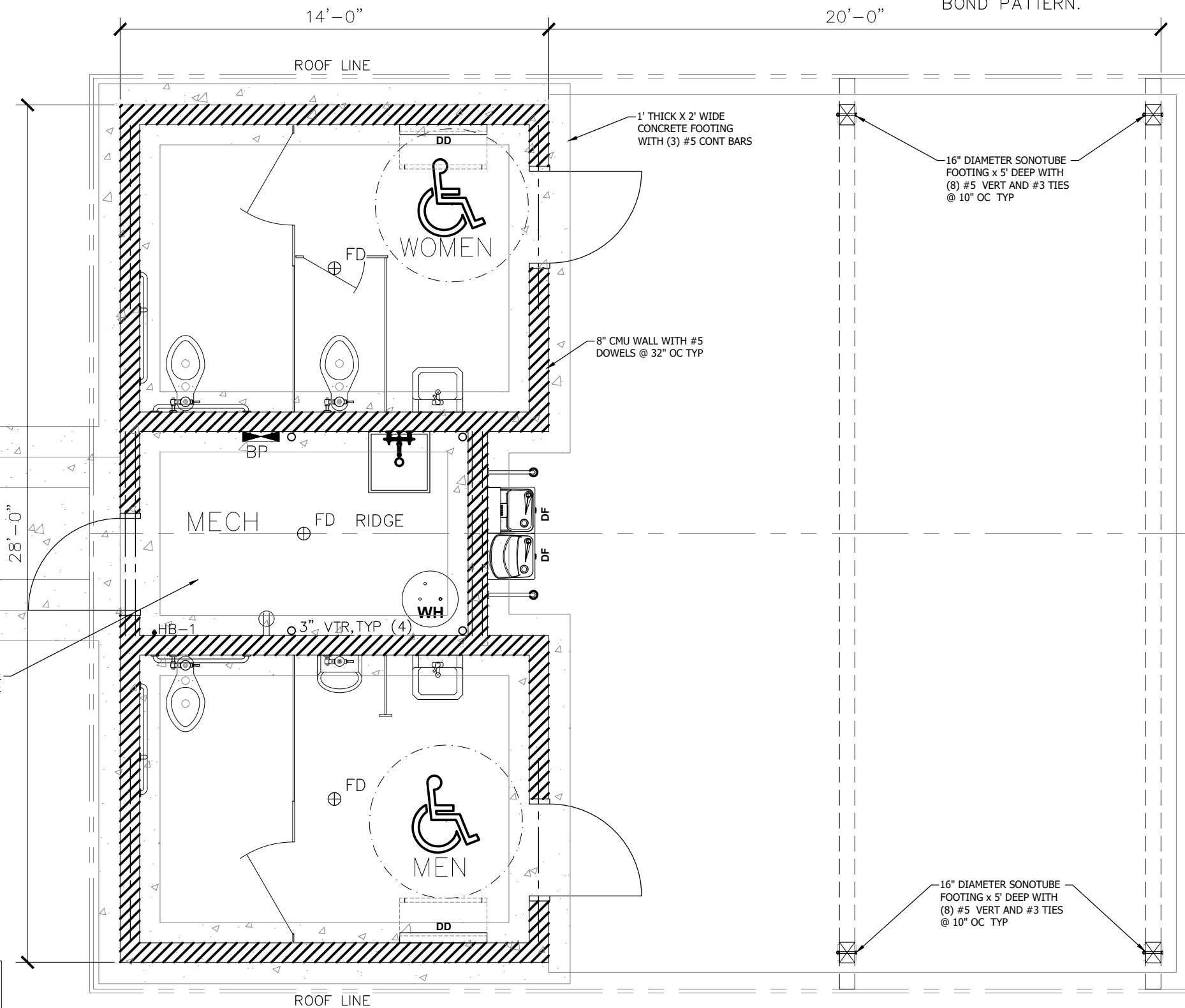
WALL TYPE SCHEDULE	
	8" REINFORCED CONCRETE MASONRY BLOCK WALL WITH MORTAR JOINTS, GROUTED SOLID ALL CELLS RUNNING BOND PATTERN.

CONCRETE WALK
(BY INSTALLER), TYP

FIRE EXTINGUISHER
BY OWNER

THESE PLAN VIEW AND ELEVATION DRAWINGS ARE A PRELIMINARY ARCHITECTURAL REPRESENTATION OF THE BUILDING. ALL DIMENSIONS, FEATURES AND COMPONENTS SHOWN ON THESE PRELIMINARY DRAWINGS MAY OR MAY NOT BE PART OF THE QUOTE. PLEASE REFER TO THE PROJECT SPECIFICATIONS FOR REQUIRED SCOPE OF SUPPLY.

1 FLOOR PLAN – BATHROOM
SCALE: 1" = 2'-0"



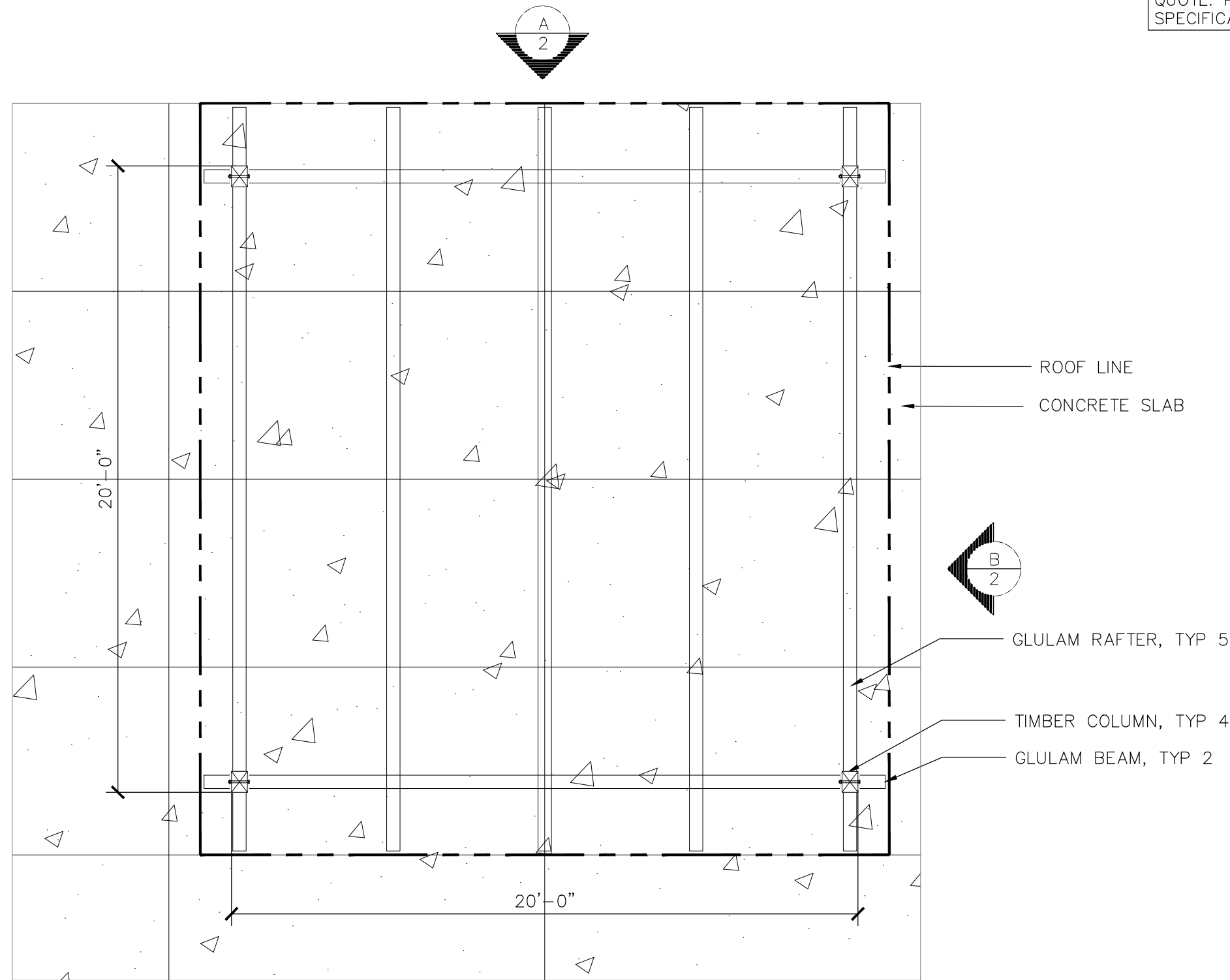
THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. -
ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. -
FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC IS FORBIDDEN.

Plot Date: 04/04/2022 - 11:45am
Drawing name: V:\193805852\CAD\Drawings\193805852_BUENA_A1.00.dwg
User: 193805852_BUENA_B34222 13176-Buena Park bathroom, 13176-Buena Park Pavilion

1

FLOOR PLAN — SHELTER

SCALE: 1" = 2'-0"



THESE PLAN VIEW AND ELEVATION DRAWINGS ARE A PRELIMINARY ARCHITECTURAL REPRESENTATION OF THE BUILDING. ALL DIMENSIONS, FEATURES AND COMPONENTS SHOWN ON THESE PRELIMINARY DRAWINGS MAY OR MAY NOT BE PART OF THE QUOTE. PLEASE REFER TO THE PROJECT SPECIFICATIONS FOR REQUIRED SCOPE OF SUPPLIES.

Plot Date: 04/06/2022 - 11:45am
Drawing name: V:\1938\active\193805852\CAD\DWG\SHEETS\BUENA\193805852_BUENA_A200.dwg
Refs: 193805852_BUENA_TB3x4x22_1317B-Buena Park Bathroom_1317C-Buena Park-Pevillon



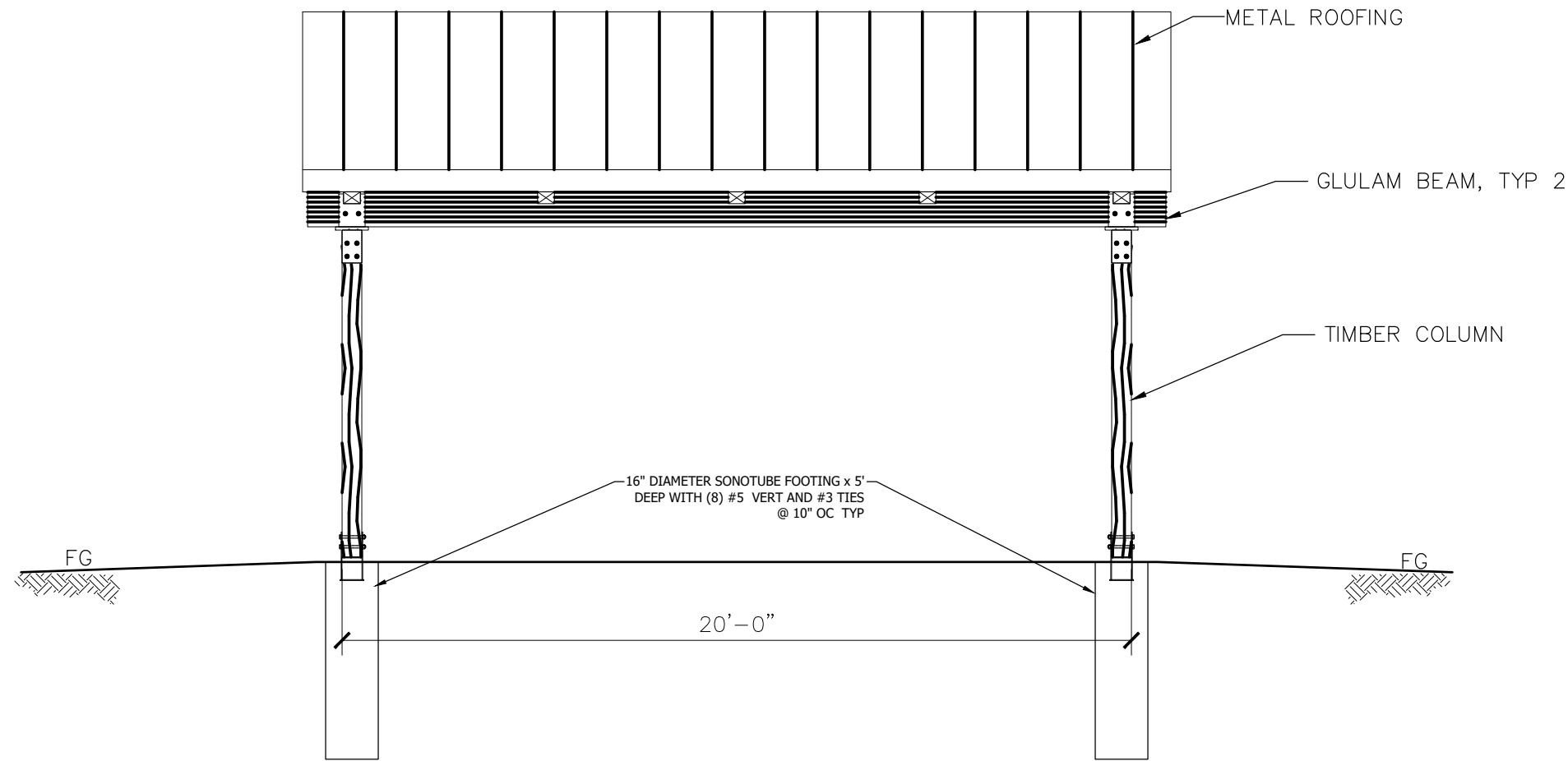
SEE SHEET S2.02
FOR FOOTING DETAILS

THESE PLAN VIEW AND ELEVATION DRAWINGS ARE A PRELIMINARY ARCHITECTURAL REPRESENTATION OF THE BUILDING. ALL DIMENSIONS, FEATURES AND COMPONENTS SHOWN ON THESE PRELIMINARY DRAWINGS MAY OR MAY NOT BE PART OF THE QUOTE. PLEASE REFER TO THE PROJECT SPECIFICATIONS FOR REQUIRED SCOPE OF SUPPLY.



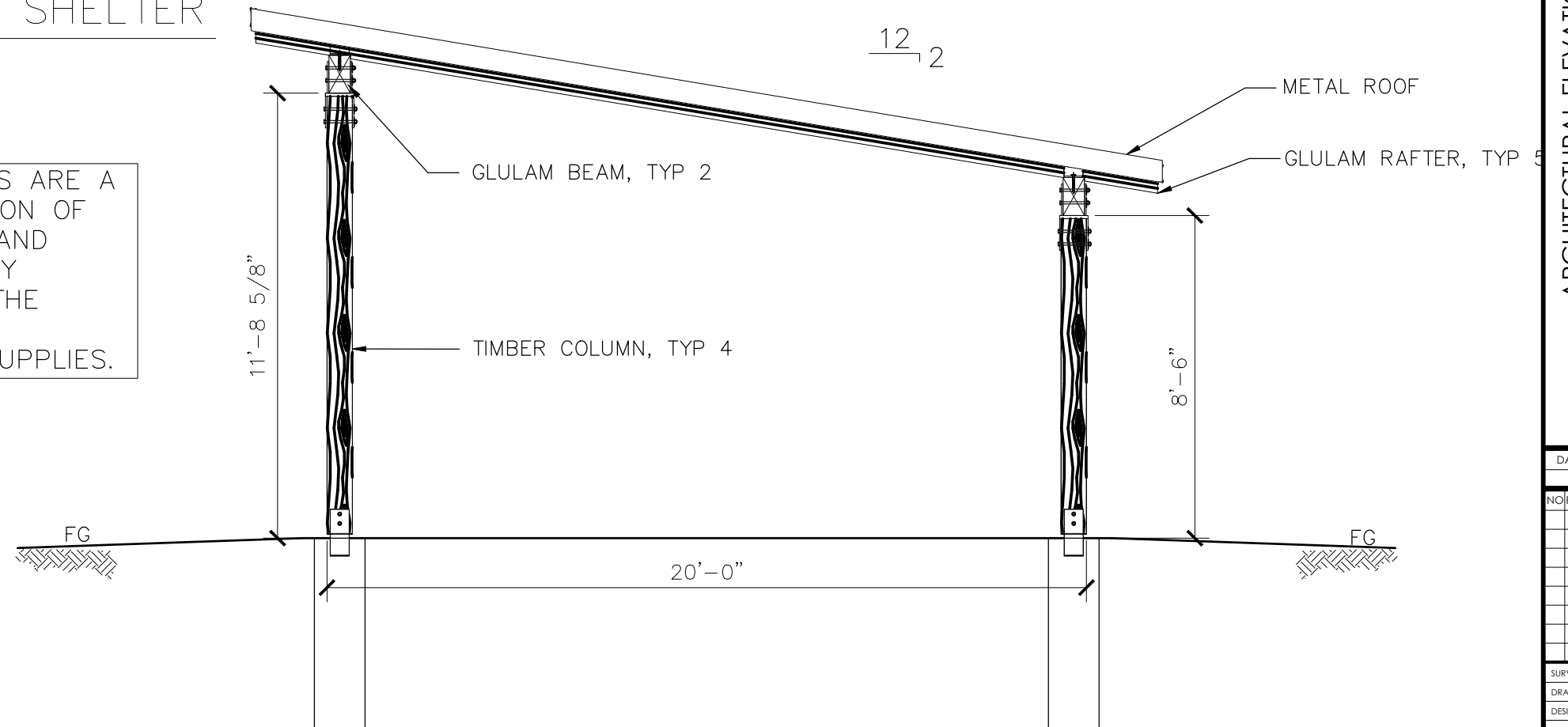
THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR COPIED FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC. REPRODUCTION OR USE FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC IS FORBIDDEN.

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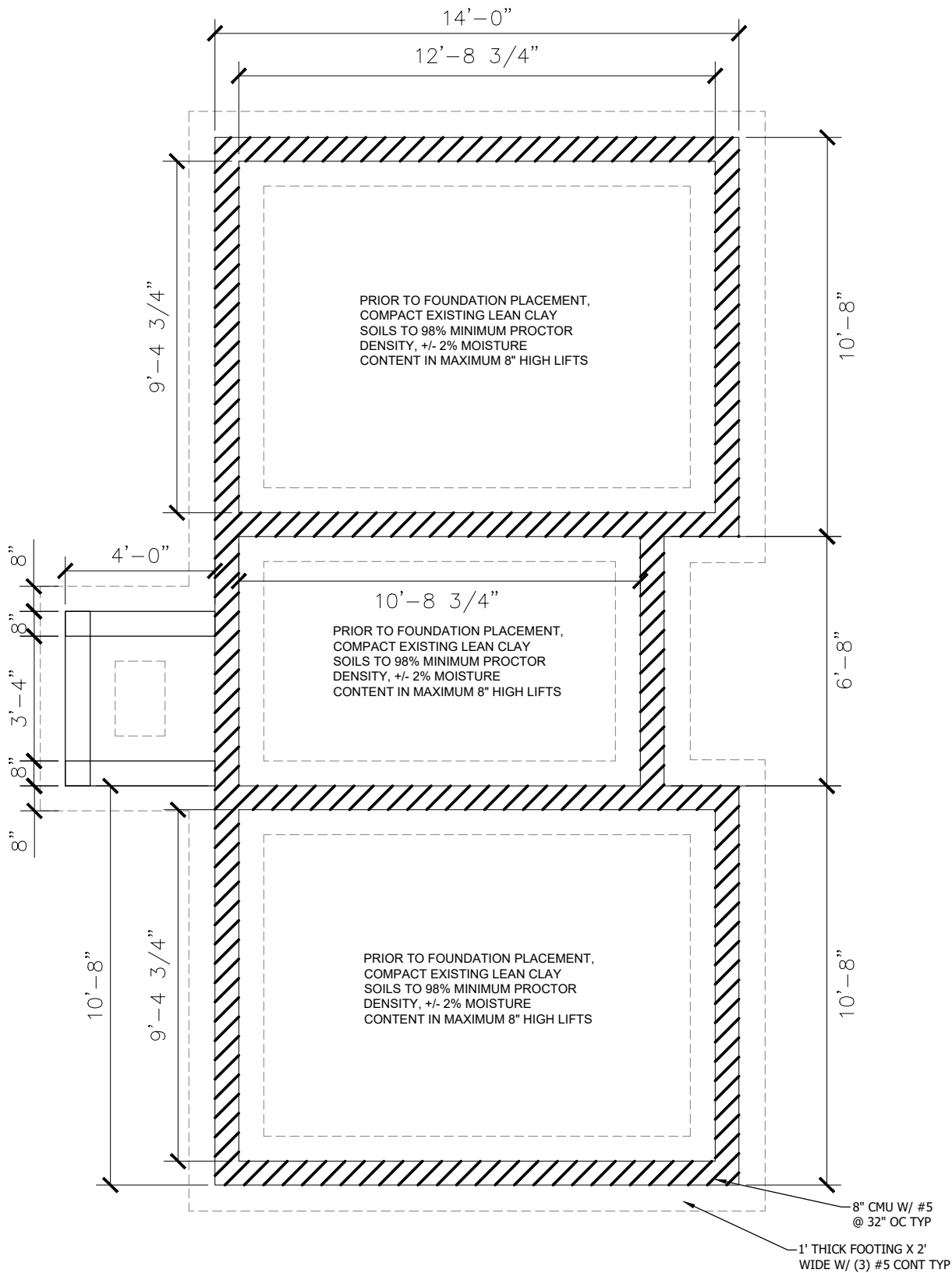


A ELEVATION VIEW — SHELTER
SCALE: 1" = 2'-0"

THESE PLAN VIEW AND ELEVATION DRAWINGS ARE A PRELIMINARY ARCHITECTURAL REPRESENTATION OF THE BUILDING. ALL DIMENSIONS, FEATURES AND COMPONENTS SHOWN ON THESE PRELIMINARY DRAWINGS MAY OR MAY NOT BE PART OF THE QUOTE. PLEASE REFER TO THE PROJECT SPECIFICATIONS FOR REQUIRED SCOPE OF SUPPLIES.



B ELEVATION VIEW — SHELTER
SCALE: 1" = 2'-0"



1 RESTROOM BUILDING FOUNDATION PLAN
SCALE: 1" = 2'-0"

GOVERNING CODES:

- | | |
|-------------|-------------------------|
| 1. GENERAL | WI STATE BLDG CODE 2015 |
| | IBC 2015 |
| 2. LOADS | ASCE 7-10 |
| 3. CONCRETE | ACI 318-14 |
| 2. WOOD | NDS 2012 |
| 3. MASONRY | ACI 530-13 / TMS 402-13 |

STRUCTURAL NOTES:

DESIGN LOADS:

- | | |
|------------------|----------|
| 1. DEAD LOADS | |
| CONCRETE | 150 PSF |
| ROOF | 10 PSF |
| 8" CMU @ 32" OC | 48 PSF |
| M/E | 5 PSF |
| 2. LIVE LOADS | |
| FLOORS | 150 PSF |
| ROOF | 20 PSF |
| 3. SNOW LOAD (S) | |
| Pg | 50 PSF |
| PF | 42.0 PSF |
| RISK | II |
| I | 1.0 |
| Ce | 1.0 |
| Ct | 1.2 |
| DRIFT | N/A |
| 4. WIND LOAD (W) | |
| V | 115 MPH |
| RISK | II |
| EXPOSURE | C |
| K _{zT} | 1.0 |

MATERIAL:

- | | |
|------------------------|--|
| 1. CONCRETE | 4,000 PSI AT 28 DAYS |
| 2. REINFORCEMENT BARS | ASTM A615, GRADE 60 |
| 3. MASONRY | |
| CONCRETE MASONRY UNITS | ASTM C90
2,000 PSI COMP. STRENGTH |
| JOINT REINFORCEMENT | LADDER TYPE, NO. 9 WIRE
ASTM A153, CLASS B2 GALV. |
| MORTAR | ASTM C270, TYPE S |
| GROUT | ASTM C476, 3,000 PSI
COMPREHENSIVE STRENGTH |
| 2. STRUCTURAL FILL | COARSE AGGREGATE
WISDOT 209 |

SLAB CONSTRUCTION NOTES:

- PROVIDE 4" THICK CONCRETE SLAB WITH #4 @ 16" OC EW WITH TROWELED FINISH UNLESS NOTED.
- TOOL AND CAULK CONTROL JOINTS IN ALL SLABS AT 12 FEET MAXIMUM SPACING.

FOUNDATION NOTES:

- PRIOR TO FOUNDATION PLACEMENT, COMPACT EXISTING LEAN CLAY SOILS TO 98% MINIMUM PROCTOR DENSITY, +/- 2% MOISTURE CONTENT IN MAXIMUM 8" HIGH LIFTS.
- PROVIDE EMBEDDED DOWELS IN FOOTINGS TO MATCH ALL VERTICAL COLUMN REINFORCING. SECURELY TIE DOWELS PRIOR TO PLACING CONCRETE.
- ALL FOUNDATIONS SHALL BEAR ON NATURAL LEAN CLAY SOILS OR IMPORTED STRUCTURAL FILL. ANY ORGANIC SOILS SHALL BE REMOVED PRIOR TO SUBGRADE COMPACTION.
- IF ORGANIC SOIL LAYER EXTENDS BELOW FOUNDATION BEARING ELEVATION, THEN REMOVE ORGANIC MATERIAL AND REPLACE WITH IMPORTED STRUCTURAL FILL. COMPACT TO 98% MINIMUM PROCTOR DENSITY, +/- 2% MOISTURE CONTENT IN MAXIMUM 8" HIGH LIFTS.
- GEOTECH REPRESENTATIVE SHALL BE ONSITE TO VERIFY BEARING SOIL MATERIAL AND ADEQUACY.

MASONRY WALL CONSTRUCTION NOTES:

- CONCRETE BLOCK SHALL BE LAID IN RUNNING BOND UNLESS NOTED.
- PROVIDE OPEN-CORE STYLE CMU FOR ALL MASONRY WALLS.
- PROVIDE BULLNOSED CMU FOR ALL EXPOSED MASONRY WALL CORNERS.
- PROVIDE VERTICAL #5 @ 32" SPACING IN ALL MASONRY WALLS UNLESS NOTED.
- GROUT FULL ALL CMU CORES CONTAINING VERTICAL REINFORCEMENT.
- INSTALL HORIZONTAL JOINT REINFORCING IN EVERY OTHER COURSE.
- PROVIDE MASONRY EXPANSION JOINT DETAIL 4/S2.01 WHERE INDICATED THUS.
- PROVIDE MASONRY CONTROL JOINT DETAIL 5/S2.01 WHERE INDICATED THUS, OR AT A SPACING OF NO GREATER THAN 20 FEET.
- TOOL ALL MASONRY JOINTS CONCAVE.

CONSTRUCTION NOTES:

- EXCAVATION
 - CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL TEMPORARY SHORING AND BRACING NECESSARY TO PROTECT PERSONNEL AND PROPERTY FROM INJURY OR DAMAGE DURING CONSTRUCTION OPERATION.
- CONCRETE
 - LAP SPLICES AND 90 DEGREE END HOOKS SHALL BE AS SHOWN BELOW UNLESS NOTED.

REINF. BAR SIZE	SLAB, WALL, COLUMN		BEAMS		90 DEGREE END HOOK
	BAR LAP	TOP BAR	BAR LAP	TOP BAR	
#3	19 IN.	24 IN.	28 IN.	36 IN.	6 IN.
#4	25 IN.	32 IN.	37 IN.	48 IN.	8 IN.
#5	31 IN.	40 IN.	46 IN.	60 IN.	10 IN.

- * TOP BAR LAP SPLICES ARE HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 12 IN. OF CONCRETE IS CAST IN THE MEMBER BELOW THE SPLICE.
- CONCRETE CAST AGAINST EARTH 3"
 - ALL OTHER CONCRETE EXPOSED TO WEATHER 2"
 - INTERIOR SLAB, WALLS AND JOISTS 3/4"
 - BEAM STIRRUPS OR COLUMN TIES OR SPIRALS 1 1/2"
- CONCRETE SHALL BE PLACED WITHOUT CONSTRUCTION JOINTS EXCEPT WHERE SPECIFICALLY SHOWN ON THE DRAWINGS OR AS APPROVED BY THE ENGINEER.
 - BEVEL ALL EXPOSED CORNERS OF CONCRETE 3/4" x 3/4".

REQUIRED SPECIAL INSPECTIONS					
DESCRIPTION OF WORK IBC SECTION 1704	INSPECTION		TESTING		REMARKS
	YES	NO	YES	NO	
1. CONCRETE	●		●		
2. BOLTS INSTALLED IN CONCRETE					●
3. DUCTILE MOMENT-RES CONCRETE FRAME					●
4. REINF STEEL AND PRESTRESSING STEEL	●		●		
5. WELDING					●
6. HIGH-STRENGTH BOLTING					●
7. STRUCTURAL MASONRY	●		●		
8. REINFORCED GYPSUM CONC					●
9. INSULATING-CONCRETE FILL					●
10. SPRAY-APPLIED FIREPROOFING					●
11. PILING, DRILLED PIERS AND CAISSONS					●
12. SHOTCRETE					●
13. SPECIAL GRADING EXC AND FILLING					●
14. SPECIAL CASES					●

Plot Date: 04/06/2022 - 11:46am
Drawing name: V:\1938\active\193805852\CAD\Dwg\Sheets\BUENA\193805852_BUENA_S200.dwg
Xrefs: 193805852_BUENA_TB34x22_1317C-Buena Park-Pevlon, 193802875XSNA, 193805852_BUENA_XSNA

1 POST FOOTING DETAIL

SCALE: 1" = 1'-0"

2 EDGE OF CONC SLAB

SCALE: 1" = 1'-0"

Diagram illustrating the edge of a concrete slab. The slab is shown in cross-section, revealing a layer of compacted fill beneath the concrete. A sawcut joint is indicated by a dashed line, with a callout stating: "MAKE SAWCUT 1 1/2\"

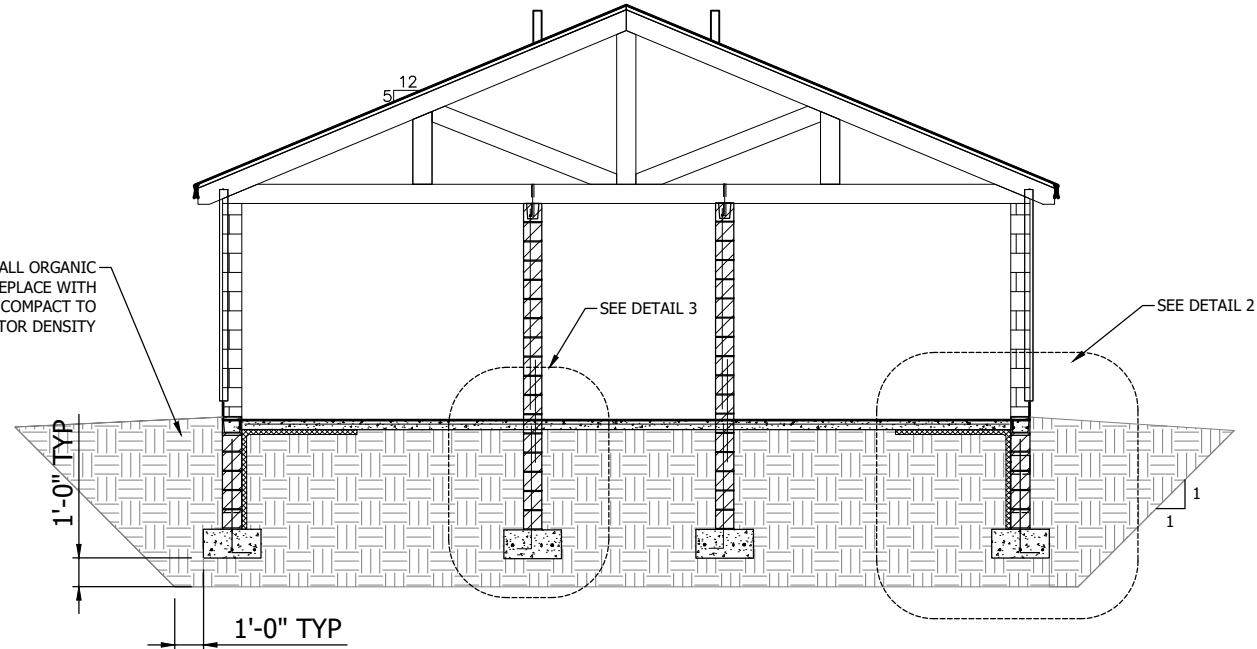
4 EXPANSION JOINT DETAIL

5 CONTROL JOINT DETAIL

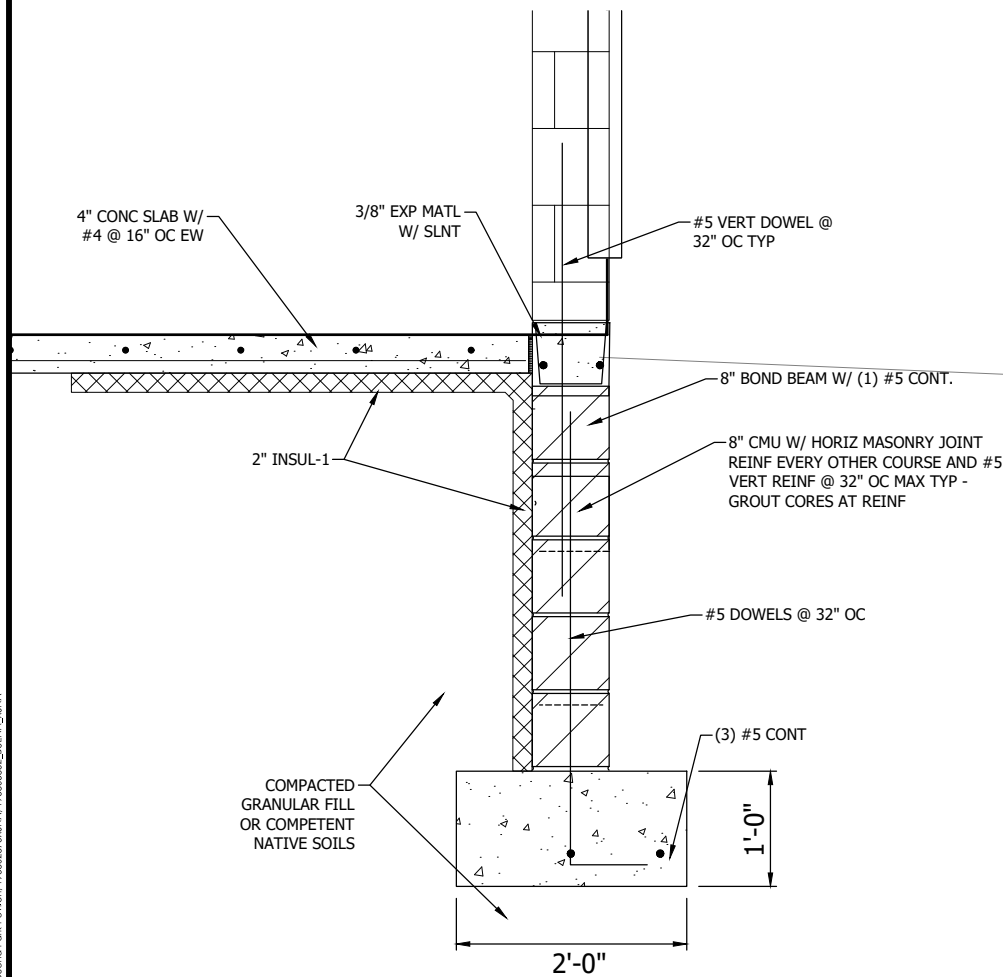
NO SCALE

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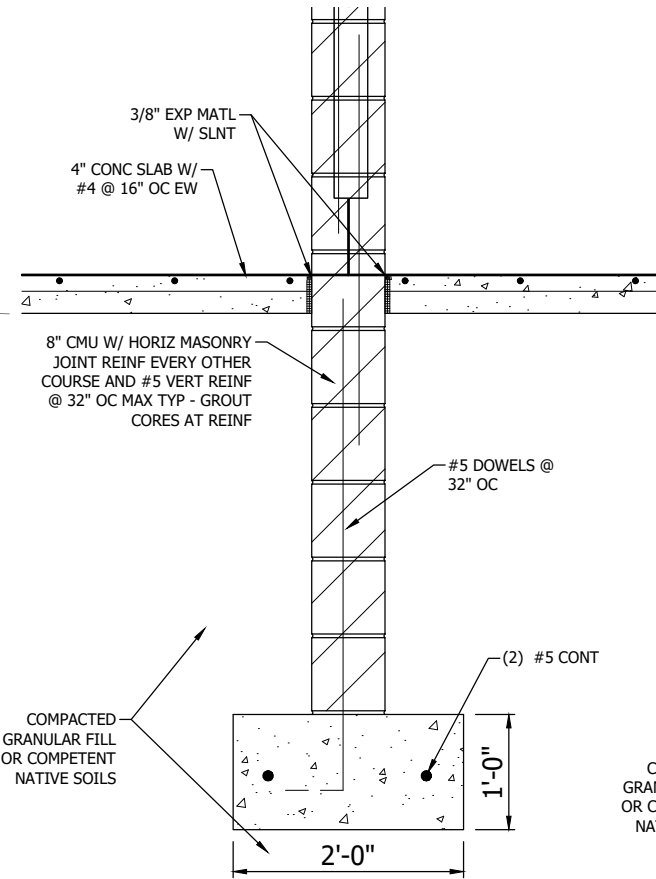
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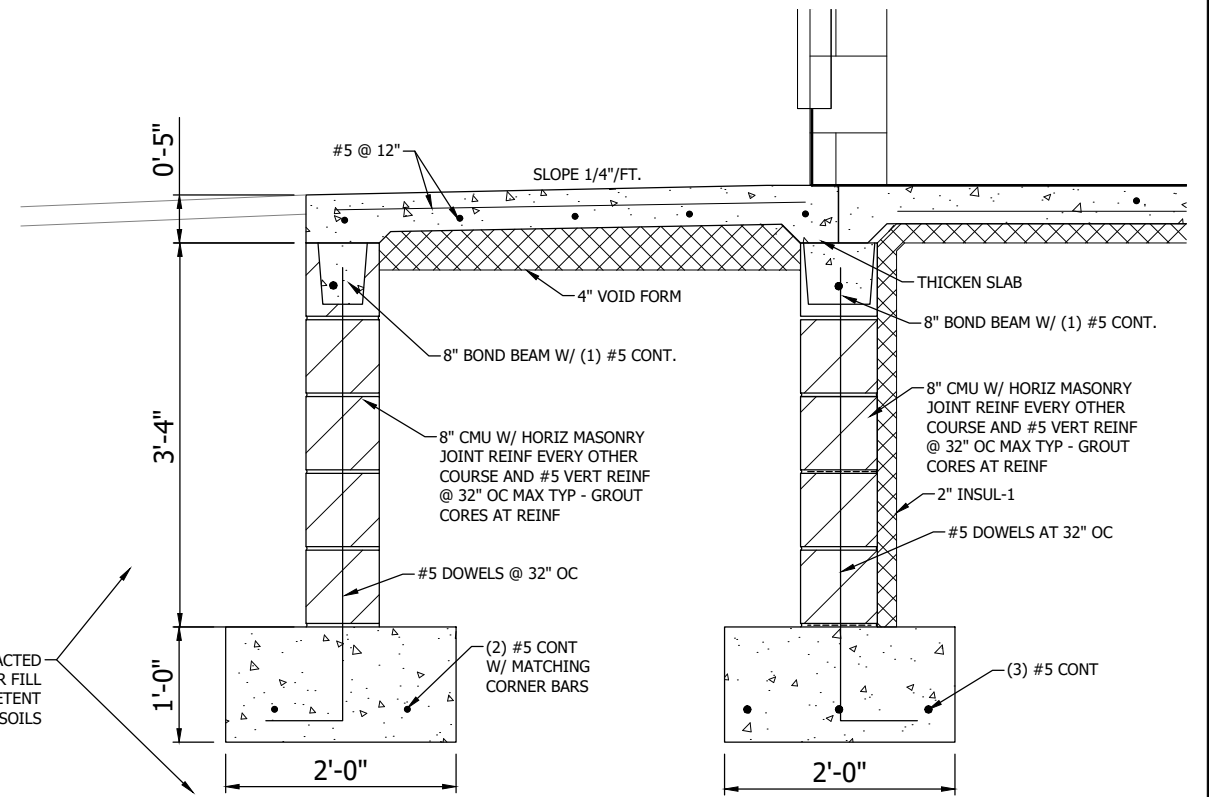
1 RESTROOM BUILDING SECTION
NO SCALE



2 EXTERIOR WALL DETAIL
NO SCALE



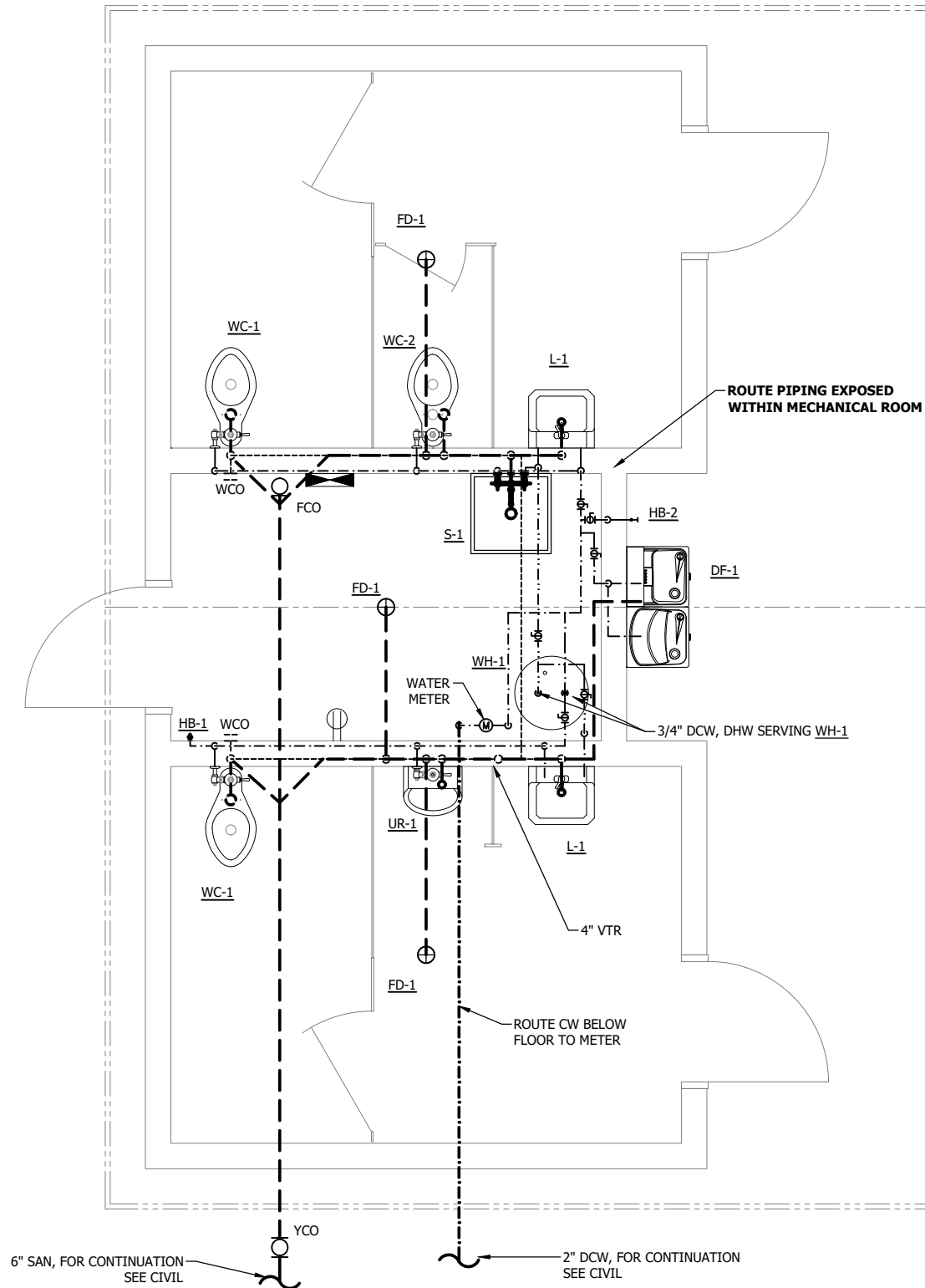
3 INTERIOR WALL DETAIL
NO SCALE



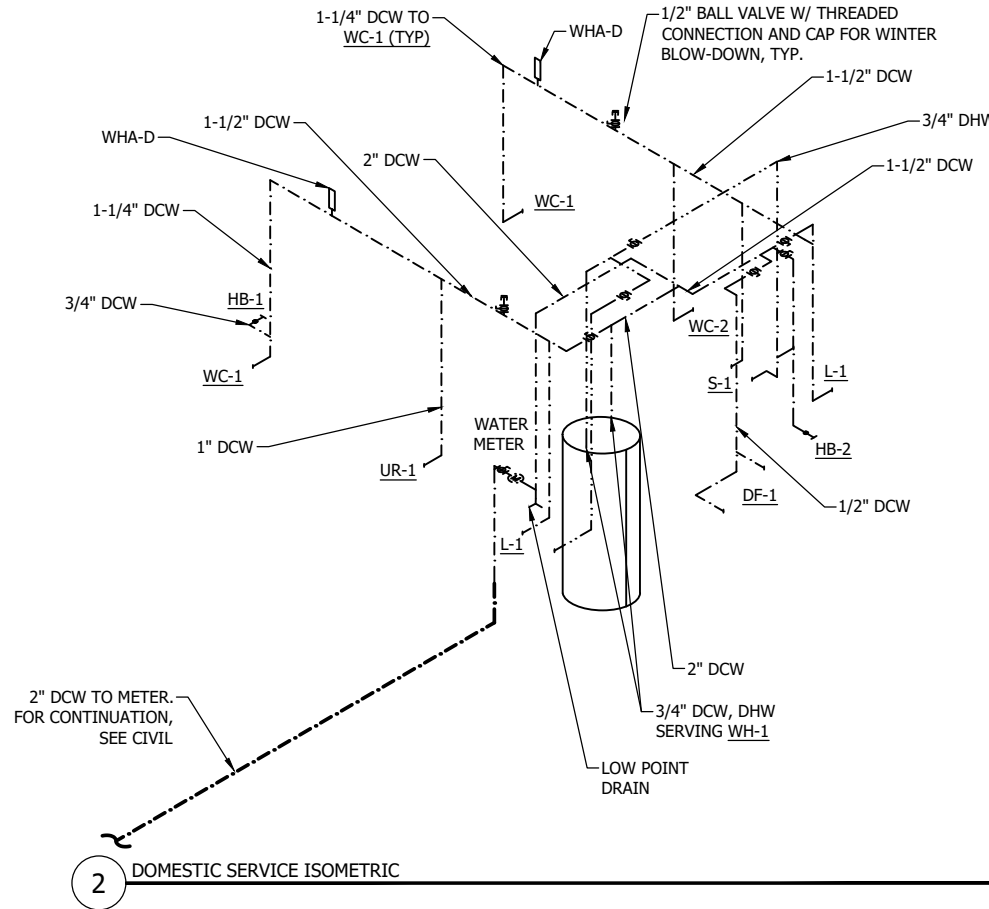
4 STOOP DETAIL
NO SCALE

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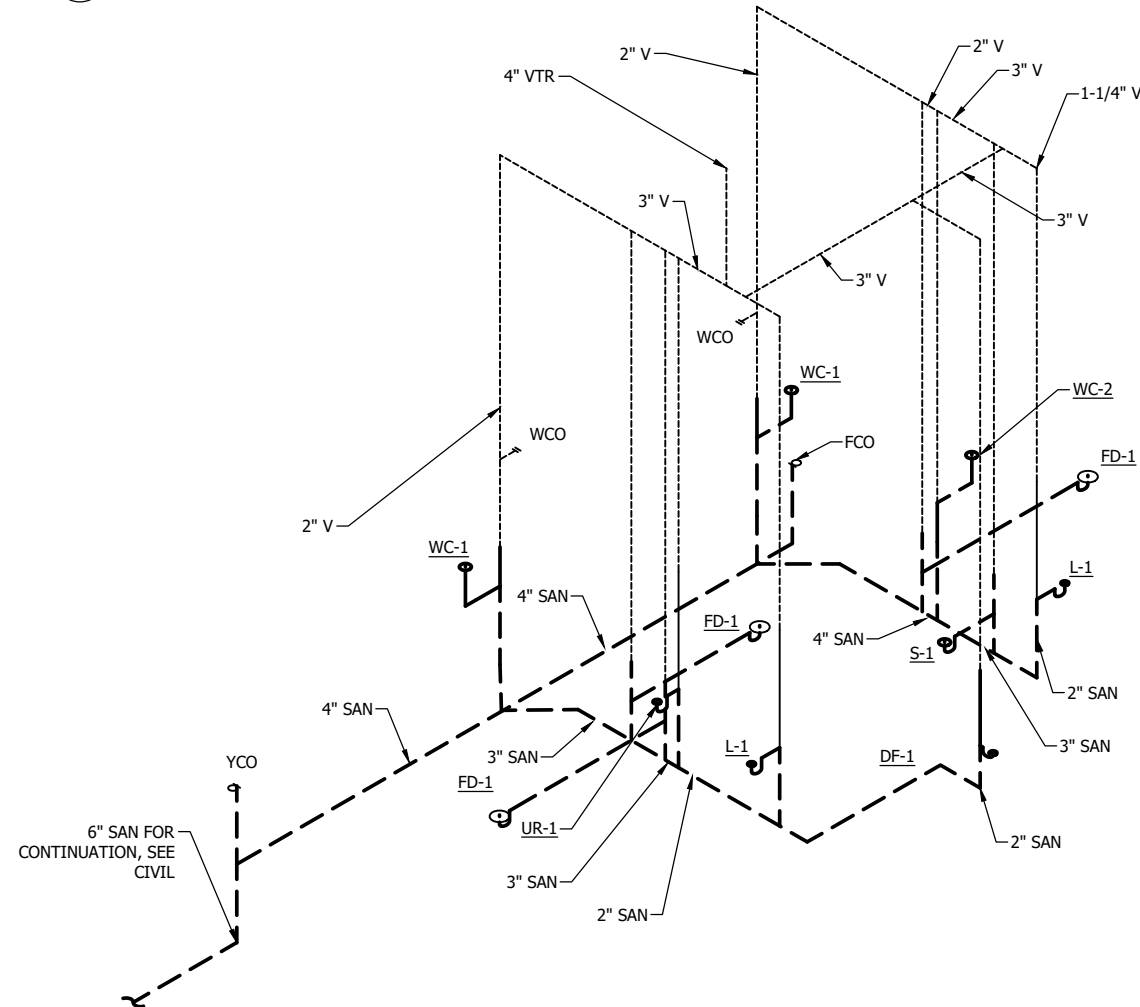
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User: BATHROOM_193805852\BUENA_193805852_BUENA_PLUMBING_00



1 PLUMBING FLOOR PLAN
SCALE: 1/2" = 1'-0"



2 DOMESTIC SERVICE ISOMETRIC

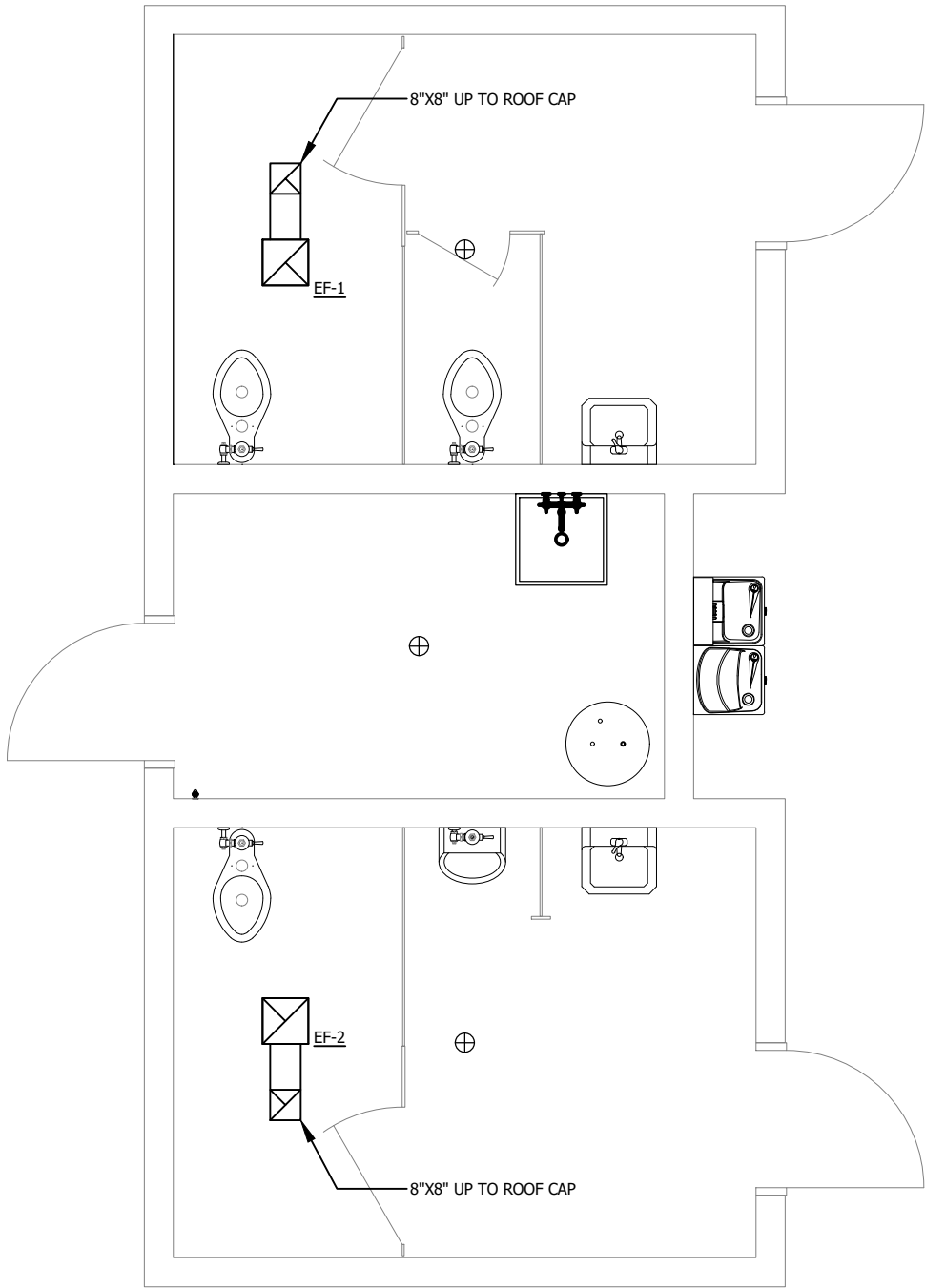


3 WASTE AND VENT ISOMETRIC

- NOTE:
1. PROVIDE LOW POINT DRAINS AS REQUIRED TO DRAIN SYSTEM FOR WINTERIZATION
 2. LOCATE ISOLATION VALVES TO ALLOW SHUTDOWN OF ONE BATHROOM WITHOUT EFFECTING THE OTHER.

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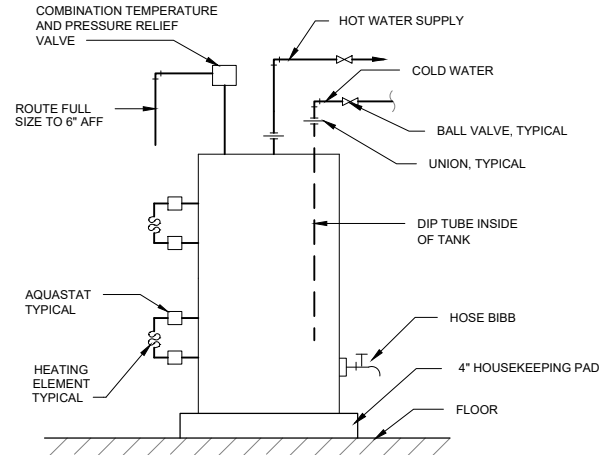


1 HVAC FLOOR PLAN
SCALE: 1/2" = 1'-0"

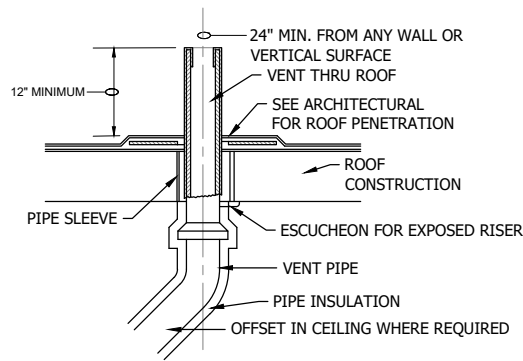
PLUMBING FIXTURE SCHEDULE (PROVIDED BY BUILDING SUPPLIER)						
MARK	DESCRIPTION	CONNECTIONS (INCHES)				BASIS OF DESIGN
		WASTE	VENT	CW	HW	
HB-1	HOSE BIBB (INT.)	-	-	3/4	-	WOODFORD 24P WITH VACUUM BREAKER AND METAL HANDWHEEL
HB-2	HOSE BIBB (EXT.)	-	-	3/4	-	WOODFORD 67 WITH VACUUM BREAKER AND REMOVABLE TEE HANDLE
WC-1	WATER CLOSET, ADA	4	2	1	-	AMERICAN STANDARD MADERA 3043.001, SLOAN REGAL 111-1.6, PROVIDE WITH SPLIT SEAT
WC-2	WATER CLOSET	4	2	1	-	AMERICAN STANDARD MADERA 2234.001, SLOAN REGAL 111-1.6, PROVIDE WITH SPLIT SEAT
S-1	MOP SINK	3	2	1/2	1/2	FIAT MSB 2424 WITH 830-AA FAUCET, BUMPERGUARD, HOSE & BRACKET, MOP HANGER
L-1	LAVATORY	2	1-1/2	1/2	1/2	AMERICAN STANDARD LUCERNE 0355.012, CHICAGO FAUCET 802-V336CP, PROVIDE CONCEALED AIR WALL HANGER, ASSE 1016 TEMPERATURE LIMITING DEVICE
UR-1	URINAL	2	1-1/2	1	-	AMERICAN STANDARD MADERA 3043.001, SLOAN REGAL 111-1.6, PROVIDE WITH SPLIT SEAT
DF-1	DRINKING FOUNTAIN	2	1-1/2	1/2	-	ELKAY VRCGRNTL8C DUAL HEIGHT
FD-1	FLOOR DRAIN	3	2	-	-	JOSAM 30004-6A WITH DEEP SEAL TRAP
REMARKS: 1. REFER TO SPECIFICATION SECTION 23 40 00 FOR PLUMBING FIXTURE TRIM NOT INDICATED ON THIS SCHEDULE.						

FAN SCHEDULE (PROVIDED BY BUILDING SUPPLIER)									
ITEM NO.	BASIS OF DESIGN	CFM	E.S.P. "W.C.	TYPE	DRIVE	FAN RPM	ELECTRICAL		REMARKS
							HP	VOLT/PH	
EF-1	GREENHECK CSP-A200	100	0.48	INLINE	DIRECT	825	1/15	115/60/1	PROVIDE WITH SPEED CONTROL, ROOF CAP, AND OCCUPANCY SENSOR
EF-2	GREENHECK CSP-A200	100	0.48	INLINE	DIRECT	825	1/15	115/60/1	PROVIDE WITH SPEED CONTROL, ROOF CAP, AND OCCUPANCY SENSOR

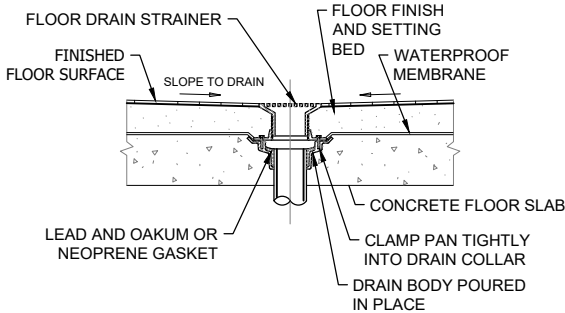
WATER HEATER SCHEDULE (PROVIDED BY BUILDING SUPPLIER)									
MARK	DESCRIPTION	LOCATION	BASIS OF DESIGN	STORAGE CAPACITY	RECOVERY (GPH)	TEMP. RISE	VOLT/PH.	LOAD (KW)	REMARKS
WH-1	ELECTRIC	MECH	AO SMITH DEL-15	15 GAL	20	90 ° F	240/1	4.5	PROVIDE WITH EXPANSION TANK



2 ELECTRIC WATER HEATER



3 VENT THROUGH ROOF



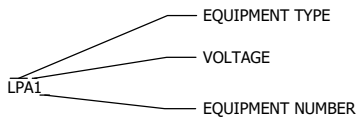
4 FLOOR DRAIN

ONE-LINE DIAGRAM SYMBOLS

	INCOMING LINE
	POWER CIRCUIT BREAKER
	OIL CIRCUIT BREAKER
	CIRCUIT BREAKER
	DRAW-OUT CIRCUIT BREAKER
	LOAD BREAK INTERRUPTING SWITCH
	SINGLE THROW DISCONNECTING SWITCH
	DOUBLE THROW DISCONNECTING SWITCH
	FUSE
	DISCONNECTING FUSE
	SWITCH AND FUSE
	RESISTOR1
	RESISTOR2
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	LIGHTNING ARRESTER
	TRANSFORMER
	CAPACITOR
	MOTOR
	GENERATOR
	RELAY (* RELAY NO.)
	STRESS CONE
	FUSE CUTOUT
	ENCLOSED FUSE CUTOUT
	AMMETER
	AMMETER SWITCH
	DEMAND METER
	POWER FACTOR METER
	VOLTMETER
	VOLTMETER SWITCH
	WATTMETER
	WATT-OUR METER
	WATT-OUR METER WITH DEMAND REGISTER
	MULTI-FUNCTION METER
	METER
	TRANSIENT VOLTAGE SURGE SUPPRESSER
	KEY INTERLOCK
	AUTOMATIC TRANSFER SWITCH (A.T.S)

PANELBOARD NAMING CONVENTION

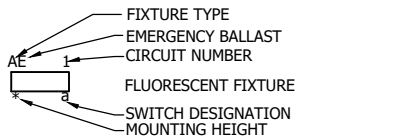
TYPICAL UNLESS INDICATED OTHERWISE



EQUIPMENT TYPE:	SE = SERVICE ENTRANCE PANELBOARD
	LP = LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARD
	PP = POWER PANELBOARD
	L = LIGHTING CONTROL PANEL

VOLTAGE:	A = 120/240 1φ
	B = 208/120 3φ
	C = 240/120 3φ
	D = 480/277 3φ

LIGHTING SYMBOLS



MOUNTING HEIGHT:	■ CEILING RECESSED MOUNTED
	□ CEILING SURFACE MOUNTED
	⊠ PENDANT MOUNTED AT X" A.F.F.
	△ WALL MOUNTED AT X" A.F.F.

	WALL MOUNT FIXTURE
	FLUORESCENT OR INCANDESCENT RECESSED DOWNLIGHT
	FLUORESCENT OR INCANDESCENT RECESSED WALLWASHER
	WALL MOUNTED UNIT (NO BRACKET = CEILING MOUNT)
	EXIT LIGHT
	INDICATES ARROW DIRECTION (IF ANY)
	FACE(S) ON WHICH LETTERING APPEARS
	EXIT/BATTERY PACK LIGHT
	TRACK LIGHTING
	COVE LIGHT
	MISCELLANEOUS FIXTURES
	PHOTOCELL

POWER SYMBOLS

	WEATHERPROOF
	DUPLEX RECEPTACLE - 18"AFF
	CIRCUIT NUMBER
	GROUND FAULT TYPE
	PEDESTAL MOUNTED FLOOR BOX
	DOUBLE DUPLEX RECEPTACLE - 18"AFF
	EMERGENCY POWER DUPLEX RECEPTACLE - 18"AFF
	CEILING PENDENT RECEPTACLE DROP
	FLOOR MOUNTED RECEPTACLE OUTLET
	PLUG STRIP - LETTER DESIGNATES TYPE - 18"AFF
	HOME RUN SURFACE MOUNT
	HOME RUN UNDER-GROUND OR IN-SLAB
	CEILING MOUNTED RECEPTACLE
	WELDING RECEPTACLE - 18"AFF
	SPECIAL PURPOSE RECEPTACLE - 18"AFF

POWER SYMBOLS (CONT)

	ISOLATES GROUND
	DUPLEX RECEPTACLE - 18"AFF
	CIRCUIT NUMBER
	TRANSIENT VOLTAGE SURGE SUPPRESSION
	SPLIT WIRE RECEPTACLE - 18"AFF
	CLOCK OUTLET MOUNT AT +7-6" AFF, OR AS NOTED ON DRAWINGS.
	REMOTE CONNECTION FOR CD / TAPE PLAYER
	MICROPHONE RECEPTACLE WITH VOLUME CONTROL
	SINGLE POLE SWITCH - 48"AFF SWITCH DESIGNATION
	DOUBLE POLE SWITCH - 48"AFF
	THREE-WAY SWITCH - 48"AFF
	FOUR-WAY SWITCH - 48"AFF
	DIMMER SWITCH - 48"AFF
	KEY OPERATED SWITCH - 48"AFF
	SWITCH AND PILOT LIGHT - 48"AFF
	MANUAL MOTOR STARTER
	OCCUPANCY SENSOR (WALL MOUNTED) - 48"AFF
	OCCUPANCY SENSOR (CEILING MOUNTED)
	RECEPTACLE PANEL
	LIGHTING PANEL - 54"AFF
	DISTRIBUTION PANEL - 54"AFF
	DISCONNECT SWITCH - 54"AFF
	FUSED DISCONNECT SWITCH - 54"AFF
	WALL MOUNTED CIRCUIT BREAKER - 54"AFF
	COMBINATION STARTER DISCONNECT - 54"AFF
	MOTOR 3 PHASE
	MOTOR 1 PHASE
	METER SOCKET

TELEPHONE AND INTERCOM SYMBOLS

	TELEPHONE OUTLET - 18"AFF
	WALL MOUNT TELEPHONE OUTLET - 54"AFF
	FLOOR MOUNTED TELEPHONE OUTLET
	DATA COMMUNICATIONS OUTLET - 18"AFF
	VOICE/DATA OUTLET - 18"AFF
	POWER/DATA COMMUNICATIONS CEILING POLE DROP
	FLOOR MOUNTED DATA COMMUNICATIONS OUTLET
	TELEPHONE TERMINAL CABINET
	INTERCOM DOOR STATION - WALL MOUNTED 54"AFF
	INTERCOM MASTER STATION WALL OR DESK MOUNTED
	INTERCOM HANDSET STATION WITH HANDSET AND SPEAKER AMPLIFIER 54"AFF
	INTERCOM SPEAKER

FIRE ALARM SYMBOLS

	MANUAL PULL STATION - 48"AFF
	FIRE ALARM HORN/STROBE - 80"AFF (WP-WEATHERPROOF) (WG-WIRE GUARD)
	FIRE ALARM STROBE - 80"AFF
	FLOW SWITCH
	TAMPER SWITCH
	SMOKE DETECTOR - PHOTOELECTRIC
	SMOKE DETECTOR - IONIZATION
	DUCT SMOKE DETECTOR
	SMOKE DETECTOR - ELEVATOR RECALL
	HEAT DETECTOR
	DOOR HOLDER
	FIRE ALARM HORN
	FIRE ALARM BELL
	FIREMANS TELEPHONE

SECURITY SYMBOLS

	GLASS MOUNTED GLASS BREAK DETECTOR
	GLASS BREAK DETECTOR SENSING DIRECTION
	MOTION DETECTOR SENSING DIRECTION HELP BUTTON
	KEYPAD TYPE ARMING STATION - 48"AFF
	EMERGENCY TELEPHONE
	DOOR CONTACT
	ELECTRIC LOCK
	ELECTRIC STRIKE
	REQUEST TO EXIT (REX) MOTION SENSOR
	CARD READER - 48"AFF
	CCTV CAMERA - FIXED MOUNT
	CCTV CAMERA - PANT/TILT/ZOOM
	DATA GATHERING PANEL - BURGLAR ALARM
	ACCESS CONTROL PANEL

CONTROL/MISC SYMBOLS

	WALL MOUNTED JUNCTION BOX
	CEILING MOUNTED JUNCTION BOX
	SOLENOID
	LEVEL TRANSDUCER
	PRESSURE TRANSDUCER
	EMERGENCY STOP SWITCH
	LIMIT SWITCH
	FLOW SWITCH
	PRESSURE SWITCH
	TEMPERATURE SWITCH
	SPEED SWITCH
	FLOOD SWITCH
	LEVEL SWITCH
	DAMPER
	PUSHBUTTON STATION
	PUSHBUTTON WITH ILLUMINATED STOP
	SELECTOR SWITCH
	SELECTOR SWITCH WITH INDICATING LIGHT
	BELL
	BUZZER
	HORN
	DOOR HOLDER
	PLUG

CONTROL/KEY NOTES SYMBOLS

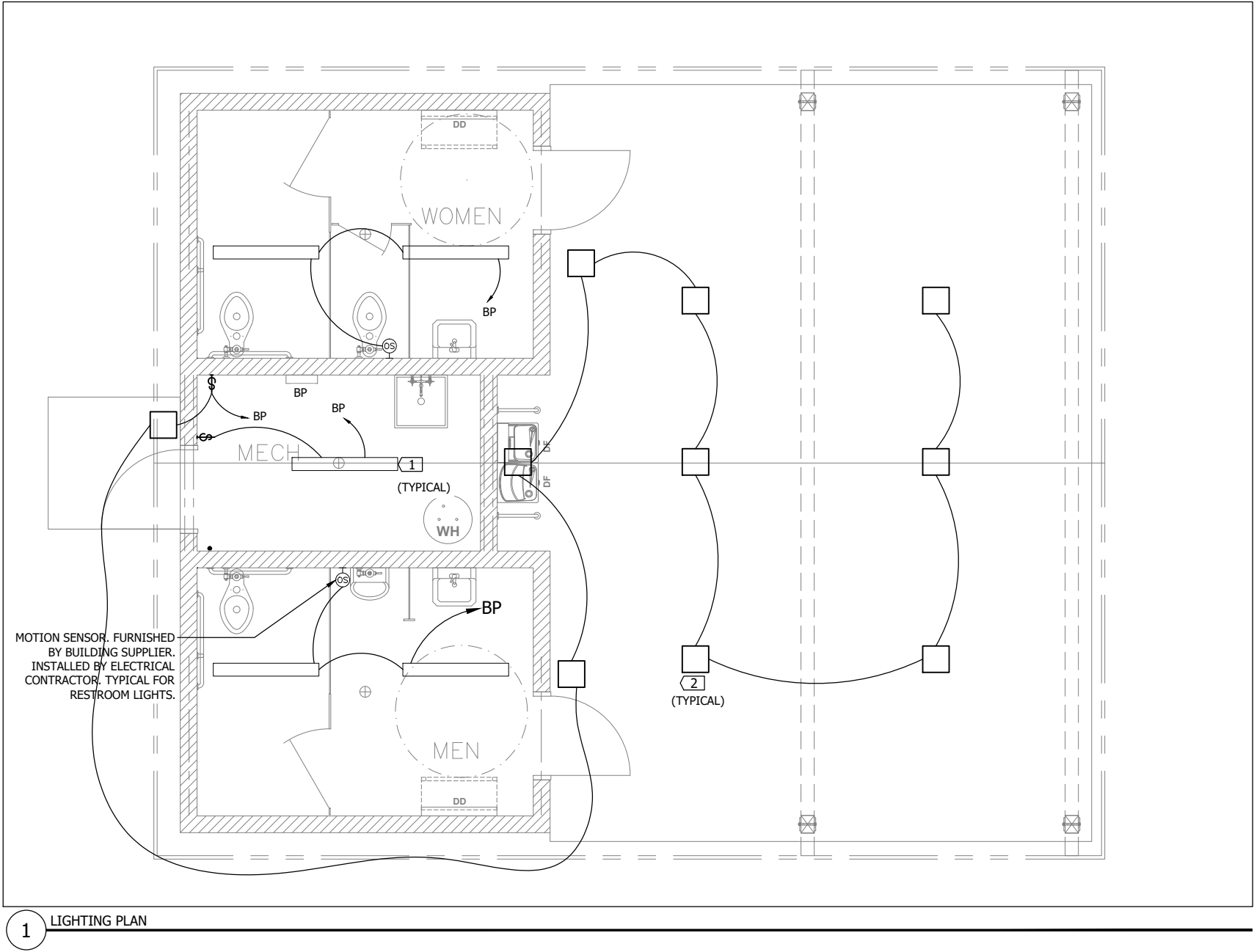
	KEYNOTE
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CONTROL SCHEMATIC SYMBOLS

	NORMALLY CLOSED PUSHBUTTON
	NORMALLY OPEN PUSHBUTTON
	THREE - POSITION SELECTOR SWITCH
	TWO - POSITION SELECTOR SWITCH
	NORMALLY CLOSED LIMIT SWITCH - HELD OPEN
	NORMALLY OPEN LIMIT SWITCH

CONTROL SCHEMATIC SYM. (CONT)

	NORMALLY OPEN LIMIT SWITCH - HELD CLOSED
	NORMALLY CLOSED LIMIT SWITCH
	OPEN SWITCH WITH TIME DELAY CLOSING
	CLOSED SWITCH WITH TIME DELAY OPENING
	OPEN SWITCH WITH TIME DELAY OPENING
	CLOSED SWITCH WITH TIME DELAY CLOSING
	FLOW SWITCH (CLOSES ON INCREASE IN FLOW)
	FLOW SWITCH (OPENS ON INCREASE IN FLOW)
	LEVEL SWITCH (CLOSES ON RISING LEVEL)
	LEVEL SWITCH (OPENS ON RISING LEVEL)
	PRESSURE SWITCH (CLOSES ON RISING PRESSURE)
	PRESSURE SWITCH (OPENS ON RISING PRESSURE)
	TEMPERATURE SWITCH (CLOSES ON RISING TEMP.)
	TEMPERATURE SWITCH (OPENS ON RISING TEMP.)
	NORMALLY OPEN CONTACTS
	NORMALLY CLOSED CONTACTS
	INDICATING LIGHT
	* - A - AMBER N - NEON B - BLUE OP - OPAL C - CLEAR OR - ORANGE G - GREEN P - PURPLE
	PUSH TO TEST INDICATING LIGHT
	CONTROL SYSTEM OUTPUT
	SOLENOID
	MANUAL STARTER
	CURRENT TRANSFORMER
	TIMING RELAY
	RELAY
	MOTOR STARTER COIL AND OVERLOAD CONTACTS
	GROUND
	CONTROL CIRCUIT TRANSFORMER
	OVERLOAD



GENEAL NOTES

- 1 ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL ROUGH-IN, INSTALLTION AND TRIM. PROVIDE ALL NECESSARY WIRE, CONNECTOR, GROUNDING, CONDUIT FOR A COMPLETE ELECTRICAL SYSTEM INSTALLATION . COORDINATE EQUIPMENT SUPPLIED BY BUILDING INSTALLER PRIOR TO INSTALLATION.

KEYED NOTES

- 1 INTERIOR CEILING MOUNT, 48" LED LIGHT FIXTURE. FURNISHED BY BUILDING SUPPLIER, INSTALLED BY ELECTRICAL CONTRACTOR.
- 2 LED DOWNLIGHTS WITH CAST-ALUMINUM HOUSING, CORROSION-RESISTANT PAINT IN DARK BRONZE AND POLYCARBONATE LENS. FURNISHED BY BUILDING SUPPLIER, INSTALLED BY ELECTRICAL CONTRACTOR

ELECTRICAL LIGHTING PLAN - RESTROOM BUILDING

BUENA PARK IMPROVEMENTS - 2022
CITY OF NEW BERLIN
BUENA PARK, NEW BERLIN, WI 53151

DATE OF ISSUANCE

APRIL 6, 2022

NO. REVISION DATE

SURVEY CHAPUT

DRAWN MTF

DESIGNED MTF

CHECKED MTF

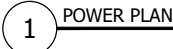
APPROVED MTF

PROJ. NO. 193805852

SHEET NUMBER

E2.01

Plot Date: 04/04/2022 - 1:48am
Drawing name: V:\1938 active\193805852\CAD\DWG\SHEETS\BUENA\193805852_BUENA_E301.dwg
Xrefs: 193805852_BUENA_TB34x22, 13179-Buena Park Bathroom



A. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL ROUGH-IN, INSTALLTION AND TRIM. PROVIDE ALL NECESSARY WIRE, CONNECTOR, GROUNDING, CONDUIT FOR A COMPLETE ELECTRICAL SYSTEM INSTALLATION . REFER TO ROMTEC DRAWINGS FOR EQUIPMENT SUPPLIED BY BUILDING INSTALLER.

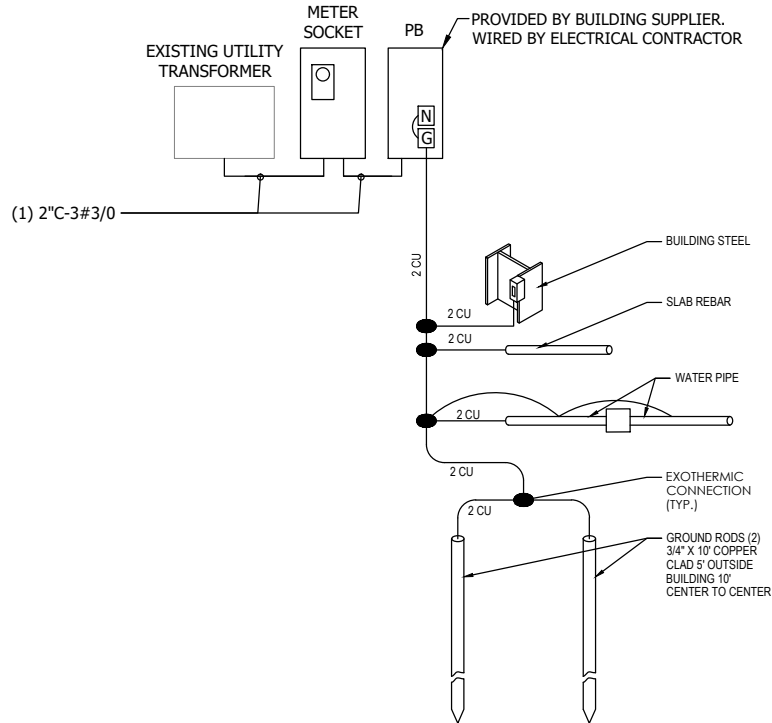
- 1 SINGLE PHASE 120/240V 200A MCB PANELBOARD. FURNISHED BY BUILDING SUPPLIER, WIRED BY ELECTRICAL CONTRACTOR.
- 2 PROVIDE MAIN GROUND ELECTRODE AND GROUNDING ELECTRODE CONDUCTOR TO SERVICE ENTRANCE RATED 'PB'.
- 3 TIMECLOCK TO CONTROL THE ELECTRIC STRIKES. TIMECLOCK SHALL BE PROGRAMMED TO UNLOCK THE RESTROOM DOORS DURING THE PARKS OPEN HOURS OF OPERATION. TIMES SHALL BE COORDINATED WITH THE CITY DURING STARTUP. TIMECLOCK SHALL BE ASTRONOMICAL TYPE. PROVIDE RELAYS AND POWER SUPPLIES AS REQUIRED TO CONTROL THE ELECTRIC STRIKES. TIMECLOCK AND ELECTRIC STRIKE SHALL BE FED FROM THE PANELBOARD BP FROM A 20A, 120V CIRCUIT BREAKER. PROVIDE 0.75"C-2#12,1#12G FROM PANELBOARD BP TO THE TIMECLOCK.

THE CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS. DO NOT SCALE THE DRAWING. -
ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO STANTEC WITHOUT DELAY. STANTEC SHALL NOT BE
RESPONSIBLE FOR ANY ERRORS OR OMISSIONS. REPRODUCTION OR USE
FOR ANY PURPOSE OTHER THAN THAT AUTHORIZED BY STANTEC IS FORBIDDEN.

Plot Date: 04/06/2022 - 11:49am
Drawing name: V:\193805852\active\193805852_SHEETS\BUENA\BUENA_ET01.dwg
User: 193805852\BUENA_ET01

Stantec													
Name: BP		Volts: 120/240				Mains Type: MCB		Type: XXXX					
Location: MECH		Phases: 1				Main Bus Rating: 200 A		A.I.C. Rating: 14kA					
Supply From: UTILITY TRANSFORMER		Wires: 3				MCB Rating: 200 A		Mounting: SURFACE					
Serves: XXXX						Lugs: NA		Enclosure: Type 1					
Notes:													
CKT	Circuit Description	Trip	Poles	CB	A		B		CB	Poles	Trip	Circuit Description	CKT
1	LIGHTING - INTERIOR	20A	1	--	500	720			--	1	20A	RECEPTACLE - MECH	2
3	LIGHTING - EXTERIOR	20A	1	--			500	180	--	1	20A	RECEPTACLE - EXTERIOR	4
5	EF-1	20A	1	--	240	240			--	1	20A	EF-2	6
7	WH-1	25A	1	--			2250	500	--	1	20A	BOTTLE FILLING STATION	8
9			1	--	2250	0			--	1	20A		10
11		20A	1	--			0	0	--	1	20A		12
13		20A	1	--	0	0			--	1	20A		14
15		20A	1	--			0	0	--	1	20A		16
17		20A	1	--	0	0			--	1	20A		18
19		20A	1	--			0	0	--	1	20A		20
21		20A	1	--	0	0			--	1	20A		22
23		20A	1	--			0	0	--	1	20A		24
25		20A	1	--	0	0			--	1	20A		26
27		20A	1	--			0	0	--	1	20A		28
29		20A	1	--	0	0			--	1	20A		30
31		20A	1	--			0	0	--	1	20A		32
33		20A	1	--	0	0			--	1	20A		34
35		20A	1	--			0	0	--	1	20A		36
37		20A	1	--	0	0			--	1	20A		38
39		20A	1	--			0	0	--	1	20A		40
41		20A	1	--	0	0			--	1	20A		42
					Total Load:	3.95 kVA	3.43 kVA						
					Total Amps:	32.92 Amps	28.58 Amps						
Load Classification		Connected Load		Demand Factor		Estimated Demand		Panel Totals					
Lighting (L)		1000 VA		100%		1000 VA		Total Connected Load:		7.38 KVA			
Power (P)		0 VA		100%		0 VA		Total Connected Load:		30.75 A			
Receptacle (R)		900 VA		100%		900 VA		Total Connected Load:		7.38 KVA			
Kitchen (K)		0 VA		80%		0 VA		Total Est. Demand:		30.75 A			
HVAC (H)		480 VA		100%		480 VA		Total Est. Demand:					
A/C (A)		0 VA		100%		0 VA							
Power Equipment (E)		5000 VA		100%		5000 VA							
CB Legend (blank = circuit breaker): G = GFCI S = Shunt Trip D = Switching Duty A = AFCI H = HID Rated C = HACR Rated † = Existing Circuit ‡ = Revised Circuit													
Notes:													

COPPER FEEDER SCHEDULE					
	TYPE				
	1	2 OR 3	4	4N	4NG
	1PH, 2W, +G	1PH, 3W, +G or 3PH, 3W, +G	3PH, 4W, +G	3PH, 4W, +G, AND 200% N	3PH, 4W, +G, A
10	0.75°C-2#14,1#14G	0.75°C-3#14,1#14G	0.75°C-4#14,1#14G	0.75°C-5#14,1#14G	0.75°C-4#14,2#14G
15	0.75°C-2#12,1#12G	0.75°C-3#12,1#12G	0.75°C-4#12,1#12G	0.75°C-5#12,1#12G	0.75°C-4#12,2#12G
20	0.75°C-2#12,1#12G	0.75°C-3#12,1#12G	0.75°C-4#12,1#12G	0.75°C-5#12,1#12G	0.75°C-4#12,2#12G
25	0.75°C-2#10,1#10G	0.75°C-3#10,1#10G	0.75°C-4#10,1#10G	0.75°C-5#10,1#10G	0.75°C-4#10,2#10G
30	0.75°C-2#10,1#10G	0.75°C-3#10,1#10G	0.75°C-4#10,1#10G	0.75°C-5#10,1#10G	0.75°C-4#10,2#10G
35	0.75°C-2#8,1#10G	0.75°C-3#8,1#10G	0.75°C-4#8,1#10G	0.75°C-5#8,1#10G	0.75°C-4#8,2#8G
40	0.75°C-2#8,1#10G	0.75°C-3#8,1#10G	0.75°C-4#8,1#10G	0.75°C-5#8,1#10G	0.75°C-4#8,2#8G
45	0.75°C-2#8,1#10G	0.75°C-3#8,1#10G	0.75°C-4#8,1#10G	0.75°C-5#8,1#10G	0.75°C-4#8,2#8G
50	0.75°C-2#8,1#10G	0.75°C-3#8,1#10G	0.75°C-4#8,1#10G	0.75°C-5#8,1#10G	0.75°C-4#8,2#8G
60	1°C-2#6,1#10G	1°C-3#6,1#10G	1°C-4#6,1#10G	1°C-5#6,1#10G	1°C-4#6,2#10G
70	1°C-2#4,1#8G	1°C-3#4,1#8G	1.25°C-4#4,1#8G	1.25°C-5#4,1#8G	1.25°C-4#4,2#8G
80	1°C-2#4,1#8G	1°C-3#4,1#8G	1.25°C-4#4,1#8G	1.25°C-5#4,1#8G	1.25°C-4#4,2#8G
90	1°C-2#3,1#8G	1°C-3#3,1#8G	1.25°C-4#3,1#8G	1.25°C-5#3,1#8G	1.25°C-4#3,2#8G
100	1°C-2#2,1#8G	1.25°C-3#2,1#8G	1.25°C-4#2,1#8G	1.5°C-5#2,1#8G	1.5°C-4#2,2#8G
125	1°C-2#2,1#6G	1.25°C-3#2,1#6G	1.25°C-4#2,1#6G	1.5°C-5#2,1#6G	1.5°C-4#2,2#6G
150	1.25°C-2#1/0,1#6G	1.25°C-3#1/0,1#6G	1.5°C-4#1/0,1#6G	2°C-5#1/0,1#6G	2°C-4#1/0,2#6G
175	1.25°C-2#2/0,1#6G	1.5°C-3#2/0,1#6G	2°C-4#2/0,1#6G	2°C-5#2/0,1#6G	2°C-4#2/0,2#6G
200	1.25°C-2#3/0,1#6G	2°C-3#3/0,1#6G	2°C-4#3/0,1#6G	2.5°C-5#3/0,1#6G	2.5°C-4#3/0,2#6G
225	1.5°C-2#4/0,1#4G	2°C-3#4/0,1#4G	2.5°C-4#4/0,1#4G	2.5°C-5#4/0,1#4G	2.5°C-4#4/0,2#4G
250	2°C-2#250,1#4G	2°C-3#250,1#4G	2.5°C-4#250,1#4G	3°C-5#250,1#4G	3°C-4#250,2#4G
300	2°C-2#350,1#4G	2.5°C-3#350,1#4G	3°C-4#350,1#4G	3°C-5#350,1#4G	3°C-4#350,2#4G
350	2.5°C-2#500,1#3G	3°C-3#500,1#3G	3°C-4#500,1#3G	3.5°C-5#500,1#3G	3.5°C-4#500,2#3G
400	2.5°C-2#500,1#3G	3°C-3#500,1#3G	3°C-4#500,1#3G	3.5°C-5#500,1#3G	3.5°C-4#500,2#3G
450	TWO (2) 2°C-2#4/0,1#1/0G	TWO (2) 2°C-3#4/0,1#1/0G	TWO (2) 2.5°C-4#4/0,1#1/0G	TWO (2) 2.5°C-5#4/0,1#1/0G	TWO (2) 2.5°C-4#4/0,2#1/0G
500	TWO (2) 2°C-2#250,1#1/0G	TWO (2) 2.5°C-3#250,1#1/0G	TWO (2) 2.5°C-4#250,1#1/0G	TWO (2) 3°C-5#250,1#1/0G	TWO (2) 3°C-4#250,1#1/0G
600	TWO (2) 2°C-2#350,1#1/0G	TWO (2) 2.5°C-3#350,1#1/0G	TWO (2) 3°C-4#350,1#1/0G	TWO (2) 3°C-5#350,1#1/0G	TWO (2) 3°C-4#350,1#1/0G
800	TWO (2) 2.5°C-2#500,1#1/0G	TWO (2) 3°C-3#500,1#1/0G	TWO (2) 3.5°C-4#500,1#1/0G	TWO (2) 3.5°C-5#500,1#1/0G	TWO (2) 3.5°C-4#500,1#1/0G
900	THREE (3) 2°C-2#350,1#2/0G	THREE (3) 2.5°C-3#350,1#2/0G	THREE (3) 3°C-4#350,1#2/0G	THREE (3) 3°C-5#350,1#2/0G	THREE (3) 3°C-4#350,1#2/0G
1000	THREE (3) 2.5°C-2#500,1#2/0G	THREE (3) 3°C-3#500,1#2/0G	THREE (3) 3.5°C-4#500,1#2/0G	THREE (3) 3.5°C-5#500,1#2/0G	THREE (3) 3.5°C-4#500,1#2/0G
1200	FOUR (4) 2.5°C-2#350,1#3/0G	FOUR (4) 3°C-3#350,1#3/0G	FOUR (4) 3.5°C-4#350,1#3/0G	FOUR (4) 3.5°C-5#350,1#3/0G	FOUR (4) 3.5°C-4#350,1#3/0G
1600	FIVE (5) 2.5°C-2#500,1#4/0G	FIVE (5) 3°C-3#500,1#4/0G	FIVE (5) 3.5°C-4#500,1#4/0G	FIVE (5) 3.5°C-5#500,1#4/0G	FIVE (5) 3.5°C-4#500,1#4/0G
2000	SIX (6) 2.5°C-2#500,1#250G	SIX (6) 3°C-3#500,1#250G	SIX (6) 3.5°C-4#500,1#250G	SIX (6) 4°C-5#500,1#250G	SIX (6) 4°C-4#500,1#250G
2500	SEVEN (7) 3°C-2#500,1#350G	SEVEN (7) 3°C-3#500,1#350G	SEVEN (7) 3.5°C-4#500,1#350G	SEVEN (7) 4°C-5#500,1#350G	SEVEN (7) 4°C-4#500,1#350G
3000	EIGHT (8) 3°C-2#500,1#500G	EIGHT (8) 3°C-3#500,1#500G	EIGHT (8) 3.5°C-4#500,1#500G	EIGHT (8) 4°C-5#500,1#500G	EIGHT (8) 4°C-4#500,1#500G
4000	ELEVEN (11) 3°C-2#500,1#500G	ELEVEN (11) 3°C-3#500,1#500G	ELEVEN (11) 3.5°C-4#500,1#500G	ELEVEN (11) 4°C-5#500,1#500G	ELEVEN (11) 4°C-4#500,1#500G



1 LINE DIAGRAM - POWER
NTS

COPPER FEEDER SCHEDULE

4 225	TYPE				
	1	2 OR 3	4	4N	4NG
	1PH, 2W, +G	1PH, 3W, +G or 3PH, 3W, +G	3PH, 4W, +G	3PH, 4W, +G, AND 200% N	3PH, 4W, +G, AND 1G
10	0.75°C-2#14,1#14G	0.75°C-3#14,1#14G	0.75°C-4#14,1#14G	0.75°C-5#14,1#14G	0.75°C-4#12,2#14G
15	0.75°C-2#12,1#12G	0.75°C-3#12,1#12G	0.75°C-4#12,1#12G	0.75°C-5#12,1#12G	0.75°C-4#12,2#12G
20	0.75°C-2#12,1#12G	0.75°C-3#12,1#12G	0.75°C-4#12,1#12G	0.75°C-5#12,1#12G	0.75°C-4#12,2#12G
25	0.75°C-2#10,1#10G	0.75°C-3#10,1#10G	0.75°C-4#10,1#10G	0.75°C-5#10,1#10G	0.75°C-4#10,2#10G
30	0.75°C-2#10,1#10G	0.75°C-3#10,1#10G	0.75°C-4#10,1#10G	0.75°C-5#10,1#10G	0.75°C-4#10,2#10G
35	0.75°C-2#8,1#10G	0.75°C-3#8,1#10G	0.75°C-4#8,1#10G	0.75°C-5#8,1#10G	0.75°C-4#8,2#10G
40	0.75°C-2#8,1#10G	0.75°C-3#8,1#10G	0.75°C-4#8,1#10G	0.75°C-5#8,1#10G	0.75°C-4#8,2#10G
45	0.75°C-2#8,1#10G	0.75°C-3#8,1#10G	0.75°C-4#8,1#10G	0.75°C-5#8,1#10G	0.75°C-4#8,2#10G
50	0.75°C-2#8,1#10G	0.75°C-3#8,1#10G	0.75°C-4#8,1#10G	0.75°C-5#8,1#10G	0.75°C-4#8,2#10G
60	1°C-2#6,1#10G	1°C-3#6,1#10G	1°C-4#6,1#10G	1°C-5#6,1#10G	1°C-4#6,2#10G
70	1°C-2#4,1#8G	1°C-3#4,1#8G	1.25°C-4#4,1#8G	1.25°C-5#4,1#8G	1.25°C-4#4,2#8G
80	1°C-2#4,1#8G	1°C-3#4,1#8G	1.25°C-4#4,1#8G	1.25°C-5#4,1#8G	1.25°C-4#4,2#8G
90	1°C-2#3,1#8G	1°C-3#3,1#8G	1.25°C-4#3,1#8G	1.25°C-5#3,1#8G	1.25°C-4#3,2#8G
100	1°C-2#2,1#8G	1.25°C-3#2,1#8G	1.25°C-4#2,1#8G	1.5°C-5#2,1#8G	1.5°C-4#2,2#8G
125	1°C-2#2,1#6G	1.25°C-3#2,1#6G	1.25°C-4#2,1#6G	1.5°C-5#2,1#6G	1.5°C-4#2,2#6G
150	1.25°C-2#1/0,1#6G	1.25°C-3#1/0,1#6G	1.5°C-4#1/0,1#6G	2°C-5#1/0,1#6G	2°C-4#1/0,2#6G
175	1.25°C-2#2/0,1#6G	1.5°C-3#2/0,1#6G	2°C-4#2/0,1#6G	2°C-5#2/0,1#6G	2°C-4#2/0,2#6G
200	1.25°C-2#3/0,1#6G	2°C-3#3/0,1#6G	2°C-4#3/0,1#6G	2.5°C-5#3/0,1#6G	2.5°C-4#3/0,2#6G
225	1.5°C-2#4/0,1#4G	2°C-3#4/0,1#4G	2.5°C-4#4/0,1#4G	2.5°C-5#4/0,1#4G	2.5°C-4#4/0,2#4G
250	2°C-2#250,1#4G	2°C-3#250,1#4G	2.5°C-4#250,1#4G	3°C-5#250,1#4G	3°C-4#250,2#4G
300	2°C-2#350,1#4G	2.5°C-3#350,1#4G	3°C-4#350,1#4G	3°C-5#350,1#4G	3°C-4#350,2#4G
350	2.5°C-2#500,1#3G	3°C-3#500,1#3G	3°C-4#500,1#3G	3.5°C-5#500,1#3G	3.5°C-4#500,2#3G
400	2.5°C-2#500,1#3G	3°C-3#500,1#3G	3°C-4#500,1#3G	3.5°C-5#500,1#3G	3.5°C-4#500,2#3G
450	TWO (2) 2°C-2#4/0,1#1/0G	TWO (2) 2°C-3#4/0,1#1/0G	TWO (2) 2.5°C-4#4/0,1#1/0G	TWO (2) 2.5°C-5#4/0,1#1/0G	TWO (2) 2.5°C-4#4/0,2#1/0G
500	TWO (2) 2°C-2#250,1#1/0G	TWO (2) 2.5°C-3#250,1#1/0G	TWO (2) 2.5°C-4#250,1#1/0G	TWO (2) 3°C-5#250,1#1/0G	TWO (2) 3°C-4#250,2#1/0G
600	TWO (2) 2°C-2#350,1#1/0G	TWO (2) 2.5°C-3#350,1#1/0G	TWO (2) 3°C-4#350,1#1/0G	TWO (2) 3°C-5#350,1#1/0G	TWO (2) 3°C-4#350,2#1/0G
800	TWO (2) 2.5°C-2#500,1#1/0G	TWO (2) 3°C-3#500,1#1/0G	TWO (2) 3.5°C-4#500,1#1/0G	TWO (2) 3.5°C-5#500,1#1/0G	TWO (2) 3.5°C-4#500,2#1/0G
900	THREE (3) 2°C-2#350,1#2/0G	THREE (3) 2.5°C-3#350,1#2/0G	THREE (3) 3°C-4#350,1#2/0G	THREE (3) 3°C-5#350,1#2/0G	THREE (3) 3°C-4#350,2#2/0G
1000	THREE (3) 2.5°C-2#500,1#2/0G	THREE (3) 3°C-3#500,1#2/0G	THREE (3) 3.5°C-4#500,1#2/0G	THREE (3) 3.5°C-5#500,1#2/0G	THREE (3) 3.5°C-4#500,2#2/0G
1200	FOUR (4) 2.5°C-2#350,1#3/0G	FOUR (4) 3°C-3#350,1#3/0G	FOUR (4) 3.5°C-4#350,1#3/0G	FOUR (4) 3.5°C-5#350,1#3/0G	FOUR (4) 3.5°C-4#350,2#3/0G
1600	FIVE (5) 2.5°C-2#500,1#4/0G	FIVE (5) 3°C-3#500,1#4/0G	FIVE (5) 3.5°C-4#500,1#4/0G	FIVE (5) 3.5°C-5#500,1#4/0G	FIVE (5) 3.5°C-4#500,2#4/0G
2000	SIX (6) 2.5°C-2#500,1#250G	SIX (6) 3°C-3#500,1#250G	SIX (6) 3.5°C-4#500,1#250G	SIX (6) 4°C-5#500,1#250G	SIX (6) 4°C-4#500,2#250G
2500	SEVEN (7) 3°C-2#500,1#350G	SEVEN (7) 3°C-3#500,1#350G	SEVEN (7) 3.5°C-4#500,1#350G	SEVEN (7) 4°C-5#500,1#350G	SEVEN (7) 4°C-4#500,2#350G
3000	EIGHT (8) 3°C-2#500,1#500G	EIGHT (8) 3°C-3#500,1#500G	EIGHT (8) 3.5°C-4#500,1#500G	EIGHT (8) 4°C-5#500,1#500G	EIGHT (8) 4°C-4#500,2#500G
4000	ELEVEN (11) 3°C-2#500,1#500G	ELEVEN (11) 3°C-3#500,1#500G	ELEVEN (11) 3.5°C-4#500,1#500G	ELEVEN (11) 4°C-5#500,1#500G	ELEVEN (11) 4°C-4#500,2#500G

NOTES:
CONDUIT SIZES ARE FOR TYPE THHN/THWN COPPER CONDUCTORS ONLY IN RIGID METAL CONDUIT. OTHER CONDUCTOR TYPES AND CONDUIT TYPES MAY REQUIRE LARGER CONDUITS.

STAFF REPORT

EXECUTIVE SUMMARY

APPLICANT/PROJECT: Russel Raposa on the behalf of Nina Race / Spa Paw & Tail, LLC

LOCATION: 5055 S Emmer Drive (Tax Key #: 1257.994.001)

REQUEST: Construct two outdoor dog exercise areas with 9ft fencing and a 8' by 10' storage shed located at 5055 S Emmer Drive (Tax Key #: 1257.994.001).

D.R.C. RECOMMENDATION: Recommend approval for the addition of two outdoor fenced in dog exercise areas and a 8' by 10' storage shed located at 5055 S Emmer Drive (Tax Key #: 1257.994.001) subject to the application, plans on file and the following conditions:

1. Planning:

- a. Applicant shall adhere to the general submitted plan of operation.
- b. The applicant is proposing to construct two outdoor dog exercise areas off of the west side (rear) of the building with 9ft tall chain-link fencing with privacy screening and a 10' x 8' pre-fabricated tool shed for storage.
- c. Per Section 275-42G(3)(d)[2], "Fences exceeding 74 inches in height, provided that all other requirements for fences are met. Plan Commission review and approval is required."
- d. Per Section 275-41E(c)[2] "accessory buildings in non-single-family residential zoning districts that exceed 2,500 square feet shall require Plan Commission review and approval."
- e. Fence construction and location shall adhere to the requirements set forth in Zoning Code Section 275-42G(3), with exception to the maximum height in the rear yard.
- f. Fences made of maintenance-free materials may be located on the lot line. Such materials include, but are not limited to, metal fences (chain-link, wrought-iron, aluminum), PVC/recycled materials, removable fencing, pressure-treated wood and other maintenance-free materials, as approved by the Director. Fences that are not made of maintenance-free materials shall be located at least two feet from the property line.
- g. Per 275-42, fences shall not block or impact existing drainage patterns. Any grade changes made in the area of the fence installation must follow the requirements in 275-55.
- h. Employee and customer parking shall be contained on site.
- i. This application does not include any interior or exterior building modifications. Separate applications and permits are required for any modifications.
- j. Applicant shall adhere to Zoning Code Section 275-60E(3), "All noise shall be so muffled or otherwise controlled as not to become objectionable due to intermittence, duration, beat frequency, impulse character, periodic character or shrillness."
 - i. Any substantiated noise or nuisance complaints will be investigated.

ii. Number of dogs may need to be limited based on complaints.

2. Storm Water Utility:

- a. Follow the plan of operation and plan for cleaning of the play area. The existing maintenance agreement will be used for enforcement.

3. Engineering:

- a. The drive aisle around the rear of the building will need to be marked as one-way as the drive aisle width will now be less than 24-feet wide. Install a “Do Not Enter” sign on the south end of the building if one does not already exist.
- b. The one dock area will have limited maneuverability. This will need to be taken into consideration when taking deliveries from any size truck larger than a single unit box truck.

4. Inspection:

- a. Exit (Vestibule 121) must discharge directly to a public way per IBC & IFC 2015 1028.5. & Exit Access 1007.1.1. cannot discharge to a fenced in area.
- b. Any alterations shall require that the building plans be signed and stamped by a licensed architect or professional engineer per the Wisconsin Enrolled Commercial Building Code. (SPS 361.31).
- c. Apply and obtain appropriate building, electric, plumbing and fire department permits.
- d. Building shall meet all applicable building and fire codes.

5. Fire:

- a. Provide fire extinguishers every 75' of travel.
- b. Maintain emergency egress
- c. Maintain any and all egresses through dog runs.
- d. Maintain egress/emergency lighting throughout.
- e. Name and address on front and rear where applicable.

DETAILS IN ATTACHED STAFF REPORT

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

Meeting of May 2, 2022

Russel Raposa on behalf of Nina Race /
Spa Paw & Tail, LLC
5055 S Emmer Drive (Tax Key #'s: 1257.994.001).

DATE STAFF REPORT PREPARED: April 21, 2022

APPLICANT / OWNER(S): Russel Raposa on behalf of Nina Race / Spa Paw & Tail, LLC

REQUEST/DESCRIPTION OF PROJECT: Use Approval for Spa Paw & Tail, LLC to construct two outdoor dog exercise areas and add an 8' by 10' pre-fabricated tool shed, located at 5055 S Emmer Drive.

DATE OF APPLICATION / DATE FILED WITH CITY CLERK: 3/22/22; Revised Plans 4/5/2022

DATE OF COMPLETENESS DETERMINATION: 3/22/2022; Revised Plans 4/5/2022
Application Check List Enclosed: No

PRE-APPLICATION CONFERENCE HELD: Yes
(Date(s) of Meeting(s): Numerous meetings and phone calls / Site Visit(s): Several with the most recent on 4/1/2022)

CONCEPTUAL PLAN: Yes, see attached plans.
Recommended Y / N / Other; N/A

SIZE OF DEVELOPMENT / PARCEL(S): 4.2210 Acres

CURRENT ZONING: M-1 (Light Manufacturing)

CURRENT LAND USE: Pet resort and day camp

PROPOSED ZONING: N/A

PROPOSED LAND USE: N/A

PROPOSED LOT SIZE(S): N/A

PROPOSED DENSITY: N/A

ADJACENT ZONING AND LAND USE:

North: Zoning: R-4	Land Use: Single-Family Residential
South: Zoning: M-1	Land Use: Industrial (Towne Corporate Park)
East: Zoning: M-1	Land Use: Industrial (Towne Corporate Park)
West: Zoning: M-1	Land Use: Industrial (Towne Corporate Park)

CONFORMANCE WITH THE 2020 COMPREHENSIVE PLAN AND MUNICIPAL CODE: Yes

Chapter 18: Neighborhood “H”: Westridge & Moorland Road: Yes, this request meets the intent of this Chapter. Planning Context / Vision / Development Policies:

Vision:

- *Layout that includes a mix of retail, commercial, office and light manufacturing within the Business Park/Industrial area.*
- *Allow for flexible site design for both residential and nonresidential development by creating Zoning Code standards that promote creativity and sustainability.*

Development Policies:

- *Use low-intensity office or neighborhood-oriented retail as a buffer between the industrial areas and the residential areas to the north and west.*
- *Require coordinated, pre-planned concepts/development proposals to ensure a cohesive and coordinated development pattern. Developments must take into consideration how adjacent parcels would be developed.*
- *Maintain a transportation system that minimizes cut-through and business-related traffic in adjacent residential areas.*

Land use:

- Future Land Use Map: Business Park / Industrial

ZONING CODE (Chapter 275): Yes, this request is consistent with Sections 275-35B(4).

SUBDIVISION CODE (CHAPTER 235): N/A

PUBLIC HEARING REQUIRED: No

CONCEPTUAL USE / SITE /ARCHITECTURAL REVIEW:

Use Approval Required: Yes

Site Plan Required: Yes, plans attached.

Architectural Review Required: No

PROPOSED ARCHITECTURE: The applicant is not proposing any architectural modifications to the building, but is proposing a 9-foot high chain-link fence with privacy screening around the outdoor dog exercise areas. The applicant also proposed the addition of a tool shed that matches the existing buildings' current color. See attached plans.

UNIQUE SITE CHARACTERISTICS:

Environmental Corridor: No

Wetland On Property: No

Conservancy Districts (C-1, C-2): No

NRCS Map Classification: Not inventoried.

Floodplain: No

Topography / Geologic: The site is relatively flat.

BIKE & PEDESTRIAN FACILITIES: No improvements identified.

PARK & OPEN SPACE PLAN: None Identified.

NATURAL RESOURCES PROTECTION:

Limits of Disturbance (LOD): N/A

Woodland, Tree, and Vegetation Protection: N/A

Wildlife Habitat Protection: N/A

Wildlife Management Plan: N/A

ENVIRONMENTAL IMPACT: See attached letter.

STORM WATER 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. No proposed changes at this time.

SANITARY SEWER PROVISION:

Within Current Sewer Service Area: Yes

Sewershed Capacity Available: Yes

Adequate Linkage: Yes

On-site system required: No

WATER USAGE CALCULATION: No new water connection required.

TRAFFIC IMPACT: A Traffic Impact Study was not required for this development.

SCHOOL DISTRICT IMPACT: N/A

PREVIOUS ACTION (Most recent history):

06/01/2009 Plan Commission held a public hearing for a Conditional Use request (File #: CU-09-02).
06/02/2011 Staff approved the Use Approval for a fenced in play area and rain garden (Permit #: UA-11-28)

CONSISTENCY WITH PREVIOUS ACTION: Yes

FINDINGS:

1. Plan of Operation (please see attached Plan of Operation for more details):
 - a. During business hours they are looking to add outdoor dog runs to allow animals to be outside during business hours. The animal runs will be at the back of the building in the industrial park. Dogs will not be outside after 7:15 pm during Late Spring to Late Fall.
 - b. Spa Paw & Tail Resort Operating Hours are M-F 6:30am - 6:30pm. Saturdays 7:30am – 12:00pm. Closed on Sundays.
 - c. The boarding hours for drop off and pick up are M-F 7:00am – 12pm and 1:00pm-4:00pm, Saturday 7:30am-12:00pm, Sunday 9:00am–12:00pm and 1:00pm-5:00pm
 - d. The outdoor dog runs will be screened using black plastic slats in the chain-link fence.

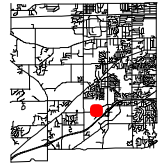
D.R.C. RECOMMENDATION:

Recommend approval for the addition of two outdoor dog exercise areas and a 8' by 10' tool shed located at 5055 S Emmer Drive (Tax Key #:1257994001) subject to the application, plans on file and the following conditions: **See Executive Summary.**

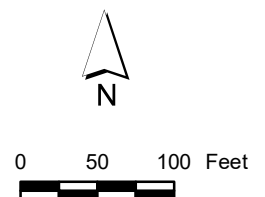
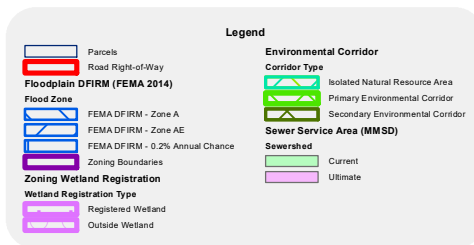
ATTACHMENTS:

Location Map
Plan of Operation
Site Plans & Design Plans
Letter from DCD Staff

UA-2200591
Spa Paw & Tail
5055 S Emmer Drive (Tax Key #:1257.994.001)



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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March 23, 2022

RE:Spa Paw & Tails Plan of Operation

Spa Paw and Tail Pet Resort
5055 Emmer Drive
New Berlin, WI 53151

Spa Paw & Tail Resort Operating Hours are M-F 6:30am To 6:30pm. Saturdays
7:30am - 12pm Closed on Sundays.
The boarding hours for drop off and pick up are M-F 7:00am - 12pm And 1:00pm
-4pm, Sat 7:30-12pm, Sun 9:00am - 12pm & 1:00pm-5:00pm

During business hours they are looking to add outdoor dog runs to allow
animals to be outside during business hours. The animal runs will be at the
back of the building in the industrial park. Dogs will not be outside after
7:15 pm during Late Spring to Late Fall.

The outdoor dog runs will be screened using black plastic slats in the chain
link fence.

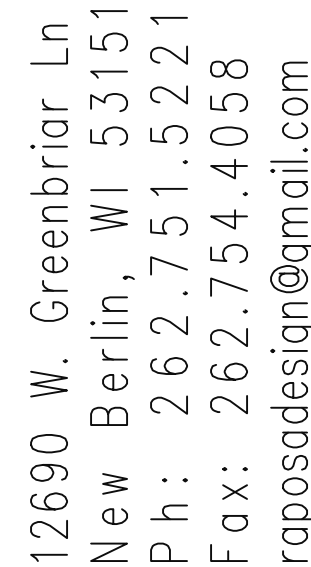
Maintenance schedule will be as follows:

The following procedures are based on dog runs being cut into asphalt parking lot and
draining into a stone and sand sub-base filtering system as shown on Construction
drawings.

1. Daily cleanup of solid waste.
2. OXY TURF (Cleaner & Deodorize. Biodegradable Cleans 99.9% of bacterial
growth & is Non-Toxic,
Hydrogen Peroxide based.) would be used on a Monthly Basis for
disinfecting. When applied no water would be used to rinse the runs.
3. Annually, Power brushing would be done to remove animal fur & refresh
the turf fibers.
4. The runs would be constructed with a landscape fabric under 6" of sand
with a layer of landscape fabric over the sand. 6" of clean stone would
be put over the top of the sand and landscape fabric and then the turf
system would sit over the clear stone base.

If you have any questions please feel free to contact me.

Russell J. Raposa
Principal
Raposa Design

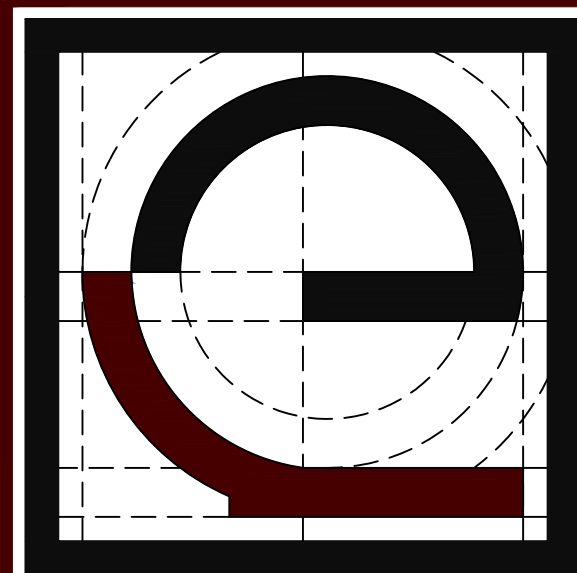
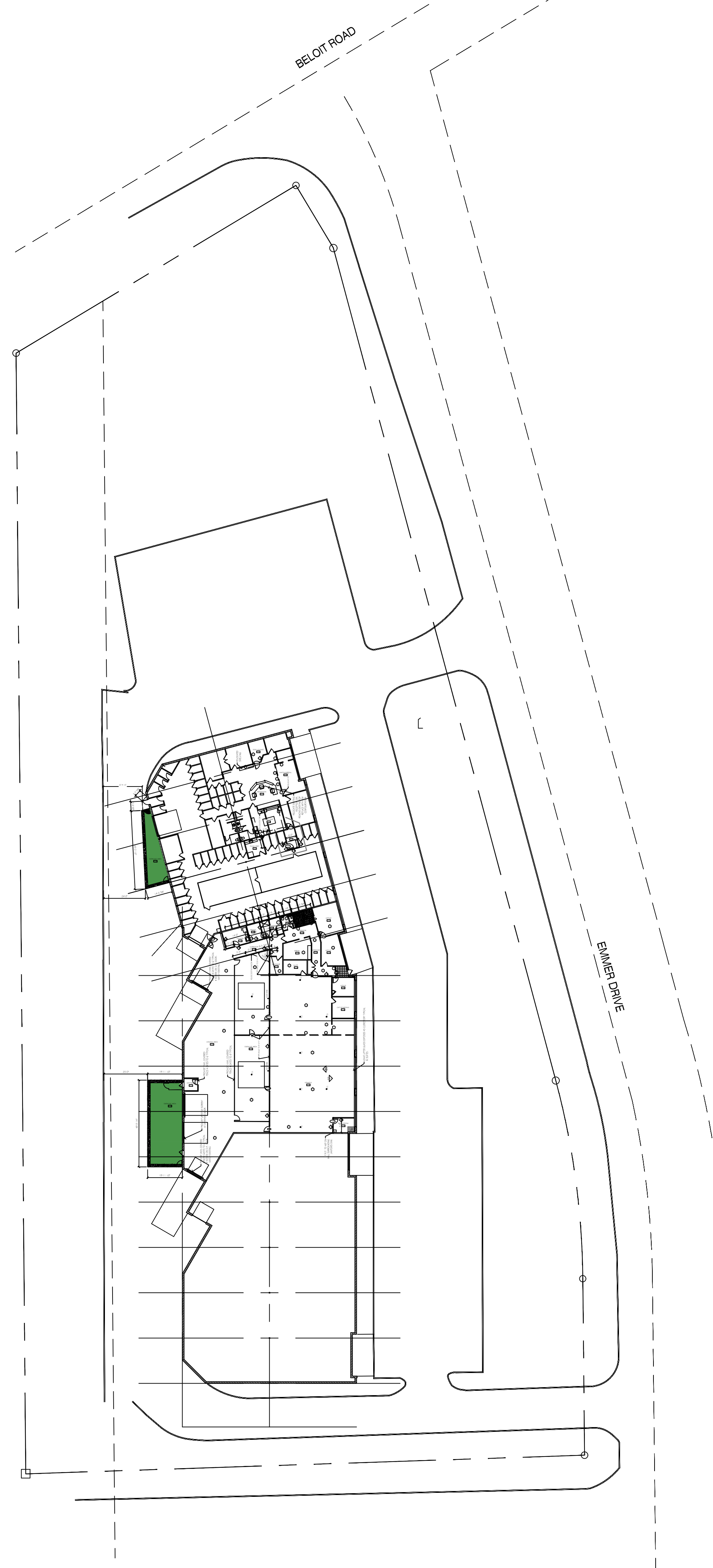
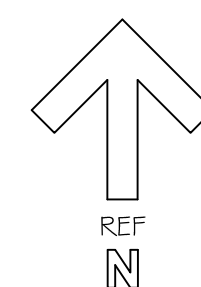


Spa Paw & Tail
5055 S. Emmer Dr
New Berlin, WI 53151

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	ROOM NAME		NEW OR RELOCATED DOOR # 100
	DOOR NUMBER		EXISTING DOOR TO REMAIN
	PARTITION TYPE		EXISTING DOOR TO BE REMOVED
	PHONE/DATA PORT		NEW WALL CONSTRUCTION
	GROUND FAULT INTERRUPT RECEPTACLE		EXISTING WALL CONSTRUCTION
	DEDICATED DUPLEX RECEPTACLE		EXISTING WALL TO BE REMOVED
	STANDARD QUAD RECEPTACLE		CEILING GRID W/2X4 ACOUSTIC CEILING TILES
	DEDICATED QUAD RECEPTACLE (HEIGHT AS INDICATED)		CEILING TILES W/2X2 VINYL FACED CEILING TILES
	J BOX WITH 3 CIRCUITS (ONE DEDICATED FOR COMPUTERS) FOR USE W/HAWORTH BASE FEED		SURFACE MOUNTED FIRE EXTINGUISHER
	J BOX WITH 3 CIRCUITS (ONE DEDICATED FOR COMPUTERS) FOR USE W/HAWORTH POWER POLE		SINGLE POLE SWITCH
	COMMUNICATION POLE TO BE INSTALLED BY FURNITURE INSTALLER.		DOUBLE WALL SWITCH
	LOCATION FOR DATA/COMMUNICATIONS - PROVIDE TWO GANG J BOXES W/SINGLE PLASTER RING W/PULL STRING @ 18" CL. A.F.F.		DIMMER SWITCH
	PHONE JACK		3-WAY SWITCH
	DOORBELL @ 44" A.F.F.		FIRE EXTINGUISHER CABINET
	CHIME FOR DOORBELL @ 90" A.F.F. (7'-6") NOTE: MORE THAN ONE CHIME MAY BE INDICATED.		EXHAUST FAN
	EXISTING ITEM TO BE FIELD VERIFIED.		
	EXIT LIGHT		



RAPOSA DESIGN

architecture

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New Berlin, WI 53151

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Spa Paw & Tail

5055 S. Emmer Dr
New Berlin, WI 53151

SHEET TITLE

Site Plan

DATE OF ISSUE

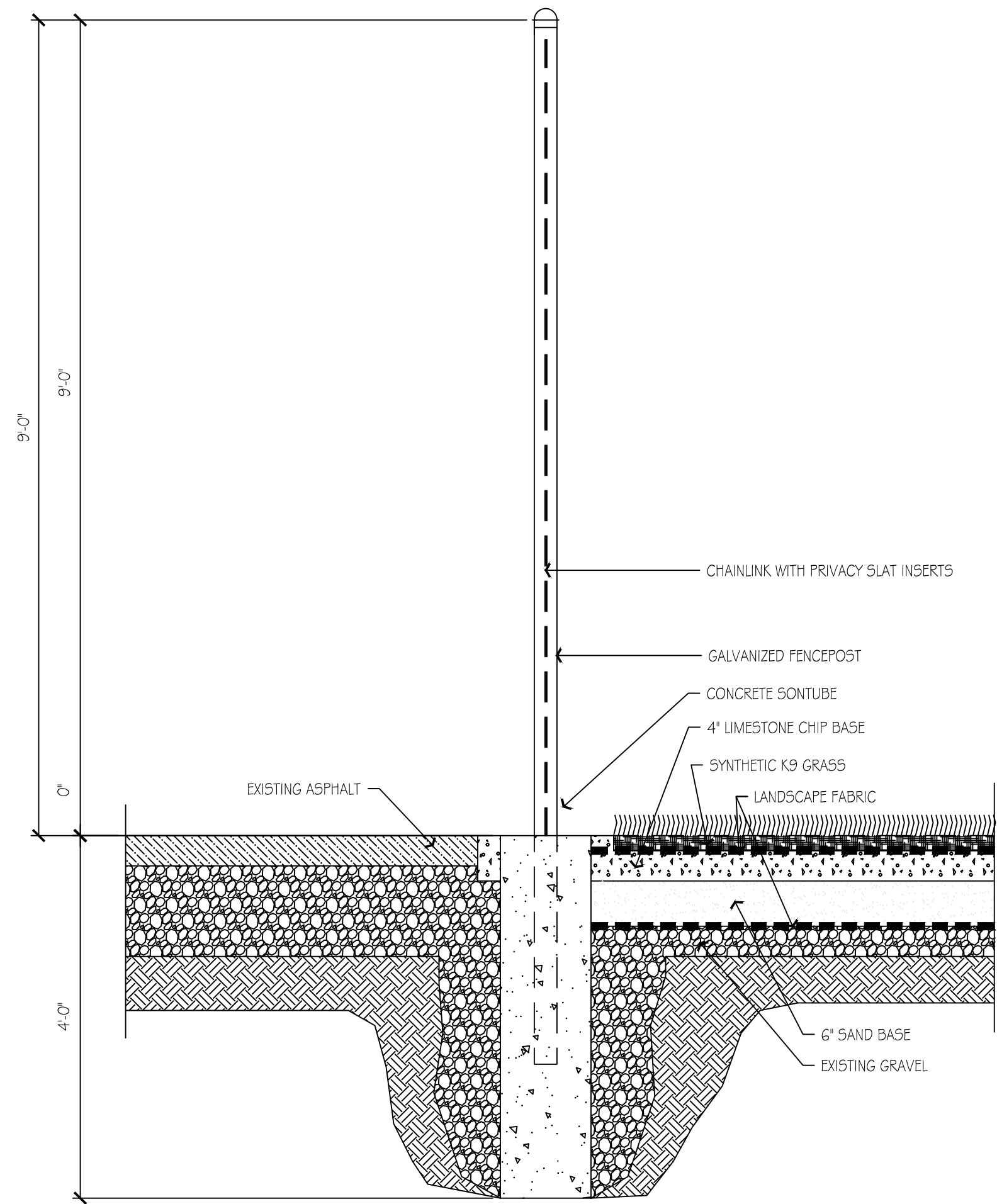
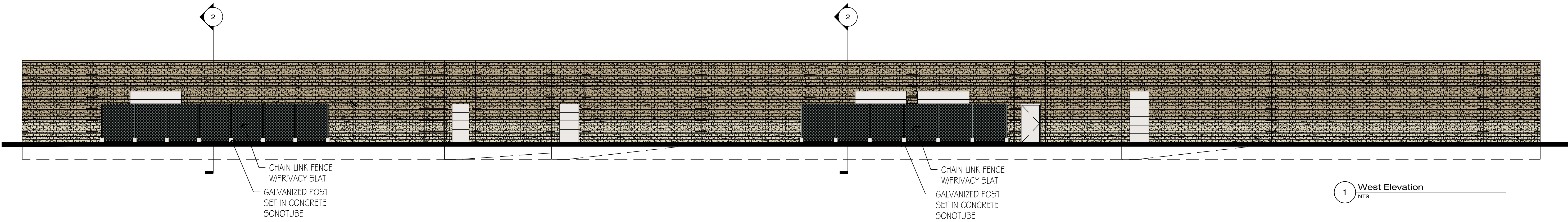
February 26, 2022

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JOB: RD160.21
DRAWN: RJF
CHECKED: RJF
DATE: 12/02/21

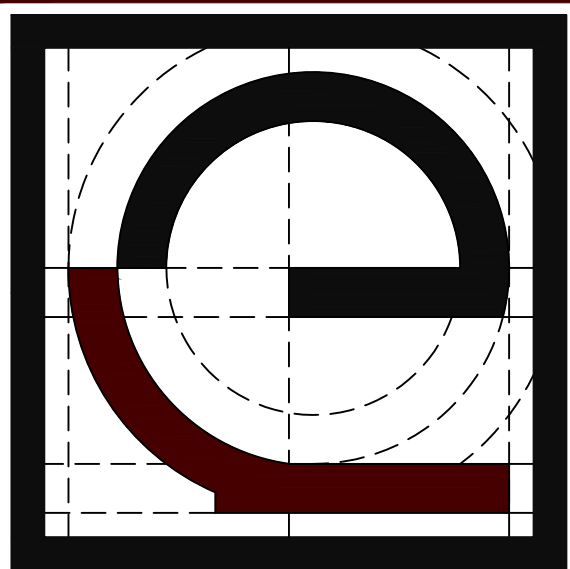
SHEET:

A2



MAINTENANCE PLAN	
The following procedures are based on dog runs being cut into asphalt parking lot and draining into a stone and sand sub-base filtering system as shown on Construction drawings.	
1.	Daily cleanup of solid waste.
2.	OXY TURF (Cleaner & Deoderize. Bidregadable Cleans 99.9% of bacterial growth & is Non-Toxic, Hydrogen Peroxide based.) would be used on a Monthly Basis for disinfecting. When applied no water would be used to rinse the runs.
3.	Annually, Powerbrushing would be done to remove animal fur & refresh the turf fibers.
4.	The runs would be constructed with a landscape fabric under 6" of sand with a layer of landscape fabric over the sand. 6" of clean stone would be put over the top of the sand and landscape fabric and then the turf system would sit over the clear stone base.

1 Section @ Fence
3/4" = 1'-0"



RAPOSA DESIGN

architecture

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SHEET TITLE

Elevation & Detail

DATE OF ISSUE December 02, 2021

SYMBOL	REVISION DESCRIPTION	DATE

JOB: RD160.21
DRAWN: RJR
CHECKED: RJR
DATE: 12/02/21

SHEET:

A2

Hogan, Kristen

From: Hewitt, Nicole
Sent: Thursday, February 17, 2022 8:57 AM
To: raposadesign@gmail.com
Cc: Hogan, Kristen; Jones, Nikki; Wall, Kelly
Subject: Spa Paw and Tail

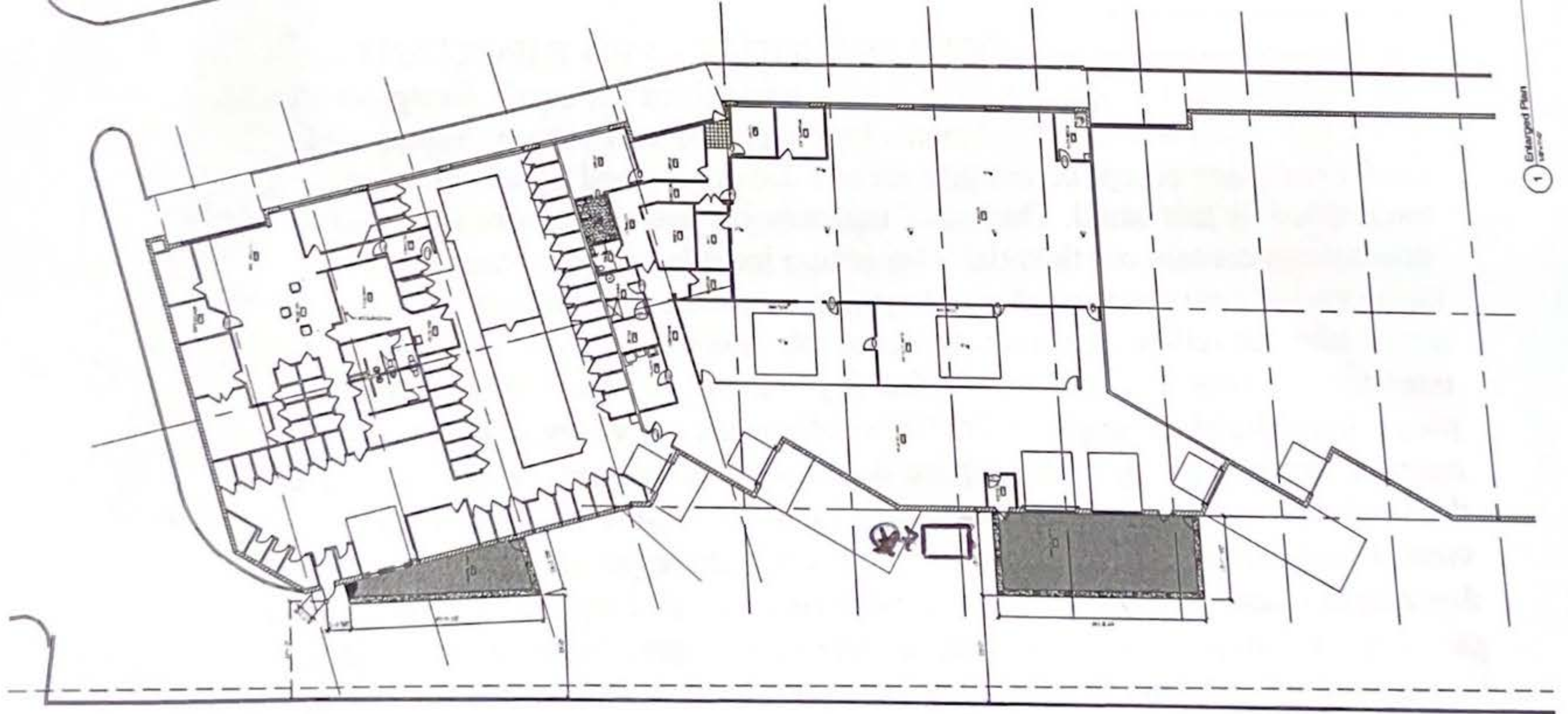
Following is the past guidance from the DNR based upon previous similar projects in the City.

1. Daily clean up of solid waste from the animals is required.
2. Washing of the outside play area with water during periods of dry weather is allowed on two conditions.
 - a. No chemicals can be discharged. I reviewed the two chemical disinfectants that you submitted, KennelSol and AlphaZymePlus. The product information seems to describe that they are air-dry products which means that they are applied and then dry off without needing a water rinse. This will need to be confirmed with the product supplier. If you choose to use these products, you will need to confirm application methods with your chemical supplier and that no rinsing would be necessary. If, in fact, this is the case, then the products would not be forbidden under storm water review. No discharge of these chemicals from the washing/sanitizing process is allowed by DNR without a WPDES state permit.
 - b. The rinse water must be piped or the elevations must be such that gravity flow will drain the play area to a rain garden or other similar infiltration storm water practice. The rain garden or other practice must be sized for the area that is draining to it.
3. Other options acceptable to DNR are a holding tank or sanitary sewer discharge. They would involve draining the play area to the sanitary sewer (would need approval of City Engineer, JP Walker) or to drain the area into a holding tank to be treated on-site or sent out for treatment.
4. Even if no water rinsing of the play area is done, a rain garden or similar infiltration storm water practice is still required for storm water runoff that will occur during rain events.

Please include in your submittal your responses to each of the above items.

Thank you,

Nicole Hewitt, PE
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1 Enlarged Plan
1/4" = 1'-0"

(*) 8' x 10'
utility shed.

8' width ↑
10' Length ↔
10' off back of building