



Board of Public Works

Regular Meeting

335 South Broadway
De Pere, WI 54115
www.deperewi.gov

Agenda

Monday, January 13, 2025

7:30 PM

Council Chambers and Virtual

Pursuant to Wisconsin Statute 19.84, Notice is hereby given to the public that a meeting of the **Board of Public Works** of the City of De Pere will be held on **January 13, 2025 at 7:30 PM** in the **COUNCIL CHAMBERS, 2ND FLOOR CITY HALL, 335 S. BROADWAY STREET, DE PERE.**

The Public or Members of the Board of Public Works, which may count toward an official quorum, may attend the meeting either in person in the Council Chambers or telephonically or electronically via video conferencing or other appropriate technological means. Telephonic or electronic access to the meeting is provided below:

Computer/smart phone accessing <https://www.gotomeet.me/DePere>

OR

You can also dial in using your phone.
United States (Toll Free): [1 866 899 4679](tel:18668994679)
United States: [+1 \(312\) 757-3117](tel:+13127573117)
Access Code: 154-883-285

This meeting may also be rebroadcast on TV throughout the week and available on demand at <http://deperecitywi.igm2.com/>.

- I. Call to Order
 - 1. Roll Call
- II. Public Comment on matters not on the Agenda. Comments made during the public comment period shall pertain only to matters under the jurisdiction of the Board of Public Works. §6-3(f) DPMC
- III. Items
 - 1. Approval of the December 9, 2024 Board of Public Works Meeting Minutes
 - 2. Consider and Possible Action on Award of Contract for 9th Street Reservoir Overflow Modifications*
 - 3. Consideration and possible action regarding SEH's Proposal for MSC Expansion for Design and Construction Engineering Services*
 - 4. Consideration and possible action on Subsidizing Street Tree Costs

5. Consideration and possible action on Wisconsin Public Service Contract for Replacing Decorative Street Lighting in the Downtown Areas*
6. Consideration and possible action on the 2024 Storm Lateral Assessment Charge for Existing Residential Properties
7. Consideration and possible action on the 2024 Storm Lateral Assessment Charge for Existing Non-Residential Properties
8. Discussion of Charles Street Swale
9. Consideration and possible action participating with Brown County on the Safe Roads for All FHWA Grant*
10. Consideration and possible action GV-15 Retaining Wall Design Concepts*
11. Consideration and possible action GV-16 Bridge Design Concepts*
12. Consideration and possible action on Neighborhood Watch Sign Policy*
13. Consideration and possible action on award of Contract 24-17 Community Center Relay*
14. Consideration and possible action on the State/Municipal Financial Agreement with WisDOT for I-41-Southbridge Road Interchange*
15. Consideration and possible action on State/Municipal Financial Agreement-1st Revision for STH 32 from Merrill Street to Cook Street*
16. Consideration and possible action on updates to 2024 General Conditions and Standard Specifications

IV. Future Agenda Items

V. Adjournment

Any person wishing to attend this meeting who, because of disability, requires special accommodations should contact the Clerk's office at 339-4050 by Noon, the previous business day so that arrangements can be made.

Agenda Sent To:

Alderspersons
City Administrator
Mayor
Department Heads
TV, Newspapers & Radio Stations
Kress Family Library
De Pere Chamber of Commerce
Robert E. Lee & Associates, Inc
Short Elliott Hendrickson, Inc.
Wisconsin Public Service
Alfson Excavating LLC

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Betty Marovich, Administrative Assistant/Recording Secretary
Date: January 13, 2025

RE: **Approval of the December 9, 2025 Board of Public Works Meeting Minutes**



Board of Public Works

Regular Meeting

335 South Broadway
De Pere, WI 54115
<https://www.deperewi.gov/>

Draft Minutes

Monday, December 9, 2024

7:30 PM

Council Chambers and Virtual

I. Call to Order

The meeting was called to order at 7:30 PM by Mayor James Boyd

Attendee Name	Title	Status	Arrived
James Boyd	Mayor	Present	
Dan Carpenter	Aldersperson	Present	
Mike Eserkaln	Aldersperson	Present	
Jonathon Hansen	Aldersperson	Present	
Shana Defnet Ledvina	Aldersperson	Present	

Scott Thoresen, Public Works Director
Eric Rakers, City Engineer
Betty Marovich, Recording Secretary
Pam Manley, Finance Director

II. Public comment upon matters not on the agenda. Comments made during the public comment period shall pertain only to matters under the jurisdiction of the Board of Public Works. Section 6-3(f) DPMC

None

III. Items

1. Approval of the October 7, 2024 Board of Public Works Meeting Minutes

Mayor Boyd moved to approve the October 7, 2024 Board of Public Works Meeting Minutes, seconded by Aldersperson Carpenter. Upon vote, the motion passed unanimously.

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	James Boyd, Mayor
SECONDER:	Dan Carpenter, Aldersperson
AYES:	Boyd, Carpenter, Eserkaln, Hansen, Defnet Ledvina

2. Consideration and possible action on Green Bay Water Utility Billing Services Agreement*

Pam Manley, Finance Director, explained that Green Bay Water Utility contacted the City to update the 2015 agreement for water utility billing services. Green Bay Water Utility provided proposed changes to the City, which were discussed by staff and the first amendment to the agreement is attached to the packet for consideration and approval.

Mayor Boyd asked if Ms. Manley was okay with the changes in the amendment. Ms. Manley shared the cost changes from 2024 to 2025 and explained that Green Bay had justified the cost and that staff did not believe it could be done cheaper in-house. Aldersperson Ledvina asked if the billing would change to monthly with this agreement being paid monthly. Ms. Manley explained that the billing to properties would stay the same. Aldersperson Ledvina asked if Green Bay fields the initial calls for water billing. Ms. Manley stated that the majority of billing calls are handled by Green Bay.

Alderson Carpenter shared the cost changes from 2015 to 2024 and proposed change for 2025 and asked Ms. Manley if she knew the annual CPI-W changes from 2014 to 2024. Ms. Manley shared those annual increases. Alderson Carpenter asked how the CPI-W number is derived. Ms. Manley explained that it is provided by the Social Security Administration. Ms. Manley explained the difference between CPI and CPI-W. Ms. Manley stated that CPI-W will continue to be used for annual increases and either party can open discussions if they believe the increase is unfair. Alderson Carpenter asked if there would be a 2.5% increase based on Social Security increasing 2.5%. Ms. Manley stated the included amendment has the 2025 rates and 2026 rates will be based on 2025 CPI-W. Ms. Manley offered to bring the annual increases back to the Board for review. Alderson Carpenter verified that increases will not be based on City of Green Bay staff position increases. Mayor Boyd stated the cost increases will be based on CPI-W per the agreement and amendment. Alderson Carpenter questioned the increase being 48% without including software costs. Ms. Manley stated that she calculated a 52.5% increase without the software cost. Alderson Carpenter questioned the cost and contract of the software. Ms. Manley stated the contract is between Green Bay and Northstar and staff has requested that future billing for City residents be provided directly to the City from Northstar. Mayor Boyd questioned if additional staff would need to be hired to complete this work in-house. Ms. Manley stated that had been the case before it was contracted with Green Bay, but that questions were fielded by the entire office, plus the City would need to contract for software and set up payment services for direct deposit and online payments. Ms. Manley stated that she was unsure one staff member could handle it all. Mayor Boyd asked if this could be included in the municipal collaboration/innovation grant opportunity. Ms. Manley stated that she believed the innovation grants were for new ideas but would look into it. Scott Thoresen, Public Works Director, stated that there are some savings compared to completing this work in-house because Green Bay is splitting costs with multiple municipalities for software based on customer base. Mayor Boyd asked if the other municipalities are getting the same increase as De Pere. Mr. Thoresen stated that those other municipalities are in negotiations with Green Bay as well. Mr. Thoresen explained the history and process of switching from in-house billing to having Green Bay handle it. Mr. Thoresen stated that it would likely take more than one staff member to return to billing in-house. Alderson Carpenter agreed with Mr. Thoresen stating that she had worked in the Clerk's office before it transitioned to being billed by Green Bay and added that the increase was likely overdue. Mayor Boyd asked the term of the agreement. Alderson Carpenter stated that either party can terminate with 180 day notice. Ms. Manley stated that was correct. Alderson Carpenter asked if the agreement takes effect on January 1, 2025. Ms. Manley stated that was correct. Alderson Carpenter questioned why it was being brought forward to the Board with such short notice for consideration. Mr. Thoresen stated that staff had been in discussion with Green Bay for many months and the terms of the agreement were just finalized to bring forward for review. Alderson Carpenter stated that it would have been nice to know in advance of approving the budget and some budget approvals may have changed knowing this increase was looming. Alderson Carpenter suggested having an internal review periodically to ensure the rates are aligning in an effort to avoid large increases. Ms. Manley stated that she plans to add this to her internal list of contracts to review. Mayor Boyd clarified that staff will review in year two and annually after that point and bring back to Board if there are amendments staff wishes to seek with Green Bay. Alderson Carpenter asked to have it brought back in early 2026, along with a full review of completing in-house as a comparison. Mr. Thoresen stated that staff space was limited on first floor City Hall and it would be very

difficult to fit in extra staff. Mr. Thoresen offered to share the costs per customer other municipalities are paying Green Bay once they finish negotiations. Alderperson Carpenter stated that the new rate equates to \$15.93 per customer. Mr. Thoresen stated that the sewer utility pays half of the cost of billing.

Mayor Boyd moved to approve the Green Bay Water Utility Billing Services Agreement, seconded by Alderperson Ledvina. Upon vote, the motion passed unanimously.

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	James Boyd, Mayor
SECONDER:	Shana Defnet Ledvina, Alderperson
AYES:	Boyd, Carpenter, Eserkaln, Hansen, Defnet Ledvina

3. Consideration and possible action to delay the reconstruction of Merrill Street to 2026*

Eric Rakers, City Engineer, stated that Merrill Street from S. Broadway to Erie Street was included in the 2025 budget for reconstruction. Mr. Rakers added that it had been included for reconstruction because during the last street rating, this area of Merrill Street was rated as a 3, 4, or 5 depending on the segment and it would be designed to improve the pavement quality, improve pedestrian curb ramps, and accommodate the existing traffic. Mr. Rakers stated that staff recently was notified that the Unified School District of De Pere (USDDP) is completing a traffic impact analysis (TIA) on Merrill and Chicago Streets to evaluate potential improvements required for a new high school and to improve the traffic flow for existing schools in the area. Mr. Rakers added that one of the evaluations of the TIA would be to have Merrill Street and Chicago Street as one-way pairs, similar to Main Ave and Reid Street. Staff has requested that the TIA also evaluate pedestrian facilities, improvements at the schools (including connectivity of City streets between Merrill Street and Chicago Street near the current high school) and intersection modifications. The outcomes of the TIA could impact the design of Merrill Street. West De Pere School District completed a TIA several years ago and that study included an evaluation of streets near the schools and recommended improvements at the schools, including RRFBs on Grant and Ninth Streets and traffic signals on Grant Street. City staff evaluates the TIA and presents recommended improvements to the Board for approval. Staff recommends delaying the Merrill Street reconstruction until 2026 and after the TIA is completed.

Alderperson Hansen commented that the one-way street pair seemed unlikely but asked what other recommendations could be made by the TIA that would result in tearing out new road improvements if Merrill Street was completed in 2025. Mr. Rakers stated that pedestrian bumpouts and turn lanes could be recommended by the TIA that would significantly impact the new road improvements. Mayor Boyd added that changes to the campus including parking lot configurations could also impact the improvements. Mayor Boyd added that staff had provided recommendations to the school for the TIA to evaluate. Mr. Rakers shared a couple of the recommendations that staff had provided for evaluation. Scott Thoresen, Public Works Director, added that staff had requested parking at the high school be evaluated to alleviate the parking issues on the side streets in that area. Alderperson Hansen asked if the section from Erie to Lone Oak that was improved a few years ago could be impacted by the TIA. Mr. Rakers stated it could be and added that section had been a resurfacing type of project compared to the reconstruction being proposed for next year. Alderperson Hansen commented that the section between Huron and Superior is in exceptionally bad shape and asked if staff would continue to patch it.

Mr. Thoresen stated that was about all staff could do to keep it functional. Alderperson Hansen asked if the project was delayed if the City would borrow less or redirect the money to another project. Mr. Rakers stated that the money designated for Merrill Street would stay with Merrill Street and staff had not planned to replace with a new project for 2025. Mr. Thoresen stated that it would result in less borrowing in 2025.

Mayor Boyd moved to delay the reconstruction of Merrill Street to 2026, seconded by Alderperson Carpenter. Upon vote, the motion passed unanimously.

RESULT:	ADOPTED [UNANIMOUS]
MOVER:	James Boyd, Mayor
SECONDER:	Dan Carpenter, Alderperson
AYES:	Boyd, Carpenter, Eserkaln, Hansen, Defnet Ledvina

IV. Future Agenda Items

None

V. Adjournment

Mayor Boyd moved to adjourn the meeting at 8:02 PM, seconded by Alderperson Ledvina. Upon vote, the motion passed unanimously.

Respectfully submitted,
Betty Marovich

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Board of Public Works Members
From: Scott J. Thoresen, Director of Public Works
Date: January 13, 2025
RE: Consider and Possible Action on Award of Contract for 9th Street Reservoir Overflow
Modifications*

The City's consultant REL received bids (See attached bid and recommendation letter) on December 18, 2024, for the contract for the 9th Street reservoir overflow modifications. This project involves modifying the existing ground storage reservoir overflow so that it meets Wisconsin Administrative Code NR 811.64 (4)(a). The low bid received is Jossart Brothers, De Pere, WI in the amount of \$68,500.00.

Staff's recommendation is to award the contract to Jossart Brothers, De Pere, WI in the amount of \$68,500.00. The 2025 water utility budget has \$125,000.00 allocated for this project which will also include engineering fees for REL.

December 18, 2024

Mr. Scott Thoresen
CITY OF DE PERE
925 South Sixth Street
De Pere, WI 54115

RE: 9th Street Reservoir Overflow Modifications
Contract 404-24-01

Dear Mr. Thoresen:

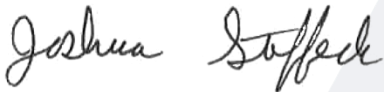
Bids were opened on December 18, 2024, for the 9th Street Reservoir Overflow Modifications project, Contract 404-24-01. Bids were received from eight (8) contractors, ranging in cost, from \$68,500.00 to \$94,825.00 for the base bid. The low bidder was Jossart Brothers, De Pere, WI. A bid tabulation is enclosed.

We have reviewed the documents submitted with the bids and everything appears to be in order. Therefore, we recommend the City award the contract to Jossart Brothers for the bid amount of \$68,500.00.

If you have any questions, please do not hesitate to call our office.

Sincerely,

ROBERT E. LEE & ASSOCIATES, INC.



Joshua J. Steffek, P.E.
Project Manager

JJS/LAR

ENC.

CC/ENC.: Eric Zygarlicke, City of De Pere
Dean LaFleur, REL

ITEMIZED BID TABULATION														
OWNER: CITY OF DE PERE														
PROJECT: 9th Street Reservoir Overflow Modifications														
CONTRACT: 404-24-01														
BID DATE: Wednesday, December 18, 2024 - 1:00 p.m.														
Line Item	Item Code	Item Description	Unit	Qty.	JOSSART BROTHERS De Pere, WI		KRUCZEK CONSTRUCTION Green Bay, WI		ADVANCE CONSTRUCTION Green Bay, WI		BILLMAN CONSTRUCTION Suamico, WI		MC EXCAVATING Whitelaw, WI	
					Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension	Unit Price	Extension
Base Bid														
1	3212.11	Asphaltic Concrete Pavement, 4 LT 58-28 S, Complete.	TON	30	\$250.00	\$7,500.00	\$210.00	\$6,300.00	\$240.00	\$7,200.00	\$330.00	\$9,900.00	\$250.00	\$7,500.00
2	5000.01	Complete All Work, As Specified and Shown on the Drawings, Complete.	LS	1	\$49,000.00	\$49,000.00	\$60,000.00	\$60,000.00	\$66,216.00	\$66,216.00	\$54,322.00	\$54,322.00	\$69,811.90	\$69,811.90
3	5000.02	Provide Stainless Steel Overflow Piping, Complete.	LS	1	\$12,000.00	\$12,000.00	\$12,700.00	\$12,700.00	\$5,990.00	\$5,990.00	\$18,000.00	\$18,000.00	\$7,200.00	\$7,200.00
		Total - Base Bid, Bid Items 1 - 3				\$68,500.00		\$79,000.00		\$79,406.00		\$82,222.00		\$84,511.90
Alternate 1														
4	5000.03	Provide Ductile Iron Overflow Piping, In Lieu of Item Code 5000.02, Complete.	LS	1	\$6,000.00	\$6,000.00	\$9,900.00	\$9,900.00	\$6,793.00	\$6,793.00	\$15,500.00	\$15,500.00	\$7,150.00	\$7,150.00
		Total - Alternate 1 - Bid Item 4				\$6,000.00		\$9,900.00		\$6,793.00		\$15,500.00		\$7,150.00
Total Contract 404-24-01, Bid Items 1- 3					\$68,500.00		\$79,000.00		\$79,406.00		\$82,222.00		\$84,511.90	

ITEMIZED BID TABULATION										
OWNER: CITY OF DE PERE										
PROJECT: 9th Street Reservoir Overflow Modifications										
CONTRACT: 404-24-01										
BID DATE: Wednesday, December 18, 2024 - 1:00 p.m.										
Line Item	Item Code	Item Description	Unit	Qty.	PETERS CONCRETE Green Bay, WI		DE GROOT, INC. Green Bay, WI		VINTON CONSTRUCTION Manitowoc, WI	
					Unit Price	Extension	Unit Price	Extension	Unit Price	Extension
Base Bid										
1	3212.11	Asphaltic Concrete Pavement, 4 LT 58-28 S, Complete.	TON	30	\$330.00	\$9,900.00	\$252.50	\$7,575.00	\$232.00	\$6,960.00
2	5000.01	Complete All Work, As Specified and Shown on the Drawings, Complete.	LS	1	\$53,000.00	\$53,000.00	\$62,746.25	\$62,746.25	\$82,145.00	\$82,145.00
3	5000.02	Provide Stainless Steel Overflow Piping, Complete.	LS	1	\$26,500.00	\$26,500.00	\$22,220.00	\$22,220.00	\$5,720.00	\$5,720.00
		Total - Base Bid, Bid Items 1 - 3				\$89,400.00		\$92,541.25		\$94,825.00
Alternate 1										
4	5000.03	Provide Ductile Iron Overflow Piping, In Lieu of Item Code 5000.02, Complete.	LS	1	\$25,500.00	\$25,500.00	\$19,190.00	\$19,190.00	\$13,200.00	\$13,200.00
		Total - Alternate 1 - Bid Item 4				\$25,500.00		\$19,190.00		\$13,200.00
Total Contract 404-24-01, Bid Items 1- 3						\$89,400.00		\$92,541.25		\$94,825.00

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Board of Public Works Members
From: Scott J. Thoresen, Director of Public Works
Date: January 6, 2025
RE: Consider and Possible Action Regarding SEH's Proposal for MSC Expansion for Design and Construction Engineering Services*

The 2025 approved budget includes \$25,000,000 for the MSC expansion. The expansion would include the expansion of the current facilities for the City's equipment and vehicles, office expansion, and necessary updates to the facilities to meet ADA requirements. This funding would include consultant fees, construction, and additional interior office furniture for the office expansion.

The City is currently under contract with SEH for design services for the MSC expansion. SEH submitted the attached proposal for design and construction engineering services which would be ordered into their existing engineering contract. The scope of services are as follows:

1. Design of the 6,000 s.f. addition to the office facility and the consolidation of the documents from the previously phased projects and includes the added services to design for conformance per the ADA audit: **\$263,049.00**
2. Construction administration for the addition to the office facility and the consolidation of the construction administration from the previously phased projects: **\$206,945.00**
3. Construction administration services as the Architect and Engineer of Record to comply with State requirements for professional of record during construction: **\$82,950.00**
4. Expenses: In addition to the professional services fees. Expenses are billed at actual cost. Expenses are estimated at **\$13,500.00**

Total costs for the above-mentioned services are \$566,444. The tentative schedule for the expansion would be complete design in 2025, bid spring of 2026, and construction taking place in 2026 and 2027.

Staff met to discuss this proposal to determine whether we should solicit additional proposals. The following things were discussed:

- The design process would be delayed by possibly twelve (12) months or more. It would take several months to solicit proposals. If a new consultant was hired, the consultant firm

would have to start the design process from the beginning for the expansion of the equipment and vehicles, which could take up to nine (9) months or more.

- Design costs would be higher to hire a new consultant firm due to the design fees needed to develop the preliminary design phases that has already currently been designed by SEH.
- Staff reviewed what the City would be paying SEH on a percentage basis. Staff looked at the percentages for VFW pool and the Nelson Pavilion. The City paid GRAEF approximately 8.96% for design and construction services for the VFW pool. The City paid McMahon approximately 6.7% for design and construction services for the Nelson Pavilion. If SEH's proposal is approved their fees would be approximately 3.76% for design and construction services.

Staff recommends approving SEH's proposal in the amount of \$566,444.



January 3, 2023

RE: De Pere MSB Facility and Office
Expansion and Renovation- **Revised**
1/3/2025

Mr. Scott Thoreson
City of De Pere
925 S 6th Street
De Pere, WI 53533

Dear Scott:

Short Elliott Hendrickson Inc. (SEH®) appreciates the opportunity to submit this proposal to the City of De Pere (client) for professional architectural and engineering services as required for a renovated MSB facility and proposed new Public Works office improvements in De Pere, Wisconsin (Project).

PROJECT UNDERSTANDING

This proposal is based on a facility and site needs study and building programming recently completed for the De Pere Public Works Department that developed design, bid documents and phasing plan for campus-wide development for the Municipal Services Building facility on 6th Street. This proposal includes the next steps in the process including design of a 6,000 s.f. office addition, consolidation of the previous phases of construction, bidding assistance and construction administration services.

Based on previous design efforts and proposed expansion design to the existing office facility, this project will include the following:

1. Consolidation of previously developed phased bidding documents into one combined set of contract documents
2. Documentation of demolition of the existing 1999 office addition and design of a 6,000 s.f. office addition
3. Incorporation of ADA corrective design and implementation based on the ADA report issued to SEH for the MSB facility including Civil/Site works, Architecture and MEP services.
4. Bidding and construction administration services for the consolidated scope of work to include all previous phases of development and includes the new office expansion.
5. Geotechnical Exploration and reporting for soil classification beneath the proposed office addition
6. Site improvements to include:
 - a. Relocation of existing utilities and large underground stormwater interceptor
 - b. Modifications to existing topography, pavement, stormwater treatment and landscaping

Engineers | Architects | Planners | Scientists

Short Elliott Hendrickson Inc., 425 West Water Street, Suite 300, Appleton, WI 54911-6058

920.380.2800 | 888.413.4214 | 888.908.8166 fax | sehinc.com

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Tasks

1. Consolidate previous phased designed packages into a single conformed set of contract documents.
2. Code review and coordination for the office expansion.
3. Develop office expansion demolition and construction drawings through Design Development
4. Provide cost estimate at Design Development phase.
5. Upon approval of design development plans and estimate, begin construction documents.
6. Generate 60% and 90% review documents along with associated cost estimates.
7. Generate final bid documents.
8. Plan submittal to state and local authorities as required for construction.
9. Construction documents to be posted to online bid room for contractor's downloading bidding.
10. Respond to contractor questions during bidding and issue addendum as needed.
11. Conduct pre-bid meeting, if required.
12. Assist with reviewing bids and recommending contractor award.
13. Administer construction of the entire scope of development. (Proposed as separate services)

Professional Services Included:

- Architectural / Project Management (SEH) FEE: \$162,600

Architectural Scope: The Scope of Work proposed includes providing design services through construction documents (CD) and includes construction support (CS). **Our revised scope of work includes coordination and design of the ADA improvements per the ADA audit report issued to SEH.**

- a. Design Development – coordinate with Public Works Department personnel to make modifications / changes to the preliminary design prior to beginning construction documents.
 - Floor plans
 - Exterior elevations
 - Schematic building sections
 - Updated Cost Estimate
- b. Construction documents – generate construction plans and specifications based on approved Design Development plans as well as coordination with remainder of the design team on their work
 - Floor Plans – overall and enlarged as needed
 - Building Elevations
 - Roof Plan
 - Building / Wall Sections
 - Reflected Ceiling Plan
 - Door and Room Finish Schedules
 - Details & Interior Elevations as needed
- c. Bidding Services
 - Plan submittals to State of Wisconsin and local AHJ as required
 - Respond to contractor questions during bidding
 - Issue addendum as necessary
 - Assist with review of bids
 - Construction administration services will be contracted separately after award of the contract for construction.
- d. Construction Administration Services **FEE: \$35,700.00**

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- Review submittals and shop drawings
 - Respond to contractor RFI
 - Issue Construction Bulletins
 - Attend bi-weekly construction meetings during the construction phase
 - Develop punchlists
 - Coordinate project close out
 - Attend 11-month post-construction punchlist walk through
- e. Construction Administration Services- (Consolidated Projects) **FEE: \$150,400- This fee is the construction administration fee for the previously identified phased project delivery scope that was broken into Phases 1A-2E. Those Construction Administration services will need to be performed with the consolidation of the phased projects.**
 - Review submittals and shop drawings
 - Respond to contractor RFI
 - Issue Construction Bulletins
 - Attend bi-weekly construction meetings during the construction phase
 - Develop punchlists
 - Coordinate project close out
 - Attend 11-month post-construction punchlist walk through
- f.
- **Structural Engineering (SEH) FEE: \$22,000.00**
 - 1. Structural Engineering Scope: The Scope of Work proposed includes providing design services through construction documents (CD) and includes construction support (CS).
 - a. Design Development
 - Review preliminary plans and provide input on structural elements – coordinate with remainder of design team
 - Review geotechnical report and begin foundation design
 - b. Construction Documents
 - Foundation plan
 - Structural framing plan
 - Structural details
 - Structural Specifications
 - Coordination with pre-engineered metal building system manufacturer
 - c. Bidding Services
 - State plan submittal
 - Respond to contractor questions during bidding
 - Construction administration services will be contracted separately after award of the contract for construction.
 - d. Construction Administration Services **FEE: \$5,500.00**
 - Review submittals and shop drawings
 - Respond to contractor RFI
 - Issue Construction Bulletins
 - Develop punchlists
 - Coordinate project close out
 - Attend 11-month post-construction punchlist walk through

- Civil Engineering (RaSmith) FEE: **\$21,949.00**

Civil Engineering Scope: The Scope of Work proposed includes providing design services through construction documents (CD) and includes construction support (CS).). **Our revised scope of work includes coordination and design of the ADA improvements per the ADA audit report issued to SEH.**

1.

- a. Design Development – This task includes preparation of Design Development Documents which will include:
 - Topographic Survey of the site
 - Coordination for soil borings.
 - Existing Conditions/Site Demolition Plan.
 - Site Plan.
 - Grading and Drainage Plan.
 - Site Utility Plan.
 - Erosion Control Plan.
 - Stormwater modeling and design.
- b. 60% and 90% and final Construction Documents to include:
 - Existing Conditions/Site Demolition Plan (refined)
 - Site Plan.
 - Grading and Drainage Plan.
 - Site Utility Plan.
 - Landscape Plan.
 - Construction Details and General Notes.
 - Erosion Control Plan and Details.
 - Stormwater management Plan
 - Site/Civil Details
 - Technical Specifications for Civil Site Elements.
 - Engineer's Estimate of Probable Construction Costs.
 - WI DNR NOI permit submittal.
 - DSPS exterior plumbing submittal.
 - Attendance at two (2) City plan commission and site review meetings.
 - Construction administration services will be contracted separately after award of the contract for construction.
- c. Construction Administration Services **FEE: \$2,420.00**
 - Review submittals and shop drawings
 - Respond to contractor RFI
 - Issue Construction Bulletins
 - Develop punchlists

Engineers | Architects | Planners | Scientists

Short Elliott Hendrickson Inc., 425 West Water Street, Suite 300, Appleton, WI 54911-6058

920.380.2800 | 888.413.4214 | 888.908.8166 fax | **sehinc.com**

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- Coordinate project close out
 - Attend 11-month post-construction punchlist walk through
- HVAC Engineering (MSA Professional Services) **FEE: \$42,020.00-** (INCLUDES THE SCOPE ITEMS OF ELECTRICAL AND PLUMBING DESIGN LISTED BELOW).
 1. The Scope of Work proposed includes providing design services through construction documents (CD) and includes construction support (CS).
 2. The Scope of Work proposed includes the following effort:
 - a. Design Development – coordinate with City and Public Works Department personnel to make modifications / changes to current preliminary design prior to beginning construction documents.
 - HVAC plans and equipment/ductwork layout
 - Updated Cost Estimate
 - Equipment selections
 - b. Construction documents – generate construction plans and specifications based on approved Design Development plans as well as coordination with remainder of the design team on their work
 - HVAC Plans – overall and enlarged as needed
 - Details
 - Controls and sequencing operations
 - System design and specifications
 - c. Bidding Services
 - Plan submittals to State of Wisconsin as required
 - Respond to contractor questions during bidding
 - Assist with review of bids
 - Construction administration services will be contracted separately after award of the contract for construction.
 - d. Construction Administration Services **FEE: \$10,505.00**
 - Review submittals and shop drawings
 - Respond to contractor RFI
 - Issue Construction Bulletins
 - Develop punchlists
 - Coordinate project close out
 - Attend 11-month post-construction punchlist walk through
- 3. Electrical Engineering (MSA Professional Services) **FEE: INCLUDED ABOVE**

Design will assume a new electrical service to the building and new power distribution within the building. New light fixtures will be provided to serve the layout as coordinated with Architect and Owner. New lighting control system will be provided. Direction for locations of low voltage systems (network drops, security systems, key fobs, etc) will be furnished to MSA by owner and architect and will be indicated on electrical drawings.

 1. The Scope of Work proposed includes providing design services through construction documents (CD) and includes construction support (CS).
 2. The Scope of Work proposed includes the following effort:

- a. Design Development – coordinate with City and Public Works Department personnel to make modifications / changes to current preliminary design prior to beginning construction documents.
 - Electrical plans and equipment layout
 - Updated Cost Estimate
 - Equipment selections (gear, generator, controls)
- b. Construction documents – generate construction plans and specifications based on approved Design Development plans as well as coordination with remainder of the design team on their work
 - Electrical Plans – overall and enlarged as needed
 - Details and one-line diagram
 - Controls and sequencing operations
 - System design and specifications
 - Rough in for low voltage systems (data systems, security access control, cameras, A/V)
- c. Bidding Services
 - Plan submittals to State of Wisconsin as required
 - Respond to contractor questions during bidding
 - Assist with review of bids
 - Construction administration services will be contracted separately after award of the contract for construction.
- d. Construction Administration Services **FEE: INCLUDED ABOVE**
 - Review submittals and shop drawings
 - Respond to contractor RFI
 - Issue Construction Bulletins
 - Develop punchlists
 - Coordinate project close out
 - Attend 11-month post-construction punchlist walk through

4. Plumbing Engineering (MSA Professional Services) FEE: INCLUDED ABOVE

The Scope of Work proposed includes providing design services through construction documents (CD) and includes construction support (CS).

Design shall include new service requirements for water, natural gas, sanitary sewer. New fixtures will be provided per architectural layouts.

- 1. The Scope of Work proposed includes the following effort:
 - a. Design Development – coordinate with City and Public Works Department personnel to make modifications / changes to current preliminary design prior to beginning construction documents.
 - Plumbing plans and equipment layout
 - Updated Cost Estimate
 - Equipment selections (fixtures, equipment, piped systems)
 - b. Construction documents – generate construction plans and specifications based on approved Design Development plans as well as coordination with remainder of the design team on their work

Engineers | Architects | Planners | Scientists

Short Elliott Hendrickson Inc., 425 West Water Street, Suite 300, Appleton, WI 54911-6058

920.380.2800 | 888.413.4214 | 888.908.8166 fax | **sehinc.com**

SEH is 100% employee-owned | Affirmative Action–Equal Opportunity Employer

- Plumbing Plans – overall and enlarged as needed
 - Details
 - System design and specifications
 - Basis of design fire protection drawings (State approved plans by FP Engineer of Record)
- c. Bidding Services
 - Plan submittals to State of Wisconsin as required
 - Respond to contractor questions during bidding
 - Assist with review of bids
 - Construction administration services will be contracted separately after award of the contract for construction.
- d. Construction Administration Services **FEE: INCLUDED ABOVE**
 - Review submittals and shop drawings
 - Respond to contractor RFI
 - Issue Construction Bulletins
 - Develop punchlists
 - Coordinate project close out
 - Attend 11-month post-construction punchlist walk through
- Interior Design Services (ACI) **FEE: \$4,680.00**

Interior Design Scope: The Scope of Work proposed includes providing design services through construction documents (CD) and includes construction support (CS).

 - a. Design Development – coordinate with Public Works Department personnel to make modifications / changes to current preliminary design prior to beginning construction documents.
 - Room Finish Schedule
 - Interior Material Selections and Specifications
 - b. Construction documents – generate construction plans and specifications based on approved Design Development plans as well as coordination with remainder of the design team on their work
 - Floor Plans – overall and enlarged as needed
 - Room Finish Schedules
 - Details & Interior Elevations as needed
 - c. Bidding Services
 - Plan submittals to State of Wisconsin as required
 - Respond to contractor questions during bidding
 - Assist with review of bids
 - Construction administration services will be contracted separately after award of the contract for construction.
 - d. Construction Administration Services **FEE: \$2,420.00**
 - Review submittals and shop drawings
 - Respond to contractor RFI
 - Issue Construction Bulletins
 - Develop punchlists
 - Coordinate project close out
 - Attend 11-month post-construction punchlist walk through

- **Geotechnical Services (PSI) FEE: \$9,800.00**

Geotechnical Scope: The Scope of Work proposed includes providing on-site geotechnical drilling and investigation as directed by the Civil and Structural Engineers- **This added scope addresses additional soil borings in the areas impacted by the ADA improved parking and pavement areas.**

- a. Deliverables

- Drilling, sampling and lab work
 - Final report and recommendations

PRELIMINARY SCHEDULE:

This proposal is based on the premise that this project will go out to bid in spring of 2026, with construction taking place in 2026 and 2027.

- Project Kick off:..... Within 2 weeks of Contract
- Complete Design Development:..... 6 weeks
- 60% Construction documents:..... 12 weeks
- 90% Construction Documents:..... 4 weeks
- 100% Documents / Out to Bid: 4 weeks
- Bidding:..... 4 weeks
- Start Construction:..... 2-4 weeks after bids received

Anticipated construction duration is 15 months. We will request that bidding contractors submit an anticipated completion date with their bids to verify.

Upon approval of this proposal, and signed contract to follow, SEH will begin work immediately on this project and will work with client to have this phase of work completed in a timely manner based on the schedule above.

CLIENT'S RESPONSIBILITY

The client agrees to meet with SEH to review proposed plans and provide feedback on design and to make timely decisions to keep the design process on schedule.

ASSUMPTIONS / NOT INCLUDED

1. Project delivery method will be Design / Bid / Build.
2. Project will be bid as one project.
3. No specific sustainable features (Geothermal, Photo PV, Water reclamation) are required aside from current standard applications.
4. If the project is registered with Focus on Energy, there may be additional professional design fees to offset the effort or participating in the program.

PROPOSED FEE

Our base fee for these services shall be on a **Lump Sum Basis**. Monthly invoices will be based upon work completed in the calendar month prior to the invoice date.

A breakdown of the above fees is as follows:

1. Design of the 6,000 s.f. addition to the office facility and the consolidation of the documents from the previously phased projects and includes the added services to design for conformance per the ADA audit: **\$263,049.00**
2. Construction administration for the addition to the office facility and the consolidation of the construction administration from the previously phased projects: **\$206,945.00**
3. Construction administration services as the Architect and Engineer of Record to comply with State requirements for professional of record during construction: **\$82,950.00**
4. Expenses: In addition to the professional services fees. Expenses are billed at actual cost. Expenses are estimated at **\$13,500.00**

Please let me know if this proposal meets your approval, after which our standard contract will be forwarded to you for your signature. If you have any questions or concerns regarding this proposal, please contact me at 920.585.4320.

We look forward to working with you and the De Pere Public Works Department on this long-anticipated project.

Sincerely,



Trevor M. Frank, NCARB, AIA, PMP, LEED AP
Sr. Architect / Project Manager
(Lic WI, AZ, FL, GA, IA, IL, IN, KY, MI, MN, NC, ND, OH, RI, SD, TN, VA.)

CC: File

Memo Re: Partially Subsidizing Street Trees

To: Board of Public Works

From: Ald. Jonathon Hansen

Meeting Date: 1/13/25



Former City Forester Don Melichar wrote a memo for the Park Board meeting on January 18, 2024 summarizing the street tree policies of surrounding municipalities. He received the following information from the Village of Ashwaubenon regarding their street tree program:

“Residents can purchase trees for established neighborhoods if they currently don’t have any. We charge \$100 per tree and provide a 5-year warranty. This is a cost sharing partnership between residents and the Village to get trees planted in established neighborhoods.”

This information can also be found on the Village of Ashwaubenon’s website using the link below:

<https://www.ashwaubenon.gov/government/departments/forestry/street-tree-planting/>

In short, the Village of Ashwaubenon charges residents a flat \$100 for their street tree orders regardless of the cost of the tree. Thus, any cost beyond \$100 is essentially subsidized by the Village. I am proposing that we consider implementing a similar policy here in De Pere.

Ashwaubenon does limit the program to homeowners in established neighborhoods that do not currently have any trees, but I would recommend that we not follow that restriction and just make them available to all residents regardless of whether they already have trees or live in an “established” neighborhood (while still following the guidelines of the Arboricultural Specifications Manual, which governs where in the right of way trees can be placed).

Per Forestry Supervisor Kyle Rouse, in 2024, residents ordered 124 street trees. The cost of a street tree was **\$147.70**. Therefore, if the City had a program similar to Ashwaubenon’s, the City would have subsidized \$47.70 of the cost this year, with the resident paying the remaining \$100.00. This would have cost the City a total of **\$5,914.80** in 2024.

If this program were to be adopted, Parks & Rec Director Marty Kosobucki recommends allocating \$10,000 annually to cover future increases in the cost of trees and additional orders from residents. This would need to be included in the annual executive budgets under the Dept. of Parks, Recreation, and Forestry. Since the 2025 budget has already been adopted, I would recommend waiting until the 2026 budget to start the program.

Thank you for your consideration.

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City of De Pere, Wisconsin

Request For Board of Park Commissioners Action

MEETING DATE: January 18, 2024

DEPARTMENT: Parks, Recreation & Forestry

FROM: Marty Kosobucki

SUBJECT: General Discussion on Current Tree Planting Policy for ROW Trees and Potential Change.

ATTACHMENTS:

- Tree planting summary for Park Board 1-4-24 (DOCX)

CITY OF DE PERE MEMO



To: Board of Park Commissioners
From: Don Melichar
Date: January 4, 2024

RE: **Tree Planting Policy**

This memo is to respond to Alderperson Ledvina's request for information on the department's tree planting policy. The following is copied directly from our Standards and Specifications Manual:

A. Street Tree Planting Programs:

1. Neighborhood Tree Program – This program is to allow property owners the opportunity to have the City plant trees along the street in front of their home or business. This is a cost share program where the owner can purchase a tree(s) through the City at wholesale cost and the City will plant and maintain the tree for life. The City Forester will select and give property owners a choice of bare root trees in a size range of 1.25" – 1.75" diameter (caliper) at 6" above the ground line. Trees will only be planted where an established lawn exists.
2. Replacement – Trees destroyed by vandalism, vehicles, lawn equipment, etc. may be replaced at a cost to the person causing the damage, if known. If such person is unknown, the adjacent homeowner may request and pay for a new tree if conditions and space allow for a replacement planting. The City Forester, the Director of Parks, Recreation and Forestry or the Board of Park Commissioners may also request a new tree to be planted at no cost to the property owner to replace the lost tree.
3. Unimproved Streets – Trees shall not be planted in the terrace where curbing and/or established lawn area does not exist.
4. Memorial Tree Planting – Individuals or groups may choose to purchase (on their own or through the City), and have planted by the City, a tree to honor someone special. This planting can take place in a park of their choice if space and conditions allow. Planting can occur at various times of the year if weather and species permit.

B. Installation Time Periods:

1. Street tree plantings will normally take place during two time periods per year. The first plantings will be in the spring, typically mid-April until the end of May. The other planting period occurs in the fall, approximately from Mid-October to early November.
2. Some tree species can only be transplanted in the spring for optimal establishment so these species will only be available once per year.
3. Evergreen trees (not an approved street tree but may be planted in parks) should only be planted in the spring or summer to ensure establishment prior to freezing weather in the fall. Evergreens continue to transpire throughout winter so they should not be planted after October 1st since optimal establishment would not take place.

The City has utilized grant funds to assist homeowners in a cost share program to replace ash lost to Emerald Ash Borer. This program has allowed the City to replace a limited amount of dead trees with new, no cost trees in the terrace.

The City Public Works Department does pay for new trees when an existing tree is removed in construction projects, as long as the city's standards and specifications are met and space is available.

The City of De Pere does not have any requirements for new developments for the planting of trees and does not unilaterally plant trees in terraces by new homes or businesses in open planting spaces.

I have also surveyed several surrounding communities and their responses are:

Ashwaubenon

- New subdivisions – linear price per foot for tree planting. We charge \$5.50/lineal foot which provides approximately \$275/tree planted... this covers both labor and plant material.
- Neighborhood Street Tree Planting Program – Residents can purchase trees for established neighborhoods if they currently don't have any. We charge \$100 per tree and provide a 5-year warranty. This is a cost sharing partnership between residents and the Village to get trees planted in established neighborhoods.
- Budgeted – we also have a separate line item in the budget for tree planting. This is used for arterial/collector streets, park plantings, warranty replacements and resolving issues such as vandalism and car accidents.

Allouez

- Neighborhood Tree Planting program – resident pays the cost for the tree, which is whatever we get charged from the nursery.
- Street/Park Tree planting (replacements) – line item in our Forestry Budget; 2024 is \$10,000.
- Street Reconstruction projects – I try to get replacements paid for out of that project. We haven't done any new plantings from this so far though.

Green Bay

- We have a line item in our budget for trees.
- Any new developments are charged a fee of \$2.00 per lineal foot of roadway in the development. We figure 1 tree per 50' so basically 1 tree per lot at 100.00 per tree.

Ledgeview

- Resident Street Tree Planting program – resident purchases a tree at \$200-\$250/tree and the town will plant it, maintain it, and replace it if it dies.
- New subdivisions tree planting - The Town shall require street trees for all new subdivisions in the Town. The cost of planting street trees will be at the expense of the developer.
- Planting of trees when streets are urbanized or reconstructed - When streets are fully reconstructed, new street trees shall be planted if, in the opinion of the Town Forester or designee, there is adequate land in the terrace or boulevard to reasonably support tree growth. The cost of planting street trees will be included and considered part of the street urbanization or reconstruction cost.

As with De Pere, all surveyed communities also utilize grants to help offset losses and assist in building their urban forests in parks and ROWs.

Thank you for your consideration in this matter. If you have any questions, concerns, or comments, please do not hesitate to contact me.

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Board of Public Works Members
From: Scott J. Thoresen, Director of Public Works
Date: January 3, 2025
RE: Consider and Possible Action on WPS Contract for Replacing Decorative Street Lighting in the Downtown Areas*

The adopted 2025 budget included \$30,000 for WPS to replace the existing decorative streetlights owned by WPS in the downtown areas. WPS will replace the existing fixtures with a LED Paragon fixture the BOPW and Council approved going with in January of 2024. In order for WPS to replace these fixtures, the City must enter into the attached street lighting contracts with WPS. The total costs for both contracts as seen in the attached contracts are \$14,066.95. The breakdown is as follows:

- East side lighting = \$1,191.79
- West side lighting = \$12,875.16

The east side lighting is significantly less because WPS inadvertently billed the City in 2024 for \$12,426.17 (See attached bill). This bill was paid from the 2024 streetlight operating budget because the monthly bill was coded for streetlights. WPS does not know why this occurred but is looking into this. This will result in the City bonding less monies for the decorative light replacements.

Staff recommend approving the contracts with WPS for replacement of the decorative street lighting in the downtown areas.

Bill Date	Account Number	Next Meter Read Date	Amount Due	Payment Due Date
12/19/2024	0401270505-00205		\$1,191.79	01/10/2025

Customer Name CITY OF DE PERE
Service Address STREET LIGHTING
DE PERE WI 54115

Activity Since Last Bill	
01/15/2024	Previous Balance \$12,426.17
02/01/2024	Payment -\$12,426.17
	Balance \$0.00
	Total Current Charges \$1,191.79
	Total Current Balance \$1,191.79

Other Charges/Credits	
Elec Const Chrg Non-Refundable	
WR 3389035	
Install Underground Sys	\$770.00
Subtotal:	\$770.00
Elec Const Chrg Non-Refundable	
WR 3389035	
Install Ornamental Ltg	\$421.79
Subtotal:	\$421.79
Other Charges/Credits Total:	\$1,191.79

Messages
View your bill online anytime in My Account. Visit our website to sign up.
Thank you! We appreciate your prompt payments during the year.

ACCOUNT NUMBER: 0401270505-00205 INVOICE: 5296309042 Page 1 of 1 WEC_PDF_Out_Archive 21141 {1}

Please return this stub with your payment.



ACCOUNT NUMBER: 0401270505-00205

CITY OF DE PERE
335 S BROADWAY
DE PERE WI 54115-2526

Wisconsin Public Service
PO Box 1109
Glenview IL 60025-8109

Amount Due By	01/10/2025	\$1,191.79
<i>Please write your account number on your check</i>		
Amount Enclosed		

0110401270505002056 0000119179

WISCONSIN PUBLIC SERVICE CORPORATION-WI
CONTRACT FOR OUTDOOR LIGHTING SERVICE

This contract is for the installation of Outdoor Lighting entered into on 12/18/2024 (Contract Date) between
CITY OF DE PERE (Customer) and Wisconsin Public Service Corporation (WPSC).

The Customer desires WPSC to own, install and maintain the outdoor lighting system.
Site Address/Description/Location: STREET LIGHTING EAST in the
CITY of DE PERE, County of BROWN, State of WI.

This lighting system is comprised of 55 LED Lamps under a LS-1 rate schedule on
pole number(s) See attached pole number sheet.

Now in consideration of the mutual promises herein contained, the parties hereto agree as follows: The customer
agrees to comply with all terms and conditions as stated on page 2 of this contract, including the commencement
date of Minimum Charges and all appropriate WPSC tariffs on file with the PSCW.

The Customer will pay WPSC on a monthly basis for the outdoor lighting service according to the following:

1. Monthly Fixture Charges	Quantity	Monthly Rate	Monthly Billing
Class M - LED Med Output Post Top, Paragon	55	\$ 31.46	\$ 1,730.30
Sub-Total Monthly Bill			\$ 1,730.30
2. Monthly Non-Standard Charges	Quantity	Monthly Rate	Monthly Billing
Span			
Wood Pole			
Mast Arm > 6'			
Sub-Total Monthly Non-Standard Charges			\$ -
Total Monthly Bill			\$ 1,730.30

3. Advance Payment - Special Facilities, Non-Refundable	Advance Payment
Total Advance Payment	\$1,191.79

WPSC Signature	Property Owner / Authorized Representative Signature
WR/Revisions: 3389035-1	Property Owner / Authorized Representative Mailing Address
IFRIS Project: 21800071EC, 21800071ER	CITY OF DE PERE
Database:	335 S BROADWAY
	DE PERE, WI 54115-2526

ADDITIONAL TERMS AND CONDITIONS

1. This Contract is not effective until signed by both WPSC and the Customer. If the Customer fails to return the Contract to WPSC within sixty days of the WPSC signature date or contract date, the Contract is null and void.
2. The minimum term of this contract is 3 years beginning with the first billing. It may be terminated by either party at the expiration date and at any time thereafter by giving ninety days written notice. Termination or change requests after installation and prior to conclusion of the lighting agreement term will result in customer charges.
3. All the terms and conditions of the Contract shall extend to and be binding upon the heirs, executors, administrators, successors, and assigns of the parties hereto. If the Customer leases, sells, or otherwise disposes of the property herein described, he shall complete the payments according to this Contract unless he shall have secured an assumption of his remaining obligations under this Contract, satisfactory to and approved by WPSC.
4. In the event that WPSC decides to use any of the poles and spans for some purpose other than outdoor lighting service, the monthly charges for those poles and spans shall cease during the period that they are used for other purposes.
5. The Customer agrees, when possible, to report promptly to WPSC the failure of any lamp to burn or any dangerous equipment, and the location thereof, to the end that such lamp and/or equipment may be inspected and the trouble therewith remedied. No credit will be allowed for outages.
6. The payment calculation of this Contract is subject to change if the Customer causes a construction delay, there is a change in scope, or actions by governmental authorities cause a calculation change. Any change shall be reviewed with the Customer prior to construction and a new Contract shall be executed. Adjustment of customer requirements (refunds or additional payment) to reflect actual investment for changes in the size or number of units installed, major rock, or frost removal, and similar items affecting the scope of the project, shall be made if the adjustment is greater than \$20. This adjustment, if applicable, will normally occur within six months of completion of construction. Any changes shall be reviewed with the Customer.
7. As a condition of receiving service, the Customer agrees to grant WPSC, at no cost, an easement for the necessary construction, operation, and maintenance of any portion of the extension necessary to serve the Customer.
8. Whether stated or not, a special facilities charge will be applied during Winter Construction period, as stated in WPSC's approved tariffs.
9. **Any lawn restoration or surface repair on private property, as a result of this installation, shall be the Customer's responsibility.**
10. The Customer, irrespective of subsequent change of ownership, shall provide at no expense to WPSC, soil graded within six inches of the finished grade prior to installation of facilities. Survey stakes indicating property lines shall be installed by the Customer at no expense to WPSC prior to installation of facilities. WPSC shall be notified in advance of any change in grade levels. Any and all costs incurred as a result of such grade changes shall be at the expense of the Customer.
11. **In no event shall the Customer place any decorative element on the pole without the prior written approval of WPSC. Such approval will be under the terms of the Pole Attachment Policy and Procedure in effect at the time of such request. A copy of the Pole Attachment Policy will be furnished by WPSC to the Customer upon request.**
12. **The Customer agrees to provide WPSC, or its authorized contractor, the location within 18", of all underground facilities such as those for the transmission of electricity, water, cable TV, sewer, telephone, gas or fuel which are owned by the Customer on the premises, and which may be encountered by WPSC or its authorized contractor during the proposed installation of the facilities. If the Customer is unable to locate any underground facility, or fails to provide the location of any underground facility, or if the underground facility in question is encountered more than 18" from the location identified by the Customer, the Customer shall defend, indemnify, and hold WPSC harmless, as well as its agents, employees, assigns, affiliates, officers, administrators, predecessors, successors, subsidiaries, members and managers from and against any claim, action, proceeding, liability, loss, damage, cost or expense including, without limitations, attorneys' fees, arising out of or in connection with the Customer's use of services.**
13. Upon written request and at the expense of the Customer, WPSC will relocate any pole and/or change the position of any lamp.
14. **In no event, except for a breach by the Customer of section 11 above, shall either party be responsible to the other for any consequential, incidental, special or punitive damages whatsoever, whether arising from breach of warranty or other breach of contract, negligence or other tort, or any other theory of law. In a case of a breach by the Customer of section 11 above, the Customer shall be liable for consequential, incidental, special and punitive damages.**
15. If any provision of this Contract is found to be invalid or unenforceable by any court, such provision shall be ineffective only to the extent that it is in contravention of applicable laws without invalidating the remaining provision of the Contract.
16. WPSC does not guarantee this installation meets AASHTO or the Illuminating Engineering Society's minimum recommended standards for lighting.
17. This contract shall be governed by and construed in accordance with the internal laws of the State of Wisconsin and/or Michigan.
18. The Customer and WPSC hereby agree to abide by and be subject to the rules, regulations, and schedules of WPSC as filed with and approved by the Wisconsin Public Service Commission from time to time, as well as the rules and regulations of the Wisconsin Administrative Code.
19. In the event of a conflict between this Contract and WPSC's approved tariffs, the tariffs shall prevail.

WISCONSIN PUBLIC SERVICE CORPORATION-WI
CONTRACT FOR OUTDOOR LIGHTING SERVICE

This contract is for the installation of Outdoor Lighting entered into on 12/18/2024 (Contract Date) between
CITY OF DE PERE (Customer) and Wisconsin Public Service Corporation (WPSC).

The Customer desires WPSC to own, install and maintain the outdoor lighting system.
Site Address/Description/Location: STREET LIGHTING WEST in the
CITY of DE PERE, County of BROWN, State of WI.

This lighting system is comprised of 52 LED Lamps under a LS-1 rate schedule on
pole number(s) See attached pole number sheet.

Now in consideration of the mutual promises herein contained, the parties hereto agree as follows: The customer
agrees to comply with all terms and conditions as stated on page 2 of this contract, including the commencement
date of Minimum Charges and all appropriate WPSC tariffs on file with the PSCW.

The Customer will pay WPSC on a monthly basis for the outdoor lighting service according to the following:

1. Monthly Fixture Charges	Quantity	Monthly Rate	Monthly Billing
Class M - LED Med Output Post Top, Paragon	52	\$ 31.46	\$ 1,635.92
Sub-Total Monthly Bill			\$ 1,635.92
2. Monthly Non-Standard Charges	Quantity	Monthly Rate	Monthly Billing
Span			
Wood Pole			
Mast Arm > 6'			
Sub-Total Monthly Non-Standard Charges			\$ -
Total Monthly Bill			\$ 1,635.92

3. Advance Payment - Special Facilities, Non-Refundable	Advance Payment
Total Advance Payment	\$ 12,875.16

WPSC Signature	Property Owner / Authorized Representative Signature
WR/Revisions: 3389034-1	Property Owner / Authorized Representative Mailing Address
IFRIS Project: 21800071EC, 21800071ER	CITY OF DE PERE
Database:	335 S BROADWAY
	DE PERE, WI 54115-2526

ADDITIONAL TERMS AND CONDITIONS

1. This Contract is not effective until signed by both WPSC and the Customer. If the Customer fails to return the Contract to WPSC within sixty days of the WPSC signature date or contract date, the Contract is null and void.
2. The minimum term of this contract is 3 years beginning with the first billing. It may be terminated by either party at the expiration date and at any time thereafter by giving ninety days written notice. Termination or change requests after installation and prior to conclusion of the lighting agreement term will result in customer charges.
3. All the terms and conditions of the Contract shall extend to and be binding upon the heirs, executors, administrators, successors, and assigns of the parties hereto. If the Customer leases, sells, or otherwise disposes of the property herein described, he shall complete the payments according to this Contract unless he shall have secured an assumption of his remaining obligations under this Contract, satisfactory to and approved by WPSC.
4. In the event that WPSC decides to use any of the poles and spans for some purpose other than outdoor lighting service, the monthly charges for those poles and spans shall cease during the period that they are used for other purposes.
5. The Customer agrees, when possible, to report promptly to WPSC the failure of any lamp to burn or any dangerous equipment, and the location thereof, to the end that such lamp and/or equipment may be inspected and the trouble therewith remedied. No credit will be allowed for outages.
6. The payment calculation of this Contract is subject to change if the Customer causes a construction delay, there is a change in scope, or actions by governmental authorities cause a calculation change. Any change shall be reviewed with the Customer prior to construction and a new Contract shall be executed. Adjustment of customer requirements (refunds or additional payment) to reflect actual investment for changes in the size or number of units installed, major rock, or frost removal, and similar items affecting the scope of the project, shall be made if the adjustment is greater than \$20. This adjustment, if applicable, will normally occur within six months of completion of construction. Any changes shall be reviewed with the Customer.
7. As a condition of receiving service, the Customer agrees to grant WPSC, at no cost, an easement for the necessary construction, operation, and maintenance of any portion of the extension necessary to serve the Customer.
8. Whether stated or not, a special facilities charge will be applied during Winter Construction period, as stated in WPSC's approved tariffs.
9. **Any lawn restoration or surface repair on private property, as a result of this installation, shall be the Customer's responsibility.**
10. The Customer, irrespective of subsequent change of ownership, shall provide at no expense to WPSC, soil graded within six inches of the finished grade prior to installation of facilities. Survey stakes indicating property lines shall be installed by the Customer at no expense to WPSC prior to installation of facilities. WPSC shall be notified in advance of any change in grade levels. Any and all costs incurred as a result of such grade changes shall be at the expense of the Customer.
11. **In no event shall the Customer place any decorative element on the pole without the prior written approval of WPSC. Such approval will be under the terms of the Pole Attachment Policy and Procedure in effect at the time of such request. A copy of the Pole Attachment Policy will be furnished by WPSC to the Customer upon request.**
12. **The Customer agrees to provide WPSC, or its authorized contractor, the location within 18", of all underground facilities such as those for the transmission of electricity, water, cable TV, sewer, telephone, gas or fuel which are owned by the Customer on the premises, and which may be encountered by WPSC or its authorized contractor during the proposed installation of the facilities. If the Customer is unable to locate any underground facility, or fails to provide the location of any underground facility, or if the underground facility in question is encountered more than 18" from the location identified by the Customer, the Customer shall defend, indemnify, and hold WPSC harmless, as well as its agents, employees, assigns, affiliates, officers, administrators, predecessors, successors, subsidiaries, members and managers from and against any claim, action, proceeding, liability, loss, damage, cost or expense including, without limitations, attorneys' fees, arising out of or in connection with the Customer's use of services.**
13. Upon written request and at the expense of the Customer, WPSC will relocate any pole and/or change the position of any lamp.
14. **In no event, except for a breach by the Customer of section 11 above, shall either party be responsible to the other for any consequential, incidental, special or punitive damages whatsoever, whether arising from breach of warranty or other breach of contract, negligence or other tort, or any other theory of law. In a case of a breach by the Customer of section 11 above, the Customer shall be liable for consequential, incidental, special and punitive damages.**
15. If any provision of this Contract is found to be invalid or unenforceable by any court, such provision shall be ineffective only to the extent that it is in contravention of applicable laws without invalidating the remaining provision of the Contract.
16. WPSC does not guarantee this installation meets AASHTO or the Illuminating Engineering Society's minimum recommended standards for lighting.
17. This contract shall be governed by and construed in accordance with the internal laws of the State of Wisconsin and/or Michigan.
18. The Customer and WPSC hereby agree to abide by and be subject to the rules, regulations, and schedules of WPSC as filed with and approved by the Wisconsin Public Service Commission from time to time, as well as the rules and regulations of the Wisconsin Administrative Code.
19. In the event of a conflict between this Contract and WPSC's approved tariffs, the tariffs shall prevail.

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric P. Rakers, P.E., City Engineer
Date: January 13, 2025

RE: **Consideration and Possible Action on the 2025 Storm Lateral Assessment Charge for Existing Residential Properties**

The purpose for this item is to establish the special assessment cost for storm main and laterals installed in 2025 to residential lots in developed areas.

Background

In 2016, Section 13-8 (f) of the Municipal Code was updated for the assessment of new storm sewer and storm lateral provided to residential properties in developed areas.

Based on the Municipal Code, the assessment will be presented to the Board of Public Works each year. The cost for the storm assessment will be based on the previous three year's construction cost for storm sewer and appurtenances on a weighted average for the cost and amount installed on applicable projects. The assessment will be based on the following charges:

- a. 100% of the storm lateral cost will be included in the assessment. This includes the lateral piping and connection to the storm sewer main. The lateral piping cost will be based on an average 30 foot long storm sewer lateral length.
- b. 20% of the storm sewer main will be included in the assessment. The remaining 80% of the storm sewer main will be charged to the storm water utility. Storm sewer main cost will be based on the following:
 - i. 12 inch diameter storm sewer main.
 - ii. Four foot diameter manholes with an average depth of five feet and a spacing of 300 feet.
 - iii. Average lot width of 60 feet.

Staff has reviewed the cost of storm sewer main and laterals for projects in existing developed areas over the last three years. The calculations have been attached. Based on the calculations the special assessment rate for 2025 in existing residential areas is as follows:

- Storm Lateral Assessment - \$2,100.80 per each lateral.
- Storm Main Assessment - \$604.80 per parcel
- Total for a Lateral and the Main Assessment - \$2,705.60

Recommendation

Staff recommends approval of the 2025 storm assessments for residential lots in developed areas as follows:

- Storm Lateral Assessment - \$2,100.80 per each lateral
- Storm Main Assessment - \$604.80 per parcel

Attachments

Schedule_B&C-2025_Residential_Storm_Assessments

Schedule B
2025 Storm Sewer Cost Evaluation - Residential
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects
City of De Pere
Date: January 7, 2025

Mainline Cost

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-04	Remove and Relay 12" PVC or RCP Class III Storm Sewer	LF	298.00	\$67.00	\$19,966.00	
22-01	ST-05	Provide 12" PVC, RCP Class III, or PP Storm Sewer	LF	1,683.00	\$67.00	\$112,761.00	
22-02	ST-05	Provide 12" PVC or RCP (Class III) Storm Sewer	LF	961.78	\$90.00	\$86,560.20	
22-04	ST-01	Remove and Relay 12" RCP Class V Storm Sewer	LF	10.00	\$134.00	\$1,340.00	
22-04	ST-02	Provide 12" Class V Storm Sewer	LF	248.00	\$64.65	\$16,033.20	
22-07	ST-08	Remove and Relay 12" PVC or RCP (Class III) Storm Sewer	LF	187.30	\$92.44	\$17,314.01	
23-01	ST-03	Remove and Replace 12" PVC, RCP Class III, or PP Storm Sewer	LF	89.00	\$115.00	\$10,235.00	
23-01	ST-04	Provide 12" PVC, RCP Class III, or PP Storm Sewer (Granular Backfill)	LF	2,616.00	\$71.00	\$185,736.00	
23-01	ST-05	Provide 12" PVC, RCP Class III, or PP Storm Sewer (Natural Backfill)	LF	149.00	\$62.00	\$9,238.00	
23-02	ST-01	Provide 12" PVC, Class IV, or PP Storm Sewer	LF	68.00	\$89.00	\$6,052.00	
24-01	ST-05	Provide 12" PVC, RCP Class III, or PP Storm Sewer (Granular Backfill)	LF	314.20	\$62.50	\$19,637.50	
24-01	ST-06	Remove and Relay 12" PVC, RCP Class III, or PP Storm Sewer (Gran. Backfill)	LF	303.70	\$62.50	\$18,981.25	
24-01	ST-07	Remove and Relay 12" PVC, RCP Class III, or PP Storm Sewer (Nat. Backfill)	LF	13.10	\$98.00	\$1,283.80	
24-02	ST-02	Remove and Relay 12" PVC, RCP Class III, or PP Storm Sewer	LF	6.00	\$105.00	\$630.00	
24-02	ST-04	Provide 12" PVC or RCP Class II, or PP Storm Sewer	LF	455.00	\$56.00	\$25,480.00	
Total				7,402.08		\$531,247.96	
Average Cost Per Foot						\$71.77	

Schedule B
2025 Storm Sewer Cost Evaluation - Residential
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects
City of De Pere
Date: January 7, 2025

Lateral Cost

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-08	Provide 6" PVC Storm Sewer Lateral	LF	2,126.0	\$62.00	\$131,812.00	
22-02	ST-07	Provide 6" PVC Storm Sewer Lateral	LF	537.0	\$57.00	\$30,609.00	
23-01	ST-08	Provide 6" PVC Storm Lateral	LF	1,896.0	\$53.00	\$100,488.00	
24-01	ST-11	Provide 6" PVC Storm Sewer Lateral	LF	2,160.8	\$43.50	\$93,994.80	
24-02	ST-06	Provide 6" PVC Storm Sewer Lateral	LF	973.5	\$46.00	\$44,781.00	
Total				7,693.30		\$401,684.80	Average length of lateral is based on a 60 foot right of way and several laterals being connected to inlets.
Average Cost Per Foot						\$52.21	
Average Cost per Lot at 30 Feet of Lateral (100% to Resident)						\$1,566.30	

Storm Wye Cost

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-09	Provide 18" x 6" Storm Branch or Inserta Tee	EA	8	\$250.00	\$2,000.00	
22-01	ST-10	Provide 15" x 6" Storm Branch or Inserta Tee	EA	14	\$250.00	\$3,500.00	
22-01	ST-11	Provide 12" x 6" Storm Branch or Inserta Tee	EA	20	\$250.00	\$5,000.00	
22-01	ST-12	Provide 8" x 6" Storm Branch or Inserta Tee	EA	24	\$200.00	\$4,800.00	
22-01	ST-13	Provide Lateral Connection to Existing Storm Sewer	EA	16	\$200.00	\$3,200.00	
22-02	ST-08	Provide 24" x 6" Storm Branch or Inserta Tee	EA	1	\$200.00	\$200.00	
22-02	ST-09	Provide 21" x 6" Storm Branch or Inserta Tee	EA	3	\$200.00	\$600.00	
22-02	ST-10	Provide 18" x 6" Storm Branch or Inserta Tee	EA	2	\$200.00	\$400.00	
22-02	ST-11	Provide 12" x 6" Storm Branch or Inserta Tee	EA	2	\$200.00	\$400.00	
22-02	ST-12	Provide 8" x 6" Storm Branch or Inserta Tee	EA	4	\$120.00	\$480.00	
23-01	ST-09	Provide 12" x 6" Storm Branch or Inserta Tee	EA	23	\$225.00	\$5,175.00	
23-01	ST-10	Provide 8" x 6" Storm Branch	EA	23	\$150.00	\$3,450.00	
24-01	ST-13	Provide 24"x6" Storm Branch or Inserta Tee	EA	2	\$257.00	\$514.00	
24-01	ST-14	Provide 21"x6" Storm Branch or Inserta Tee	EA	4	\$257.00	\$1,028.00	
24-01	ST-15	Provide 12"x6" Storm Branch or Inserta Tee	EA	20	\$70.00	\$1,400.00	
24-01	ST-16	Provide 8"x6" Storm Branch	EA	30	\$147.00	\$4,410.00	
24-02	ST-07	Provide 18"x6" Storm Branch or Inserta Tee	EA	4	\$286.00	\$1,144.00	
24-02	ST-09	Provide 8"x6" Storm Branch or Inserta Tee	EA	21	\$145.00	\$3,045.00	
Total				221		\$40,746.00	
Average Cost Per Wye						\$184.37	

Schedule B
2025 Storm Sewer Cost Evaluation - Residential
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects
City of De Pere
Date: January 7, 2025

Storm Sewer Manhole

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-15	Remove and Replace 4' Diameter Storm Manhole	VF	16.16	\$600.00	\$9,696.00	
22-01	ST-17	Provide 4' Diameter Storm Manhole	VF	89.09	\$600.00	\$53,454.00	
22-02	ST-13	Remove and Replace 4' Diameter Storm Manhole	VF	5.64	\$775.00	\$4,371.00	
22-02	ST-15	Provide 4' Diameter Storm Manhole	VF	56.97	\$845.00	\$48,139.65	
22-04	ST-07	Provide 4' Diameter Storm Manhole	VF	5.69	\$912.00	\$5,189.28	
22-07	ST-04	Provide 4' Diameter Storm Sewer Manhole	VF	4.66	\$803.83	\$3,745.85	
22-07	ST-05	Remove and Replace 4' Diameter Storm Sewer Manhole	VF	58.39	\$703.36	\$41,069.19	
23-01	ST-11	Remove and Replace 4' Diameter Storm Manhole	VF	10.00	\$676.00	\$6,760.00	
23-01	ST-12	Provide 4' Diameter Storm Manhole	VF	96.00	\$867.00	\$83,232.00	
23-02	ST-02	Remove and Replace 4' Diameter Storm Manhole	VF	14.00	\$733.00	\$10,262.00	
24-01	ST-21	Provide 4' Diameter Storm Manhole	VF	51.21	\$731.00	\$37,434.51	
24-01	ST-22	Remove and Replace 4' Diameter Storm Manhole	VF	33.39	\$864.00	\$28,848.96	
24-02	ST-10	Remove and Replace 4' Diameter Storm Manhole	VF	12.40	\$700.00	\$8,680.00	
24-02	ST-11	Provide 4' Diameter Storm Manhole	VF	59.20	\$600.00	\$35,520.00	
Total				512.80		\$376,402.44	
Cost Per Foot						\$734.01	
Cost for a 5 foot Deep Manhole						\$3,670.05	
Average Per Foot Cost with a 300 Foot Spacing						\$12.23	

Schedule C
2025 Storm Sewer Cost Evaluation - Residential
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects.
City of De Pere
Date: January 7, 2025

Storm Mainline Cost

Item Description	Cost Per LF	Comment
12" Storm Sewer Main	\$71.77	
4' Diameter Storm Manhole	\$12.23	300 foot spacing with a 5' depth
Mainline Cost Per Street Foot	\$84.00	
Cost Per Side of Street	\$42.00	
Cost Per Lot	\$2,520.00	60 foot wide lot
Assessable Amount (20%)	\$504.00	Remaining 80% funded by Storm Water Utility
Engineering and Administration (20%)	\$100.80	
Total Mainline Costs	\$604.80	

Storm Lateral Cost

Item Description	Cost Per EA	Comment
6" Storm Lateral	\$1,566.30	30 foot average length. Some laterals will be connected to inlets.
Storm Wye Cost	\$184.37	
Assessable Amount (100%)	\$1,750.67	
Engineering and Administration (20%)	\$350.13	
Total Lateral Costs	\$2,100.80	

Total Cost

Mainline	\$604.80
Storm Lateral	\$2,100.80
Total Cost	\$2,705.60

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric P. Rakers, P.E., City Engineer
Date: January 13, 2025

RE: **Consideration and Possible Action on the 2025 Storm Lateral Assessment Charge for Existing Non-Residential Properties**

The purpose for this item is to establish the special assessment cost for storm main and laterals installed in 2025 to non-residential parcels in developed areas.

Background

In 2014, Section 13-8 (f) of the Municipal Code was updated for the assessment of new storm sewer and storm lateral provided to non-residential parcels in developed areas.

Based on the Municipal Code, the assessment will be presented to the Board of Public Works each year. The cost for the storm assessment will be based on the previous three year's construction cost for storm sewer and appurtenances on a weighted average for the cost and amount installed on applicable projects. The assessment will be based on the following charges:

- a. 100% of the storm lateral cost will be included in the assessment. This includes the lateral piping and connection to the storm sewer main. The lateral piping cost will be based on an average 35 foot long storm sewer lateral length.
- b. 20% of the storm sewer main will be included in the assessment. The remaining 80% of the storm sewer main will be charged to the storm water utility. Storm sewer main cost will be based on the following:
 - i. 18 inch diameter storm sewer main.
 - ii. Four foot diameter manholes with an average depth of five feet and a spacing of 300 feet.

Staff has reviewed the cost of storm sewer main and laterals for projects over the last three years. The calculations have been attached. Based on the calculations the special assessment rate for 2025 in existing non-residential areas is as follows:

- Storm Main Assessment - \$11.64 per foot of parcel frontage
- 6-Inch Storm Lateral Assessment - \$2,414.06 per each
- 8-Inch Storm Lateral Assessment - \$3,089.92 per each
- 12-Inch Storm Lateral Assessment - \$3,640.54 per each

Each individual parcel will have the appropriate lateral sized to accommodate projected runoff needs.

Recommendation

Staff recommends approval of the 2025 storm assessments for non-residential lots in developed areas as follows:

- Storm Main Assessment - \$11.64 per foot of parcel frontage
- 6-Inch Storm Lateral Assessment - \$2,414.06 per each
- 8-Inch Storm Lateral Assessment - \$3,089.92 per each
- 12-Inch Storm Lateral Assessment - \$3,640.54 per each

Attachments

Schedule_B&C_Non-Residential_Storm_Assessments

Schedule B

2025 Storm Sewer Cost Evaluation - Existing Development Other Than Residential up to Two Units per Building Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects.

City of De Pere

Date: January 7, 2025

Mainline Cost

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-01	Remove and Relay 18" PVC, RCP Class III, or PP Storm Sewer	LF	154.00	\$81.00	\$12,474.00	
22-01	ST-02	Provide 18" PVC, RCP Class III, or PP Storm Sewer	LF	130.00	\$80.00	\$10,400.00	
22-02	ST-03	Provide 18" RCP (Class III), or PP Storm Sewer	LF	143.19	\$78.00	\$11,168.82	
24-02	ST-01	Remove and Relay 18" RCP Class IV	LF	379.00	\$90.50	\$34,299.50	
Total				806.19		\$68,342.32	
Average Cost Per Foot						\$84.77	

Schedule B
2025 Storm Sewer Cost Evaluation - Existing Development Other Than Residential up to Two Units per Building
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects.

City of De Pere
Date: January 7, 2025

Storm Sewer Manhole

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-15	Remove and Replace 4' Diameter Storm Manhole	VF	16.16	\$600.00	\$9,696.00	
22-01	ST-17	Provide 4' Diameter Storm Manhole	VF	89.09	\$600.00	\$53,454.00	
22-02	ST-13	Remove and Replace 4' Diameter Storm Manhole	VF	5.64	\$775.00	\$4,371.00	
22-02	ST-15	Provide 4' Diameter Storm Manhole	VF	56.97	\$845.00	\$48,139.65	
22-04	ST-07	Provide 4' Diameter Storm Manhole	VF	5.69	\$912.00	\$5,189.28	
22-07	ST-04	Provide 4' Diameter Storm Sewer Manhole	VF	4.66	\$803.83	\$3,745.85	
22-07	ST-05	Remove and Replace 4' Diameter Storm Sewer Manhole	VF	58.39	\$703.36	\$41,069.19	
23-01	ST-11	Remove and Replace 4' Diameter Storm Manhole	VF	10.00	\$676.00	\$6,760.00	
23-01	ST-12	Provide 4' Diameter Storm Manhole	VF	96.00	\$867.00	\$83,232.00	
23-02	ST-02	Remove and Replace 4' Diameter Storm Manhole	VF	14.00	\$733.00	\$10,262.00	
24-01	ST-21	Provide 4' Diameter Storm Manhole	VF	51.21	\$731.00	\$37,434.51	
24-01	ST-22	Remove and Replace 4' Diameter Storm Manhole	VF	33.39	\$864.00	\$28,848.96	
24-02	ST-10	Remove and Replace 4' Diameter Storm Manhole	VF	12.40	\$700.00	\$8,680.00	
24-02	ST-11	Provide 4' Diameter Storm Manhole	VF	59.20	\$600.00	\$35,520.00	
Total				512.80		\$376,402.44	
Cost Per Vertical Foot						\$734.01	
Cost for a 5 foot Deep Manhole						\$3,670.05	
Average Per Foot Cost with a 300 Foot Spacing						\$12.23	

Schedule B
2025 Storm Sewer Cost Evaluation - Existing Development Other Than Residential up to Two Units per Building
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects.
City of De Pere
Date: January 7, 2025

Lateral Cost

Lateral 6"

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-08	Provide 6" PVC Storm Sewer Lateral	LF	2,126.0	\$62.00	\$131,812.00	
22-02	ST-07	Provide 6" PVC Storm Sewer Lateral	LF	537.0	\$57.00	\$30,609.00	
23-01	ST-08	Provide 6" PVC Storm Lateral	LF	1,896.0	\$53.00	\$100,488.00	
24-01	ST-11	Provide 6" PVC Storm Sewer Lateral	LF	2,160.8	\$43.50	\$93,994.80	
24-02	ST-06	Provide 6" PVC Storm Sewer Lateral	LF	973.5	\$46.00	\$44,781.00	
Total				7,693.3		\$401,684.80	
Average Cost Per Foot						\$52.21	Average length of lateral is based on a 70 foot right of way.
Average Cost per Lot at 35 Feet of Lateral (100% to Owner)						\$1,827.35	

Lateral 8"

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-06	Provide 8" PVC Storm Sewer	LF	1,006.00	\$64.00	\$64,384.00	
22-02	ST-06	Provide 8" PVC Storm Sewer	LF	301.26	\$59.00	\$17,774.34	
23-01	ST-06	Provide 8" PVC Storm Sewer	LF	1,116.00	\$66.00	\$73,656.00	
24-01	ST-08	Provide 8" PVC Storm Sewer (Granular Backfill)	LF	1,278.20	\$55.00	\$70,301.00	
24-01	ST-10	Provide 8" PVC Storm Sewer Lateral	LF	37.50	\$78.00	\$2,925.00	
24-02	ST-05	Provide 8" PVC Storm Sewer	LF	1,119.00	\$50.00	\$55,950.00	
Total				4,857.96		\$284,990.34	Average length of lateral is based on a 70 foot right of way.
Average Cost Per Foot						\$58.66	
Average Cost per Lot at 35 Feet of Lateral (100% to Owner)						\$2,053.10	

Schedule B
2025 Storm Sewer Cost Evaluation - Existing Development Other Than Residential up to Two Units per Building
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects.
City of De Pere
Date: January 7, 2025

Lateral Cost

Lateral 12"

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-04	Remove and Relay 12" PVC or RCP Class III Storm Sewer	LF	298.00	\$67.00	\$19,966.00	
22-01	ST-05	Provide 12" PVC, RCP Class III, or PP Storm Sewer	LF	1,683.00	\$67.00	\$112,761.00	
22-02	ST-05	Provide 12" PVC or RCP (Class III) Storm Sewer	LF	961.78	\$90.00	\$86,560.20	
22-04	ST-01	Remove and Relay 12" RCP Class V Storm Sewer	LF	10.00	\$134.00	\$1,340.00	
22-04	ST-02	Provide 12" Class V Storm Sewer	LF	248.00	\$64.65	\$16,033.20	
22-07	ST-08	Remove and Relay 12" PVC or RCP (Class III) Storm Sewer	LF	187.30	\$92.44	\$17,314.01	
23-01	ST-03	Remove and Replace 12" PVC, RCP Class III, or PP Storm Sewer	LF	89.00	\$115.00	\$10,235.00	
23-01	ST-04	Provide 12" PVC, RCP Class III, or PP Storm Sewer (Granular Backfill)	LF	2,616.00	\$71.00	\$185,736.00	
23-01	ST-05	Provide 12" PVC, RCP Class III, or PP Storm Sewer (Natural Backfill)	LF	149.00	\$62.00	\$9,238.00	
23-02	ST-01	Provide 12" PVC, Class IV, or PP Storm Sewer	LF	68.00	\$89.00	\$6,052.00	
24-01	ST-05	Provide 12" PVC, RCP Class III, or PP Storm Sewer (Granular Backfill)	LF	314.20	\$62.50	\$19,637.50	
24-01	ST-06	Remove and Relay 12" PVC, RCP Class III, or PP Storm Sewer (Gran. Backfill)	LF	303.70	\$62.50	\$18,981.25	
24-01	ST-07	Remove and Relay 12" PVC, RCP Class III, or PP Storm Sewer (Nat. Backfill)	LF	13.10	\$98.00	\$1,283.80	
24-02	ST-02	Remove and Relay 12" PVC, RCP Class III, or PP Storm Sewer	LF	6.00	\$105.00	\$630.00	
24-02	ST-04	Provide 12" PVC or RCP Class II, or PP Storm Sewer	LF	455.00	\$56.00	\$25,480.00	
Total				7,402.08		\$531,247.96	
Average Cost Per Foot						\$71.77	
Average Cost per Lot at 35 Feet of Lateral (100% to Owner)						\$2,511.95	
							Average length of lateral is based on a 70 foot right of way.

Schedule B
2025 Storm Sewer Cost Evaluation - Existing Development Other Than Residential up to Two Units per Building
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects.
City of De Pere
Date: January 7, 2025

Connection Cost

Storm Wye Cost (6")

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-01	ST-09	Provide 18" x 6" Storm Branch or Inserta Tee	EA	8	\$250.00	\$2,000.00	
22-01	ST-10	Provide 15" x 6" Storm Branch or Inserta Tee	EA	14	\$250.00	\$3,500.00	
22-01	ST-11	Provide 12" x 6" Storm Branch Inserta Tee	EA	20	\$250.00	\$5,000.00	
22-01	ST-12	Provide 8" x 6" Storm Branch or Inserta Tee	EA	24	\$200.00	\$4,800.00	
22-01	ST-13	Provide Lateral Connection to Existing Storm Sewer	EA	16	\$200.00	\$3,200.00	
22-02	ST-08	Provide 24" x 6" Storm Branch or Inserta Tee	EA	1	\$200.00	\$200.00	
22-02	ST-09	Provide 21" x 6" Storm Branch or Inserta Tee	EA	3	\$200.00	\$600.00	
22-02	ST-10	Provide 18" x 6" Storm Branch or Inserta Tee	EA	2	\$200.00	\$400.00	
22-02	ST-11	Provide 12" x 6" Storm Branch or Inserta Tee	EA	2	\$200.00	\$400.00	
22-02	ST-12	Provide 8" x 6" Storm Branch or Inserta Tee	EA	4	\$120.00	\$480.00	
23-01	ST-09	Provide 12" x 6" Storm Branch or Inserta Tee	EA	23	\$225.00	\$5,175.00	
23-01	ST-10	Provide 8" x 6" Storm Branch	EA	23	\$150.00	\$3,450.00	
24-01	ST-13	Provide 24"x6" Storm Branch or Inserta Tee	EA	2	\$257.00	\$514.00	
24-01	ST-14	Provide 21"x6" Storm Branch or Inserta Tee	EA	4	\$257.00	\$1,028.00	
24-01	ST-15	Provide 12"x6" Storm Branch or Inserta Tee	EA	20	\$70.00	\$1,400.00	
24-01	ST-16	Provide 8"x6" Storm Branch	EA	30	\$147.00	\$4,410.00	
24-02	ST-07	Provide 18"x6" Storm Branch or Inserta Tee	EA	4	\$286.00	\$1,144.00	
24-02	ST-09	Provide 8"x6" Storm Branch or Inserta Tee	EA	21	\$145.00	\$3,045.00	
Total				221		\$40,746.00	
Average Cost Per Wye						\$184.37	

Core Storm Tee Cost (8" & 12")

Project	Bid Item	Bid Item Description	Unit	Quantity	Cost	Total	Comment
22-04	ST-06	Core Drill Storm Sewer and Provide 8" Inserta Tee	EA	5	\$500.00	\$2,500.00	
24-01	ST-12	Provide 24"x12" Storm Branch or Inserta Tee	EA	1	\$631.00	\$631.00	
Total				6		\$3,131.00	
Average Cost Per Connection/Core						\$521.83	

Schedule C
2025 Storm Sewer Cost Evaluation - Existing Development Other Than Residential up to
Two Units per Building
Summary Based on 2022-2024 Asphalt Reconstruction and Resurfacing Projects.
City of De Pere
Date: January 7, 2025

Storm Mainline Cost

Item Description	Cost Per LF	Comment
18" Storm Sewer Main	\$84.77	300 foot spacing with a 5' depth
4' Diameter Storm Manhole	\$12.23	
Mainline Cost Per Street Foot	\$97.00	Remaining 80% funded by Storm Water Utility
Cost Per Side of Street	\$48.50	
Assessable Amount (20%)	\$9.70	
Engineering and Administration (20%)	\$1.94	
Total Mainline Cost Per Front Lot Foot	\$11.64	

Storm Lateral Cost

Item Description	Cost Per EA	Comment
6" Storm Lateral	\$1,827.35	35 foot average length.
Storm Wye Cost	\$184.37	
Assessable Amount (100%)	\$2,011.72	
Engineering and Administration (20%)	\$402.34	
Total Lateral Costs	\$2,414.06	

Storm Lateral Cost

Item Description	Cost Per EA	Comment
8" Storm Lateral	\$2,053.10	35 foot average length.
Storm Wye Cost (Core)	\$521.83	Average of cost to core pipe
Assessable Amount (100%)	\$2,574.93	
Engineering and Administration (20%)	\$514.99	
Total Lateral Costs	\$3,089.92	

Storm Lateral Cost

Item Description	Cost Per EA	Comment
12" Storm Lateral	\$2,511.95	35 foot average length.
Storm Wye Cost (Core)	\$521.83	Average of cost to core pipe
Assessable Amount (100%)	\$3,033.78	
Engineering and Administration (20%)	\$606.76	
Total Lateral Costs	\$3,640.54	

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric Rakers, P.E., City Engineer
Date: January 13, 2025

RE: **Discussion of Charles Street Swale**

The purpose for this memo is to provide an overview of the Charles Street swale due to concerns of the swale being wet most of the time. The Charles Street swale is located south of Charles Street from Jim Martin Park to a storm water pond near the East River. The swale transports storm water from several City storm sewers to the pond for treatment, prior to discharge to the East River.

Background

Swales are constructed for storm water management purposes which include transporting, treating, and storing storm water runoff. The Charles Street swale was constructed in the early 1990's as part of ongoing residential development. The swale was built in its entirety from Jim Martin Park to a storm water management pond near the East River. The Shelley Lane and Brule Road culverts were built with the swale. Through the years, Sullivan Lane, Desplaine Road, and East River Drive were built over the swale with culverts. Based on the construction drawings, the swale was built at very flat slopes varying from 0.10%, to 0.53%. To put that in perspective, 0.1% slope is equivalent to 1.25 inches fall in 100 feet. 4 inch or 6 inch diameter underdrain was installed near the far east end of the swale to minimize ponding water. Early aerial photography shows this swale holding water due to the flat slopes

Not only do the flat slopes impact water in the swale, but most of the swale is located within the 100-year flood zone for the East River. East River water level fluctuations have an impact on the swale and the amount of water in the swale. When the East River is high, water will stand in the swale.

The swale drains approximately 270 acres in the City of De Pere. The De Pere drainage basin is shown in Exhibit A. There are some additional areas from the Town of Ledgeview that drain to the swale near East River Drive which is not shown on the plan. The basin consists primarily of residential development.

Charles Street Swale Review and Discussion

Wet Swale

Periodically, residents have questioned the functionality of the swale due to the swale being wet or flowing over extended periods of time. Based on photos from the 1990's, and from aerials through the years, the swale has been wet. Attached in Exhibit B is a series of aerial photos from 2000 to 2020 showing the swale. The location and width of water in the swale is shown by the dark area in the center of the swale in each aerial. There has been minimal change in the water location in width through the years.

The primary reasons this ditch is wet or flowing is the very flat construction slope and the large drainage basin discharge to the swale. First, as indicated above, this swale is very flat. From a constructability standpoint, it is not feasible to construct a swale at flat slopes without areas holding water. During construction, there was an attempt to mitigate the swale being continuously wet by installing some underdrain on the easterly areas in where the design slope was 0.1%. We do not know if this underdrain is still functioning, but due to the age, the underdrain could be clogged, filled with tree roots, or broken. Additionally, the section of De Pere is clay soil. Clay soil have very low percolation rates, meaning that the water does not easily soak in the ground.

Another contributing factor to the continued flow of water is sump pump discharges. Storm sewer and drainage systems in the city transport not only storm water, but sump pump discharges. For large drainage basins such as this, rain events take an extended periods of time to drain. Sump pumps on the other hand discharge yearly to the storm sewer system. There are sections of De Pere where sump pumps run all summer and in wet periods, several times and hour. This basin at 270 acres, transports storm water from hundreds of homes. Each home is connected to the storm sewer via a storm lateral. Each house in this basin has a sump pump which is connected to the storm lateral. Based on the large number of houses, the sump pump discharges will provide an almost continuous flow of water. Additionally, this section of De Pere is flat with a high-water table, and some sections are in the East River floodplain. This means that sump pumps will run much more than other sections of De Pere.

East River Elevation Impacts

The elevation of the East River impacts the water elevation of the swale. As discussed above, the swale is in the 100-year East River Floodplain. The swale from just east of Sullivan Street to the East River is identified by FEMA as a floodplain. Exhibit C-1 shows the 100-year floodplain. This means that during a 100-year flooding event (1% change of happening in any given year) on the East River, water will back up almost to Sullivan Lane. Not only will water back up into the swale during the 100-year, but smaller events also. Exhibit C-2 and C-3 include maps showing water backup from the East River during the 50-year (2% probability) and 10-year (10%

probability) storm event. Although the water elevation is not as high as the 100-year for each of these events, water will back up to Sullivan Lane for both.

Survey Review

In 2024, City staff completed a field survey of the swale. The purpose of the survey was to evaluate the ditch capacity to transport storm events. The survey was compared to the original design and the existing inverts at the culverts and storm sewer discharges. Based on the survey, and using the storm sewers and culvert elevations, the actual swale slopes vary from 0.69% to 0.14%.

Sediment buildup is occurring in the swale. Depths vary from a few inches between Jim Martin Park and Shelley Lane to 1.4 feet on a small section between Shelley Lane and Brule Road. The average sediment in the swale is 7 inches. There are several possible reasons for the sediment buildup. First, with the flat slopes heavy sediment tends to settle out due to the slow moving water. This material then gets held in place by vegetation. Second, is the amount of vegetation growth in the swale. With the swale being wet, there are challenges in maintaining vegetation. Some sections of the swale are well manicured, while others have tall and thick vegetation. This type of vegetation slows the water which increases the degree of settling.

Design

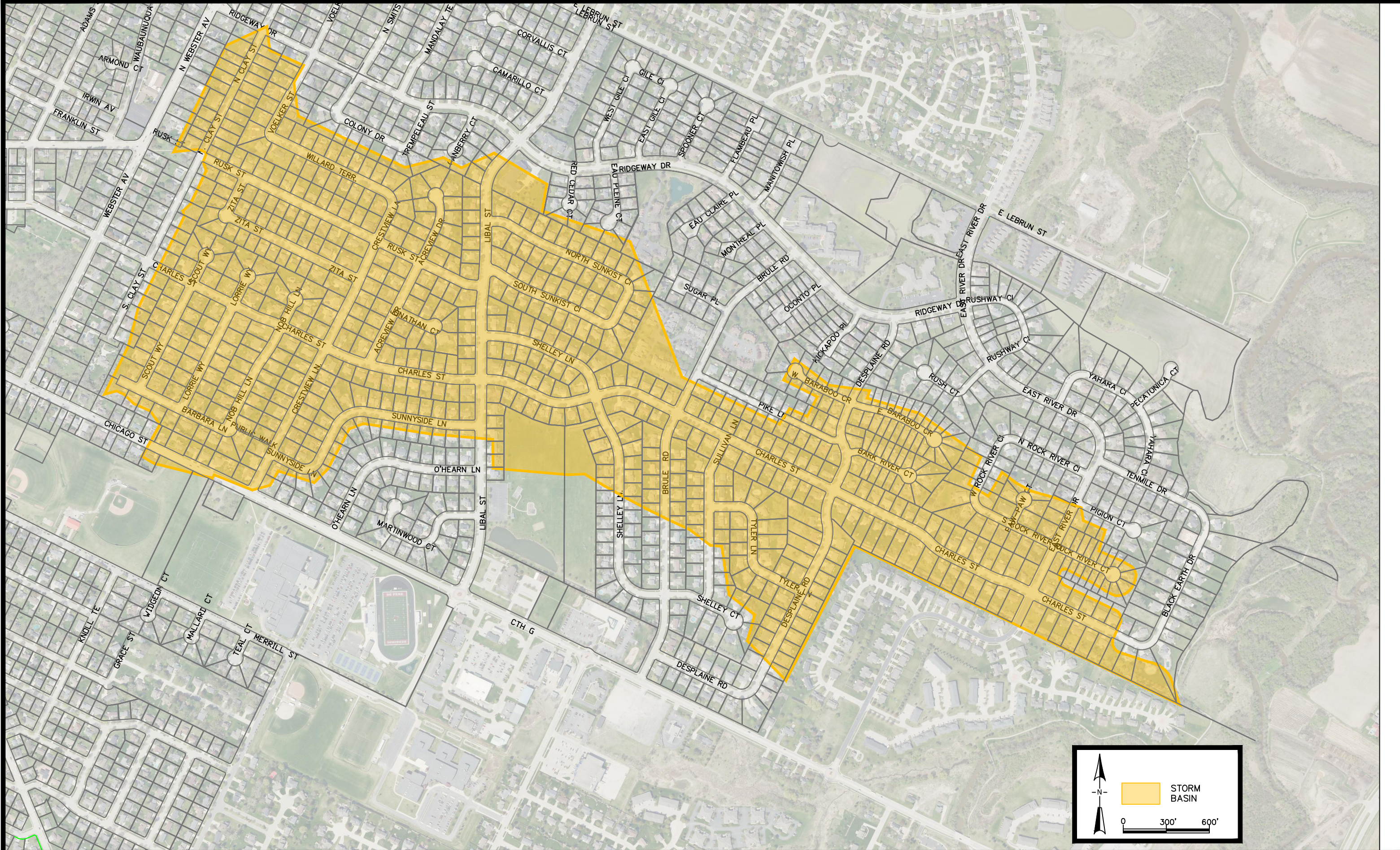
City staff completed a cursory review of the swale based on the results of the survey and the drainage basin and land use. Even though the swale has sediment build-up, it appears to have adequate capacity to transport storm events from the City storm sewer to the East River. The city storm sewers are discharging to the swale are designed for a 5-year storm event. The flow for these events will be within the swale banks in most of the area, excluding a section of low area adjacent to the swale, between Sullivan Lane and Desplaine Road. There are culverts at several street crossings over the Charles Street Swale. The culverts have a lower carrying capacity than the swale and 5-year storm design event that will increase the water elevation in swale upstream.

Besides swale shape, there are several variables that impact the swale. First, when the East River is backed up, the elevation in the swale will also increase to due to water East River backup. Second, the type of vegetation growing in the swale will impact the capacity. Large and thick vegetation decreases the carrying capacity of the swale. There are some areas with very thick vegetation. The city has monitored the swale for trees and woody vegetation and removed periodically through the years. The city has not been involved with general vegetation growth beyond that.

City Actions

City staff inspects the Charles Street swale periodically. When excessive woody vegetation is observed, clearing activities are completed, preferably during winter.

City staff is reviewing overall maintenance activities for all swales in the city that transport City water. Additional maintenance by the City or property owner may be required in the future.



CITY OF DE PERE

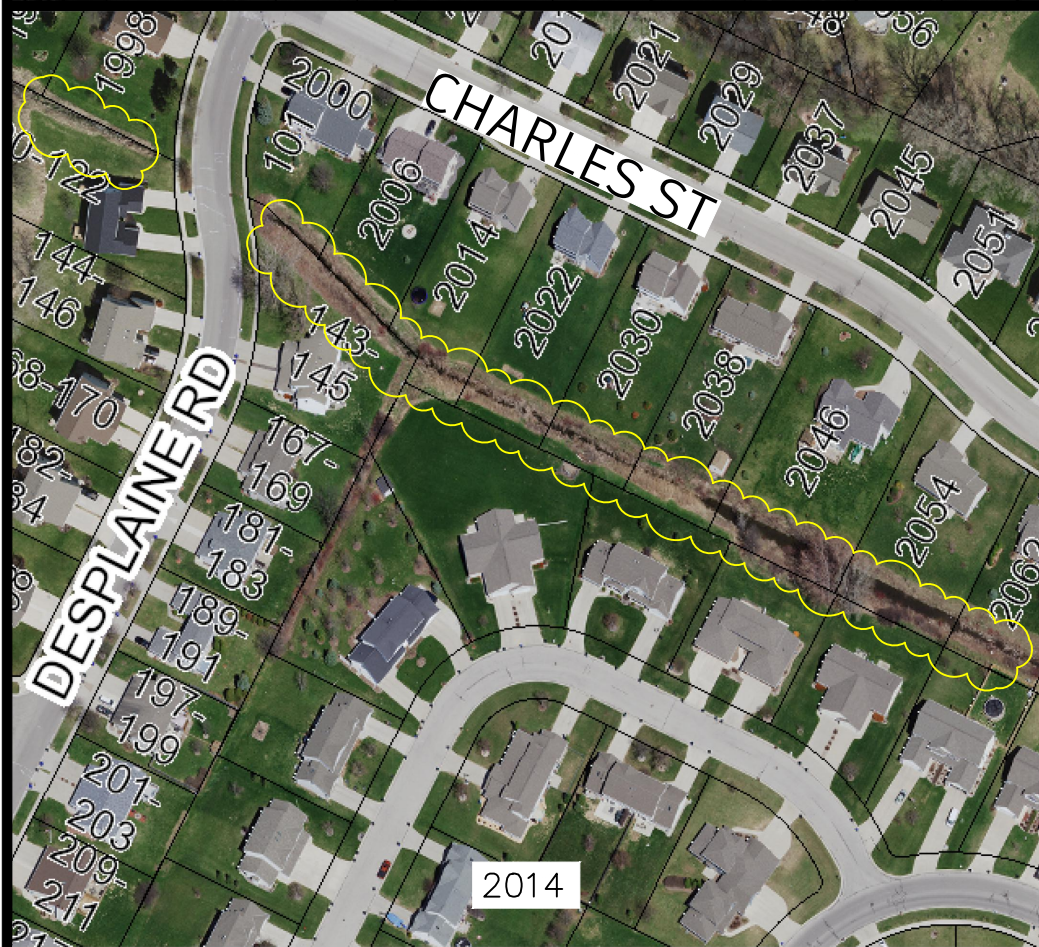
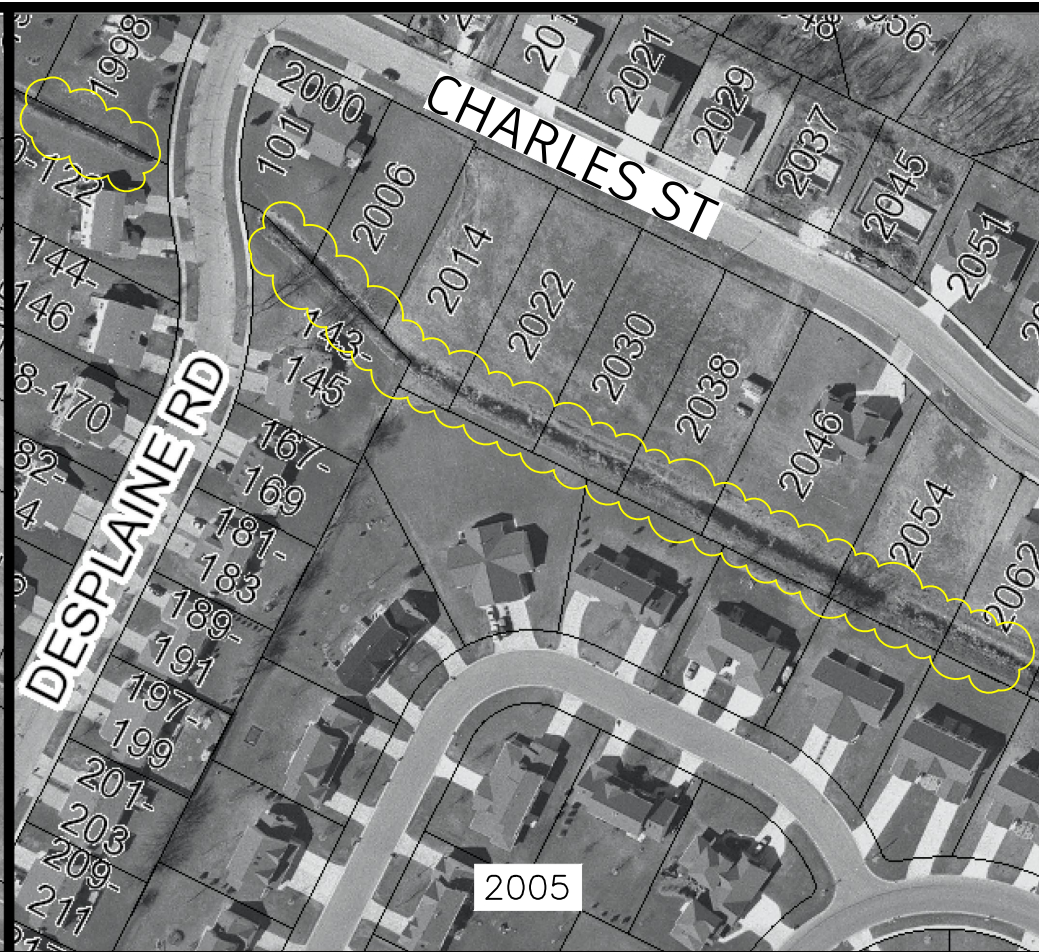
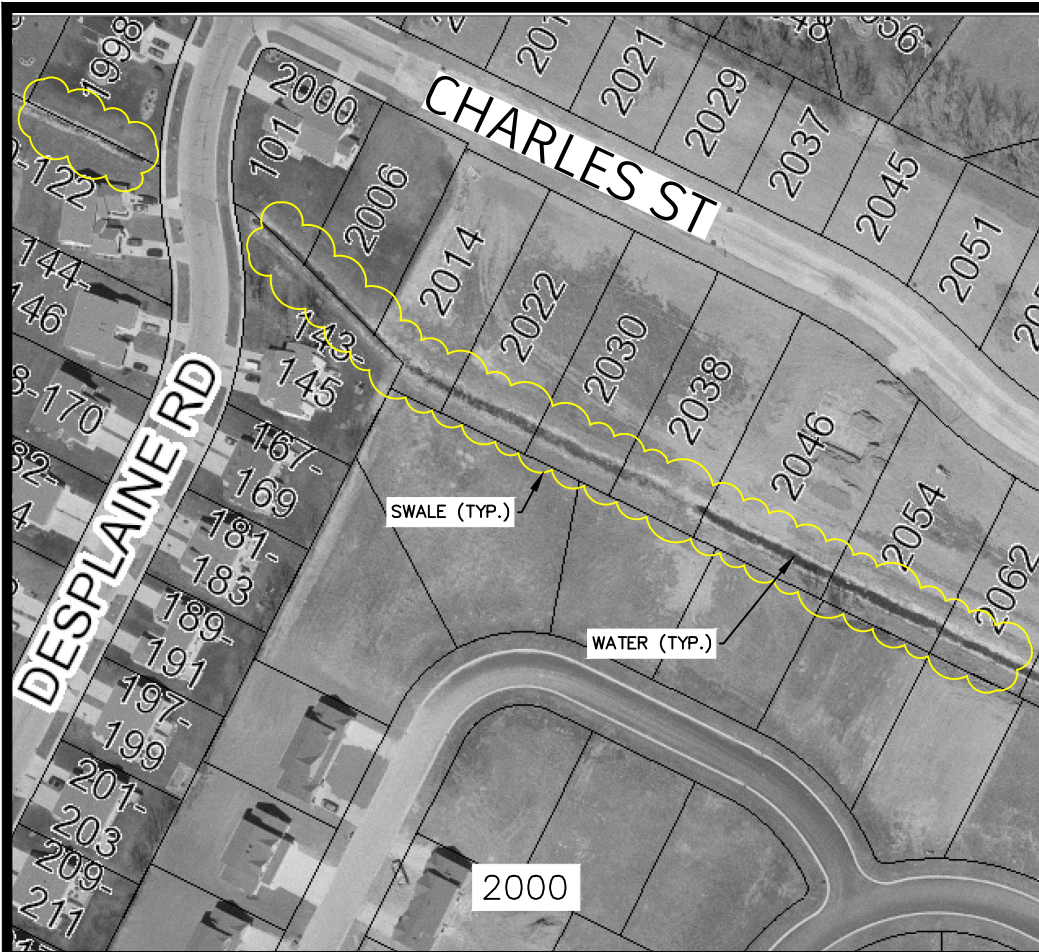
ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

**CHARLES STREET SWALE
STORM BASIN**

NAME: CHARLES STREET
STORM SWALE
PROJECT # 2024 REVIEW

EXHIBIT

A



CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

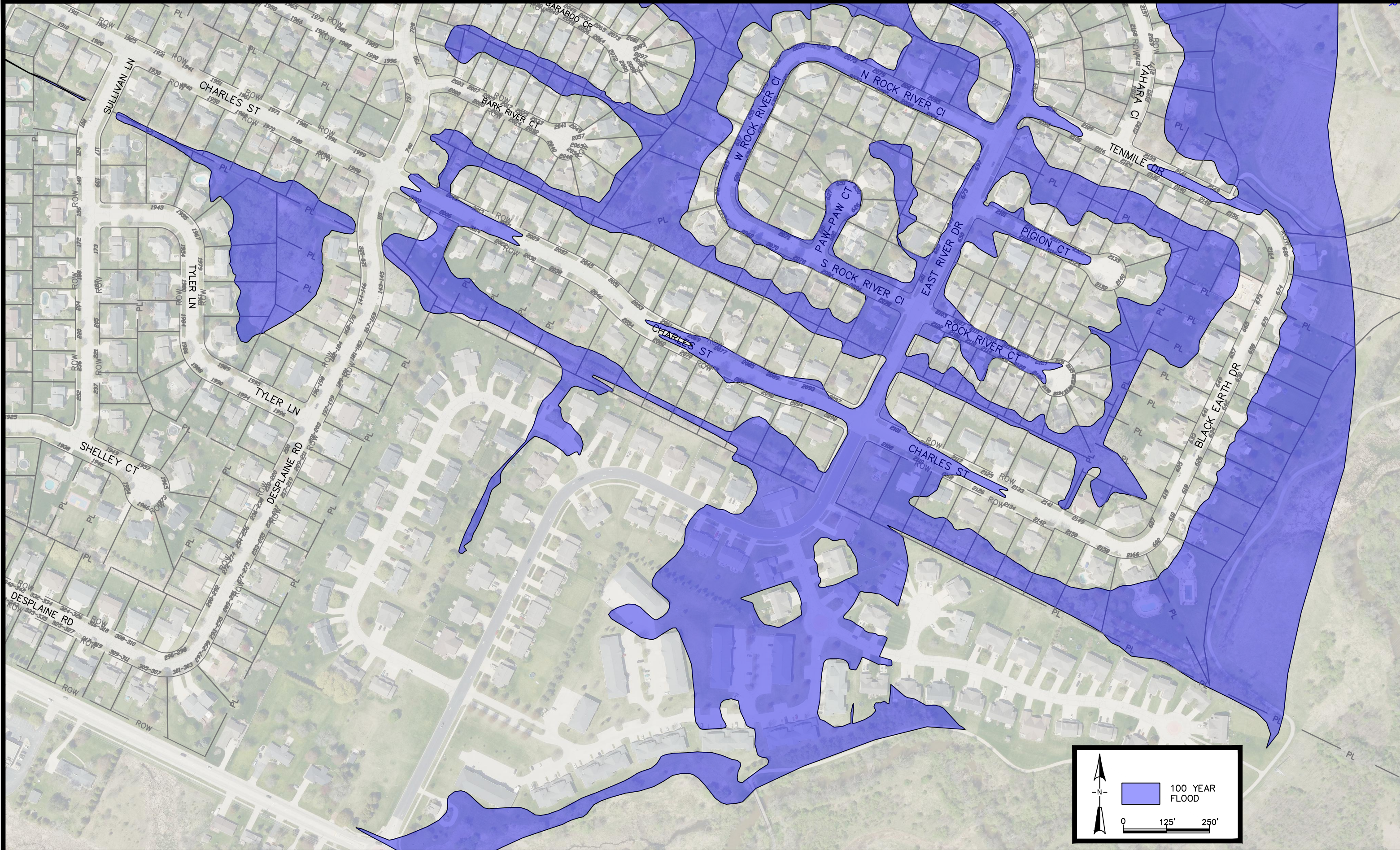
**CHARLES STREET SWALE
HISTORICAL PHOTOS**

NAME: CHARLES STREET
STORM SWALE
PROJECT # 2024 REVIEW

NOTE:
THE DARK AREAS IN THE PHOTOS SHOW THE LOCATION OF WATER. WATER IS
PRESENT IN EACH AERIAL WITH MINIMAL CHANGES IN EACH PHOTO.

EXHIBIT

B



CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

**CHARLES STREET SWALE
100 YEAR FLOOD**

NAME: CHARLES STREET
STORM SWALE
PROJECT # 2024 REVIEW

EAST RIVER 100-YEAR FLOOD PLAIN BASED ON FEMA MAPS

EXHIBIT
C-1



CITY OF DE PERE

ENGINEERING DIVISION 925 S. SIXTH ST DE PERE WI 54115
OFFICE 920-339-4061 FAX 920-339-4071

CHARLES STREET SWALE
10 YEAR FLOOD

NAME: CHARLES STREET
STORM SWALE
PROJECT # 2024 REVIEW

ESTIMATED 10-YEAR EAST RIVER IMPACTS ALONG THE CHARLES STREET SWALE

EXHIBIT
C-3

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric P. Rakers, P.E., City Engineer
Date: January 13, 2025

RE: **Consideration and possible action participating with Brown County on the Safe Roads for All FHWA Grant***

The purpose for this item is to discuss participating in plan preparation of a Road Safety Plan with Brown County.

Background and Discussion

In 2023, Brown County was awarded a Federal Highway (FHWA) grant “Safe Streets and Roads for All” (commonly referred to SS4A). This is a grant to write a Road Safety Plan for roads at the local level (town, village, and city). This report examines roads, intersections, accident data, curve information, and geometry and makes recommendations for “low hanging fruit” such as signage types, centerline rumble strips, pavement markings, and pedestrian crossings. The plan is a kick-off point for garnering FHWA Highway Safety Improvement Program funding opportunity. Without the SS4A, a municipality is not eligible to apply for HSIP grants.

The grant funding is an 80:20 match program, where FHWA provides 80% and the locals would need to provide 20%. The grant amount awarded is \$200,000 with a local \$50,000 match to attain a total project estimate for \$250,000. Brown County Highway recently sent out a Request for Proposals (see attached) from interested firms to prepare this report for all the locals in the County that will participate. To participate with Brown County, each local municipality needs to decide that they want to participate and guarantee to commit to their 20% of the funding. Brown County has pro-rated the local portion based on centerline road miles (since it is a road based plan) and the table of cost breakdown (in event all choose to participate) is provided as well (see attached).

The City’s prorated share to participate is \$3,963.71. The estimated amount will increase if all other municipalities do not participate. Knowing there could and will likely be variability, an upper limit could be established, and if the cost goes above that amount, this item would be brought back to the Board.

Recommendation

Staff recommends the City participate with the County in the SS4A Road Safety Plan preparation. The cost to participate will be set at a maximum of \$7,000. Funding will be from the Engineering Department’s Consulting budget item.

Attachments:

- Safe Road for All FHWA Grant SS4 Cost Breakout
- Brown County Highway Department Request for Qualifications
- E-mail from Chris Hardy, Brown County Highway Commissioner

Safe Roads for All - FHWA Grant
SS4A

Determining Cost Allocation on Local Share
Grant is \$200,000 with \$50,000 (20% local share)
County Roads are not included in the Plan (local only)

Authority	District	Rd Miles	Allocation	Est Cost	
Eaton	Town	42.84	0.0305	\$	1,525.79
Glenmore	Town	60.1	0.0428	\$	2,140.53
Green Bay	Town	44.95	0.0320	\$	1,600.94
Holland	Town	55.28	0.0394	\$	1,968.86
Humboldt	Town	36.66	0.0261	\$	1,305.69
Lawrence	Town	58.46	0.0416	\$	2,082.12
Ledgeview	Town	63.39	0.0452	\$	2,257.70
Morrison	Town	53.54	0.0381	\$	1,906.89
Denmark	Town	59.88	0.0427	\$	2,132.69
Pittsfield	Town	56.79	0.0405	\$	2,022.64
Rockland	Town	42.84	0.0305	\$	1,525.79
Scott	Town	42.74	0.0304	\$	1,522.23
Wrightstown	Town	30.37	0.0216	\$	1,081.66
Allouez	Village	54.65	0.0389	\$	1,946.42
Ashwaubenon	Village	100.18	0.0714	\$	3,568.02
Bellevue	Village	74.43	0.0530	\$	2,650.91
Denmark	Village	14.64	0.0104	\$	521.42
Greenleaf	Village	25.76	0.0183	\$	917.47
Hobart	Village	91.3	0.0650	\$	3,251.75
Howard	Village	114.48	0.0815	\$	4,077.33
Pulaski	Village	19.73	0.0141	\$	702.71
Suamico	Village	135.74	0.0967	\$	4,834.53
Wrightstown	Village	13.82	0.0098	\$	492.21
DePere	City	111.29	0.0793	\$	3,963.71
Green Bay	City	0	0.0000	\$	- Own Grant
		1403.86	1.0000	\$	50,000.00



REQUEST FOR QUALIFICATIONS

Municipality
Brown County Highway Department
2198 Glendale Avenue
Green Bay, WI 54303

Project ID(s)
TSP-1
SS4A Action Plan

Solicitation Type (Roster or Open)
WisDOT Register of Eligible Consultants

SOLICITATION DATE
December 12, 2024

RFQ QUESTIONS DUE:
January 3, 2025, 12 pm CT

RFQ DUE DATE
January 17, 2025, 12 pm CT

INTERVIEW DATE
January 31, 2025, 12 pm CT

Location/Description

Local Road Safe Streets and Roads for All Action Plan
SS4A
Local Road System
Brown County

Local selection?
Yes

Background

Brown County in partnership with 24 municipalities was awarded a US DOT Safe Streets and Roads for All (SS4A) grant to complete an action plan intended to reach zero preventable roadway deaths in Brown County. In 2018, Brown County completed a county highway system safety plan. This new local roadway safety action plan will continue to build off Brown’s County’s 2018 efforts to advance a Vision Zero approach.

Brown County Highway is seeking consultant services to lead efforts on the SS4A action plan process. The successful applicant will direct and implement efforts in coordination with Brown County staff and participating jurisdictions/municipalities to create a local road county-wide safety action plan for the local roadway network ranging from urban, suburban and rural. The action plan will identify location specific safety challenges and appropriate treatments and fulfill the USDOT requirements for eligibility for implementation funding from the SS4A program in future years.

Project Description and Goals

The overall goal for the project is to create a county-wide local road safety action plan that comprehensively identifies location specific challenges and develops appropriate treatments and projects for the identified locations. The action plan is to identify low-cost, high impact strategies that can improve safety throughout the county on the local road system such as:

• Clear zone maintenance	• Install and upgrade signing
• Enhanced and widened edge line markings	• Bicycle lane markings or separated accommodations
• Rumble strips	• Shoulder paving

• Marked and/or signalized cross walks	• Roundabouts and/or traffic signals
• Pavement safety edge	• Lighting

The plans must:

- Fulfill USDOT requirements for eligibility for implementation funding from the SS4A program in future years.
- Provide guidance for the county and participating jurisdictions on how to proceed with safety improvement priorities independently of the SS4A program over the next 10 years.

The project must, at a minimum include:

- Produce a complete and comprehensive regional safety action plan that:
 - Identifies roadway safety challenges through a systemic model.
 - Categorizes, ranks and catalogs the safety challenges.
 - Develop a prioritization. It is not expected all roadways will be recommended for a countermeasure.
 - Evaluates a range of treatments based on USDOT proven safety countermeasures.
 - Utilizes a combination of public and stakeholder priorities, equity considerations, cost/benefit analysis, roadway limitations and a system of prioritization for which identified issues are in a detailed implementation plan.
 - Create an implementation plan or prioritization that includes project description, limits and general cost range.
 - Includes all USDOT required components for eligibility for SS4A Implementation Grant Funding.
- USDOT Action Plan Components. The USDOT requires that SS4A Action Plan include at least four of the six following components.
 - High ranking official/governing body commits to Vision Zero
 - Representative committee oversees action plan development.
 - Meaningful public engagement and stakeholder outreach.
 - Equity analysis (defined as USDOT disadvantaged communities).
 - Assessment of current safety policies and recommendations for future
 - Identification of baselines and goals to evaluate progress moving forward.

Overview of Potential Participants

Brown County will engage with the following potential jurisdictions and stakeholders to ensure complete and inclusive community engagement.

- Jurisdiction/municipalities within the County

Jurisdiction	District	Rd Miles
Eaton	Town	42.84
Glenmore	Town	60.1
Green Bay	Town	44.95
Holland	Town	55.28
Humboldt	Town	36.66
Lawrence	Town	58.46
Ledgeview	Town	63.39
Morrison	Town	53.54
Denmark	Town	59.88
Pittsfield	Town	56.79
Rockland	Town	42.84
Scott	Town	42.74
Wrightstown	Town	30.37
Allouez	Village	54.65
Ashwaubenon	Village	100.18
Bellevue	Village	74.43
Denmark	Village	14.64
Greenleaf	Village	25.76
Hobart	Village	91.3
Howard	Village	114.48
Pulaski	Village	19.73
Suamico	Village	135.74
Wrightstown	Village	13.82
De Pere	City	111.29
Total miles		1403.86

Additional Stakeholders

- Oneida Nation (received its own SS4A grant so this effort will need to coordinate with this effort)
- City of Green Bay (received its own SS4A grant so this effort will need to coordinate with this effort)
- Hmong, Hispanic and African American Resource Centers
- Other Stakeholders as needed such as Green Bay Metro, Emergency Response and various school districts.

Municipalities and stakeholders will have an opportunity to interact with the project team and identify safety issues that should be reviewed as part of the Action Plan. Stakeholders can expect to participate in 3 to 5 Action Plan engagement meetings:

- Project scoping and planning
- Issue identification
- Draft action plan
- Additional meeting(s) as determined.
- Meetings may be combined if appropriate.

Anticipated Tasks

Task 1 – Project Management, Organization, Guidance and Tracking of Process

- Work with client to develop an overall strategy and work plan, including goals, scope of work, timeline/schedule of tasks and milestones.
- This task includes the day-to-day operations of the contract including timely submission of contract documents (monthly progress reports, budget management, invoices).
- This also includes efforts to coordinate the project with County management and stakeholders. County management shall be updated monthly through email or monthly progress meetings.
- Prepare presentations for the stakeholders to explain and frame key decisions to be made.
- Includes the production of draft and final meeting minutes for all meetings between the consultant, county and municipalities.
- Determine the appropriate level and detail of public outreach that balances stakeholder interest, equity considerations and specific strategies.
- Work with the client to draft and implement a public outreach process that meets the requirements of the SS4A Program and provide valuable feedback to help with prioritization of roadway safety challenge locations.

Task 1 Deliverables:

- Progress reports, invoices and meeting minutes to County management.
- Outreach plan for client approval.
- Presentations of project information to stakeholders.

Task 2 – Data Collection and Analysis

- Collect and organize relevant crash data for the local roads in Brown County. The primary data element of interest is motor vehicle crashes and roadway data. The consultant should expect to leverage whatever local data is available to assist in the development of a comprehensive safety plan.
- Obtain current traffic crash data through WisTransportal System through the Wisconsin Traffic Operations and Safety Laboratory (Community Maps), including but not limited to summary preliminary summary and advanced data in addition to specific accident reports (MV4000). The most recent set of 5-year crash data should be used for analysis.
- Collect roadway data from the Wisconsin Information System for Local Roads (WISLR), internet sources, field reviews or some other manner. Use WisDOT traffic counts to verify ADT accuracy in WISLR. It will be necessary to determine various roadway characteristics in order to realistically determine priorities. Elements such as pavement age, shoulder width, location will determine where countermeasures can be applied. Close coordination with stakeholders will be

required. It is not anticipated significant field data collection will be required. The consultant should conduct a limited field review after proposed counter measures have been identified for specific roadway.

- Obtain roadway plans (as available) from the various municipalities.
- Review any pertinent documents applicable to the transportation system within the municipalities. Review and report possible safety research or application of information which could be valuable to this effort. If there are other local or state documents available, they should be reviewed as part of the plan development.
- Assess the quality and completeness of the available data.
- Develop systemic analysis to identify and categorize the roadway safety challenges.

Task 2 Deliverables:

- Comprehensive categorization and listing by location and municipality.
- Public outreach meeting

Task 3 – Determination of priority focus areas

- Utilize the data collected from Task 2, priorities identified through Task 3 and municipal stakeholder input, identify a smaller group of priority crash location sites and specific locations for more detailed analysis.

Task 3 Deliverables:

- Written methodology for each location.
- Document and develop a list of priority locations, roadway segments and intersection types and justification
- Technical report summarizing the analysis.

Task 4 – Development of specific treatments and projects for priority locations.

- Create an implementation plan for improvements using USDOT Proven Safety Countermeasures for all prioritized locations.
- The recommended projects should include project description, project location, limits and estimate.

Task 4 Deliverables:

- Report or technical memo for the priority locations.
- Public outreach meeting

Task 5 – Completion of SS4A approved action plan for the participating jurisdictions/municipalities.

- Ensure all USDOT required components for safety actions plans eligible for implementation funding are present.

Task 5 Deliverables:

- Final summary report that includes data analysis, process summary and summary of how the completed plan meets USDOT SS4A requirements. A detailed public outreach summary should be included.

Schedule

The final SS4A Action Plan report is due no later than November 30, 2025, with a project close out by December 31, 2025.

Consultant requirements

- Minimum of 5 years of experience conducting traffic or traffic safety investigations, engineering studies and or traffic research as the lead project engineer.
- At least one member of the proposed project team must be a Wisconsin Licensed Civil Engineer.
- Experience in conducting large scale/countywide crash analysis and understanding of the results to develop recommendations (county, region, statewide) that is consistent with the FHWA Systemic Safety Project Selection Tool, in the past 5 years.
- Experience in applying crash countermeasures and distinguishing effectiveness based on FHWA Crash Modification Factors Clearinghouse information and other relevant studies.
- Has conducted and completed a Road Safety Audit (RSA) at a limited number of high risk, crash and/or state, county or local road highlighted locations, as defined by FHWA Road Safety Audit Guidelines.
- Demonstrated ability to investigate, identify, and propose characteristics of fatal and serious injury crashes.
- Demonstrated ability to perform literature reviews, summarize and conduct studies while applying current program guidelines and techniques.
- Demonstrated ability to manage a project with diverse stakeholders and committees.

RFQ Clarifications and Questions

The consultant may ask clarifying questions of the RFQ by submitting them via email to Chris Hardy, PE. Chris.hardy@browncountywi.gov. Questions regarding this RFQ must be submitted no later than January 3, 2025, 12:00 pm CT. Answers to questions requiring clarifications will be posted prior to the deadline.

Selection Process

Consultant firms will be ranked on the submitted Request for Qualifications forms using the attached “Brown County Highway Department Engineering Consultant RFQ Form”. The Highway Department will select qualified firms for the interview process from the qualifications presented in the RFQ.

Interview dates are tentatively scheduled for 12:00 pm CT, January 31, 2025, at the Brown County Highway Department, 2198 Glendale Avenue, Green Bay, WI 54303

Instructions for consultants:

1. Complete the RFQ Portion, **to a maximum of 11 pages**, adhering to these guidelines:
 - a. All electronic files must be in Adobe PDF format. No files other than the RFQ will be considered.
 - b. Submit only ONE RFQ per firm. Firms with multiple locations and/or parent companies may not submit more than one RFQ.
 - c. Additional comments may be added in narrative form after the tables in each question.
 - d. General formatting:
 - i. Do not add colors in the tables or to fonts.
 - ii. Limit font bolding to highlight only the most important words. Do not bold questions.
 - iii. Use the Arial font, sized between 9-12 only. Only table labels should be font size 8.
 - iv. Using bullets within tables is allowed.
 - v. Limited table column size changing is allowed, but expanding tables is not.
 - vi. Deleting unneeded tables from the default form is allowed. Do not delete any questions.
 - vii. Leave at least two blank lines between information and the next question.
 - e. Special instructions for RFQ questions:
 - i. Question 2—be sure to identify time period for availability.
 - f. Do not copy resumes or other external documents into the RFQ form to supply firm qualifications.
 - g. Automatic disqualification will occur if:
 - i. Questions are deleted or changed.
 - ii. The RFQ response is longer than 9 pages.
 - iii. NOI submitted after the specified RFQ deadline listed below.
2. Delete the scope of service narrative and these instructions before submitting the file to the department.
3. The scope of services and the submitted RFQ form will become part of the contract with the awarded consultant. The standard Brown County Professional Services Contract will be used for this work. See attached contract template.
4. For more information, contact:

Chris Hardy, PE
Highway Commissioner
chris.hardy@browncountywi.gov
5. RFQ Deadline: **All RFQ's must be submitted no later than 12:00 pm CT January 17, 2025.**
 - Please send an electronic copy (PDF) of your RFQ documents to chris.hardy@browncountywi.gov and colleen.harris@exp.com
 - Hard copies are an acceptable alternative submission- if you intend to submit a paper hard copy, please provide three (3) copies to Brown County Highway Department, 2198 Glendale Avenue, Green Bay WI 54303 by the RFQ deadline.



Request For Qualifications

Municipality
Brown County Public Works Department
2198 Glendale Avenue
Green Bay, WI 54303

Project ID(s)
TSP-1
SS4A Action Plan

Solicitation Type (Roster or Open)
Brown County Roster

SOLICITATION DATE
December 12, 2024

RFQ DUE DATE
January 17, 2025, 12 pm CT

Firm Name		
Street Address	Area Code - Telephone Number	Area Code - FAX Number
City, State, ZIP Code	Contact Person, E-Mail Address	

Use only the format furnished; changes or deletion of questions or format may disqualify you from consideration. Limit your response to 11 pages.

1. **10 points.** List credentials, qualifications and years experience for the project manager and other key staff you would assign to this project in the following table. If showing more than two individuals, add tables using the format provided. Key subconsultants may be listed. Be sure to clearly identify the subconsultant firm. Note any DBE participation.

KEY STAFF	POSITION/ PROJECT ROLE	YEARS EXPERIENCE	EDUCATION	REGISTRATION (PE, RLS, etc.)
Narrative				

KEY STAFF	POSITION/ PROJECT ROLE	YEARS EXPERIENCE	EDUCATION	REGISTRATION (PE, RLS, etc.)
Narrative				

2. **5 Points.** Workload Capacity and Firm Location - Describe your staff's capacity, availability and their ability to perform the work in a timely manner relative to present workload. Address the firm location and availability of the named key staff members, including competing commitments and the percent of time available for this project. If showing more than four individuals, add rows to the table below. Key subconsultants may be listed. Note any DBE participation.

KEY STAFF		CURRENT COMMITMENTS	CURRENT ESTIMATED AVAILABILITY BY TIME PERIOD
Name		➤	
Firm		➤	
Location		➤	
Name		➤	
Firm		➤	
Location		➤	

3. **25 points.** List consulting teams' performance of similar type projects and complexity. IF showing more than two projects, add tables using the format provided. Key subconsultants may be listed. Be sure to clearly identify the subconsultant firm – no more than two (2) pages.

Project Name	Begin/End Service Dates	Firm's Fees on Project	Reference--Name, Address, Phone, E-mail
DELIVERABLES		KEY STAFF	
➤	➤		
➤	➤		
Narrative			

Project Name	Begin/End Service Dates	Firm's Fees on Project	Reference--Name, Address, Phone, E-mail
DELIVERABLES		KEY STAFF	
➤	➤		
➤	➤		
Narrative			

4. **45 Points.** Project Knowledge –Describe your overall project approach - no more than four (4) pages.

Narrative

5. **15 Points.** Description of data analysis approach - no more than three (3) pages.

Narrative

Betty Marovich

From: Hardy, Chris <Chris.Hardy@browncountywi.gov>
Sent: Monday, December 23, 2024 8:15 AM
To: James Boyd; Carey E. Danen; Tony Fietzer; Scott Thoresen; Eric Rakers; Brad Lange; carrie.zittlow@villageofallouezwi.gov; Sean Gehin; Mary Kardoskee; kteske@ashwaubenon.gov; brickert@ashwaubenon.gov; sSoukup@VillageofBellevueWI.gov; susanspresident@vi.denmark.wi.gov; sherri@vi.denmark.wi.gov; rheidel@hobartwi.gov; lisa@hobartwi.gov; jerry@hobartwi.gov; bmcintyre@villageofhoward.com; chaltom@villageofhoward.com; Denmark Public Works Director Erica (erika@villageofdenmark.com); publicworks@villageofhoward.com; Geoff Farr; villagepres@villageofpulaski.org; villageclerk@villageofpulaski.org; bholewinski@villageofpulaski.org; SVanRossum@SuamicoWI.gov; clerk@SuamicoWI.gov; dpwdirector@SuamicoWI.org; Andy Smits; TCoenen; sbowers@wrightstown.us; Andy Vickman
Subject: FW: Grant Funding Opportunity
Attachments: SS4A_NOI Revised 12112024.pdf; Funding Allocation_Locals.pdf

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello,

In 2023, Brown County was awarded a Federal Highway (FHWA) grant “Safe Streets and Roads for All” (commonly referred to SS4A). This is a grant to write a Road Safety Plan for roads at the local level (town, village, and city). Similar to the Road Safety Plan prepared for BC Highway back in 2018, this report examines roads, intersections, accident data, curve information, etc and makes recommendations for “low hanging fruit”. For example, signage types, centerline rumble strips, pavement markings, ped crossings, etc, etc. Here’s a link to what that might look like; [Highway Safety Improvement Program \(HSIP\) | FHWA](#). The report is really the kick-off point for garnering FHWA Highway Safety Improvement Program funding opportunity. Without the SS4A, you are not able to apply for HSIP grants.

The grant funding is a 80:20 match program, where FHWA provides 80% and the locals would need to provide 20%. The grant amount awarded is \$200,000 with a local \$50,000 match to attain a total project estimate for \$250,000. BC Highway recently sent out a Request for Proposals from interested firms to prepare this report for all the locals in the County that will participate. In order to participate, each local needs to decide that they want to participate and guarantee to commit to their 20% of the funding. We have pro-rated the local portion based on centerline road miles (since it is a road based plan) and the table of cost breakdown (in event all choose to participate) is provided as well (attached).

Please notify me prior to January 31, 2024 if you are interested and commit to participation in this monumental program. This will be one of the first multi-jurisdictional encompassing local road safety plan to be prepared in the Wisconsin and the nation. The City of Green Bay and the Oneida Nation have each received a SS4A grant of their own and will not be participating in this program. The only potential participants are as identified on the attached (proposed breakdown of contributions).

If you have any questions regarding this proposal and offer, please reach out to me to discuss. For those that decide to not participate, their roads will be removed from consideration of the study and report.

Chris Hardy, P.E.

Highway Commissioner



Brown County Highway Department
2198 Glendale Ave
Green Bay, WI 54303

(920) 662-2170

***** IMPORTANT CONFIDENTIALITY NOTICE ***** This electronic transmission, along with any information attached may contain confidential, proprietary, or privileged information, subject to, among other protections, the Health Insurance Portability & Accountability Act of 1996, codified as 45 C.F.R. Part 160; the Public Health Service Act, codified as 42 C.F.R. Part 2; and the attorney-client/attorney work-product statutory and common law privileges. If the reader of this transmission is not the intended recipient, you are hereby notified that any disclosure, copying, distribution or use of the information contained in or attached to this email is strictly prohibited. If you have received this email in error, please immediately notify the sender via return e-mail, then delete the email and any of its attachments, without reading or saving the email.

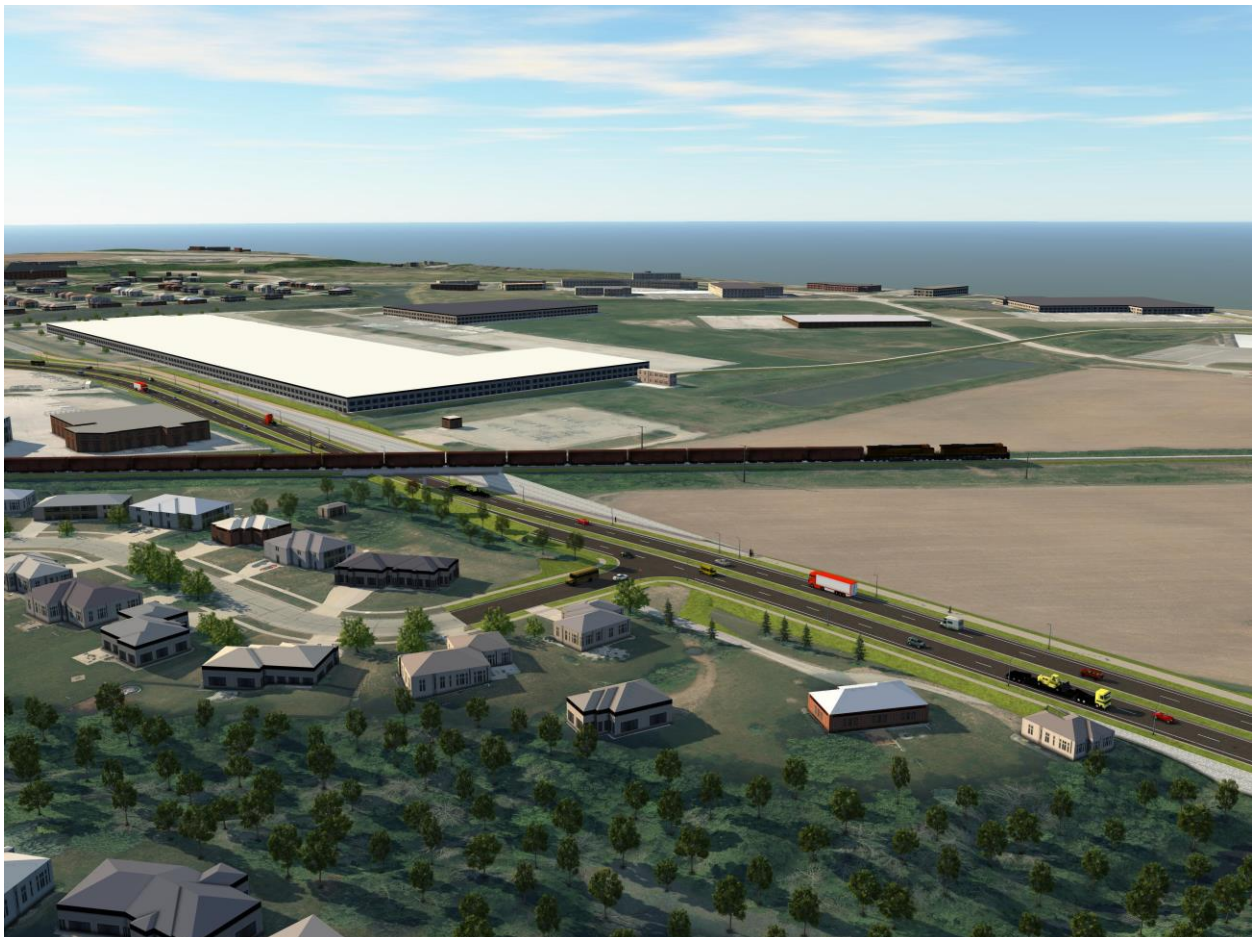
CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Board of Public Works Members
From: Scott J. Thoresen, Director of Public Works
Date: January 8, 2025
RE: Consideration and possible action GV-15 Retaining Wall Design Concepts*

GV-15 is going to require the construction of approximately 2000 feet of retaining walls for the roadway due to the need to build a new railroad bridge. Below are concepts showing the retaining walls being built on both sides of GV at the proposed railroad bridge.

AERIAL OVERVIEW CONCEPT LOOKING WEST



CONCEPT LOOKING EAST



The County has provided the City the following retaining wall options to be considered:

MSE RETAINING WALL

This type of retaining wall is created using a form liner and staining is applied to the concrete panels. The cost of this type of retaining wall is estimated at \$90 to \$120 per square foot.





CAST-IN PLACE CONCRETE CANTILEVER RETAINING WALL

This type of retaining wall is created using a form liner and staining is applied to the concrete wall. The cost of this type of retaining wall is estimated at \$90 to \$120 per square foot.





SOLDIER PILE/POST AND PANEL RETAINING WALL

This type of retaining wall is created using a form liner and staining is applied to the concrete panels. The cost of this type of retaining wall is estimated at \$220+ per square foot.



RETAINING WALL RAILING

The top of the retaining walls are required to have either a fence or railing installed to protect anyone from falling from the top of the wall. The vinyl coated chain link fence is estimated at \$40 to \$75 a lineal foot. The metal railing is estimated at \$250 to \$300 a lineal foot.

METAL RAILING



VINYL COATED CHAIN LINK FENCE



The intent of the discussion is to get BOPW and Council approval on the retaining wall design concepts. As mentioned above, there is approximately 2,000 lineal feet of wall with 1,000 lineal feet of wall on each side of the road. The costs of the retaining walls will be split 50:50 with the County. At this time the County would prefer either to go with the MSE retaining wall or the cast-in place concrete retaining wall because of the costs. In addition, the County would prefer to go with the vinyl-coated chain link fence because it is approximately 1/3 the cost of the metal railing.

CITY OF DE PERE MEMO

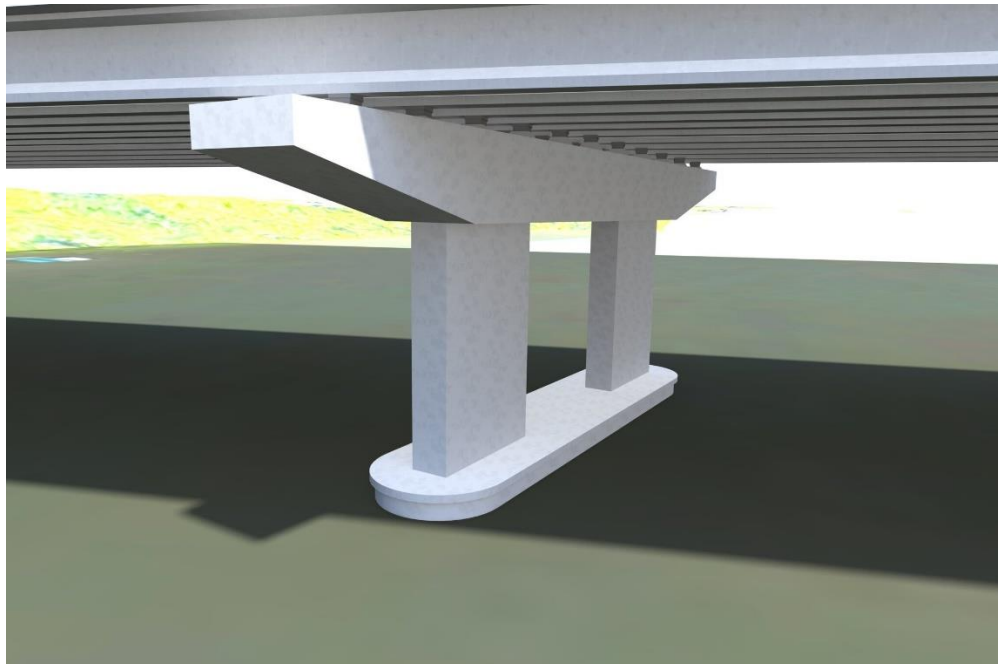


To: Honorable Mayor Boyd
Board of Public Works Members
From: Scott J. Thoresen, Director of Public Works
Date: January 2, 2025
RE: Consideration and possible action GV-16 Bridge Design Concepts*

The City received the attached correspondence from the Brown County regarding the GV-16 bridge design concepts (See attached correspondence) for the new bridge over the Fox River for the Southbridge corridor project. The following are options to be considered for bridge design:

PIER AESTHETIC OPTIONS:

- Rectangular Column Piers (Base design) with rectangular constant cross-section, plain concrete surface finish, no form liner surface treatment, and no color staining. The base design costs for the piers are estimated at \$18,000,000. **COUNTY IS RECOMMENDING THIS OPTION**



- Enhanced Rectangular Column Pier Option with cut stone surface texture (form liner) to pier base, multi-color concrete stain on the pier base, and one-color concrete to pier columns and cap. This would be an additional \$450,000 and costs would be shared with County 50:50.



- Flared Width Trapezoidal Columns with flared, increasing with column shape, plain concrete finish, no form liner surface treatments, and no concrete staining (colored). This option would be an additional \$990,000 and costs would be shared with County 50:50.



- Enhance Flared Width Trapezoidal Columns with flared column increasing with column shape, cut stone texture (form liner) to pier base, multi-colored concrete stain to pier base, and one-color stain to pier columns and cap. This option would be an additional \$1,440,000 and costs would be shared with County 50:50.

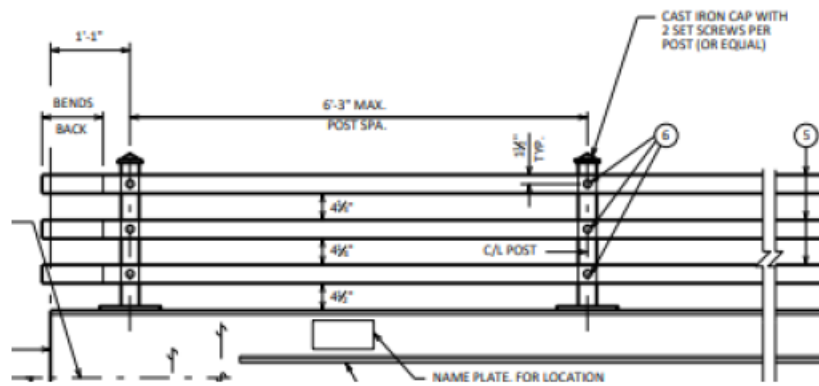


BRIDGE PARAPET & RAILING OPTIONS:

- Vertical Parapets (Base design) with plain concrete finish (no form liner) and grey standard concrete finish.
- Vertical Parapet with cut stone surface texture (form liner) with multi-color staining on both the exterior and interior wall. This option would be an additional \$450,000 and costs would be shared with County 50:50. **COUNTY IS RECOMMENDING THIS OPTION**



- Tubular Railing (Base design) the railing is tubular in shape and the railing is galvanized steel and is not painted.



TUBULAR RAILING

- Type C3 Combination Railing installed on vertical parapets and would be painted. This option would be an additional \$385,000 and costs would be shared with County 50:50. **COUNTY IS RECOMMENDING THIS OPTION**



PEDESTRIAN OVERLOOK:

- This option would add six (6) pedestrian bumpouts with three (3) being on each side. This option would be an additional \$60,000 and costs would be shared with County 50:50.

COUNTY IS RECOMMENDING THIS OPTION



DECORATIVE PYLONS:

- This option would add decorative pylons above the roadway at ends of the bridge and would be sized proportionally per the bridge. This is something that was done on the Claude Alloeuz Bridge. This option would be an additional \$264,000 and costs would be shared with County 50:50.



The intent of the discussion is to get BOPW and Council approval on the bridge design concepts. The County has received \$50 million for the construction of the bridge. The County has been told any unused funding for the bridge (estimated at \$8 million) can be used for the construction of GV-15. Any aesthetic options presented above would decrease the amount that could be used for GV-15. The GV-15 project is expected to significantly increase in costs due to the need to construct a bridge for the railroad tracks that currently exist at Red Maple Road.



2198 GLENDALE AVENUE
GREEN BAY, WI 54303

PHONE (920) 662-2170 FAX (920) 434-4576



CHRIS HARDY, P.E.
HIGHWAY COMMISSIONER

December 6, 2024

City of De Pere

MEMO: Southbridge Connector Aesthetics

For Local Program projects or projects that are receiving Federal or State grant funds for construction, funding will participate on design elements in accordance with Standard Details in the WisDOT Bridge Manual. This means the project grant funding (typically 80:20) can be used for standard bridge and retaining wall elements and finishes (think concrete, grey, flat, form finish type façade). There is allowance for some Non-Standard components and finishes to be used on these projects (aesthetic treatments). However, project funding will NOT participate in the cost for those items if elected by the locals. The cost for aesthetic treatments falls 100% on LOCALS. Allowable aesthetic treatments might include, for example; pier shapes beyond the WisDOT standard; concrete surface coloration and finishes (rustications); railing style, shape, and color; sidewalk bump-outs for recreational view; lighting fixtures or color; and others.

For the past several months, we have been discussing amenity options related to aesthetic treatments for bridges within the corridor. WisDOT went so far as to provide a listing of some amenity options and their associated costs. Brown County Planning, Development, & Transportation Committee (PD&T) recently reviewed some of those amenity options and made a preliminary recommendation to the Department on how to move forward or proceed in the consideration of them. One aspect of that recommendation is to reach-out to our municipal partners and gauge their interest with regards to options that are being presented.

Please see attached for aesthetic amenity options reviewed by the County for the GV-16 specific bridge and potentially for all the bridges on the Southbridge Connector projects (EB-39, GV-16, and GV-18; GV-15?); including, potential cost implications for each:

1. Piers
2. Parapet and Railings
3. Sidewalk Bump-outs
4. Lighting
5. Bridge End Pylons

PIER AESTHETIC OPTIONS:

- a) **Rectangular Column Piers: are included with the base design for the Fox River crossing bridge and would be provided at no additional LOCAL cost. Base Piers are**
 - a. rectangular with constant cross-section,
 - b. plain concrete surface finish,
 - c. no form liner surface treatment, and
 - d. no colored concrete staining.
 - e. Pier as base design will cost \$18,000,000 (about \$2M per pier).
Keep in mind GV-16 has a \$50M grant for its construction.
- b) **Enhanced Rectangular Column: Pier Option 1**
 - a. cut stone surface texture (form liner) to pier base,
 - b. multi-color concrete stain on the pier base,
 - c. one color concrete stain to pier columns and cap
 - d. Extra Cost = \$450,000 for all 9 piers (\$50,000 per pier). Shared 50:50 county-municipal.
- c) **Flared Width Trapezoidal Columns: Pier Option 2**
 - a. flared, increasing with column shape,
 - b. plain concrete finish,

- c. no form liner surface treatments,
- d. no concrete staining (colored)
- e. Extra cost = \$990,000 (\$110,000 per pier); shared 50:50 county-municipal.
- d) Enhanced Flared Width Trapezoidal Columns: Option 3
 - a. flared column increasing with column shape,
 - b. cut stone texture (form liner) to pier base,
 - c. multi-color concrete stain to pier base,
 - d. one color concrete stain to pier columns and cap
 - e. Extra cost = \$1,440,000 (\$160,000 per pier); shared 50:50 county-municipal.

BRIDGE PARAPET AND RAILING AESTHETIC OPTIONS:

- a) Vertical Parapets: Base design standard is
 - a. plain concrete finish (no form liner),
 - b. grey standard concrete finish.
- b) Vertical Parapets: Option 1
 - a. cut stone surface texture (form liner) with multi-color staining,
 - b. added to both exterior parapet faces of outside bridge parapet wall,
 - c. added to pedestrian (sidewalk) side of bridge wall,
 - d. Extra Cost = \$450,000
- c) Tubular Railing: Base design option is
 - a. tubular shape railing,
 - b. galvanized steel, unpainted finish,
- d) Type C3 Combination Railing (painted studio): Option A
 - a. only on exterior vertical parapets,
 - b. Cost = \$385,000.
- e) Logo: Southbridge Connector Logo added to the railing.
 - a. Option 1 on Logo handout sheet.
 - b. Cost = \$10,000 (for WisDOT SBC @ GV-18 cost is 80:20 funding, so \$2,000).

BRIDGE LIGHTING:

- a) Continuous lighting study was completed August 2024,
- b) **WisDOT approved Type 5 poles with 6 ft arms,**
- c) **Lighting approved LED B luminaries,**
- d) Light-spacing to be determined on structure: 50 ft, 75 ft, or 150 ft ,
- e) **Color black.**
- f) **No Cost Difference.**

PEDESTRIAN OVERLOOK:

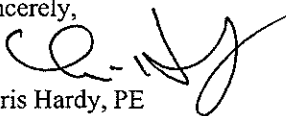
- a) **6 pedestrian bump-outs; 3 each side.**
- b) **Cost = \$60,000 (6 at \$10,000 person).**

DECORATIVE PYLONS:

- a) Add decorative pylons above roadway at ends of bridges.
- b) Sized proportionally per the bridge.
- c) Cost = \$264,000 (\$66,000 each).

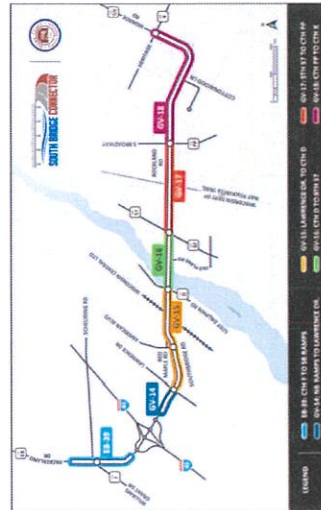
Please review the above information and provide input to this department on how your local authority might want to proceed. Again, at this time, Brown County has not made a final decision on aesthetics; merely a recommendation to have a point to move forward in the design process. Recommended options are shown in bold, above (total about \$895,000 additional above current budget estimate).

Sincerely,


Chris Hardy, PE
Highway Commissioner



GV-16 Structure Aesthetics





WisDOT Bridge Standard Details



Participating Items Construction Funded by WisDOT

- Design Elements Per Standard Details In The WisDOT BM
- Permissible (Participating) Aesthetic Enhancement:
 - Horizontal and Vertical Inset Reveals (Rustications)
 - Inset Panels on Flat Surfaces

Non-Participating Items Construction Funded by Municipality

- Non-Standard Bridge Component Shapes
- Architectural Surface Treatment (Concrete Form Liners) to Achieve Surface Textures Such As Cut-Stone Masonry.
- Concrete Color Stain
- Non-Standard Pedestrian Railing or Fencing
- Non-Standard Lighting



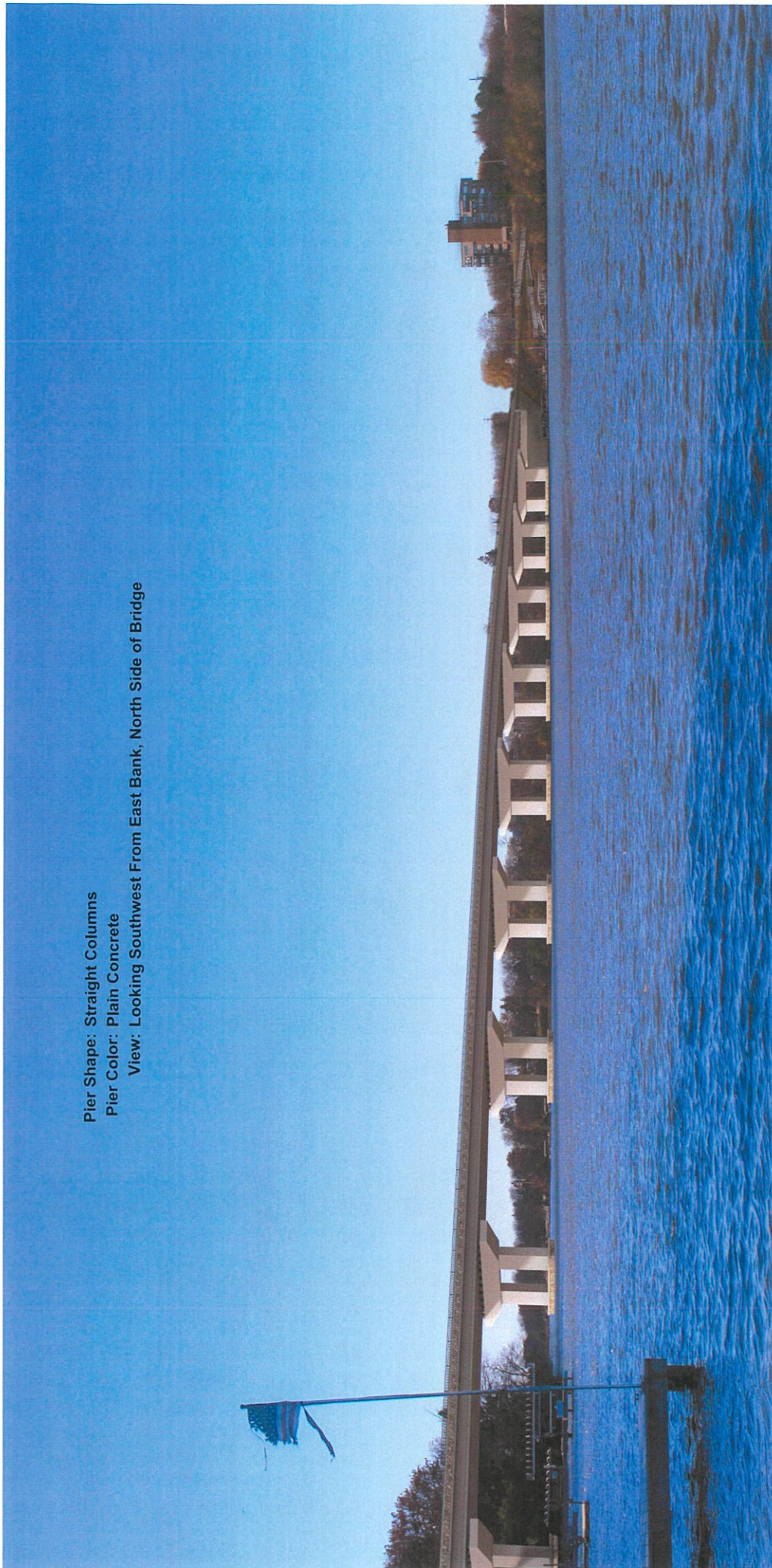
Rectangular Column Piers

- Least Cost Option With No Aesthetic Enhancement
- 2 - Rectangular Columns with Constant Cross Section
- Plain Concrete Finish
- No Form Liner Surface Treatments
- No Concrete Staining (Colored Concrete)
- ~\$2 M per Pier; ~\$18 M for 9 Piers

Piers "A"



Pier Shape: Straight Columns
Pier Color: Plain Concrete
View: Looking Southwest From East Bank, North Side of Bridge





Enhanced Rectangular Column Piers

- Cut-Stone Surface Texture (Form Liner) to Pier Base
- Multi- Color Concrete Stain to Pier Base
- One Color Concrete Stain to Pier Columns and Cap
- +\$50,000 per Pier; +\$450,000 for 9 piers
- +1.2% Increase To Estimated Overall Bridge Construction Cost

Piers "B"





Flared Width / Trapezoidal Columns

- Flared Increasing With Column Shape
- Plain Concrete Finish
- No Form Liner Surface Treatments
- No Concrete Staining (Colored Concrete)
- +\$110,000 per Pier; + \$990,000 for 9 Piers
- +2.7% Increase To Estimated Overall Bridge Construction Cost

Piers "C"



Piers "D"



Enhanced Flared Width / Trapezoidal Columns

- Flared Increasing With Column Shape
- Cut-Stone Surface Texture (Form Liner) to Pier Base
- Multi- Color Concrete Stain to Pier Base
- One Color Concrete Stain to Pier Columns and Cap
- +\$160,000 per Pier; +\$1,440,000 for 9 piers
- +3.9% Increase To Estimated Overall Bridge Construction Cost





Bridge Parapet and Railing Aesthetic Enhancements



Cut-Stone Surface Texture (Form Liner) With Multi-Color Staining

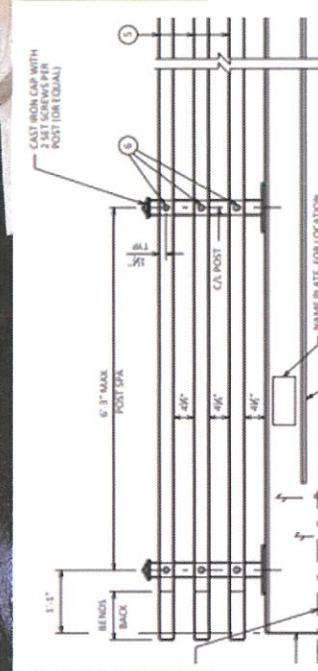
- Both Faces Of Vertical Parapets
- Pedestrian Side Of Traffic Parapets
- +\$450,000
- +1.2% Increase To Estimated Overall Bridge Construction Cost
- WisDOT Tubular Railing No Additional Cost

Type C3 Combination Railing (Painted Steel)

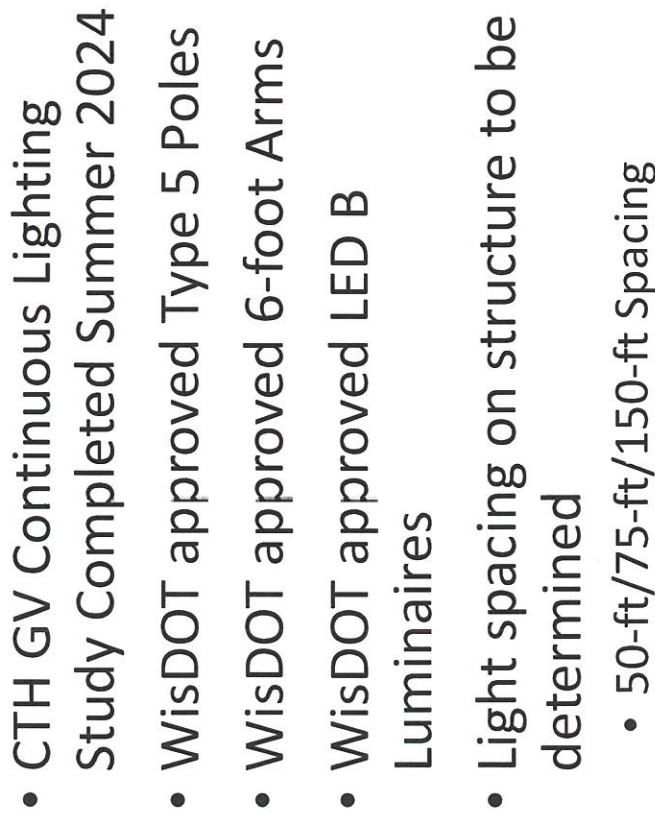
- On Exterior Vertical Parapets Only
- +\$385,000 (Compared to Tubular Railing)
- +1.0% Increase To Estimated Overall Bridge Construction Cost



TYPE C3 RAILING



TUBULAR RAILING





Pedestrian Overlook Bump-Outs

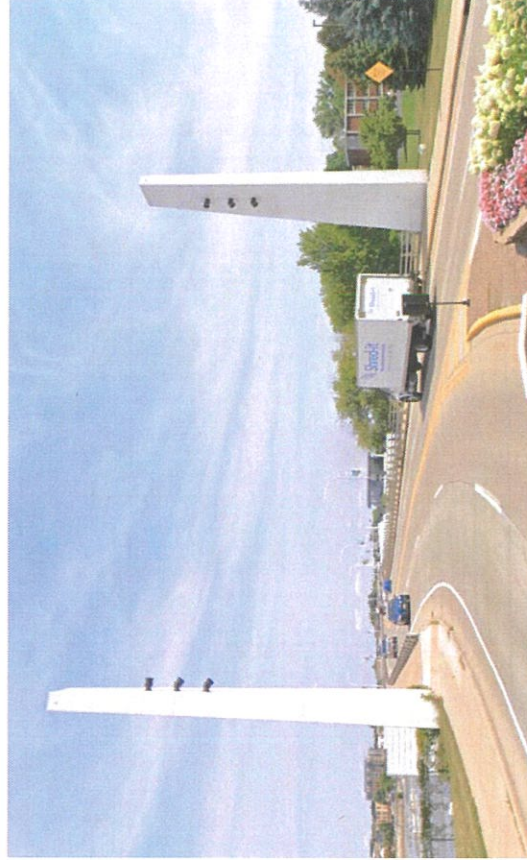
- 6 Pedestrian Lookouts (3 Each Side)
- +\$60,000 (\$10,000 Each Lookout)
- 0.2% Increase To Estimated Overall Bridge Construction Cost



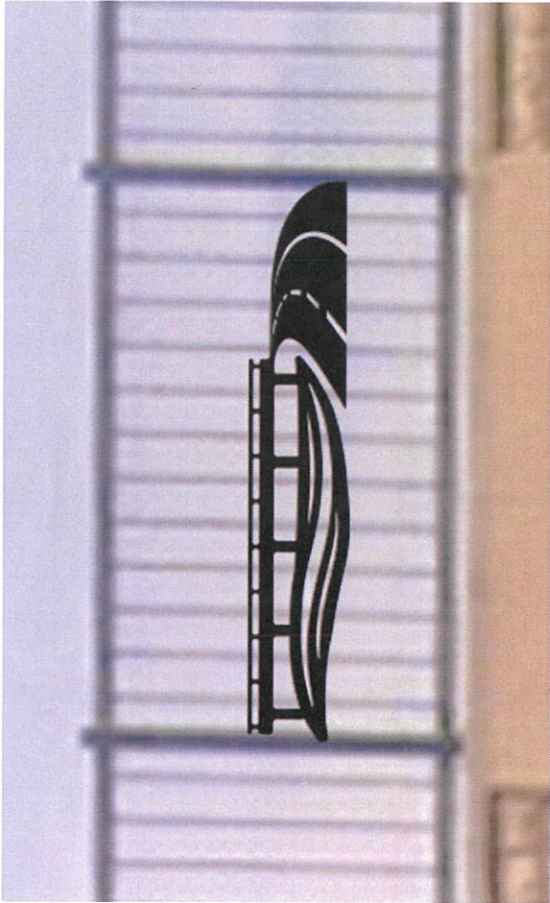


Bridge End Pylons

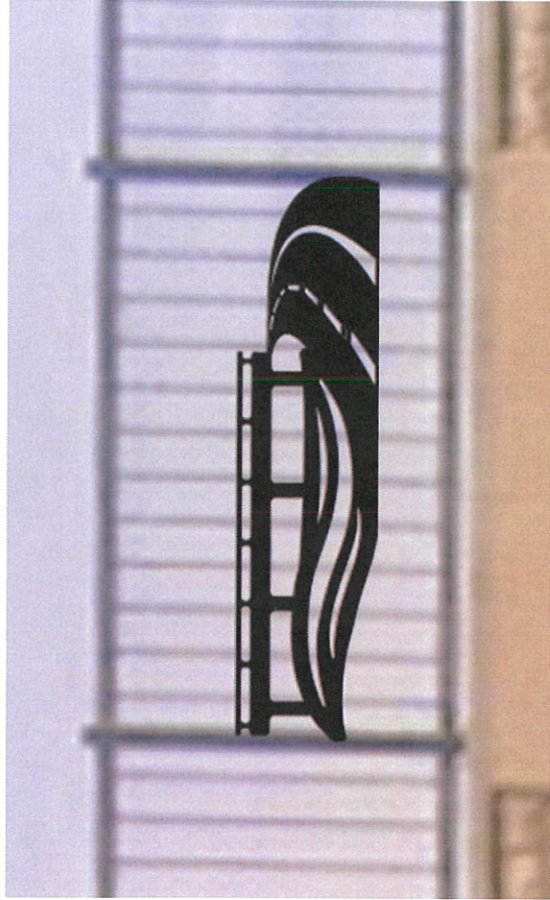
- Decorative Pylons Above the Roadway At Ends Of The Bridge
- +\$66,000 Per Pylon; +\$264,000 For Four Pylons
- 0.7% Increase To Estimated Overall Bridge Construction Cost
- Estimated cost based on pylons similar to the Claude Allouez Bridge in De Pere
- pylons would be proportionally less cost.



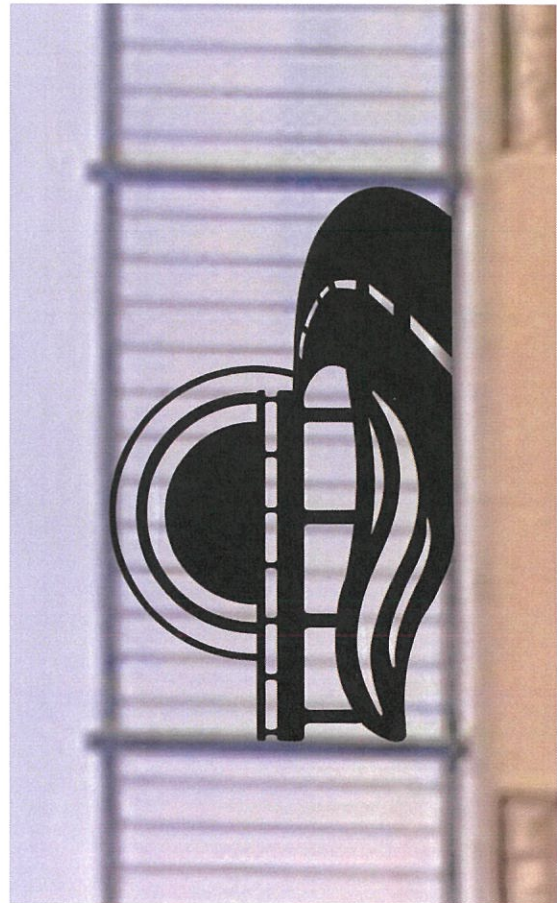
Claude Allouez Bridge in De Pere



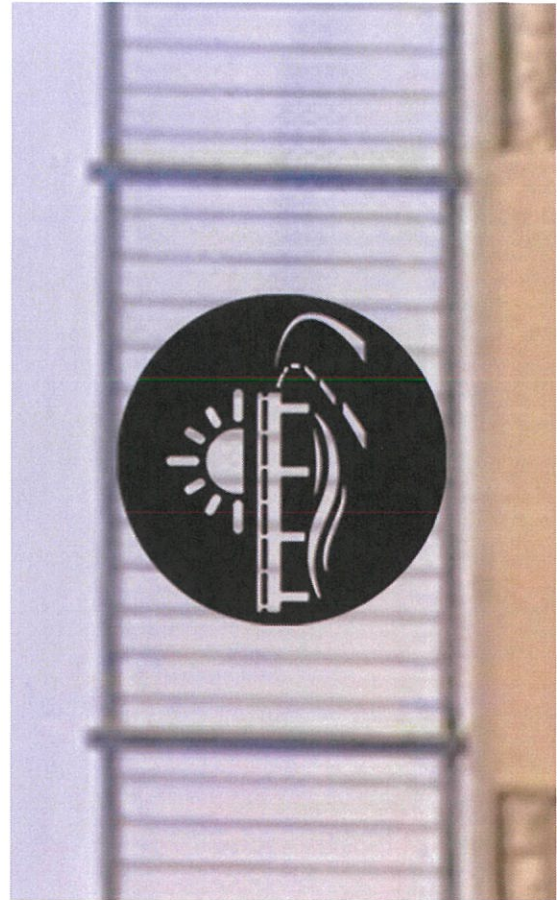
Option 1: Original logo and proportion



Option 2: Original logo with narrow proportion



Option 3: Narrow proportion with sun



Option 4: Narrow proportion with sun reversed

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric Rakers
Date: January 13, 2025
RE: Consideration and possible action on Neighborhood Watch Sign Policy*

The Police Department has received a grant to partially fund the replacement of neighborhood watch associations. Prior to expending funds, a policy needs to be created addressing the future placement and replacement of signs.

Background

De Pere has neighborhood watch signs scattered around the City. Some of the signs are associated with active neighborhood associations while other associations no longer exist or are not active. A map is attached showing the previous neighborhood watch associations whether active or not. The existing signs are aged and need to be replaced. The Police Department has received a grant to partially fund sign replacement for active neighborhood watch associations.

In the past, neighborhood watch associations were responsible for funding the installation of signs. Signs were placed at various locations within the neighborhood association area. There does not appear to have been a policy on the number of signs placed in an association area. Signs were placed on existing signposts or utility poles.

Discussion

There are many different considerations when creating a policy including funding, location of signs, when are signs installed and removed, how many signs can a group have, along with who will maintain the signs and the overall program. Additionally, Wisconsin Statute 66.0429 establishes requirements for installing neighborhood watch signs.

Program Oversight. One of the challenges has been tracking active neighborhood associations. For signs to be installed and maintained, the association must remain active. This program has been run by the Police Department in the past in conjunction with Statute 66.0429 (2) which states that “a city or village which has a neighborhood watch program authorized by the law enforcement agency”. Based on this, the Police Department will oversee the program, including funding/invoicing, tracking active associations, and installing, maintaining, and replacing signs.

Sign installation will be completed by the Street Department, as directed by the Police Department. Signs will be made by the Street Department.

Funding. The Police Department has received a \$3,000 grant to re-establish signs. This will not fund all the signs. Based on internal discussions, the goal is to provide each active neighborhood watch association with two signs. Signs in the past were funded by the neighborhood watch association. Requiring neighborhood watch associations to purchase signs provides a balance to the number of signs a neighborhood watch association will request. The Police Department believes they have enough money to fund up to two signs for each group.

Maintenance costs for sign replacement has been funded by the neighborhood watch associations in the past. This should be continued as part of the program.

Location/Number of Signs. It is difficult to establish a “one size fits all” for the installation of neighborhood association signs due to the sizes and configurations of various neighborhood watch associations. As can be seen on the neighborhood watch associations map, the associations vary significantly in size, with some having multiple entrance points and some being on cul de sacs.

Sign installation should be restricted to entrances into the association. Signs should not be placed internally within an association. The goal is to highlight the entrance into the association while balancing the overuse of signs within the right of way.

Sign installation has been restricted to existing signposts, light poles, or the back of stop signs in the past. Staff reviewed this practice and determined that the placement on the back of stop signs is not allowed. Additionally, when using stop signs, the association signs are located on the opposite side of the road for standard sign placement (signs are typically on the right-hand side). The use of existing sign poles and streetlights reduces the cost of implementation while minimizing too many signs scattered throughout the right of way.

Installation. Neighborhood watch signs have primarily been installed by City staff. Signs were placed on existing signposts or utility poles. The advantage to this is two-fold. First, installing on existing signposts and utility poles helps reduce the costs of sign installation, which will be charged back to the association. Second, it can help to reduce the number of new signs installed in an area.

Recommendation

Staff recommends the attached policy be approved, with up to two signs per active neighborhood watch association being funded in 2025.

Attachments:

- Draft Policy Neighborhood Watch Sign Program
- Existing Neighborhood Watch Associations
- Wisconsin Statute 66.0429 Street barriers; neighborhood watch signs.



DRAFT POLICY NEIGHBORHOOD WATCH SIGN PROGRAM

PROGRAM OVERSIGHT

The Neighborhood Watch Sign Program will be administered by the Police Department in accordance with Wisconsin Statute 66.04029. The Police Department will maintain a list of active associations. If associations are dissolved or considered inactive, the Police Department will direct the Street Department to remove signs.

Neighborhood watch signs shall have a uniform design created by the Street Department in coordination with the Police Department and approved by the Wisconsin Department of Transportation per Statute 66.0429 (2).

FUNDING

Neighborhood watch sign installation shall be funded by the associations. The association will make a request to the Police Department. If approved, the Police Department will direct the Street Department to create a sign and install per the policy below.

The cost to repair or replace signs shall be funded by the associations at the same cost as a new sign.

The cost to install, repair, or replace a sign is for the sign creation. The City will install the sign at no cost to the association.

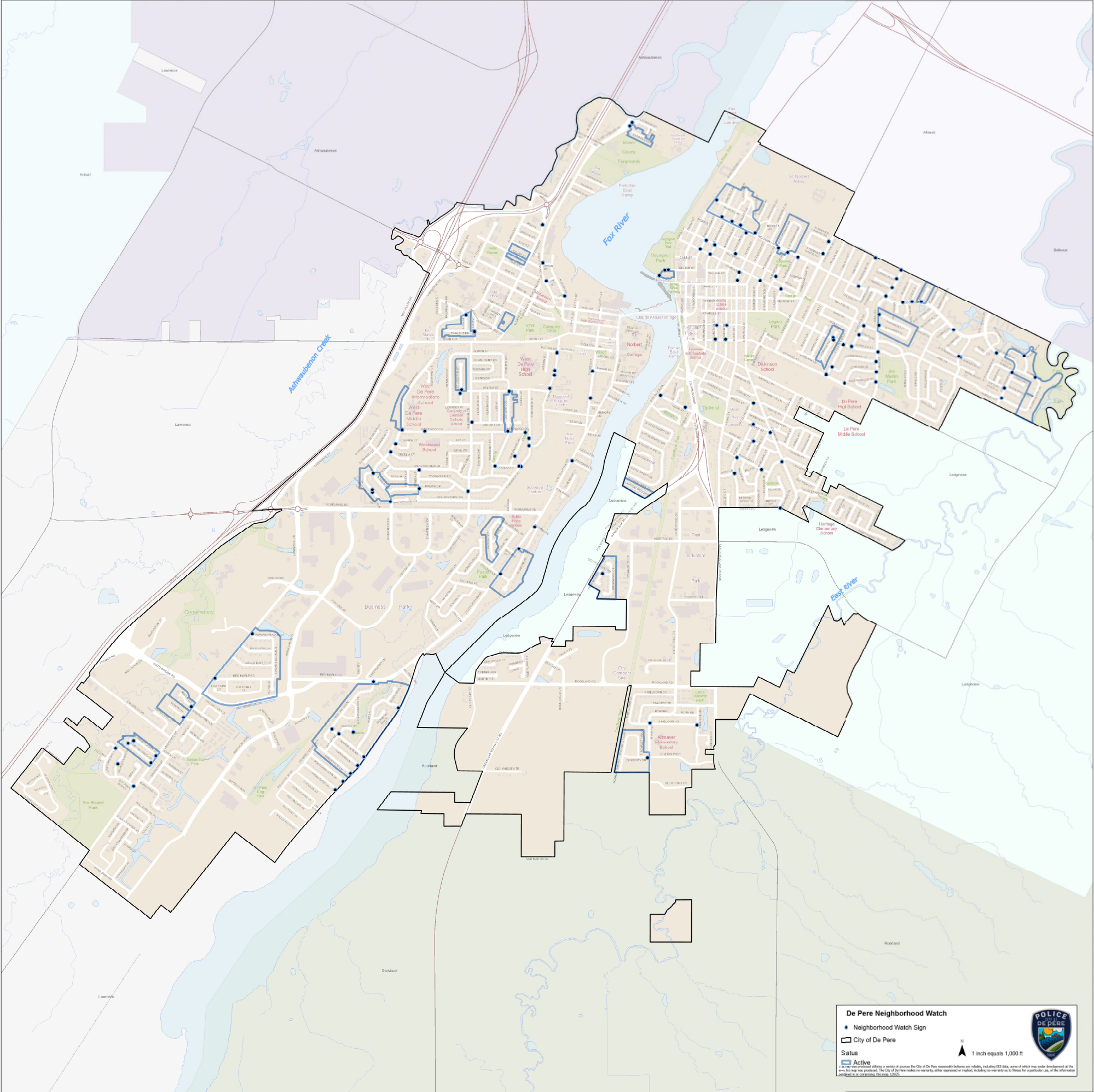
There is no charge to remove old signs.

The Street Department will invoice the association for sign installation, repair, or replacement. The cost for sign installation will be determined by the Street Department.

LOCATION/INSTALLATION

Sign installation shall be restricted to the entrances into a neighborhood association. Signs shall be located on the right-hand side of the street and placed on existing signposts or utility poles. The sign will be placed as close to the entrance of association as possible based on the location of existing signposts or utility poles.

Sign maintenance/replacement will be determined by the City.



75 Updated 23-24 Wis. Stats.

MUNICIPAL LAW

66.0435

(10) A privilege may be granted only as provided in this section.

History: 1985 a. 297; 1991 a. 316; 1993 a. 184, 246; 1997 a. 27; 1999 a. 150 ss. 111, 114; Stats. 1999 s. 66.0425; 2005 a. 441; 2015 a. 231.

When the plaintiff fell due to a depression in a street enclosed as a temporary sidewalk, the city, not the indemnitor contractor, was primarily liable since the contractor did no excavation in the street and its enclosing of the street did not cause the defect. *Webster v. Klug & Smith*, 81 Wis. 2d 334, 260 N.W.2d 686 (1978).

66.0427 Open excavations in populous counties. In a town, city or village in a county with a population of 750,000 or more no excavation for building purposes, whether or not completed, may be left open for more than 6 months without proceeding with the erection of a building on the excavation. If an excavation remains open for more than 6 months, the building inspector or other designated officer of the town, village or city shall order that the erection of a building on the excavation begin forthwith or that the excavation be filled to grade. The order shall be served upon the owner of the land or the owner's agent and upon the holder of any encumbrance of record as provided in s. 66.0413 (1) (d). If the owner of the land fails to comply with the order within 15 days after service of the order upon the owner, the building inspector or other designated officer shall fill the excavation to grade and the cost shall be charged against the real estate as provided in s. 66.0413 (1) (f). Section 66.0413 (1) (h) applies to orders issued under this section. This section does not impair the authority of a city or village to enact ordinances in this field.

History: 1999 a. 150 s. 145; 2017 a. 207 s. 5.

66.0429 Street barriers; neighborhood watch signs.

(1) The governing body of a city, village or town may set aside streets or roads that are not a part of any federal, state or county trunk highway system for the safety of children in coasting or other play activities, and may obstruct or barricade the streets or roads to safeguard the children from accidents. The governing body of the city, village or town may erect and maintain on the streets or roads barriers or barricades, lights, or warning signs and is not liable for any damage caused by the erection or maintenance.

(2) A city or village which has a neighborhood watch program authorized by the law enforcement agency of the city or village and in which the residents of the city or village participate may, in a manner approved by the city council or village board, place within the right-of-way of a street or highway within its limits a neighborhood watch sign of a uniform design approved by the department of transportation. No sign under this subsection may be placed within the right-of-way of a highway designated as part of the national system of interstate and defense highways.

(3) (a) The governing body of a city may monitor or limit access to streets that are not part of any federal, state or county trunk highway system or connecting highway, as described in s. 84.02 (11), for the purposes of security or public safety. The governing body of a city may authorize gates or security stations, or both, to be erected and maintained to monitor traffic or limit access on these streets. The restriction of access to streets that is authorized under this subsection does not affect a city's eligibility for state transportation aids.

(b) This subsection applies only to the city of Arcadia.

History: 1985 a. 194; 1987 a. 205; 1993 a. 113, 246; 1999 a. 150 s. 115; Stats. 1999 s. 66.0429.

66.0431 Prohibiting operators from leaving keys in parked motor vehicles. The governing body of a city, village or town may by ordinance require every passenger motor vehicle to be equipped with a lock suitable to lock either the starting lever, throttle, steering apparatus, gear shift lever or ignition system; prohibit any person from permitting a motor vehicle in the

person's custody from standing or remaining unattended on any street, road, or alley or in any other public place, except an attended parking area, unless either the starting lever, throttle, steering apparatus, gear shift or ignition of the vehicle is locked and the key for that lock is removed from the vehicle; and provide forfeitures for violations of the ordinance. This section does not apply to motor vehicles operated by common carriers of passengers under ch. 194.

History: 1991 a. 316; 1993 a. 246; 1999 a. 150 s. 615; Stats. 1999 s. 66.0431.

66.0433 Licenses for nonintoxicating beverages. (1)

A town board, village board or common council may grant licenses to persons it considers proper for the sale of beverages containing less than 0.5 percent of alcohol by volume to be consumed on the premises where sold and to manufacturers, wholesalers, retailers and distributors of these beverages. The fee for a license shall be not less than \$5 nor more than \$50, to be fixed by the board or council, except that where these beverages are sold for consumption off the premises the license fee shall be \$5. The license shall be issued by the town, village or city clerk, shall designate the specific premises for which granted and shall expire the next June 30 after issuance. The full license fee shall be charged for the whole or a fraction of the year. No beverages described in this paragraph may be manufactured, sold at wholesale or retail or sold for consumption on the premises, or kept for sale at wholesale or retail or for consumption on the premises where sold, without a license issued under this paragraph.

(1m) If a place of business moves from the premises designated in the license to another location in the town, village or city within the license period, the licensee shall give notice of the change of location, and the license shall be amended accordingly without payment of an additional fee. A license is not transferable from one person to another.

(2) No license or permit may be granted to any person, unless to a domestic corporation or domestic limited liability company, not a resident of this state and of the town, village or city in which the license is applied for, nor, subject to ss. 111.321, 111.322 and 111.335, to any person who has been convicted of a felony, unless the person has been restored to civil rights.

(3) A town board, village board or common council may by resolution or ordinance adopt reasonable and necessary regulations regarding the location of licensed premises, the conduct of the licensed premises, the sale of beverages containing less than 0.5 percent of alcohol by volume and the revocation of any license.

History: 1977 c. 125; 1981 c. 334 s. 25 (1); 1981 c. 380, 391; 1993 a. 112; 1999 a. 150 s. 156; Stats. 1999 s. 66.0433; 2017 a. 59.

66.0435 Manufactured and mobile home communities. (1) DEFINITIONS. In this section:

(am) "Community" means a manufactured and mobile home community.

(b) "Licensee" means any person licensed to operate and maintain a manufactured and mobile home community under this section.

(c) "Licensing authority" means the city, town or village wherein a manufactured and mobile home community is located.

(cg) "Manufactured and mobile home community" means any plot or plots of ground upon which 3 or more manufactured homes or mobile homes, occupied for dwelling or sleeping purposes, are located, regardless of whether a charge is made for the accommodation.

(cm) "Manufactured home" has the meaning given in s. 101.91 (2) and includes any additions, attachments, annexes, foundations, and appurtenances.

(d) "Mobile home" has the meaning given in s. 101.91 (10)

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric P. Rakers, P.E., City Engineer
Date: January 13, 2025

RE: **Consideration and possible action on award of Contract 24-17 Community Center Relay***

The Engineering Department received bids on Project 24-17 Community Center Utility Relay on Thursday, December 12, 2024. This project involves relaying sanitary sewer and storm sewer near the Community Center north of Grant Street. A section of the storm sewer is collapsing. Additionally, part of the existing box culvert will be relayed and the sanitary sewer relocated out of this culvert. The bids received are as follows:

Contractor	Amount
Alfson Excavating LLC	\$662,927.50
Kruczek Construction, Inc.	\$727,777.77
De Groot, Inc.	\$752,708.38
Calnin & Goss, LLC	\$755,583.29
Dorner, Inc.	\$774,019.50
Advance Construction Inc.	\$785,896.00
Highway Landscapers, Inc.	\$803,752.25
PTS Contractors, Inc.	\$899,983.00

The allocated funding amount from the capital improvement budget is \$684,600.00, which is broken down as follows:

- Storm Water Utility: \$485,600.00
- Sewerage Utility: \$199,000.00

Staff's recommendation is to accept the bid from Alfson Excavating LLC in the amount of \$662,927.50

Attachments:

2024 1212 CE_Project 24-17_Bid Tab (PDF)



Project 24-17
Community Center Utility Relay

				BIDDER NO. 1		BIDDER NO. 2		BIDDER NO. 3		BIDDER NO. 4		BIDDER NO. 5		BIDDER NO. 6		BIDDER NO. 7		BIDDER NO. 8	
				Alfson Excavating LLC		Kruczek Construction Inc.		De Groot, Inc.		Calnin & Goss, LLC		Dorner Inc.		Advance Construction Inc.		Highway Landscapers, Inc.		PTS Contractors, Inc	
ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID
SANITARY SEWER																			
SS-01	Provide 12" PVC Sanitary Sewer (Granular Backfill)	LF	175	\$130.00	\$22,750.00	\$111.00	\$19,425.00	\$117.07	\$20,487.25	\$106.34	\$18,609.50	\$148.00	\$25,900.00	\$172.00	\$30,100.00	\$175.15	\$30,651.25	\$173.00	\$30,275.00
SS-02	Provide 12" PVC Sanitary Sewer (Natural Backfill)	LF	270	\$105.00	\$28,350.00	\$85.00	\$22,950.00	\$93.34	\$25,201.80	\$85.76	\$23,155.20	\$108.00	\$29,160.00	\$116.00	\$31,320.00	\$120.15	\$32,440.50	\$114.00	\$30,780.00
SS-03	Remove and Relay 10" PVC Sanitary Sewer (Granular Backfill)	LF	50	\$125.00	\$6,250.00	\$128.00	\$6,400.00	\$110.66	\$5,533.00	\$197.30	\$9,865.00	\$139.00	\$6,950.00	\$163.00	\$8,150.00	\$167.60	\$8,380.00	\$150.00	\$7,500.00
SS-04	Remove and Relay 10" PVC Sanitary Sewer (Natural Backfill)	LF	60	\$110.00	\$6,600.00	\$102.00	\$6,120.00	\$69.38	\$4,162.80	\$149.65	\$8,979.00	\$107.00	\$6,420.00	\$123.00	\$7,380.00	\$112.60	\$6,756.00	\$105.00	\$6,300.00
SS-05	Provide 10" PVC Sanitary Sewer (Granular Backfill)	LF	15	\$125.00	\$1,875.00	\$128.00	\$1,920.00	\$103.02	\$1,545.30	\$106.75	\$1,601.25	\$122.00	\$1,830.00	\$163.00	\$2,445.00	\$167.60	\$2,514.00	\$278.00	\$4,170.00
SS-06	Provide 10" PVC Sanitary Sewer (Natural Backfill)	LF	20	\$110.00	\$2,200.00	\$102.00	\$2,040.00	\$70.70	\$1,414.00	\$65.75	\$1,315.00	\$90.00	\$1,800.00	\$123.00	\$2,460.00	\$112.60	\$2,252.00	\$185.00	\$3,700.00
SS-07	Provide 8" PVC Sanitary Sewer (Granular Backfill)	LF	50	\$105.00	\$5,250.00	\$121.00	\$6,050.00	\$107.76	\$5,388.00	\$192.69	\$9,634.50	\$136.00	\$6,800.00	\$158.00	\$7,900.00	\$161.45	\$8,072.50	\$155.00	\$7,750.00
SS-08	Provide 4" PVC Sanitary Sewer Lateral	LF	30	\$125.00	\$3,750.00	\$93.00	\$2,790.00	\$50.57	\$1,517.10	\$41.96	\$1,258.80	\$118.00	\$3,540.00	\$76.00	\$2,280.00	\$75.00	\$2,250.00	\$150.00	\$4,500.00
SS-09	Provide 12"x4" Sanitary Wye	EA	1	\$500.00	\$500.00	\$390.00	\$390.00	\$840.32	\$840.32	\$598.39	\$598.39	\$420.00	\$420.00	\$340.00	\$340.00	\$515.00	\$515.00	\$500.00	\$500.00
SS-10	Provide 4' Diameter Outside Drop Sanitary Sewer Manhole	VF	11	\$1,200.00	\$13,200.00	\$926.00	\$10,186.00	\$884.03	\$9,724.33	\$1,797.79	\$19,775.69	\$1,766.00	\$19,426.00	\$1,200.00	\$13,200.00	\$1,410.00	\$15,510.00	\$2,000.00	\$22,000.00
SS-11	Provide 4' Diameter Sanitary Sewer Manhole	VF	17	\$720.00	\$12,240.00	\$877.00	\$14,909.00	\$879.72	\$14,955.24	\$1,982.31	\$33,699.27	\$1,112.00	\$18,904.00	\$564.00	\$9,588.00	\$1,135.00	\$19,295.00	\$900.00	\$15,300.00
SS-12	Remove and Replace 4' Diameter Sanitary Sewer Manhole	VF	6	\$760.00	\$4,560.00	\$936.00	\$5,616.00	\$1,313.32	\$7,879.92	\$1,797.39	\$10,784.34	\$1,164.00	\$6,984.00	\$822.00	\$4,932.00	\$1,264.00	\$7,584.00	\$1,000.00	\$6,000.00
SS-13	Connect to Existing Sanitary Sewer Pipe (4" to 12")	EA	5	\$1,000.00	\$5,000.00	\$1,160.00	\$5,800.00	\$3,030.00	\$15,150.00	\$952.81	\$4,764.05	\$1,165.00	\$5,825.00	\$600.00	\$3,000.00	\$325.00	\$1,625.00	\$2,500.00	\$12,500.00
SS-14	Connect to Existing Sanitary Sewer Manhole	EA	1	\$1,500.00	\$1,500.00	\$1,120.00	\$1,120.00	\$3,030.00	\$3,030.00	\$1,875.47	\$1,875.47	\$1,050.00	\$1,050.00	\$1,000.00	\$1,000.00	\$500.00	\$500.00	\$5,000.00	\$5,000.00
SS-15	Dig Down and Verify Sanitary Sewer Pipe	EA	1	\$1,000.00	\$1,000.00	\$650.00	\$650.00	\$1,515.00	\$1,515.00	\$1,875.47	\$1,875.47	\$1,050.00	\$1,050.00	\$750.00	\$750.00	\$700.00	\$700.00	\$1,000.00	\$1,000.00
SS-16	Abandon/Remove Sanitary Sewer and Appurtenances	LS	1	\$6,000.00	\$6,000.00	\$9,000.00	\$9,000.00	\$5,151.00	\$5,151.00	\$2,878.76	\$2,878.76	\$2,085.00	\$2,085.00	\$5,000.00	\$5,000.00	\$22,500.00	\$22,500.00	\$3,500.00	\$3,500.00
STORM SEWER																			
ST-01	Provide 38"x60" Reinforced Concrete (Class HE-III) Elliptical Storm Sewer (Granular Backfill)	LF	75	\$430.00	\$32,250.00	\$538.00	\$40,350.00	\$512.22	\$38,416.50	\$101.01	\$7,575.75	\$492.00	\$36,900.00	\$500.00	\$37,500.00	\$505.00	\$37,875.00	\$480.00	\$36,000.00
ST-02	Provide 72" RCP (Class III) Storm Sewer (Natural Backfill)	LF	200	\$455.00	\$91,000.00	\$521.00	\$104,200.00	\$493.18	\$98,636.00	\$495.49	\$99,098.00	\$528.00	\$105,600.00	\$498.00	\$99,600.00	\$482.00	\$96,400.00	\$512.00	\$102,400.00
ST-03	Provide 60" RCP (Class III) Storm Sewer (Granular Backfill)	LF	80	\$415.00	\$33,200.00	\$440.00	\$35,200.00	\$489.53	\$39,162.40	\$418.62	\$33,489.60	\$462.00	\$36,960.00	\$453.00	\$36,240.00	\$551.00	\$44,080.00	\$485.00	\$38,800.00
ST-04	Provide 60" RCP (Class III) Storm Sewer (Natural Backfill)	LF	160	\$320.00	\$51,200.00	\$400.00	\$64,000.00	\$354.32	\$56,691.20	\$378.49	\$60,558.40	\$389.00	\$62,240.00	\$391.00	\$62,560.00	\$368.00	\$58,880.00	\$402.00	\$64,320.00
ST-05	Provide 36" RCP (Class III) Storm Sewer (Natural Backfill)	LF	40	\$225.00	\$9,000.00	\$161.00	\$6,440.00	\$219.48	\$8,779.20	\$187.02	\$7,480.80	\$195.00	\$7,800.00	\$193.50	\$7,740.00	\$147.00	\$5,880.00	\$225.00	\$9,000.00
ST-06	Remove and Replace 36" RCP (Class III) Storm Sewer (Natural Backfill)	LF	8	\$280.00	\$2,240.00	\$186.00	\$1,488.00	\$207.05	\$1,656.40	\$328.37	\$2,626.96	\$437.00	\$3,496.00	\$243.50	\$1,948.00	\$292.00	\$2,336.00	\$300.00	\$2,400.00
ST-07	Remove and Replace 30" RCP (Class III) Storm Sewer (Natural Backfill)	LF	8	\$260.00	\$2,080.00	\$160.00	\$1,280.00	\$188.22	\$1,505.76	\$344.29	\$2,754.32	\$394.00	\$3,152.00	\$220.00	\$1,760.00	\$266.00	\$2,128.00	\$265.00	\$2,120.00
ST-08	Provide 18" PP, PVC, or RCP (Class III) Storm Sewer (Natural Backfill)	LF	65	\$70.00	\$4,550.00	\$74.00	\$4,810.00	\$87.13	\$5,663.45	\$155.08	\$10,080.20	\$106.00	\$6,890.00	\$105.00	\$6,825.00	\$69.30	\$4,504.50	\$120.00	\$7,800.00
ST-09	Provide 12" PP, PVC, or RCP (Class III) Storm Sewer (Granular Backfill)	LF	30	\$69.00	\$2,070.00	\$76.00	\$2,280.00	\$123.04	\$3,691.20	\$109.08	\$3,272.40	\$112.00	\$3,360.00	\$109.00	\$3,270.00	\$67.80	\$2,034.00	\$150.00	\$4,500.00
ST-10	Provide 12" PP, PVC, or RCP (Class III) Storm Sewer (Natural Backfill)	LF	140	\$67.00	\$9,380.00	\$59.00	\$8,260.00	\$93.03	\$13,024.20	\$79.98	\$11,197.20	\$84.00	\$11,760.00	\$89.00	\$12,460.00	\$57.80	\$8,092.00	\$150.00	\$21,000.00
ST-11	Provide 10" PVC Storm Sewer (Granular Backfill)	LF	30	\$70.00	\$2,100.00	\$100.00	\$3,000.00	\$101.44	\$3,043.20	\$124.14	\$3,724.20	\$107.00	\$3,210.00	\$113.00	\$3,390.00	\$72.60	\$2,178.00	\$130.00	\$3,900.00
ST-12	Provide 10" PVC Storm Sewer (Natural Backfill)	LF	40	\$68.00	\$2,720.00	\$70.00	\$2,800.00	\$85.85	\$3,434.00	\$56.25	\$2,250.00	\$87.00	\$3,480.00	\$93.00	\$3,720.00	\$62.60	\$2,504.00	\$120.00	\$4,800.00
ST-13	Provide 6" PVC Storm Sewer (Granular Backfill)	LF	30	\$60.00	\$1,800.00	\$66.00	\$1,980.00	\$85.69	\$2,570.70	\$121.75	\$3,652.50	\$88.00	\$2,640.00	\$72.50	\$2,175.00	\$62.35	\$1,870.50	\$100.00	\$3,000.00
ST-14	Provide 6" PVC Storm Sewer (Natural Backfill)	LF	20	\$58.00	\$1,160.00	\$53.00	\$1,060.00	\$70.70	\$1,414.00	\$101.23	\$2,024.60	\$69.00	\$1,380.00	\$52.50	\$1,050.00	\$52.35	\$1,047.00	\$90.00	\$1,800.00
ST-15	Provide 72"x12" Storm Branch or Inserta Tee	EA	3	\$700.00	\$2,100.00	\$781.00	\$2,343.00	\$1,050.40	\$3,151.20	\$718.35	\$2,155.05	\$1,665.00	\$4,995.00	\$1,000.00	\$3,000.00	\$842.00	\$2,526.00	\$1,000.00	\$3,000.00
ST-16	Provide 60"x12" Storm Branch or Inserta Tee	EA	1	\$700.00	\$700.00	\$781.00	\$781.00	\$1,050.40	\$1,050.40	\$1,481.59	\$1,481.59	\$1,665.00	\$1,665.00	\$1,000.00	\$1,000.00	\$842.00	\$842.00	\$1,000.00	\$1,000.00
ST-17	Provide 60"x6" Storm Branch or Inserta Tee	EA	1	\$450.00	\$450.00	\$356.00	\$356.00	\$573.68	\$573.68	\$1,110.42	\$1,110.42	\$850.00	\$850.00	\$330.00	\$330.00	\$490.00	\$490.00	\$1,000.00	\$1,000.00
ST-18	Provide 10' Cast-in-Place Manhole	VF	8	\$2,300.00	\$18,400.00	\$10,600.00	\$84,800.00	\$10,126.18	\$81,009.44	\$1,687.72	\$13,501.76	\$10,056.00	\$80,448.00	\$11,558.00	\$92,464.00	\$4,995.00	\$39,960.00	\$15,000.00	\$120,000.00
ST-19	Provide 10' Diameter Storm Manhole or Equivalent Box	VF	16	\$3,100.00	\$49,600.00	\$2,960.00	\$47,360.00	\$2,965.12	\$47,441.92	\$3,243.37	\$51,893.92	\$3,441.00	\$55,056.00	\$3,179.00	\$50,864.00	\$2,985.00	\$47,760.00	\$3,100.00	\$49,600.00
ST-20	Provide 9' Diameter Storm Manhole or Equivalent Box	VF	14	\$2,250.00	\$31,500.00	\$2,126.00	\$29,764.00	\$1,987.05	\$27,818.70	\$2,193.07	\$30,702.98	\$2,230.00	\$31,220.00	\$2,427.00	\$33,978.00	\$2,426.00	\$33,964.00	\$2,300.00	\$32,200.00
ST-21	Provide 6' Diameter Storm Manhole	VF	6	\$1,250.00	\$7,500.00	\$1,236.00	\$7,416.00	\$1,385.06	\$8,310.36	\$1,569.69	\$9,418.14	\$1,459.00	\$8,754.00	\$1,262.00	\$7,572.00	\$1,235.00	\$7,410.00	\$1,200.00	\$7,200.00
ST-22	Provide 5' Diameter Storm Manhole	VF	7	\$975.00	\$6,825.00	\$832.00	\$5,824.00	\$994.46	\$6,961.22	\$1,156.21	\$8,093.47	\$1,105.00	\$7,735.00	\$861.00	\$6,027.00	\$920.00	\$6,440.00	\$1,000.00	\$7,000.00
ST-23	Provide Type A Inlet	EA	2	\$125.00	\$250.00	\$2,575.00	\$5,150.00	\$2,427.37	\$4,854.74	\$3,306.77	\$6,613.54	\$3,310.00	\$6,620.00	\$2,000.00	\$4,000.00	\$1,850.00	\$3,700.00	\$2,500.00	\$5,000.00
ST-24	Connect to Existing 60"x84" Box Culvert	EA	1	\$4,500.00	\$4,500.00	\$6,776.83	\$6,776.83	\$5,050.00	\$5,050.00	\$2,555.88	\$2,555.88	\$3,500.00	\$3,500.00	\$4,000.00	\$4,000.00	\$3,500.00	\$3,500.00	\$26,000.00	\$26,000.00
ST-25	Connect to Existing Pipe with Concrete Collar (30" to 36")	EA	2	\$1,000.00	\$2,000.00	\$603.50	\$1,207.00	\$2,272.50	\$4,545.00	\$1,850.30	\$3,700.60	\$1,950.00	\$3,900.00	\$1,800.00	\$3,600.00	\$1,500.00	\$3,000.00	\$2,520.00	\$5,040.00
ST-26	Connect to Existing Pipe (6" to 18")	EA	7	\$750.00	\$5,250.00	\$800.00	\$5,600.00	\$1,512.11	\$10,584.77	\$522.55	\$3,657.85	\$1,565.00	\$10,955.00	\$400.00	\$2,800.00	\$750.00	\$5,250.00	\$925.00	\$6,475.00
ST-27	Dig Down and Verify Storm Sewer Pipe	EA	9	\$1,000.00	\$9,000.00	\$650.00	\$5,850.00	\$1,161.50	\$10,453.50	\$694.62	\$6,251.58	\$1,050.00	\$9,450.00	\$750.00	\$6,750.00	\$700.00	\$6,300.00	\$1,010.00	\$9,090.00
ST-28	Abandon/Remove Existing Storm Sewer Appurtenances	LS	1	\$17,000.00	\$17,000.00	\$23,000.00	\$23,000.00	\$16,665.00	\$16,665.00	\$49,823.17	\$49,823.17	\$4,170.00	\$4,170.00	\$50,000.00	\$50,000.00	\$46,500.00	\$46,500.00	\$38,800.00	\$38,800.00



Project 24-17
Community Center Utility Relay

				BIDDER NO. 1		BIDDER NO. 2		BIDDER NO. 3		BIDDER NO. 4		BIDDER NO. 5		BIDDER NO. 6		BIDDER NO. 7		BIDDER NO. 8	
				Alfson Excavating LLC		Kruczek Construction Inc.		De Groot, Inc.		Calnin & Goss, LLC		Dorner Inc.		Advance Construction Inc.		Highway Landscapers, Inc.		PTS Contractors, Inc	
ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID	UNIT PRICE	AMOUNT BID
STREET AND DRAINAGE																			
SD-01	Provide Clearing and Grubbing	LS	1	\$20,500.00	\$20,500.00	\$11,000.00	\$11,000.00	\$10,100.00	\$10,100.00	\$12,542.93	\$12,542.93	\$10,550.00	\$10,550.00	\$10,000.00	\$10,000.00	\$5,500.00	\$5,500.00	\$10,000.00	\$10,000.00
SD-02	Provide 1-1/4" Crushed Aggregate Base Course	TON	20	\$20.00	\$400.00	\$16.00	\$320.00	\$25.25	\$505.00	\$37.10	\$742.00	\$26.90	\$538.00	\$20.00	\$400.00	\$35.00	\$700.00	\$22.00	\$440.00
SD-03	Provide Asphaltic Concrete Pavement Type 4 LT 58-28 S, 1-3/4" Upper Layer	TON	80	\$125.00	\$10,000.00	\$114.00	\$9,120.00	\$121.96	\$9,756.80	\$145.65	\$11,652.00	\$130.00	\$10,400.00	\$113.80	\$9,104.00	\$113.80	\$9,104.00	\$120.00	\$9,600.00
SD-04	Provide Asphaltic Concrete Pavement Type 3 LT 58-28 S, 2-1/4" Lower Layer	TON	110	\$145.00	\$15,950.00	\$136.00	\$14,960.00	\$146.35	\$16,098.50	\$173.68	\$19,104.80	\$153.60	\$16,896.00	\$135.70	\$14,927.00	\$135.70	\$14,927.00	\$145.00	\$15,950.00
SD-05	Remove and Replace 9" Doweled Concrete Pavement	SY	15	\$180.00	\$2,700.00	\$113.00	\$1,695.00	\$126.46	\$1,896.90	\$198.38	\$2,975.70	\$152.80	\$2,292.00	\$112.00	\$1,680.00	\$220.00	\$3,300.00	\$127.00	\$1,905.00
SD-06	Remove and Replace 24" Integral Concrete Curb and Gutter	LF	10	\$35.00	\$350.00	\$32.00	\$320.00	\$29.13	\$291.30	\$163.19	\$1,631.90	\$40.90	\$409.00	\$38.00	\$380.00	\$125.00	\$1,250.00	\$44.00	\$440.00
SD-07	Remove and Replace 24" Concrete Curb and Gutter	LF	610	\$37.00	\$22,570.00	\$31.00	\$18,910.00	\$33.80	\$20,618.00	\$44.16	\$26,937.60	\$30.40	\$18,544.00	\$32.70	\$19,947.00	\$80.00	\$48,800.00	\$34.00	\$20,740.00
SD-08	Remove and Replace 6" Concrete Sidewalk, Ramp, or Driveway	SY	120	\$90.00	\$10,800.00	\$91.00	\$10,920.00	\$105.66	\$12,679.20	\$115.83	\$13,899.60	\$103.30	\$12,396.00	\$92.00	\$11,040.00	\$135.00	\$16,200.00	\$106.00	\$12,720.00
SD-09	Remove and Replace 4" Concrete Sidewalk	SY	110	\$85.00	\$9,350.00	\$81.00	\$8,910.00	\$96.29	\$10,591.90	\$106.87	\$11,755.70	\$92.60	\$10,186.00	\$83.00	\$9,130.00	\$117.00	\$12,870.00	\$96.00	\$10,560.00
SD-10	Provide #4 Reinforcement Bars for Curb and Sidewalk	LF	420	\$2.00	\$840.00	\$2.00	\$840.00	\$2.12	\$890.40	\$4.48	\$1,881.60	\$2.20	\$924.00	\$2.00	\$840.00	\$2.75	\$1,155.00	\$2.00	\$840.00
SD-11	Drilled Dowel Bars	EA	10	\$30.00	\$300.00	\$14.25	\$142.50	\$15.15	\$151.50	\$32.00	\$320.00	\$15.10	\$151.00	\$14.00	\$140.00	\$25.00	\$250.00	\$15.00	\$150.00
SD-12	Drilled Tie Bars (Existing Sidewalk, Driveway and Curb and Gutter)	EA	50	\$10.00	\$500.00	\$8.00	\$400.00	\$10.10	\$505.00	\$17.92	\$896.00	\$8.60	\$430.00	\$8.00	\$400.00	\$8.00	\$400.00	\$9.00	\$450.00
SD-13	Drilled Tie Bars (Existing Concrete Pavement)	EA	5	\$15.00	\$75.00	\$9.00	\$45.00	\$12.12	\$60.60	\$17.92	\$89.60	\$9.70	\$48.50	\$9.00	\$45.00	\$15.00	\$75.00	\$10.00	\$50.00
SD-14	Provide Detectable Warning Field (Natural Patina)	EA	3	\$360.00	\$1,080.00	\$300.00	\$900.00	\$312.09	\$936.27	\$639.95	\$1,919.85	\$325.00	\$975.00	\$300.00	\$900.00	\$650.00	\$1,950.00	\$320.00	\$960.00
SD-15	Provide Concrete Flume	SY	5	\$150.00	\$750.00	\$160.00	\$800.00	\$156.05	\$780.25	\$639.95	\$3,199.75	\$190.00	\$950.00	\$150.00	\$750.00	\$750.00	\$3,750.00	\$160.00	\$800.00
SD-16	Landscaping - Topsoil, Seed, Fertilizer and Mulch	SY	40	\$50.00	\$2,000.00	\$20.00	\$800.00	\$25.25	\$1,010.00	\$63.99	\$2,559.60	\$20.00	\$800.00	\$20.00	\$800.00	\$25.00	\$1,000.00	\$53.00	\$2,120.00
SPECIAL CONSTRUCTION																			
SC-01	Pipe Foundation Stabilization	CY	100	\$40.00	\$4,000.00	\$0.01	\$1.00	\$25.25	\$2,525.00	\$95.67	\$9,567.00	\$30.00	\$3,000.00	\$25.00	\$2,500.00	\$125.00	\$12,500.00	\$23.00	\$2,300.00
SC-02	Inlet Protection Type B	EA	3	\$75.00	\$225.00	\$70.00	\$210.00	\$151.50	\$454.50	\$127.99	\$383.97	\$110.00	\$330.00	\$50.00	\$150.00	\$75.00	\$225.00	\$106.00	\$318.00
SC-03	Inlet Protection Type D	EA	2	\$150.00	\$300.00	\$100.00	\$200.00	\$151.50	\$303.00	\$255.98	\$511.96	\$110.00	\$220.00	\$85.00	\$170.00	\$150.00	\$300.00	\$215.00	\$430.00
SC-04	Remove, Salvage & Reinstall Sign	LS	1	\$1,000.00	\$1,000.00	\$2,000.00	\$2,000.00	\$2,222.00	\$2,222.00	\$3,839.67	\$3,839.67	\$1,105.00	\$1,105.00	\$200.00	\$200.00	\$4,500.00	\$4,500.00	\$3,200.00	\$3,200.00
SC-05	Remove, Salvage & Reinstall Fence	LS	1	\$2,500.00	\$2,500.00	\$7,944.44	\$7,944.44	\$2,525.00	\$2,525.00	\$15,358.69	\$15,358.69	\$2,755.00	\$2,755.00	\$3,000.00	\$3,000.00	\$3,500.00	\$3,500.00	\$12,000.00	\$12,000.00
SC-06	Traffic Control - Grant Street	LS	1	\$20,000.00	\$20,000.00	\$3,300.00	\$3,300.00	\$12,120.00	\$12,120.00	\$3,199.73	\$3,199.73	\$12,000.00	\$12,000.00	\$12,500.00	\$12,500.00	\$7,500.00	\$7,500.00	\$4,000.00	\$4,000.00
ELECTRICAL																			
E-01	Conduit Rigid Nonmetallic Schedule 40, 2"	LF	300	\$29.50	\$8,850.00	\$10.20	\$3,060.00	\$10.50	\$3,150.00	\$12.80	\$3,840.00	\$10.00	\$3,000.00	\$8.00	\$2,400.00	\$10.00	\$3,000.00	\$10.60	\$3,180.00
E-02	Concrete Base, Type 5	EA	2	\$825.00	\$1,650.00	\$1,606.50	\$3,213.00	\$1,654.38	\$3,308.76	\$2,015.83	\$4,031.66	\$1,615.00	\$3,230.00	\$1,200.00	\$2,400.00	\$1,575.00	\$3,150.00	\$1,700.00	\$3,400.00
E-03	Electrical Wire Lighting 10 AWG	LF	350	\$1.25	\$437.50	\$1.00	\$350.00	\$1.05	\$367.50	\$1.28	\$448.00	\$1.70	\$595.00	\$1.00	\$350.00	\$1.00	\$350.00	\$1.10	\$385.00
E-04	Electrical Wire Lighting 6 AWG	LF	1000	\$2.00	\$2,000.00	\$2.30	\$2,300.00	\$2.36	\$2,360.00	\$2.88	\$2,880.00	\$3.20	\$3,200.00	\$2.35	\$2,350.00	\$2.25	\$2,250.00	\$2.40	\$2,400.00
E-05	Rewire Existing Light Pole	LS	1	\$750.00	\$750.00	\$765.00	\$765.00	\$787.80	\$787.80	\$959.92	\$959.92	\$585.00	\$585.00	\$325.00	\$325.00	\$750.00	\$750.00	\$795.00	\$795.00
E-06	Remove, Salvage, and Reinstall Existing Light Pole	EA	2	\$1,100.00	\$2,200.00	\$2,805.00	\$5,610.00	\$3,030.00	\$6,060.00	\$3,519.70	\$7,039.40	\$590.00	\$1,180.00	\$1,300.00	\$2,600.00	\$2,750.00	\$5,500.00	\$2,915.00	\$5,830.00
TOTAL AMOUNT BID:				\$662,927.50		\$727,777.77		\$752,708.38		\$755,583.20		\$774,019.50		\$785,896.00		\$803,752.25		\$899,983.00	

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric P. Rakers, P.E., City Engineer
Date: January 13, 2025

RE: **Consideration and possible action on the State/Municipal Financial Agreement with WisDOT for I-41-Southbridge Road Interchange***

The Wisconsin Department of Transportation (WisDOT) is continuing construction on the I41 and Southbridge (Generations Boulevard) interchange project. The first phase of the project that started in 2024 was early fill placement in the interchange due to very poor subsoils under WisDOT Project ID 1130-68-81.

The next phase will be constructing the pavement and bridge for the interchange later in 2025. This work is being completed under WisDOT Project ID 1130-68-77. The City will have a small cost for this work. The costs are associated with the following

- Architectural surface treatment with stamped concrete in the roundabouts – 20% of cost to City
- Concrete staining on the overpass – 10% of cost to City and 10% of cost to Town of Lawrence
- Minor sanitary sewer and water valve box adjustments – 10% of cost to City

For this work to be completed, the City needs to enter into a State/Municipal Financial Agreement (SMFA) with WisDOT. The estimated cost for the work in the SMFA is \$3,631.

Staff recommends the Board of Public Works approve the agreement and forward to the Council for approval.

Attachments:

- SMFA for WisDOT Project ID 1130-68-77



**STATE/MUNICIPAL FINANCIAL
AGREEMENT FOR A STATE- LET
HIGHWAY PROJECT**

Date: January 3, 2025
I.D.: 1130-68-77 (Design 1130-63-01)
Road Name: I-41, Southbridge Rd
Title: Appleton – De Pere
Limits: SBC Interchange
County: Brown
Roadway Length: 0.677 MI

The signatory **City of De Pere** hereinafter called the Municipality, through its undersigned duly authorized officers or officials, hereby requests the State of Wisconsin Department of Transportation, hereinafter called the State, to initiate and affect the highway or street improvement hereinafter described.

The authority for the Municipality to enter into this agreement with the State is provided by Section 86.25(1), (2), and (3) of the Statutes.

NEEDS AND ESTIMATE SUMMARY:

Existing Facility - Describe and give reason for request: The I-41 Project corridor, which has four travel lanes, two in each direction – is congested and sees a higher rate of crashes than similarly configured freeways in Wisconsin. By federal standards, the project area has multiple roadway design deficiencies, and much of its pavement and several bridges are nearing the end of their useful lives and must be replaced.

Much of the original pavement in the corridor was built in the 1960s and has reached the end of its useful life, meaning further rehabilitations are no longer cost-effective. The project corridor also has narrow road shoulders, outdated ramp designs, and interchanges spaced too closely to one another – deficiencies that can contribute to safety and operational problems.

Proposed Improvement - Nature of work: The I-41/Southbridge interchange is a new diamond interchange proposed to connect with the future Brown County Southbridge Connector project. WisDOT identified the diamond interchange with roundabouts as the preferred alternative for this location. At the new Southbridge interchange, the roundabout alternative is the safest interchange option, provided the best traffic operations, and has the support of Brown County, Town of Lawrence, and City of De Pere.

Work as part of the 1130-68-77 project will include completion of the new Southbridge interchange. Three multi-lane roundabouts will be installed along the new corridor (I-41 SB ramps, I-41 NB ramps, and French Road). Work will also include a new bridge over I-41 and auxiliary lanes between the new interchange and Scheuring Road to the north.

Describe non-participating work included in the project and other work necessary to finish the project completely which will be undertaken independently by the municipality: Architectural surface treatment and staining will be added to the new I-41/Southbridge overpass along with a silhouette attached to the parapet fence. Stamped colored concrete will also be added to the center island of the three remaining roundabouts (I-41 SB, I-41 NB, and French Road). The municipality is responsible for the additional cost of stamping estimated at 10% of the bid item cost. Sanitary manhole and water valve adjustments are also included for matching final roadway grades.

Phase ¹	Total Est. Cost	Federal/State Funds	%	Other Funds	%	Municipal Funds	%
Design Engineering	N/A	N/A	100%	\$0	0%	\$0	0%
Real Estate Acquisition	N/A	N/A	100%	\$0	0%	\$0	0%

Municipal Utility Coordination:	N/A	N/A	100%	\$0	0%	\$0	0%
Construction ²: 1130-68-77							
Category 1000 – Roadway	\$11,780,899	\$11,780,899	100%	\$0	0%	\$0	0%
Category 1100 – Lighting	\$667,473	\$667,473	100%	\$0	0%	\$0	0%
Category 1200 – FTMS / ITS	\$497,320	\$497,320	100%	\$0	0%	\$0	0%
Category 1400 – CSD ³ (Architectural Surface Treatment & Staining)	\$29,431	\$23,545	80% MAX	\$2,943	10% +BAL	\$2,943	10% +BAL
Category 1410 - CSD ³ (Fence Silhouettes)	\$11,500	\$9,200	80% MAX	\$2,300	20% +BAL	\$0	0%
Category 1420 – CSD ³ (Stamping Colored Concrete – Town of Lawrence)	\$12,144	\$11,901	98% MAX	\$243	2% +BAL	\$0	0%
Category 1430 – CSD ³ (Stamping Colored Concrete – City of De Pere)	\$20,148	\$19,745	98% MAX	\$0	0%	\$403	2% +BAL
Category 1600 – 100% City of De Pere Funded	\$15	\$0	0%	\$0	0%	\$15	100%
Category 1610 – 100% Brown County Funded	\$15	\$0	0%	\$15	100%	\$0	0%
Category 1620 – 100% Town of Lawrence Funded	\$15	\$0	0%	\$15	100%	\$0	0%
Category 1700 – Utilities (Town of Lawrence)	\$2,696	\$2,426	90%	\$270	10%	\$0	0%
Category 1710 – Utilities (City of De Pere)	\$2,696	\$2,426	90%	\$0	0%	\$270	10%
Category 1800 – 100% State Funded	\$1,150	\$1,150	100%	\$0	0%	\$0	0%
Category 2000 – B-05-0696 I41/Southbridge	\$2,583,091	\$2,583,091	100%	\$0	0%	\$0	0%
Category 3000 – C-05-0800 I41 over Hemlock Creek	\$230,849	\$230,849	100%	\$0	0%	\$0	0%
Category 6000 – S-05-0423	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6010 – S-05-0431	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6020 – S-05-0432	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6030 – S-05-0433	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6040 – S-05-0438	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6050 – S-05-0439	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6060 – S-05-0440	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6070 – S-05-0441	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6080 – S-05-0442	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6090 – S-05-0443	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Category 6100 – S-05-0446	\$143,750	\$143,750	100%	\$0	0%	\$0	0%
Subtotal	\$17,420,692	\$17,411,275		\$5,786		\$3,631	
Total Est. Cost Distribution	\$17,420,692	\$17,411,275		\$5,786		\$3,631	

¹. Costs shown are estimates only and may be updated as design progresses

². Estimates include construction engineering, estimated at 15%.

³. Community Sensitive Design (CSD) amenities considered to be the preference of the community are funded with 80% federal funding up to a maximum of \$26,000 for category 1400, \$10,500 for category 1410, \$13,500 for category 1420, and \$22,000 for category 1430.

This request is subject to the terms and conditions that follow (pages [3] – [9]); is made by the undersigned under proper authority to make such request for the designated Municipality, and upon signature by the State and

delivery to the Municipality shall constitute agreement between the Municipality and the State. A review of the existing State Municipal Maintenance Agreement (SMMA) or creation of a new SMMA signed by the Municipality and the State shall be completed in conjunction with this agreement. The initiation and accomplishment of the improvement will be subject to the applicable federal and state regulations. No term or provision of neither the State/Municipal Financial Agreement nor any of its attachments may be changed, waived or terminated orally but only by an instrument in writing executed by both parties to the State/Municipal Financial Agreement.

Signed for and on behalf of the City of De Pere	
Name	Title
Signature	Date
Signed for and on behalf of the State	
Name	Title
Signature	Date

TERMS AND CONDITIONS:

1. The Municipality shall pay to the State all costs incurred by the State in connection with the improvement which exceeds federal/state financing commitments or are ineligible for federal/state financing. Local participation shall be limited to the items and percentages set forth in the Summary of Costs table, which shows Municipal funding participation. In order to guarantee the Municipality's foregoing agreements to pay the State, the Municipality, through its above duly authorized officers or officials, agrees and authorizes the State to set off and withhold the required reimbursement amount as determined by the State from General Transportation Aids or any moneys otherwise due and payable by the State to the Municipality.
2. Funding of each project phase is subject to inclusion in an approved program and per the State's Facility Development Manual (FDM) standards. Federal aid and/or state transportation fund financing will be limited to participation in the costs of the following items as specified in the Summary of Costs:
 - (a) Design engineering and state review services.
 - (b) Real Estate necessitated for the improvement.
 - (c) Compensable utility adjustment and railroad force work necessitated for the project.
 - (d) The grading, base, pavement, curb and gutter, and structure costs to State standards, excluding the cost of parking areas.
 - (e) Storm sewer mains, culverts, laterals, manholes, inlets, catch basins, and connections for surface water drainage of the improvement; including replacement and/or adjustments of existing storm sewer manhole covers and inlet grates as needed.
 - (f) Construction engineering incidental to inspection and supervision of actual construction work, except for inspection, staking, and testing of sanitary sewer and water main.
 - (g) Signing and pavement marking necessitated for the safe and efficient flow of traffic, including detour routes.
 - (h) Replacement of existing sidewalks necessitated by construction and construction of new sidewalk at the time of construction. Sidewalk is considered to be new if it's constructed in a location where it has not existed before.
 - (i) Replacement of existing driveways, in kind, necessitated by the project.

- (j) New installations or alteration resulting from roadway construction of standard State street lighting and traffic signals or devices. Alteration may include salvaging and replacement of existing components.
 - (k) Eligible Community Sensitive Design (CSD) amenities considered to be the preference of the community, not to exceed CSD funding limit for the project.
3. Work necessary to complete the improvement to be financed entirely by the Municipality or other utility or facility owner includes the following items:
 - (a) New installations of or alteration of sanitary sewers and connections, water, gas, electric, telephone, telegraph, fire or police alarm facilities, parking meters, and similar utilities.
 - (b) New installation or alteration of signs not necessary for the safe and efficient flow of traffic.
 - (c) Roadway and bridge width in excess of standards.
 - (d) Construction inspection, staking, and material testing and acceptance for construction of sanitary sewer and water main.
 - (e) Provide complete plans, specifications, and estimates for sanitary sewer and water main work. The Municipality assumes full responsibility for the design, installation, inspection, testing, and operation of the sanitary sewer and water system. This relieves the State and all of its employees from the liability for all suits, actions, or claims resulting from the sanitary sewer and water system construction.
 - (f) Parking lane costs.
 - (g) Coordinate, clean up, and fund any hazardous materials encountered for city utility construction. All hazardous material cleanup work shall be performed in accordance with state and federal regulations.
 - (h) Conditioning, if required, and maintenance of detour routes.
 - (i) 20% of cost eligible Community Sensitive Design (CSD) amenities up to the CSD funding limit for the project plus 100% of the cost eligible CSD amenities in excess of the federal funding limit for the project.
 4. As the work progresses, the Municipality will be billed for work completed which is not chargeable to federal/state funds. Upon completion of the project, a final audit will be made to determine the final division of costs.
 5. If the Municipality should withdraw the project, it shall reimburse the State for any costs incurred by the State on behalf of the project.
 6. The work will be administered by the State and may include items not eligible for federal/state participation.
 7. The Municipality shall, in cooperation with the State, assist with public relations for the project and announcements to the press and such outlets as would generally alert the affected property owners and the community of the nature, extent, and timing of the project and arrangements for handling traffic within and around the project.
 8. Basis for local participation:

Design Engineering, Real Estate Acquisition, Utility Coordination:

The State will pay 100% of the cost for design engineering, real estate acquisition, and utility coordination.

Costs for design engineering, real estate acquisition, and utility coordination are shown as not applicable (N/A) in the summary of costs table due to the complexities of isolating individual Let Project costs from the Appleton-Green Bay corridor wide design ID (1130-63-01) and this information is not relevant to the municipal construction cost share.

Construction 1130-68-77:

The Project Agreement will be revised, if necessary, as the project progresses. All costs shown are approximate and subject to final audit. Estimates include construction engineering, estimated at 15%.

Category 1000 – Roadway items

The State will pay 100% of the construction costs under Category 1000 – Roadway Items unless otherwise noted.

Category 1100 – Lighting

The State will pay 100% of the construction costs under Category 1100 – Lighting unless otherwise noted.

Category 1200 – FTMS/ITS

The State will pay 100% of the construction costs under Category 1200 – FTMS/ITS unless otherwise noted.

Category 1400 – CSD (Architectural Surface Treatment & Staining)

CSD amenities are funded with 80% federal funding up to a maximum of \$26,000 when the municipalities agree to provide the remaining 20% and any funds in excess of the CSD category funding limit. The Municipality and town of Lawrence will split the local cost share at 10% each up to the CSD amenities category limit and split any costs in excess of the CSD category limit at 50% each. CSD amenities included in the project are:

Item Number	Item Description	Units	Estimated Qty	Unit Price	Amount
517.1010.S	Concrete Staining (structure) 01. B-5-696	SF	5,915	\$1.50	\$8,872.50
517.1015.S	Concrete Staining Multi-Color (structure) 01. B-5-696	SF	1,520	\$3.50	\$5,320.00
517.1050.S	Architectural Surface Treatment (structure) 01. B-5-696	SF	1,520	\$7.50	\$11,400.00

1130-68-77 Construction Total: \$25,592.50
15% Construction Engineering: \$3,838.88
 1130-68-77 Project Total **\$29,431.38**

1130-68-77 - Category 1400 CSD amenities category limit = \$32,500

CSD funding is governed by Wis. Stat. 85.0205. The department will regularly review the total CSD funding on this and any associated improvement projects to ensure total CSD funding does not exceed statutory limits. If at any point CSD funding exceeds statutory limits, the department will notify the Municipality of any adjustments to CSD funding that may be required to remain in compliance with state statutes.

Category 1410 – CSD (Fence Silhouettes)

CSD amenities are funded with 80% federal funding up to a maximum of \$10,500 when Brown County and the town of Lawrence agree to provide the remaining 20% and any funds in excess of the CSD category funding limit. Brown County and the town of Lawrence will split the local cost share at 10% each up to the CSD amenities category limit and split any costs in excess of the CSD category limit at 50% each. CSD amenities included in the project are:

Item Number	Item Description	Units	Estimated Qty	Unit Price	Amount
SPV.0060	Fence Silhouette	Each	2	\$5,000.00	\$10,000.00

1130-68-77 Construction Total: \$10,000.00

<u>15% Construction Engineering:</u>	<u>\$1,500.00</u>
1130-68-77 Project Total:	\$11,500.00

1130-68-77 - Category 1410 CSD amenities limit = \$13,125

CSD funding is governed by Wis. Stat. 85.0205. The department will regularly review the total CSD funding on this and any associated improvement projects to ensure total CSD funding does not exceed statutory limits. If at any point CSD funding exceeds statutory limits, the department will notify the Municipality of any adjustments to CSD funding that may be required to remain in compliance with state statutes.

Category 1420 – CSD (Stamping Colored Concrete – Town of Lawrence)

CSD amenities are funded with 80% federal funding up to a maximum of \$13,500 when the town of Lawrence agrees to provide the remaining 20% and any funds in excess of the CSD category funding limit. CSD amenities included in the project are:

Item Number	Item Description	Units	Estimated Qty	Unit Price	Amount
405.1000	Stamping Colored Concrete	CY	44	\$240.00	\$10,560.00

1130-68-77 Construction Total:	\$10,560.00
<u>15% Construction Engineering:</u>	<u>\$1,584.00</u>
1130-68-77 Project Total:	\$12,144.00

1130-68-77 – Category 1420 CSD amenities limit = \$13,776

Estimated additional cost to stamp the concrete is 10% of the total Stamping Colored Concrete bid item. Following the CSD cost share above, the actual town of Lawrence responsibility is 2% (10% x 20%) of the bid item. The State will pay 98% of the construction cost up to the federal CSD category funding limit.

CSD funding is governed by Wis. Stat. 85.0205. The department will regularly review the total CSD funding on this and any associated improvement projects to ensure total CSD funding does not exceed statutory limits. If at any point CSD funding exceeds statutory limits, the department will notify the town of Lawrence of any adjustments to CSD funding that may be required to remain in compliance with state statutes.

Category 1430 – CSD (Stamping Colored Concrete – City of De Pere)

CSD amenities are funded with 80% federal funding up to a maximum of \$22,000 when the Municipality agrees to provide the remaining 20% and any funds in excess of the CSD category funding limit. CSD amenities included in the project are:

Item Number	Item Description	Units	Estimated Qty	Unit Price	Amount
405.1000	Stamping Colored Concrete	CY	73	\$240.00	\$17,520.00

1130-68-77 Construction Total:	\$17,520.00
<u>15% Construction Engineering:</u>	<u>\$2,628.00</u>
1130-68-77 Project Total:	\$20,148.00

1130-68-77 – Category 1430 CSD amenities limit = \$22,449

Estimated additional cost to stamp the concrete is 10% of the total Stamping Colored Concrete bid item. Following the CSD cost share above, the actual municipal responsibility is 2% (10% x 20%) of the bid item. The State will pay 98% of the construction cost up to the federal CSD category funding limit.

CSD funding is governed by Wis. Stat. 85.0205. The department will regularly review the total CSD funding on this and any associated improvement projects to ensure total CSD funding does not exceed statutory limits. If at any point CSD funding exceeds statutory limits, the department will notify the Municipality of any adjustments

to CSD funding that may be required to remain in compliance with state statutes.

Category 1600/1610/1620 – 100% City of De Pere/Brown County/Town of Lawrence Funded

In accordance with Local Participation Policy Section 3-25-5 of the State's Program Management Manual, proposed improvements requested by the Municipality within the project limits, but outside the original project scope, are considered 100% the responsibility of the Municipality.

Item Number	Item Description	Units	Estimated Qty	Unit Price	Amount
305.0120	Base Aggregate Dense 1 1/4-Inch	Ton	1	\$13.00	\$13.00

1130-68-77 Construction Total: \$13.00
15% Construction Engineering: \$2.00
1130-68-77 Project Total: **\$15.00**

Category 1700 – Utilities (Town of Lawrence)

Wisconsin State Statute 84.295 (4m) Municipal Utility Relocation; Freeway Construction

(a) The state shall pay 90 percent of the eligible costs of the relocation or replacement of any municipal utility facilities required by the construction of any freeway undertaken by the department. The affected municipal utility shall pay the balance of such costs.

Item Number	Item Description	Units	Estimated Qty	Unit Price	Amount
SPV.0060	Adjusting Sanitary Manhole Covers	Each	2	\$780.00	\$1,564.00
SPV.0060	Adjusting Water Valve Boxes	Each	3	\$260.00	\$780.00

1130-68-77 Construction Total: \$2,344.00
15% Construction Engineering: \$352.00
1130-68-77 Project Total: **\$2,696.00**

Category 1710 – Utilities (City of De Pere)

Wisconsin State Statute 84.295 (4m) Municipal Utility Relocation; Freeway Construction

(a) The state shall pay 90 percent of the eligible costs of the relocation or replacement of any municipal utility facilities required by the construction of any freeway undertaken by the department. The affected municipal utility shall pay the balance of such costs.

Item Number	Item Description	Units	Estimated Qty	Unit Price	Amount
SPV.0060	Adjusting Sanitary Manhole Covers	Each	2	\$780.00	\$1,564.00
SPV.0060	Adjusting Water Valve Boxes	Each	3	\$260.00	\$780.00

1130-68-77 Construction Total: \$2,344.00
15% Construction Engineering: \$352.00
1130-68-77 Project Total: **\$2,696.00**

Category 1800 – State Funded

The State will pay 100% of the construction costs under Category 1800 – State Funded unless otherwise noted.

Category 2000 – B-05-0696 I41/Southbridge

The State will pay 100% of the construction costs under Category 2000 – B-05-0696 I41/Southbridge unless otherwise noted.

Category 3000 – C-05-0800 I41 over Hemlock Creek

The State will pay 100% of the construction costs under Category 3000 – C-05-0800 I41 over Hemlock Creek unless otherwise noted.

Category 6000 – S-05-0423

The State will pay 100% of the construction costs under Category 6000 – S-05-0423 unless otherwise noted.

Category 6010 – S-05-0431

The State will pay 100% of the construction costs under Category 6010 – S-05-0431 unless otherwise noted.

Category 6020 – S-05-0432

The State will pay 100% of the construction costs under Category 6020 – S-05-0432 unless otherwise noted.

Category 6030 – S-05-0433

The State will pay 100% of the construction costs under Category 6030 – S-05-0433 unless otherwise noted.

Category 6040 – S-05-0438

The State will pay 100% of the construction costs under Category 6040 – S-05-0438 unless otherwise noted.

Category 6050 – S-05-0439

The State will pay 100% of the construction costs under Category 6050 – S-05-0439 unless otherwise noted.

Category 6060 – S-05-0440

The State will pay 100% of the construction costs under Category 6060 – S-05-0440 unless otherwise noted.

Category 6070 – S-05-0441

The State will pay 100% of the construction costs under Category 6070 – S-05-0441 unless otherwise noted.

Category 6080 – S-05-0442

The State will pay 100% of the construction costs under Category 6080 – S-05-0442 unless otherwise noted.

Category 6090 – S-05-0443

The State will pay 100% of the construction costs under Category 6090 – S-05-0443 unless otherwise noted.

Category 6100 – S-05-0446

The State will pay 100% of the construction costs under Category 6100 – S-05-0446 unless otherwise noted.

Comments and Clarification: This agreement is an active agreement that may need to be amended as the project is designed. It is understood that these amendments may be needed as some issues have not been fully evaluated or resolved. The purpose of this agreement is to specify the local and state involvement in funding the project.

A signed agreement is required before the State will prepare or participate in the preparation of detailed designs, acquire right-of-way, or participate in construction of a project that merits local involvement.

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric P. Rakers, P.E., City Engineer
Date: January 13, 2025

RE: **Consideration and possible action on the State/Municipal Financial Agreement – 1st Revision for STH 32***

The City entered into a State/Municipal Financial Agreement (SMFA) with the Wisconsin Department of Transportation (WisDOT) for resurfacing of STH 32 (Broadway Street) from Merrill Street to Cook Street. The SMFA was signed by the City on February 27, 2023, and by WisDOT on March 3, 2023. The City has received a SMFA Revision #1 for this project. Since this section of STH 32 is connecting highway, the City needs to enter into the SMFA which requires the City to fund 25% of the design. The City's estimated cost on the original SMFA was \$19,550 and is increasing to \$42,500 with the Revision #1. The cost has increased due to overall project cost increases. The revised project now includes the construction of sidewalk on the east side of STH 32 from Bomier Street to Cook Street. SMFA Revision #1 has been attached with the changes from the original SMFA highlighted.

Staff recommends the Board of Public Works approve the agreement and forward to the Council for approval.

Attachments:

- SMFA Revision #1 for WisDOT STH 32 Project ID 4085-65-01/23/72



1st Revision

STATE/MUNICIPAL FINANCIAL AGREEMENT FOR A STATE- LET HIGHWAY PROJECT

This agreement supersedes the agreement signed by the Municipality on 2/27/2023 and signed by the State on 03/03/2023.

Revision #1 Date: December 16, 2024

Original Date: January 6, 2023

I.D.: 4085-65-01/23/72

Road Name: State Highway 32

Title: Broadway Street, C of De Pere

Limits: Cook Street – Merrill Street

County: Brown

Roadway Length: 0.4 miles

The signatory **city of De Pere**, hereinafter called the Municipality, through its undersigned duly authorized officers or officials, hereby requests the State of Wisconsin Department of Transportation, hereinafter called the State, to initiate and affect the highway or street improvement hereinafter described.

The authority for the Municipality to enter into this agreement with the State is provided by Section 86.25(1), (2), and (3) of the Statutes.

NEEDS AND ESTIMATE SUMMARY:

Existing Facility - Describe and give reason for request: The existing facility is a connecting highway.

Broadway Street, for most of the length of the project, is a 4-lane divided highway consisting of 2, 12-foot lanes in each direction. Between Cook Street and Bomier Street, is a rural section; curb and gutter and sidewalk are located along the project limits between Bomier Street and Merrill Street.

Proposed Improvement - Nature of work: It is anticipated the proposed improvements will consist of a resurface level improvement project. The project will begin at the connecting highway limits north of Cook Street and will extend to the asphalt/concrete joint located south of the Merrill Street intersection.

Describe non-participating work included in the project and other work necessary to finish the project completely which will be undertaken independently by the municipality: The non-participating work will be determined as this project continues through the design process; it is anticipated the municipality will be responsible for any sanitary or water valve adjustments.

TABLE 1: SUMMARY OF COSTS

Phase	Total Est. Cost	Federal/State Funds	%	Municipal Funds	%
4085-65-01 Preliminary Engineering: Plan Development	\$ 170,000	\$ 127,500	75%	\$ 42,500	25%
4085-65-23 Real Estate Acquisition: Acquisition	\$ 6,000	\$ 6,000	100%	\$ -	0%
4085-65-72 ¹ Construction: Roadway (cat 0010)	\$ 819,000	\$ 819,000	100%	\$ -	0%
subtotal 4085-65-72	\$ 819,000	\$ 819,000		\$ -	

Total Cost Distribution \$ **995,000** \$ **952,500** \$ **42,500**

1. Estimates include construction engineering.

This request is subject to the terms and conditions that follow (pages 3 – 4); is made by the undersigned under proper authority to make such request for the designated Municipality, and upon signature by the State and delivery to the Municipality shall constitute agreement between the Municipality and the State. A review of the existing State Municipal Maintenance Agreement (SMMA) or creation of a new SMMA signed by the Municipality and the State shall be completed in conjunction with this agreement. The initiation and accomplishment of the improvement will be subject to the applicable federal and state regulations. No term or provision of neither the State/Municipal Financial Agreement nor any of its attachments may be changed, waived or terminated orally but only by an instrument in writing executed by both parties to the State/Municipal Financial Agreement.

Signed for and in behalf of the city of De Pere	
Name	Title
Signature	Date
Signed for and in behalf of the State	
Name	Title
Signature	Date

TERMS AND CONDITIONS:

1. The Municipality shall pay to the State all costs incurred by the State in connection with the improvement which exceeds federal/state financing commitments or are ineligible for federal/state financing. Local participation shall be limited to the items and percentages set forth in the Summary of Costs table, which shows Municipal funding participation. In order to guarantee the Municipality's foregoing agreements to pay the State, the Municipality, through its above duly authorized officers or officials, agrees and authorizes the State to set off and withhold the required reimbursement amount as determined by the State from General Transportation Aids or any moneys otherwise due and payable by the State to the Municipality.
2. Funding of each project phase is subject to inclusion in an approved program and per the State's Facility Development Manual (FDM) standards. Federal aid and/or state transportation fund financing will be limited to participation in the costs of the following items as specified in the Summary of Costs:
 - (a) Design engineering and state review services.
 - (b) Real Estate necessitated for the improvement.
 - (c) Compensable utility adjustment and railroad force work necessitated for the project.
 - (d) The grading, base, pavement, curb and gutter, and structure costs to State standards, excluding the cost of parking areas.
 - (e) Storm sewer mains, culverts, laterals, manholes, inlets, catch basins, and connections for surface water drainage of the improvement; including replacement and/or adjustments of existing storm sewer manhole covers and inlet grates as needed.
 - (f) Construction engineering incidental to inspection and supervision of actual construction work, except for inspection, staking, and testing of sanitary sewer and water main.
 - (g) Signing and pavement marking necessitated for the safe and efficient flow of traffic, including detour routes.
 - (h) Replacement of existing sidewalks necessitated by construction and construction of new sidewalk at the time of construction. Sidewalk is considered to be new if it's constructed in a location where it has not existed before.
 - (i) Replacement of existing driveways, in kind, necessitated by the project.
 - (j) New installations or alteration resulting from roadway construction of standard State street lighting and traffic signals or devices. Alteration may include salvaging and replacement of existing components.
3. Work necessary to complete the improvement to be financed entirely by the Municipality or other utility or facility owner includes the following items:
 - (a) New installations of or alteration of sanitary sewers and connections, water, gas, electric, telephone, telegraph, fire or police alarm facilities, parking meters, and similar utilities.
 - (b) New installation or alteration of signs not necessary for the safe and efficient flow of traffic.
 - (c) Roadway and bridge width in excess of standards.
 - (d) Construction inspection, staking, and material testing and acceptance for construction of sanitary sewer and water main.
 - (e) Provide complete plans, specifications, and estimates for sanitary sewer and water main work. The Municipality assumes full responsibility for the design, installation, inspection, testing, and operation of the sanitary sewer and water system. This relieves the State and all of its employees from the liability for all suits, actions, or claims resulting from the sanitary sewer and water system construction.
 - (f) Parking lane costs.

- (g) Coordinate, clean up, and fund any hazardous materials encountered during construction. All hazardous material cleanup work shall be performed in accordance to state and federal regulations.
 - (h) Damages to abutting property due to change in street or sidewalk widths, grades, or drainage.
 - (i) Conditioning, if required, and maintenance of detour routes.
 - (j) Repair of damages to roads or streets caused by reason of their use in hauling materials incidental to the improvement.
4. As the work progresses, the Municipality will be billed for work completed which is not chargeable to federal/state funds. Upon completion of the project, a final audit will be made to determine the final division of costs.
 5. If the Municipality should withdraw the project, it shall reimburse the State for any costs incurred by the State in behalf of the project.
 6. The work will be administered by the State and may include items not eligible for federal/state participation.
 7. The Municipality shall, in cooperation with the State, assist with public relations for the project and announcements to the press and such outlets as would generally alert the affected property owners and the community of the nature, extent, and timing of the project and arrangements for handling traffic within and around the project.
 8. Basis for local participation:
 - (a) **Project ID 4085-65-01, Preliminary Engineering:** The Municipality will be responsible for 25% of the design for the anticipated resurface level improvement project. Any additional work per the request of the Municipality will be funded by the Municipality.
 - (b) **Project ID 4085-65-23, Real Estate:** The State will be 100% responsible for all costs associated with the real estate acquisition of the temporary resolution at Wells Park, a 4f property. The City of De Pere will waive compensation, as the current owner of the parcel, and the State will complete the donation paperwork for the city of De Pere.

Comments and Clarification: This agreement is an active agreement that may need to be amended as the project is designed. It is understood that these amendments may be needed as some issues have not been fully evaluated or resolved. The purpose of this agreement is to specify the local and state involvement in funding the project. A signed agreement is required before the State will prepare or participate in the preparation of detailed designs, acquire right-of-way, or participate in construction of a project that merits local involvement.

CITY OF DE PERE MEMO



To: Honorable Mayor Boyd
Members of the Board of Public Works
From: Eric Rakers, P.E., City Engineer
Date: January 13, 2025

RE: **Consideration and possible action on updates to 2025 General Conditions and Standard Specifications**

Listed in this memo are proposed updates to the City of De Pere's 2025 General Conditions and Standard Specifications. Specifications need to be updated on a regular basis to accommodate changes in the industry, as well as improving the clarity of the documents. The last update was completed in January 2024. There are several changes to the document. Listed below is a summary of the major changes to the specifications.

Section 32 16 13 – Concrete Curb and Gutter

- 1) Under Section 1.2, References, inserted C595 Standard Specifications for Blended Hydraulic Cements
- 2) Under Section 2.2, Cement, added the use of ASTM C595, Type 1L for cement in concrete.

Section 32 16 20 – Concrete Sidewalks and Driveways

- 1) Under Section 1.2, References, inserted C595 Standard Specifications for Blended Hydraulic Cements
- 2) Under Section 2.2, Cement, added the use of ASTM C595, Type 1L for cement in concrete.

Section 33 11 00 – Water Distribution Systems

- 1) Under Section 1.2, References, inserted C153 Ductile-Iron Compact Fittings.
- 2) Under 2.3, Valves, C., deleted Item 10. *Valves will be fitted with a three (3) foot long extension stem with bottom bolts for tightening to the valve at 90 degrees to each other.*
- 3) Under 2.7, Tracer Wire, A., updated the tracer wire specification to increase the wire coating, modify the wire for directional drilling/boring and added for pipe bursting.
- 4) Under 2.9, Couplings and Adapters, B., added the requirements for AWWA C153 for short body fittings.
- 5) Under 3.10 Field Quality Control, water main testing has been updated to require pressure and leakage testing on relay water main projects after the corporations are installed.

Section 33 31 00 – Sanitary Sewer Systems

- 1) Under Section 2.3, Manholes,
 - a. A.4.b., added the use of Flex-O-Ring.
 - b. A.7.d., added the use of Kor N-Seal.

- 2) Under Section 2.5 Tracer Wire, updated the tracer wire specification to increase the wire coating, modify the wire for directional drilling/boring and added for pipe bursting.
- 3) Under 3.1 Gravity Sewer Installation,
 - a. C.1.d., eliminated the reference to lamping.
 - b. C.1., added section h. to require clay dams be installed near manholes.

Section 33 41 00 – Storm Sewer Systems

- 1) Under Section 2.3, Manholes, A.4.b., added the use of Flex-O-Ring.
- 2) Under Section 2.7, Tracer Wire, updated the tracer wire specification to increase the wire coating.
- 3) Under Section 3.1, Gravity Sewer Installation,
 - a. D.1.c., clarified that the 4'8" measurement is to the bottom of the structure.
 - b. H.2., added polypropylene pipe to the listing for connecting storm sewer to endwalls.
- 4) Under Section 3.5, Tracer Wire, D.&E., clarified how tracer wire is brought to the surface for different types of installations.

Standard Detail Updates

- 1) Updated S-1 – Precast Concrete Manhole – Updated the detail from a 4" to 6" beyond the riser section to match the specifications.
- 2) Updated S-7 – Sanitary, Storm, and Water Services – Updated the length of the coiled water main from 50 feet to 60 feet.

Attachments

2024 Standard Specifications and Details with redlines

Changed 2024 Standard Specifications and Details with redlines

DE PERE[®]



DEPARTMENT OF PUBLIC WORKS

2025 STANDARD SPECIFICATIONS

JANUARY 13, 2025

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City of De Pere

CITY OF DE PERE

**SECTION 00 70 00
GENERAL CONDITIONS**

DEFINITIONS AND TERMS

Whenever any of the following listed terms appear in the contract documents, the intent and meaning shall be interpreted as follows:

AASHTO - American Association of State Highway Transportation Officials.

Addenda - All revisions of and supplements to the plans and specifications incorporated in or attached to and becoming an integral part of the contract documents.

Advertisement for Bids - The official notice inviting bids for proposed improvements.

Agreement - The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

ANSI - American National Standards Institute, Inc.

ASTM - American Society for Testing and Materials.

AWWA - American Water Works Association.

Bid - The offer or bid of the Bidder, submitted on the prescribed bid form, setting forth the prices of the work to be performed.

Bidder - Any individual, partnership or corporation submitting a bid for work contemplated, acting directly or through a duly authorized representative.

Bid Form - The approved form on which the City requires formal bids to be prepared and submitted for the work.

Bidding Documents - The Bidding Requirements and the proposed Contract Documents (including all Addenda).

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.

Board of Public Works – The Board of Public Works of the City of De Pere

Board of Park Commissioners - The Board of Park Commissioners of the City of De Pere.

2025 Specifications

City of De Pere

City - The City of De Pere, a municipal corporation of the State of Wisconsin, located in the County of Brown.

Completion Date - The calendar date shown in the bid on or before which the work contemplated under the contract shall be completed.

Contract - The written agreement between the City and the Contractor setting the obligations of the parties thereto. The contract includes the advertisement for bids, bid, contract form and contract bond, specifications, special provisions, plans, and notice to proceed, also any contract change orders and agreements that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument.

Contract Bond - The approved form of security, executed by the Contractor and his surety or sureties, guaranteeing the faithful performance of the contract and the payment to persons entitled thereto, of all claims.

Contract Change Order - A written order, authorization or agreement executed by the Contractor and the City covering work not otherwise provided for, revisions in or amendments to the contract, or conditions specifically prescribed in the specifications as requiring contract change orders. Such document becomes a part of the contract when executed by the contracting parties.

Contract Time - The number of calendar days shown in the bid representing time allowed for the completion of the work contemplated under the contract.

Contractor - The party of the second part to the contract; the individual, partnership, joint venture, corporation or agency undertaking the execution of the work under the terms of the contract and acting directly or through a duly authorized representative.

Director of Public Works - The Director of Public Works of the City of De Pere or authorized designee.

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.

Engineer - The City Engineer of the City of De Pere or authorized designee.

Inspector - The authorized representative of the Engineer assigned to make detailed inspection of any or all portions of the work or materials therefore.

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.

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.

2025 Specifications

City of De Pere

Notice to Proceed - A written notice to the Contractor of the time within which to begin the prosecution of the work.

Owner - The City of De Pere, Wisconsin.

Plans - All contract drawings, including reproductions and revisions thereof, pertaining to the work covered by the contract.

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.

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.

Special Provisions - Special directions, provisions or requirements peculiar to the project under consideration and not otherwise thoroughly or satisfactorily detailed or set forth in the specifications. Special provisions set forth the final contractual intent as to the matter involved, and shall prevail over these specifications and plans whenever in conflict therewith.

Specifications - The body of directions, provisions and requirements contained herein, together with written agreements and all documents of any description, made or to be made, pertaining to the method of manner of performing the work, the quantities, and the quality of materials to be furnished under the contract.

Subcontractor - Any individual, partnership, joint venture or corporation to whom the Contractor sublets any part of the contract.

Successful Bidder - The Bidder submitting a responsive Bid to whom Owner makes an award.

Supplier - A manufacturer, fabricator, supplier, distributor, material man, 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.

Surety - The corporate body bound with and for the Contractor to insure acceptable performance of the contract and payment of all obligations pertaining to the work.

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.

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Work - Work shall be understood to mean the furnishing of all labor, materials, equipment and other incidentals necessary or convenient to the successful completion of the project, or a particular part of the project, in accordance with the requirements of the contract.

BIDDING REQUIREMENTS

BID FORMS. Bid forms for bidding may be obtained from the office of the Director of Public Works.

All papers bound with or attached to the bid form are considered a part thereof and shall not be detached or altered when the bid is submitted. The plans, specifications and other documents designated in the bid form will be considered a part of the bid whether attached or not.

INTERPRETATION OF QUANTITIES. A schedule of quantities of work to be done or materials to be furnished is given in the Bid Form.

Itemized quantities of work are to be considered as approximate and for the comparison of bids only. After the contract is awarded, the quantities of work listed may be increased or decreased a reasonable amount without invalidating the bid prices.

EXAMINATION OF CONTRACT DOCUMENTS AND SITE OF WORK. The bidder is required to examine carefully the work site, bid form, plans, specifications, special provisions and contract forms for the work contemplated. The submission of a bid will be considered conclusive evidence that the bidder has made such examination and is satisfied to all conditions and contingencies.

No extra payment will be made over and above the contract price and no performance of the Contractor will be excused on account of any difference between the information relating to soil conditions provided by the City and the conditions disclosed at the site of the work during the progress of the contract.

INTERPRETATION OF CONTRACT DOCUMENTS. No oral representations or interpretations will be made to any bidder as to the meaning of the contract documents. Requests for an interpretation shall be made in writing and delivered to the Engineer at least ten (10) days before the time announced for opening the bids. Interpretations by the Engineer will be in the form of an addendum to the contract documents and, when issued, will be sent as promptly as is practical to all parties to whom the bid documents have been issued. All such addenda shall become part of the contract.

PREPARATION OF THE BID. The bidder shall submit its bid on forms included with the Bidding Documents. The bid shall be properly executed, and shall clearly specify a unit price for each item listed therein and shall also show the products of the respective unit prices and quantities, and the total amount of the bid obtained by adding the amounts of the several items.

In case of conflict between a unit bid price and the corresponding extended amount, the unit bid price will govern.

A bid submitted by an individual shall be signed by the bidder or by a duly authorized agent. A bid submitted by a partnership shall be signed by a member or a duly authorized agent thereof. A bid

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submitted by a corporation shall be signed by an authorized officer or duly authorized agent of such corporation, and the bid shall show the name of the State under the laws of which said corporation was chartered.

REJECTION OF BIDS. Bids may be rejected if they show any alterations of form, additions or amendments not called for, conditional bids, incomplete bids, erasures, or irregularities of any kind. Bids in which the unit prices for some items are out of proportion to the prices for other items, or bids in which unit prices are not submitted for each item of work listed may be rejected.

BID GUARANTEE. No bid will be considered unless accompanied by a certified check, bank's draft, bank's check, or a surety bond payable to the City of De Pere as designated in the Advertisement for Bids.

SUBMISSION OF BIDS. The bid and Bid Guarantee shall be submitted electronically and/or hard copy as required in the bidding documents. For hard copy submittals, each bid shall be placed, together with the Bid Guarantee, in a sealed envelope, so marked as to indicate the project number and the name and address of the bidder.

Bids will be received at the office of the Director of Public Works until the hour of the date designated in the Advertisement for Bids.

WITHDRAWAL OF BIDS. All bids filed with the Director of Public Works will be kept secure and unopened and may not be withdrawn, except on written request of the bidder or authorized representative made prior to expiration of the time set for receiving bids. If such withdrawal is made, the prospective bidder shall not be entitled to bid on the contract at hand unless the same is re-advertised and the bid will be returned unopened to such bidder after the public opening of bids.

OPENING OF BIDS. Bids will be opened and read publicly at the time and place indicated in the Advertisement for Bids.

The City of De Pere reserves the right to postpone the date and time for opening of bids at any time prior to the date and time announced in the advertisement.

PREQUALIFICATION OF BIDDERS. Each bidder shall pre-qualify by submitting Proof of Responsibility on forms furnished by the Director of Public Works. Such forms shall be filed with the Director of Public Works not later than the time and date indicated in the Advertisement for Bids. Bidders are required to complete 30% of the Work with their own forces.

COMPETENCY OF BIDDERS. Any one or more of the following may be considered as sufficient for the rejection of the bid or bids and disqualification of the bidder: Developments subsequent to establishment of bidder's competency and qualifications which would reasonably be construed as affecting the responsibility of the bidder. Conviction of a violation of a State or Federal law or regulation relating to or reflecting on the competency of the bidder.

- (a) More than one bid for the same work from an individual, partnership, or corporation under the same or different names.

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- (b) Evidence of collusion among bidders.
- (c) Lack of responsibility as shown by past work for the City.
- (d) Noncompliance with terms of previous or existing contracts.
- (e) Uncompleted work, which might hinder or prevent the prompt completion of additional work if awarded.
- (f) Uncompleted work on which the actual time used has exceeded the contract time set therefore, or on which work the performance or progress is not satisfactory.

AWARD AND EXECUTION OF CONTRACT

CONSIDERATION OF BIDS. The bids received will be compared on the basis of the summation of the products of the quantities of work listed and the contract unit prices offered.

In case of discrepancy between the gross sum shown in the bid and that obtained by adding the products of the quantities of work and the unit prices, the unit prices will govern, and any errors found in said products and summation will be corrected.

The City reserves the right to reject any or all bids, to waive any technicalities, to re-advertise for bids, or to proceed to do the work otherwise, if in its judgment, the best interest of the City will thereby be served.

AWARD OF CONTRACT. The award of contract, if it be awarded, will be to the lowest responsible bidder whose bid complies with all necessary requirements.

Should no award be made within 60 days after the date of opening bids, the lowest responsible bidder may, upon the expiration of such period, request in writing that the award be made within a stipulated time, not less than 10 days, exclusive of Sundays and holidays, after the date of his request. Should no award be made within the time so stipulated, the bidder will thereby be relieved of his obligation to execute a contract and contract bond.

RETURN OF BID GUARANTEE. The bid guaranty of all except the three lowest responsible bidders will be returned promptly after the bids are checked and tabulated.

The bid guarantee of the lowest responsible bidder will be returned as soon as the contract, contract bond, and other documents required to be filed by the bidder has been properly executed and submitted in proper form to the City; provided, however, that in the event no award is made within the extended time stipulated by the lowest responsible bidder, the bidder's guarantee will be returned promptly upon expiration of such extended time.

The bid guarantees of the second and third lowest responsible bidders will be returned as soon as the contract, contract bond, and other documents required have been properly executed by the successful bidder and submitted in proper form to the City; provided that the guarantees of such second and third

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bidders will not be retained longer than 70 days after the date of opening of bids without their express consent.

CONTRACT BOND. The successful bidder, at the time of submitting the contract for execution by the City shall deposit with the Director of Public Works a good and sufficient Performance Bond in the full amount of the contract and a Payment Bond in the amount of 100 percent of the contract. Forms for the contract bond are those included in the Bidding Documents.

INSURANCE. The Contractor shall provide the following insurance:

General. All insurance is the responsibility of the Contractor. The Contractor and each separate Subcontractor shall purchase and maintain such insurance as will protect him/her, and indemnify and safe harmless the City from any and all claims for General and Automobile Liability and Worker's Compensation/Employer's Liability, including claims for damages resulting in bodily injury, including but not limited to death, and property damage and arising out of or resulting from the Contractor's direct or indirect operations under this contract, whether such operations be performed by himself/herself or by a Subcontractor or anyone directly or indirectly employed by any of them.

This insurance shall be written for not less than any limit of liability specified herein, or required by law, whichever is the greater, notwithstanding that the policy may have lower limits of liability applying elsewhere in the policy, and shall include contractual liability insurance as applicable to the Contractor's obligations.

The Contractor's and Subcontractor's insurance shall always be primary with respect to the City's responsibilities under this contract. Contractor shall name the City as an additional insured under all policies required hereunder (except Worker's Compensation).

The Contractor's and Subcontractor's insurance shall contain a provision that provides 30 days written notice of cancellation or change to the City.

No insurance required under the Contract shall be carried with an insurer not authorized to do business in Wisconsin by the Office of the Insurance Commissioner. All insurance providers must have an AM Best Rating of A-VII or higher. The City reserves the right to disapprove any insurance company.

The Contractor shall provide the City with a certificate of insurance outlining the required coverage and naming the City as an additional insured thereunder for purposes of the Contract.

Types of Insurance

- (a) General Liability
 - (1) Coverage Form must be the most recent version of the Commercial General "Occurrence" policy, including:

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- (a) Premises and Operations
- (b) Products and Completed Operations
- (c) Advertising and Personal Injury
- (d) Explosion, Collapse and Underground Hazard Coverage
- (e) Contractual Insurance
- (f) Broad Form Property Damage
- (g) Coverage for Independent Contractors
- (h) Care, Custody and Control coverages for City-owned materials at the worksite
- (i) Endorsement naming the City of De Pere, its employees, agents and assigns as Additional Insureds as respects work performed by the Contractor/Subcontractor for the City/Owner.

- (2) Limits of Liability:
Bodily Injury/Property Damage Combined Single Limits:

Per Occurrence	\$1,000,000
Products/Completed Operations Aggregate	\$1,000,000
Personal Injury/Advertising Injury	\$1,000,000
Medical Payments Limits	\$10,000
General Aggregate	\$1,000,000
Excess or Umbrella Liability	\$5,000,000

- (b) Automobile Liability
(1) Coverages must include the following extensions:

Comprehensive Form

- (a) All Owned Autos
- (b) All Hired Autos
- (c) All Non-Owned Autos
- (d) Mobile Equipment
- (e) Specialized Equipment
- (f) Contractual Liability
- (g) Uninsured Motorists to Limit of Policy
- (h) Additional Insured Endorsement naming City of De Pere, its employees, agents and assigns

- (2) Limits of Liability:

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Combined Single Limit/Bodily Injury and Property Damage:

\$1,000,000 per person/per accident

Uninsured/Underinsured Motorists: Limits Equal to Above Combined Single Limit

- (c) Aircraft Insurance
When Contractors or Subcontractors use their own, non-owned or hired aircrafts in operations of their business, they must provide evidence of Aircraft Liability and Property Damage Insurance equal to \$1,000,000 in limits per aircraft seat. The City/Owner, its employees, agents and assigns must be named as Additional Insured's as respects the particular project for which the craft is flown.
- (d) Worker's Compensation and Employers' Liability Insurance
Limits of Liability: Statutory
- (e) Professional Liability: \$3,000,000
(Errors and Omissions or other relevant coverage)
- (f) All required liability insurances shall be written on an "occurrence" policy form. Any deductibles or self-insured retentions shall be identified to the City and shall not exceed \$10,000 per occurrence.

Indemnification. The Contractor shall indemnify and hold harmless the City, its officers, agents and employees from and against all claims, damage, losses, and expenses including reasonable attorney's fees arising out of or resulting from the performance of the work specified in this Contract, provided that any such claim damage, loss or expense is caused in whole or in part by any negligent or intentional act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a part indemnified hereunder.

In any and all claims against the City, its officers, agents and employees by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this section shall not be limited in any way by any limitation of the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under Workers' Compensation Acts, disability benefit acts or other employee benefit acts.

Builders' Risk Insurance. (This does not apply to additions and/or alterations on existing structures.)

Unless otherwise provided, the City shall purchase and maintain fire insurance, extended coverage, vandalism and malicious mischief upon the entire structure on which the work of this contract is to be done equal to 100% of the insurable value (Builders' Risk-Completed Value).

The City may at its discretion, purchase All Risk Builders' Risk Coverage.

Waiver of Subrogation. The City, Contractor and Subcontractor waive all rights of subrogation against each other for damages caused by fire and other perils covered by insurance provided for under the terms of the Contract, except such rights as they may have to the proceeds of the

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insurance held by the City as trustee. The loss, if any, is to be made adjustable with and payable to the City as trustee for the insured Contractor and Subcontractor as their interests may appear, except in such cases as may require payment of all or a proportion of said insurance to be made to the Mortgagee as his interest may appear.

EXECUTION OF CONTRACT. The Contract shall be executed by the Bidder, and the Contract Bond shall be executed by the principal and the sureties, and both shall be presented to the Director of Public Works within 10 days after the date of Notice of the Award of the Contract.

No contract will be considered binding upon the City until the final execution of the contract agreement. The date of final execution of the Contract shall be the date on which the final signature is affixed.

FAILURE TO EXECUTE CONTRACT. Failure on the part of the Successful Bidder to execute a Contract and an acceptable Contract Bond, within 10 days after the date of Notice of Award of

the Contract will be just cause for the annulment of the award and the forfeiture of the proposed guarantee to the City, not as a penalty but in payment of liquidated damages sustained as a result of said failure.

RIGHT OF BIDDER TO NULLIFY BID. Should the City fail to execute a Contract within 60 days after the filing by the Bidder of the Contract, together with Contract Bond and other documents required to be filed, all in proper form and order, the Bidder may nullify its acceptance of the Contract by filing due notice of such intent. Such notice shall be in writing and may be filed at any time after the expiration of 60 days after the filing by the Bidder of the required Contract Documents. Said notice shall stipulate the maximum number of days, not less than 10, exclusive of Sundays and holidays, within which the contract shall be executed by the City. Failure on the part of the City to execute the contract within the time so stipulated, shall be construed to be an acceptance on the part of the City of the nullification of the bid, and the bidder and surety will be relieved of all obligations to the City that may have been incurred under said contract and contract bond.

Said nullification is a purely voluntary act of the Bidder. Therefore, no liability or obligation toward the Bidder, surety, or any other party who may have an interest, directly or indirectly in such contract, will be incurred by the City.

Unless and until the bidder files such notice of nullification, and until such notice becomes effective, if filed, the contract may be executed by the City without prejudice to any of the terms and conditions thereof.

SCOPE OF WORK

INTENT OF PLANS AND SPECIFICATIONS. It is the intent of the plans and specifications to provide for the construction, execution and completion of a complete work or improvement, which the Contractor undertakes to do in full compliance with the plans, specifications, special provisions and contract. The Contractor shall perform all items of work covered and stipulated in the bid and perform altered and extra work and shall furnish, unless otherwise provided in the contract, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work.

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INCREASED OR DECREASED QUANTITIES. It is agreed and understood that the quantities of any items of work shown on the plans or in the bid are subject to increase or decrease during the progress of the work. The Director of Public Works reserves the right to increase or decrease the quantities of any items of work, including increase or decrease of quantities by revision of plans, as may be considered necessary or desirable during the progress of the work to satisfactorily complete the construction. Such increases or decreases in quantities shall not be considered as a waiver of any conditions of the contract nor invalidate any of the provisions thereof.

REVISION OF PLANS. The right is reserved at any time during which the contract is in force to make such revisions in the plans or revisions in the terms of the contract as may be necessary. Revisions of the plans shall, insofar as practical, be ordered in writing before starting work on such revisions.

The work involved in such revisions shall be paid for at contract unit prices except as portions of it may qualify as extra work.

OMITTED ITEMS. The right is reserved to omit from the work any item or portion thereof found unnecessary to the improvement and such omission shall not be considered as a waiver of any conditions of the contract nor invalidate any of the provisions thereof. The Contractor will be paid for all work done toward the completion of the item or part thereof prior to such omission.

EXTRA WORK. The Director of Public Works may, at any time during the progress of the work covered by the contract, order other work or materials incidental thereto. All such work and materials that do not appear in the bid or contract as a specific item accompanied by a unit price, and which are not included under the price bid for other items in the contract, shall be designated as extra work. The Contractor hereby agrees to perform extra work whenever it is deemed necessary or desirable by the Director of Public Works to complete the project as originally contemplated, or as subsequently altered, and it shall be done in accordance with the requirements herein set forth.

Extra work shall be done under the supervision of the Engineer, whose decision shall be final and binding.

The Contractor shall not perform any extra work until a contract change order has been authorized. Claims for compensation for extra work performed which has not been authorized and not covered by a contract change order may be rejected.

The method of determining the basis of payment for extra work will be by unit bid price named in the bid for like items of work or by a supplemental schedule of prices bid by the Contractor in the bid when such bids are requested and when the unit bid price is not applicable. In the event that neither of the foregoing methods are applicable, the method of determining the basis of payment for extra work will be by unit prices submitted by the Contractor and accepted by the Director of Public Works, by a lump sum price submitted by the Contractor and accepted by the Director of Public Works, or by a cost plus 15% basis. Cost is hereby defined as including the actual cost of labor, foreperson over labor actually employed upon the extra work, labor liability insurance, the Contractor's payroll taxes, if any, and materials delivered upon and forming a part of the extra work, but excluding all administration and clerical expenses, all supervision and superintendents above foreperson and use and upkeep of small tools, plant and machinery and rent of storage yard. Prevailing rental rates on special tools and equipment and actual cost of special services will

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be allowed the Contractor without the above-specified 15% added thereto. The 15% basis shall not be charged on the Contractor's equipment rates. Contractor equipment shall only be paid when it is in use for construction of the extra work as determined by the Engineer.

In the event that additional work is performed by Subcontractors, the method for determining the basis of payment shall be the same as the Contractor in the paragraph above. The Contractor may include a Subcontractor cost plus 5% basis.

INGRESS AND EGRESS. The Contractor shall at all times conduct the work in such a manner as to insure the least possible obstruction to pedestrian and vehicular traffic serving abutting properties along the project and to that end shall, at its own expense, provide and maintain in reasonably passable condition such temporary roads and temporary approaches as are deemed reasonable and practical by the Engineer.

CONTROL OF WORK

AUTHORITY OF ENGINEER. All work shall be done under the supervision of and performed to the satisfaction of the Engineer. The Engineer shall decide all questions which arise as to the quality and acceptability of materials furnished, work performed, manner of performance (excluding safety), rate of progress of the work, interpretation of the plans and specifications, acceptable fulfillment of the contract, compensation, and disputes and mutual rights between Contractors under the specifications. The Engineer shall determine the amount and quantity of work performed and materials furnished, and the decision of the Engineer estimates shall be final. The Engineer's estimate in such event shall be a condition precedent to the right of the Contractor to receive money due under the contract.

The Engineer shall have executive authority to enforce and make effective such decisions and orders as the Contractor fails to carry out promptly and, in case of failure on the part of the Contractor to execute work ordered by the Engineer, the Engineer may, after giving notice in writing to the Contractor, proceed to execute such work as may be deemed necessary and the cost thereof shall be deducted from compensation due or which may become due the Contractor under the contract.

COORDINATION OF PLANS, SPECIFICATIONS AND SPECIAL PROVISIONS. These specifications, the plans, special provisions and all supplemental documents are essential parts of the contract and a requirement occurring in one is as binding as though occurring in all. They are intended to be cooperative, to describe and provide for a complete work. In the case of a discrepancy between the plans and the specifications, the plans shall govern; between the special provisions and the specifications or the plans, the special provisions shall govern.

The Contractor shall take no advantage of any apparent error or omission in the plans or specifications, and the Engineer shall be permitted to make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the plans and specifications.

LINE AND GRADE. The Engineer will furnish and set the construction survey stakes or reference points necessary to establish the alignment and grade for all types of work. These stakes and points shall constitute the field control by and in accordance with which the Contractor shall govern and execute the work. The Contractor shall furnish, at its own expense, such other facilities and labor as may be required by

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the Engineer in establishing such points and lines necessary to the prosecution of the work after the work is started. The Contractor shall furnish free of charge all additional stakes and other material necessary for making and maintaining the points and lines given. The Contractor shall set and shall be responsible for all additional stakes or markings needed to facilitate layout or construction of the work.

The Contractor shall be responsible for the preservation of all stakes and points, and if any of these survey stakes or points have been carelessly or willfully destroyed or disturbed by the Contractor, the cost to the City of replacing them may be charged against the Contractor and be deducted from the payment of the work.

COOPERATION OF CONTRACTOR. The City reserves the right at any time to contract for and perform other or additional work on or near the Work covered by any contract.

The Contractor shall control construction operations in such a manner as to minimize the extent of the land area disturbed during construction. Areas that are disturbed and are not needed in construction operations shall be restored by the Contractor and no payment shall be made to the Contractor for this resolution.

The Contractor shall arrange and conduct work so as not to interfere with the operations of other Contractors engaged upon or near the work and to join work to that of others in a proper manner, and in accordance with the spirit of the plans and specifications, and to perform work in the proper sequence in relation to that of other work, all as may be directed by the Engineer. The Contractor shall be held responsible for any damage done by it or its agents to the work performed by another Contractor.

In case of a dispute arising between two or more Contractors engaged on the same improvement as to the respective rights of each under the specification, the Engineer shall determine the matter at issue and shall define the respective rights of the various interests involved in order to secure the completion of all parts of the work in general harmony and with satisfactory results. The Engineer's decision shall be final and binding on all parties concerned and shall not in any way be a cause for claims for extra compensation by any of the parties.

The Contractor shall have at all times during the progress of construction, irrespective of the amount of work sublet, a competent superintendent or designated representative capable of reading and thoroughly understanding the plans and specifications, as agent on the work, who shall receive instructions from the Engineer or authorized representatives. The superintendent or designated representative shall have full authority to execute the orders or directions of the Engineer without delay and to supply promptly such materials, tools, plans, equipment, and labor as may be required to properly perform the work.

REMOVAL OF UNAUTHORIZED AND UNACCEPTABLE MATERIALS AND WORKMANSHIP. Work performed without lines and grades being given, work performed beyond the lines and grades shown on the plans, or as given, except as herein provided, or any extra work performed without authority, will be considered as unauthorized and may not be measured or paid for by the City. Work so done may be ordered removed or replaced at the Contractor's expense.

Work which is not within reasonably close conformity with the plans and specifications and which results in an inferior or unsatisfactory product will be considered as unacceptable work.

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Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, found to exist prior to the final acceptance of the work, shall be immediately removed and acceptably replaced or otherwise satisfactorily corrected by and at the expense of the Contractor.

OWNER MAY CORRECT UNACCEPTABLE WORK. If Contractor fails within a reasonable time after written notice from Engineer to correct unacceptable Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Plans and Specifications 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.

In exercising the rights and remedies, 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.

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 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 the 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 therefore. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work others destroyed or damaged by correction, removal, or replacement of Contractor's unacceptable Work.

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 right and remedies.

ACCEPTANCE OF WORK. The Engineer will make an inspection of any section of work included in the contract as soon as practicable after notification by the Contractor and confirmation by the Inspector that such work has in their opinion been completed and final cleaning up performed. Whenever any section of the work constructed by the Contractor shall have been satisfactorily completed at the time of final inspection, the Engineer shall give written notice of final acceptance to the Contractor.

Should the inspection disclose any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of the same, and the Contractor shall immediately comply with and execute such instructions for corrections of the same. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the Engineer will make the final acceptance and notify the Contractor in writing of his acceptance as of the date of final inspection.

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In the event that the testing of materials is incomplete at the time of final inspection and the work is satisfactorily completed, the Engineer shall give a written notice of partial acceptance, pending receipt of satisfactory test reports; whereupon, the final acceptance shall be given without any additional inspection.

CONTROL OF MATERIALS

SOURCE OF SUPPLY AND QUALITY. The specifications require the use of new, high quality materials throughout the work, except as may specifically be provided elsewhere in the

specifications, on the plans, or in the special provisions, incorporated in the work in such a manner as to produce completed construction which is workmanlike and acceptable in every detail.

PLANT INSPECTION. The Engineer may undertake the inspection of materials at the plant, if deemed necessary or desirable, or the Engineer may designate another agency for the purpose.

RIGHT TO INSPECT AND TEST MATERIALS. To ascertain if materials comply with contract requirements, samples shall, at the discretion of the Engineer, be taken at the source or at job destination, and as often as the Engineer deems it advisable or necessary.

The Contractor shall furnish without charge all samples required by the Engineer and shall afford such facilities as may be required for collecting and forwarding them.

The Contractor may be required to furnish, when requested by the Engineer, a written statement giving the origin, composition or process of manufacture of a material.

Unless otherwise provided in the contract, it shall be the intent of these specifications that conformity of materials to the specified requirements shall be met at the time, or just prior to the time, they are incorporated into the work.

All tests shall be made in accordance with the method described and designated herein or in the contract. References to ASTM specifications shall be understood to mean the Standards or Tentative Standards of the American Society for Testing and Materials. Reference to the AASHTO specifications shall be understood to mean the Standard or Interim Specifications for Highway Materials and Methods of Sampling and Testing of the American Association of State Highway Transportation Officials. Unless otherwise designated, references to various standard specifications and test methods shall be understood to mean the specification or test method which is current on the date of the advertisement for bids.

Test results obtained on samples of materials furnished by the Contractor shall be available to the Contractor.

The City reserves the right to deduct from monies which are due or may become due the Contractor any costs incurred in the sampling and testing of materials not used under the contract.

UNCOVERING WORK. 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.

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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.

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 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.

STORAGE OF MATERIALS. Materials shall be so stored as to insure the preservation of their quality and suitability for the work. Stored materials, even though approved before storage, shall be subject to an inspection prior to their use in the work and shall meet the requirements of the contract at the time they are used. Stored materials shall be located so as to facilitate inspection.

DEFECTIVE MATERIALS. All materials that are not in reasonably close conformity with the requirements of the specifications shall be considered defective and shall be rejected. Rejected materials shall be removed from the site of the work unless otherwise permitted by the Engineer. Any defective materials, which have been subsequently corrected, shall not be used or accepted until re-evaluated and approved by the Engineer. Materials which have been incorporated in the work and subsequently found to be defective may, with the permission of the Engineer, after a determination that reasonably acceptable work has been produced, be left in place. An appropriate adjustment will be made in the contract price for such materials or for the work in which such materials are incorporated.

LEGAL RELATIONS AND PUBLIC RESPONSIBILITY

LAWS TO BE OBSERVED. The Contractor shall at all times observe and comply with all federal, state, and local laws, regulations and ordinances which are in effect or which may be placed in effect during the contract period and which in any manner affect the conduct of the work. The Contractor shall indemnify and save harmless the City and all of its officers, agents and employees against any claim or liability arising from or based on the violation of any such law, ordinance, or regulation, whether by himself or his employees, subcontractors, or agents.

DESCRIPTION. The vendor/contractor agrees that, in performing under this purchase order/contract with the City of De Pere, it will not discriminate against any employee, applicant for employment or any other person or member of the public on the basis of age, race, creed, color, disability, marital status, sex, national origin, ancestry, arrest record, conviction record, military service, use or non-use of lawful products off the employer's premises during nonworking hours, declining to attend a meeting or to

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participate in any communication about religious matters or political matters, or any other basis provided under Wis. Stats. §111.321.

PERMITS AND LICENSING. The Contractor shall procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work.

PATENTED DEVICES, MATERIALS AND PROCESSES. It is mutually understood and agreed that without exception contract prices are to include all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the work. The Contractor and the surety in all cases shall indemnify and save harmless the City from any and all claims for infringement by reason of the use of any such patented design, device, material or process to be involved under the contract, and shall indemnify the City for any cost, expenses, and damages which it may be obliged to pay, by reason of any such infringement, at any time during the prosecution or after the completion of the work.

SAFETY, HEALTH AND SANITATION. The Contractor shall comply with all federal, state and local laws governing the safety, health and sanitation, and shall provide all safeguards, safety devices and protective equipment and take any other needed actions, on his own responsibility or as the Engineer may determine, reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

PUBLIC CONVENIENCE AND SAFETY. The Contractor shall avoid as far as possible the maintenance of any condition, which might be deemed at law to be an attractive nuisance. Where such condition is unavoidable or where apparent or potential hazards occur, incident to conduct of the work, the Contractor shall maintain a proper watch or provide other reasonable safeguards. The Contractor and its surety shall be responsible for all damage, bodily injury, or death arising through his negligence, either in maintaining an attractive nuisance or otherwise.

The Contractor shall notify the Engineer, the Police Chief and the Fire Chief at least 24 hours before it becomes necessary to blockade a street.

The Contractor shall notify the De Pere Water Department, the Wisconsin Public Service Corporation, Railroad Companies, and the owners of all other property that may be affected by the Contractor's operations at least 72 hours before breaking ground.

The Contractor shall not hinder or interfere with any persons in the protection of such property, or with the operation of utilities, at any time. The Contractor shall obtain all necessary information in regard to existing utilities. The Contractor shall protect such utilities from injury and shall avoid unnecessary exposure so that they will not cause injury to the public.

The Contractor shall obtain a permit from the De Pere Water Department for the use of City water.

BARRICADES, WARNING SIGNS AND FLAGGERS. When any section of a street is closed to traffic, the Contractor shall furnish, erect, and maintain barricades at each end of the closed section and at all intersecting streets. The Contractor shall furnish, erect, and maintain at these locations such warning signs and lights as may be deemed necessary by the Engineer. The Contractor shall place additional barricades,

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warning signs and lights as may be necessary to protect the work and safeguard vehicular and pedestrian traffic. All signing and barricading will be done in accordance with the latest WisDOT Manual of Traffic Control Devices.

Where it is necessary to maintain a street open to traffic, the Contractor shall furnish, erect and maintain such barricades, warning signs, warning lights, and flaggers as may be necessary to protect the work and safeguard vehicular and pedestrian traffic.

The Contractor shall maintain the roadway in such condition that the public can travel the same in convenience and safety.

The Contractor will be held responsible for all damages to the work due to failure of barricades, warning signs, warning lights, flaggers and other workers assigned to protect it, and whenever evidence of such damage is found prior to acceptance, the Engineer may order the damaged portion immediately removed and replaced by the Contractor at the Contractor's expense, if, in the Engineer's opinion, such action is justified.

USE OF EXPLOSIVES. The Contractor shall observe the utmost care and shall limit the number and size of the charges to as not to endanger life and property. All explosives shall be stored in a secure manner and all such storage places shall be marked clearly **EXPLOSIVES**, and shall be in care of competent workers at all times. The methods of use, storing and handling of explosives and highly inflammable material shall conform with all state and local laws and regulations.

PROTECTION AND RESTORATION OF PROPERTY. The Contractor shall notify, in writing, the owners of all corporate or private property, which interferes with the work, advising them of the nature of the interference, and shall arrange with them for the disposition of such property. The Contractor shall furnish the Engineer upon request with copies of all such notifications and final agreements.

The Contractor shall use every reasonable precaution to prevent the damage or destruction of corporate or private property. The Contractor shall protect and carefully preserve all property marks until the City or an authorized surveyor or agent has witnessed or otherwise referenced their locations or relocation.

The Contractor shall be responsible for the damage or destruction of property of any character resulting from neglect, misconduct, or omission in manner or method of execution or non-execution of the work, or caused by defective work or the use of unsatisfactory materials, and shall restore such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or replacing it as may be directed, or shall otherwise make good such damage or destruction in an acceptable manner. Upon the Contractor's failure to do so, the Engineer may, after the expiration of a period of 48 hours after giving written notice, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary, and the cost thereof shall be deducted from any compensation due or which may become due the Contractor under this contract.

RESPONSIBILITY FOR DAMAGE CLAIMS. The Contractor and its surety shall indemnify and save harmless the City and all of its officers, officials, agents and employees from all suits, actions or claims of any character brought because of any injuries or damages received or

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sustained by any person, persons, or property on account of the operations of the said Contractor; or on account of or in consequence of any neglect in safeguarding the work, or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect or misconduct of said Contractor; or because of any claims or amount recovered for any infringement of patent, trademark or copyright; or from any claims or amounts arising or recovered under the worker's compensation law; or any other law, ordinance, order or decree; and so much of the money due the said Contractor under and by virtue of this contract as shall be considered necessary by the Board of Public Works for such purposes, may be retained for the use of the City; or, in case no money or insufficient money is retained, the Contractor's surety shall be held.

The City shall not be liable to the Contractor for damages or delays resulting from work by third parties or by injunctions or other restraining orders obtained by third parties.

It shall be the Contractor's responsibility to see that all of the contract operations incidental to the completion of this contract are covered by public liability and property damage liability insurance in order that the general public or any representative of the contracting authority may have recourse against a responsible party for injuries or damages sustained as a result of said contract operations. This requirement shall apply with equal force, whether the work is performed by the Contractor, or by a Subcontractor or by anyone directly or indirectly employed by either of them.

CONTRACTOR'S RESPONSIBILITY FOR WORK. Until acceptance of the Work by the Engineer, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements, or from any other cause, whether arising from the execution or non-execution of the Work. The Contractor shall rebuild, repair, restore and make good all injuries or damages to any portion of the Work occasioned by any of the above causes before acceptance and shall bear the expense thereof, except damage to the Work due to unforeseeable causes beyond control of and without the fault

or negligence of the Contractor, including but not restricted to acts of God, of public adversaries or of governmental authorities. In case of suspension of work from any cause whatever, the Contractor prior to suspension shall take such precautions as may be necessary to prevent damage to the project, provide for normal drainage and shall erect any necessary temporary barricades, signs or other facilities, at the Contractor's expense, as directed by the Engineer.

PERSONAL LIABILITY OF PUBLIC OFFICIALS. In carrying out any of the provisions of this contract or in exercising any power or authority granted to them thereby, there shall be no personal liability upon the City, its officers, officials, agents and employees, it being understood that in such matters they act as agents and representatives of the City. Any right of action by the Contractor against the City, or its agents or employees, is hereby expressly waived.

PROSECUTION AND PROGRESS

SUBLETTING OR ASSIGNMENT OF CONTRACT. The Contractor shall not sublet, sell, transfer, assign, or otherwise dispose of the contract or any portion thereof, or of its right, title or interest therein, without written consent of the Engineer.

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Consent to sublet any portion of the contract shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the contract or to release the Contractor of liability under the contract and bond.

In case such consent is given, the Contractor will be permitted to sublet a portion thereof, but shall perform with its own organization work amounting to at least one-third of the original contract amount, unless a larger portion is specified in the contract.

Requests for permission to sublet any portion of the contract shall be in writing and accompanied by a Qualification Statement showing that the organization, which will perform the work, is experienced and equipped for such work.

PROSECUTION OF THE WORK. The Contractor shall not begin the work to be performed under the contract before receiving written notification from the Engineer to do so, and shall thereupon begin the work within ten days after the date of such written notice.

Notice of intention to start work shall be given to the Engineer at least 72 hours in advance of beginning work.

The Contractor shall employ an ample workforce and provide a construction plant properly adapted to the Work, of sufficient capacity and efficiency to accomplish the Work in a safe and workmanlike manner at the rate of progress specified.

The Contractor shall give personal attention to and shall supervise the Work to the end that it shall be prosecuted faithfully, and when not personally present on the Work, shall at all times be represented by a competent superintendent who shall receive and obey all instructions or orders given under the contract, and who shall have full authority to execute the same, and to supply materials, tools and labor without delay, and who shall be the legal representative of the Contractor. The Contractor shall be liable for the faithful observance of any instructions delivered to it or to its authorized representative.

In the event Work is prosecuted during adverse weather conditions, the Contractor will be required to exercise such precautions, necessary to produce satisfactory work, and shall protect the finished Work from the elements. It is agreed and understood that the cost thereof has been included in the unit prices bid for the various items of Work in the Contract and that no extra compensation will be allowed therefore.

OVERTIME WORK. Overtime and shift work may be established as a regular procedure. The Contractor may request overtime and shift work periodically to accommodate construction sequencing and/or weather delays. The Engineer shall evaluate the request and make a determination on approval. If approved, the Engineer will issue written permission. Such permission may be revoked at any time. No work other than overtime and shift work established as a regular procedure shall be done between the hours of 6:00 P.M. and 7:00 A.M., nor on Saturdays, Sundays, or legal holidays, except such work as is necessary for the proper care and protection of the work already performed or except in case of an emergency.

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All costs for overtime inspection, except those occurring as a result of overtime and shift work established as a regular procedure, and other approved circumstances, shall be paid by the Contractor. Overtime inspection shall include inspection required during holidays, Saturdays, Sundays, and any weekday between the hours of 6:00 P.M. and 7:00 A.M. Such costs will include but will not necessarily be limited to engineering, inspection, general supervision and other overhead expenses, which are directly chargeable to the overtime work. All such charges shall be deducted by the City from payment due the Contractor.

LIMITATION OF OPERATIONS. At any time when, in the judgment of the Engineer, the Contractor has obstructed the safe and convenient movement of vehicular and pedestrian traffic, or is carrying on operations on a greater portion of the project than is necessary for the proper prosecution of the Work, the Engineer may require the Contractor to finish the sections in which Work is in progress before Work is started on any additional section.

WORKFORCE. The Contractor shall at all times employ sufficient supervision and labor for prosecuting and several classes of work to full completion in the manner and time requested by the Contract.

All superintendents, forepersons and workers shall have sufficient skill and experience to properly perform the Work assigned. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactorily.

Any person employed by the Contractor or by any Subcontractor who, in the opinion of the Engineer does not perform in a proper and skillful manner (or is intemperate or disorderly) shall, at the written request of the Engineer, be removed forthwith by the Contractor or Subcontractor employing such person, and shall not be employed again in any portion of the work without the approval of the Engineer.

METHODS AND EQUIPMENT. The Contractor shall provide and furnish all machinery, equipment, and tools necessary to perform the Work, which shall be in such condition and of such capacity as will produce Work of satisfactory quality within the contract time.

Failure on the part of the Contractor to provide adequate equipment, maintained in proper working order, may be sufficient cause for suspension of specific operations until compliance is obtained or may constitute cause for default of Contract.

Any plan or method of work suggested by the Engineer to the Contractor but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor; and the City shall assume no responsibility therefore.

SUSPENSION OF WORK. The Engineer shall have the authority to order the partial or complete suspension of operation for such period or periods as may be deemed necessary, in the interest of public safety and convenience, or due to unsuitable weather and such other conditions as are considered unfavorable for prosecution of satisfactory work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or to perform any or all of the provisions of the contract. Authorizations or orders to suspend work shall be in writing. Unless otherwise specifically provided, no additional or extra compensation or additional contract time will be allowed due to such suspensions of operations.

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DETERMINATION AND EXTENSION OF CONTRACT TIME. The time for completion of the Work contemplated under the Contract will be calendar days or completion date. For calendar day contracts, work will be specified in the Bid as a specific number of calendar days including Sundays and holidays on or before which the Work shall be completed. For completion date contracts, work will be specified in the bid as a date. Fifteen (15) percent of the contract time as specified is allocated to bad weather, which will not warrant an extension of contract time.

The Contract starting date, for purposes of determining contract time and extensions, will be construed to be the date construction operations are started or the tenth day following the date of written notification by the Engineer to the Contractor to begin work, whichever is earlier.

Contract time will not be charged during periods of complete suspension of operations, when ordered by the Engineer suspending operations.

Contract time will be extended by an amount as is mutually agreed upon by the Engineer and the Contractor, on the basis of contract change orders involving alterations in the contract affecting the prosecution of work, or involving extra or additional work, when such alterations are necessary for the purposes or convenience of the Engineer, or when such extra or additional work is of such character or is ordered to be done at such a time that the amount of time reasonably necessary to perform such work is disproportionate to the contract time originally set up in the bid.

Should the Contractor find it impossible to complete the Work on or before the time for completion as specified in the Contract, or extended as above set forth, the Contractor may, at any time prior to 3 days after completion of Work under the Contract, make a written request to the Engineer for an extension of time, setting forth therein reasons to justify the granting of the request. If the Engineer finds that the work was delayed because of conditions beyond the control of the Contractor, it may grant an extension of time for completion in such amount as it finds to be warranted and justified.

LIQUIDATED DAMAGES. Should the Contractor fail to complete the work within the time agreed upon in the contract, interim completion dates included in the work sequence, or within such extra time as may have been allowed by extensions, there shall be deducted from any monies due or that may become due the Contractor, for each and every calendar day, including Sundays and holidays, that the work shall remain uncompleted, a sum specified as follows:

LIQUIDATED DAMAGES		
ORIGINAL CONTRACT AMOUNT		DAILY CHARGE
FROM MORE THAN	TO AND INCLUDING	CALENDAR DAY
\$0	\$150,000	\$470
\$150,000	\$300,000	\$600
\$300,000	\$500,000	\$815
\$500,000	\$1,000,000	\$1160
\$1,000,000	_____	\$1505

This sum shall be considered and treated not as a penalty but as fixed, agreed and liquidated damages due the City from the Contractor by reason of inconvenience to the public, added cost of engineering and

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supervision, and other items which have caused an expenditure of public funds resulting from the Contractor's failure to complete the Work within the time specified in the Contract.

Permitting the Contractor to continue and finish the Work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, shall in no way operate as a waiver on the part of the City of any of its rights under the contract.

DEFAULT ON CONTRACT. If the Contractor fails to begin the Work under the Contract within the time specified, or discontinues the prosecution of the work, or for any other cause whatsoever fails to carry on the work in an acceptable manner, the Engineer shall give notice in writing to the Contractor and the Contractor's surety of such delay or default, specifying the same.

If the Contractor, within a period of 10 days after the date of such notice, shall not proceed in accordance therewith, then the Board of Public Works or Director of Public Works shall have full power and authority to forfeit the rights of the Contractor and at its option, to call upon the surety to complete the work in accordance with the terms of the contract; or it may take over the work, including any or all materials and equipment on the ground as may be suitable and acceptable, and may complete the work by or on its own force account, or may enter into a new agreement for the completion of said Contract according to the terms and provisions thereof, or use such other methods such as, in its opinion, shall be required for the completion of said Contract in an acceptable manner. All costs and charges incurred by the City, together with the cost of completing the work under contract, shall be deducted from any monies due or which may become due on such Contract. In case the expenses so incurred by the City shall be less than the sum which would have been payable under the contract if it had been completed by said Contractor, then said Contractor shall be entitled to receive the difference subject to any claims for liens thereon which may be filed with the City, or any prior assignment filed with it, and in case such expense shall exceed the sum which would have been payable under the contract, the Contractor and the surety shall be liable and shall pay to the City the amount of such excess.

TERMINATION OF THE CONTRACTOR'S RESPONSIBILITY. Whenever the improvement contemplated and covered by the contract shall have been completely performed on the part of the Contractor and all parts of the Work had been approved and accepted by the Engineer, according to the contract, and the final estimate paid, the Contractor's obligations shall then be considered fulfilled, except as set forth in the contract bond.

EMERGENCY DEFERMENT OR CANCELLATION OF CONTRACT. The City and the Contractor, in the event of national emergency or a shortage of materials, labor, or equipment, beyond the control of the Contractor may upon a finding by the City that such emergencies or shortages do exist, and by reason of which such Contractor is unable to proceed with the construction contract, defer such construction in whole or in part, or cancel such construction contract, or any part thereof.

MEASUREMENT AND PAYMENT

TAX EXEMPT STATUS. The City of De Pere is tax exempt under Wis. Stats§77.54(9m), sales tax is not included for the storage, use, and consumption of tangible personal property sold to a Contractor which becomes a component of a facility that is owned by the City. A facility is defined as building, shelter,

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parking lot, parking garage, athletic field, athletic park, storm sewer, water supply system, or sewerage and waste water treatment facility, but does not include a highway, street or road. Payments for components utilized in the above constructed facilities shall not include a sales tax.

MEASUREMENT OF QUANTITIES. All work completed under the contract will be measured for final payment by the Engineer to determine the quantities of work performed, except when agreements have been made providing for compensation on the basis of plan quantities or when contract change orders have been executed providing for other methods of measurement. The Contractor will be paid for the actual amount of work performed in accordance with the contract, as shown by the final measurements or upon the basis of plan quantities.

SCOPE OF PAYMENT. The Contractor shall accept the compensation, as herein provided, in full payment for furnishing all materials, labor, tools and equipment necessary for performing all work contemplated and embraced under the contract; also for loss or damage arising from the nature of the work or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the Engineer; and for all insurance, compensation and risks of every description connected with the prosecution of the Work; also for all expenses incurred in consequence of the suspension or discontinuance of the Work as herein specified; and for any infringement of patent, trademark, or copyright; and for completing the Work according to the Contract.

The payment of any current estimate prior to final acceptance of the Work by the City shall in no way constitute an acknowledgment of the acceptance of the Work, nor in anyway prejudice or affect the obligation of the Contractor, at its expense, to repair, correct, renew or replace any defects or imperfections in the construction or in the strength or quality of the materials used in or about the construction of the Work under Contract and its appurtenances, or any damage due or attributable to such defects, which defects, imperfections or damage shall have been discovered on or before the final inspection and acceptance of the Work. The Engineer shall be the sole judge of such defects, imperfections or damage and the Contractor shall be liable to the City for failure to correct the same as provided herein.

No monies otherwise payable under the Contract shall become due and payable if the City so elects until the Contractor shall satisfy the City that it has fully settled or paid for all materials used in or upon the work and labor done in connection therewith.

INCREASED OR DECREASED QUANTITIES. Whenever the quantity of any item of work as given in the bid shall be increased or decreased as required to satisfactorily complete the work, payment for such item of work shall be made on the basis of the actual quantity completed at the original contract unit price.

Compensation for alterations in plans for quantities or work requiring contract change orders shall be as stipulated in such agreements.

EXTRA WORK. When extra work has been partially or completely performed, the Engineer may compute the amount thereof, which has been completed and may include such amount in partial payment estimated and in the final estimate certified to the Board of Public Works.

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OMITTED ITEMS. The City shall have the right to cancel the portions of the contract relating to the construction of any items therein by the payment to the Contractor of a fair and equitable amount to be agreed upon by contract change order covering all items of cost incurred prior to the date of cancellation or suspension of the Work by order of the Engineer.

Acceptable materials ordered by the Contractor and not canceled prior to the date of cancellation of the Work by order of the Engineer and which are delivered on the work will be paid for at the actual cost to the Contractor and shall thereupon become the property of the City.

PARTIAL PAYMENTS. Partial payments based on the value of the Work performed or materials furnished, at contract or agreed unit or lump sum prices, will be made to the Contractor as the work progresses, except that partial payments will not be made as long as the Contractor fails to comply with any order of the Engineer in accordance with the Contract.

Once each month, provided that a payment of \$5,000 or more becomes due, the Engineer will make an estimate of the quantities of work performed and the value thereof at contract or agreed unit or lump sum price.

The Engineer may, upon presentation by the Contractor of receipted bills, freight bills or other satisfactory evidence of payment, include in the estimate prepared for partial payment the value of non-perishable materials which are to form a part of the completed work, produced or purchased, and delivered and stored in the vicinity of the work at such locations where they will be available for ready incorporation into the work.

From the total amount of the estimate, determined as provided above, the City shall, after deducting previous payments made, pay to the Contractor 95% of the amount of the approved invoice, retaining 5% of the estimate of work done until 50% of the work has been completed. At 50% completion of the work, the previous retainage shall not yet be paid, but further partial payments shall be made in full to the Contractor without additional retainage being taken unless the Engineer certifies that the work is not proceeding satisfactorily. If the work is not proceeding satisfactorily, additional amounts may be retained. After substantial completion, an amount retained may be paid to the Contractor, keeping retained only such amount as is needed for the remaining work.

Should any defective work or material be discovered, or should a reasonable doubt arise as to the integrity of any part of the work completed previous to the final acceptance and payment, there will be deducted from the first estimate rendered after the discovery of such work an amount equal in value to the defective or questioned work, and this work will not be included in a subsequent estimate until the defects have been remedied or the causes for doubt removed.

All material and work covered by partial payments made thereupon become the property of the City, but this provision shall not be construed as relieving the Contractor from the sole responsibility for all materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the City to require the fulfillment of all terms of the contract.

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ACCEPTANCE AND FINAL PAYMENT. When the project has been finally accepted, the Engineer will prepare the final estimate of the quantities of Work performed. After review of such final estimate, the Contractor will be paid the entire sum found to be due after deducting all previous payments and all amounts to be deducted under the provisions of the Contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

ASSIGNMENT OF PAYMENTS. All monies payable under the Contract, or any part thereof, shall be paid to the Contractor in accordance with the provisions of this Section, and no assignment or order executed by the Contractor directing payment of any portion or all of such funds to any other person or persons shall be recognized by the City.

CLAIMS FOR ADJUSTMENT IN COMPENSATION. Should the Contractor deem that an adjustment in compensation is due for work or materials not clearly covered in the Contract or not ordered by the Engineer as an extra, the Contractor shall notify the Engineer in writing the Contractor's intention to make claim for such adjustment before proceeding with the work involved in such claim.

Should the Contractor encounter physical conditions at the site of the work of any unusual nature, differing materially from those which might be reasonably encountered and generally recognized as inherent in work of the character provided for or implied in the plans and specifications, promptly, and before such conditions are unduly disturbed, the Engineer shall be notified, in writing, of the Contractor's intent to claim an adjustment in compensation. The Engineer shall thereupon promptly investigate the conditions, and, if the Engineer finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or the time required for performance of the contract, the contract will be modified in writing and an equitable adjustment made in accordance with the requirements of extra work.

Should the Contractor fail to give the Engineer written and timely notice of intent to claim an adjustment in compensation as hereinbefore provided and to afford the Engineer the opportunity to investigate any changed conditions claimed before they are unduly disturbed, Contractor thereby expressly waives such claim. In any event, the determination of the validity of the claim will rest with the City or its authorized representative.

GUARANTEE

GUARANTEE OF MATERIALS AND WORKMANSHIP. The Contractor shall guarantee all materials furnished and all work performed under the Contract against all defects in materials and workmanship for a period of one year following the date of acceptance of the Work, which date shall be understood to be the date of which final payment of all monies due the Contractor under the contract is authorized by the Director of Public Works.

Should any defect appear during the guarantee period, the Contractor shall make the required repairs or replacement upon receipt of written notification from the Director of Public Works to do so.

END OF SECTION

SECTION 01 45 23.10

TESTING AND INSPECTION OF PIPELINE & APPURTENANCES

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Low pressure air test.
 - 2. Televising gravity pipelines.
 - 3. Deflection test for gravity pipelines that are not reinforced concrete pipe (PVC and other).
 - 4. Pressure and leakage test for pressurized pipelines.
 - 5. Continuity testing.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM D3034 Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - 2. ASTM F679S Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings.
 - 3. ASTM C1107 Spec. for Packaged Dry, Hydraulic –Cement Grout (Nonshrink)
- B. American Water Works Association (AWWA)
 - 1. AWWA C600 Installation of Ductile-Iron Water Mains and Their Appurtenances
 - 2. AWWA C605 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
 - 3. AWWA C651-14 Disinfecting Water Mains

1.3 SUBMITTALS

- A. Quality Control Submittals
 - 1. Test reports and results.
 - 2. Proposed method to correct deficiencies.
 - 3. Record of deficiency repair method and location.

1.4 PROJECT/SITE CONDITIONS

- A. Notify Engineer a minimum of 48 hours prior to any testing.
- B. Notify Engineer when testing equipment is setup and ready for testing.
- C. Testing shall be performed in the presence of the Engineer.

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- D. Provide access to test equipment to enable the Engineer to monitor and record test results.
- E. Repeat failed test after correction of deficiencies until satisfactory tests are obtained.
- F. Proposed correction of deficiencies shall be approved by Engineer prior to correction.
- G. Repair visible leaks within the pipeline and/or pipeline appurtenances.

PART 2 – PRODUCTS

2.1 EQUIPMENT

- A. Low Pressure Air Test
 - 1. Inflatable pipe lugs.
 - 2. Bracing.
 - 3. Compressor.
 - 4. Hose and fittings.
 - 5. Pressure gauge.
- B. Televising of Pipelines
 - 1. Cleaning Equipment:
 - a. Mechanically operated cleaning equipment shall be of the movable dam type constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the pipe.
 - i. Sewer cleaning balls or other such equipment which cannot be collapsed instantly is not acceptable cleaning equipment.
 - ii. Provide the movable dam with equal diameter as the pipe being cleaned.
 - iii. Provide a flexible scraper around the outer periphery to insure total removal of grease.
 - b. Truck mounted hydraulically propelled high velocity cleaning equipment.
 - i. Provide a minimum of 500 feet of ¾ inch I.D. high pressure hose with a selection of two or more high velocity nozzles.
 - ii. 60 GPM nozzle capacity at a working pressure of 1000 to 1500 pound psi capable of producing a scouring action from 15° to 45° in all size pipe lines designated to be cleaned.
 - iii. Provide a high velocity gun adjustable from fine spray to narrow stream with a flow rate of 3 ½ to 27 GPM operating between 200 and 800 psi. for washing and scouring manhole walls and floors.
 - iv. Provide a 1500 gallon water tank capable of holding corrosive or caustic cleaning or sanitizing chemicals, if required by the Engineer, auxiliary engines and pumps, and hose reel.
 - 2. Provide television equipment including:
 - a. Vehicle with cable and winch equipment for pulling camera through pipeline and equipment for placing pull cable.
 - b. Suitable mobile van or trailer enclosure for viewing closed circuit televising.

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- c. Camera and reeled transmitting cable.
 - i. Provide a television camera with a minimum of 600 lines resolution specifically designed and constructed for such pipeline inspection.
 - ii. Provide lighting for the camera which will be suitable for a clear picture for the entire periphery of the pipe.
 - iii. Picture quality and definition shall be suitable for a clear view of the entire pipeline.
- d. Closed circuit transmitter, receiver station, video recorder with audio capability and T.V. monitor.
- e. Engineer's on-site use of televisors, video tape player and television monitor during inspection and for a reasonable time after televising has been completed (but not to exceed 21 days).
- f. Still camera for photos from T.V. monitor.

C. Deflection Test

- 1. The deflection test is required for all sewer main that is not reinforced concrete pipe.
- 2. Mandrel sizes for these mains shall be in accordance to the following tables that are used for PVC:
- 3. PVC SDR 35 (ASTM D3034)

	Base ID (Inches)	Mandrel Size (Inches)
8	7.67	7.28
10	9.56	9.08
12	11.36	10.79
15	13.90	13.20

4. PVC (ASTM F679)

Nominal Pipe Size (Inches)	Wall Thickness	Base ID (Inches)	Mandrel Size (Inches)
18	T-1A	16.98	16.13
18	T-2B	17.06	16.20
21	T-1A	20.00	19.00
21	T-2B	20.10	19.09
24	T-1A	22.48	21.36
24	T-2B	22.59	21.46
27	T-1A	25.33	24.06
27	T-2B	25.45	24.17

D. Standard Pressure and Leakage Test

- 1. High pressure pump with electric or gas engine drive with capacity in excess of test conditions.
- 2. Provide calibrated vessel for measuring water pumped into the main to replace leakage.
- 3. Provide certified pressure gauge calibrated in pounds per square inch of sufficient capacity to conduct test.

PART 3 – EXECUTION

3.1 PREPARATION OF PIPELINE BEFORE TESTING

- A. Clean pipeline of any debris, soils, and construction material.
- B. Repair or replace piping, valves, fittings, manholes, inlets, and other parts of the piping system which have visible defects or leakage, before commencing tests, even though amount of leakage or pressure loss may be below the allowable limit.
- C. Provide traffic control and other safety equipment including confined space entry equipment, if required.

3.2 LOW PRESSURE AIR TEST

- A. Provide either the low pressure air test or the water infiltration test for sanitary sewers submerged by ground water.
- B. Preparation
 - 1. For testing consistency, wet interior pipe surface.
 - 2. Install appurtenances including, but not limited to, wyes, tees, laterals, stubs, and structure prior to test to ensure the system is being tested.
 - 3. Plug pipe outlets (including laterals) adequately to retain testing pressure.
 - 4. Visually inspect pipeline and repair visible defective joints and leaks.
- C. Testing Procedure
 - 1. Determine test time as follows:
 - a. Test times for pipeline segments with uniform pipe size shall be taken from test timetable list below.
 - b. Test times for pipeline segments longer than those shown and/or of non-uniform pipe size shall be calculated utilizing appropriate formulas in ASTM C828.

Test Timetable

Pipe Diameter "D" in Inches											
	8	10	12	15	18	21	24	27	30	36	42
25	0.30	0.37	0.45	0.52	0.60	0.74	0.89	1.04	1.19	1.50	1.82
50	0.59	0.74	0.89	1.04	1.20	1.49	1.78	2.08	2.39	3.01	3.64
75	0.89	1.11	1.34	1.57	1.80	2.23	2.67	3.12	3.58	4.51	5.45
100	1.19	1.48	1.78	2.09	2.40	2.97	3.56	4.16	4.77	6.01	7.27
125	1.48	1.86	2.23	2.61	3.01	3.72	4.45	5.20	5.96	7.51	9.09
150	1.78	2.23	2.67	3.13	3.61	4.46	5.34	6.24	7.16	9.02	10.91
Pipe Diameter "D" in Inches											
	8	10	12	15	18	21	24	27	30	36	42
175	2.08	2.60	3.12	3.65	4.21	5.21	6.23	7.28	8.35	10.52	12.73
200	2.37	2.97	3.56	4.17	4.81	5.95	7.12	8.32	9.54	12.02	14.54
225	2.67	3.34	4.01	4.70	5.41	6.69	8.01	9.36	10.73	13.52	16.36
250	2.97	3.71	4.45	5.22	6.01	7.44	8.90	10.40	11.93	15.03	18.18
275	3.26	4.08	4.90	5.74	6.61	8.18	9.79	11.44	13.12	16.53	20.00
300	3.56	4.45	5.34	6.26	7.21	8.92	10.68	12.48	14.31	18.03	21.81
325	3.86	4.82	5.79	6.78	7.81	9.67	11.58	13.52	15.50	19.53	23.63
350	4.16	5.19	6.23	7.30	8.41	10.41	12.47	14.56	16.70	21.04	25.45
375	4.45	5.57	6.68	7.83	9.02	11.16	13.36	15.60	17.89	22.54	27.27
400	4.75	5.94	7.12	8.35	9.62	11.90	14.25	16.64	19.08	24.04	29.09
425	5.05	6.31	7.57	8.87	10.22	12.64	15.14	17.68	20.27	25.54	30.90
450	5.34	6.68	8.01	9.39	10.82	13.39	16.03	18.72	21.47	27.05	32.72
475	5.64	7.05	8.46	9.91	11.42	14.13	16.92	19.76	22.66	28.55	34.54
500	5.94	7.42	8.90	10.43	12.02	14.87	17.81	20.80	23.85	30.05	36.36
525	6.23	7.79	9.35	10.96	12.62	15.62	18.70	21.84	25.04	31.55	38.18
550	6.53	8.16	9.79	11.48	13.22	16.36	19.59	22.88	26.24	33.06	39.99
575	6.83	8.53	10.24	12.00	13.82	17.10	20.48	23.93	27.43	34.56	41.81
600	7.12	8.90	10.68	12.52	14.42	17.85	21.37	24.97	28.62	36.06	43.63
I. Specified test time (minutes) required for pressure drop from 3 ½ to 2 ½ psi when testing one pipe diameter only.											
II. Interpolate test times for segment lengths not specifically listed.											

2. Pressurize pipeline to 4.0 psi and allow to stabilize (stabilization of air temperature may cause pressure drop).
3. When pressure has stabilized, start test at 3.5 psi and record time.
4. If pressure drops more than 1.0 psi during the determined test time, the test will be considered failed.
5. If the test section is below the ground water level, determine the height of the groundwater above the spring line of the pipe at each end of the test section and compute the average. For every foot of groundwater above the pipe spring line, increase the gage test pressures by 0.43 pounds per square inch.

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3.4 TELEVISION GRAVITY PIPELINES

- A. Preparation of Pipeline Before Televising
 - 1. Clean pipelines and manholes to be televised to degree to allow visual inspection of sewer interior.
 - 2. Completely block off water or sewage from both upstream and downstream of section being televised providing bypass pumping, if necessary to prevent sewage backup.
 - 3. Stop any dewatering operations a sufficient time before televising to allow groundwater elevation to reach its normal level, not less than 72 hours before televising.
 - a. Provide the following equipment and services:
 - i. Street signs, barricaded detours, flashers.
 - ii. Traffic control personnel.
 - iii. Permits to work in public streets.
 - iv. Safety equipment including safety equipment for confined entry.
 - 4. Provide utilities required to perform the work such as water, electricity, etc.
- B. Televising the interior surface of the pipeline by pulling a camera through the pipeline showing on a T.V. monitor and recorded on video tape.
 - 1. Record on the audio system concurrently with the picture the following information:
 - a. Pipeline section being inspected designated by manhole numbers at each terminus of section.
 - b. Date of survey.
 - c. Type of pipe.
 - d. Owner of pipeline.
 - e. Name of televisor.
 - f. Principal client
 - g. Description of defect with location.
 - 2. Superimpose on television image (and on tape) the following information:
 - a. Date.
 - b. Section being televised.
 - c. Footage from entering manhole.
 - 3. Produce still photographs from monitor of any defective section of the pipeline.
- C. Televising Operation
 - 1. Move camera through the line in either direction at a uniform rate no greater than ½ foot per second by means of cable winches in each manhole.
 - 2. Provide telephone or other suitable means of communications between the two winches, the pulling unit, and the monitor control.
 - 3. Halt camera and video record for a minimum of five seconds at each joint, lateral connection, leak, unusual condition, roots, collapsed sections, presence of scale or other defect.
 - 4. While video recording, provide an audio description of the line being televised, defects encountered, infiltration/inflow sources, etc.
 - 5. Measure location of joints, connections or defects horizontal at the ground level by means of a target in front of the camera and a meter device accurate to 0.5 feet per 100 feet.

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D. Televising Report

1. Provide the televising inspection report prepared by the televisor which includes the following items listed below. The report shall be provided in an electronic format approved by the Engineer.
 - a. Manhole section televised (using construction manhole numbering system with corresponding video tape number of manhole).
 - b. Photos with location and date photographed of all joints, lateral connections, roots, collapsed pipes, presence of scale or other observed defects, estimates of infiltration/inflow amounts, etc.

E. Correction of Damage Caused By Televising Operations

1. Correct any damage to surfaces such as landscaping, pavement, sidewalks, roads, etc.
2. Dig up and repair streets or property, to remove equipment lodged in sewers.
3. Cleanup and/or provide restitution for damage caused to private property and sewer systems as a result of cleaning, televising or bypass pumping.

3.5 DEFLECTION TEST FOR GRAVITY PIPELINES THAT ARE NOT REINFORCED CONCRETE PIPE (PVC, PP, AND OTHER)

A. Unless stated elsewhere, perform deflection tests per PVC gravity pipeline requirements for flexible pipes.

B. Pipe shall not exceed a deflection of 5%.

1. The following table shall be used for PP (polypropylene):

Pipe Type	Pipe Diameter (Inches)	Minimum Inside Diameter (Inches)	Inside Diameter With 5% Deflection (Inches)
Dual Wall	12	11.90	11.31
	15	14.85	14.11
	18	17.93	17.03
	21	20.79	19.75
	24	23.90	22.71
	30	29.79	28.30
Triple Wall	30	29.62	28.14
	36	35.40	33.63
	42	41.31	39.24
	48	47.31	44.94
	60	59.30	56.34

C. Conduct test after final backfill has been in place a minimum of 30 days unless a shorter timeframe is approved by the Engineer.

D. Pull test mandrel without mechanical pulling devices.

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- E. Complete the mandrel test on sewer main prior to lateral installation if using Inserta Tees or other connections that prevent the use of the mandrel.
- F. The pipeline will pass the test when the mandrel passes through the entire section of pipe between manholes or other structures in one pass pulled by hand without use of excessive force.
- G. Any section of pipeline failing to pass this test is to be repaired and retested.

3.6 PRESSURE AND LEAKAGE TEST FOR PRESSURIZED PIPELINES

- A. Provide pressure and leakage tests for pressurized pipelines including but not limited to water main and sewage force main.
 - 1. Testing shall be in accordance with AWWA C605 for PVC pipe, as modified herein.
 - 2. Testing shall be in accordance with AWWA C600 for ductile iron pipe, as modified herein.
- B. Preparations
 - 1. Install temporary plugs or caps, as required, prior to testing.
 - 2. Install thrust restraints before testing including temporary plugs or caps.
 - a. If high-early cement concrete thrust restraints are used, then test after 36 hours of thrust restraint replacement.
 - b. If standard cement concrete thrust restraints are used, then test after 7 days of thrust restraint replacement.
 - 3. At a minimum provide bedding, cover material and partial back fill for buried pipe, except joints maybe left uncovered until testing is completed.
 - 4. Install appurtenances including, but not limited to, hydrants, valves, services and air release valves prior to testing to ensure the entire system is being tested.
 - 5. Filling and flushing with water.
 - a. The Water Department will fill each valved section with maximum velocity of 1 ft. /sec. venting air completely from the pipeline and appurtenances.
 - b. Where permanent air vents are not located at high points or dead ends, install 2" corporation stops/valves with galvanized piping and threaded ends to vent air as the line is filled with water.
 - i. Close all these corporation stops/valves before applying pressure or leakage tests.
 - ii. At the conclusion of the leakage and pressure test, remove and plug corporation stops/valves, or at the discretion of the Owner left in place.
 - c. Fill the main with water from the Municipal Service Center or from flushing the main to pressure the system to the testing pressure.
 - d. Discharge water without causing erosion, nuisance, or interruption of traffic.
 - 6. Provide test connections and pressurize the pipe to normal working pressure.
 - a. Inspect pipeline and repair visible leaks.
 - b. Re-pressurize pipeline to normal working pressure as many times as necessary until there are no visible leaks.

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7. Provide backflow protection acceptable to the owner of the water system when existing water mains are used to supply test water.

C. Pressure Test

1. At the option of the Contractor, the pressure and leakage tests may be performed at the same time.
2. Test pressure at the lowest point of elevation of the segment being tested shall be not less than 150 (calculate 1.5 times the working pressure or 150 lbs. per sq. inch whichever is more) or at 10 lbs. per sq. inch less than the pressure rating of the pipe, if less than 150 lbs. per sq. inch.
3. Pressurize the system being tested to pressure required above by adding water with high pressure test pump.
4. Repair any visible leaks occurring due to test pressure application.
5. Repeat pressurizing of system to test pressure until no visible leaks can be found.
6. Test period shall be two continuous hours with no visible leaks occurring.
7. Measure pipeline pressure during test period.
8. Maintain system pressure within plus or minus 5 lbs. per sq. inch of the required test pressure by adding water with the test pump.
9. The pressure test shall be completed on all new mains up to the connection of the existing mains as approved by the Engineer. Place the new main immediately adjacent to the existing main.

D. Leakage Test

1. Perform a leakage test after satisfactory completion of the pressure test.
2. Test pressure at the lowest point of elevation of the segment being tested shall be not less than 150 lbs. per sq. inch or at 10 lbs. per sq. inch less than the pressure rating of the pipe, if less than 150 lbs. per sq. inch.
3. Leakage is defined as the quantity of water supplied into the pipe section being tested to maintain a pressure within 5 lbs. per sq. inch of the specified leakage test pressure after the pipe has been filled with water and the pipeline air has been expelled.
4. Provide gauges, measuring device, pump, piping, connections, container of water and all other apparatus required to perform the test.
5. Leakage shall not exceed the number of gallons per hour as determined by the following formula:

$$L = \frac{SD\sqrt{P}}{133,200}$$

When:

L = Allowable Leakage in Gallons/Hr.
S = Total Length of Pipe Tested in Feet
D = Nominal Pipe Dia. In Inches
P = Average Test Pressure in lbs./sq. in.

6. When the section under test contains various diameters of pipe, the available leakage will be the sum of the computed leakage for each size of pipe.
7. Test period shall be two continuous hours without exceeding the allowable leakage.

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8. Repair pipeline as required to meet allowable leakage requirements, repeating the test after each repair.

3.7 CONTINUITY TESTING

- A. Perform a continuity test on tracer wire.
- B. Provide a power source which will transmit a measurable amount of DC current the length of the tracer wire being tested or length of pipeline being tested.
- C. Take current readings with the test current “off”, then “on” to differentiate between test current and stray current.
- D. In the event continuity of the tracer wire or pipeline is not achieved, perform required repairs and repeat the test until continuity is achieved.

END OF SECTION

SECTION 02 41 13

SELECTIVE SITE DEMOLITION AND ABANDONMENT

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pavements
 - 2. Curb and Gutter
 - 3. Sidewalks
 - 4. Driveways
 - 5. Concrete and Masonry Structures
 - 6. Manholes
 - 7. Catch Basins and Inlets
 - 8. Pipe Culverts
 - 9. Water Main, Hydrants, Valve Boxes, Curb Stops and Boxes

1.2 SUBMITTALS

- A. Provide tickets for the amount of slurry backfill or flowable fill inserted into pipes that are abandoned.

PART 2 – PRODUCTS

2.1 Materials

- A. Granular backfill materials shall conform to the requirements of Soil Class C-5 or C-6 in section “Soils and Aggregates”.
- B. Concrete for this section shall conform to the requirements of Class B concrete as follows:

Class	28-day Comp. Strength	Max. Size Coarse Aggregate (Inches)	Min. Cement Content (Bags/CY)	Air Content	Slump (Inches)	Max. Water/Cement Ratio
B	3000	1 1/2	4.75	6 +/- 1	3-4	.58

PART 3 – EXECUTION

3.1 BREAKING DOWN AND REMOVING STRUCTURES

- A. General

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1. Existing structures, with attached parts and connections, shown on the drawings to be removed or that interfere with the new construction, shall be entirely removed within the limits shown.
 2. When a portion of an existing structure is to be retained, take care during construction operations so as to not damage the retained portion.
 - a. Complete operations necessary for the removal of any existing structure, which might endanger the new construction, prior to the construction of the new Work.
 - b. Do not use any equipment or devices which might damage structures, facilities, or property which are to be preserved and retained.
 3. Old casting shall be salvaged to the City.
- B. Pavement, Curb, Gutter, Sidewalk, Driveways, Crosswalk, and Similar Structures
1. Where portions of the existing structure are to be left in the surface of the finished Work, remove the structure to an existing joint, or saw cut the structure to a true line with a face perpendicular to the surface of the existing structure.
 2. Sufficient removal shall be made to provide for proper grades and connections in the new Work.
- C. Walls, Piers, Drains, Foundations, Concrete, and Masonry Structures
1. Remove entirely or break down to an elevation at least three (3) feet below the earth subgrade within the areas of a road bed and elsewhere to at least three (3) feet below the finished slopes or natural ground.
 2. Rebuild and reconnect live sewers for proper operations.
 3. Satisfactory by-pass service shall be maintained during construction operations.
- D. Manholes, Inlets, and Catch Basins
1. Remove entirely or break down to an elevation at least three (3) feet below the subgrade within the areas of a road bed and elsewhere to at least three (3) feet below the finished slopes or natural ground.
 2. Rebuild or reconnect live sewers for proper operation.
 3. Satisfactory by-pass service shall be maintained during construction operations.
- E. Pipe Culverts
1. Remove entirely all culverts that are to be removed, except as hereinafter provided for closing culverts.
 2. Remove sidewalls or substructure units in water to an elevation no higher than the elevation of the natural stream or lake bed.
 - a. Where grading of the channel is required, remove such units to the proposed finished grade of the stream or lake bed.
 - b. Remove all other sidewalls or substructure units down to at least two (2) feet below natural or finished ground.
 3. Where existing culverts are to be extended or otherwise incorporated into the new Work, remove only such part or parts of the existing culvert as necessary to provide a proper connection to the new Work.

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4. Remove pipe culverts designated for salvage in a manner that will preclude damage to the culverts.

F. Hydrants, Valve Boxes, and Curb Stops and Boxes

1. Remove hydrants without damage at the hydrant lead and plug the lead with a plug fitting.
2. Remove valve boxes entirely or at least to three (3) feet below the earth subgrade and elsewhere to at least three (3) feet below the finished slopes or natural ground.
3. Remove curb boxes and the curb stop entirely. Plug end of water service by crimping, or with a standard plug fitting, as applicable.

3.2 ABANDONING STRUCTURES

A. Manholes, Catch Basins, Inlets

1. Thoroughly clean structures to be abandoned.
2. Plug existing pipe connections with brick or concrete block masonry and with concrete.
3. Remove the walls of the structures to an elevation at least three (3) feet below the finished grade line, or to such elevation that may be designated on the drawings.
4. Provide an outlet for water seepage at the bottom of the structure.
5. Fill the structure with soil type C-5 or C-6.

B. Water Main Pipe

1. Remove pipe to joint and plug end of pipe to be abandoned with a plug fitting.
2. Fill abandoned pipe with flowable fill, blow sand, or other approved material.
3. Provide air release locations and an access point for inserting the aggregate.

C. Sewer Pipe

1. Plug existing pipe to be abandoned with brick or concrete block masonry and with concrete.
2. Fill abandoned pipe with flowable fill, blow sand, or other approved material.
3. Provide air release locations and an access point for inserting the aggregate.

3.3 DISPOSAL OF MATERIALS

- A. Deliver materials designated for salvage to owner's storage facility.
- B. All other materials shall be hauled and disposed of at a site provided by the Contractor:
 1. Method of disposal shall be in conformance with all governing authorities.
 2. There shall be no limit on haul distance.

3.4 BACKFILLING

- A. Fill all trenches, holes and pits resulting from the breaking down or removal of miscellaneous structures with granular or native backfill per Section 31 23 33, Trenching, Backfilling, and Compacting.

END OF SECTION

SECTION 31 05 10

SOILS AND AGGREGATES FOR EARTHWORK

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Engineered soils and aggregates materials
 - 2. Bank run soils materials
 - 3. Manufactured and special soils
 - 4. Crushed concrete

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C33 Spec. for Concrete Aggregates
 - 2. ASTM C88 Test for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
 - 3. ASTM C117 Test for Material Finer than No. 200 Sieve in Mineral Aggregates by Washing.
 - 4. ASTM C131 Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Lost Angles Machine.
 - 5. ASTM C136 Sieve Analysis of Fine and Coarse Aggregates.
 - 6. ASTM C144 Spec. for Aggregate for Masonry Mortar.
 - 7. ASTM C207 Spec. for Hydrated Lime for Masonry Purposes.
 - 8. ASTM C535 Test for Resistance to Degradation of Large-Size Course Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - 9. ASTM C602 Spec. for Agricultural Liming Materials.
 - 10. ASTM D75 Sampling Aggregates.
 - 11. ASTM D422 Particle Size Analysis of Soils.
 - 12. ASTM D448 Spec for Standard Sizes of Coarse Aggregate for Highway Construction.
 - 13. ASTM D1140 Test for Amount of Material in Soils Finer than the No. 200 Sieve.
 - 14. ASTM D1241 Spec. for Materials for Soil;-Aggregate Sub-base, Base, and Surface Courses.
 - 15. ASTM D2216 Laboratory Determination of Water (Moisture) content of Soil, Rock, and Soil Aggregate Mixtures.
 - 16. ASTM D2487 Classification of Soils for Engineering Purposes.
 - 17. ASTM D4318 Test Method for Liquid Limit, Plastic Limit, and Plasticity of Soils.
 - 18. ASTM D5268 Standard Specification of Topsoil Used for Landscaping Purposes.

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1.3 SUBMITTALS

- A. Provide test reports showing the results of required material testing.
- B. Provide technical data sheets for Engineered Soils.
- C. Provide topsoil analysis performed in accordance with ASTM D5268 and demonstrating the topsoil meets Soil Conservation Service specified soil types. Also, submit results of test for nutrient levels and provide recommendations for fertilizer type and application.
- D. Daily delivery tickets for each load of material delivered to the site.

1.4 QUALITY ASSURANCE

- A. The Engineer will provide an independent testing.

PART 2 – PRODUCTS

2.1 ENGINEERED SOILS AND AGGREGATES (SOIL CLASS A)

- A. General
 - 1. Material shall be clean, sound, hard, dense, durable, field or quarry stone which is free from seams, cracks, or other structural defects. It shall be angular material from shot rock (blasted) or crushed rock having substantially all face of which have resulted from artificial crushing.
 - 2. Loss due to sulfate soundness test shall not exceed 10 percent.
 - 3. Loss due to abrasion test shall not exceed 40 percent.
 - 4. Material shall not be frozen.

B. Gradation

- 1. Riprap dimensions shall confirm to the following:

AVERAGE DIMENSION RANGES FOR EACH RIPRAP GRADE (Inches)				
FRACTION OF GROSS IN-PLACE RIPRAP VOLUME OCCUPIED BY STONES	EXTRA HEAVY RIPRAP	HEAVY RIPRAP (A-1)	MEDIUM RIPRAP (A-2)	LIGHT RIPRAP (A-3)
0%	>30	>25	>20	>16
10%-14%	22-25	18-20	14-16	11-13
15%-21%	18-22	14-18	11-14	9-11
20%-28%	8-18	6.5-14	5-11	4-9
5%-7%	<8	<6.5	<5	<4
2% or less	<1	<1	<1	<1

- 2. Soil Class A-4 through A-5 Not Used.

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Sieve Size	% Passing by Weight
2-inch	100
1 ½-inch	90-100
1-inch	20-55
¾-inch	0-15
3/8-inch	0-5

4. Soil Class A-7 (¾ -inch Crushed rock – ASTM D448-No. 67) – Bedding Stone

Sieve Size	% Passing by Weight
1-inch	100
¾-inch	90-100
3/8-inch	20-55
No. 4	0-10
No. 8	0-5

5. Soil Class A-8 (3/8-inch Crushed Rock Chips – ASTM D448-No.8) - Bedding Stone

Sieve Size	% Passing by Weight
½-inch	100
3/8-inch	85-100
No. 4	10-30
No. 8	0-10
No. 16	0-5

2.2 ENGINEERED SOILS AND AGGREGATES (SOIL CLASS C) OR CRUSHED CONCRETE**A. General**

1. Stone shall be hard, durable, granular material of uniform quality resulting from crushed rock or crushed bank run sand and gravel.
2. Material shall be free from clay lump, organic matter, shale, excess, elongated or flat pieces, and other deleterious substances.
3. Forty-five percent of the particles retained on a No. 4 sieve shall have at least fractured face.
4. Wear shall not exceed 50 percent.
5. Loss due to sulfate soundness test shall not exceed 18 percent by weight.
6. Total moisture content shall not exceed 7 percent unless approved by the Engineer to obtain the optimum moisture content for compaction. The optimum moisture content will be determined based on the soil testing.
7. Filler for blending shall have a maximum liquid limit of 25 percent and a maximum plasticity index of 6.
8. Material shall not be frozen.
9. Crushed concrete shall meet the following requirements:
 - a. Be 90% free of steel reinforcement.
 - b. Contain less than 10% asphaltic pavement, surfacing, or base.
 - c. Be from a City project or a source approved by the Engineer.

B. Gradation

1. Soil Class C-1 (Crushed Stone or Concrete) – 1 ¼" Crushed Aggregate Base Course

Sieve Size	% Passing by Weight
1 ¼-inch	95-100
¾-inch	70-93
3/8-inch	42-80
No. 4	25-63
No. 10	16-48
No. 40	8-28
No. 200	2-12

2. Soil Class C-2 (Crushed Stone or Concrete) – ¾" Crushed Aggregate Base Course

Sieve Size	% Passing by Weight
1-inch	100
¾-inch	95-100
3/8-inch	50-90
No. 4	35-70
No. 10	15-55
No. 40	10-35
No. 200	5-15

3. Soil Class C-3 (Crushed Gravel) – 1 ¼" Crushed Aggregate Base Course

Sieve Size	% Passing by Weight
1 ¼-inch	95-100
¾-inch	70-93
3/8-inch	42-80
No. 4	25-63
No. 10	16-48
No. 40	8-28
No. 200	4-10

4. Soil Class C-4 (Crushed Gravel) – ¾" Crushed Aggregate Base Course

Sieve Size	% Passing by Weight
1-inch	100
¾-inch	95-100
3/8-inch	50-90
No. 4	35-70
No. 10	15-55
No. 40	10-35
No. 200	8-15

5. Soil Class C-5 (Crushed Stone, Gravel or Concrete)- Granular Backfill

Sieve Size	% Passing by Weight
1-inch	100
¾-inch	85-100
3/8-inch	50-80
No. 4	35-60
No. 40	15-30
No. 200	5-15

2.3 ENGINEERED SOILS AND AGGREGATES (SLURRY BACKFILL)

A. General

- 1. Material shall be placed in a clean concrete mixer truck and thoroughly mixed.
- 2. No additional water will be allowed. The weights are damp weights.
- 3. Just prior to placing the slurry backfill, the mixer shall be run at mixing speed for one full minute to assure an even mixture.

B. Gradation/Mix Ratio

- 1. Slurry backfill ratio per cubic yard for structure abandonment and trench backfilling shall conform to the following table:

Per Cubic Yard	
Material	Weight/Amounts
Sand	1,350 lbs
A-7	750 lbs
A-6	1,150 lbs
Water	25 Gallons

- 2. Alternatives for the slurry backfill for pipe abandonment may be required due to site conditions and means and methods as determined by the Contractor. Changes in the slurry backfill shall be approved by the Engineer.
- 3. Sand for slurry backfill shall be a granular material having at least 90% passing the No. 4 Sieve and predominantly retained on the No. 200 Sieve.

2.4 ENGINEERED SOILS (BLOW SAND)

A. Blow Sand

- 1. Blow sand shall be M50 Grade Foundry Silica Sand or approved equal.

2.5 ENGINEERED SOILS (BENTONITE CLAY)

A. Bentonite Clay

- 1. Material shall be clean and dust free.
- 2. Material shall consist of a granular sodium bentonite between 3/8" and ¾" chips.

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2.6 BANK RUN SOILS

- A. Soil Class E-1 (Clay Soil)
 - 1. Minimum 50 percent by weight passing the No. 200 sieve.
 - 2. For the fraction passing the No. 40 sieve, the minimum plasticity index shall be 15.
 - 3. Minimum Atterberg liquid limit of 30.
 - 4. Free from organic material, boulders, cobbles, excessive amounts of gravel (greater than $\frac{3}{4}$ - inch), and other deleterious substances.
- B. Soil Class F-1 (Topsoil)
 - 1. Topsoil shall meet the definition and specification stated in ASTM D5268 and meets one of the following SCS (Soil Conservation Service) soil textures:
 - a. Loam.
 - b. Sandy loam.
 - c. Silt loam.
 - d. Silty clay loam.
 - e. Clay loam.
 - 2. The topsoil shall consist of adequate mineral content to support the growth of the intended vegetation and shall not contain herbicides which would be detrimental for the intended use.
 - 3. The topsoil shall have adequate fertility for quick establishment of vegetation.
 - 4. The pH of the topsoil shall be between 6.0 and 7.0.
 - 5. Topsoil shall be free from deleterious substance.
 - 6. Pulverize and screen the topsoil such that 100 percent passed the 1-inch (25 mm) sieve and at least 90 percent passes the No. 10 (2.00 mm).
- C. Soil Class G-1 (Clean Earth Fill)
 - 1. Soil Class G-1 shall be any soil material excavated on the project site or obtained from borrow areas.
 - 2. Soil materials unsuitable and, therefore, not approved for this classification are:
 - a. Soils with high organic contents such as: topsoil, peat, muck, organic silts, and clays, marls, etc.
 - b. Manmade or rubble filled soils containing such materials as: foundry sand, fly ash cinders, asphalt, and concrete rubble, etc.
 - c. Silty soils such as: rock flour, loess, etc.
 - d. Soils with gravel larger than 3-inch.
 - e. Silty clay or clays with high plasticity (CH soils as defined in ASTM D2487).
 - f. All soil contaminated with hazardous waste materials as defined by the EPA.
- D. Soils Class G-2 (Clean Earth Fill)
 - 1. Same as G-1 above except shall not contain gravel larger than 1 $\frac{1}{2}$ - inch.

2.7 SOURCE QUALITY CONTROL

- A. Provide documentation to establish acceptability of material for each soils class in accordance to the following standards:
 - 1. Soils Class A and C:
 - a. ASTM C88.
 - b. ASTM C131 (for coarse aggregates smaller than 1 ½ inches).
 - c. ASTM C136.
 - d. ASTM C535 (for coarse aggregates 1 ½ inches and larger).
 - e. ASTM C117 (use when aggregate contains materials finer than No. 200 sieve).
 - 2. Soils Class E:
 - a. ASTM C136 (test when gravel content is present).
 - b. ASTM D422.
 - c. ASTM D1140.
 - d. ASTM D4318.
 - e. ASTM D4318.
 - 3. Soils Class F:
 - a. ASTM D2487.
 - 4. Soils Class G:
 - a. ASTM D2487.
- B. Provide source samples all soils and aggregates in accordance with ASTM D75.
- C. Provide one (1) acceptable test for each type of material at each source.

PART 3 – EXECUTION

3.1 APPLICATION

- A. Use the soil classification as specified or stated on Drawings.
- B. Place material in accordance with the Drawings and appropriate Specification Sections for the type of work being performed.
- C. Unless specified otherwise, make medium riprap at least 18-inches thick, heavy riprap at least 24-inches thick, and extra-heavy riprap at least 30-inches thick.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Clearing, grubbing, and disposal.
 - 2. Stripping and stockpiling topsoil.
 - 3. Ash Tree Requirements.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Topsoil
 - 1. Topsoil is defined as the upper soil horizon consisting of mineral layers of maximum humus (organic) accumulation.

PART 3 – EXECUTION

3.1 CLEARING, GRUBBING, AND DISPOSAL

- A. General – Clear and grub the area of construction as identified on the drawings.
- B. Clearing – Cut all brush, shrubs, stumps and trees to within 4 inches of the existing ground surface.
- C. Grubbing:
 - 1. Remove all stumps, roots, logs and timber.
 - 2. Grubbing shall consist of the removal and disposal of roots and stumps.
- D. Disposal:
 - 1. Contractor is responsible for the following:
 - a. Disposal of all material removed under clearing and grubbing.
 - b. Furnishing of a disposal site.
- E. Clearing operations shall be completed in a manner so as to prevent obstruction of traffic and to protect all remaining trees, shrubs, and other vegetation from injury.
- F. Clearing and grubbing of oak trees shall be completed in accordance with the WisDOT Standard Specifications for Highway and Structure Construction.

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3.2 STRIPPING AND STOCKPILING TOPSOIL

A. Stripping

1. Remove all topsoil beneath:
 - a. Structures.
 - b. Roadways.
 - c. All paved areas.
2. Remove topsoil in:
 - a. Areas disturbed by utility construction.
 - b. Areas requiring cuts of significant fills (significant fills are fills which cannot be obtained by addition of topsoil only).

B. Stockpiling

1. Contractor shall stockpile topsoil obtained in the stripping operation for replacement.
 - a. For areas where topsoil is to be replaced after underground utility construction.
 - b. For areas involving site grading where topsoil is to be replaced in order to sustain vegetative growth.
2. In areas where topsoil will not be required as specified above, Contractor shall remove and dispose of excess material as defined in other sections.

3.3 ASH TREE REQUIREMENTS

- A. Burning of stumps, roots, brush, waste logs and limbs, timber tops, and debris resulting from clearing and grubbing is not allowed.
- B. The emerald ash borer (EAB) has resulted in a quarantine in Brown County by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) and the Wisconsin Department of Natural Resources (DNR).
- C. Ash trees include the following species:
 1. Green ash (*F. pennsylvanica*) is found throughout the state, but is most common in southern Wisconsin.
 2. Black ash (*F. nigra*) is distributed over the entire state but is most frequently found in northern Wisconsin.
 3. Blue ash (*F. quadrangulata*) is a threatened species that is currently found only at a few sites in Waukesha County. The species is at the edge of its range in Wisconsin, but is common in states farther south. The species is not of commercial importance.
 4. White ash (*F. Americana*) is found throughout Wisconsin, but is most common in the southern third of the state.
 5. Mountain ash (*Sorbus Americana* and *S. decora*) is not a true ash and is not susceptible to EAB infestation.
- D. Follow and obey the following Wisconsin Department of Agriculture, Trade, and Consumer Protection order:
 1. ATCP 21.17 Emerald ash borer; import controls and quarantine.

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IMPORTING OR MOVING REGULATED ITEMS FROM INFESTED AREAS;

PROHIBITION. Except as provided in sub.(3), no person may do any of the following:

- (a) Import a regulated item under sub.(2) into this state if that item originates from an emerald ash borer regulated area identified in 7CFR 301.53-3.
- (b) Move any regulated item under sub. (2) out of an emerald ash borer regulated area that is identified in 7CFR 301.53-3 and located in this state.

Note: the United States Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS) periodically updates the list of regulated areas in 7CFR 301.53-3. Subsection (1) applies to new regulated areas as those areas are identified in the CFR.

REGULATED ITEMS. The following are regulated items for purposes of sub. (1):

- 1. The emerald ash borer, *Agrulus planipennis* (Fairmaire) in any living stage.
- 2. Ash trees.
- 3. Ash limbs, branches, and roots.
- 4. Ash logs, slabs or untreated lumber with bark attached.
- 5. Cut firewood of all non-coniferous species.
- 6. Ash chips and ash bark fragments (both composted and uncomposted) larger than one inch in diameter.
- 7. Any other item or substance that may be designated as a regulated item if a DATCP pest control official determines that it presents a risk of spreading emerald ash borer and notifies the person in possession of the item or substance that it is subject to the restrictions of the regulations.

E. The quarantine means that ash wood products may not be transported out of the quarantined area. If ash trees are identified within clearing and grubbing limits, the following measures are required for the disposal:

- 1. Chipped ash trees
 - a. May be left on site if used as landscape mulch within the project limits if approved by the Engineer.
 - b. May be buried on adjacent properties to projects within the quarantined zone with prior approval from the Engineer.
 - c. Chips must be disposed of immediately and may not be stockpiled.
 - d. Chipper equipment must be cleaned following post-chipping activities to insure no spread of wood chip debris into non-quarantined counties.
- 2. Ash logs, branches, and roots
 - a. May be hauled to the City compost site for disposal if approved by the Engineer.
 - b. Ash logs, branches, and roots must be disposed of immediately and may not be stockpiled.

END OF SECTION

SECTION 31 13 10

TREE PRESERVATION OF PUBLIC TREES

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Protection of above ground branches and bark.
 - 2. Protection of below ground root system and surrounding soil.

1.2 REFERENCES

- A. City of De Pere Municipal Ordinance
 - 1. Chapter 30 Parks and Recreation

PART 2 – PRODUCTS

2.1 MATERIALS

- A. None

PART 3 – EXECUTION

3.1 ABOVE GROUND BRANCHES AND ROOTS

- A. Tree trimming required is to be coordinated with the Engineer. The City reserves the right to trim all City trees.
- B. Hand trim damaged branches larger than two inch with handsaws, pruners, lopers, chainsaws or other specifically designed tree trimming equipment.
- C. Notify the Engineer of damage to bark. Damaged bark shall be repaired as directed by the Engineer

3.2 BELOW GROUND ROOT SYSTEM AND SURROUNDING SOIL

- A. Activities within the Protected Root Zone (PRZ)
 - 1. The root system shall be left undisturbed in the PRZ for each tree as follows:

Tree diameter at 4.5 feet (dbh)	Radius of PRZ (Measured from face of trunk)
0-3 inches	3 feet
3-8 inches	6 feet

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8-14 inches	8 feet
14-19 inches	10 feet
19+ inches	15 feet

- 2. Minimize compaction.
- 3. Do not store materials and equipment.
- B. Protection of the PRZ
 - 1. Provide protection of the PRZ including but not limited to:
 - a. Fencing
 - b. Temporary raised bridges over the area for equipment.
 - 2. Auger/tunnel at a minimum depth of 36 inches for utility installations.
- C. Damaged Roots
 - 1. Hand prune damaged and exposed roots larger than one inch with handsaws, pruners, loppers, chainsaws or other specifically designed root pruning equipment.
- D. Where trees are present near curb replacements, the root systems on the curb side shall be cut not more than four (4) inches beyond the edge of the new curb.
- E. For new sidewalk, limit soil disturbance to not more than four inches beyond the edge of the new sidewalk.
- F. The Engineer may route sidewalk around existing trees to minimize damage.

END OF SECTION

SECTION 31 23 00

EXCAVATION AND FILL FOR ROADWAY

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Excavation.
 - 2. Test Rolling.
 - 3. Filling and compacting.
 - 4. Disposal of surplus materials.
 - 5. Finish grading.
 - 6. Material testing.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. D4318 Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
 - 2. D1140 Test for Amount of Material in Soils Finer than the No. 200 Sieve
 - 3. D1556 Test for Density of Soil in Place by the Sand-Cone Method
 - 4. D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using 10-lb. (4.54 kg) Rammer and 18-inch (457mm) Drop
 - 5. D2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
 - 6. D938-07 Standard Test Methods for In-Place Density and water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.3 SUBMITTALS

- A. Submit copies of the results of quality control testing (include location where test was done) for aggregate to be supplied, including a sieve analysis.

1.4 DENSITY TESTING

- A. The Engineer will provide an independent testing laboratory to provide testing services.

PART 2 – PRODUCTS

2.1 SOIL MATERIALS

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- A. Soil used for borrow, fill, and backfilling shall meet the requirements of soil class as stated in the drawings or in the Specifications.
- B. As a minimum, all soil shall meet the requirements of Soil Class G-1.
- C. Soil classes shall be as per Section "Soils and Aggregates".

PART 3 – EXECUTION

3.1 EXCAVATION

- A. Excavation to subgrade elevation per the drawings.
- B. Excavate soil material determined to be unsuitable when directed by the Engineer.
- C. Vegetation of a height greater than one foot shall be cut and disposed of before ground is broken for excavation.
- D. Heavy sod and other perishable material underlying proposed roadway and sidewalk embankments shall be removed.
- E. Excavation Below Subgrade
 - 1. Remove deposits of frost-heave material, unstable silty soils, wet and unstable soil, material salvaged from old road cores in marshes, topsoil containing considerable amounts of humus or vegetable matter, rocks, or other undesirable foundation material to the depth below finished grade as the plans show or the engineer directs. If possible, slope and drain the excavation bottoms to prevent water accumulation.
 - 2. Use selected materials from roadway and drainage excavation having suitable engineering properties. Borrow, or granular backfill, as the plans or special provisions show or as the engineer directs, to backfill excavated areas.

3.2 SUBGRADE COMPACTION IN CUTS

- A. Compact subgrade to 95 percent standard proctor density to a minimum depth of 6 inches.

3.3 SUBGRADE COMPACTION IN FILLS

- A. Compact fill in layers not exceeding 8 inches in thickness.
- B. Compact to 95 percent standard proctor density.

3.4 MOISTURE REQUIREMENTS

- A. Proper soil moisture contents for compaction shall be maintained in all soils.

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1. Optimum moisture content as determined by Standard Proctor shall be used to determine acceptance moisture contents for soil compaction.
2. Use the guidelines to determine moisture content range for compaction of various soils:

Moisture Requirements for Compaction of Various Soils		
Material Description	Soil Class	Tolerable Range of Moisture Content About Optimum (%)
Coarse grained, cohesionless soils with less than 4% P200 or with less than 8% uniform gradation (i.e., clean sand or gravel).	"A" and "B"	Highest practical moisture content (saturation may be required)
Sandy clays, silty clay silts, and clays	"E" and "G"	-2 to +4
All other soil types	All other soil classes	-1 to +3

Note: The above requirements are general guidelines for soil moisture content which may or may not apply to a specific soil material. In some circumstances, the required density may be attained at moisture contents outside the ranges indicated above.

3.5 TEST ROLLING

- A. Test roll finished cut or fill subgrades by rolling with a pneumatic-tire roller or a loaded dump truck with at least ten (10) cubic yards of materials.
 1. Method and equipment used shall be suitable for intended use.
 2. Take necessary precautions to protect existing structures from damage during test rolling.
 3. Test roll an area equal to the area of the proposed construction plus a minimum of three (3) feet on each side.
- B. Treat areas showing yielding or rutting under test rolling as follows:
 1. Replace and/or recompact as necessary to stabilize the area.
 2. Retest soil areas replaced or recompact.
 3. Remove poor soils and replace with aggregate and/or fabric as directed by the Engineer.

3.6 DISPOSAL OF SURPLUS MATERIALS

- A. Haul and dispose of all surplus materials.
- B. Provide disposal area for surplus materials.

3.7 FINISH GRADING

- A. Grade, trim, and shape subgrade to required grade and section.
 1. Adjust slopes by grading so that transition is smooth and gradual.
 2. The crests of cut banks shall be rounded and shaped.

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3. Refill, Regrade and compact washouts ruts.
4. Remove all stones 3 inches or larger from grading limits.

B. Vertical Grading Tolerances

1. Rough grading tolerance.
 - a. Areas to be topsoiled – rough grade to within 0.2 foot of finish grades.
2. Areas having paved surfaces (i.e., concrete, asphalt, etc.).
 - a. Maximum allowable variation from correct profile and section shall not be more than ¼ inch in 10 feet.

END OF SECTION

SECTION 31 23 23.33

FLOWABLE FILL

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
1. Flowable fill material for backfill and abandonment.

1.2 REFERENCES

- A. American Society of Testing and Materials (ASTM)
1. D4832-10 Standard Test Method for Preparation & Testing of Controlled Low Strength Material (CLSM) Test Cylinders
 2. C618-12 Standard Specifications for Coal Fly Ash & Raw or Calcined Natural Pozzolan for use in Concrete. (Use Fly Ash conforming to the chemical and physical requirements for mineral admixture, Class F listed, including Table 2 (except for Footnote A). Waive the loss on ignition requirement
 3. C403/C403M-08 Standard Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance.
 4. C150/C150M-11 Standard Specification for Portland Cement.
 5. C33/C33M-11a Standard Specification for Concrete Aggregates.
 6. C94/C94M-12 Standard Specification for Ready-Mixed Concrete.
 7. C494/C494M-11 Standard Specification for Chemical Admixtures for Concrete
 8. C685/C685M-11 Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
 9. C940-10a Standard Specification for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced – Aggregate Concrete in the Laboratory
 10. D5971 Sampling Freshly Mixed Controlled Low Strength Material
 11. D6103 Flow Consistency of Controlled Low Strength Material
 12. D6023 Unit Weight, Yield, Cement Content and Air Content (Gravimetric) of Controlled Low Strength Material
- B. American Concrete Institute (ACI)
1. SP-150-94 Controlled Low-Strength Materials

1.3 SUBMITTALS

- A. Provide flowable fill mix design containing cement and water.

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- B. Provide documentation that the admixture supplier has experience of at least one year, with the products being provided and any equipment required to obtain desired performance of the product.

1.4 QUALITY ASSURANCE

- A. Flowable fill shall be manufactured by a ready-mix concrete producer with a minimum of 1 year experience in the production of similar products.
- B. For each type of material required for the work of this Section, provide primary materials that are the products of one manufacturer. If not otherwise specified here, materials shall comply with recommendations of ACI 229, "Controlled Low Strength Materials."
- C. Flowable fill shall be sampled and testing in the field in conformance with either ASTM C 94 or C 685. Samples for tests shall be taken for every 115 cubic meters (150 cubic yards) of material, or fraction thereof, for each day's placement. Tests shall include temperature reading and four compressive strength cylinders. Compressive strength sampling and testing shall conform to ASTM D 4832 with one specimen tested at 7 days, two at 28 days, and one held for each batch of four specimens. Sampling and testing shall be performed by a qualified, independent commercial testing laboratory. Test results should be submitted within 48 hours of completion of testing.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Provide flowable fill containing, at a minimum, cementitious materials and water. Cementitious materials shall be portland cement, pozzolanic materials, or other self-cementing materials, or combinations thereof, at the contractor's option, and following approval by the Resident Engineer. The flowable fill mix design may also contain, fine aggregate or filler, and/or chemical admixtures in any proportions such that the final product meets the strength, flow consistency and shrinkage requirements included in this specification, as approved by the Resident Engineer.
- B. Portland Cement: ASTM C150, Type 1 or Type 2 conforming to the State of Wisconsin Standard Specifications for Highway and Structure Construction. Alternative chemical grouts may be used based on field conditions if accepted by the Engineer.
- C. Water used for mixing the grouts shall be clean and potable and provided by the Contractor.
- D. Air Entraining Admixture: ASTM C260.
- E. Chemical Admixtures: ASTM C494.
- F. Aggregate: ASTM C33.

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2.2 MIXTURE

- A. Mix design shall produce a consistency that will result in a flowable product at the time of placement which does not require manual means to move it into place.
- B. Flowable fill shall have a minimum strength of 100 psi and a maximum strength of 150 psi according to ASTM C39 at 28 days after placement.
- C. Flowable fill shall have minimal subsidence and bleed water shrinkage. Evaporation of bleed water shall not result in shrinkage of more than 10.4 mm per m (1/8 inch per foot) of flowable fill depth (for mixes containing high fly ash content). Measurement of a Final Bleeding shall be as measured in Section 10 of ASTM C 940 "Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.
- D. Provide equipment as recommended by the Manufacturer and comply with manufacturer's recommendations for the addition of additives, whether at the production plant or prior to placement at the site.

PART 3 – INSTALLATION

3.1 GENERAL

- A. Flowable fill refers to a cementitious slurry consisting of a mixture of fine aggregate or filler, water, and cementitious material(s), which is used as a fill or backfill in lieu of compacted earth.
- B. Mixture is capable of filling all voids in irregular excavations and hard to reach places (such as under undercuts of existing slabs), is self-leveling, and hardens in a matter of a few hours without the need for compaction in layers.

3.2 EXAMINATION

- A. Examine conditions of substrates and other conditions under which work is to be performed and notify Engineer, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.3 APPLICATION OF FLOWABLE FILL

- A. Secure tanks, pipes and other members to be encased in flowable fill.
- B. Insure that there are no exposed metallic pipes, conduits, or other items that will be in contact with the flowable fill after placement. If so, replace with non-metallic materials or apply manufacturers recommended coating to protect metallic objects before placing the flowable fill.
- C. Replacement or protection of metallic objects is subject to the approval of the Resident Engineer.

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- D. Abandon pipe per the section on Selective Site Demolition and Abandonment.
 - E. Alternatives for flowable fill for pipe abandonment may be required due to site conditions and means and methods by the Contractor. Changes in the flowable fill shall be approved by the Engineer.
- 3.4 PROTECTION AND CURING
- A. Protect exposed surfaces of flowable fill from premature drying, wash by rain or running water, wind, mechanical injury, and excessively hot or cold temperature.
 - B. Curing method shall be subject to approval by Engineer.

END OF SECTION

SECTION 31 23 33

TRENCHING, BACKFILLING AND COMPACTING

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Obstruction removal.
 - 2. Dewatering.
 - 3. Sheet piling and bracing.
 - 4. Supporting of existing structures.
 - 5. Disposal of surplus materials.
 - 6. Trenching, backfilling and compacting.
 - 7. Restoration.
- B. This section applies to below ground pressure and gravity pipe lines.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures using 10-lb. (4.54 kg) Rammer and 18-inch (457mm) Drop
 - 2. D6938-07 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.3 SUBMITTALS

- A. Submit copies of the results of quality control testing (include location where test was done).
 - 1. Materials source testing.

1.4 QUALITY ASSURANCE

- A. The Engineer will obtain an independent testing laboratory to provide quality control testing.
- B. Acceptable test results do not relieve the Contractor from making corrections to the tested work during the warranty period.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Conform to Section “Soils and Aggregates”.

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B. Native Backfill Material

1. Backfill material shall be free of:
 - a. Vegetable or other organic material.
 - b. Concrete or concrete fragments.
 - c. Stones larger than 3 inches.
 - d. Frozen material.
 - e. Blasted rock.
 - f. All types of refuse.

C. Granular Backfill Material

1. Soil Class C-1, C-3, or C-5 in accordance with Section "Soils and Aggregates".

D. Clay Dam Backfill Material

1. Soil Class E-1 clay soil in accordance with Section "Soils and Aggregates".
2. Use where stated on the Drawings or where stated elsewhere.

2.2 SOURCE QUALITY CONTROL

- A. Provide test soil and aggregate material in accordance with Section "Soils and Aggregates".

PART 3 – EXECUTION

3.1 OBSTRUCTION REMOVAL

- A. Remove obstructions from within the construction limits as required; such as:
 1. Mounds of dirt, stone or debris.
 2. Street signs, culverts and end walls, advertising signs and guard posts (shall be replaced to original condition).
- B. Unless otherwise specified, the construction limits are:
 1. Street right-of-way.
 2. Easement boundaries.
 3. Project site property lines.
 4. As shown on the Plans.
- C. Strip and stockpile topsoil in accordance with section: "Site Clearing".
- D. Remove pavement, curb and gutter, sidewalk, and driveway and other surfaces within the maximum trench width for restoration payment purposes at the ground surface or as shown on the drawings whichever is greater.
 1. Sawcut vertically pavement, curb and gutter, sidewalk, driveway and other surfaces to full depth prior to removal.
 2. Remove concrete surfaces to the nearest joint.

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3.2 DEWATERING

- A. Determine groundwater conditions.
- B. Provide and maintain necessary means and methods to dewater excavations as required.
- C. Dispose of water.
- D. Prevent runoff and dewatering system discharge for entering excavation.
- E. Secure permits from regulatory and governmental agencies governing dewatering.
- F. Provide well, water, pumping equipment, generating equipment and/or power.
- G. Maintain a water supply to private and public wells affected by the dewatering operation.
- H. Correct damage caused to private wells due to dewatering.
- I. Dewater to a minimum depth of 12 inches below excavations.
- J. Maintain dewatering operation until backfill and compaction procedures are completed.
- K. Groundwater Disposal
 - 1. Convey groundwater to a point of discharge through pipelines.
 - a. Open ditches and trenches are not permitted.
 - b. Use of Owner's utilities is not permitted without written consent.
 - 2. Maximum Sediment Content: 10 milligrams per liter.

3.3 TRENCH EXCAVATION

- A. Excavate trench to sufficient width and depth to permit proper utility construction at line and grade shown on the drawings.
- B. The bottom of the excavation shall conform to the pipe embedment details with a minimum width of the pipe outside diameter plus 12 inches.
- C. Do not open more than 200 feet of trench at any one time.
- D. Place excavated material in a location that will minimize inconvenience to public travel, adjacent property owners and other contractors.
- E. Disposal of Surplus Excavated Material
 - 1. Remove surplus excavated material from the site as soon it is determined it will not be used for backfill material.
 - 2. Dispose of pavement separately from soils material.
 - 3. Dispose of surplus material which includes:

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- a. Loading and hauling.
- b. Dumping and leveling.
- c. Provide a dump site (when not specified by Owner)
 - 1) Conform with governing authorities.
 - 2) No limit on haul distance.
4. Do not dispose of excavated surplus material in state waters, floodplain, or wetlands without written approval of the appropriate regulatory agency.

F. Sheeting and Bracing

1. Sheet and brace trenches and excavations as required by applicable federal and state codes, by the Contract Documents, and as necessary to protect life and property.
 - a. When close sheeting is required, prevent soil from entering the trench either below or through such sheeting.
2. Removal of Sheeting and Bracing
 - a. Remove sheeting and bracing as the excavation is backfilled in such manner to avoid disturbance of adjacent structures and to insure adequate protection of the completed pipe section.
 - b. If the sheeting and bracing cannot be removed without damage to the pipe or adjacent areas, leave in place.

G. Portable Trench Shoe Shield (Shoe)

1. A shield may be used with the following restrictions.
 - a. Construct as required by State or Federal authority.
 - b. Do not exceed trench limits.
 - c. Do not disturb or alter pipe and bedding.

H. Rock Removal

1. Remove and dispose of rock in accordance to Section "Rock Removal".

3.4 TRENCH BACKFILLING AND COMPACTION

- A. Provide pipe foundation material below the bedding as directed by the Engineer.
- B. Notify Engineer of poor soils below the foundation and/or the pipe bedding.
- C. Provide pipe embedment as required for the type of pipe installed per the appropriate Section.
- D. Granular backfill shall be installed as follows unless specified otherwise on the Plans:
 1. One foot beyond the limits of existing or proposed pavements, driveways, and sidewalks.
 2. Ten feet beyond the limits of the railroad tracks.
 3. The vertical limits shall be to the existing or proposed subgrade.
- E. Native backfill may be used at locations not identified in D.
- F. Backfill Compaction

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1. Compact trenches using mechanical compaction methods.
2. Compact backfill in layers not exceeding 18 inches to the following densities:

Material Type	Density Requirement
Native Material	Equal to adjacent undisturbed material
Granular Backfill	Minimum of 95% of the Modified Proctor Density

- G. Provide select backfill material as directed by the Engineer or as specified elsewhere.
- H. Backfill trench to last pipe joint (not to exceed 10 feet) at the end of each work day.
1. Backfill during nights, weekends and when no work is in progress.
 2. Take measures to protect work site.

3.5 SURFACE RESTORATION

- A. Remove surplus material (earth, rubbish, construction material, etc.) and restore areas affected by construction activities.
- B. Restore roads, streets, and highways meeting the following provision:
1. Shape subgrade and grade for installation of required base course and pavement.
 2. Install base course to final pavement grade, compacted to 95% Modified Proctor density and fine graded.
 3. Maintain base course surface grade and control dust until paving is completed.
 4. If paving is by others, provide maintenance of the base course for the period of 6 months from the date of Substantial Completion.
- C. Restore the following surfaces to the thickness stated on the drawings or, if not stated on the drawings, then restored to the thickness of the existing surface or to the minimum thickness stated as follows, whichever is better.
1. Portland Cement Concrete Pavement: 8 inch thickness
 2. Asphaltic Concrete Pavement: 4 inch thickness
 3. Base Course:
 - a. For a concrete street: 8 inch thickness
 - b. For an asphaltic concrete street: 15 inch thickness
 4. Unpaved Roads: 15-inch thickness
 5. Curb and Gutter:
 - a. Curb and gutter to match existing style and size
 - b. Minimum 6 inch aggregate base
 6. Sidewalk:
 - a. Minimum Sidewalk Thickness: 4 inches
 - b. Minimum alley thickness: 8 inches
 - c. Minimum 4 inch aggregate base
 7. Driveways and Parking Lots:
 - a. Concrete: thickness – 6 inches
 - b. Asphaltic Concrete: Minimum Thickness – 3 inches
 - c. Minimum 6 inch aggregate base

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- 8. Landscaping:
 - a. Perform as defined in section "Turf and Grasses".
- D. Make restitution to the Owner of trees and shrubs damaged during construction.

END OF SECTION

SECTION 31 25 00

EROSION AND SEDIMENT CONTROL

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Erosion Bales and Bags
 - 2. Inlet Protection
 - 3. Silt Fence
 - 4. Erosion Mats
 - 5. Ditch Checks
 - 6. Stone Tracking Pad
 - 7. Temporary Ditch Check – Sediment Logs

1.2 REFERENCES

- A. Wisconsin DOT, Erosion Control, Product Acceptability lists for Multi-Modal Application (PAL), latest edition.
- B. American Society for Testing and Materials (ASTM)
 - 1. D1388 Test Method for Stiffness of Fabrics
 - 2. D2487 Test Method for Classification of Soils for Engineering Purposes
 - 3. D3776 Test Method for Mass Per Unit Area (Weight) of Woven Fabric
 - 4. D4355 Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc type Apparatus)
 - 5. D4491 Test Method for Water Permeability of Geotextiles by Permittivity
 - 6. D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles
 - 7. D4751 Test Method for Determining Apparent Opening Size of a Geotextile
 - 8. D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
 - 9. D5035 Test Method for Breaking Strength and Elongation of Textile Fabric (Strip Method)
 - 10. D5338 Test Method for Determining Aerobic Biodegradation of Plastic Materials Under Controlled Composting Conditions

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- C. Wisconsin Department of Natural Resources Stormwater Technical Standards,
<https://dnr.wisconsin.gov/topic/Stormwater/standards>

1.3 SYSTEM DESCRIPTION

- A. Provide additional erosion and sediment control to prevent erosion which may be caused due to selected construction methods.

1.4 SUBMITTALS

- A. Manufacturer's certification for manmade products
- B. A list of ditch checks materials
- C. Gradations for aggregate used in erosion control practices

PART 2 – PRODUCTS

2.1 EROSION BALES AND BAGS

- A. Sand Bags
1. Minimum unfilled size of 16 by 26 inches.
 2. Completely filled with a granular soil (P200<50%).
- B. Rock Filled Filter Bags
1. Minimum unfilled size of 18 by 30 inches.
 2. Construct bag of high density polyethylene as manufactured by Erotex.
 3. Seal bag with a high density polyethylene draw string knitted directly into the bag opening in a rolled seam using minimum of 480 denier polyester sewing yarn.
 4. Fill bag with well graded coarse aggregate conforming to the following AASHTO M43 Size No. 76:

Sieve Size	% Passing by Weight
2 inch	---
1 ½ inch	---
1 inch	100
¾ inch	90-100
3/8 inch	20-55
No. 4	0-10
No. 8	0-5

- C. Erosion Bales
1. Tightly compacted bales of grain straw or hay.
 2. Use straw, if required to function for more than 15 days.

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D. Support Post

1. Wood or steel construction, minimum length 4 feet.
2. Wood Posts: 2" x 2" or equivalent steel posts.

2.2 INLET PROTECTION

- A. Inlet protection shall with the Wisconsin Department of Natural Resources Conservation Practice Standard #1060 "Storm Drain Inlet Protection for Construction Sites".

2.3 SILT FENCE

A. Geotextile Fabric

1. Fabric shall be either woven or non-woven polyester, polypropylene, stabilized nylon, polyethylene or polyvinylidene chloride.
2. Fabric shall have the minimum strength values in the weakest principal direction.
3. Non-woven fabric may be needle punched, heat bonded, resin bonded or combination thereof.
4. Fabric shall meet the following requirements:
 - a. If silty soils on-site then the following can be used:

1) Grab Tensile Strength	ASTM D4632	101 lbs (450 N)
2) Apparent Opening Size	ASTM D4751	0.6 mm (No 30)
3) UV Resistance Strength Retained at 500 Hours (%)	ASTM D4355	70
4) Permittivity (per second)	ASTM D4491	0.14
 - b. If sandy soils on-site then the following can be used:

1) Grab Tensile Strength	ASTM D4632	101 lbs (450 N)
2) Apparent Opening Size	ASTM D4751	0.3 mm to 0.8 mm
3) UV Resistance Strength Retained at 500 Hours (%)	ASTM D4355	70
4) Permittivity (per second)	ASTM D4491	0.14

B. Support Posts

1. Wood or steel construction minimum length 48 inches.
2. Wood posts – 1 1/8" x 1 1/8" of hickory or oak, or equivalent steel posts.

- C. Silt fence shall with the Wisconsin Department of Natural Resources Conservation Practice Standard #1056 "Silt Fence".

2.4 EROSION MATS

A. General

1. Erosion mat shall conform to the Wisconsin Department of Natural Resources Conservation Practice Standard.

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2. Only mats conforming to the Class and Type listed in the Wisconsin Department of Transportation Erosion Control Product Acceptability List will be allowed.

B. Types

1. Non-Channel erosion mat shall conform to the Wisconsin Department of Natural Resources Conservation Practice Standard #1052 "Non-Channel Erosion Mat".
 - a. Utilize Class I, Urban.
2. Channel erosion mat shall conform to the Wisconsin Department of Natural Resources Conservation Practice Standard #1053 "Channel Erosion Mat".

C. Anchoring Devices/Stakes

1. Anchoring and components for temporary erosion mats shall be completely biodegradable as determined by ASTM D5338.
2. Materials shall be environmentally safe for soil and groundwater.
3. Do not use petroleum based plastics or composites.
4. Do not use materials which may present a hazard from splintering or spearing.
5. Design anchors to hold a minimum of two months and be substantially degraded within four months during the summer (warm soil conditions).

2.5 DITCH CHECKS

- A. Ditch checks shall with the Wisconsin Department of Natural Resources Conservation Practice Standard #1062 "Ditch Check (Channel)".

- B. Submit a list of ditch checks materials to the Engineer for review.

2.6 STONE TRACKING PAD

- A. The Stone Tracking Pad materials shall conform with the Wisconsin Department of Natural Resources Conservation Practice Standard #1057 "Stone Tracking Pad and Tire Washing".

- B. Approval is required for materials used to construct the tracking pad.

- C. Utilize 2-inch to 3-inch aggregate in areas where access is required to adjacent properties.

2.7 TEMPORARY DITCH CHECKS (TDC) – SEDIMENT LOGS

- A. TDC materials shall be one of the following approved products.

Product	Manufacturer
Curlex 12-inch Sediment Log	American Excelsior
AEC Premier 12-inch Wattle	American Excelsior
Stenlog 12	Erosion Control Blanket.com
Triangular Silt Dike	Triangular Silt Dike
Aspen Xcel Log	Western Excelsior
Ditch Chexx	Filtress
Bio-D Silt Check	Ro Lanka

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PART 3 – EXECUTION

3.1 GENERAL

- A. Keep disturbed areas to a minimum.
- B. Stabilize and protect disturbed areas with temporary seed and mulch within 14 days of active disturbance of the soil surface.
- C. Place excavated trench material on the high side of the trench where appropriate.
- D. Discharge trench water to filter barrier prior to release into a drainage way.
- E. Install gravel mats at site vehicle entrance and site exit locations to prevent tracking of soil.
- F. Collect tracked soil and clean from paved roads near the construction site the same day it occurs.
- G. Sediment control measures shall be in place at the end of each working day.
- H. Locate soil stockpiles no closer than 25 feet of a roadway, wetland, or drainage control channel and control by covering the pile with tarpaulins, temporary seed and mulch or other suitable means, if the pile is exposed for 14 days or more.
- I. Protect storm inlets including inlets in paved roadways with erosion bales, geotextile fence or other suitable approved barriers.
- J. When it is necessary to cross waterways, provide crossing structures for machinery.
- K. Repair, replace, and maintain erosion and sedimentation structures until vegetation is re-established or permanent structures are installed.
- L. Remove temporary erosion control structures and accumulated sediment and/or debris when vegetation is established.
- M. Erosion control practices shall be as shown on the plans or directed by the Engineer. Additional erosion control practices installed due to the Contractors means and methods will be incidental to the Work.

3.2 EROSION AND SEDIMENT CONTROL DEVICES

- A. Installation of erosion bales shall be done in accordance with the Wisconsin Department of Natural Resources Conservation Practice Standard #1055 "Sediment Bale Barrier (Non-Channel)".
- B. Erosion Bags

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1. Place type (sand or rock filled) where shown on the Drawings at a minimum.
2. Place bags end to end across surface water flow path.
3. Place bags at right angles to the direction of water flow.
4. Excavate shallow sump on the upstream side of bags.
5. Entrench bags at least 4 inches into the ground.
6. Place bags prior to disturbing upslope areas.
7. Drive support posts a minimum of 12 inches into the subgrade and extend to the top of the bags.
8. Remove from the site after final stabilization.

C. Inlet Protection

1. Installation of inlet protection shall be done in accordance with the Wisconsin Department of Natural Resources Conservation Practice Standard #1060 "Storm Drain Inlet Protection for Construction Sites".

D. Silt Fences

1. Installation of silt fence shall be done in accordance with the Wisconsin Department of Natural Resources Conservation Practice Standard #1056 "Silt Fence".

E. Erosion Mats

1. Installation:
 - a. See plan details for anchor trench (at ends, checks and edges) installation procedures.
 - 1) Anchor trenches shall be 12" deep.
 - 2) Compact anchor trench backfill.
 - 3) Place staples in end and check trenches spaced at 12 inches.
 - b. Follow manufacturer's specifications and instructions for placement unless project documents are more stringent.
 - c. Roll width overlaps shall be 12" at edges. Pin or staple every 3 feet along overlap length.
 - d. Roll end overlaps may be spliced by overlapping (in the direction of water flow) two feet with the upstream portion of the mat on top of the downstream portion.
This overlap shall receive at least three pins or staples with a maximum spacing of 12".
 - e. Pins or stakes shall be biodegradable with the length based on manufacturer's recommendation
 - f. Pins or stakes shall be driven flush with the mat.
 - g. Place mat flat conforming to contours in soil surface. Do not stretch mat.
 - h. Place mat from toe of slope toward top of slope.
 - i. Mat can be placed from downstream toward upstream or from upstream toward downstream.
2. Site Preparation:
 - a. Place seed and fertilizer prior to placing permanent erosion geomat.
 - b. Seed and fertilizer may be placed after permanent erosion mat installation with Engineer's approval.
 - c. Ground surface shall be smooth and compact.
 - d. Remove all rocks, dirt clods, stumps, roots, grass clumps, trash and other obstructions from lying in direct contact with the soil surface and the erosion mat.

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3. Erosion Control Revegetative Mats (ECRM):
 - a. ECRM are placed on top of the soil.
4. Turf Reinforcement Mats (TRM):
 - a. TRM are buried below the surface.
5. Wisconsin Department of Natural Resources:
 - a. Non-Channel erosion mat shall be installed on accordance with the Wisconsin Department of Natural Resources Conservation Practice Standard #1052 "Non-Channel Erosion Mat".
 - b. Channel erosion mat shall be installed in accordance with the Wisconsin Department of Natural Resources Conservation Practice Standard #1053 "Channel Erosion Mat".

F. Ditch Checks

1. Ditch check work shall be performed in accordance with the Wisconsin Department of Natural Resources Conservation Practice Standard #1062 "Ditch Check (Channel)".

G. Stone Tracking Pad

1. Stone tracking pad work shall be performed in accordance with the Wisconsin Department of Natural Resources Conservation Practice Standard #1057 "Stone Tracking Pad and Tire Washing".

H. Temporary Ditch Checks (TDC) – Sediment Logs

1. TDC shall be capable of maintaining location and form during and after rainfall events.
2. TDC shall be placed at locations shown on the Drawings.
3. Place TDC generally perpendicular to the flow line of the ditch and extend far enough so the ground level on the ends of the TDC are a minimum 18-inches higher than the flow line.
4. Place TDC immediately after road ditch has been backfilled and shaped TDC shall be removed and replaced during subsequent trenching operations in the road ditch area.

3.4 MAINTENANCE

- A. Inspect silt fences and filter barriers immediately after each rainfall and at least daily during prolonged rainfall.
 1. Make any required repairs immediately.
 2. Maintain temporary erosion and sedimentation control structures until permanent soil erosion controls are completed and/or vegetation is established.
 - a. Repair damaged structures.
 - b. Replace lost structures.
 - c. Remove sediment from deposition areas adjacent to erosion control structures without damaging structures on a regular basis.
 - d. Refill eroded areas as required for grade stabilization.
- B. If the fabric on silt fence or filter barrier decomposes or becomes ineffective prior to the end of the expected usable life and the barrier still be necessary, replace the fabric promptly.

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- C. Remove sediment deposits after each major storm event and when deposits reach approximately one-half the height of the barrier.
- D. Remove any sediment deposits remaining in place after the silt fence or filter barrier is no longer required and dress to conform to the existing grade, prepared and seeded.
- E. Repair/restore any washed out areas.
- F. Maintenance period to be entire project period including the one year warranty.
- G. Owner may direct Contractor to remove the temporary erosion control measures any time during the one year correction period.
- H. Construct permanent erosion control measures immediately after earthwork is completed.

END OF SECTION

SECTION 31 34 19

GEOTEXTILE FABRICS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Geotextile fabric under riprap.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. D4355 Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
 - 2. D4533 Test Method for Trapezoid Tearing Strength of Geotextiles
 - 3. D4491 Test Method for Water Permeability of Geotextiles by Permittivity
 - 4. D4632 Test Method for Grab Breaking Load and Elongation of Geotextiles
 - 5. D4751 Test Method for Determining Apparent Opening Size of a Geotextile
 - 6. D4833 Test Method for Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products

1.3 SUBMITTALS

- A. Provide, at the time of delivery of the geotextile fabric, a manufacturer's Certificate of Compliance that the geotextile fabric meets the requirements of this Section.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver geotextile fabric in a wrapping which will protect the fabric from ultraviolet radiation and from abrasion due to shipping and hauling.
- B. Store geotextile fabric in a dry location until installed.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Provide geotextile fabric consisting of either woven or non-woven polyester, polypropylene, stabilized nylon, polyethylene or polyvinylidene chloride. All fabric shall have a minimum strength values in the weakest principle direction. Non-woven fabric may be needle punched, heat bonded, resin bonded or combinations thereof.
- B. The geotextile fabric shall be insect, rodent, mildew and rot resistant.

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- C. Clearly mark the geotextile fabric rolls showing the type of fabric.
- D. If sewn seams are used, provide a field sewn seam sample produced from the geotextile fabric and thread and with the equipment to be used on the project, prior to incorporation into the work.

2.2 MATERIALS

- A. Non-Woven Geotextile Fabric, Type HR
 - 1. Type HR non-woven geotextile fabric shall be used beneath heavy riprap, Soil Class A-1 and medium riprap, Soil Class A-2, and light riprap, Soil Class A-3.
 - 2. The fabric shall comply with the following physical properties:

Test	Method	Value
Grab Tensile Strength (lbs.)	ASTM D4632	300 min.
Puncture Strength (lbs.)	ASTM D4833	100 min.
Apparent Breaking Elongation (%)	ASTM D4632	15 min.
Apparent Opening Size (U.S. Standard Sieve)	ASTM D4751	30-140
Permittivity, sec. ⁻¹	ASTM D4491	.30 min.

¹ All numerical values represent minimum/maximum average roll values (i.e., the average of minimum test results on any roll in a lot should meet or exceed the minimum specified values).

- 3. The following fabrics are approved for Type HR:
 - a. Amoco (Nilex) -4512
 - b. Cartage – FX-160HS
 - c. Contech – C120NW
 - d. Mirafi – 1120N

PART 3 – EXECUTION

3.1 SEWING

- A. Sew factory and field seams with a thread having the same or greater durability as the material in the fabric.
- B. Use a 401 stitch conforming to Federal Standard No.751 a.
- C. Seams shall develop a tensile strength equal to or greater than 80 percent of the specified grab tensile strength of the fabric, unless otherwise specified.

3.2 NON-WOVEN GEOTEXTILE FABRIC, TYPE HR

- A. Grade the smooth and remove all stones, roots, sticks or other foreign material which would interfere with the fabric being completely in contact with the soil.
- B. Place the fabric loosely and parallel to the direction of water movement.

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1. Provide pinning or stapling to hold the geotextile in place.
 2. Join separate pieces of fabric by overlapping or sewing.
 3. Place the fabric in the overlapped joints with minimum overlap of 24 inches in the direction of flow.
- C. After placement, do expose the fabric longer than 48 hours prior to covering.
- D. Cover damaged areas with a patch of fabric using a three-foot overlap in all directions.
- E. Place riprap from the base of the slope upward.
- F. Do not allow free fall of riprap greater than 6 inches or less if required to prevent damage to the fabric.

END OF SECTION

SECTION 32 01 17

CRACK AND JOINT SEALING

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Base Preparation – Asphalt and Concrete Pavements
 - 2. Placing and Finishing
 - 3. Traffic Control
 - 4. Clean-up

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D6690 Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

1.3 SUBMITTALS

- A. Submit manufacturer’s certification that materials delivered comply with the requirements of this section and the referenced standard.
- B. Submit daily copy of the amount of material of joint sealant delivered and placed.
- C. Submit material manufacturer’s recommended melting procedures.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. The material shall be hot pour elastic type. This material shall conform to the requirements of the Specification of Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements, ASTM D6690.
- B. The material shall be as a manufactured by HI-SPEC, CRAFCO, or equal.
- C. Material shall be packaged and shipped in a suitable commercial container clearly marked with:
 - 1. Name of material.
 - 2. The name of the manufacturer.
 - 3. The brand name.
 - 4. Weight.
 - 5. Batch number.

6. Pouring temperature recommended by the manufacturer.

PART 3 – EXECUTION

3.1 BASE PREPARATION – EXISTING ASPHALT AND CONCRETE PAVEMENTS

A. Asphalt Crack Preparation

1. All random or reflective cracks less than ½ inch wide shall be routed out to provide a sealant reservoir ½ inch (12.7mm) wide with a minimum depth ½ inch (12.7mm). This provides for a 1:1 width to depth ratio. Backer rod may be installed in the joint opening to control depth and sealant usage. Routing shall be accomplished by mechanical means and shall be extended 1 inch beyond each end of the crack. All joints and cracks shall be blown clean by compressed air (minimum air pressure, 80 pounds per square inch) with heat lancing and then crackfilled.

B. Asphalt Crackfilling Longitudinal Curb Joints

1. Routing shall be accomplished by mechanical means and shall be extended 1 inch beyond each end of the crack. All joints and cracks shall be blown clean by compressed air (minimum air pressure, 80 pounds per square inch) with heat lancing and then crackfilled.

C. Concrete Crack Preparation

1. All joints and cracks, including curb and gutter, shall be blown clean with compressed air (minimum air pressure, 80 pounds per square inch) with heat lancing and then crackfilled.

3.2 BASE PREPARATION – NEW CONCRETE PAVEMENTS

- A. All contraction and expansion joints in concrete pavement shall be sealed with a hot poured sealer. All sawed longitudinal joints shall be sealed with hot-poured sealer.
- B. The operation of sealing shall be performed as soon as practicable upon elapse of the curing period and in any event prior to the time traffic of any kind uses the pavement.
- C. Joints shall not be sealed until they have been inspected and approved by the engineer.
- D. Application of the joint sealer shall be made when the joint surfaces are clean and dry.
- E. Immediately before sealing the joint thoroughly clean the joints of all laitance, curing compound and other foreign material. Exposed joint faces shall be cleaned by sandblasting, or by water blasting with sufficient pressure to thoroughly and completely clean the joint. A multiple-pass technique shall be used until the surfaces are free of material that might prevent bonding. For final cleaning immediately prior to installation of the sealer, the joints shall be blown clean with oil-free compressed air. The joint faces must be surface dry when sealant is applied.

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3.3 PLACING AND FINISHING

- A. The sealant must be melted in a double boiler, oil jacketed melter-applicator equipped with a mechanical agitator pump, gas pressure gauges, separate temperature thermometers for the oil bath, and melted material with accessible control valves and gauges. Follow the melting procedures recommended by the material supplier. Air temperatures are to be at or above 40 degrees F. Prior to the application of sealants, all prepared cracks shall be completely dry. If any moisture is evident on the street surface or vertical walls, the prepared crack application procedure shall be terminated.
- B. Joints shall not be sealed until they have been inspected and approved by the engineer.
- C. The sealing compound shall not be heated above the maximum safe heating temperature. The maximum safe heating temperature shall be determined from tests made on samples from each lot or shipment of the material delivered to the project. When so approved by the Engineer, the manufacturer's recommended maximum safe heating temperature may be used in lieu of test determinations when relatively small quantities of sealer are used. Any material heated above the maximum safe heating temperature shall be discarded.
- D. During periods of rain or inclement weather, crackfilling material shall not be placed without the approval of the Engineer. After the period of rain or inclement weather, all cracks and joints shall be blown clean and dry with compressed air. All joints, cracks and surface defects must be free of any moisture prior to placement of the crackfilling material.
- E. It may be required by the Engineer that Contractors use a backer tape or another acceptable method of sealing the bottom of the reservoir if the joint sealant seeps down into the bottom of the crack, causing a void or low spot in the finished joint.
- F. All completed cracks shall be completely cured prior to allowing traffic to come in contact with sealant. If, with the Engineer's approval, it is necessary to open traffic to partially cured material, an adequate coating of mason sand or household toilet paper would be sufficient.
- G. On concrete streets the joints and cracks shall be pressure filled flush with the surface of the street and the material shall be applied immediately into the prepared crack or joint. On asphalt streets the joints and cracks shall be pressure filled with a wand or bander and squeegeed to a width three (3) times the width of the crack or joint and the material shall be applied immediately following heat lancing of the joints and cracks.
- H. In the event satisfactory sealing of a joint is not accomplished in a single pouring, the sealing compound shall be placed in two pourings. At least one-half of the required amount shall be placed in the first pouring, and the second pouring shall follow the first as soon as practicable after the first pouring has attained maximum shrinkage but not later than one hour after the first pouring. If the additional application is not poured within one hour, the joint/crack shall be re-cleaned at a lower pressure such that the first pour is not removed.

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3.4 TRAFFIC CONTROL

- A. The Contractor shall maintain two lanes of traffic at all times on all streets unless approved by the Engineer. Barricades, warning signs and flagmen shall be provided in accordance with the State of Wisconsin Department of Transportation Manual of Traffic Control Devices, latest edition.

3.5 CLEAN UP

- A. All debris shall be kept within the barricaded construction area and shall not be allowed to fall within open traffic lanes. All debris shall be cleaned up prior to the end of the day and prior to the opening of traffic lanes. The Contractor shall properly dispose of such material.

END OF SECTION

SECTION 32 01 20

MUD-JACKING

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Mud-Jacking Concrete
 - 2. Mud-Jacking Hole Restoration
 - 3. Clean-up

1.2 REFERENCES (Not Used)

1.3 SUBMITTALS

- A. Grout mix design.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Certified grout mix shall contain a minimum of 7 percent Portland Cement.

PART 3 – EXECUTION

3.1 MUDJACKING CONCRETE

- A. Holes for injecting the grout mix will be spaced not less than 12 inches nor more than 18 inches from a traverse joint or crack and spaced not more than six (6) inches from center of the hole to center of hole.
- B. The grout mix will have a consistency stiff enough to raise the concrete without blowing or leaking, and yet fluid enough to prevent pyramiding.
- C. The hole size for slab raising operations shall be a minimum of one inch (1") up to a maximum of two inches (2") in diameter.
- D. The holes shall be spaced as necessary to uniformly assure complete communication of slurry between holes.
- E. Slabs shall be raised to the required elevation and pitched at one-quarter (1/4) inch per twelve (12) inches of lineal run, or as directed by the Engineer.

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3.2 MUD-JACK HOLE RESTORATION

- A. All jacking operation holes will be cleared of the grout mix and filled with a stiff 1:3 cement mix, which will be consolidated and finished smooth.
- B. Holes shall be cleaned the full depth of the slab by removing excess slurry and wire brushing exposed sidewalls.
- C. Prior to placement of the Portland Cement, the surface around the holes shall be damp.

3.3 CLEAN-UP

- A. Slabs raised shall be thoroughly scraped and swept after completion, but prior to patching.
- B. Surrounding grass areas adjacent to slab raising shall be left in a clean, non-debrised condition.

END OF SECTION

SECTION 32 11 23

CRUSHED AGGREGATE BASE COURSE

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Material testing.
 - 2. Foundation preparation.
 - 3. Crushed aggregate base course for roads, shoulders, and parking areas.
 - 4. Preparation of crushed aggregate base course for paving.
 - 5. Adjustment of utility accesses.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. T2 Sampling Stone, Slag, Gravel, Sand, and Stone Block for Use as Highway Materials
 - 2. T27 Sieve Analysis of Fine and Coarse Aggregates
 - 3. T37 Sieve Analysis of Mineral Filler
 - 4. T89 Determining the Liquid Limit of Soil
 - 5. T90 Determining the Plastic Limit and Plasticity Index of Soils
 - 6. T104 Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
- B. American Society for Testing and Materials (ASTM):
 - 1. D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb. (4.54 kg) Rammer and 18-In. (457 mm) Drop.
 - 2. D6938-07 ASTM D6938-07 Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 SUBMITTALS

- A. Submit copies of the results of quality control testing (include location where test was done):
 - 1. Materials testing by Contractor:
 - a. Provide source testing report and approval letter from Owner the material was supplied.
- B. Submit daily one copy of weight tickets showing the net weight for each truckload of crushed aggregate base material delivered and placed.

1.4 QUALITY ASSURANCE

- A. The Engineer will obtain an independent testing laboratory to provide quality control testing.

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1.5 DELIVERY, STORAGE AND HANDLING

A. Stockpiling of Aggregates

1. Store aggregates to prevent contamination by foreign matter or by aggregates of different sizes.

B. Delivery of Aggregates

1. Vehicles used to transport aggregates shall be of a type to minimize loss of materials and excessive segregation of particles.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Aggregates

1. Aggregates shall consist of hard, durable particles of crushed stone or crushed gravel and a filler of natural sand, stone sand or other finely divided mineral matter.
 - a. Remove oversize material by screening or by crushing to required sizes.
 - b. Composite material shall be free from organic matter, shale, and lumps or balls of clay and shall conform to the gradation requirements below.
2. Liquid Limit and Plasticity Index:
 - a. Aggregate including any blended filler shall have a liquid limit of not more than 25 and a plasticity index of not more than 6.
3. Fracture Count:
 - a. At least 58 percent of particles retained on the No. 4 sieve shall have at least one fractured face.
4. Soundness:
 - a. When the fraction of aggregate retained on the No. 4 sieve is subjected to five cycles of the sodium sulfate soundness test, weighted loss shall not exceed 18 percent by weight.
5. Filler for Blending:
 - a. Additional mineral filler required to meet gradation requirements or for satisfactory binding of material shall be uniformly blended with base course material at the screening plant.
 - b. Mineral fillers shall be free from agglomerations or lumps and shall contain not more than 15 percent of material retained on a No. 4 sieve.
6. Moisture Content: Shall not exceed 7 percent.

- #### B. Aggregate base course material produced from crushed concrete conforming to section 31 05 10 and this section shall be permitted if the material is from the project site or if allowed in the project manual.

C. Aggregate Gradation Requirements

1. Gradation No. 2 (1½ inch material):

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Sieve Size	% By Weight Passing	
	Crushed Gravel	Crushed Stone or Concrete
1 ¼ inch	95-100	95-100
¾ inch	70-93	70-93
3/8 inch	45-80	45-80
No. 4	30-63	30-63
No. 10	20-48	20-48
No. 40	8-28	8-28
No. 200	4-10(1)	2-12(1)

(1) Limited to 8.0 percent for base placed between new and old pavement.

2. Gradation No. 3 (¾ inch material):

Sieve Size	% By Weight Passing	
	Crushed Gravel	Crushed Stone or Concrete
1 inch	100	100
¾ inch	95-100	95-100
3/8 inch	50-90	50-90
No. 4	35-70	35-70
No. 10	15-55	15-55
No. 40	10-35	10-35
No. 200	8-15	5-15

2.2 SOURCE QUALITY CONTROL

A. Test aggregate material per the following requirements:

1. Sampling: AASHTO T2.
2. Sieve Analysis:
 - a. AASHTO T27 for aggregates including fracture count.
 - b. AASHTO T37 for mineral fillers.
3. Liquid Test: AASHTO T89.
4. Plasticity Index: AASHTO T90.
5. Soundness: AASHTO T104 using sodium sulfate.

PART 3 – EXECUTION

3.1 PREPARATION OF FOUNDATION

- A. Preparation of foundation for crushed aggregate base course shall be in accordance with requirements of Section "Excavation and Fill".
- B. Do not place the base course on a foundation that is soft or spongy or one that is covered by ice or snow.
- C. Do not place base material on a dry or dusty foundation when existing condition would cause rapid dissipation of moisture from base material and hinder or preclude its proper compaction.

1. Apply water to such dry foundations and rework or recompact as necessary.

3.2 CRUSHED AGGREGATE BASE COURSE INSTALLATION

- A. Use gradations as follows:
 1. Base course: Gradation No. 2
 2. Top 3 inch layer of shoulders and aggregate driveways: Gradation No. 3
- B. Construct crushed aggregate base course to the width, thickness, section and location shown on the drawings.
 1. Maximum compacted thickness of any one layer shall not exceed 6 inches for 1¼ or ¾ inch material; 9 inches for 3 inch material.
 - a. When multiple courses are required, they shall be composed of approximately equal thicknesses.
- C. Spreading Base Material
 1. Proceed with the work such that the hauling equipment will travel over the previously placed material.
 2. Route hauling equipment as uniformly as possible over all portions of the previously constructed layers of the base course.
 3. Deposit the material on the foundation or previously placed layer in such a manner as to minimize segregation and to facilitate spreading to a uniform layer of the required dimensions.
- D. Compaction
 1. After a layer of aggregate has been placed and spread to the required thickness, width, and section, it shall be compacted.
 2. If the material is deficient in moisture content, to attain the required density, add necessary moisture during compaction operations by means which provides a uniform application.
 3. Each layer or course placed shall be compacted to at least 95 percent of the maximum dry density as determined by the Modified Proctor Test (ASTM D1557).
 4. Areas where proper compaction is not obtainable due to segregation of materials, excess fines or other deficiencies shall be reworked or removed and replaced with material that will yield the desired results.
 5. Prior to and during compaction operations, shape and maintain the material to the proper dimensions.
- E. Maintenance
 1. Provide maintenance of the base course until surface paving is complete or until the base is otherwise accepted.
- F. Dust Abatement
 1. Minimize the dispersion of dust from the base course by the application of water or other approved dust control materials.

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- G. Preparation of Base for Paving
 - 1. The preparation of crushed aggregate base courses for paving shall include all necessary scarifying, shaping, and compacting to provide the required cross-sectional contour, a profile free from abrupt changes in elevation, and a surface free from pits, holes, depressions, or projections above the normal surface.
 - 2. Remove any standing or ponded water, and ice or snow from the base before paving begins.
- 3.3 ADJUSTING UTILITY ACCESSES
 - A. Adjust existing sanitary and storm manholes to proposed finished street grade.
 - B. Adjust existing water valve boxes to proposed finished street grade.

END OF SECTION

SECTION 32 11 26.16

PULVERIZED ASPHALT AND AGGREGATE BASE COURSE

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Material testing.
 - 2. Foundation preparation.
 - 3. Pulverize asphalt and aggregate base course installation.

1.2 REFERENCES

- A. Wisconsin Department of Transportation Section 325

1.3 QUALITY ASSURANCE

- A. The Engineer will obtain an independent testing laboratory to provide quality control testing.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Stockpiling of Aggregates
 - 1. Store aggregates to prevent contamination by foreign matter or by aggregates of different sizes.
- B. Delivery of Aggregates
 - 1. Vehicles used to transport aggregates shall be of a type to minimize loss of materials and excessive segregation of particles.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. The maximum allowable recycled asphalt pavement (RAP) content in the salvaged material is 50%. This will be based on pulverizing depths. If RAP is above 50%, blending with virgin aggregate material will be required.
- B. 97% or more of RAP will pass a 2-inch sieve.

PART 3 – EXECUTION

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3.1 PREPARATION OF FOUNDATION

- A. Pulverize the full depth (shown on plans or elsewhere) of the existing asphaltic pavement and aggregate until 97 percent or more will pass the 2-inch sieve. Windrow material as construction operations dictate.
- B. Preparation of foundation for pulverized asphalt and aggregate base course shall be in accordance with requirements of Section "Excavation and Fill".
- C. Do not place the base course on a foundation that is soft or spongy or one that is covered by ice or snow.
- D. Do not place base material on a dry or dusty foundation when existing condition would cause rapid dissipation of moisture from base material and hinder or preclude its proper compaction.
 - 1. Apply water to such dry foundations and rework or re-compact as necessary.

3.2 PULVERIZE ASPHALT AND AGGREGATE BASE COURSE INSTALLATION

- A. Construct surface base course to the width, thickness, section, and location shown on the drawings.
 - 1. Maximum compacted thickness of any one layer shall not exceed 8 inches.
- B. Spreading Base Material
 - 1. Proceed with the work such that the hauling equipment will travel over previously placed material.
 - 2. Route hauling equipment as uniformly as possible over all portions of the previously constructed layers of the base course.
 - 3. Deposit the material on the foundation or previously placed layer in such a manner as to minimize segregation and to facilitate spreading to a uniform layer of the required dimensions.
- C. Compaction
 - 1. After a layer of aggregate has been placed and spread to the required thickness, width, and section, it shall be compacted.
 - 2. Compact the re-laid material first with either a rubber tired roller or 12.5-ton or heavier vibratory padfoot roller and second with an 8-ton or heavier vibratory steel roller. Add water, as required, both before and during compaction.
 - 3. Each layer or course placed shall be compacted to at least 95 percent of the maximum dry density as determined by the Modified Proctor Test (ASTMD1557).
 - 4. Areas where proper compaction is not obtainable due to segregation of materials, excess fines or other deficiencies shall be reworked or removed and replaced with material that will yield the desired results.
 - 5. Prior to and during compaction operations, shape and maintain the material to the proper dimensions.

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- D. Maintenance
 - 1. Provide maintenance of the base course until surface paving is complete or until the base is otherwise accepted.
- E. Dust Abatement
 - 1. Minimize the dispersion of dust from the base course by the application of water or other approved dust control materials.

END OF SECTION

SECTION 32 12 16

ASPHALTIC CONCRETE PAVEMENT

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Sampling and Testing Requirements
 - 2. Surface Preparation
 - 3. Asphaltic Concrete Paving

1.2 REFERENCES

- A. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the items: method of measurement and basis of payment shall not apply.

1.3 SUBMITTALS

- A. Submit copies of each asphaltic concrete mix design proposed for the project.
- B. Submit daily one (1) copy of weight tickets showing the net weight for each truckload of asphaltic concrete delivered and placed.

1.4 QUALITY ASSURANCE

- A. The City will perform density testing.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store asphalt cement in tanks free of foreign substances and caked asphalt.
- B. Stockpile aggregate to prevent excessive segregation.
- C. Storage period for hot mix shall not exceed 2 hours.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Conform to WisDOT Standard Specifications for Highway and Structures Construction Sections 450, 455, and 460.

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2.2 EQUIPMENT

- A. All equipment shall conform to WisDOT Standard Specifications for Highway and Structure Construction Section 450.

2.3 SOURCE QUALITY CONTROL TESTING

- A. Materials to be tested:
 - 1. Aggregate.
 - 2. Asphaltic concrete mix design confirmation.
- B. Tests for source quality control testing shall be in accordance with WisDOT Standard Specifications for Highway and Structures Construction Sections 450, 455 and 460.

PART 3 – EXECUTION

3.1 SURFACE PREPARATION

- A. Prepare a compacted foundation in accordance with Section "Crushed Aggregate Base Course".
- B. For existing pavement remove the following asphalt:
 - 1. Localized areas which tend to ravel, shove, or bleed.
 - 2. Areas unsuitable as a base.
 - 3. Unstable patching.
- C. Remove loose concrete and protruding joint material.
- D. Clean surface and joints of foreign material, e.g. dust, dirt, water, vegetation, etc.
- E. Control weeds with herbicide conforming to governing state or local authority, rules and regulations.
- F. Apply tack coat on existing surfaces and between layers at minimum rate of 0.05 to 0.07 gallon per square yard after dilution.
- G. Fill potholes and depressions with a leveling course of asphaltic concrete mix compacted to required density of surface course.
- H. Adjust and reset the casting after placing the binder course and prior to placing the surface course.

3.2 MIX PREPARATION

- A. Aggregates
 - 1. Separate into three sizes as defined under mix uniformity.

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2. Store in separate bins until proportioned into mix.
3. When fillers are required, add through separate bin and feed.
4. Dry and heat aggregate.
5. Feed aggregate into mixer within 15°F plus or minus of required discharge temperature.

B. Asphalt Cement

1. Feed asphalt cement into mixer within 25°F plus or minus of required discharge temperature.

C. Mix Uniformity

1. Design mix tolerance (plus or minus):
 - a. Aggregates passing No. 4 and larger sieves: 6 percent.
 - b. Aggregates passing No. 4 and No. 100 sieves (inclusive): 4 percent.
 - c. Aggregates passing No. 200 sieves: 2 percent.
 - d. Bituminous Material: 0.4 percent.
2. Irrespective of tolerances, gradations shall be within the master range defined under aggregate gradation of this section.

3.3 ASPHALTIC CONCRETE INSTALLATION

A. Do not place asphaltic concrete pavement when following conditions exist:

1. Unstable or frozen base.
2. During rain or snow.
3. When air temperature is less than 35°F (1.5°C).

B. Place to thickness, grade, section and location shown on the Drawings.

1. When thickness of the lifts is not shown, thickness shall be 2 inches compacted.
2. Finished surface shall be a true plane of 1/8 inch in 10 feet.

C. Establish course thickness by placing in layers in accordance with WisDOT Standard Specifications Section 460.

D. Hand Spreading

1. Permitted only in areas inaccessible to finishing machines.
2. Place by means of a shovel and shape with rake or lute.
3. Do not rake over machine spread surfaces.

E. Compaction

1. Roll as soon as mixture will support roller without displacing or hair line cracking:
 - a. Initial pass shall be with drive roller toward paver.
 - b. Start at center and continue toward either edge.
 - c. Overlap successive trips.
2. Subsequent strips laid shall start adjacent to previous laid strip and continue to opposite edge.
3. Roll until:

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- a. Roller marks are eliminated.
- b. Surface is of uniform density.
- c. Required density is obtained.

F. Bonding Joints

1. Clean all joints.
2. When joining new asphaltic concrete pavement to existing asphaltic concrete pavement, saw cut joints and tack coat.
3. When joining new asphaltic concrete pavement to new asphaltic concrete pavement, saw cut end joints and tack coat cold joints.
4. Milled joints may be acceptable if approved by the Engineer.

G. Replace pavement full lane width with all joints saw cut and tacked when:

1. Minimum density is not met.
2. Minimum asphalt content is not met.
3. There is significant segregation, raveling, rutting, or deformation.

3.4 FIELD QUALITY CONTROL

A. Density Testing

1. Perform by nuclear method in accordance with ASTM D2950.
2. Fifteen per production day or fifteen per 4,500 square yards placed, whichever number is greater.
3. Minimum density required shall be in accordance with WisDOT Standard Specifications Section 460.

END OF SECTION

SECTION 32 13 13**PORTLAND CEMENT CONCRETE PAVEMENT****PART 1 – GENERAL****1.1 SUMMARY****A. Section Includes**

1. Sampling and testing requirements.
2. Surface preparation.
3. Portland cement concrete paving.

1.2 REFERENCES**A. American Association of State Highway and Transportation Officials (AASHTO):**

1. M148 Liquid Membrane-Forming Compounds for Curing Concrete
2. M153 Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
3. M171 Sheet Materials for Curing Concrete
4. M182 Burlap Cloth Made from Jute or Kenaf
5. M213 Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
6. M254 Corrosion Resistant Dowel Bars

B. American Society for Testing and Materials (ASTM):

1. A184 Spec. for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
2. A185 Spec. for Welded Steel Wire Fabric for Concrete Reinforcement
3. A615 Spec. for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
4. A617 Spec. for Axle-Steel Deformed and Plain Bars for Concrete Reinforcement
5. C31 Making and Curing Concrete Test Specimens in the Field
6. C33 Standard Specification for Concrete Aggregates
7. C39 Test for Compressive Strength of Cylindrical Concrete Specimens
8. C94 Spec. for Ready-Mixed Concrete
9. C143 Test for Slump of Portland Cement Concrete
10. C172 Sampling Fresh Concrete
11. C231 Test for Air Content of Freshly Mixed Concrete by the Pressure Method
12. C309 Standard Specifications for Liquid Membrane – Forming Compounds for Curing Concrete
13. C1315 Spec. for Liquid Membrane-Forming Compounds Having Special properties for Curing and Sealing Concrete
14. C920 Spec. for Elastomeric Joint Sealants
15. D1751 Spec. for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

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16. D1752 Spec. for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
17. D3405 Spec. for Joint Sealants, Hot-Poured for Concrete and Asphalt Pavements
18. E329 Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction

C. American Association of State and Highway Transportation Officials

1. T96 Standard Method of Test for Resistance to Degradation of Small-Size Course Aggregate by Abrasion and Impact in the Los Angeles Machine
2. T013 Standard Method of Test for Soundness of Aggregates by Freezing and Thawing
3. T104 Standard Method of Test for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

D. Wisconsin Department of Transportation (WisDOT), State of Wisconsin Standard Specifications for Highway Construction, Latest Edition (State Specifications)

1.3 SUBMITTALS

A. Design Mixes

1. Submit copies of the composition and strength testing results for design mix for each type of concrete.
2. Manufacturer's certification of the curing compound.

B. Certificates

1. Provide producer's certification that the supplied materials meet the applicable specification requirements.
2. Provide the material content per cubic yard for each class of concrete furnished.
 - a. Dry weight of concrete.
 - b. Saturated surface-dried weights of fine and coarse aggregates.
 - c. Quantity, type, and name of any admixtures used.
 - d. Weight of water.
3. Provide delivery tickets for each truck at the time of pour.
 - a. Delivery tickets are not required for job-mixed concrete.

C. Samples

1. Provide all material samples needed for the required testing.
2. The Engineer will create and test concrete cylinders.

1.4 QUALITY ASSURANCE/QUALITY MANAGEMENT PLAN

A. General Requirements

1. Provide a Quality Management Plan (QMP) conforming to the WisDOT State Specifications based on the size of the project.
2. Small Quantity projects for class I is defined as follows:

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- a. Less than 150 cubic yards of structure concrete placed under a single bid item.
- b. Less than 2500 cubic yards of slip-formed pavement placed using a single mix design.
- c. Less than 1000 cubic yards of non-slipped formed pavement placed using a single mix design.

B. Small Quantity Project Requirements

- 1. Installation testing to be completed by the Owner includes the following:
 - a. Slump
 - b. Air-entrainment
 - c. Compressive strength test
- 2. Other testing per the WisDOT State Specification Sections 415 is to be completed by the Contractor including:
 - a. Probing method for depth on slipped form pavement per Section 415.3.16.4.2.
 - b. Surface Testing and Correction per 415.3.10.
- 3. Submit an abbreviated QMP per the WisDOT State Specification Sections 710.2.2 (2) and (3) and 710.2.
 - a. Eliminate sections regarding measurement and payment and incentive and disincentive based on the results.
- 4. Additional tests may be conducted by the Contractor for those conducted by the Owner.

C. Large Quantity Projects

- 1. Installation testing to be completed by the Owner includes the following:
 - a. Slump
 - b. Air-entrainment
 - c. Compressive strength test
- 2. Other testing per the WisDOT State Specification Sections 415 is to be completed by the Contractor including:
 - a. Probing method for depth on slipped form pavement per Section 415.3.16.4.2.
 - b. Surface Testing and Correction per 415.3.10.
- 3. Modify the WisDOT QMP for concrete pavement based on the following:
 - a. Arrange one pre-pour meeting to discuss concrete placement.
 - b. Number of compressive strength tests to be as noted below.
 - c. Eliminate sections regarding measurement and payment and incentive and disincentive based on the results.

D. Compressive Strength Testing

- 1. Small Quantity Projects
 - a. Tests to be taken for each 200 cubic yards of concrete placed or at least once each day for each design mix.
 - b. Test one cylinder at 7 days.
 - c. Test two cylinders at 28 days.
 - d. Remaining cylinder will be tested in the event a prior test fails.
- 2. Large Quantity Projects
 - a. Tests to be taken for each 500 cubic yards of concrete placed or at least once for each ½ day for each mix.

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3. 28 Day Test Requirements
 - a. Compressive strength is 4,000 psi.
 - b. No individual test falls more than 500 psi below specified compressive strength.
 - c. If differential strengths of the two specimens is 350 psi or greater, the low strength specimen shall be discarded and the strength of the remaining cylinder shall then be the test result. If the test is below 3500 psi, the test is considered a failure. Also, if either of the two 28 day specimens falls below 3000 psi, the test result is considered a failure.
4. Failure of compressive strength tests shall result in the following additional testing:
 - a. Provide two core samples of each portion of work affected and perform compressive strength tests.
 - b. Replace work if core samples do not equal or exceed specified compressive strength
 - c. Additional testing shall be completed at the Contractor's expense, including traffic control to perform and replace nonconforming work.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Concrete

1. Conform to the WisDOT Standard Specifications for Highway and Structure Construction, Latest Edition.
 - a. Class I concrete
 - b. Twenty-eight day compressive strength: 4,000 psi
 - c. Air entrainment:
 - 1) Slip-formed concrete – 7.0 percent, +/- 1.5 percent
 - 2) Other concrete – 6.0 percent, +/- 1.5 percent
 - d. Slump:
 - 1) 2.5 inch or less – Slip-formed
 - 2) 4.0 inch or less – Non Slip-formed

B. Aggregates

1. Conform to WisDOT State Specifications
 - a. Slip formed concrete aggregate shall conform to Soil Class A-6 (1 1/2-Inch Crushed Rock) (WisDOT Size No. 2 Aggregate per 501.2.5.4.5)
 - b. Hand formed concrete aggregate shall conform to either:
 - 1) Soil Class A-7 (3/4-Inch Crushed Rock) (WisDOT Size No. 1 Aggregate per 501.2.5.4.5)
 - 2) Soil Class A-6 (1 1/2-Inch Crushed Rock) (WisDOT Size No. 2 Aggregate per 501.2.5.4.5)
2. Conform to ASTM C33.
3. Aggregate Wear: Loss of abrasion and impact shall not exceed 50 percent by mass (AASHTO T96)
4. Aggregate Soundness: The weighted average sodium sulfate loss shall not exceed 12 percent by mass (AASHTO T104)
5. Freeze-Thaw: The weighted average loss shall not exceed 18 percent by mass (AASHTO T103)

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C. Reinforcement

1. Conform to the WisDOT Standard Specifications for Highway and Structure Construction, Latest Edition.

D. Joint Sealing

1. Concrete pavement joint material shall conform to Section 32 01 17, Crack and Joint Sealing.

E. Curing Material

1. Furnish linseed oil based curing compound conforming to ASTM C309.
 - a. Linseed oil emulsion shall consist of, by volume exclusive of the pigment, 50 +/- 4 percent linseed oil and 50 +/- 4 percent water. Ensure that the oil phase is, by weight, 80 percent boiled linseed oil and 20 percent viscosity (Z-8) linseed oil.
 - b. ASTM C309 shall be modified to waive the drying time.

2.2 EQUIPMENT

A. Concrete Spreader

1. Shall be capable of striking off the surface of the concrete in a longitudinal direction of the slab at any required elevation.

B. Slip-Form Paver

1. Shall be designed to consolidate, screed, and float-finish freshly placed concrete in one complete pass.
2. Shall be equipped to vibrate the concrete for the full width and depth of course.
3. Machine design shall prevent the spreading or slumping of the concrete.

C. Finishing Machine (for Formed Pavement)

1. Shall be of the screeding and troweling type, equipped with at least two oscillating transverse screeds, adjustable tilt, and crown.
2. Machine shall be capable of striking off and consolidating concrete.

D. Vibrators

1. May be pan type or the internal type with immersed tube or multiple spuds.
2. Frequency Requirements:
 - a. Pan Type: 4,000 impulses per minute minimum.
 - b. Internal Type:
 - 1) Tube Vibrators: 5,000 impulses per minute minimum.
 - 2) Spud Vibrators: 7,000 impulses per minute minimum.

2.3 SOURCE QUALITY CONTROL

A. Material Acceptance Testing

1. Design mix.

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- B. Perform additional testing under the following circumstances:
 - 1. Material failure.
 - 2. Change in ready-mix source.
 - 3. Design mix changes requested by Contractor.

PART 3 – EXECUTION

3.1 PRE-POUR MEETING

- A. Attend a pre-pour meeting prior to construction with a slip form paver for each paving event, as determined by the Engineer.

3.2 BASE PREPARATION

- A. Prepare in accordance with the WisDOT Standard Specifications for Highway and Structure Construction, Latest Edition.
- B. Before placing concrete:
 - 1. Remove loose material from compacted base.
 - 2. Proof-roll prepared base surface to check for unstable areas and the need for additional compaction.
 - 3. Correct any deficiencies prior to paving.
 - 4. Adjust all fixtures (i.e., castings, frames, inlets, and valve boxes) per City standards
 - 5. Moisten the compacted base as required to prevent the base from removing water from the placed concrete.

3.3 PLACING AND FINISHING CONCRETE

- A. Place and finish in accordance with the WisDOT Standard Specifications for Highway and Structure Construction, Latest Edition.
- B. Provide a concrete stamp per the detail.
- C. All concrete joints shall be sealed.

3.4 CONCRETE CORES

- A. Concrete cores completed by the Contractor shall be repaired with like material as approved by the Engineer.

3.5 CONCRETE WORK WARRANTY

- A. Work shall be warrantied for a period of one year after substantial completion covering;
 - 1. Transverse cracking.
 - 2. Spalling.

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- 3. Popouts.
- 4. Other detrimental impacts related to workmanship.

B. Cost for repairs and traffic control shall be the responsibility of the Contractor.

3.6 OPENING ROADWAY TO TRAFFIC

- A. If additional strength tests are required to open the roadway to traffic prior to the 7-day break, the contractor shall cast cylinders to verify compressive strengths of 3000 pounds per square inch. Submit the compressive strength test results to the Engineer for verification. Compute the opening strength as the average of compressive strength test results for 2 cylinders. If the strength of a cylinder is less than 90 percent of the required strength, the Engineer will reject the resulting average.
- B. For concrete patches completed with high early strength concrete, the Engineer will complete a 3-day cylinder break to check strength prior to opening the roadway to traffic.

END OF SECTION

SECTION 32 16 13

CONCRETE CURB AND GUTTER

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
- 1. Fine grading and compaction of subgrade.
 - 2. Curb and gutter construction.
 - 3. Backfilling and finish grading.
 - 4. Landscaping.

1.2 REFERENCES

- A. American Concrete Institute (ACI)
- 1. ACI 305 Recommended Practice for Hot Weather Concreting
 - 2. ACI 306 Recommended Practice for Cold Weather Concreting
- B. American Society for Testing and Materials (ASTM):
- 1. A615 Spec. for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
 - 2. C31 Making and Curing Concrete Test Specimens in the Field
 - 3. C33 Spec. for Concrete Aggregate
 - 4. C39 Test for Compressive Strength of Cylindrical Concrete Specimens
 - 5. C94 Spec. for Ready-Mixed Concrete
 - 6. C143 Test for Slump of Portland Cement Concrete
 - 7. C150 Spec. for Portland Cement
 - 8. C172 Sampling Fresh Concrete
 - 9. C231 Test for Air Content of Freshly Mixed Concrete by the Pressure Method
 - 10. C309 Standard Specifications for Liquid Membrane – Forming Compounds for Curing Concrete
 - 11. [C595](#) [Standard Specifications for Blended Hydraulic Cements](#)
 - 12. C1315 Spec. for Liquid Membrane-Forming Compounds Having Special properties for Curing and Sealing Concrete
 - 13. D1557 Test Methods for Moisture-Density Relations of Soils and Soils-Aggregate Mixtures Using 10-Lb. (4.54 Kg) Rammer and 18-In. (457 mm) Drop
 - 14. D1751 Spec. for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
 - 15. E329 Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction

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- C. American Association of State and Highway Transportation Officials
 - 1. T96 Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - 2. T013 Standard Method of Test for Soundness of Aggregates by Freezing and Thawing
 - 3. T104 Standard Method of Test for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
- D. Wisconsin Department of Transportation (WisDOT), State of Wisconsin Standard Specifications for Highway Structure Construction, Latest Edition (State Specification)

1.3 SUBMITTALS

- A. Concrete design mix of composition and strength testing results for design mix for each type of concrete.
- B. Producer's certification that the supplied materials meet the applicable specification requirements.
- C. Manufacturer's certification of the curing compound.

1.4 QUALITY ASSURANCE/QUALITY MANAGEMENT PLAN

- A. General Requirements
 - 1. Provide a Quality Management Plan (QMP) conforming to the WisDOT State Specifications for Class II concrete
- B. Testing to be completed as follows:
 - 1. Installation Testing by Owner:
 - a. Slump.
 - b. Air-entrainment.
 - c. Compressive strength test.
 - 2. Other testing per the WisDOT State Specification is to be completed by the Contractor.
 - 3. Additional tests may be conducted by the Contractor for those conducted by the Owner.
- C. The following shall be in accordance with the stated State Specifications and references:
 - 1. Inspection and Testing: ASTM E329.
 - 2. Sampling: ASTM C172.
 - 3. Slump: ASTM C143.
 - 4. Air-Entrainment: ASTM C231.
 - 5. Compressive Strength Test: ASTM C31 and C39.
- D. Compressive strength test shall consist of four standard test cylinders made from a single batch of concrete:

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1. Tests to be taken for each 200 cubic yards of concrete placed or at least once each day.
2. Test one cylinder at 7 days.
3. Test two cylinders at 28 days.
4. Remaining cylinder shall be tested in the event prior tests fail.
5. 28 Day Test Requirements:
 - a. Compressive strength is 4,000 psi.
 - b. No individual test falls more than 500 psi below specified compressive strength.
 - c. If differential strengths of the two specimens is 350 psi or greater, the low strength specimen shall be discarded and the strength of the remaining cylinder shall then be the test result.
 - d. If the test result is below 3500 psi, the test is considered a failure. Also, if either of the two 28 day specimens falls below 3000 psi, the test result is considered a failure.
6. Failure of compressive strength tests shall result in following additional testing:
 - a. Provide two core samples of each portion of work affected and perform compressive strength tests.
 - b. Replace work if core samples do not equal or exceed specified compressive strength.
 - c. Additional testing shall be completed at the Contractor's expense.

PART 2 – PRODUCTS

2.1 CONCRETE

- A. Conform to ASTM C94, WisDOT State Specifications, and the following:
 1. Class II concrete
 2. Twenty-eight Day Compression Strength: 4000 psi.
 3. Aggregate shall conform to either of the following:
 - a. Soil Class A-7 (3/4-Inch Crushed Rock) (WisDOT Size No. 1 Aggregate per 501.2.5.4.5)
 - b. Soil Class A-6 (1 1/2-Inch Crushed Rock) (WisDOT Size No. 2 Aggregate per 501.2.5.4.5)
 4. Minimum Cement Content: 6 bags/c.y.
 5. Air entrainment:
 - a. Slip-formed concrete – 7.0 percent, +/- 1.5 percent
 - b. Other concrete – 6.0 percent, +/- 1.5 percent
 6. Maximum Water-Cement Ratio: .44
 7. Slump:
 - a. 2.5 inch or less – Slip-formed
 - b. 4.0 inch or less – Non slip-formed
- B. Admixtures to lower freezing point of concrete are not permitted.

2.2 CEMENT

- A. Conform to ASTM C150, Type 1 [or ASTM C595, Type 1L](#).

2.3 AGGREGATES

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- A. Conform to WisDOT State Specifications
- B. Conform to ASTM C33.
- C. Aggregate Wear: Loss of abrasion and impact shall not exceed 50 percent by mass (AASHTO T96)
- D. Aggregate Soundness: The weighted average sodium sulfate loss shall not exceed 12 percent by mass (AASHTO T104)
- E. Freeze-Thaw: The weighted average loss shall not exceed 18 percent by mass (AASHTO T103)

2.4 EXPANSION JOINT

- A. Conform with ASTM D1751.
- B. Thickness: $\frac{3}{4}$ inch

2.5 REINFORCEMENT BAR

- A. Conform with WisDOT Standard Specifications for Highway Construction, Latest Edition, Section 505.
- B. Grade 60.
- C. Minimum Bar Size: #4, Epoxy Coated

2.6 CURING MATERIALS

- A. Furnish linseed oil based curing compound conforming to ASTM C309.
 - 1. Linseed oil emulsion shall consist of, by volume exclusive of the pigment, 50 +/- 4 percent linseed oil and 50 +/- 4 percent water. Ensure that the oil phase is, by weight, 80 percent boiled linseed oil and 20 percent viscosity (Z-8) linseed oil.
 - 2. ASTM C309 shall be modified to waive the drying time.

2.7 CRUSHED AGGREGATE BASE MATERIAL

- A. Aggregates shall consist of hard, durable particles of crushed stone or crushed gravel and a filler of natural sand, stone sand or other finely divided mineral matter.
 - 1. Remove oversize material by screening or by crushing to required sizes.
 - 2. Composite material shall be free from organic matter, shale, and lumps or balls of clay and shall conform to the gradation requirements below.
- B. Liquid Limit and Plasticity Index
 - 1. Aggregate, including any blended filler, shall have a liquid limit of not more than 25 and a plasticity index of not more than 6.

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- C. Fracture Count
 - 1. At least 45 percent of particles retained on the No. 4 sieve shall have at least one fractured face.
- D. Soundness
 - 1. When the fraction of aggregate retained on the No. 4 sieve is subjected to five cycles of the sodium sulfate soundness test, weighted loss shall not exceed 18 percent by weight.
- E. Filler for Blending
 - 1. Additional mineral filler required to meet gradation requirements or for satisfactory binding of material shall be uniformly blended with base course material at the screening plant.
- F. Moisture content shall not exceed 7 percent.
 - 1. Additional mineral filler required to meet gradation requirements or for satisfactory binding of material shall be uniformly blended with base course material at the screening plant.
 - 2. Mineral fillers shall be free from agglomerations or lumps and shall contain not more than 15 percent of material retained on a No. 4 sieve.
- G. Aggregate Gradation Requirements shall conform to C-2 or C-4 from Soils and Aggregate.

PART 3 – EXECUTION

3.1 PREPARATION OF SUBGRADE

- A. Prepare the subgrade by excavating to the lines, grades, and cross-sections shown on the drawings as required for placing curb and gutter.
- B. If subgrade excavation in cut is required, stockpile the surplus material for use in fill areas behind the curb and gutter, or dispose of at a site provided by the Contractor.
- C. If subgrade excavation in fill is required, then furnish, install, and compact granular sub-base material.
 - 1. Sub-base material shall be Soil Class C-2 or C-4 or suitable material from cut areas.
- D. Compact to minimum 95 percent modified proctor density (ASTM D1557).

3.2 PLACING AND GRADING BASE COURSE

- A. Provide a minimum of 6 inches of base material.
- B. The subgrade shall be prepared by fine grading to the lines, grades, and cross-sections shown on the drawings as required for placing the curb and gutter.

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- C. Compact to minimum 95 percent modified proctor density (ASTM D1557).
- 3.3 CATCH BASINS/INLETS
 - A. Adjust catch basins/inlets to curb and gutter elevation per City standards.
- 3.4 FORMS
 - A. Conform to ACI 347.
 - B. Provide forms of the size and type of material required to properly construct the curb and gutter as required.
 - C. Properly brace or tie together forms to maintain position and shape.
 - D. Clean and coat forms with clear, non-staining mineral or paraffin base form oil prior to placement of the concrete against the forms.
 - E. Removal of Forms
 - 1. The forms may be removed provided the concrete obtains sufficient strength so as not to be damaged and will retain its shape.
 - 2. Protect the curb and gutter until the concrete has attained design strength.
- 3.5 SLIPFORM CONSTRUCTION
 - A. The use of slipform equipment will be acceptable.
 - B. Coordinate the operations of mixing, delivering, and placing of the concrete to provide uniform progress with minimum stopping and starting of the curb machine.
 - C. The curb machine shall be capable of placing the specified curb and gutter section with an adequate amount of vibration to preclude the possibility of honeycomb formation.
- 3.6 ENVIRONMENTAL CONSTRUCTION
 - A. Hot Weather Concreting
 - 1. Follow ACI 305 whenever mean surrounding air temperature equals or exceeds 80°F (27°C).
 - 2. Do not place concrete whenever air temperature equals or exceeds 90°F (32°C).
 - B. Cold Weather Concreting
 - 1. Follow ACI 306 whenever mean surrounding air temperature is below 40°F (4.5°C).
 - C. Do not place concrete during rain, sleet, or snow unless protection is provided.
- 3.7 PLACING CONCRETE

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- A. Construct curb and gutter to match the dimensions shown in the details.
- B. Construct curb and gutter on the prepared and moistened foundation in one course.
- C. Construct curb and gutter to the required lines and grades as shown on the drawings.
- D. Place concrete by using the slipform or fixed form method.
- E. Use mechanical vibration for concrete with slump less than or equal to two (2) inches. After consolidation strike off, and finish to the required section.
- F. Contraction Joints
 - 1. Provide joints at 10-foot intervals.
 - 2. Create contraction joints by sawing or forming an induced plane of weakness at least two (2) inches deep.
 - 3. If sawing, perform as soon as practicable after concrete has set sufficiently to preclude raveling during the sawing and before any shrinkage cracks occur.
- G. Place expansion joints as follows:
 - 1. 300 feet maximum spacing on tangent sections.
 - 2. Where radial curb and gutter meet tangent sections.
 - 3. Adjacent to existing expansion joints in abutting concrete paving.
 - 4. Three (3) feet from inlets.
 - 5. Place at right angles to the flow line and surface of the gutters.
- H. Place depressions for handicapped ramps and driveways as required and shown on the drawings.
- I. Place a concrete stamp per the detail.

3.8 REINFORCEMENT

- A. Install two (2) - twenty (20) foot long number four (4) deformed reinforcement bars over all trenches that fall under any portion of the Concrete Curb & Gutter being constructed. The Engineer will determine the location of all deformed reinforcement bars.
- B. Install two (2) number four (4) epoxy coated deformed reinforcement bars, 12 inches long between new and existing slabs. The bars shall be drilled six inches into the existing concrete slab.

3.9 FINISHING

- A. Finish in accordance with the WisDOT Standard Specifications for Highway and Structure Construction, Latest Edition

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- B. Thoroughly trowel and brush or lightly broom the face surfaces of the curb and gutter prior to concrete set.
- C. Round exposed edges of the curb and gutter to ¼ inch radius, both front and back, and edges adjacent to expansion joints.
- D. Pointed with mortar composed of three parts sand and one part Portland cement honeycombed areas as soon as possible after the curb and gutter has been placed.

3.10 CURB RAMPING

- A. Provide depressed and sloped curb at curb ramping locations and driveways shown on the Drawings or as directed by the Engineer.
- B. Provide appropriate longitudinal slope on curb as shown on the Drawings for curb ramps and for driveways or as directed by the Engineer.

3.11 CURING

- A. Start curing activities as soon as free water has disappeared from the surface of concrete after placing and finishing.
- B. Apply curing compound to all exposed surfaces by spraying a uniform coating in such a manner as to provide a continuous water impermeable surface. Apply in accordance with manufacturer's recommendations to limit loss of water to not more than 0.40 kg/m² in 72 hours.
- C. Under hot weather conditions, conform to ACI 305.
- D. Under cold weather conditions, conform to ACI 306.
- E. During curing period, protect concrete from damaging mechanical disturbances, water flow, loading, shock, and vibration.

3.12 RESTORATION

- A. Backfilling
 - 1. Backfill low areas with Soils Class G-1 as defined in Section "Soils and Aggregates".
 - a. Between curb and property line.
 - b. In boulevard areas.
 - c. Shape to line and grade to permit landscaping.
 - d. Compact to 85 percent Modified Proctor density (ASTM D1557) and test roll.
- B. Landscaping
 - 1. Perform as defined in Section "Turf and Grasses".

3.13 CONCRETE WORK WARRANTY

- A. Work shall be warrantied for a period of one year after substantial completion covering;
 - 1. Transverse cracking.
 - 2. Spalling.
 - 3. Popouts.
 - 4. Other detrimental impacts related to workmanship.
- B. Cost for repairs and traffic control shall be the responsibility of the Contractor.

END OF SECTION

SECTION 32 16 20

CONCRETE SIDEWALKS AND DRIVEWAYS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
1. Excavation.
 2. Compaction aggregate base.
 3. Sidewalk and driveway construction.

1.2 REFERENCES STANDARDS

- A. American Society for Testing and Materials (ASTM)
1. A185 Specification for Welded Steel Wire Fabric for Concrete Reinforcement.
 2. C31 Making and Curing Concrete Test Specimens in the Field.
 3. C33 Specification for Concrete Aggregates.
 4. C39 Test for Compressive Strength of Cylindrical Concrete Specimens.
 5. C94 Specification for Ready-Mixed Concrete.
 6. C143 Test for Slump of Portland Cement Concrete.
 7. C150 Specification for Portland Cement.
 8. C172 Sampling Fresh Concrete.
 9. C231 Test for Air Content of Freshly Mixed Concrete by the Pressure Method.
 10. C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 11. [C595](#) [Standard Specifications for Blended Hydraulic Cements](#)
 12. C1315 Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
 13. D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Lb (4.54 kg) Rammer and 18-in. (457 mm) Drop.
 14. D1751 Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Type).
 15. E329 Standard Recommended Practice for Inspection Testing Agencies for Concrete, Steel and Bituminous Materials Used in Construction.
- B. American Concrete Institute (ACI)
1. ACI 304 Measuring, Mixing, Transporting, and Placing Concrete.
 2. ACI 305 Recommended Practice for Hot Weather Concreting.
 3. ACI 306 Recommended Practice for Cold Weather Concreting.

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- 4. ACI 347 Recommended Practice for Concrete Formwork.
- C. American Association of State and Highway Transportation Officials
 - 1. T96 Standard Method of Test for Resistance to Degradation of Small-Size Course Aggregate by Abrasion and impact in the Los Angeles Machine
 - 2. T013 Standard Method of Test for Soundness of Aggregates by Freezing and Thawing
 - 3. T104 Standard Method of Test for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
- D. Wisconsin Department of Transportation (WisDOT), State of Wisconsin Standards Specifications for Highway Construction, Latest Edition (State Specifications)

1.3 SUBMITTALS

- A. Concrete design mix of composition and strength testing results for design mix for each type of concrete.
- B. Producer's certification that the supplied materials meet the applicable specification requirements.
- C. Manufacturer's certification for curing compound.

1.4 QUALITY ASSURANCE/QUALITY MANAGEMENT PLAN

- A. General Requirements
 - 1. Provide a Quality Management Plan (QMP) conforming to the WisDOT State Specifications for Class II concrete.
- B. Testing to be completed as follows:
 - 1. Installation Testing by Owner:
 - a. Slump.
 - b. Air-entrainment.
 - c. Compressive strength test.
 - 2. Other testing per the WisDOT State Specification is to be completed by the Contractor.
 - 3. Additional tests may be conducted by the Contractor for those conducted by the Owner.
- C. The following shall be in accordance with the State Specifications and stated references:
 - 1. Inspection and Testing: ASTM E329.
 - 2. Sampling: ASTM C172.
 - 3. Slump: ASTM C143.
 - 4. Air-Entrainment: ASTM C231.
 - 5. Compressive Strength Test: ASTM C31 and C39.
- D. Compressive strength test shall consist of four standard test cylinders made from a single batch of concrete:

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1. Tests to be taken for each 200 cubic yards of concrete placed or at least once each day.
2. Test one cylinder at 7 days.
3. Test two cylinders at 28 days.
4. Remaining cylinder shall be tested in the event prior tests fail.
5. 28 Day Test Requirements:
 - a. Compressive strength is 4,000 psi.
 - b. No individual test falls more than 500 psi below specified compressive strength.
 - c. If differential strengths of the two specimens is 350 psi or greater, the low strength specimen shall be discarded and the strength of the remaining cylinder shall then be the test result.
 - d. If the test result is below 3500 psi, the test is considered a failure. Also, if either of the two 28 day specimens falls below 3000 psi, the test result is considered a failure.
6. Failure of compressive strength tests shall result in following additional testing:
 - a. Provide two core samples of each portion of work affected and perform compressive strength tests.
 - b. Replace work if core samples do not equal or exceed specified compressive strength.
 - c. Additional testing shall be completed at the Contractor's expense.

PART 2 – PRODUCTS

2.1 CONCRETE

- A. Concrete shall conform to ASTM C94, the WisDOT State Specification, and the following:
 1. Class II concrete
 2. Twenty-eight Day Compressive Strength: 4,000 psi.
 3. Aggregate shall conform to either of the following:
 - a. Soil Class A-7 (3/4-Inch Crushed Rock) (WisDOT Size No. 1 Aggregate per 501.2.5.4.5)
 - b. Soil Class A-6 (1 1/2-Inch Crushed Rock) (WisDOT Size No. 2 Aggregate per 501.2.5.4.5)
 4. Minimum Cement Content: 6 bags/c.y.
 5. Air entrainment:
 - a. Slip-formed concrete – 7.0 percent, +/- 1.5 percent
 - b. Other concrete – 6.0 percent, +/- 1.5 percent
 6. Maximum Water-Cement Ratio: .44
 7. Slump:
 - a. 2.5 inch or less – Slipformed
 - b. 4.0 inch or less – Non-Slipformed

2.2 CEMENT

- A. Conform to ASTM C150, Type 1 [or ASTM C595, Type 1L](#).

2.3 AGGREGATES

- A. Conform to WisDOT State Specifications

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- B. Conform to ASTM C33.
- C. Aggregate Wear: Loss of abrasion and impact shall not exceed 50 percent by mass (AASHTO T96)
- D. Aggregate Soundness: The weighted average sodium sulfate loss shall not exceed 12 percent by mass (AASHTO T104)
- E. Freeze-Thaw: The weighted average loss shall not exceed 18 percent by mass (AASHTO T103)

2.4 CURING MATERIALS

- A. Use linseed oil based material conforming to the WisDOT Standard Specifications for Highway and Structure Construction, Latest Edition. Furnish linseed oil based curing compound conforming to ASTM C309.
 - 1. Linseed oil emulsion shall consist of, by volume exclusive of the pigment, 50 +/- 4 percent linseed oil and 50 +/- 4 percent water. Ensure that the oil phase is, by weight, 80 percent boiled linseed oil and 20 percent viscosity (Z-8) linseed oil.
 - 2. ASTM C309 shall be modified to waive the drying time.

2.5 EXPANSION JOINT

- A. Conform to ASTM D1751.
- B. Thickness: ½ inch.

2.6 REINFORCEMENT BAR

- A. Conform with WisDOT Standard Specifications for Highway Construction, Latest Edition, Section 505.
- B. Grade 60.
- C. Minimum Bar Size: #4., Epoxy Coated

2.7 CURB RAMP DETECTABLE WARNING FIELD

- A. Provide detectable warning fields in curb ramps in accordance with the requirements of the current edition of the Standard Specification for the State Department of Transportation.
- B. Fields to be unpainted cast iron.
- C. Acceptable products are:
 - 1. Neenah Foundry
 - 2. Cast DWD by Pioneer Detectable LLC
 - 3. Other Engineer approved equal cast iron plate.

PART 3 – EXECUTION

3.1 PREPARATION OF THE SUBGRADE

- A. Excavate subgrade to line and grade shown on plans and details.
- B. Provide a minimum of 4 inches of base.
 - 1. Soil Class C-2 or C-4 as defined in Section "Soils and Aggregates".
- C. Compact to minimum 95 percent modified proctor density, ASTM D1557.
- D. Surplus material may be used in fill areas.
- E. Excess material shall be disposed at a site provided by Contractor.
- F. The foundation shall be six (6) inches wider than the sidewalk.

3.2 FORMS

- A. Conform to ACI 347.
- B. Forms shall be of the size, shape and type of material required to construct the sidewalk and driveway as required.
- C. Brace and tie together forms to maintain position and shape.
- D. Clean and coat forms with clear, non-staining mineral or paraffin base form oil prior to placement of concrete against forms.
- E. Surfaces in contact with concrete shall be free from frost, debris, and other deleterious material.
- F. Moisten the base prior to placement of concrete.
- G. Remove laitance and other unsound material before freshly placed concrete is placed against previously placed concrete.
- H. Have materials available to protect concrete from damage until it has hardened sufficiently to resist damage.
- I. Unless noted otherwise, furnish the following minimum thicknesses:
 - 1. Sidewalks: 4"
 - 2. Curb Ramps: 6" unless directed otherwise by the Engineer.
 - 3. Driveways: Residential: 6"
 - 4. Driveways: Industrial, Business, Commercial: 8"

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5. Alleys: 8"

- J. Sidewalk shall be 5 feet in width for new construction. Match width of existing sidewalk for reconstruction unless directed otherwise by the Engineer.
- K. The sidewalk shall slope a maximum of $\frac{1}{4}$ inch per foot towards the street or as shown on the Plan or as directed by the Engineer.
- L. Edges of sidewalks and edges adjacent to expansion joints or construction joints shall be finished with an edging tool having a radius of $\frac{1}{4}$ inch.

3.3 EXPANSION JOINTS

- A. Location and geometry of expansion joints shall be as shown on the Drawings or according to the following criteria:
 - 1. At right angle or tee intersections.
 - 2. At sidewalk and stoop intersections.
 - 3. Where sidewalk and driveway adjoin vertical surfaces.
 - 4. Where sidewalk and driveway adjoin existing concrete street pavements.
 - 5. Where sidewalk and driveway adjoin existing concrete driveways.
 - 6. Where driveway and sidewalk adjoin curb and gutter.
 - 7. Where 4" thick sidewalk meets 6" thick sidewalk at curb ramps.
 - 8. Maximum spacing 300 feet.
- B. Extend filler full width and depth of concrete, with top slightly below finished surface of concrete.

3.4 CONTRACTION JOINTS

- A. Locate in accordance with details and following criteria:
 - 1. Transverse joints in the sidewalk shall be spaced at an average spacing of 5 foot intervals.
 - 2. When matching existing concrete sidewalk results in a variable joint spacing, transverse joint spacing in the new sidewalk shall be modified to a minimum spacing of 4 feet and a maximum spacing of 6 feet, unless additional variation is approved by the Engineer.
 - 3. Transverse joints shall be placed down the center of the approach portion of the driveway.
 - 4. Joints shall not deviate more than five degrees from a right angle measured at intersecting joints or flatwork edge, and more than $\frac{1}{2}$ inch from a straight line.
- B. Joint Dimensions
 - 1. Depth:
 - a. Minimum 1 inch or one-fifth of slab depth whichever is greater.
 - 2. Width:
 - a. Minimum $\frac{1}{8}$ inch for sawed joints, $\frac{1}{4}$ inch for other types.
 - b. Maximum $\frac{1}{4}$ inch for sawed joints, $\frac{3}{8}$ inch for other types.

3.5 ENVIRONMENTAL REQUIREMENTS

- A. Hot Weather Concreting
 - 1. Follow ACI 305 whenever mean surrounding air temperature equals or exceeds 80°F (27°C).
 - 2. Do not place concrete whenever air temperature equals or exceeds 90°F (32°C).
- B. Cold Weather Concreting
 - 1. Follow ACI 306 whenever mean surrounding air temperature is below 40°F (4.5°C).
- C. Do not place concrete during rain, sleet, or snow unless protection is provided.

3.6 PLACING CONCRETE

- A. Conveying Concrete
 - 1. Convey concrete from mixer to place of final deposit by methods that will prevent separation or loss of materials.
 - 2. Equipment for chuting, pumping, or pneumatically conveying concrete shall be capable of providing a supply of concrete at site of work without separation of ingredients and without interruptions sufficient to permit loss of plasticity between successive placements.
 - 3. Unless otherwise approved, conform to ACI 304.
- B. Depositing Concrete
 - 1. Place concrete on prepared and moistened foundation in a single lift.
 - 2. Deposit concrete as nearly as practicable to its final position to avoid segregation due to rehandling or flowing.
 - 3. Carry on concreting at such a rate that concrete is at all times plastic, and flows readily into spaces between reinforcing.
 - 4. Do not deposit concrete that has partially hardened or that has been contaminated by foreign materials.
 - 5. Do not use retempered or remixed concrete.
 - 6. After concreting is started, it shall be carried on as a continuous operation until placing a section is completed.
 - 7. Thoroughly consolidate concrete by suitable means during placement, and thoroughly work concrete around reinforcement and embedded fixtures, and into corners of forms.
 - a. Provide mechanical vibration for concrete eight (8) inches thick and greater.
- C. Provide a concrete stamp per the detail.

3.7 REINFORCEMENT

- A. Install two (2) number four (4) epoxy coated deformed reinforcement bars over all trenches that fall under any portion of the concrete sidewalk or driveway being constructed. The Engineer will determine the final location of all deformed reinforcement bars. In general, reinforcement bars shall be extended into the adjacent concrete slab that is outside of the trench as follows:

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1. When the adjacent concrete slab is existing, drill 6" into the concrete.
2. When the adjacent concrete slab is new, overlap the reinforcement bar at least 12 inches into the adjacent concrete slab.

- B. Install two (2) number four (4) epoxy coated deformed reinforcement bars, 12 inches long between new and existing slabs. The bars shall be drilled six inches into the existing concrete slab.

3.8 FINISHING

- A. Strike off concrete to a true and even surface.
- B. Finish float and trowel surface smooth.
- C. Brush or lightly broom surface at right angles to traffic.

3.9 CURING

- A. Start curing activities as soon as free water has disappeared from surface of concrete after placing and finishing.
- B. Apply curing compound to exposed surfaces by spraying a uniform coating to provide a continuous water impermeable surface. Apply in accordance with manufacturer's recommendations to limit loss of water to not more than 0.40 kg/m² in 72 hours.
- C. Maintain all exposed concrete surfaces moist for the first 7 days after placement.
- D. Under hot weather conditions conform to ACI 305.
- E. Under cold weather conditions conform to ACI 306.
- F. During curing period, protect concrete from damaging mechanical disturbances, water flow, loading, shock, and vibration.

3.10 EXISTING CONCRETE FLATWORK

- A. When abutting to existing flatwork, provide the following:
1. Saw cut existing concrete at construction limits.
 2. Install expansion joints between existing and new construction.

3.11 CURB RAMPS

- A. Install curb ramps where shown on Drawings or as directed by the Engineer.

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- B. Provide detectable warning field run parallel to the direction of travel of the ramp to allow wheel chairs unimpeded access to the road or sidewalk.
- C. Elevation of the warning field is to be equal to the elevation of the curb cut to allow drainage.
 - 1. Equal elevations of the warning field, curb ramp and curb at the curb interface are also required so there is no tripping hazard or impediment to wheel chairs or walkers.
 - 2. Do not recess the warning field.
- D. Install warning fields 0 to 2 inch from back of curb.
 - 1. For installations on a radius, the leading edge of the detectable warning field is to remain within the 0 to 2 inch offset from back of curb.
 - 2. The opposite corner adjacent to the curb will be a varying distance in order to keep the warning fields parallel to the direction of travel.
- E. Slope longitudinal sidewalk to meet the curb ramp with a slope 12 horizontal to 1 vertical or flatter.
- F. Install warning fields per standard detail 8D5, A through E, from the Wisconsin Department of Transportation Facility Development Manual.

3.12 CONCRETE WORK WARRANTY

- A. Work shall be warrantied for a period of one year after substantial completion covering;
 - 1. Transverse cracking.
 - 2. Spalling.
 - 3. Popouts.
 - 4. Other detrimental impacts related to workmanship.
- B. Cost for repairs and traffic control shall be the responsibility of the Contractor.

END OF SECTION

SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Furnishing and applying pavement line markings.

1.2 REFERENCES

- A. State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, current edition, and all supplemental and interim supplemental specifications, as they may pertain, except the items: method of measurement and basis of payment shall not apply.
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. M247 Standard Specification for Glass Beads Used in Pavement Markings

1.3 SUBMITTALS

- A. Submit a certificate of compliance certifying that the epoxy and/or paint supplied under the contract conforms to these specifications.
- B. Submit a certificate of compliance certifying that the beads supplied under the contract conform to these specifications.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver paint and epoxy materials to the job site unopened, in manufacture's containers legibly marked with the contents, color, batch number, date manufactured, and manufacture's name and address. Do not use material more than one year old.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Conform to WisDOT Standard Specifications for Highway and Structures Construction Sections 646.
- B. Glass Beads
 - 1. Furnish glass beads conforming to AASHTO M247, except for gradation conform to the following:

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Sieve Size	(%) Percent Passing by Weight	
	For Epoxy	For Paint
No. 20	100	95-100
No. 30	75-95	70-90
No. 40	---	60-80
No. 50	15-35	10-30
No. 80	---	0-3
No. 100	0-5	0-1

2.2 EQUIPMENT

- A. All equipment shall conform to WisDOT Standard Specifications for Highway and Structure Construction Section 646.3.2.

PART 3 – EXECUTION

3.1 SURFACE PREPARATION

- A. All surface preparation shall conform to WisDOT Standard Specifications for Highway and Structure Construction Section 646.3.1.

3.2 LINE MARKING

- A. All line marking shall conform to WisDOT Standard Specifications for Highway and Structure Construction Section 646.3.3.

END OF SECTION

SECTION 32 92 00

TURF AND GRASSES

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Topsoil
 - 2. Salvaged Topsoil
 - 3. Fertilizer
 - 4. Seeding
 - 5. Mulch

1.2 REFERENCES

- A. Association of Official Seed Analysis (AOSA)
 - 1. Rules for testing seed.

1.3 SUBMITTALS

- A. Topsoil
 - 1. Provide topsoil analysis performed in accordance with ASTM D5268 and demonstrating the topsoil meets Natural Resource Conservation Service (NRCS) specified soil types.
 - 2. Submit results of tests for nutrient levels and provide recommendations for fertilizer type and application.
- B. Fertilizer
 - 1. Furnish certification from supplier attesting to:
 - a. Brand name, chemical analysis, and guarantee of analysis.
- C. Seed
 - 1. Furnish certification of conformance with AOSA "Rules for Testing Seed" and attest to:
 - a. Mix, age, weed content, purity, and germination.
- D. Mulch Material
 - 1. Furnish sample of mulch material when requested by the Engineer.
- E. Erosion Mat
 - 1. Furnish sample of erosion mat material along with a certification of its physical properties.

PART 2 – PRODUCTS

2.1 TOPSOIL

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- A. Consists of adequate mineral content to support the growth of the intended vegetation, consists of Soils Class F-1 or F-2 (Soils and Aggregates) as required and shall meet the definition and specification stated in ASTM D5268, and meets one of the following NRCS soil textures:
 - 1. Loam.
 - 2. Sandy Loam.
 - 3. Silt Loam.
 - 4. Silty Clay Loam.
 - 5. Clay Loam.
- B. The topsoil shall consist of adequate mineral content to support the growth of the intended vegetation and shall not contain herbicides which would be detrimental for the intended use.
- C. The topsoil shall have adequate fertility for quick establishment of vegetation.
- D. The pH of the topsoil shall be between 6.0 and 7.0.
- E. Topsoil shall be free from deleterious substances.
- F. Topsoil shall be free from roots, sticks, weeds, brush, stones or other litter and waste products.
- G. Pulverize and screen the topsoil such that 100 percent passes the 1-inch (25 mm) sieve and at least 90 percent passes the No. 10 (2.00 mm).

2.2 SALVAGED TOPSOIL

- A. Consists of the natural loam, sandy loam, silt loam, silty clay loam or clay loam humus-bearing soils available from the overlying portions of the areas contemplated by the plans.
- B. Salvaged topsoil shall be free from deleterious substances, roots, sticks, weeds, brush, stones or other litter and waste products.
- C. Pulverize and screen the salvaged topsoil such that 100 percent passes the 1-inch (25 mm) sieve and at least 90 percent passes the No. 10 (2.00 mm).

2.3 FERTILIZER

- A. Fertilizer shall meet the recommendations of the supplier.

2.4 SEED

- A. Conform with the requirements of the governing authority for seeding and for restrictions on noxious weed seed.
- B. Seed mixture shall be composed of seeds of the purity, germination, and proportion by weight as follows:

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Seed Mix #10 – Heavy Soil

Percent	Variety	Min. % Purity	Min. % Germination
40	Kentucky Bluegrass	98	85
25	Red Fescue	97	85
20	Perennial Ryegrass	97	90
10	White Clover	95	90
5	Redtop	92	85
100% Total			

Seed Mix #20

Percent	Variety	Min. % Purity	Min. % Germination
6	Kentucky Bluegrass	98	85
24	Hard Fescue (varieties below)	97	85
40	Turf Type Tall Fescue (varieties below)	98	85
30	Perennial Ryegrass	97	90
100% Total			

Hard Fescue Varieties: Choose one or both:

- Scaldis Hard Fescue
- SR3100 Hard Fescue

Turf type tall fescue varieties: Choose two of the five:

- Tulsa turf type tall fescue
- Regiment turf type tall fescue
- Crossfire turf type tall fescue
- Shortstop turf type tall fescue
- SR8200 turf type tall fescue

Seed Mix #30

Percent	Variety	Min. % Purity	Min. % Germination
10	Kentucky Bluegrass	98	85
30	Red Fescue	97	85
15	Improved Fine Perennial Ryegrass	97	90
25	Hard Fescue (varieties below)	97	90
10	Salt Grass	98	85
10	Birdsfoot Trefoil	95	80
100% Total			

Seed Mix #40

Percent	Variety	Min. % Purity	Min. % Germination
35	Kentucky Bluegrass	98	85
20	Hard Fescue	97	85

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20	Red Fescue	97	85
25	Improved Fine Perennial Ryegrass	96	85
100% Total			

C. Temporary Nurse Crop

1. When required the Contractor shall furnish one of the following seed mixtures:

Species	Min. % Purity	Min. % Germination	Lbs. per Acre
Oats	98	90	80
Rye	98	85	100

2.5 MULCH

- A. Mulch shall consist of straw, hay, marsh hay, or wood chips which are free of noxious weeds and other objectionable foreign matter.
1. If wood chips are used, the mulch area shall be treated with one (1) pound of available nitrogen per 1,000 square feet.
- B. Mulch binder shall conform to one of the following:
1. Emulsified asphalt shall meet the requirements for Type SS-1 AASHTO M140.
2. Terra Tack I, or equal.

PART 3 – EXECUTION

3.1 TOPSOILING (TOPSOIL OR SALVAGED TOPSOIL)

- A. Topsoil all areas which are required to be seeded. Place topsoil to the following depth of 4 inches when settled.
- B. Topsoil placement for seeding lawns:
1. Mechanically level subgrade to allow uniform placement of topsoil.
2. Remove rocks, roots, clods, and other foreign material.
3. Place topsoil to required depth.
4. Mechanically level topsoil.
5. Rake topsoil smooth and remove all lumps.
6. Seed as required.

3.2 SALVAGED TOPSOIL STRIPPING

- A. Remove available topsoil from the site of work in such amounts and to such depths as available or required and the transporting and stockpiling of such topsoil in accordance with the plans, required in the contract or directed by the Engineer.

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- B. All areas from which topsoil is procured shall be cleared, if necessary, by means of mowing weeds or other vegetation to a height of approximately six inches and freed from any litter such as brush, rock or foreign material of objectionable size or quantity.
- C. The humus-bearing soil shall then be stripped off to such depth as available, or as necessary to produce sufficient volumes required by the contract, taking all practicable care to avoid incorporation of any of the underlying sterile soil therewith.
- D. The topsoil thus stripped from these areas will be stockpiled and leveled as directed so that it can be reclaimed.
- E. Any appreciable volumes excavated in excess of the amounts required to accomplish these requirements shall be disposed of by the Contractor at the Contractor's cost and expense.

3.3 SEEDING

- A. Selection of seed mixtures, rate of seeding and intended use of the mixtures shall be as follows:

Seed Mixture	Rate of Seeding (lbs. per 1,000 sq. ft.)	Intended Use
No. 10	3-4	Average loam or heavy clay soils
No. 20	5-6	Light, sandy or gravelly soils. All ditches, inslopes.
No. 30	5-6	For medians and on slopes generally within 15 feet of the shoulder where a salt tolerant turf is preferred.
Seed No. 40	Rate of Seeding 3-4	In urban area or other areas where a lawn type turf is desired.

- B. Seeding period shall be as recommended by the seed supplier.
- C. Seeding
 - 1. Utilize a machine or combination of machinery which will produce the following:
 - a. Apply seed uniformly at the rate specified.
 - b. Cover seed with approximately ¼ inch of topsoil.
 - c. Roll lightly.
 - d. Apply seed at right angles to surface drainage.

3.4 MULCHING

- A. Complete mulching as follows:
 - 1. Within 48 hours after seeding has been completed.
 - 2. Place all mulch uniformly to a loose depth of 1 to 1½ inches (2 to 3 tons per acre).
 - 3. Mulching operation shall begin at the top of slopes and proceed downward.
 - 4. Do not mulch under high winds.

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B. Mulching shall be secured using one of the following methods:

1. Method "A":

a. Secure mulch with heavy twine or netting.

1) Twine to be fastened with pegs or staples to form a grid of 6- to 10-foot spacing.

2. Method "B":

a. Anchor mulch in soil by means of a mulch tiller.

b. Mulch shall be impressed in the topsoil to a depth of 1½ to 2½ inches in one pass of the tiller.

3.5 SEQUENCE

A. Topsoil, seed, and mulch restoration shall be completed prior to final asphaltic concrete pavement placement.

3.6 MAINTENANCE

A. Maintain all seeded areas until all the following conditions are met.

1. Seeding: Establish a good stand of grass (uniform in density and color) satisfactory to Owner.

2. Capable of resisting erosion.

B. Watering of turf shall be included in maintenance.

END OF SECTION

SECTION 33 00 01

CONCRETE PIPE - REINFORCED

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
1. Circular storm sewer.
 2. Elliptical storm sewer pipe.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
1. M198 Joints of Circular Concrete Sewer
 2. M273 Precast Reinforced Concrete Box Sections for Culverts, Storm Drains and Sewers with less than 2 ft. of Cover Subjected to Highway Loadings
- B. American Society for Testing and Materials (ASTM):
1. C76 Standard Specification for Reinforce Concrete Culvert, Storm Drain, and Sewer Pipe.
 2. C443 Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
 3. C444 Standard Specification for Perforated Concrete Pipe
 4. C497 Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile
 5. C506 Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe
 6. C507 Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, Sewer Pipe
 7. C877 Standard Specification for External Sealing Bands for Concrete Pipe, Manholes, and Precast Box Sections
 8. C990 Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
 9. C1433 Standard Specification for Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers

1.3 SUBMITTALS

- A. Manufacturer’s certification that the material delivered has been satisfactorily tested in accordance with ASTM C497.
- B. Provide a detail design of the pipe joints and gasket.

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- C. Manufacturer's certification that culvert box sections and culvert box endwalls conform with ASTM 1433.
- D. Provide manufacturer's certification that the material for sealing bands conforms with ASTM C-877.

1.4 QUALITY ASSURANCE

- A. Pipe shall be available to Owner's Representative for inspection.
- B. Material brands and/or pipe shall not be mixed.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Upon delivery insure that the pipe is clearly marked with the following information:
 - 1. Specification designation.
 - 2. Pipe class or strength designation.
 - 3. Date of manufacture.
 - 4. Name or trademark of manufacturer.
 - 5. Plant identification.
 - 6. Letters E or Q indicating elliptical or quadrant reinforcement.
- B. Store material to protect from damage and do not stack in layers.

PART 2 – PRODUCTS

2.1 CIRCULAR PIPE

- A. Conform to ASTM C76 of the classification stated in the drawings.
- B. Provide bell and spigot joints conforming to ASTM C443 with flat rubber gaskets meeting standard gasket requirements.

2.2 ELLIPTICAL PIPE

- A. Conform to ASTM C507 of the classification stated on the drawings.
- B. Provide tongue and groove joints with flexible plastic Type B gaskets conforming to AASHTO M198 and joint sealants conforming to ASTM C990.

PART 3 – EXECUTION

3.1 APPLICATION

- A. Storm Sewer

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Concrete Pipe - Reinforced

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1. Use circular pipe ASTM C76 "B" or "C" wall unless stated otherwise on drawings.
2. Use elliptical pipe, arch pipe and box sections only where shown on drawings.
3. Use perforated pipe only where shown on drawings.

3.2 FIELD QUALITY CONTROL

- A. Inspect and reject pipe for the following defects:
1. Improper marking.
 2. Fractures or cracks passing through wall, except for a single end crack that does not exceed depth of joint.
 3. Defects indicating non-compliance with proportioning, mixing and molding of the concrete.
 4. Surface defects indicating honeycombed or open texture.
 5. Ends are not normal to the wall and center line of the pipe.
 6. Damaged or cracked ends.
 7. Any continuous crack having a width of 0.01 inch or more and extending for a length of 12 inches or more.

END OF SECTION

SECTION 33 00 02

POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. PVC pipe for mainline gravity sewer.
 - 2. PVC pipe for sewer services.
 - 3. PVC pipe for water main
 - 4. PVC pipe for pressure sewer (force main)
- B. The products described are not installed under this Section.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A307-00 Specification for Carbon Steel Bolts and Studs, 60,000psi Tensile Strength
 - 2. D1784 Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride)(CPVC) Compounds
 - 3. D1785 Specifications for Poly (Vinyl Chloride) (PVC) Plastic Pipe Schedules 40, 80, and 120
 - 4. D2241 Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)
 - 5. D2466 Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
 - 6. D2467 Specification for Socket-Type Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
 - 7. D2564 Standard Specifications for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe Systems
 - 8. D2672 Standard Specifications for Joints for IPS PVC Pipe Using Solvent Cement
 - 9. D2855 Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings
 - 10. D3034 Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
 - 11. D3139 Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
 - 12. D3212 Specifications for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
 - 13. F477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
 - 14. F679 Specification for Poly (Vinyl Chloride) (PVC) Large Diameter Plastic Gravity Sewer Pipe Fittings

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B. American Water Works Association (AWWA)

1. C104 Cement Mortar Lining for Cast Iron and Ductile Iron Pipe and Fittings for Water
2. C110 Gray Iron and Ductile Iron Fittings, 3-inch through 48-inch for Water and Other Liquids
3. C111 Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Rittings
4. C153 Ductile-Iron Compact Fittings, 3-inch through 16-inch, for Water and Other Liquids
5. C900 Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch through 12-inch for water
6. C905 Standard for Polyvinyl Chloride (PVC) Water Transmission Pipe, Nominal Diameters 14-inch through 36-inch

1.3 SUBMITTALS

A. Submit the following:

1. Certification of productions date of all materials.
2. Manufacturer's certification that the materials delivered were manufactured, sampled, tested, and inspected in accordance with this specifications and appropriate referenced standards.
3. Product data sheet.
4. Manufacturer's recommendations for assembly.

1.4 QUALITY ASSURANCE

A. Make pipe available to the Engineer's Representative for inspection.

B. Pipe shall be considered defective and will be rejected when:

1. Pitted or cratered.
2. Flaking.
3. Straightness varies more than ½ inch in 10 feet.
4. Any defect which prevents assembly according to manufacturer's recommendations.
5. Not utilized within six months of date of production. The Engineer may extend this date to twelve (12) months if property stored.
6. Pipe is not properly marked.

C. Material brands and/or pipe classes shall not be mixed.

D. Pipe Marking – pipe and fittings shall be marked as follows:

1. Manufacturer's name, trademark or logo.
2. Nominal size.
3. PVC cell classification.
4. Pipe stiffness designation, dimension ration, or schedule size and pressure class.
5. ASTM or AWWA specification designation.
6. National Sanitation Foundation approval (pipe for potable water).

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7. Production date.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inspect the pipe shipment to identify shifted loads, broken packaging or rough treatment, which could be an indication of damage.
- B. Unload the pipe in a manner which will not put stress on the pipe or strike anything causing damage.
- C. Place and store the pipe package units on level ground stacked no more than 8 feet high. Do not store close to heat sources.
- D. Store gaskets away from excessive exposure to heat, direct sunlight, ozone, oil or grease.
- E. Store Solvent cement in tightly sealed containers away from excessive heat.
- F. Handle pipe in a manner to prevent impact blows, abrasion damage, gouging or cutting.
- G. When handling pipe in cold weather, provide additional care to prevent damage due to impact. Impact strength is reduced in cold weather.

PART 2 – PRODUCTS

2.1 NON-PRESSURE RATED PIPE

- A. Mainline Gravity Sewer and Sewer Services
 - 1. Pipe fittings and repair couplings shall be manufactured and tested in accordance with the following standards:
 - a. Sizes 8 inch through 15 inch and depths up to 30 feet: ASTM D3034, PSM SDR-35 PVC
 - b. Sizes 18 inch through 48 inch and depths up to 30 feet: ASTM F679, PS46 PVC, T-1 minimum cell classification
 - 2. Elastomeric Gaskets: Conform with ASTM F477
 - 3. Elastomeric Joints: Conform with ASTM D3212
 - 4. Solvent Weld Joints: Not permitted.
 - 5. Repair couplings for transition between ABS composite pipe and PVC shall be Fernco eccentric couplings with stainless steel shear rings, bands, nuts, and housings.
- B. Sewer Services
 - 1. Pipe shall be manufactured and tested in accordance with ASTM D2665.
 - 2. Fittings to conform with ASTM F1866.
 - 3. Pipe for sizes 4-inch and 6-inch: Schedule 40.
 - 4. Solvent Weld Joints: ASTM D2672.
 - a. Solvent Cements: ASTM D2564
 - b. Joints shall be made in accordance with ASTM D2855.

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2.2 PRESSURE RATED PIPE

A. Water Main

1. Manufacture and test the pipe and joints in accordance with the following standards:
 - a. Pipe sizes 4-inch through 12-inch: AWWA C900 pressure Class 235, thickness Class DR 18.
 - b. Pipe sizes 14-inch through 36-inch: AWWA C905, pressure Class 235, thickness Class DR 18.
2. Elastomeric gaskets shall be manufactured as defined in ASTM F477.
3. Joints shall conform to ASTM D3139.
4. Fittings:
 - a. Standard ductile iron mechanical or push-on joint conforming to AWWA C110 or compact ductile iron mechanical or push-on joint conforming to AWWA C153.
 - b. Cement mortar lined conforming to AWWA C104.
 - c. Rubber gasket joints conforming to AWWA C111.
 - d. Tee-head bolts and hexagonal nuts shall be 304 stainless steel with anti-seize mechanism.

B. Thrust Restrained Joint PVC pipe for Trenchless Construction of Water Main

1. Manufacture and test the pipe and joints in accordance with the following standards:
 - a. Pipe sizes 4-inch through 12-inch: AWWA C900, pressure Class 150, thickness Class DR 18.
 - b. Pipe sizes 14-inch through 36-inch: AWWA C905, pressure Class 150, thickness Class DR 18.
2. Provide twin elastomeric gaskets manufactured in accordance with ASTM F477.
3. Design joint so be used with non-metallic couplings with high-strength flexible thermoplastic splines inserted into mating precision-machined grooves in the pipe and coupling to provide full 360 degree restraint.
4. Fittings:
 - a. Standard ductile iron mechanical or push-on joint conforming to AWWA C110 or compact ductile iron mechanical or push-on joint conforming to AWWA C153.
 - b. Cement mortar lined conforming to AWWA C104.
 - c. Rubber gasket joints conforming to AWWA C111.
 - d. Bolts and nuts shall be 304 stainless steel with anti-seize mechanism.

END OF SECTION

SECTION 33 00 03

HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Pressure pipe and fittings for water distribution.

1.2 REFERENCES

- A. American Water Works Association (AWWA)
 - 1. C901 Standard for Polyethylene (PE) Pressure Pipe and Tubing, ½ in.(13 mm) Through 3 in. (76 mm) for Water Service
 - 2. C906 Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 in. (100 mm) Through 63 in. (1,575 mm), for Water Distribution and Transmission
- B. American Society for Testing and Materials (ASTM):
 - 1. A307-00 Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
 - 2. D638 Standard Test Method for Tensile Properties of Plastics
 - 3. D1238 Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
 - 4. D1505 Standard Test Method for Density of Plastics by the Density-Gradient Technique
 - 5. D1598 Standard Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure
 - 6. D1599 Standard Test Method for Resistance to Short-Time Hydraulic Failure Pressure of Plastic Pipe, Tubing and Fittings
 - 7. D2122 Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings
 - 8. D2290 Standard Test Method for Apparent Hoop Tensile Strength of Plastic or Reinforced Plastic Pipe by Split Disk Method
 - 9. D2837 Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials
 - 10. D3261 Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Pipe and Tubing
 - 11. D3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

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C. National Sanitation Foundation

1. NSF No. 14 Plastics Piping Components and Related Materials

1.3 SUBMITTALS

A. Product Data

1. Provide product data on pipe and fittings including dimensions.

B. Quality Assurance/Control Submittals

1. Certification that the tests required by this specification section were performed and meet the stated minimum requirements.
2. Evidence from the pipe manufacturer that the personnel completing joints is qualified to perform the thermal butt fusion.
3. Manufacturer's instructions and procedures for joining the pipe and pipe fittings.

1.4 QUALITY ASSURANCE

A. Pipe shall be available to Owner's Representative for inspection.

B. Pipe shall be considered defective and will be rejected when:

1. Any defect which prevents assembly according to manufacturer's recommendations.
2. Not utilized within six months of date of production. The Engineer may extend this date to twelve (12) months if property stored.
3. Pipe is not properly marked.

C. Material manufacturer, pipe diameters and pressure classes shall not be mixed.

D. Personnel completing the joints shall be certified by the pipe manufacturer as being qualified to perform the thermal butt fusion.

1.5 DELIVERY, STORAGE AND HANDLING

A. Upon delivery inspect pipe and fittings for damage, cracks, holes, or foreign inclusions.

B. Store pipe and accessories on flat level ground with no rocks or other objects under the pipe.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Pipe Sizes 4-inch and Larger

1. Pipe and fittings shall be high density polyethylene (HDPE) meeting AWWA C906 standards.
2. Materials used for the manufacture of the HDPE pipe and fittings shall be made from a PE 3608 resin compound meeting the minimum cell classification of PE 345434C in accordance

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with ASTM D3350 and the hydrostatic design basis of 1,600 psi determined in accordance with ASTM D2837.

3. Provide ductile iron outside diameter of nominal size shown on the Drawings or stated in the Bid Schedule.
4. Provide pipe with a dimension ratio (DR) of 9, pressure class 200.
5. Pipe shall be installed within 6 months of the production date.

B. Pipe sizes up to 2 inches:

1. Polyethylene (PE) tubing shall conform to the requirements of AWWA C901, PE 3608, DR 9.

C. Pipe sizes greater than 2 inches up to 3 inches:

1. Polyethylene (PE) pipe shall conform to the requirements of AWWA C901, PE 3608, DR 9.

D. Fittings

1. Fittings shall meet the requirements of AWWA C901 or AWWA C906 whichever applies.
2. Fittings for pipe greater than 3 inches diameter shall be HDPE molded fittings and HDPE fabricated fittings of the same pressure rating and outside diameter as the connecting pipe.
 - a. The pipe manufacturer shall mold or fabricate and supply all HDPE molded fittings, fabricated fittings, accessories and adapters required to perform the Work. No Contractor fabricated fittings shall be used.
 - b. Molded fittings shall be manufactured with thermal butt-fused joints meeting the requirements of ASTM D3261.
 - c. Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings.
3. Fittings for pipe 3 inches diameter or less shall be capable of restraining PE pipe from pullout with the same pressure class as the connecting pipe.
 - a. Provide metal compression connections with ferrule and compression nut.
 - b. Provide a stainless steel insert stiffener to insert inside the tube.
 - c. Insert fittings shall not be used.

2.2 PIPE IDENTIFICATION

- A. Mark the pipe and fittings with the appropriate standard AWWA C901 or AWWA C906 whichever is applicable to affirm the product was manufactured, inspected, sampled, and tested in accordance with the standard.
- B. Pipe and fittings shall be marked with the following at intervals between markings of no greater than 5 feet:
 1. Nominal size and OD based on ductile iron OD sizing.
 2. Standard material code designation of PE 3408 or PE 3608 (as applicable).
 3. Dimension ratio.
 4. Pressure class 200
 5. AWWA C901 or AWWA C906, whichever is applicable.
 6. Manufacturer's production code to include day, month, year produced.

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2.3 JOINTS

- A. HDPE Pipe and Pipe Fittings Greater than 3 inches Diameter
 - 1. Pipe and pipe fittings shall be designed for joining by thermal butt fusion.
 - 2. Joining method shall be capable of conveying water at the pressure designated by the pressure class.
 - 3. Joints shall be pipe end to pipe end and pipe end to fitting.
- B. Transition from HDPE to Ductile Iron Pipe or PVC Pipe
 - 1. Provide a molded flange connector adaptor with a ductile iron back-up flange for making a flange to flange connection. If the connecting pipe is plain end then use an EBAA Iron Inc. Megaflange 2100 Restrained Flange Adaptor on the connecting pipe.
 - 2. For buried connections use a mechanical joint connection adaptor with a mechanical joint flange backup connecting to a mechanical joint pipe ductile iron pipe and when connecting to a plain end PVC pipe provide an EBAA Iron Inc. use the series 15PF00 for Restraint for C900 PVC Pipe.
 - a. Provide extended T-bolts for the connection.
 - b. Provide stainless steel stiffener inserted in the pipe.
 - 3. From the transition joint pipe restrains shall be provided at all joints within the following distances of the transition joint:
 - a. 6" diameter pipe - 15 linear feet.
 - b. 8" diameter pipe - 19 linear feet.
 - c. 10" diameter pipe - 24 linear feet.
 - d. 12" diameter pipe - 28 linear feet.
 - e. 14" diameter pipe - 33 linear feet.
 - f. 16" diameter pipe - 36 linear feet.
- C. Transition from HDPE to stainless steel.
 - 1. Provide a molded flange connector adaptor with a stainless steel backup flange for making a flange to flange connection.
 - 2. Bolts and nuts shall be 304 stainless steel with anti-seize mechanism.

2.4 SOURCE QUALITY CONTROL

- A. The following tests shall be performed on the production pipe:
 - 1. Measurement of pipe dimensions in accordance with ASTM D2122
 - a. Pipe dimensions shall be within the tolerances stated in AWWA C906 or AWWA C901 whichever is applicable.
 - b. Wall thickness variability in any diametrical cross section of the pipe shall not exceed 12%.
 - c. The outside diameter measured at the cut-end of the pipe length shall not be more than 1.5% smaller than the average outside diameter specified in AWWA C906 or AWWA C901, whichever is applicable, when measured at any point not closer than 12 inches to the squarely cut-end of the pipe length.

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2. Thermal stability of a pipe specimen from mid-wall area in accordance with the method described in ASTM D3350. The minimum induction temperature shall be 220°C.
 3. Ring-tensile strength test of pipe specimens tested in accordance with ASTM D2290. Tensile strength shall be not less than 2,900 psi.
 4. Quick burst test of pipe specimens in accordance with ASTM D1599. The test pressure at failure shall not be less than that which results from the minimum hoop stress value of 2,900 psi.
 5. Elongation at break test of five pipe specimens cut equally spaced around the circumference of the pipe in the longitudinal direction tested in accordance with ASTM D638 using a cross-head separation of 2 inches per minute. The elongation at break for each test specimen shall not exceed 400%.
 6. Five-second pressure test of a section of pipe tested in accordance with ASTM D1598. The pipe shall not burst, crack, spit, or otherwise fail a test pressure four times the pipe pressure class applied for five seconds. This test is also required for fittings.
 7. Melt index of pipe specimens tested in accordance with ASTM D1238. The resultant index shall be less than 0.15.
 8. Density of pipe specimens tested in accordance with ASTM D2839. The result shall be minimum 0.955 grams per cubic centimeter.
 9. Bend-back test in accordance with AWWA C901 or AWWA C906 whichever is applicable. Any indication of cracking or crazing shall reject the pipe.
- B. Test the PE compounds by an accredited testing agency in accordance with the applicable requirements of NSF No. 14 to demonstrate the materials are suitable for use with potable water.

PART 3 – EXECUTION

3.1 POLYETHYLENE PIPE INSTALLATION

- A. In addition to the applicable sections for installing piping, conform to the following:
1. Thermal butt fuse all joints as per ASTM D2657.
 2. Utilize certified personnel for jointing operation.

END OF SECTION

SECTION 33 00 04

CORRUGATED METAL CULVERT PIPE (CMCP) AND FITTINGS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Circular corrugated steel pipe.
 - 2. Flared end sections.

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO)
 - 1. M36 Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains
 - 2. M190 Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches
- B. American Society for Testing and Materials (ASTM):
 - 1. A760 Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

1.3 SUBMITTALS

- A. Shop Drawings
 - 1. Submit shop drawings for sectional plate pipe, sectional plate arches, or sectional plate pipe arches.
 - 2. Include shop detail, erection, and other drawings showing dimensions, sizes of material, details, and other information necessary for the complete fabrication and erection of the metal work
- B. Quality Assurance/Control Submittals
 - 1. Provide manufacturer's certification.

1.4 QUALITY ASSURANCE

- A. Mark each piece of pipe as follows:
 - 1. Manufacturer's name or trademark.
 - 2. Date of manufacture.
 - 3. Pipe size.
- B. Provide manufacturer's certification that samples representing each lot have been tested and inspected in accordance with ASTM A760/AASHTO M36 have been found to meet the requirements for material required per this Specification Section.

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1.5 DELIVERY, STORAGE AND HANDLING

A. Shipping, Handling and Unloading

1. Package pipe and fittings to prevent damage during shipping.
2. Fittings shall be on a pallet.
3. Use lifts for loading or unloading to avoid shock.
4. Do not drop materials.
5. Do not drag pipe or strike with hard objects which could scratch coatings.

B. Acceptance at the Site.

1. Inspect pipe and pipe fittings when delivered to the site and prior to installation.
2. Reject pipe for any of the following:
 - a. Uneven laps.
 - b. Variation from a straight centerline of more than ½ inch.
 - c. Ragged or diagonal sheared edges.
 - d. Loose bolts or rivets.
 - e. Fasteners which are unevenly lined.
 - f. Poorly formed seams.
 - g. Illegible brand marking.
 - h. Poorly formed seams.
 - i. Dents or bends in the metal.
 - j. Elliptical shape on round pipe.
 - 1) The average inside diameter of the pipe shall not vary more than ½ inch or 1 percent, whichever is greater.
 - 2) Measure on the inside crest of the corrugations.
 - 3) Clearly mark rejected pipe as "Rejected" with OSHA yellow paint.

C. Storage and Protection

1. Provide safe storage for material.
2. Store materials to keep free from dirt and foreign matter.
3. Store fittings in a manner that will allow them to drain and protect them from freezing.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Pipe Material

1. Corrugated steel pipe material, manufactured and fabricated in accordance with ASTM A760/AASHTO M36.
2. Metallic Coating – Zinc (galvanized).
3. Circular pipe shall be Type I.
4. Corrugation size 2 2/3" x ½" for pipe sizes 12" diameter through 84" diameter.
5. Material sheet thickness:
 - a. 6" diameter - 0.052 inches
 - b. 8" diameter to 21" diameter – 0.064 inches

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- c. 24" diameter to 30" diameter – 0.079 inches
- d. 36" diameter to 54" diameter – 0.109 inches
- e. 60" diameter to 72" diameter – 0.138 inches
- f. 78" diameter to 96" diameter – 0.168 inches
- 6. Flared end sections shall meet the same requirements as the connecting pipe.

B. Gaskets

- 1. Band of expanded rubber in accordance with ASTM A760/AASHTO M36.

C. Band Connectors

- 1. Corrugations to match the pipe sections in accordance with ASTM A760/AASHTO M36.

D. Coating

- 1. Provide Type A, fully bituminous-coated pipe in accordance with AASHTO Standard M190.

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 33 00 05

DOUBLE AND TRIPLE WALLED POLYPROPYLENE PIPE

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Double walled polypropylene pipe for mainline gravity storm sewer.
 - 2. Triple walled polypropylene pipe for mainline gravity storm sewer.
- B. The products described are not installed under this Section.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
 - 2. F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
 - 3. F2736 Standard Specification for 6 to 27 in. (152 To 762 mm) Polypropylene (PP) Corrugated Single Wall Pipe and Double Wall Pipe
 - 4. F2764 Standard Specification for 30 to 60 in. [750 to 1500 mm] Polypropylene (PP) Triple Wall Pipe and Fittings for Non-Pressure Sanitary Sewer Applications

1.3 SUBMITTALS

- A. Submit the following:
 - 1. Certification of productions date of all materials.
 - 2. Manufacturer's certification that the materials delivered were manufactured, sampled, tested, and inspected in accordance with this specifications and appropriate referenced standards.
 - 3. Product data sheet.
 - 4. Manufacturer's recommendations for assembly.

1.4 QUALITY ASSURANCE

- A. Make pipe available to the Engineer's Representative for inspection.
- B. Pipe shall be considered defective and will be rejected when:
 - 1. Pitted or cratered.
 - 2. Flaking.
 - 3. Straightness varies more than ½ inch in 10 feet.

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4. Any defect which prevents assembly according to manufacturer's recommendations.
5. Not utilized within six months of date of production. The Engineer may extend this date to twelve (12) months if property stored.
6. Pipe is not properly marked.

C. Material brands and/or pipe classes shall not be mixed.

D. Pipe Marking – pipe and fittings shall be marked as follows:

1. Manufacturer's name, trademark or logo.
2. Nominal size.
3. Pipe stiffness designation, dimension ration, or schedule size and pressure class.
4. ASTM specification designation.
5. Production date.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inspect the pipe shipment to identify shifted loads, broken packaging or rough treatment, which could be an indication of damage.
- B. Unload the pipe in a manner which will not put stress on the pipe or strike anything causing damage.
- C. Place and store the pipe package units on level ground stacked no more than 8 feet high. Do not store close to heat sources.
- D. For onsite gasket installation on pipe, store gaskets away from excessive exposure to heat, direct sunlight, ozone, oil or grease.
- E. For gaskets installed on the pipe offsite, keep the protective wrap on gaskets until installation.
- F. Handle pipe in a manner to prevent impact blows, abrasion damage, gouging or cutting.
- G. When handling pipe in cold weather, provide additional care to prevent damage due to impact.

PART 2 – PRODUCTS

2.1 NON-PRESSURE RATED PIPE

A. Mainline Gravity Sewer and Sewer Services

1. Pipe fittings and repair couplings shall be manufactured and tested in accordance with the following standards:
 - a. Sizes 8 inch through 27 inch and depths up to 20 feet: ASTM F2736, PSM SDR-35 PVC
 - b. Sizes 30 inch through 60 inch and depths up to 20 feet: ASTM F2764, PS46 PVC, T-1 minimum cell classification
2. Pipe shall have a minimum pipe stiffness of 46 PSI.

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- 3. Minimum height of cover to the top of pipe to the existing elevation or proposed finished elevation (whichever is less) shall be two feet.
 - 4. Elastomeric Gaskets: Conform with ASTM F477
 - 5. Elastomeric Joints: Conform with ASTM D3212
 - 6. Solvent Weld Joints: Not permitted.
- B. Sewer Services
- 1. 4" and 6" pipe shall be Schedule 40 PVC and conform to section 33 00 02, Polyvinyl Chloride (PVC) Pipe and Fittings.
 - 2. Branch laterals shall be designed to accept SDR 35.

END OF SECTION

SECTION 33 05 05

UTILITY PIPING – GENERAL PROVISIONS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Safety and related matters.
 - 2. Interference with the work of others
 - 3. Existing utilities and structures.
 - 4. Conflict with utilities.
 - 5. Work on streets, highways, railroad right-of-way, and work in waterways and wetlands.
 - 6. Easements.
 - 7. Protection of property markers.
 - 8. Cold weather.
 - 9. Cleaning of the work.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 SAFETY AND RELATED MATTERS

- A. Comply with all federal, state, and local rules and regulations concerning:
 - 1. Construction safety including confined entry.
 - 2. Noise control.
 - 3. Dust and smoke control.
 - 4. Stormwater.
- B. Access to Services
 - 1. Insure free access to all fire hydrants, valve boxes, manholes, curb stops, fire alarms, police call boxes, etc.
- C. Protection of Work, Public, and Property
 - 1. Provide safe passage for local vehicular and pedestrian traffic.
 - 2. Provide vehicular and pedestrian access to properties abutting street where utilities are being constructed.
 - 3. Provide all necessary barricades, warning lights, and signs, signals, flagmen, etc. in accordance with federal, state, and local regulations.
- D. Organize and perform construction activities to minimize the creation of airborne dust and the tracking of mud and dirt into public streets.
 - 1. If dust is generated, implement control measures such as:

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- a. Street sweeping and cleaning.
- b. Water sprinkling or application of chemical dust suppressant.
- c. Cover dusty materials in piles or in transit.
- d. Protect buildings that may be adversely affected.
- e. Protect new and existing machinery, motors, instrument panels or similar equipment with suitable dust screens.
 - 1) Provide proper ventilation with dust screens.

3.2 INTERFERENCE WITH THE WORK OF OTHERS

- A. Arrange work in a manner as to not interfere with any other work.
 - 1. Coordinate work with other contracts through Owner's Representative.

3.3 EXISTING UTILITIES AND STRUCTURES

- A. The existing utilities and structures as shown on the drawings may not be all inclusive.
- B. The locations of existing utilities and structures are shown on the drawings for information to the Contractor, but should not be construed as a representative of the exact location.
- C. Maintain or provide:
 - 1. Service of water, sewers, gas, culverts, drains, electricity, or other utilities encountered.
 - 2. Temporary connections and outlets for all private and public utilities that are interrupting construction.
 - 3. Disposal for all drainage and sewage resulting from relocations and/or interruptions in accordance with regulations and permits of the controlling governmental agency(s).
- D. Correct any damage to below or above ground utilities and structures encountered during construction.

3.4 CONFLICT OF UTILITIES

- A. Separation of Water Mains and Sewers
 - 1. The following separations shall be minimum:
 - a. Parallel.
 - 1) 8 feet, measured center to center.
 - b. Vertical (when pipelines cross or when horizontal clearance is impossible).
 - 1) Water Main Below a Sewer: 18 inches clear. (Both pipes must be constructed of water main quality pipe and joints for ten feet either side of the crossing).
 - 2) Water Main Above a Sewer: 6 inches clear.
 - 2. When crossing a sewer, center a full length of water main or sewer to position joints as far as possible from sewer.
- B. Utility Location
 - 1. Coordinate relocation of any utilities with the work schedule.

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C. Crossing Existing Water Services

1. If water services are crossed during utility construction, and located above the utility, the Engineer may direct the contractor to insulate the water service.
2. If the depth of cover over the water service is less than six feet, insulate as required by the Engineer.

3.5 WORK ON STREET, HIGHWAY, RAILROAD RIGHT-OF-WAY AND WORK IN WATERWAYS AND WETLANDS

- A. Work on street, highway, railroad right-of-ways, or in waterways and wetlands are subject to provisions of special permits required and issued by governmental agencies having jurisdiction in addition to requirements of specifications for this work.
- B. Do not commence Work prior to receiving required permits.
- C. Provide special bonds when required by permit.
- D. Notify controlling authority prior to beginning and after completing any construction in right-of-ways or streams.
- E. Bear all expenses related to permit compliance.

3.6 EASEMENTS

- A. Owner will provide all easements.
- B. Work on the easements shall be in strict compliance with the terms of the easements agreements.
- C. Owner, easement grantee, and Contractor shall be in full agreement on the method of execution prior to beginning work.
 1. Only structures, trees, shrubs, and other obstructions are to be removed as mutually agreed.
 2. Restoration shall be equal to original condition or the conditions of the agreement.

3.7 PROTECTION OF ESTABLISHED PROPERTY MARKERS

- A. Protect all property markers (iron pipe, concrete, or wood posts, etc.) from movement from original position.
- B. Pay costs of replacement of property markers moved during construction.
- C. Re-establishment of removed property lot pins will be done by a Registered Land Surveyor in accordance with pertinent sections of the State of Wisconsin Statutes. The City of De Pere will have the right of approval of the Registered Land Surveyor. Certification of proper re-establishment of lot pins will be provided by the Contractor.

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3.8 COLD WEATHER

- A. The Engineer reserves the right to order pipe laying discontinued whenever, in the Engineer's opinion, there is a danger of the quality of work being impaired because of cold weather.
- B. The Contractor shall be responsible for heating the pipe and jointing materials so as to prevent freezing of joints.
- C. No pipe shall be laid on frozen ground.
- D. When pipes are to be laid with rubber gaskets in cold weather, the gasket material shall be sufficiently warmed so as to facilitate making a proper joint.
- E. When pipes are to be laid with a solvent cemented joint in cold weather, care shall be taken to ensure the removal of all ice and snow from the jointed area prior to the application of the solvent cement.

3.9 CLEANING OF WORK

- A. Pipelines
 - 1. Interiors of utility pipelines (including existing) affected by construction procedures shall be free of all extraneous materials.
 - 2. Pipelines shall be left clean at the completion of work.
- B. Final Cleanup and Inspection
 - 1. Remove the following:
 - a. Temporary offices and storage structures.
 - b. Temporary fencing and roads.
 - c. Surplus material and rubbish.
 - d. Material (liquid or solid) resulting from cleaning operations.
 - 2. The Engineer and Owner may make a final inspection of the work during the progress of the final cleaning and repairing. Any portion of the work accepted by the Owner shall be kept clean by the Contractor until final acceptance of the entire project.
 - 3. When the Contractor has completed the final cleaning operation, he shall notify the Engineer in writing that he is ready for final inspection.
 - 4. After written notification to the Contractor, the Owner may elect to remove from the work site and/or adjacent properties, all rubbish, surplus or waste materials which the Contractor has neglected or refused to remove, and deduct the costs of removal from any monies due the Contractor.
 - 5. During construction, the Contractor shall clean up as the Work proceeds. The premises shall be kept free of accumulations of waste materials and earth, rubbish and other debris resulting from the work. If in the judgment of the Engineer, the Contractor fails to keep the sites clean as described herein above, the Engineer will recommend to the Owner withholding all progress payments until the sites have been cleaned up to the Engineer's satisfaction.

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6. All debris and waste materials and salvaged materials, unless required by the Specifications to be reused or delivered to the Owner, shall become the property of the Contractor and shall be removed by the Contractor from the construction sites.
7. Where truck crossings occur over sidewalks, they shall be kept free from all spilled earth and grading materials and shall at all times be maintained in a passable condition for foot traffic.
8. Generally, the transportation of materials to and from the sites shall be over regular streets. When the Contractor's operations or that of its shippers, haulers, or subcontractors are such that dirt, mud, or debris is spilled or otherwise deposited on streets, driveways, sidewalks, or other thoroughfares, the Contractor shall clean up the large chunks before the close of every day's operations or before it is broken up or becomes impacted on the surface. In case of dispute or Contractor's failure to perform this cleanup work, the Owner may clean the streets and walks, remove the rubbish, etc., and will charge the cost to the Contractor, by withholding monies due to cover all charged work.
9. After completion of work in any of the site work areas, the Contractor will remove all waste materials, rubbish and debris from and about the premises as well as all tools and surplus materials, and will leave the sites clean and ready for occupancy by the Owner. The Contractor will restore to their original condition any roads, utilities, walks, buildings, etc. disturbed or damaged by the Contractor's operations.
10. Open burning of debris will not be permitted unless specifically authorized in writing by the Owner, and then only following state, municipal or other local codes, ordinances, rules or regulations.
11. Payment for cleaning up and complying with all items in this Section shall be made incidental to construction.

END OF SECTION

SECTION 33 05 23

TRENCHLESS EXCAVATION CONSTRUCTION

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Auger horizontal earth boring (boring and jacking).
 - 2. Horizontal directional drilling.
 - 3. Compaction methods.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. A139 Standard Specification for Electric-Fusion (Arc) – Welded Steel Pipe (NPS 4 and over)

1.3 SUBMITTALS

- A. Certificate of compliance for the steel casing pipe.
- B. Horizontal and vertical location of the installed pipe during horizontal directional drilling.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Steel Casing Pipe
 - 1. Meets the requirements of ASTM A139, Grade B.
 - 2. No protective coating.
 - 3. No hydrostatic test required.
 - 4. Pipe shall be new and unused.
 - 5. Pipe shall be straight and round.
 - 6. Beveled ends for butt welding.
 - 7. Straight seam or seamless pipe.
 - 8. Minimum yield strength of 35,000 psi.
 - 9. Pipe wall thickness to be determined by the Contractor designed for loads due to jacking and E80 loadings with the following minimums:

Nominal Pipe Diameter (inches)	Nominal Wall Thickness (inches)
Under 14	0.250
14 and 16	0.281
18	0.312

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20	0.344
24	0.406
26	0.438
30	0.469
32	0.500
36	0.532
42	0.563

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Auger Horizontal Earth Boring (Boring and Jacking)
1. This method is to be used for the installation of a steel casing pipe under roads, railroads, streams and other obstacles as shown on the drawings.
 2. Provide boring and receiving pits meeting the requirements of section "Trenching, Backfilling and Compacting."
 3. The grades and slopes of the casing shall conform to the drawings.
 - a. Use a grade control head where grade is critical for sanitary and storm sewer.
 - b. Provide a water level or other device to measure the grade of the pipe casing while it is being installed.
 - c. Determine the grade of each end of the installed casing prior to removal of equipment.
 4. Take care to ensure that developed thrust pressures do not disturb existing utilities in or around the bore pit area.
 5. In soft unstable soil use an auger of slightly smaller diameter than the inside diameter of the casing so as not to create a void between the casing and the soil.
 6. Pressure grout the void between the casing and the bore hole, if the outside diameter of the casing is over-excavated.
 7. The casing pipe diameter shall be a minimum of 6" larger than the bell diameter of the carrier pipe.
 8. Install casing horizontally and vertically to an accuracy of +0.5% of the length of the casing. Use an oversized casing where line and grade of the carrier pipe cannot be provided within this accuracy.
 9. Provide continuous circumferential butt welds for a watertight straight and true casing pipe.
 10. Support and brace the carrier pipe to prevent shifting.
 11. Provide flowable fill between casing and carrier pipe conforming to the requirements for pipe abandonment under Section 31 05 10.
- B. Horizontal Directional Drilling
1. This method is to be used for installation of the carrier pipe under roads, railroads, streams and other obstacles as shown on the drawings.
 2. The drilling process shall be by mechanical cutting using a drill bit (cutting head) capable of drilling in rock.
 3. A bentonite slurry shall be used to transport drill cuttings to the surface, stabilize the hole against collapse, lubricate and cool the cutting head.

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4. The cutting head shall provide directional steering and monitoring of the actual position for a pipeline that is not straight.
5. During drilling of the pilot hole, continuously monitor the location of the cutting head and record locations at a maximum of 20 foot intervals to be used for as-built information.
6. The pilot hole exit shall provide an accuracy of 5 feet left or right, 1 foot up or down, and -5 feet to +15 feet in length from that shown on the drawings.
7. Provide tracer wire on carrier pipe.
8. Fill the annular space between the borehole and the carrier pipe with bentonite slurry.
9. Bentonite Slurry and Cuttings:
 - a. Collect slurry and cuttings by a mobile spoils recovery equipment and removed from the site.
 - b. Dispose of spoils at an acceptable site.
 - c. Do not dispose of drill cuttings (spoils) into sanitary, storm or other public drainage system.
 - d. Do not permit spoils to flow over land and contain all materials.
 - e. Upon completion of the boring and pipe installation, remove all spoils from the starting and termination pits. Restore pits to their original condition.
 - f. Cover stockpiled material when not being used to prevent runoff.
 - g. The pilot hole, preream, and pullback operations shall be in one continuous operation.

C. Compaction Methods

1. Restricted to use for lines smaller than 4" diameter in compressible soil conditions and less than 50 feet in length.
2. Do not use the backhoe bucket to push the tool or pipe.
3. Push rod, rotary or percussion methods are acceptable when the grade and slope is not critical.
4. Install the pipe horizontally and vertically to an accuracy of +1% of the length of the boring.
5. Provide boring and receiving pits meeting the requirements of section "Trenching, Backfilling and Compacting."
6. Where appropriate soil conditions permit use of compaction methods for installation of sewer laterals (4" and 6") to required grades, the following applies:
 - a. May use rotary method with track-type boring unit utilizing a rigid solid drill stem.
 - b. May use percussion method utilizing a launching platform and sighting device to obtain proper alignment.
 - c. Grade shall be maintained between 1.04% and 2.08%.
 - d. If grades cannot be maintained using these methods, then install using horizontal directional drilling.

END OF SECTION

SECTION 33 11 00

WATER DISTRIBUTION SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Underground installation of pressure pipe, fittings and appurtenances.
 - 2. Fire Hydrants
 - 3. Valves
 - 4. Polyethylene encasement for ductile iron pipe and fittings
 - 5. Tracer wire
 - 6. Insulation for pipe frost shield
 - 7. Disinfection of water mains.

1.2 REFERENCES

- A. American Water Works Association (AWWA):
 - 1. C105 Polyethylene Encasement of Ductile-Iron Pipe Systems
 - 2. C219 Bolted, Sleeve-Type Couplings for Plain-End Pipe
 - 3. C502 Dry-Barrel Fire Hydrants
 - 4. C504 Rubber-Seated Butterfly Valves
 - 5. C512 Air-Release, Air/Vacuum and Combination Air Valves for Waterworks Service
 - 6. [C153](#) [Ductile-Iron Compact Fittings](#)
 - 7. C515 Reduced Wall, Resilient Seated Gate Valves for Water Supply Services
 - 8. C550 Protective Epoxy Interior Coatings for Valves and Hydrants
 - 9. C600 Installation of Ductile-Iron Water Mains and Their Appurtenances
 - 10. C605 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
 - 11. C651 Disinfecting Water Mains
 - 12. C800 Underground Service Line Valves and Fittings
 - 13. C901 Polyethylene (PE) Pressure Pipe and Tubing, ½ Inch through 3 Inch for Water Service
 - 14. C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 in. through 63 in. for Distribution and Transmission

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B. American Society for Testing and Materials (ASTM):

1. A48 Standard Specification for Grey Iron Castings
2. A307-00 Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
3. A575 Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades
4. B62 Standard Specification for Composition Bronze or Ounce Metal Castings
5. B88 Standard Specification for Seamless Copper Water Tube
6. B584 Standard Specification for Copper Alloy Sand Castings for General Applications
7. C478 Standard Specification for Precast Reinforced Concrete Manhole Sections
8. C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
9. C923 Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
10. C990 Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants
11. D2774 Standard Practice for Underground Installation of Thermoplastic Pressure Piping
12. F1668 Standard Guide for Construction Procedures for Buried Plastic Pipe

C. American Association of State Highway and Transportation Officials (AASHTO) :

1. H-20 Standard Specification for Highway Bridges

D. Federal Specifications (FS):

1. SS-C-153C Cement, Bituminous, Plastic

E. National Fire Protection Association

1. NFPA 291 Recommended Practice for Fire Flow Testing and Marking of Hydrants

1.3 SUBMITTALS

- A. A manufacturer's certification that the products were manufactured in accordance with the designated reference standards with these specifications and including test results and date of tests.
- B. Manufacturer's calculations and recommendations for joint restraint.
- C. Pipe location records.

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PART 2 - PRODUCT

2.1 NO LEAD BRASS FITTINGS AND VALVES – GENERAL

- A. All fittings and valves shall be manufactured in accordance with AWWA Standard C-800, latest revision, and as further specified in these technical specifications.
 - 1. Exception: Any brass part of the fitting or valve in contact with potable water shall be made of a “No-Lead Brass”, defined for this specification as UNS Copper Alloy No. C89520 or C89833 in accordance with the chemical and mechanical requirements of ASTM B584 and AWWA C-800. This “No-Lead Brass” alloy shall not contain more than nine one hundredths of one percent (0.09% or less) total lead content by weight.
 - 2. Any brass part of the fitting or valve not in contact with potable water shall be made of 85-5-5 brass as defined for this specification as UNS Copper Alloy C83600 per ASTM B62, ASTM B584 and AWWA C-800.
- B. All brass fittings and valves shall be certified by an ANSI accredited test lab per NSF/ANSI standard 61, Drinking Water Components – Health Effects, Section 8 or NSF/ANSI Standards 372, Drinking Water System Components – Lead Content. Proof of certification is required.
- C. Brass fittings and valves shall comply with the United States of America Safe Drinking Water Act, and the U.S. Environmental Protection Agency.
- D. All brass fittings and valves shall have the manufacturer’s name or trademark permanently stamped or cast on it. Another marking identifying the “no lead” brass alloy, e.g., ‘NL’, shall be cast or permanently stamped on the fitting or valve.

2.2 FIRE HYDRANTS

- A. Conform to requirements of AWWA C502.
- B. Manufactured within one year of installation.
- C. Compression type shutoff with bronze by bronze seating design opening against the pressure and closing with the pressure.
- D. Main Valve Opening: 5 ¼”
- E. Minimum Barrel Diameter: 7”
- F. Provide traffic model with upper and lower barrels joined at the ground line by a separate and breakable and replaceable flange joint and providing 360 degrees rotation of upper barrel.
- G. Hydrant shall be designed to accept barrel extensions.
- H. Hydrant bolts and nuts shall be 304 stainless steel with anti-seize mechanism.

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- I. Nozzles
 - 1. Provide three-way design with one 4 ½" NST pumper nozzle and two 2 ½" NST hose nozzles.
 - 2. Provide nozzle caps with nut the same size as the operating nut and chain.
- J. Bury depth shall be 6.5 feet measured to the nearest ½ foot from the bottom of the connecting pipe to the ground line of the hydrant.
- K. Inlet connection shall be 6 inch mechanical joint with 304 stainless steel bolts and nuts with anti-seize mechanism.
- L. The hydrant top section shall be painted the color yellow, excluding the caps.
- M. The caps on the hydrant shall be painted per NFPA Standard 291, based on available fire flows as determined by the Engineer and shown on the plans.
 - 1. Class AA –Blue Caps M4137 Hydrant National Blue – Rated capacity of 1500 gpm or greater
 - 2. Class A –Green – Rated capacity of 1000-1499 gpm
 - 3. Class B –Orange – Rated capacity of 500-999 gpm
 - 4. Class C –Red – Rated capacity of less than 500 gpm
- N. Hydrant to have a 16" break-off section.
- O. 1 ½" pentagon operating nut to open left.
- P. Hydrant markers shall consist of a five (5) foot long 3/8 inch diameter fiberglass shaft attached to a heavy duty MIL SPEC zinc plated carbon steel spring mount with a flat bracket. The shaft shall be completely wrapped with alternating six (6) inch wide reflective tape strips so that there will be no exposed fiberglass. The reflective tape color shall match the hydrant cap color. Complete assembly shall be corrosion and UV resistant. Flat mounting bracket shall fit onto the 5/8-inch hydrant bolt.
- Q. Hydrants shall be Waterous WB67250

2.3 VALVES

- A. General
 - 1. Valves shall be for buried service.
 - 2. Valve ends shall be mechanical joint for buried service.
 - 3. Operating stem shall turn counterclockwise to open.
 - 4. Shaft or stem shall be sealed using O-ring seals.
 - 5. Manufactured within one year of installation.
- B. Butterfly Valves
 - 1. Conform to requirements of AWWA C504 mechanical joint end valves, Class 150B
 - 2. Used where water main is larger than 12 inches diameter.

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3. Equip with traveling nut or worm gear operators.
4. Valve Body: Cast iron ASTM A126, Class B.
5. Valve Shaft: Stainless steel 304.
6. Valve Disc: Ductile iron ASTM A536 with 304 stainless steel disc edge.
7. Shaft seals shall be the self-adjusting split-V type or standard O-ring seals.
8. Operators:
 - a. The operator shall be furnished with a standard AWWA 2-inch square nut for manual wrench operation as specified in Section 19 of AWWA C-500 which shall be positively secured to the operator input shaft.
 - b. Valve to open counter clockwise.
 - c. A self-draining, self-aligning base 4-3/4 to 5 inch diameter concentric with the input shaft, shall be provided to accept a circular valve box base.
 - d. The valve shall seat closed at an angle of 90 degrees from full open.
 - e. The operator shall be self-locking, and the disc shall not creep or flutter under service conditions.
 - f. The operator shall be furnished with a permanent factory set stop at each of its travel.
 - g. Maximum input torque required to develop the rated output torque shall not exceed 150 foot-pounds for any size valve.
 - h. The operator shall be designed for the output torque shown in Table 1 of AWWA C504.
 - i. The operator case shall be completely watertight, sealed by means of approved gaskets, gasket compounds, O-rings or threaded plugs.
 - j. Operators shall be filled with suitable oil lubricant or thoroughly coated with an approved grease at the factory. If the operator lubricant is oil, suitable fill and drain plugs shall be provided.
9. Bolts and nuts for end connections shall be 304 stainless steel with anti-seize mechanism.
10. Acceptable Manufacturers: See special provisions.

C. Resilient Wedge (Gate) Valves

1. Conform to requirement of AWWA C515 mechanical joint connectors with 304 stainless steel bolts with anti-seize mechanism or push-on connectors.
2. Use where water main is 12 inches in diameter or smaller.
3. Stem shall be non-rising.
4. Bolts and nuts on the valve shall be 304 stainless steel.
5. Bolts and nuts for end connections shall be 304 stainless steel bolts with anti-seize mechanism.
6. Tapping valves shall have one end flanged with alignment lip to attach tapping sleeve, and the other end with a special flange to attach the drilling machine and adaptor.
7. Test Plugs:
 - a. The valve bonnet shall be provided with a 1/2 or 3/8 inch diameter threaded, solid, malleable or cast iron test plug.
8. Stem Seal:
 - a. The valve stem seal shall be O-rings. The compound shall be of Buna N or NBR rubber and have a durometer hardness of 70 +/- 5 when tested in accordance with ASTM Designation D-2240.

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9. Operating Nut:

- a. The valve shall be equipped with a standard 2 inch square operating nut with cast-on directional arrow.
- b. Valve to open counter clockwise.

10. Acceptable Manufacturers:

- a. Mueller
- b. Kennedy
- c. American Flow Control/Waterous
- d. Clow

Deleted: <#>Valves will be fitted with a three (3) foot long extension stem with bottom bolts for tightening to the valve at 90 degrees to each other. ¶
<#>Extension stem manufacturer shall be Ess Brothers and Sons Inc. or approved equal. ¶

D. Valve Boxes

1. Cast iron, three-piece screw type, 5 ¼ inch shaft, round or oval base sized for valve.
2. Threads shall be cast into top and bottom sections.
3. Cover shall be anti-rattle type mark with the word "water" on top.
4. Acceptable Manufacturers:
 - a. Tyler 6860DD
 - b. Bingham Taylor
 - c. Sigma

2.4 POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPE AND FITTINGS

A. Conform to requirements of AWWA C105.

B. Type: I

C. Class: "A" (natural color) or "C" (black).

D. Grade: "E-1"

E. Thickness: 8 mils

2.5 WATER MAIN

A. Pipe material and size shall be stated in the Proposal and shown in the Drawings.

B. If the material is not stated, water main is to be Polyvinyl Chloride Pipe (PVC).

2.6 WATER SERVICES

A. Pipe and Tubing

1. Pipe and/or tubing material and size shall be as stated in the proposal and shown on the drawings.
2. Copper tubing shall conform to the requirements of ASTM B88, Type K for sizes up to 2 inches diameter.
3. Polyethylene (PE) tubing shall be blue and conform to the requirements of AWWA C901, PE

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3608, DR 9 for sizes up to 2 inches.

4. Polyethylene (PE) pipe shall be blue and conform to the requirements of AWWA C901, PE 3608, DR 11, for sizes greater than 2 inches up to 3 inches.
5. Polyvinyl Chloride Pipe (PVC) shall conform to the requirements of AWWA C900 for sizes 4 inches or greater.

B. Corporation Stops/Valves

1. Conform to the requirements of AWWA C800.
2. Ball type valve with double O-ring seals.
3. Outlet shall include a copper flare connection for copper tubing or compression connection with stiffeners for polyethylene tubing.
4. The pipe stiffener length for polyethylene tubing shall match the length of the fitting at the location of the compression nut.
5. Acceptable Manufacturers:
 - a. Ford F1000
 - b. McDonald
 - 1) 1" - 74701Q
 - 2) 1 ½" & 2" – 74701BQ

C. Curb Stops/Valves

1. Conform to the requirements of AWWA C800.
2. Ball type valve with double O-ring seals.
3. Inlet and outlet shall include a copper flare connection for copper tubing or compression connection with stiffeners for polyethylene tubing.
4. The pipe stiffener length for polyethylene tubing shall match the length of the fitting at the location of the compression nut.
5. Curb Stop to Curb Box Rod Connection
 - a. Material: Stainless steel 304
 - b. Bolt Size: ¾ - 20 x 1 ¼
 - c. Nylon Stainless Steel Locker
6. Acceptable Manufacturers:
 - a. Ford B44-444M
 - b. McDonald 6104Q
 - c. Mueller B25155

D. Tapping or Service Saddles

1. Stainless steel double strap designed for ductile iron pipe.
2. Full circumference wide band stainless steel double bolt designed for PVC pipe.
3. Required for PVC service taps and taps over 1" in diameter for ductile iron pipe.
4. All taps shall be made with a Rockwell 372, Romac, Smith Blair Model 372, or equal service saddle.

E. Curb Boxes

1. Minneapolis pattern.
2. Cast iron lid with a 1 ¼" threaded brass pentagon plug and the work "Water" on top in raised

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letters with nut for trace wire.

3. Upper section shall be a minimum 1 ¼" I.D. steel pipe.
4. Base section shall be a minimum 1 ¼" I.D. cast iron.
5. The casting shall be thoroughly coated with bituminous pitch varnish or pipe dip.
6. Provide a McDonald 5660SS 48 inch stationary Type 304 Stainless Steel curb box rod.
7. Length shall be 7 ½ foot bury with a 6 ½ to 7 ½ foot adjustment range.
8. Acceptable Manufacturers:
 - a. Mueller H-10300
 - b. Ford EM2-60-57
 - c. McDonald 5614

2.7 TRACER WIRE

A. Wire for Water Main Construction.

1. Tracer wire shall be continuous, single-strand #12 AWG copper clad steel, high strength, with a minimum 30 mil HDPE thickness for open cut construction
2. Tracer wire shall be #12 AWG copper clad steel, extra high strength with a minimum 1150 lbs. break load with a minimum 30 mil HDPE insulation thickness for directional drilling/boring.
3. Tracer wire shall be 7x7 stranded copper clad steel, extreme strength with 4700 lb. break load, with minimum 50 mil HDPE coating for pipe bursting.

B. Tracer wire shall be color coated blue.

Deleted: <#>#10 AWG solid, 21% conductivity annealed copper-clad high carbon steel extra high strength wire.¶

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2.8 TRACER WIRE ACCESS BOX

A. Provide access box device in accordance with the following:

1. The covered access device (tracer wire access box) shall have:
 - a. Two pieces to allow for telescoping action adjustment and for frost control.
 - b. Top piece to extend below ground a minimum of 12 inches.
 - c. 2 ½ inch minimum diameter extension from the top piece of the access box to the top of the sewer pipe.
 - d. Lid to be heavy cast iron manufactured in accordance with ASTM A48 Class 25. The top of the lid to be permanently engraved with "WATER" by the manufacturer. The lid is to be furnished with a means of locking the lid such as a standard lockable pentagonal bolt head. Lid to be furnished with connection holes where the tracer wire is to be connected with stainless steel terminal bolts.
2. Acceptable access devices are:
 - a. The Valvco Water Tracer Wire Access Box manufactured by C. P. Test Services-Valvco, Inc, reference:
<http://www.fischer-harris.com/ValvcoTracerWireAccessBox.htm>
 - b. The Cathodic Test Box P200 series manufactured by Bingham & Taylor, reference:
<http://www.binghamandtaylor.com/cathodic.htm>
3. In lieu of the above access devices furnish materials required as shown on the drawing detail for Tracer Wire Access.

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4. In lieu of the above devices, a modified water valve box, approved by the Engineer will be considered, meeting the following requirements:
 - a. Cast iron, two-piece screw type, 5 ¼ inch shaft, with extension to top of sewer pipe.
 - b. Threads shall be cast into top section.
 - c. Cover shall be anti-rattle type mark with the word "WATER" on top.

2.9 COUPLINGS AND ADAPTERS

A. Flanged Coupling Adapters

1. Used for connecting plain end pipe to flanged equipment and fittings.
2. Ductile iron body and follower completely epoxy coated.
3. Plain rubber gasket.
4. Provide with anchor studs.

B. Bolted Couplings

1. Used for connecting plain end pipe to plain end pipe.
2. Steel sleeve completely epoxy coated.
3. Ductile iron follower.
4. Plain rubber gaskets.

5. [Meet the requirements of AWWA C-219.](#)

6. [Meet the requirements of AWWA C-153.](#)

C. Tapping Sleeves

1. Tapping sleeves shall be rated at 200 psi working pressure up to 12" diameter and 150 psi working pressure above 12" diameter.
2. Sleeve and outlet flange shall be 304 stainless steel.
3. Sleeve gasket shall be full length of the sleeve waffle style 360 degree around the pipe.
4. Provide full face gasket between the outlet flange and the valve flange.
5. Tapping sleeves shall be Mueller H-034, Smith Blair 665, Dresser Style 630, or Romac.

D. Couplings and adapters shall be Dresser, Smith-Blair, or Romac Industries.

2.10 INSULATION BOARD

- A. Extruded polystyrene conforming to ASTM C578, Type IV.
- B. Each board shall be 2 inches thick x 4 feet wide x 8 feet long.

2.11 PIPE EMBEDMENT MATERIAL

- A. Soil Class A-7 - ¾" or A-8-3/8" crushed rock per section "Soils and Aggregates for Earthwork."
- B. Soil Class G-2 - "Clean earth fill per section "Soils and Aggregates for Earthwork."
- C. Sand or engineer approved material for steel casing void.

2.12 THRUST RESTRAINTS

- A. Mechanical Restraints
- 1. Ductile Iron Pipe and Fittings:
 - a. Megalug Series 1100 follower gland or equal for mechanical joint restraints.
 - b. Clow "Super Lock," American "Lok-Ring" or U.S. Pipe "TR Flex" for push-on joint restraint.
 - 2. Polyvinyl Chloride (PVC) Pipe:
 - a. Megalug Series 2000 PV restraint gland or equal for mechanical joint restraint.
 - b. EBAA Iron, Inc. Series 1600 for AWWA C-900 pipe push-on joint restraint and EBAA Iron, Inc. Series 2800 for AWWA C-905 pipe push-on joint restraint, or equal.
 - c. Sigma One-Lok
 - 3. Alpha™ ends may be used in lieu of a mechanical restraint.
 - 4. Polyvinyl Chloride (PVC) Pipe:
 - a. Megalug Series 2000 PV restraint gland or equal for mechanical joint restraint.
 - b. EBAA Iron, Inc. Series 1600 for AWWA C-900 pipe push-on joint restraint and EBAA Iron, Inc. Series 2800 for AWWA C-905 pipe push-on joint restraint, or equal.

B. Concrete Thrust Blocks

- 1. Ready-mixed concrete conforming to the following:

Class	28-day Compressive Strength (PSI)	Max. Size Coarse Aggregate	Min. Cement Content (Bags/CY)	Air Content (%)	Slump
B	3000	1 ½ Inch	4.75	6 +/-1	3 to 4 Inch

- 2. Job-mixed concrete is permitted for amounts one cubic yard or less and shall meet the same material and strength requirements as ready-mixed concrete.

PART 3 - EXECUTION

3.1 WATER MAIN PIPE INSTALLATION

- A. General
- 1. Vertical and Horizontal Alignment:
 - a. Install pipe to maintain vertical and horizontal alignment as shown on the drawings.
 - b. Place pipe to required line and grade with a tolerance of plus or minus 0.1 feet.
 - c. Install pipe without unplanned high points in the line, and a minimum cover over the top of pipe of six (6) feet.
 - d. Provide fittings, valves and hydrants at the required locations with joints centered, spigots bottomed and valve and hydrant stems plumb.
 - 2. Commence pipe installation only after the trench has been dewatered below the trench bottom and all necessary sheeting and bracing is in place.
 - 3. Use full length pipe except where necessary at valves and fittings.

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4. Cut pipe to provide a smooth end at a right angle to the longitudinal axis of the pipe.
5. Assemble pipe in accordance with the written recommendations of the manufacturer.
6. When the interruption or operation of an existing pressure pipeline system is necessary to complete construction, conform to the following:
 - a. Owner will operate system at Contractor's request.
 - b. Confine requests to Owner's normal working schedule.
 - c. Do not operate controls or appurtenances.
7. Excavate to existing water main. Adjust line and grade if necessary to avoid use of extra fittings.
8. Unless otherwise ordered, pipe shall be laid with the bell ends facing the direction of laying. When the grade exceeds two feet of rise per one hundred feet of trench, the bells shall face upgrade.
9. Permissible joint deflection shall conform to the following table:

Maximum Permissible Joint Deflection – Rubber Gasket Joint			
Pipe Size	Max. Def. Degrees	Max. Def. in. per 18 ft	Radius Of Curve - ft
6	5-00	19	205
8	5-00	19	205
10	5-00	19	205
12	5-00	19	205

10. Remove and salvage plugs, flush pipes and incidental sections of existing water main as requested by Engineer.
11. Maintain five (5) feet between fittings.
12. Do not insert pipe beyond the stop marks at joints.
13. Bolts are to be tightened with a torque wrench to the manufacturer's recommendations.

B. Open Cut Method

1. Pipe construction of any pipe material shall follow the recommended procedures of ASTM F1668.
2. Trench requirements shall conform to section "Trenching, Backfilling and Compacting".
3. Keep pipe clean during and after laying.
4. Do not roll, drop, or dump pipe appurtenances into the trench.
5. When laying operations are interrupted or terminated, temporarily seal pipe ends to prevent entry of water, debris, small animals, or other types of contamination. Prevent flotation of the sealed pipe.

C. Trenchless Excavation Method

1. Boring and Jacking:
 - a. Provide casing pipe bored and jacked in-place in accordance with section "Trenchless Excavation Construction," at line and grade to accommodate the carrier pipe.
 - b. Install carrier pipe at line and grade through casing pipe blocked to prevent contact with the casing pipe.
 - c. Fill the annular space between casing pipe and carrier pipe with sand or pea gravel.

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2. Horizontal Directional Drilling:

- a. Install pipe directly by horizontal directional drilling in accordance with section "Trenchless Excavation Construction" at the line and grade shown on the drawings.
- b. Design pipe as required above that specified to accommodate tensile stress during the installation process.

D. Ductile Iron Pipe Installation

1. Install pipe and appurtenances in accordance with AWWA C600.
2. Install pipe and fittings with polyethylene encasement in accordance with AWWA C105.
3. Pipe shall be cut at right angles to the centerline of the pipe. Cutting shall be done in a neat workmanlike manner without damage to the pipe so as to leave a smooth end. All pipes shall be cut with an approved mechanical cutter. The cut end of a pipe to be used with a rubber gasket joint shall be tapered by grinding or filing about 1/8 inch back at an angle of approximately 30 degrees with the centerline of the pipe, and any sharp or rough edges shall be removed.

E. Polyvinyl Chloride (PVC) Pipe Installation

1. Install pipe and appurtenance in accordance with AWWA C605.
2. Pipe bending is not permitted.
3. For shorter than standard pipe lengths, field cuts may be made with either hand or mechanical saws or plastic pipe cutters. Ends shall be cut square and perpendicular to the pipe axis. Spigots shall have burrs removed and ends smoothly beveled by a mechanical beveler or by hand with a rasp or file. Field spigots shall be stop-marked with felt tip marker or wax crayon for proper length of assembly insertion. The angle and depth of field bevels and lengths to stop-marks shall be comparable to factory pipe spigots.

F. Polyethylene (PE) Pipe Installation

1. Install pipe in accordance with ASTM D2774.

G. Pipe Embedment

1. Prestressed concrete cylinder pipe and ductile iron pipe Class "C" embedment:
 - a. Bedding:
 - 1) 4" below pipe place Soil Class A-7 or A-8 material.
 - 2) 6" below pipe place Soil Class A-7 or A-8 material if trench bottom is rock.
 - 3) Place and work bedding material by hand to insure all excavated voids are filled.
 - b. Haunching and Initial Backfill:
 - 1) From bedding material to one-sixth of pipe outside diameter use Soil Class A-7 material placed and worked by hand to insure all excavated voids are filled.
 - 2) From one-sixth of pipe outside diameter to 12" above the pipe use Soil Class G-2 material compacted in-place to 95% standard proctor density using hand tampers or impact tampers.
2. Plastic Pipe - Class "B" Embedment:
 - a. Bedding, Haunching and Initial Backfill:
 - 1) 4" below pipe to 12" above the pipe, place Soil Class A-7 or A-8 material work by hand to insure all excavated voids are filled.

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- 2) If in rock, place Soil Class A-7 or A-8 material 6" below pipe to 12" above the pipe and work by hand to insure all excavated voids are filled.
3. Block pipe installed through steel casing so as not to touch steel casing and fill the annular space between steel casing and carrier pipe.

3.2 THRUST RESTRAINTS

- A. Provide at mechanical joint and push-on joint connections including valves, hydrants, and fittings including plugs, caps, tees, reducers and bends.
 1. Alpha™ ends may be used in lieu of a mechanical restraint.
- B. Provide thrust restraint with mechanical restraints and concrete thrust blocks which physically prevent joint separation. Thrust blocks are to be constructed to transfer the thrust load from the pipe to the undisturbed soil of the trench wall.
 1. When using mechanical restraints, restrain the fitting joints within the following minimum pipe length on each side of the fitting unless manufacturer's submitted calculations and recommendations indicate otherwise:

Restrained/Tied Pipe Length Chart					
Minimum Length Requiring Restraints					
Fitting Type	6 inch	8 inch	10 inch	12 inch	16 inch
11.25° Bend	10	10	10	10	10
22.5° Bend	10	10	10	10	10
30° Bend	10	10	10	10	10
45° Bend	10	10	10	10	10
60° Bend	10	20	20	20	20
90° Bend*	20	20	30	40	40

Restrained/Tied Pipe Length Chart					
Minimum Length Requiring Restraints					
Tee (Side Tied)	20	20	30	40	40
Stubs or Dead Ends	20	20	30	40	50
Cross with Plugged End	20	20	30	40	40
Valve at End of Line	20	20	30	40	40

*Use of 90° Bends requires Engineer Approval

2. Where grade changes are made in the line by means of bends, secure the top bends by mechanical restraints and secure the bottom bends by means of poured in-place concrete thrust blocks and provide mechanical restraints within a pipe length of 30' of the joint.
- C. Install mechanical restraints in accordance with the manufacturer's recommendations. Use a torque limiting twist off nut without the need for a torque wrench to insure proper actuation of

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the restraint wedge.

- D. Encase mechanical restraints, associated materials, and the restrained pipe with polyethylene. Encasements are to extend five (5) feet beyond restraint.
- E. Restrain hydrants with mechanical restraints or with tie rods connecting all joints between the hydrant and the main line.

3.3 HYDRANTS

- A. Install where shown on the Drawings in accordance with AWWA C600.
- B. Install hydrants plumb with the nozzles parallel with or at right angles to the road as determined by the Owner.
- C. Set to grade with breakaway flange not more than 2 inches above or below the grade established by the Engineer.
- D. Provide drainage at the base of the hydrant placing crushed rock pipe bedding material.
- E. If groundwater is above the drain port or the drain port is within 8 feet of a sanitary sewer or storm inlet, then plug the port.
- F. Repair any paint chips or finish deficiencies that occur during construction.

3.4 VALVES

- A. Install in accordance with AWWA C600.
- B. Provide resilient wedge (gate) valves for sizes to 12 inches.
- C. Provide butterfly valves for sizes over 12 inches.
- D. Valves shall be supported on 6 inches of soil class A-7 or A-8 crushed rock pipe bedding material.
- E. Install valves in the closed position.
- F. Provide a valve box centered plumb over the operating nut of the valve and placed such that the box will not transmit shock or stress to the valve. Adjust the top of the valve box flush with finished grade.
- G. Provide and connect air release, vacuum relief valves to the main with a tee fitting and isolation valve. Install per manufacturer's recommendations.

3.5 CONNECTIONS TO EXISTING WATER MAIN

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A. Cut-in Connection

1. Cut existing main only large enough to accept a mechanical joint ductile iron fitting or valve directly connected to one end of the existing pipe.
2. Connect the other end using a ductile iron cut-in sleeve connected to the fitting or valve and the other cut end of the existing water main connected by mechanical joint end of the cut-in sleeve.
3. Fittings shall be mechanical joint ductile iron or Hymax.

B. Tapped Connection

1. Connect to the existing water main using a tapping sleeve and tapping valve.
2. The cut in the existing water main shall be full diameter.
3. Provide the type of connection stated in the drawings.

3.6 INSULATION FOR PIPE FROST SHIELD

- A. Provide where shown on the Drawings.
- B. Install insulation board in an inverted U around the pipe.
- C. The top width of the insulation board frost shield shall be the same as the trench width centered over the pipe.
- D. The sides of the U shall be 2' high with the bottom of the legs at least to the springline of the pipe.
- E. Install the insulation board in layers to provide a minimum thickness of 4" or the thickness stated on the Drawings.
- F. Install such that there are no voids under the insulation.

3.7 POLYETHYLENE ENCASEMENT

- A. Wrap underground ductile iron pipe.
- B. Wrap underground fittings, valves and valve boxes.
- C. Wrap mechanical restraints and accessories.
- D. Wrap all portions of hydrants below grade.
- E. Wrap curb stop and box below grade.
- F. Install in accordance with AWWA C105.

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- G. Provide Class "C" polyethylene when exposure to sunlight will exceed two weeks.
- H. The polyethylene wrap shall be cut approximately five (5) feet longer than that of the pipe section and fittings. After assembling the pipe joint, the polyethylene shall be overlapped approximately one (1) foot and at all joints sealed with approved adhesive tape. Additional taping shall be used a three (3) foot intervals along the pipe. Any rips, punctures or other damage to the polyethylene shall be wrapped immediately with adhesive tape. Before installing the polyethylene wrap the exterior of the pipe shall be free of foreign material.
- I. When valves, tees, crosses, etc., cannot be wrapped practically in a tube, flat sheet or split tube shall be used. All seams shall be taped securely.
- J. The bedding and cover material shall be placed with care so as to prevent damage to the polyethylene wrap. Any rips or punctures in the wrap shall be repaired immediately.

3.8 TRACER WIRE

- A. Provide for water main.
- B. Tape wire directly to pipe at a minimum of three points per 20 foot length of pipe.
- C. Extend on all hydrants from the water main and the hydrant lead up the hydrant and into a tracer wire access box then continue back down to the water main so that a continuous strand of wire is achieved. The access box will be located adjacent to the hydrant, on the street side.
- D. Water main tracer wire at the curb box will be brought to the surface and with eighteen (18) inches of slack fastened to the curb box with plastic wire tie. The lateral will be marked with an eight (8) feet long, treated four by four (4"x4").
- E. Extend wire up to the surface at access points.
- F. Splices
 - 1. Maximum of one splice between access points.
 - 2. Splice connections shall be made using solder connections or other connections approved by Engineer.
- G. Connect tracer wire to ductile iron by welding when connecting new water main to existing ductile iron water main.

3.9 WATER SERVICES

- A. Location
 - 1. Install service laterals per the detail.
- B. Corporation Stops

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1. Install a 2 o'clock and 10 o'clock position on the pipe circumference.
2. Do not install taps closer than 2 feet from the end of the pipe and not closer than 18" between taps.
3. Tap ductile iron pipe in accordance with AWWA C600.
4. Install service connections to PVC pipe in accordance with AWWA C605 using service saddles.
5. Install corporation stops with the pipeline at normal working pressure to visually observe any leaks.
6. Tap the service with the use of manual feed equipment using a cutter designed specifically for the material being tapped.
7. Provide seven (7) feet of depth at the property line.
8. Construct services without any coupling from the corporation to the curb box.
9. Water services from the main to the curb box shall be HDPE or PVC per the "Materials Section".
10. Water services from the curb box to existing copper water service shall be copper, unless HDPE is approved by the Engineer. HDPE may be allowed to accommodate bending the water service to connect to a shallower existing service. Connect tracer wire to copper water service with clamp.

C. Install service pipe with horizontal curve from the service connection back to the straight trench to the property line.

D. Install curb stops at the property or as shown on the Drawings.

1. Provide curb box centered over the operating nut of the valve.
2. Provide shut-off extension rod on the curb stop valve operator.
3. Provide a stainless steel bolt and locking nut to connect the curb stop to the stainless steel curb box rod.
4. Top of the curb box shall be adjusted flush with the finished grade.
5. Mark the location with a treated four by four (4"x4") board installed four (4) feet in the ground and four (4) feet out of ground. Water marker shall be painted blue.
6. If an existing water service being replaced is shallow, the Engineer may direct the Contractor to replace the water service beyond the sidewalk.
7. Provide valve box adapter around curb box if located in concrete.

E. Construct a clay dam around the lateral at the end of the new lateral, prior to the curb stop.

1. Clay dam is to be 12" thick.
2. Install in place of the bedding stone and initial backfill.

F. Insulate water service if within 12" to the bottom of a sewer.

G. Do not install water main above a storm sewer without approval from the Engineer.

3.10 FIELD QUALITY CONTROL

A. Provide the following pipe tests:

1. Perform water system pressure and leakage tests for pressurized pipelines following the procedure identified in Section 01 45 23.

- i. For water relay projects, perform tests on the water main with the installation of corporations but prior to connecting water services.
- ii. For new water installation projects, perform tests after all services and curb stops are installed.

2. a. Continuity testing for tracer wire installed.

3.11 DISINFECTION AND BACTERIOLOGICAL TESTING

- A. Provide disinfection and bacteriological testing according to AWWA C651-14 and section NR 811.73, Wisconsin Administrative Code.
- B. If piping was contaminated during storage, construction, or repair, the pipe shall be flushed to remove any foreign material that may have entered the pipe prior to disinfection.
- C. Disinfect with Tablet Method.
 1. Place the required number of tablets as follows:
 - a. The inlet end of each pipe section, including branch lines. The number of tablets shall be per the following:

Pipe Diameter (Inches)	13 or less feet (Number of Tablets)	18 feet (Number of Tablets)	20 feet (Number of Tablets)
4	1	1	1
6	1	1	1
8	1	2	2
10	2	3	3
12	3	4	4
16	4	6	7

Refer to AWWA C651-14 for larger diameters

- b. Each hydrant, hydrant lead, and other appurtenances.
 2. Attach tablets with food-grade adhesive to the top inside surface of the pipe.
 - a. Use adhesive approved by USDA for contact with edible products.
 - b. Adhesive shall be Permatex Form-A-Gasket No. 2, Permatex Clear RTV Silicone, or equal.
 - c. Permatex Form-A-Gasket No. 1 is not acceptable.
 3. Fill in a manner such that the water velocity within the main will not exceed 1 fps.
 4. Water is to remain in the pipe for a minimum of 24 hours. If the water temperature is less than 41 degrees F, the water is to remain in the pipe a minimum of 48 hours.
- D. Verify Chlorine Residual. Confirm the chlorine residual after 24 or 48 hours is greater than 0.2 ppm.

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 b. Test shall be performed at water system pressure following the procedure identified in Section 01 45 23. ¶
 c. Close all curb stops in the section during the test.¶

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- E. Flush Chlorinated Water. Chlorinated water shall be flushed until the chlorine residual returns to background level for the distribution system. Water with a chlorine residual greater than distribution system must be de-chlorinated prior to discharge to the ground surface or storm sewer.
- F. Verify by Bacteriological Testing. Following flushing, the water main shall be tested for coliform analyses as follows:
 - 1. New water mains.
 - a. Two sets of samples collected 16 hours apart; or
 - b. Two sets of samples collected after the fresh water has remained in the main for at least 16 hours. The sets shall be collected no less than 15 minutes apart.
 - c. A set of samples includes: one sample every 1200 feet, one sample at the end of the newly installed line and one sample at each branch greater than one pipe length.
 - 2. Repaired mains that are depressurized and partially or wholly depressurized.
 - a. One set of samples after flushing.
 - b. The line may be reactivated prior to completion of the bacteriological analyses.
 - c. A set of samples includes: one sample downstream of the repair site (if flow direction is unknown, then one sample from each end of the repair site) and every 200 feet of pipe that was shut down.
 - 3. Repaired mains that were maintained under pressure at all times. No bacteriological testing is required.
- G. Water from all new mains must successfully pass a bacteriological test in accordance with the requirements of the Department of Natural Resources before the main is placed in service. This test shall be taken by the City of De Pere.
- H. Upon successful completion of disinfection, place the water main in service to maintain system pressure.

END OF SECTION

SECTION 33 31 00

SANITARY SEWER SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes

1. Gravity sanitary sewer installation.
2. Precast concrete and concrete masonry manholes.
3. Manhole castings.
4. Manhole drops.
5. Sewer services.
6. Tracer wire.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM A48 Standard Specification for Gray Iron Castings
2. ASTM C139 Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
3. ASTM A240 Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels
4. ASTM C270 Standard Specification for Mortar for Unit Masonry
5. ASTM C476 Standard Specification for Grout for Reinforced and Non-reinforced Masonry
6. ASTM C478 Standard Specification for Precast Reinforced Concrete Manhole Sections
7. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
8. ASTM C913 Standard Specification for Precast Concrete Water and Wastewater Structures
9. ASTM C923 Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes
10. ASTM C1173 Standard Specification for Flexible Transition Couplings for Underground Piping Systems
11. ASTM D2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
12. ASTM D4101 Standard Specification for Propylene Plastic Injection and Extrusion Materials

B. American Association of State highway and Transportation Officials (AASHTO):

C. Federal Specifications (FS):

1. FS SS-C-153C Cement, Bituminous, Plastic.

1.3 SUBMITTALS

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- A. A manufacturer's certification for each product stating that the products were manufactured in accordance with the designated reference standards with test results and date of tests.

PART 2 – PRODUCTS

2.1 PIPE

- A. Pipe Material
 - 1. PVC Sewer Pipe shall be in accordance with Section 33 00 02 Polyvinyl Chloride (PVC) Pipe and Fittings.
 - 2. Pipeline material shall be PVC Pipe unless stated elsewhere in the proposal schedule or as shown on drawings
 - 3. Pipe diameters shall be as shown on drawings.
- B. Wyes, Tees, Risers and Fittings
 - 1. Wyes, tees and fittings shall be the same type of material and class as the mainline pipe.
 - 2. Risers and fittings shall be the same material and class as the service connections.
 - 3. Tees can only be used for connecting to existing sanitary sewers when approved by the Engineer.
 - 4. Wye branches for a lined sewer shall be a saddle type connector compatible with the lined pipe. Acceptable manufacturers:
 - a. Fernco Tap Saddle
 - b. GPK gasketed sewer fittings,
 - c. Approved equals (saddle wye gasket branch and gasket skirt with straps) will be considered.

2.2 TRANSITION COUPLINGS

- A. Couplings for transition between dissimilar pipe diameters or dissimilar pipe materials
 - 1. Fernco Inc., Mission Rubber Company, and Maxadapter are acceptable manufacturers.
 - 2. Conform to ASTM C1173.
 - 3. Provide stainless steel shear rings, bands, nuts and housings of marine grade stainless steel conforming to ASTM A240.

2.3 MANHOLES

- A. Precast Reinforced Concrete Manholes
 - 1. Components including base sections, riser sections, grade rings (adjustment rings), eccentric cone, flat slab top and manhole reducing bench shall meet ASTM C478.
 - 2. Base section shall include base riser section with integral monolithic bottom extending minimum of 6 inches beyond riser section.
 - 3. Tops for manholes shall be eccentric cone or, if required elsewhere, flat slab top.
 - 4. Adjusting rings
 - a. Precast concrete minimum of 2 inches thick.
 - b. Rubber: Infra-Riser, Pro-Ring, [Flex-O-Ring](#), or approved equal.

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- c. HDPE: Tadtech or approved equal.
- 5. Eccentric cones, flat slab tops and adjusting rings.
 - a. Shall have a 24 inch diameter opening.
 - b. Shall support AASHTO H-20 loadings.
- 6. Joints between components.
 - a. Joint design shall be in accordance with ASTM C990.
 - b. Gasket shall be the 1 ¼ inch thick butyl rubber material meeting requirements of AASHTO M-198 Type B flexible plastic gasket and ASTM C990 butyl rubber sealant.
- 7. Connector between Precast Reinforced Manhole Structures
 - a. Resilient flexible connector shall meet ASTM C923.
 - b. The seal between the flexible connector and the manhole shall be by casting the connector integrally with the manhole wall.
 - c. The seal between the connector and the pipe shall be by compression of the resilient material against the outside of the pipe.
 - d. Factory made manholes shall use A-Lok, Z-Lok, [Kor N-Seal](#) or equal.
 - e. Where an existing manhole is core drilled in the field, the flexible connector shall be NPC Inc., Kor-N-Seal or Press-Seal Gasket Corporation PSX:Positive Seal.

B. Bituminous plastic cement shall meet Federal Specification SS-C-153C, Type I.

C. Manhole Steps

- 1. Steel reinforced copolymer polypropylene meeting ASTM C478.
- 2. Copolymer polypropylene shall meet ASTM D4101.
- 3. Steel reinforcement shall be ASTM A615, Grade 60, ½ inch minimum steel reinforcing rod.
- 4. Step shall be 12 inches wide and project from the wall between 5 inches and 7 inches.
- 5. Minimum design live load shall be a single concentrated load of 300 lbs. when in place.

D. Castings

- 1. Shall be ASTM A48, Class 35B, gray iron.
- 2. Manhole frame and covers shall be non-rocking.
- 3. Manhole covers for sanitary sewer shall be self-sealing with concealed pick hole.
- 4. Shall be of uniform quality free from blowholes, shrinkage, discoloration and other defects.
- 5. Shall be heavy duty designed for AASHTO H-20 loads.
- 6. Type 1 Frame and Cover: Neenah Foundry No. R1500 unless stated elsewhere in the proposal or as shown on the drawings.

2.4 PIPE EMBEDMENT MATERIAL

A. Soil Class A-7 or A-8 crushed rock per section "Soils and Aggregates".

2.5 TRACER WIRE

A. ~~Wire for sanitary sewer,~~

- 1. Tracer wire shall be continuous, single-strand #12 AWG copper clad steel, high strength, with a minimum 30 mil HDPE thickness for open cut construction

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2. Tracer wire shall be #12 AWG copper clad steel, extra high strength with a minimum 1150 lbs. break load with a minimum 30 mil HDPE insulation thickness for directional drilling/boring.
3. Tracer wire shall be 7x7 stranded copper clad steel, extreme strength with 4700 lb. break load, with minimum 50 mil HDPE coating for pipe bursting.

B. Tracer wire on sanitary laterals will have green colored insulation.

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PART 3 – EXECUTION

3.1 GRAVITY SEWER INSTALLATION

A. General

1. Vertical and Horizontal Alignment
 - a. Install sewer pipe to maintain vertical and horizontal alignment as shown on the Drawings.
 - b. Use laser equipment mounted in a manner to permit beam to shine through pipe.
 - c. Use a target to check each pipe installed.
 - d. Check laser beam alignment and grade a minimum of every 100 feet.
 - e. Use a fan to control air temperature variations in pipe and reduce bending of laser beam.
2. Commence pipe installation only after the trench has been dewatered below the trench bottom and all necessary sheeting and bracing is in place.
3. Install pipe starting at the downstream end and proceed toward the upstream.
4. Install plastic pipe in accordance with ASTM D2321, as revised by these specifications.

B. Pipe Embedment

1. Plastic Pipe – Class “B” Embedment:
 - a. Bedding, Haunching and Initial Backfill
 - 1) 4” below pipe to 12” above the pipe, place Soil Class A-7 or A-8 material work by hand to insure all excavated voids are filled.
 - 2) If in rock, place Soil Class A-7 or A-8 material 6” below pipe to 12” above the pipe and work by hand to insure all excavated voids are filled.

C. Pipe Installation

1. Open Cut Method:
 - a. Trench requirements shall conform to Section “Trenching, Backfilling, and Compacting.”
 - b. Do not use support blocking.
 - c. Proceed pipe laying upgrade with spigot pointing in direction of flow.
 - d. Lay each pipe true to line and grade.
 - e. When pipe installation is not in progress, provide the forward end of the pipe with a temporary plug to prevent foreign material from entering.
 - f. Push “home” the spigot end of the pipe joint in the socket before proceeding to install the next pipe.

When connecting to an existing sewer not terminating in a manhole, uncover the end of the existing sewer prior to laying sewer to allow horizontal and vertical adjustments.

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g. Install pipe such that pipe joints are located far enough from the manhole outside wall to permit future pipe repair without damaging the manhole and the joints shall not fall within manhole walls.

h. Construct a bentonite clay dam at the upstream end of each sanitary sewer run prior to the upstream manhole.

1) Clay dam is to be 12" thick.

2) Install in place of bedding stone and initial backfill.

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2. Trenchless Excavation Method

a. Auger horizontal earth boring (boring and jacking)

- 1) Bore and jack steel casing pipe at location and diameter or larger shown on the
- 2) Drawings in accordance with Section "Trenchless Excavation Construction" at line and grade to accommodate the gravity carrier pipe.
- 3) Install the gravity carrier pipe at line and grade through the casing pipe blocked to prevent contact with the casing pipe.
- 4) Fill the annular space between casing pipe and gravity carrier pipe with sand or Engineer approved equal.

b. Horizontal directional drilling

- 1) Install gravity carrier pipe in accordance with Section "Trenchless Excavation Construction" at line and grade and location shown on the Drawings.
- 2) Fill the annular space between the bore hole and the gravity carrier pipe with a bentonite slurry.

D. Manholes

1. General Installation Requirements:

- a. Depths shown on Drawings shall be considered approximate.
- b. Establish flow lines and casting elevations from grade stakes and cut sheets.
- c. Provide 6 feet minimum height from top of casting to flowline.
- d. Place bases on a minimum of four (4) inches of bedding material:
 - 1) Soil Class A-7 or A-8.
 - 2) Place and work by hand to insure all excavated voids are filled.
 - 3) The maximum amount of adjusting rings is twelve inches.
- e. Seal exterior of lift holes with bituminous plastic cement.
- f. Fill the following with mortar and finished smooth.
 - 1) Interior lift holes.
 - 2) Annular space around pipes: interior bottom half only.
- g. Construct manholes in accordance with the appropriate detail drawings.
- h. Install structures plumb.

2. Detailed Installation:

- a. Unless indicated otherwise, provide precast concrete manhole construction.
- b. Four foot diameter shall be considered standard.
- c. Pitch casting to match street crowns where applicable.
- d. Provide precast risers in a combination of lengths to minimize the number of joints.
- e. Install Butyl Rubber Joint Sealant at risers:
 - 1) Rope configuration.

- 2) Install to be compressed by subsequent riser.
 - f. Manhole adjusting
 - 1) Manholes must have only **ONE** concrete ring (2", 4", or 6") on top of the cone section.
 - a) Asphaltic Concrete Pavement - Secure ring to the pre-cast cone section with a 3 and ½ inch wide Kent Seal or equal.
 - b) Concrete Pavement – Secure ring to pre-cast cone section with concrete vibrated in place during the paving operation.
 - 2) For manholes in pavement, above the concrete ring attach ½ inch thru 3 inch thick tapered rubber ring using two (2) 5/16 inch bead above and below the ring, of sealant type as recommended by the rubber ring manufacturer. There shall be a minimum of 2" in depth of rubber rings.
 - g. The maximum amount of adjusting rings is twelve inches. Do not enter manhole with pipe through cone section.

The pipe shall enter the barrel of the manhole through a flexible, watertight gasket or connector.
 - h. Precast flat top may be used in lieu of a cone section when elevation is limited.

Provide Type 1 frames and covers for each manhole unless otherwise shown on the plan details.
 - i. Manhole Drops:
 - 1) Conform to the detail Drawings.
 - 2) Furnish where designated on Drawings.
 - j. Inverts:
 - 1) Shall conform to the following:
 - a) Shape to the lower half diameter of the largest connecting pipe.
 - b) Slope concrete bench upward to manhole wall.
 - c) Maintain a uniform flow line slope through manhole which matches minimum pipe slope.
 - 2) Precast manholes shall be furnished with a manufacturer installed invert.
 - k. Future Sewer Connections:
 - 1) Pipe stubs shall be provided as shown on the drawings.
 - 2) Stubs shall extend a maximum of 12 inches from outer wall of structure unless otherwise stated.
 - 3) Stub shall be capped or bulkheaded and water tight.
- E. Sewer Services
- 1. Laterals:
 - a. Unless otherwise specified, terminate laterals at the property line.
 - b. In the absence of grade stakes, install laterals deep enough to pick up the lowest service point, or a minimum depth of 10 feet, whichever is greater.
 - c. Install laterals in conformance with all plumbing codes and ordinances.
 - d. Provide cleanouts required by plumbing codes and ordinances as part of the lateral installation.
 - e. When a lateral is not connected for immediate use:
 - 1) Mark the location with a 4" x 4" pressure treated board, installed 4 feet in the ground

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and 4 feet out of the ground. Sanitary marker shall be painted green.

2) Provide a watertight cap on the lateral end.

- f. Install sewer lateral and water services with location and separation per the details.
- g. Construct a bentonite clay dam around the lateral at the right-of-way, or at end of the new lateral.

1) Clay dam is to be 12" thick

2) Install in place of the bedding stone and initial backfill

2. Risers:

a. Risers shall be located at the mainline pipe unless noted otherwise on the plans or in the special provisions.

b. Bends shall be 45 degrees.

c. Riser pipe shall be placed on a minimum of four (4) inches of bedding material.

3. Service Branches:

a. New Sewers: Install a factory assembled wye branch wherever possible.

b. Existing and Lined Sewers:

1) Provide "Y" branches with a saddle type connector compatible to the pipe material being used.

2) Provide concrete or hard wood blocking under the wye.

F. Connecting New Pipe to Existing Pipe

1. If pipe are of the same material and size, then use a coupling of the same pipe material designed for coupling of the same material and size.

2. If pipe are of dissimilar material or size or there is no coupling made of the same material, then provide a transition coupling with a stainless steel shear ring or approved equal. Provide bushings or inserts to maintain the flow line through the connection.

G. Joints

1. Construct joints in compliance with manufacturer's recommendations.

2. Utilize full length pipe except at manholes or service branches.

3.2 INSULATION FOR PIPE FROST SHIELD

A. Provide where shown on the Drawings.

B. Install insulation board in an inverted U around the pipe.

C. Install insulation board with the top insulation board the same width as the trench centered over the pipe.

D. Install the sides of the U-shape two feet high with the bottom of the legs at least to the springline of the pipe.

E. Install the insulation board in layers to provide a minimum thickness of 4 inches or the thickness stated on the Drawings.

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- F. Install such that there are no voids under the insulation.

3.3 BULKHEADS

- A. Bulkhead new construction to protect existing sewers from water, dirt, and debris.
- B. Do not remove bulkheads until new construction is accepted for use.
- C. Prior to removal of bulkhead, remove all material (liquid or solid) which accumulated behind bulkheads.

3.4 CLEANING AND REPAIRING SEWER LINES

- A. Clean as follows:
 - 1. All new sewer lines installed under this contract.
 - 2. Any existing sewer lines which are affected by construction.
- B. Furnish water and jetting equipment for cleaning operation.
- C. Repair all visible leads and defects, whether or not the sewer lines have been subject to all required tests.
- D. Remove any stuck cleaning, inspection or testing equipment from sewer lines.

3.5 TRACER WIRE

- A. Provide for all non-metallic service laterals within public right-of-way.
- B. Lateral or branch tracer wire splice connections will be typical Western Union-type solder splice made by stripping the coating off the main run tracer wire and then tightly wrapping the branch tracer wire around the main run tracer wire a minimum of 8 times. Both wire splices would then be soldered with a self-flux, 50-50 rosin core solder and tightly wrapped with a 1 ½" wide by 3.2 mm Scotchfill™ electrical insulation tape, or equivalent then coated with 3M Scotchkote™ electrical coating, or equivalent so that no copper wire is exposed. A stripping tool shall be used to remove the plastic coating on the wire. The Contractor will be responsible to have all the correct types of tools necessary to install the tracer wire materials as specified above and to ensure that the tools are in good working order.
- C. Tracer wire will be securely attached to the mainline sewer pipe, within (6) six inches of each end of the pipe, and at equally spaced locations with a maximum spacing of (6) six feet. Any exposed copper wire will be sealed and covered with materials approved by the Engineer.
- D. Tracer wire at the end of laterals on new sewer construction shall be brought to the surface at the right-of-way perpendicular to the end of the lateral and will be inserted into a three (3) foot

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long piece of a one (1) inch PVC with a double slotted cap and securely attached to the treated four by four (4"x4"). The top of the four by four will be placed such that four (4) feet extends above the finished grade. The one (1) inch PVC shall be placed such that eighteen (18) inches extend above the finished grade. The tracer wire at the top of the PVC will protrude out of one of the slots and back into the PVC pipe through the other slot with at least eighteen inches of slack.

- E. Tracer wire at the end of laterals on sanitary sewer replacements with connections to existing laterals shall be as follows:
 - 1. Wrapped around the curb stop if near the curb stop.
 - 2. Extended to the surface and installed in a tracer wire box if not near the curb stop.

3.6 FIELD QUALITY CONTROL

- A. Provide the following service in accordance with the section on Testing and Inspection of Pipeline Appurtenances.
 - 1. Televiser all sanitary sewers.
 - 2. Lamp sanitary sewers if required by the Engineer.
 - 3. Perform a low pressure air test.
 - 4. Perform a deflection test on all plastic pipes.
 - 5. Perform a continuity test on all tracer wire.

END OF SECTION

SECTION 33 41 00

STORM SEWER SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Gravity storm sewer installation.
 - 2. Precast concrete manholes.
 - 3. Precast concrete inlets.
 - 4. Manhole, inlet and catch basin castings.
 - 5. Sewer services.

1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A48 Standard Specification for Gray Iron Castings
 - 2. ASTM A240 Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels
 - 3. ASTM C139 Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
 - 4. ASTM C91 Standard Specification for Masonry Cement
 - 5. ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes
 - 6. ASTM C270 Standard Specification for Mortar for Unit Masonry
 - 7. ASTM C476 Standard Specification for Grout for Reinforced and Nonreinforced Masonry
 - 8. ASTM C478 Standard Specification for Precast Reinforced Concrete Manhole Sections
 - 9. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
 - 10. ASTM C564 Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
 - 11. ASTM C913 Standard Specification for Precast Concrete Water and Wastewater Structures
 - 12. ASTM C923 Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes
 - 13. ASTM C990 Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants
 - 14. ASTM C1173 Standard Specification for Flexible Transition Couplings for Underground Piping Systems
 - 15. ASTM D2321 Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
 - 16. ASTM D4101 Standard Specification for Propylene Plastic Injection and Extrusion Materials
- B. American Association of State highway and Transportation Officials (AASHTO):
 - 1. AASHTO H-20 Standard Specification for Highway Bridges.

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2. AASHTO M198 Joints for Circular Concrete Sewer and Culvert Pipe Using Flexible Watertight Gaskets.

C. Federal Specifications (FS):

1. FS SS-C-153C Cement, Bituminous, Plastic.

1.3 SUBMITTALS

- A. A manufacturer's certification for each product stating that the products were manufactured in accordance with the designated reference standards with test results and date of tests.

PART 2 – PRODUCTS

2.1 PIPE

A. Sewer Pipe

1. Concrete sewer pipe shall be in accordance with 33 00 01 Concrete Pipe-Reinforced.
2. PVC Sewer Pipe shall be in accordance with Section 33 00 02 Polyvinyl Chloride (PVC) Pipe and Fittings.
3. CMCP shall be in accordance with Section 33 00 04 Corrugated Metal Culvert Pipe and Fittings.
4. Polypropylene sewer pipe shall be in accordance with Section 33 00 05 Double and Triple Walled Polypropylene Pipe.
5. Pipeline material shall be as stated in the proposal schedule or as shown on drawings
6. Pipe diameters shall be as shown on drawings.

B. Wyes, Tees, Risers and Fittings

1. Wyes, tees and fittings shall be the same type of material and class as the mainline pipe.
2. Risers and fittings shall be the same material and class as the service connections.
3. Allowable lateral connections for mainline pipe greater than 12" diameter is as follows below. Installation shall conform to manufacturer's recommendation based on pipe type.
 - a. RCP Pipe - NPC Kor-N-Tee, Multi-Tite Gasket, ProFlow Gasket, ADS Inserta Tee Onefit or Engineer approved equal.
 - b. PVC/PP – Kor-N-Tee Saddle, Multi-Tite Pipe Saddle, ADS Inserta Tee Onefit or Engineer approved equal.
 - c. Lateral, Fernco Multi-Tite Pipe Gaskets or Saddle Connector as recommended by the manufacturer may be used where mainline pipe is greater than 12" diameter.

2.2 TRANSITION COUPLINGS

A. Couplings for transition between dissimilar pipe diameters or dissimilar pipe materials

1. Fernco Inc., Mission Rubber Company, and Maxadapter are acceptable manufacturers.
2. Conform to ASTM C1173.
3. Provide stainless steel shear rings, bands, nuts and housings of marine grade stainless steel conforming to ASTM A240.

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2.3 MANHOLES AND INLETS

- A. Precast Reinforced Concrete Manholes and Inlets
 - 1. Components including base sections, riser sections, grade rings (adjustment rings), eccentric cone, flat slab top and manhole reducing bench shall meet ASTM C478 and rectangular, inlets and catch basins shall meet ASTM C913.
 - 2. Base section shall include base riser section with integral monolithic bottom extending minimum of 6 inches beyond riser section.
 - 3. Tops for manholes shall be eccentric cone or, if required elsewhere, flat slab top.
 - 4. Adjusting rings
 - a. Precast concrete: minimum of 2 inches thick.
 - b. Rubber: Infra-Riser, Pro-Ring, [Flex-O-Ring](#), or approved equal.
 - c. HDPE: Tadtech or approved equal. Inlet rings shall be tapered longitudinally when the inlet is not at the low point.
 - 5. Eccentric cones, flat slab tops and adjusting rings.
 - a. Shall have a 24 inch diameter opening.
 - b. Shall support AASHTO H-20 loadings.
 - 6. Joints between components.
 - a. Joint design shall be in accordance with ASTM C990.
 - b. Gasket shall be the 1 ¼ inch thick butyl rubber material meeting requirements of AASHTO M-198 Type B flexible plastic gasket and ASTM C990 butyl rubber sealant.
 - 7. Connection between Manhole Structures and Storm Sewer Pipe.
 - a. Provide a non-shrink grout.
- B. Bituminous plastic cement shall meet Federal Specification SS-C-153C, Type I.
- C. Manhole Steps
 - 1. Steel reinforced copolymer polypropylene meeting ASTM C478.
 - 2. Copolymer polypropylene shall meet ASTM D4101.
 - 3. Steel reinforcement shall be ASTM A615, Grade 60, ½ inch minimum steel reinforcing rod.
 - 4. Step shall be 12 inches wide and project from the wall between 5 inches and 7 inches.
 - 5. Minimum design live load shall be a single concentrated load of 300 lbs. when in place.
- D. Castings
 - 1. Shall be ASTM A48, Class 35B, gray iron.
 - 2. Manhole frame and covers shall be non-rocking.
 - 3. Shall be of uniform quality free from blowholes, shrinkage, discoloration and other defects.
 - 4. Shall be heavy duty designed for AASHTO H-20 loads.
 - 5. Manhole Castings: Neenah Foundry No. R1500, unless stated elsewhere in the proposal or as shown on the drawings.
 - 6. Type A Field Inlet Casting: Neenah Foundry No. 1500 with R2100 Grate Type "A".
 - 7. Type B Inlet Casting: Neenah Foundry No. 3067-L, 7007B curb box with language for dump no waste drains to freshwater.
 - 8. Beehive Grate and Casting: Neenah Foundry No. R-2560-D3.

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2.4 MORTAR

A. Cement

1. Furnish masonry cement conforming to ASTM C91, type S.
2. Furnish hydrated lime conforming to ASTM C207.

B. Sand

1. Use sand conforming to 501.2.5, WisDOT State Specifications, except as follows:
 - a. Ensure that sand subjected to the mortar strength test has a tensile or compressive strength at 3 days and 7 days of not less than 85 percent of that developed by mortar of the same proportions and consistency, made of the same cement and standard Ottawa sand.
 - b. Use sand uniformly graded from coarse to fine conforming to the following gradation requirements:

SIEVE	PERCENT PASSING BY WEIGHT
No. 8	95-100
No. 100	25 Maximum
No. 200	10 Maximum

C. Mortar

1. Use mortar composed of 3 parts of sand for mortar, and one part of either a mixture of 50 percent portland cement and 50 percent of masonry cement, or a mixture of 75 percent portland cement and 25 percent hydrated lime.
2. Use a machine to mix the mortar unless the engineer allows otherwise.
 - a. Prepare machine-mixed mortar in an engineer-approved mixer and mix not less than 1 ½ minutes.
 - b. If preparing hand-mixed mortar, mix the sand and cement thoroughly in a clean, tight mortar box until uniform in color, then add clean water in a quantity that forms a stiff paste.
 - c. Do not use mortar mixed longer than 30 minutes or that develops its initial set.

2.5 GEOTEXTILE FABRIC FOR FILTRATION AND SEPARATION

- A. Fabric shall be non-woven polyester, polypropylene or polyethylene conforming to the following minimums:
1. Grab Tensile Strength: 180 lbs.
 2. Puncture strength: 68 lbs.
 3. Apparent Breaking Elongation: 30%
 4. Apparent Opening Size (Sieve Size): 50
 5. Permittivity

2.6 PIPE EMBEDMENT MATERIAL

- A. Soil Class A-7, or A-8 crushed rock per section "Soils and Aggregates."

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2.7 TRACER WIRE

- A. Tracer wire shall be continuous, single-strand #12 solid copper or copper clad steel, high strength, with a minimum 30 mil HDPE thickness for open cut construction.

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Deleted: THHN wire with a continuous coating of polyethylene insulation suitable for direct burial in wet locations....

- B. Tracer wire on storm sewer laterals will have brown colored insulation.

2.8 ENDWALLS

- A. Reinforced concrete apron endwalls shall be installed on the outlets of reinforced concrete storm sewer as called for on the plans. The concrete apron endwalls shall be constructed to conform to Section 33 00 01 Reinforced Concrete Pipe.
- B. Corrugated metal apron endwalls shall be installed on outlets corrugated metal culverts as called for on the plans. The metal apron endwalls shall be constructed to conform to Section 33 00 04 Corrugated Metal Culvert Pipe.

PART 3 – EXECUTION

3.1 GRAVITY SEWER INSTALLATION

- A. General
1. Vertical and Horizontal Alignment
 - a. Install sewer pipe to maintain vertical and horizontal alignment as shown on the Drawings.
 - b. Use laser equipment mounted in a manner to permit beam to shine through pipe.
 - c. Use a target to check each pipe installed.
 - d. Check laser beam alignment and grade a minimum of every 100 feet.
 - e. Use a fan to control air temperature variations in pipe and reduce bending of laser beam.
 2. Commence pipe installation only after the trench has been dewatered below the trench bottom and all necessary sheeting and bracing is in place.
 3. Install pipe starting at the downstream end and proceed toward the upstream.
 4. Install plastic pipe in accordance with ASTM D2321, as revised by these specifications.
- B. Pipe Embedment
1. Circular Concrete Pipe – Class “C” Embedment:
 - a. Bedding:
 - 1) 4” below pipe place Soil Class A-7 or A-8 material.
 - 2) 6” below pipe place Soil Class A-7 or A-8 material if trench bottom is rock.
 - 3) Place and work bedding material by hand to insure all excavated voids are filled.
 - b. Haunching and Initial Backfill:
 - 1) From bedding material to one-sixth of pipe outside diameter, use Soil Class A-7 or A-8 material place and worked by hand to insure all excavated voids are filled.
 - 2) From one-sixth of pipe outside diameter to 12” above the pipe, use Soil Class G-2

material compacted in-place to 95% standard proctor density using hand tampers or impact tampers.

2. Plastic Pipe and Corrugated Metal Pipe – Class “B” Embedment:

a. Bedding, Haunching and Initial Backfill

- 1) 4” below pipe to 12” above the pipe, place Soil Class A-7 or A-8 material work by hand to insure all excavated voids are filled.
- 2) If in rock, place Soil Class A-7 or A-8 material 6” below pipe to 12” above the pipe and work by hand to insure all excavated voids are filled.

3. Perforated Pipe – Class “B” Embedment

a. Bedding, Haunching and Initial Backfill

- 1) 4” below pipe to 12” above the pipe, place Soil Class A-7 or A-8 material work by hand to insure all excavated voids are filled.
- 2) If in rock, place Soil Class A-7 or A-8 material 6” below pipe to 12” above the pipe and work by hand to insure all excavated voids are filled.

C. Pipe Installation

1. Open Cut Method:

- a. Trench requirements shall conform to Section “Trenching, Backfilling, and Compacting.”
- b. Do not use support blocking.
- c. Proceed pipe laying upgrade with spigot pointing in direction of flow.
- d. Lay each pipe true to line and grade within tolerances required for lapping.
- e. When pipe installation is not in progress, provide the forward end of the pipe with a temporary plug to prevent foreign material from entering.
- f. Push “home” the spigot end of the pipe joint in the socket before proceeding to install the next pipe.
When connecting to an existing sewer not terminating in a manhole, uncover the end of the existing sewer prior to laying sewer to allow horizontal and vertical adjustments.
- g. Install pipe such that pipe joints are located far enough from the manhole outside wall to permit future pipe repair without damaging the manhole and the joints shall not fall within manhole walls.

2. Trenchless Excavation Method

a. Auger horizontal earth boring (boring and jacking)

- 1) Bore and jack steel casing pipe at location and diameter or larger shown on the Drawings in accordance with Section “Trenchless Excavation Construction” at line and grade to accommodate the gravity carrier pipe.
- 2) Install the gravity carrier pipe at line and grade through the casing pipe blocked to prevent contact with the casing pipe.
- 3) Fill the annular space between casing pipe and gravity carrier pipe with sand or Engineer approved equal.

b. Horizontal directional drilling

- 1) Install gravity carrier pipe in accordance with Section “Trenchless Excavation Construction” at line and grade and location shown on the Drawings.
- 2) Fill the annular space between the bore hole and the gravity carrier pipe with a bentonite slurry.

D. Manholes and Inlets

1. General Installation Requirements:
 - a. Depths shown on Drawings shall be considered approximate.
 - b. Establish flow lines and casting elevations from grade stakes and cut sheets.
 - c. Provide four feet eight inches (4'-8") minimum height from top of casting to [the bottom of the](#) base.
 - d. Place bases on a minimum of four (4) inches of bedding material:
 - 1) Soil Class A-7 or A-8.
 - 2) Place and work by hand to insure all excavated voids are filled.
 - e. Seal exterior of lift holes with bituminous plastic cement.
 - f. Fill the following with mortar and finished smooth.
 - 1) Interior lift holes.
 - 2) Annular space around pipes
 - g. Construct manholes and inlets in accordance with the appropriate detail drawings.
 - h. Install structures plumb.
2. Detailed Installation:
 - a. Unless indicated otherwise, provide precast concrete manhole construction.
 - b. Four foot diameter shall be considered standard.
 - c. Pitch casting to match street crowns where applicable.
 - d. Provide precast risers in a combination of lengths which minimize the number of joints.
 - e. Install Butyl Rubber Joint Sealant at Risers:
 - 1) Rope configuration.
 - 2) Installed to be compressed by subsequent riser.
 - f. Manhole and Inlet Adjusting.
 - 1) Manholes and inlets must have only ONE concrete ring (2", 4", or 6") on top of the cone section.
 - a) Asphaltic Concrete Pavement – Secure ring to the pre-cast cone section with a 3 and ½ inch wide Kent Seal or equal.
 - b) Concrete Pavement – Secure ring to pre-cast cone section with concrete vibrated in place during the paving operation.
 - 2) For manholes in pavement, above the concrete ring attach a ½ inch thru 3 inch thick tapered rubber ring using two (2) 5/16 inch bead above and below the ring, of sealant type as recommended by the rubber ring manufacturer. There shall be a minimum of 2" in depth of rubber rings.
 - 3) For inlets in pavement, above the concrete ring attach a ½ inch thru 3 inch thick rubber ring using two (2) 5/16 inch bead above and below the ring, of sealant type as recommended by the rubber ring manufacturer. The ring shall be tapered along the flow line for at all locations excluding inlets at low points. There shall be a minimum of 2" in depth of rubber rings.
 - 4) The maximum amount of adjusting rings is 12 inches.
 - g. Do not enter manhole with pipe through cone section.
 - h. Pipe connections to manholes
 - 1) Grout pipe in-place inside and outside the manhole with mortar or gasket providing a soil tight seal.
 - i. Precast flat top may be used in lieu of a cone section when elevation is limited.

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- j. Provide Type 1 frames and covers for each manhole unless otherwise shown on the plan details.
- k. Inverts:
 - 1) Shall conform to the following:
 - a) Shape to the lower half diameter of the largest connecting pipe.
 - b) Slope concrete bench upward to manhole wall.
 - c) Maintain a uniform flow line slope through manhole which matches minimum pipe slope.
 - 2) Precast manholes shall be furnished with a manufacturer installed invert.
- l. Future Sewer Connections:
 - 1) Pipe stubs shall be provided as shown on the drawings.
Stubs shall extend a maximum of 12 inches from outer wall of structure unless otherwise stated.
 - 2) Stub shall be capped or bulkheaded and water tight.

E. Sewer Services

- 1. Laterals:
 - a. Unless otherwise specified, terminate laterals at the property line.
 - b. In the absence of grade stakes, install laterals deep enough to pick up the lowest service point.
 - c. Install laterals in conformance with all plumbing codes and ordinances.
 - d. Provide cleanouts required by plumbing codes and ordinances as part of the lateral installation.
 - e. When a lateral is not connected for immediate use:
 - 1) Mark the location with a 4" x 4" pressure treated board installed 4 feet in the ground and 4 feet out of the ground. Storm marker shall be painted brown.
 - 2) Provide a watertight cap on the lateral end.
 - f. Install sewer laterals and water service with location and separation per the details.
- 2. Risers:
 - a. Risers shall extend from the main and be installed to maintain at least ten feet of depth on the lateral at the right-of-way or at the height shown on the plans.
 - b. Bends shall be 45 degrees.
 - c. Riser pipe shall be placed on a minimum of four (4) inch of bedding material.
- 3. Service Branches:
 - a. New Sewers:
 - 1) Install a factory assembled wye branch wherever possible.
 - 2) For concrete pipe, core drill and use a flexible water tight tee connector that mechanically expands in the cored opening.
 - b. Existing Sewers:
 - 1) Provide "Y" branches with a saddle type connector compatible to the pipe material being used.
 - 2) For concrete pipe, core drill and use a flexible water tight tee connector that mechanically expands in the cored opening.

F. Connecting New Pipe to Existing Pipe

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1. If pipe are of the same material and size, then use a coupling of the same pipe material designed for coupling of the same material and size.
2. If pipe are of dissimilar material or size or there is no coupling made of the same material, then provide a transition coupling with a stainless steel shear ring. Provide bushings or inserts to maintain the flow line through the connection.

G. Joints

1. Construct joints in compliance with manufacturer's recommendations.
2. Utilize full length pipe except at manholes or service branches.

H. Endwalls

1. Reinforced concrete endwalls shall be connected to concrete pipe with steel bolts conforming to WisDOT Standard Specifications for Highway Construction, Latest Edition.
2. Reinforced concrete endwalls shall be connected to PVC or PP Pipe with a band on the PVC or PP and steel bolt on the endwall.
3. Corrugated metal endwalls and pipe shall be banded.

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3.2 INSULATION FOR PIPE FROST SHIELD

- A. Provide where shown on the Drawings.
- B. Install insulation board in an inverted U around the pipe.
- C. Install insulation board with the top insulation board the same width as the trench centered over the pipe.
- D. Install the sides of the U-shape tow feet high with the bottom of the legs at least to the springline of the pipe.
- E. Install the insulation board in layers to provide a minimum thickness of 4 inches or the thickness stated on the Drawings.
- F. Install such that there are no voids under the insulation.

3.3 BULKHEADS

- A. Bulkhead new construction to protect existing sewers from water, dirt, and debris.
- B. Do not remove bulkheads until new construction is accepted for use.
- C. Prior to removal of bulkhead, remove all material (liquid or solid) which accumulated behind bulkheads.

3.4 CLEANING AND REPAIRING SEWER LINES

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City of De Pere

- A. Clean as follows:
 - 1. All new sewer lines installed under this contract.
 - 2. Any existing sewer lines which are affected by construction.
- B. Furnish water and jetting equipment for cleaning operation.
- C. Repair all visible leads and defects, whether or not the sewer lines have been subject to all required tests.
- D. Remove any stuck cleaning, inspection or testing equipment from sewer lines.

3.5 TRACER WIRE

- A. Provide for all non-metallic service laterals within public right-of-way.
- B. Lateral or branch tracer wire splice connections will be typical Western Union-type solder splice made by stripping the coating off the main run tracer wire and then tightly wrapping the branch tracer wire around the main run tracer wire a minimum of eight (8) times. Both wire splices would then be soldered with a self-flux, 50-50 rosin core solder and tightly with a 1 1/2 " wide 3.2 mm Scotchfill™ electrical insulation tape, or equivalent then coated with 3M Scotchkote™ electrical coating, or equivalent so that no copper wire is exposed. A Klein™ stripping tool shall be used to remove the plastic coating on the wire. The Contractor will be responsible to have all the correct types of tools necessary to install the tracer wire materials as specified above and to ensure that the tools are in good working order.
- C. Tracer wire will be securely attached to the mainline sewer pipe, within (6) six inches of each end of the pipe, and at equally spaced locations with a minimum spacing of (6) six feet. Any exposed copper wire will be sealed and covered with materials approved by the Engineer.
- D. Tracer wire at the end of laterals [for new developed areas](#) will be brought to the surface at the right-of-way perpendicular to the end of the lateral and will be inserted into a three (3) foot long piece of a one (1) inch PVC with a double slotted cap and securely attached to an eight (8) foot long, treated four by four ("4x4"). The top of the four x four will be placed such that thirty (30) inches extend above the finished grade. The one (1) inch PVC shall be placed such that eighteen (18) inches extend above the finished grade. The tracer wire at the top of the PVC will protrude out of one of the slots and back into the PVC pipe through the other slot with at least eighteen inches of slack.
- E. Tracer wire at the end of laterals [in existing developed areas shall be as follows:](#)
 - 1. Wrapped around the curb stop if near the curb stop.
 - 2. Extended to the surface and installed in a tracer wire box if not near the curb stop, [as directed by the engineer.](#)

Deleted: on storm sewer replacements with connections to existing laterals shall be as follows:...

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3.6 FIELD QUALITY CONTROL

1/13/2025

33 41 00-10

Storm Sewer Systems

2025 Specifications

City of De Pere

- A. Provide the following service in accordance with the section on Testing and Inspection of Pipeline Construction.
1. Televisе all storm sewers.
 2. Perform a deflection test on all mains that are not reinforced concrete.
 3. Perform a continuity test on all tracer wire.

END OF SECTION

DE PERE[®]



DEPARTMENT OF PUBLIC WORKS

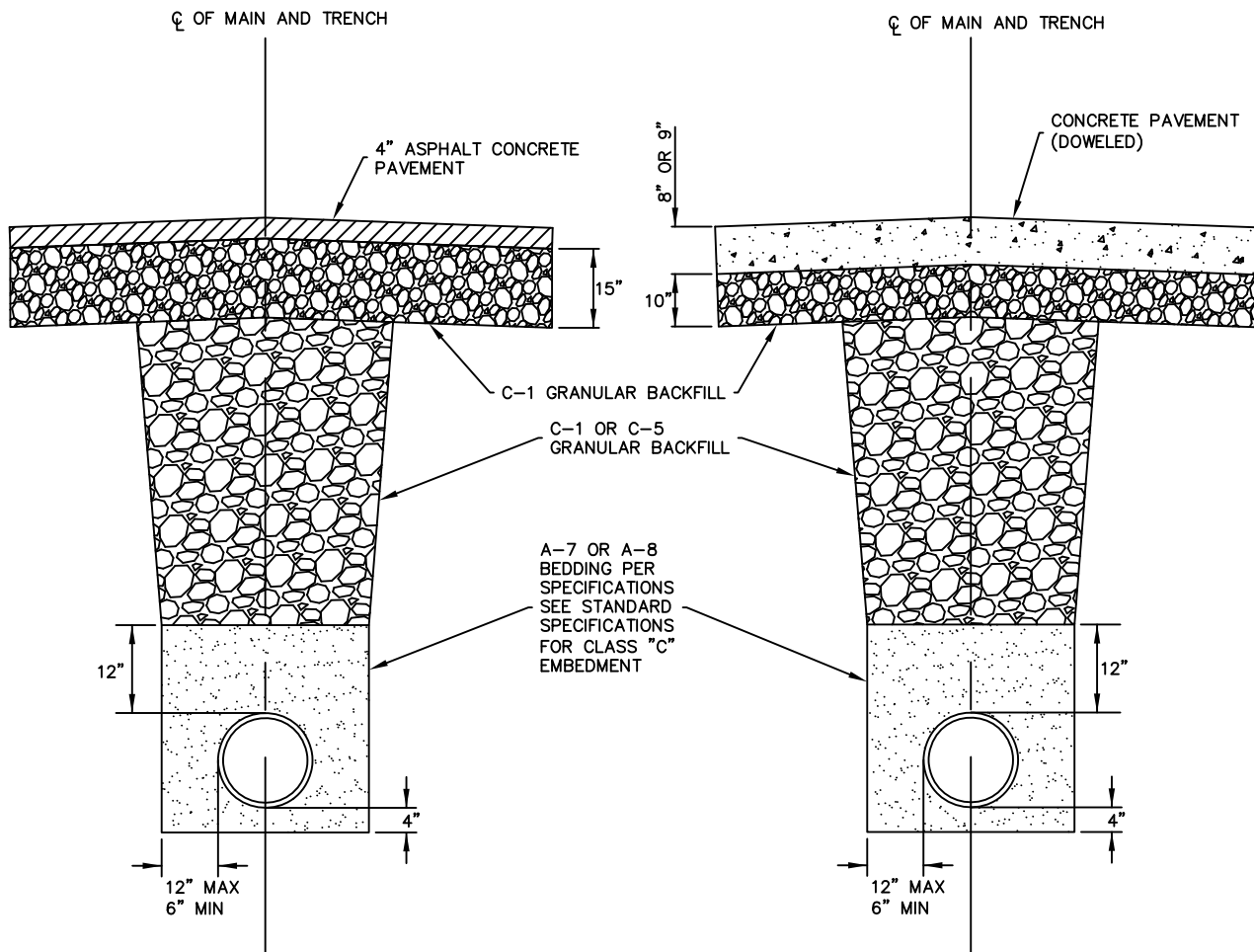
STANDARD DETAILS

JANUARY 13, 2025

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ASPHALT PAVEMENT BACKFILL

CONCRETE PAVEMENT BACKFILL

NOTES:

1. SIDE SLOPE BELOW ELEVATION ON FOOT ABOVE OF PIPE SHALL BE VERTICAL.
2. BACKFILL TO ONE FOOT ABOVE THE TOP OF THE PIPE SHALL BE TAMPED UNDER AND AROUND THE PIPE.



ENGINEERING DIVISION

925 S. SIXTH ST
DE PERE, WI 54115

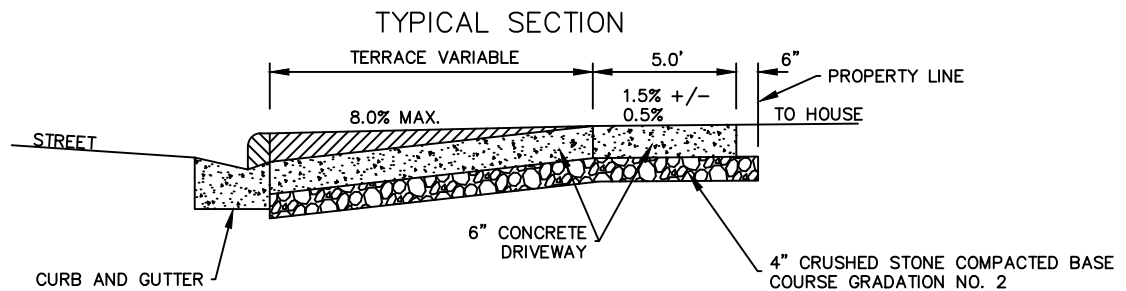
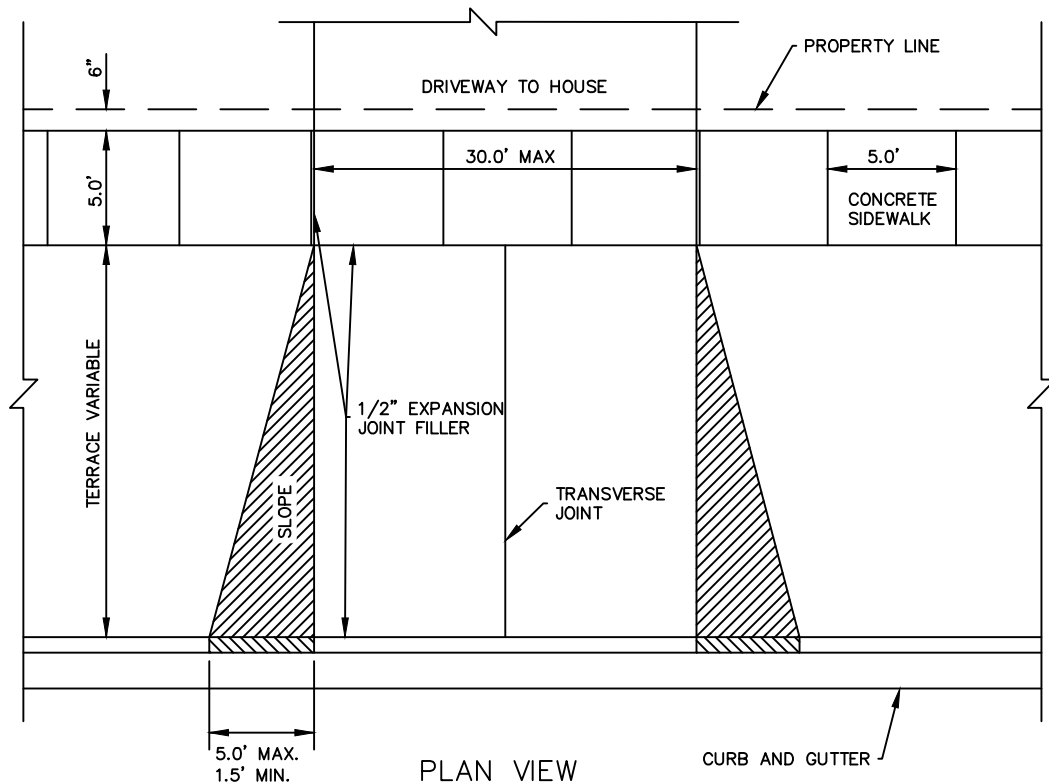
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TRENCHING AND
BACKFILLING

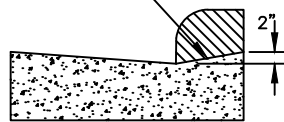
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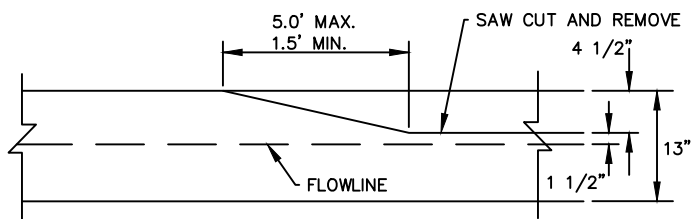
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ALL CURB CUTS WILL BE MADE BY A RAIL MOUNTED, HYDRAULICALLY CONTROLLED OR HIGH CYCLE ELECTRIC, LARGE DIAMETER CONCRETE SAW DESIGNED SPECIFICALLY FOR THIS METHOD OF THE CURB HEAD REMOVAL.



CURB CUT SIDE VIEW



CURB CUT BACK VIEW



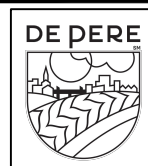
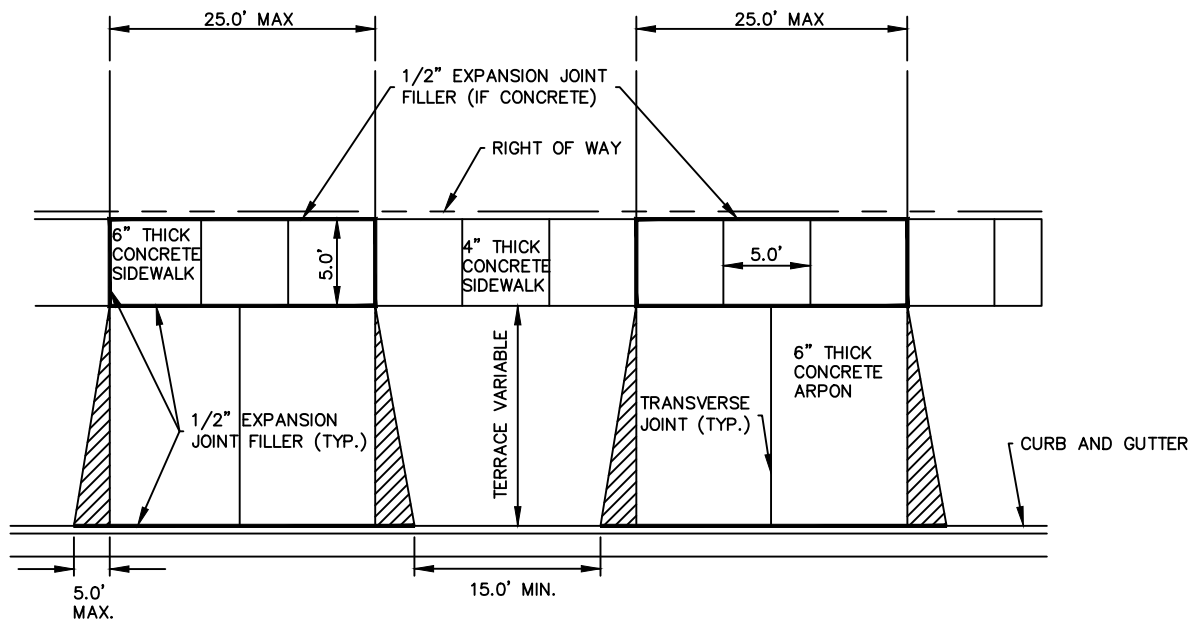
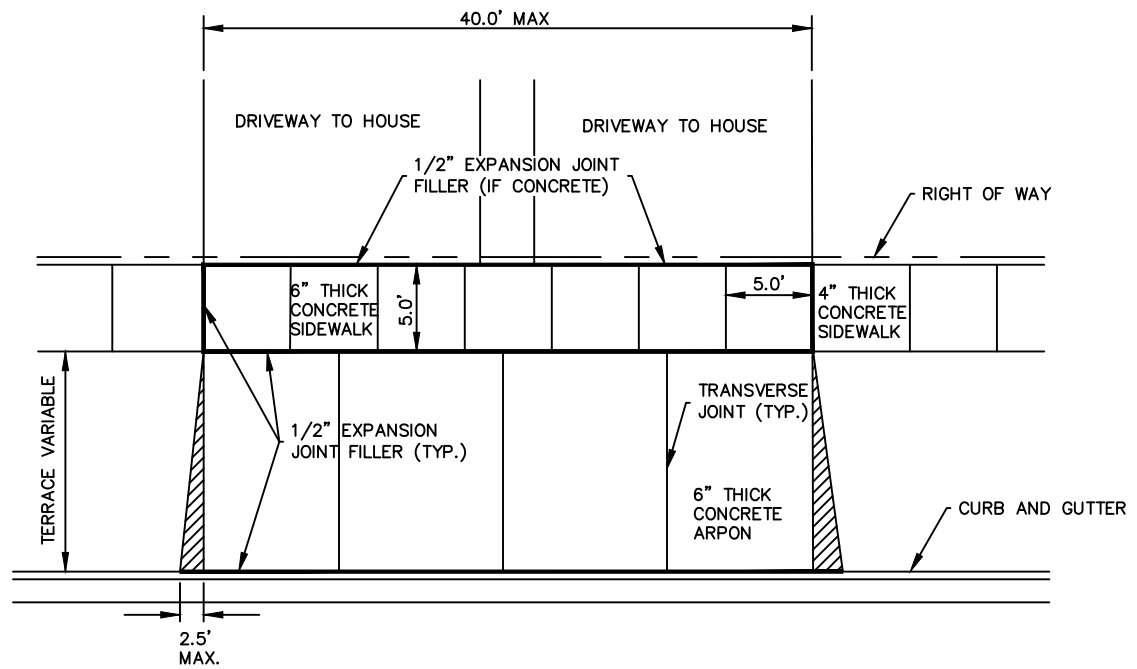
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925 S. SIXTH ST
DE PERE, WI 54115
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
RESIDENTIAL
CONCRETE DRIVEWAYS

DIVISION: 32

DRAWING NO:
C-1

DATE: 01/2024
BY: MJT
CHECKED: EPR



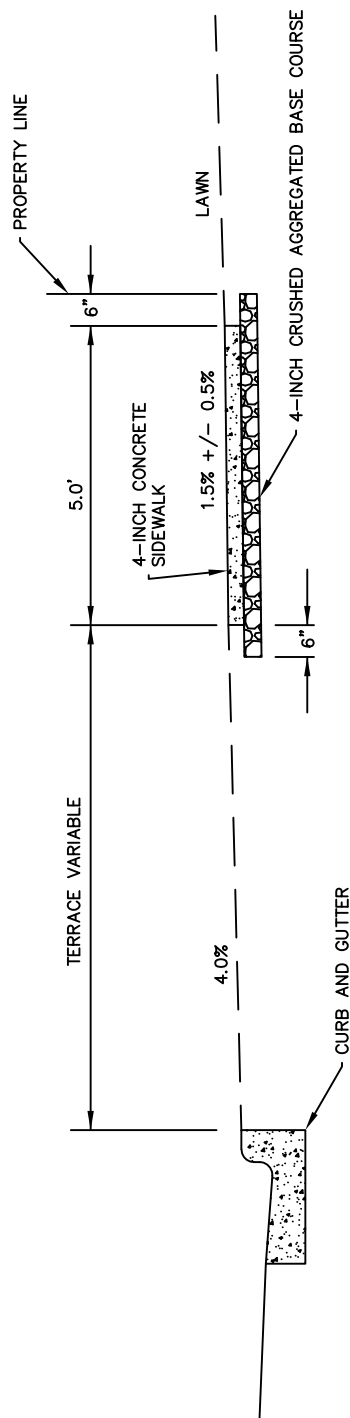
ENGINEERING DIVISION
925 S. SIXTH ST
DE PERE, WI 54115
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
DUPLEX DRIVEWAYS

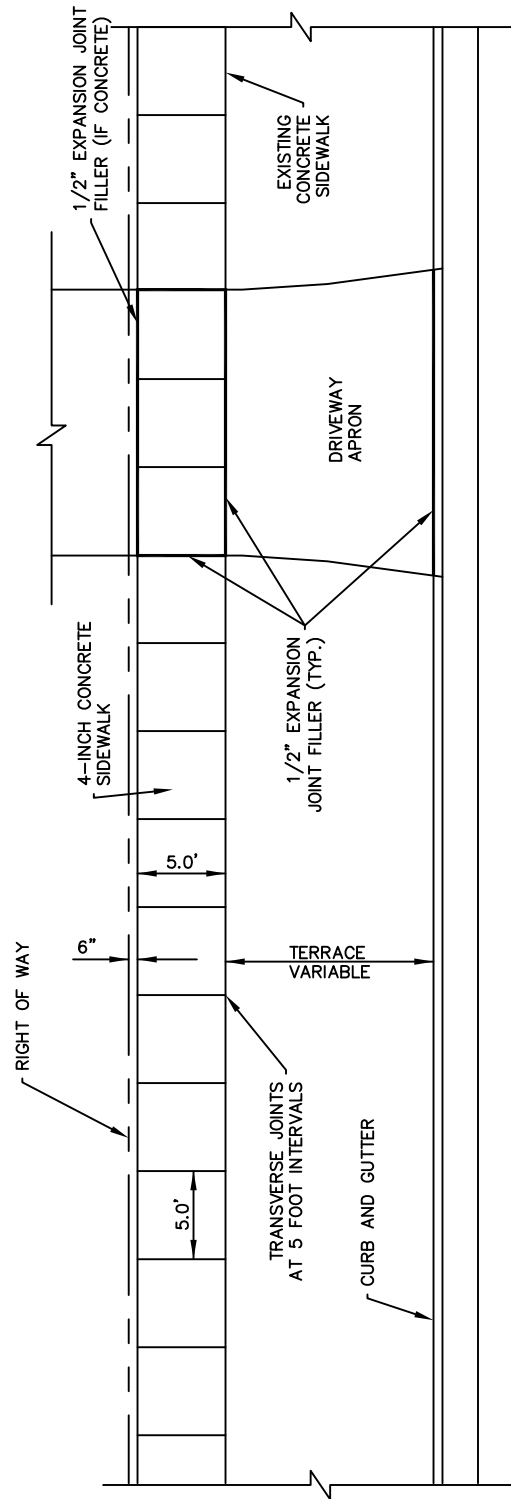
DIVISION: 32

DRAWING NO:
C-2

DATE: 01/2024
BY: MJT
CHECKED: EPR



TYPICAL SECTION



NOTE:

1. CONCRETE DRIVEWAY THICKNESS:

- RESIDENTIAL - 6" DEPTH
- COMMERCIAL/INDUSTRIAL - 8" DEPTH



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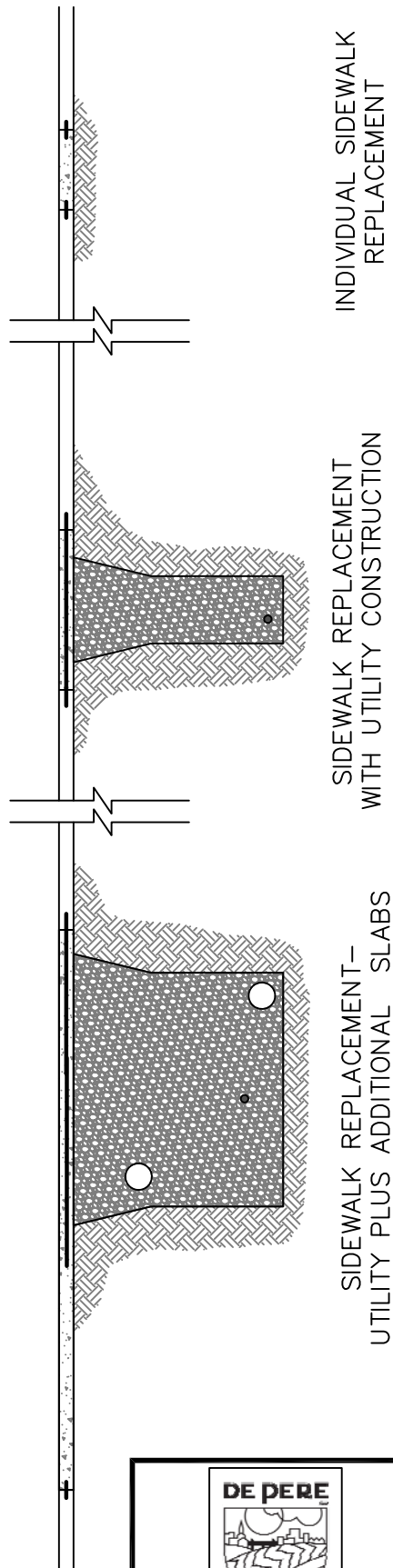
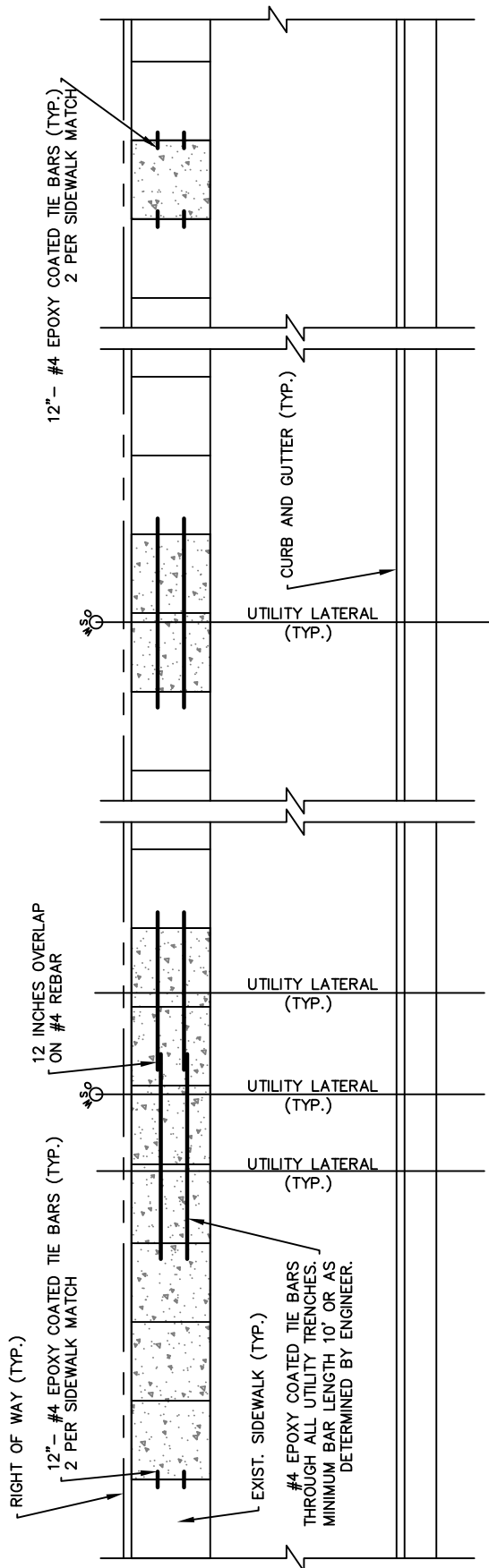
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
CONCRETE SIDEWALKS
AND DRIVEWAY

DIVISION: 32

DRAWING NO:
C-3

DATE: 12/2018
BY: KAD
CHECKED: EPR



ENGINEERING DIVISION

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DE PERE, WI 54115

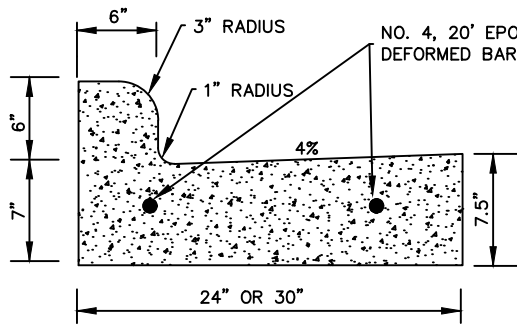
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
CONCRETE SIDEWALK
REINFORCEMENTS

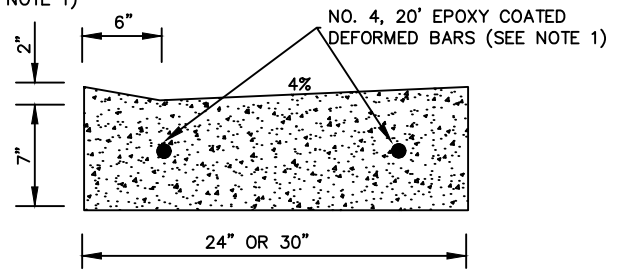
DIVISION: 32

DRAWING NO:
C-4

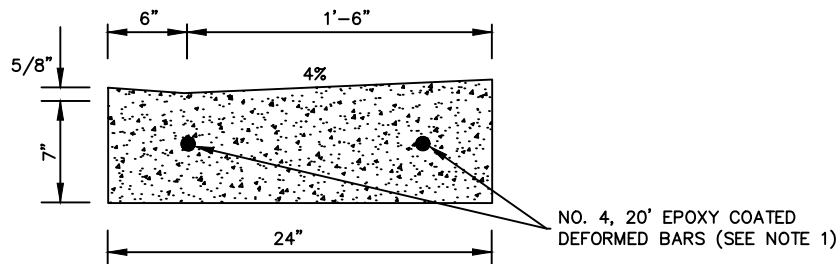
DATE: 12/2018
BY: KAD
CHECKED: EPR



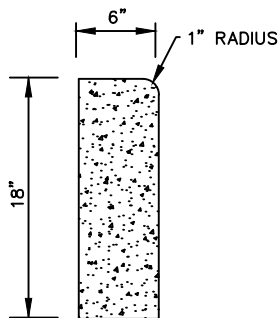
CURB AND GUTTER



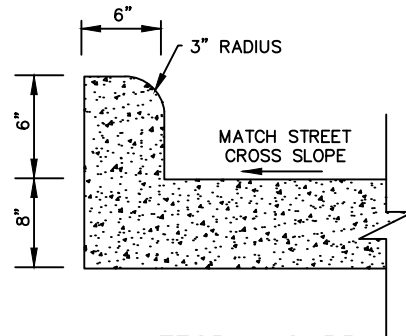
DRIVEWAY
GUTTER



PEDESTRIAN CURB RAMP
GUTTER



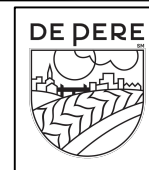
CURB



INTEGRAL CURB

NOTES:

1. 2--NO. 4, 20' EPOXY COATED DEFORMED BARS SHALL BE INSTALLED CENTERED OVER EACH SERVICE AND UTILITY TRENCH OR AS DIRECTED BY THE ENGINEER. FOR TRENCHES LYING UNDER THE CURB AND RUNNING PARALLEL TO THE CURB THE BARS SHALL BE INSTALLED FULL LENGTH OF THE TRENCH.
2. ALL EXPOSED EDGES OF THE CONCRETE SHALL BE FINISHED WITH AN EDGING TOOL HAVING A RADIUS OF 1/4 INCH UNLESS OTHERWISE NOTED.



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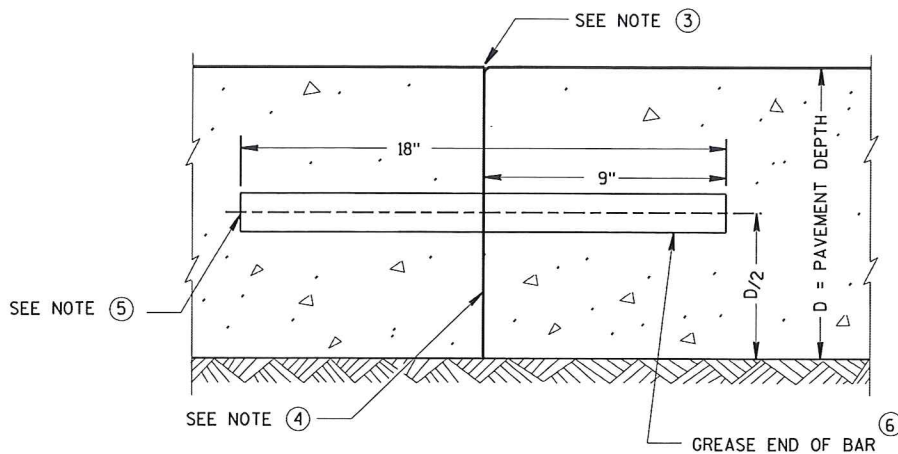
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
CONCRETE CURB
CURB AND GUTTER
AND GUTTER

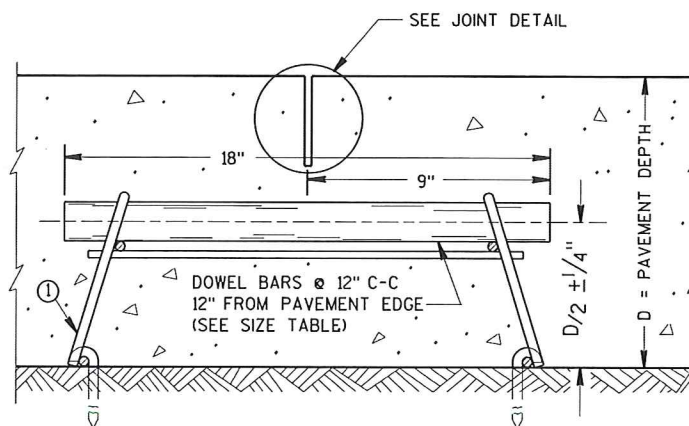
DIVISION: 32

DRAWING NO:
C-5

DATE: 01/2024
BY: MJT
CHECKED: EPR



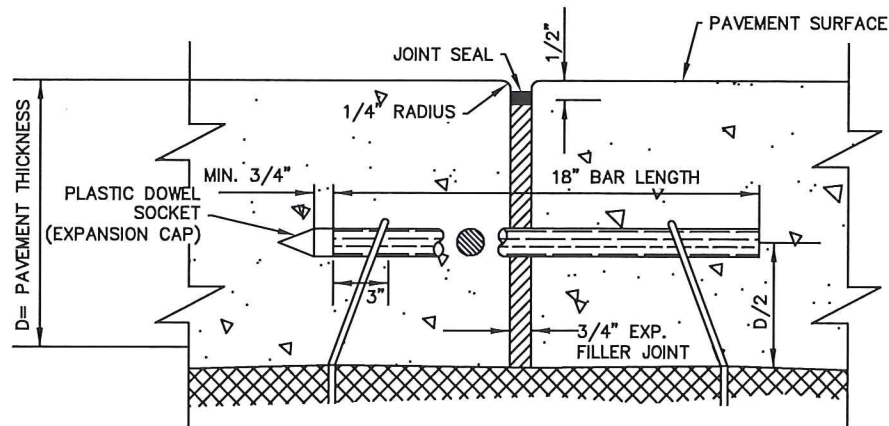
TRANSVERSE CONSTRUCTION JOINT



DOWELED CONTRACTION JOINT

PAVEMENT DEPTH, DOWEL BAR SIZE
AND JOINT SACING TABLE

PAVEMENT DEPTH (D)	DOWEL BAR DIAMETER	CONTRACTION JOINT SPACING
5 1/2", 6", 6 1/2"	NONE	12'
7", 7 1/2"	1"	14'
8", 8 1/2"	1 1/4"	15'
9", 9 1/2"	1 1/4"	15'
10" & ABOVE	1 1/2"	15'



EXPANSION JOINT

NOTES:

- OBTAIN ENGINEER'S APPROVAL FOR THE USE OF ALTERNATE DESIGNS OF THE DOWEL ASSEMBLY. USE MECHANICAL DOWEL BAR INSERTERS OR DOWEL ASSEMBLIES WHEN CONSTRUCTION CONTRACTION JOINTS.
- SECURE BASKETS WITH ANCHORS TO HOLD DOWEL BARS IN CORRECT POSITION AND ALIGNMENT. TYPE, LOCATION, NUMBER AND LENGTH OF ANCHORS ARE DEPENDENT UPON FIELD CONDITIONS.
- FORM OR SAW CONSTRUCTION JOINTS. PROVIDE A 1/4-INCH RADIUS AT FORMED JOINTS.
- PROVIDE A SMOOTH VERTICAL FACE FOR THE ENTIRE DEPTH OF THE PAVEMENT WHEN FORMING CONSTRUCTION JOINTS.
- INSTALL DOWEL BARS AT CONSTRUCTION JOINTS BY FORMING OR DRILLING. INSTALL FORMED DOWEL BARS 12 INCHES C-C AND 12 INCHES FROM PAVEMENT EDGE. REMOVE EXCESS CONCRETE FROM THE FREE END OF THE DOWEL BAR IF DOWEL BARS ARE FORMED THROUGH A HEADER BOARD. INSTALL DRILLED DOWEL BARS ACCORDING TO DRILLED DOWEL BAR CONSTRUCTION JOINT DETAIL.
- APPLY A THIN UNIFORM COATING OF SURFACE TREATMENT TO THE FREE END OF THE DOWEL BARS TO PREVENT BONDING.



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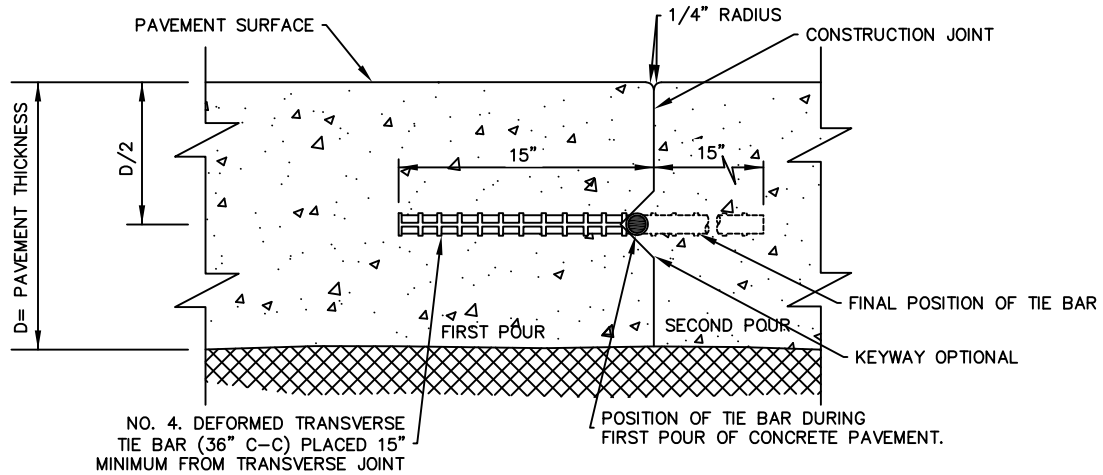
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
TRANSVERSE
JOINTS

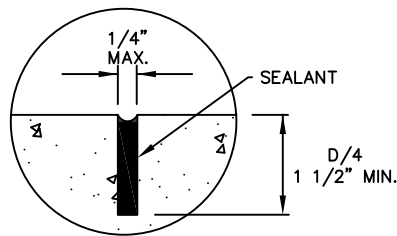
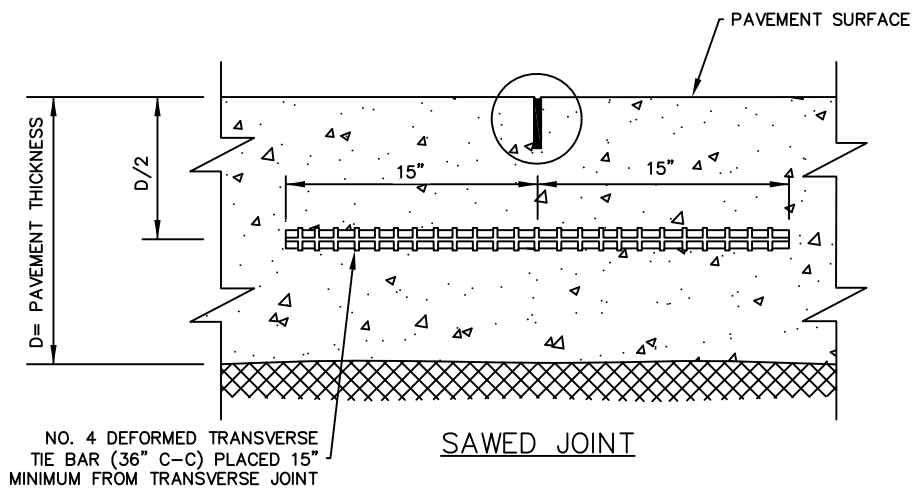
DIVISION: 32

DRAWING NO:
C-6

DATE: 12/2019
BY: KAD
CHECKED: EPR



CONSTRUCTION JOINT



NOTE:

1. ALL TIE BARS, PAVEMENT TIES AND DOWELS SHALL BE EPOXY COATED.



ENGINEERING DIVISION

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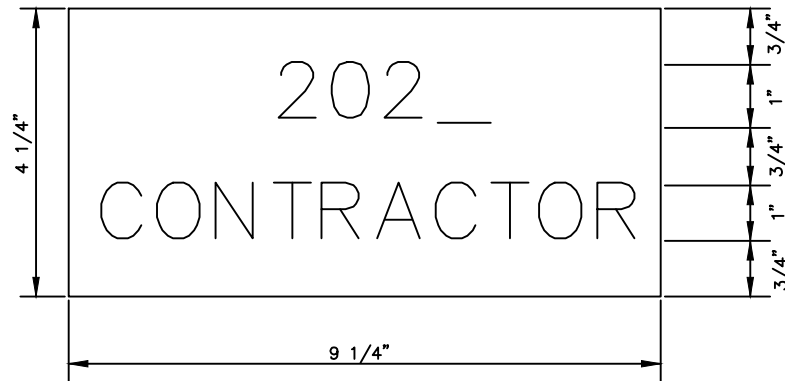
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
LONGITUDINAL
JOINTS

DIVISION: 32

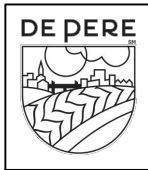
DRAWING NO:
C-7

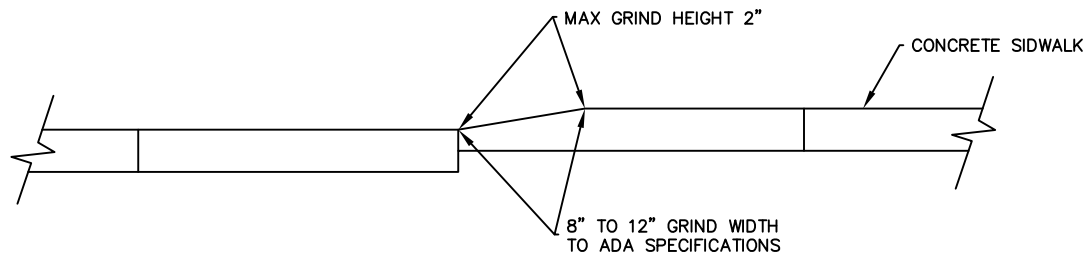
DATE: 12/2019
BY: KAD
CHECKED: EPR



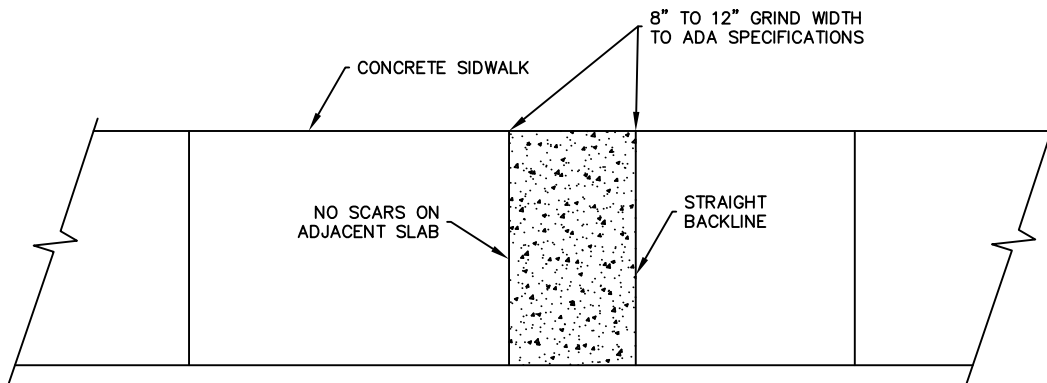
NOTE:

1. THE ENDS OF ALL CONCRETE WORK SHALL BE MARKED WITH A STAMP AS SHOWN, WITH THE CURRENT YEAR.
2. THE DATE OF CONSTRUCTION SHALL BE STAMPED ON ALL CONCRETE PAVEMENTS AND ALLEYS WITH 1-INCH NUMERALS AT THE ENDS OF EACH SECTION PAVED.

 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE, WI 54115 OFFICE 920-339-4061 FAX 920-339-4071	TITLE: CONCRETE STAMP
	DIVISION: 32
	DRAWING NO: C-8
	DATE: 12/2019 BY: KAD CHECKED: EPR



TYPICAL SECTION



PLAN VIEW



ENGINEERING DIVISION

925 S. SIXTH ST
DE PERE, WI 54115

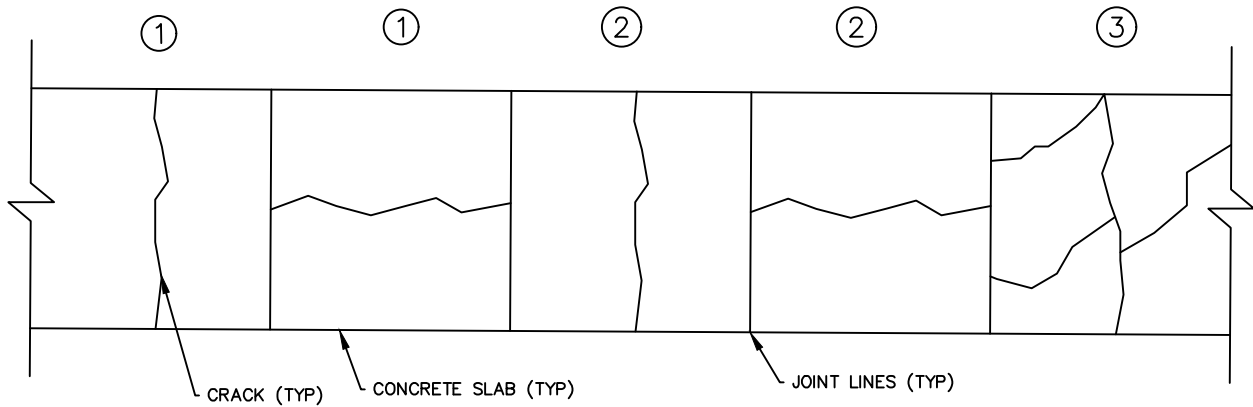
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
CONCRETE SIDEWALKS
GRINDING DETAIL

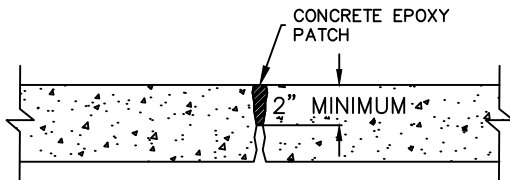
DIVISION: 32

DRAWING NO:
C-9

DATE: 12/2018
BY: KAD
CHECKED: EPR



PLAN VIEW—CRACK LOCATION



① TYPICAL SECTION

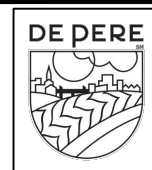


② TYPICAL SECTION

NOTES:

- ① IF THE SIDEWALK PANEL IS CRACKED WITH NO HEIGHT VARIATION ACROSS THE CRACK, THE SIDEWALK PANEL MAY BE REPAIRED USING CONCRETE EPOXY. IF REPAIRED WITH ANY MATERIAL OTHER THAN CONCRETE EPOXY, THE SIDEWALK PANEL WILL BE REMOVED AND REPLACED.
- ② IF SIDEWALK PANEL IS CRACKED WITH A HEIGHT VARIATION ACROSS THE CRACK, THE SIDEWALK PANEL MUST BE REMOVED AND REPLACED.
- ③ IF SIDEWALK PANEL HAS MORE THAN 10 FEET OF HORIZONTAL CRACKS, THE SIDEWALK PANEL MUST BE REMOVED AND REPLACED.

REQUIRED REPAIR (PER NOTE 1 ABOVE)—
CRACKS THAT CAN BE REPAIRED WITH CONCRETE EPOXY SHALL BE REPAIRED BY ROUTING THE CRACK AND REMOVING LOOSE MATERIAL TO A DEPTH OF AT LEAST 2 INCHES. THE CRACK SHALL BE FILLED TO BE FLUSH WITH THE SURROUNDING CONCRETE.



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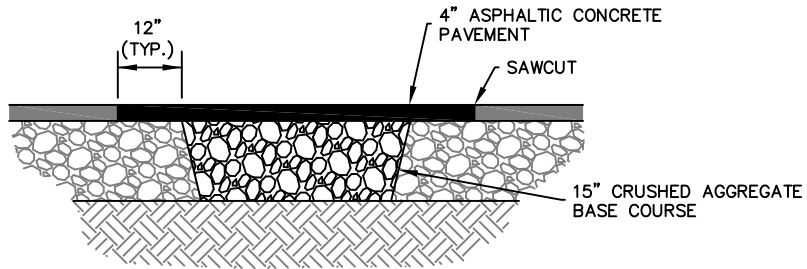
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
CRACKED CONCRETE
SIDEWALK REPAIR
DETAIL

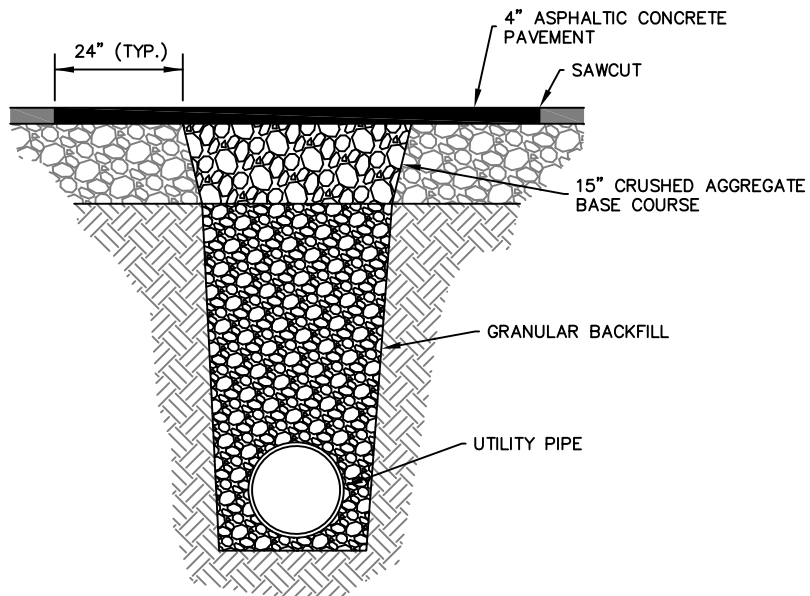
DIVISION: 32

DRAWING NO:
C-10

DATE: 01/2022
BY: KAD
CHECKED: EPR



WORK WITHIN ASPHALT AND AGGREGATE



EXCAVATION EXTENDS INTO THE SUBGRADE



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DE PERE, WI 54115
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
EXCAVATION IN
ASPHALT PAVEMENT

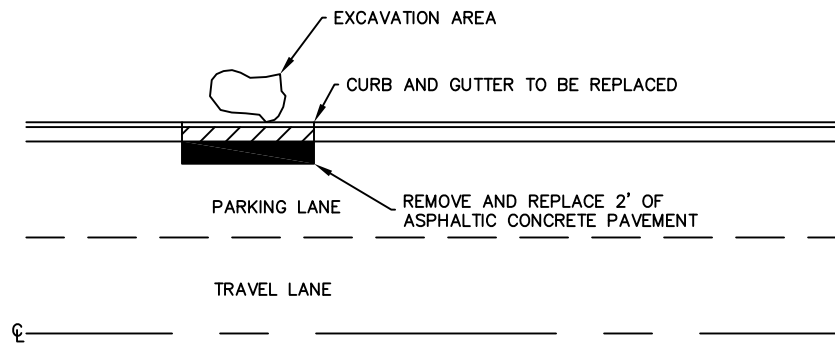
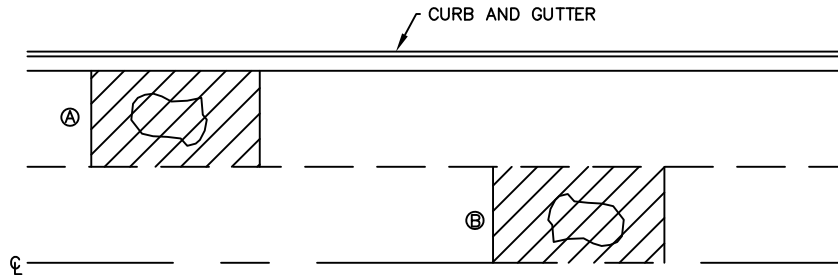
DIVISION: 32

DRAWING NO:
P-1

DATE: 12/2018
BY: KAD
CHECKED: EPR

EXCAVATION IN ASPHALT

- Ⓐ - EXCAVATION IN PARKING LANE
- REPAIR PARKING LANE
- Ⓑ - EXCAVATION IN TRAVEL LANE
- REPAIR TRAVEL LANE



CURB AND GUTTER REMOVAL ON ASPHALTIC CONCRETE PAVEMENT

NOTE:

1. IF EXCAVATION OCCURS BEHIND THE CURB AND GUTTER AND INVOLVES CURB AND GUTTER REMOVAL AND REPLACEMENT, A TWO (2) FEET WIDE STRIP OF ASPHALT CONCRETE PAVEMENT SHALL BE REMOVED AND REPLACED.



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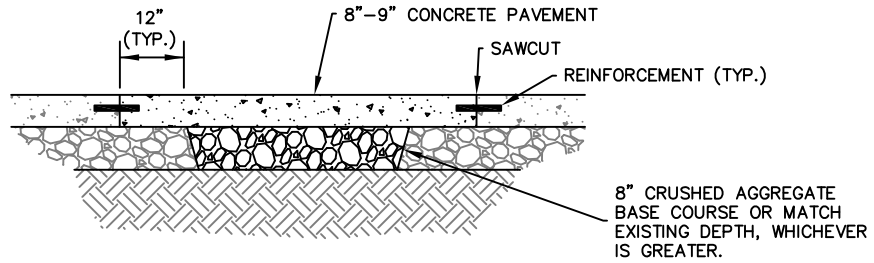
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
PATCH WORK IN
ASPHALT PAVEMENT

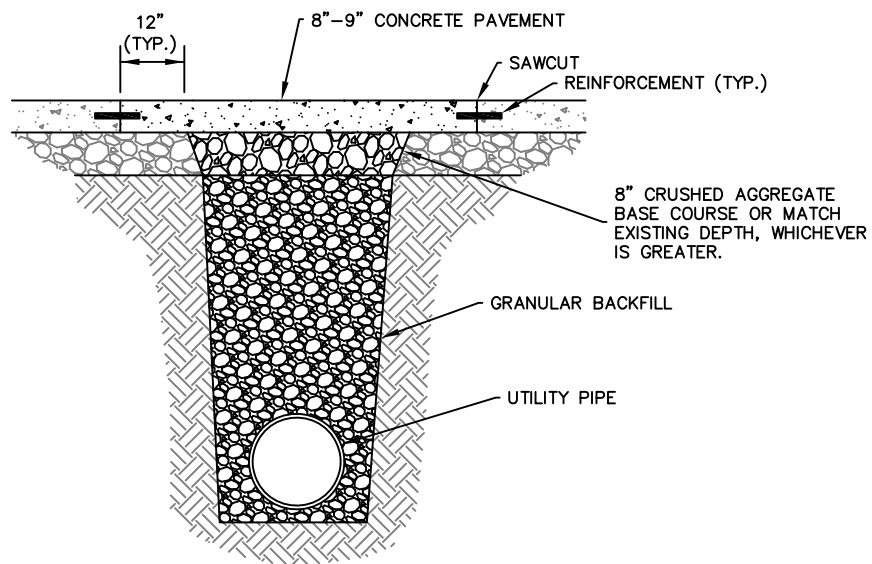
DIVISION: 32

DRAWING NO:
P-2

DATE: 12/2018
BY: KAD
CHECKED: EPR



WORK WITHIN CONCRETE AND AGGREGATE



EXCAVATION EXTENDS INTO THE SUBGRADE

NOTE:

1. INSTALL REINFORCEMENT PER SPECIFICATIONS.



ENGINEERING DIVISION

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OFFICE 920-339-4061
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TITLE:
EXCAVATION IN
CONCRETE PAVEMENT

DIVISION: 32

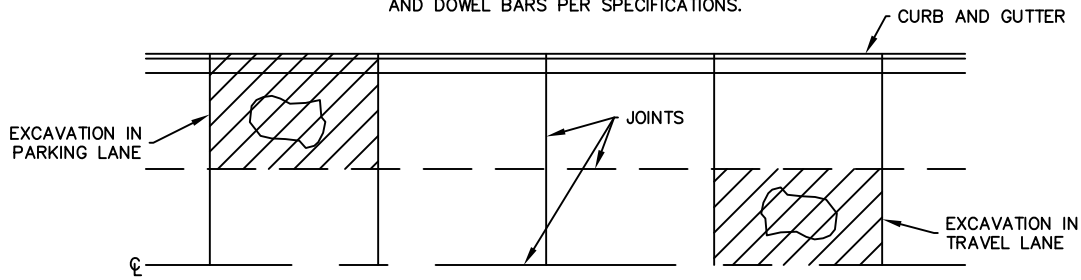
DRAWING NO:
P-3

DATE: 12/2019
BY: KAD
CHECKED: EPR

EXCAVATION ON CONCRETE STREETS LESS THAN 15 YEARS

NOTE:

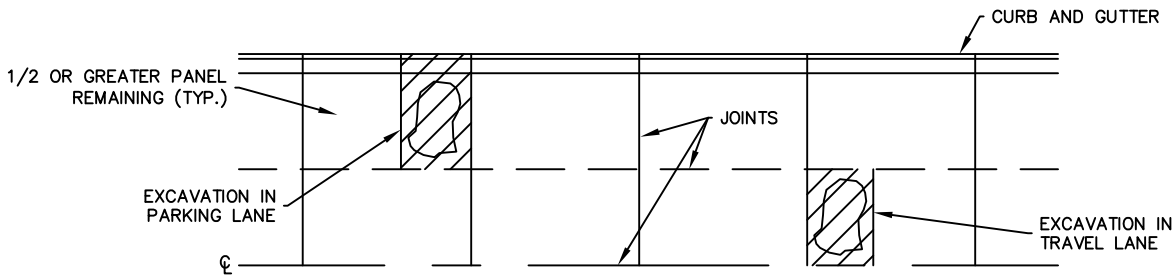
1. REPAIR TO A JOINT LINE. INSTALL TIE BARS AND DOWEL BARS PER SPECIFICATIONS.



EXCAVATION ON CONCRETE STREETS GREATER THAN 15 YEARS

NOTES:

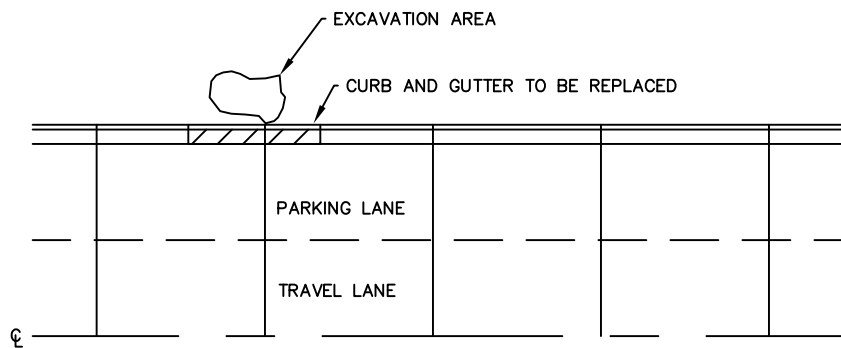
1. REMOVE TO THE JOINT IF REMAINDER OF PANEL IS CRACKED.
2. SAWCUT 12 INCHES BEYOND TRENCH WALL OR DAMAGED CONCRETE. MINIMUM PATCH MUST BE 7 FEET.
3. INSTALL TIE BARS AND DOWEL BARS PER SPECIFICATIONS.



CURB AND GUTTER REMOVAL ON ASPHALTIC CONCRETE PAVEMENT

NOTE:

1. IF EXCAVATION OCCURS BEHIND THE CURB AND GUTTER AND INVOLVES CURB AND GUTTER REMOVAL AND REPLACEMENT. INSTALL TIE BARS PER SPECIFICATIONS.



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OFFICE 920-339-4061
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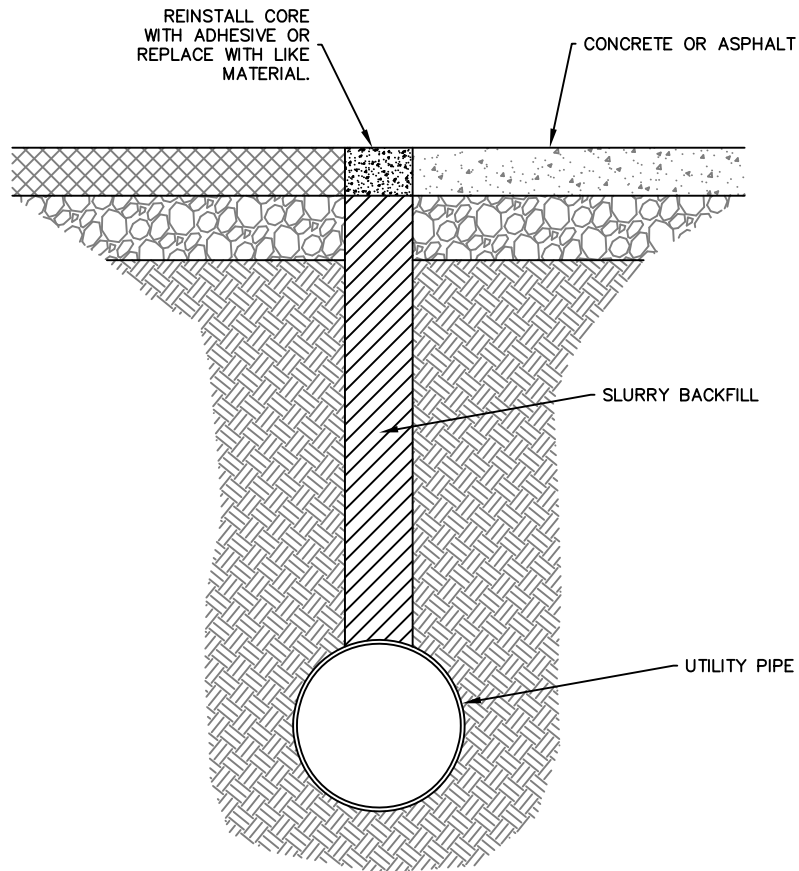
TITLE:
PATCH WORK IN
CONCRETE PAVEMENT

DIVISION: 32

DRAWING NO:
P-4

DATE: 12/2019
BY: KAD
CHECKED: EPR

CORING OR BORE HOLE REPLACEMENT DETAIL



NOTE:

1. IF CORE IS TO BE REPLACED, IT SHALL BE INSTALLED IMMEDIATELY AFTER PLACEMENT OF THE SLURRY. IT SHALL BE FLUSH WITH THE ADJACENT PAVEMENT.



ENGINEERING DIVISION

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DE PERE, WI 54115

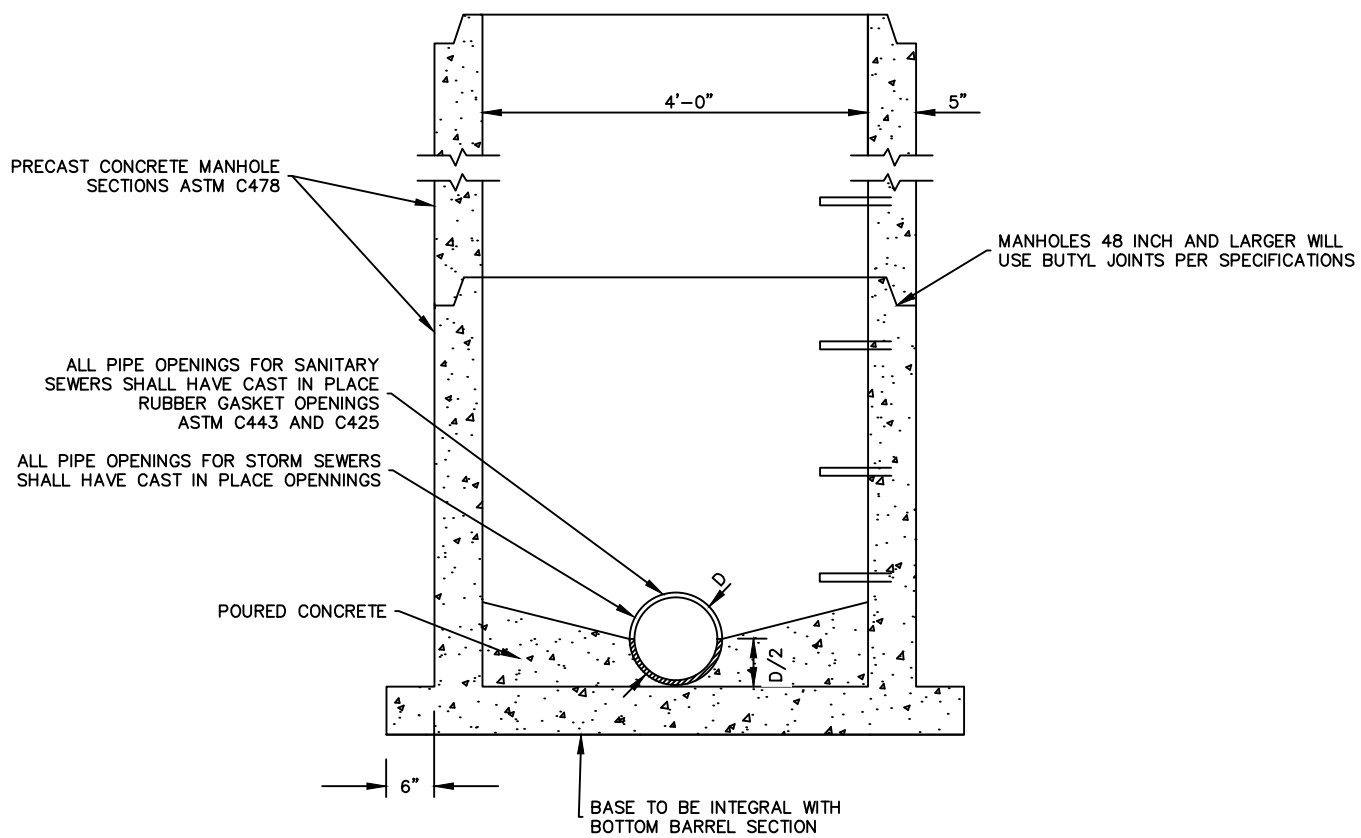
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
CORE OR BORE HOLE
REPLACEMENT DETAIL
IN CONCRETE OR
ASPHALT

DIVISION: 32

DRAWING NO:
P-5

DATE: 12/2018
BY: KAD
CHECKED: EPR



DE PERE



ENGINEERING DIVISION
925 S. SIXTH ST
DE PERE, WI 54115

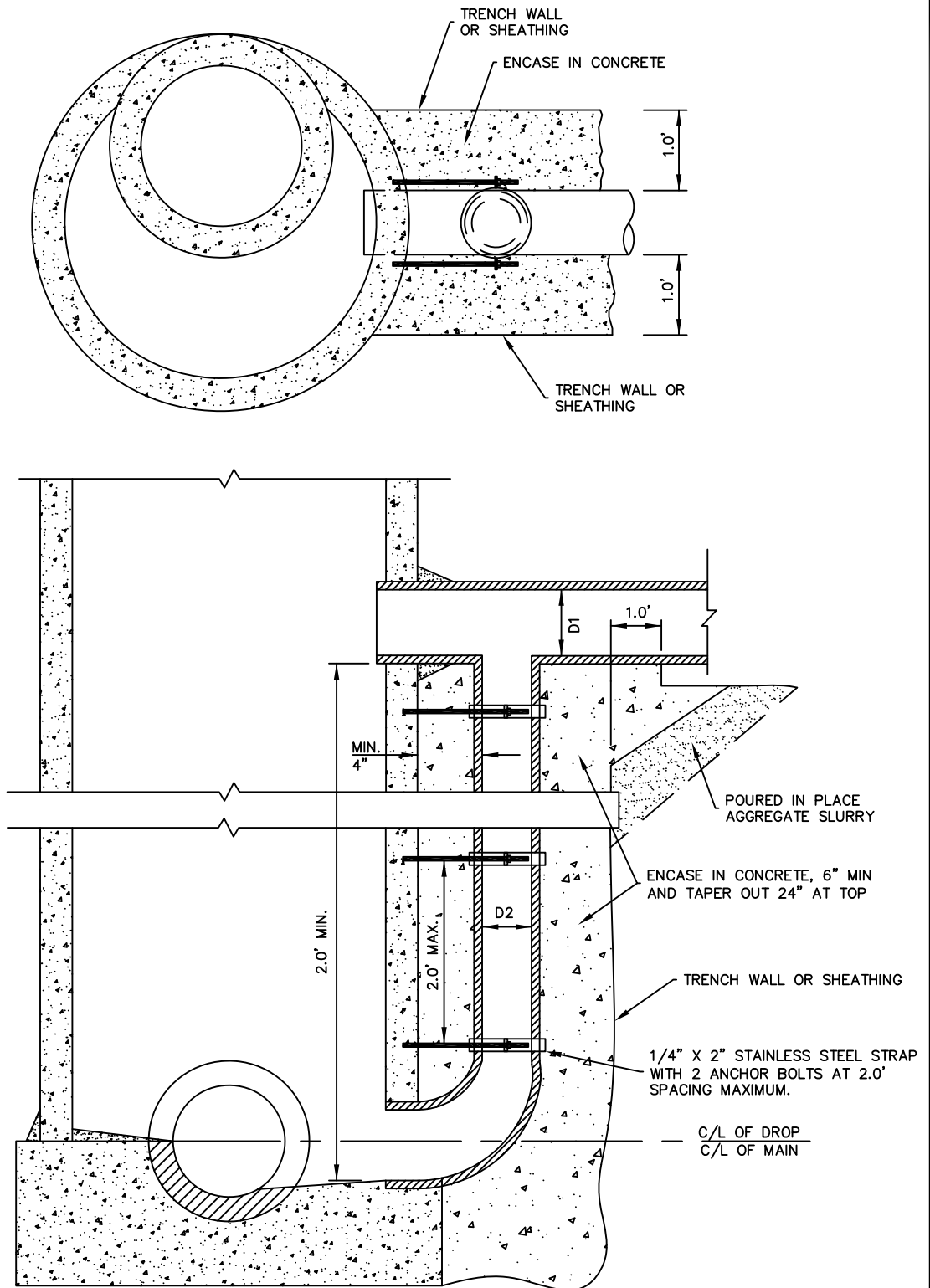
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
PRECAST CONCRETE
MANHOLE

DIVISION: 33

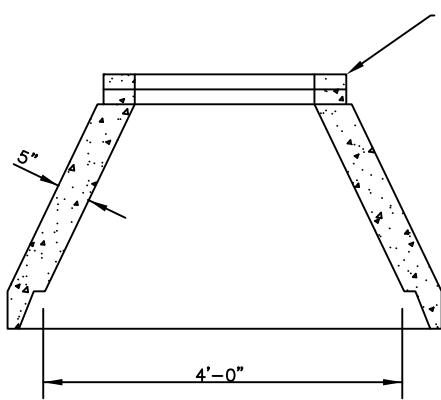
DRAWING NO:
S-1

DATE: 01/2025
BY: KAD
CHECKED: EPR

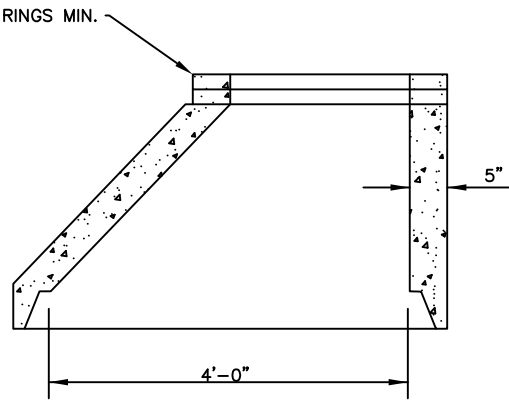


PIPE SCHEDULE OUTSIDE DROP MANHOLE	
LATERAL D1	DROP PIPE D2
24	18
21	15
18	12
15	10
12	10
10	8
8	8

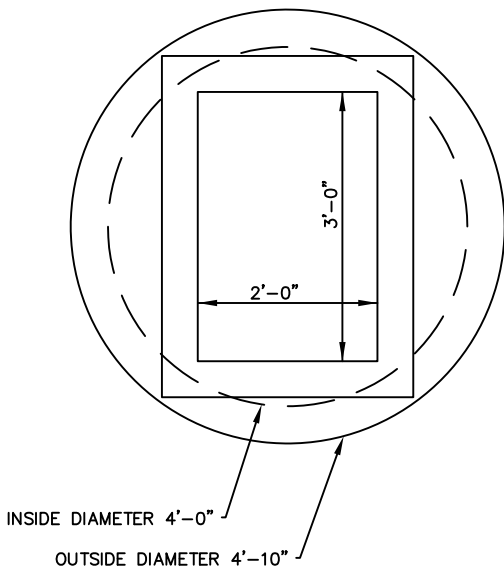
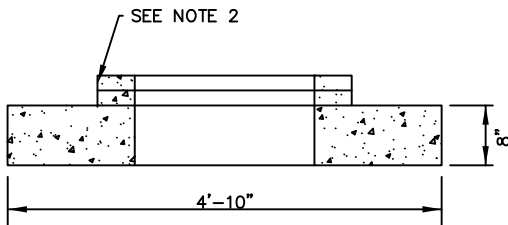
 ENGINEERING DIVISION 925 S. SIXTH ST DE PERE, WI 54115 OFFICE 920-339-4061 FAX 920-339-4071	TITLE: OUTSIDE DROP MANHOLE
	DIVISION: 33
	DRAWING NO: S-2
	DATE: 12/2018 BY: KAD CHECKED: EPR



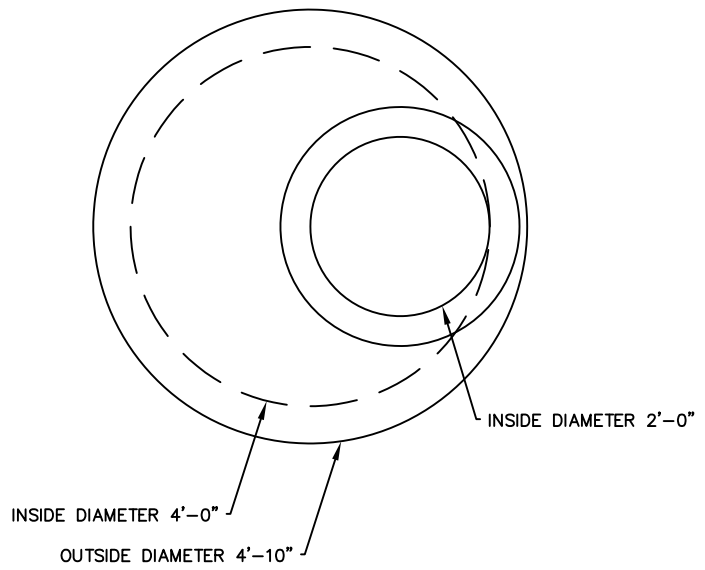
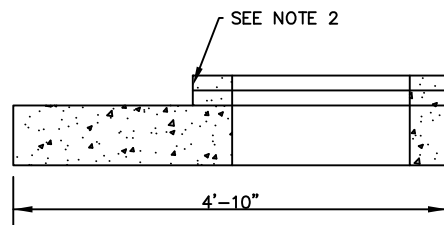
CONCENTRIC CONE
WHERE DIRECTED BY ENGINEER



ECCENTRIC CONE STANDARD



INLET MANHOLE COVER



MANHOLE COVER

NOTE:

1. THE TOP ADJUSTING RING (MINIMUM OF 2" AND MAXIMUM OF 3") ON ALL MANHOLES AND INLETS THAT FALL WITHIN THE PAVEMENT SHALL BE RUBBER RISER RINGS.
2. ASPHALT STREET:
 - MIN. 2-2" ADJUSTMENT RINGS, BOTTOM RING CONCRETE AND THE TOP RING RUBBER.
- CONCRETE STREET:
 - MINIMUM 2" RUBBER RING ON TOP WITH CONCRETE VIBRATED UNDER RUBBER RING OR AN ADDITIONAL 2" CONCRETE RING.



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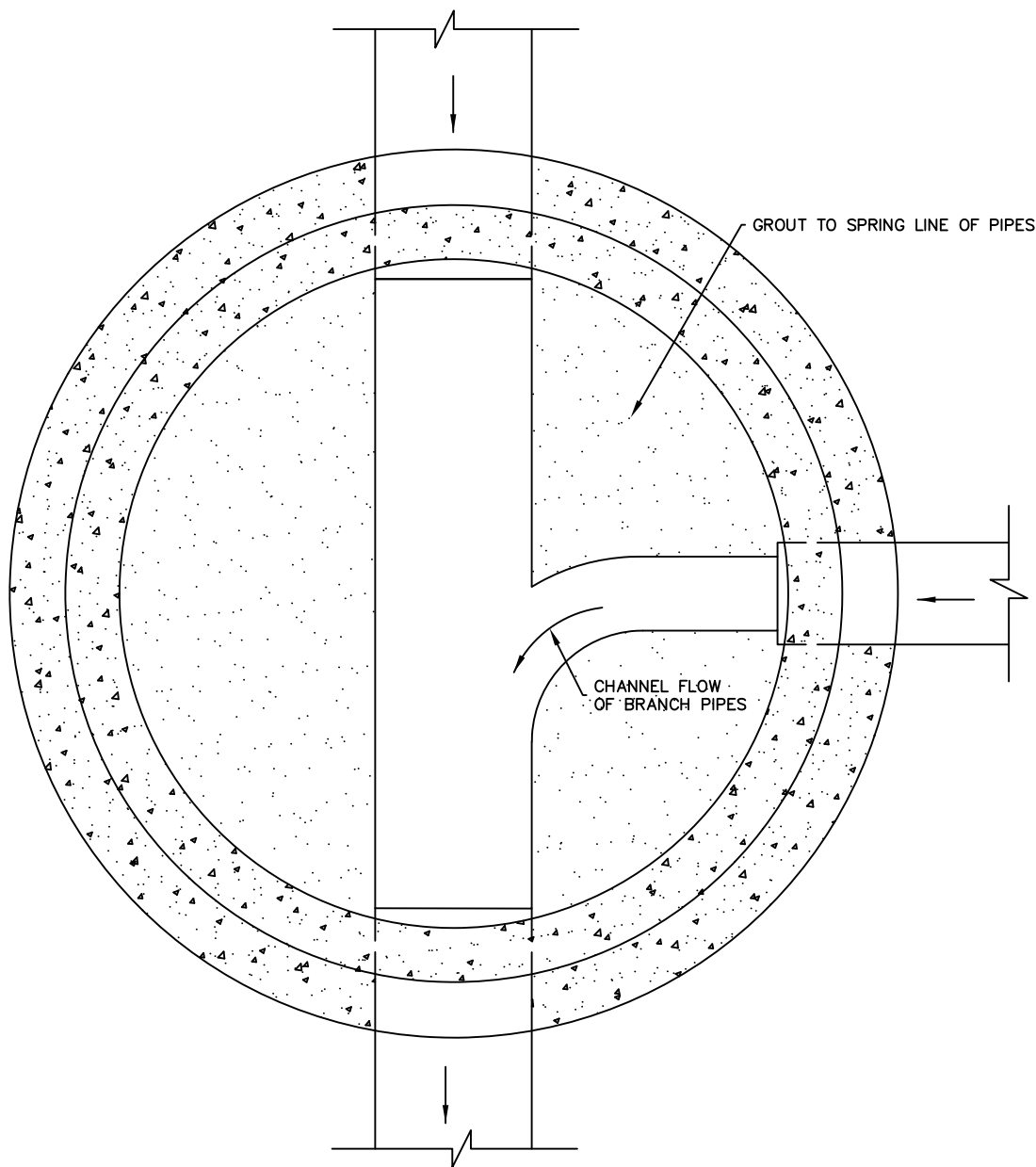
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
PRECAST CONCRETE
CONES AND COVERS
ASTM C478

DIVISION: 33

DRAWING NO:
S-3

DATE: 12/2018
BY: KAD
CHECKED: EPR



STANDARD MANHOLE



ENGINEERING DIVISION

925 S. SIXTH ST
DE PERE, WI 54115

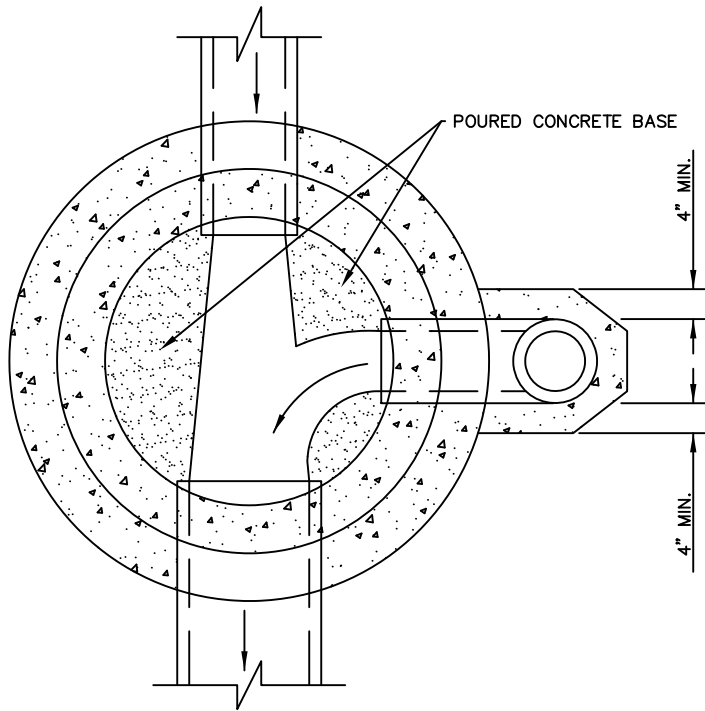
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
CHANNELIZATION

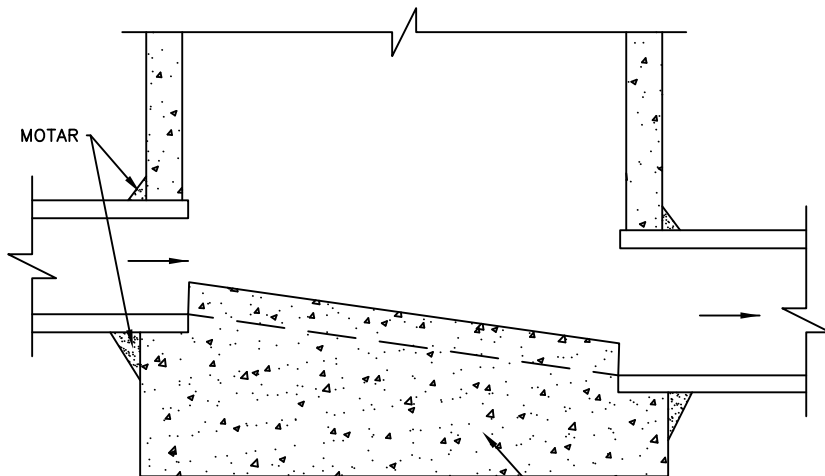
DIVISION: 33

DRAWING NO:
S-4

DATE: 12/2018
BY: KAD
CHECKED: EPR



DROP MANHOLE



PIPE SIZE CHANGE



ENGINEERING DIVISION

925 S. SIXTH ST
DE PERE, WI 54115

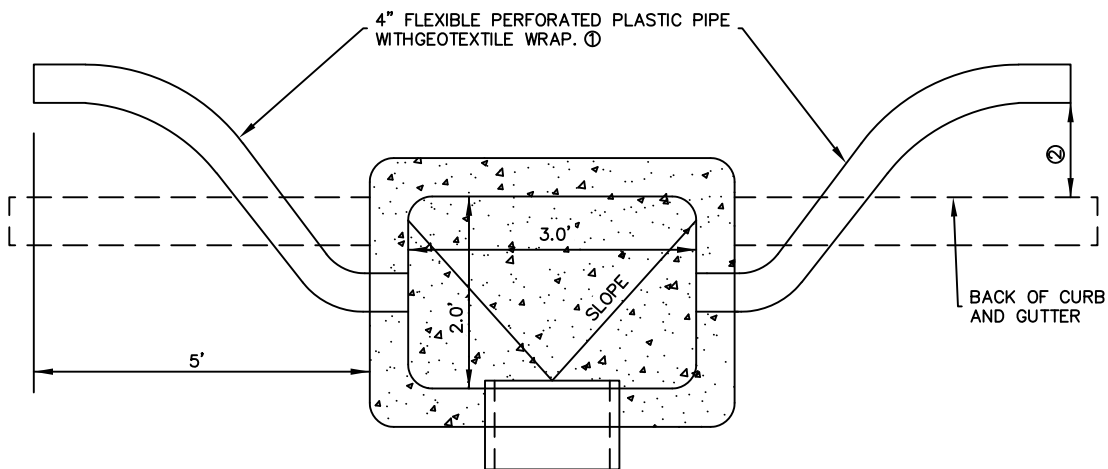
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
CHANNELIZATION

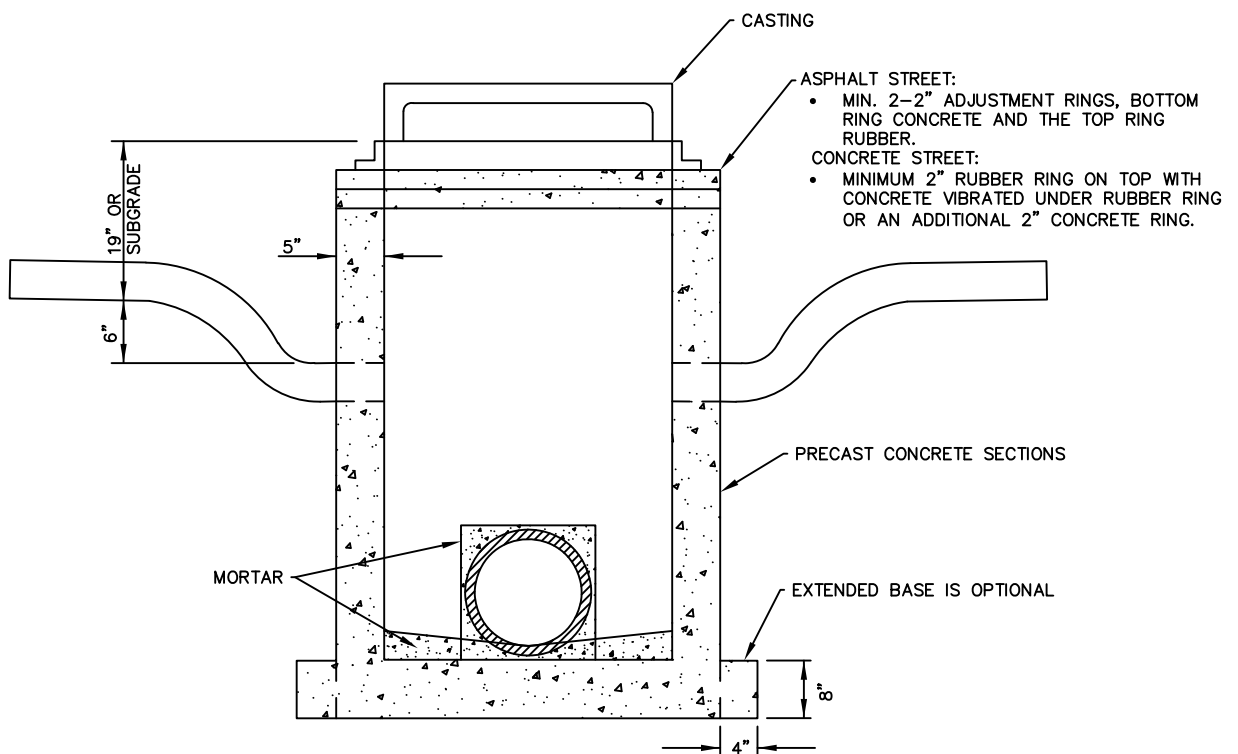
DIVISION: 33

DRAWING NO:
S-5

DATE: 12/2018
BY: KAD
CHECKED: EPR



- ① IF THERE IS LESS THEN 5' OF CURB AND GUTTER BEING REPLACED, EXTEND TO THE LIMITS OF THE CURB AND GUTTER REPLACEMENT.
- ② EDGE DRAIN TO BE LOCATED AT EDGE OF CRUSHED AGGREGATE BASE COURSE.



NOTES:

1. THE MINIMUM DEPTH OF TYPE B INLETS FROM GRATE TO BOTTOM OF BASE SHALL BE 4'-8".
2. PROVIDE INLET BARRIERS FOR NEW CONSTRUCTION.
3. TYPE B INLETS SHALL MEET ALL SPECIFICATIONS OF ASTM C478.
4. 1", 2" OR TAPERED RUBBER RINGS ARE ACCEPTABLE TO PROVIDE FOR FIELD CONDITIONS.



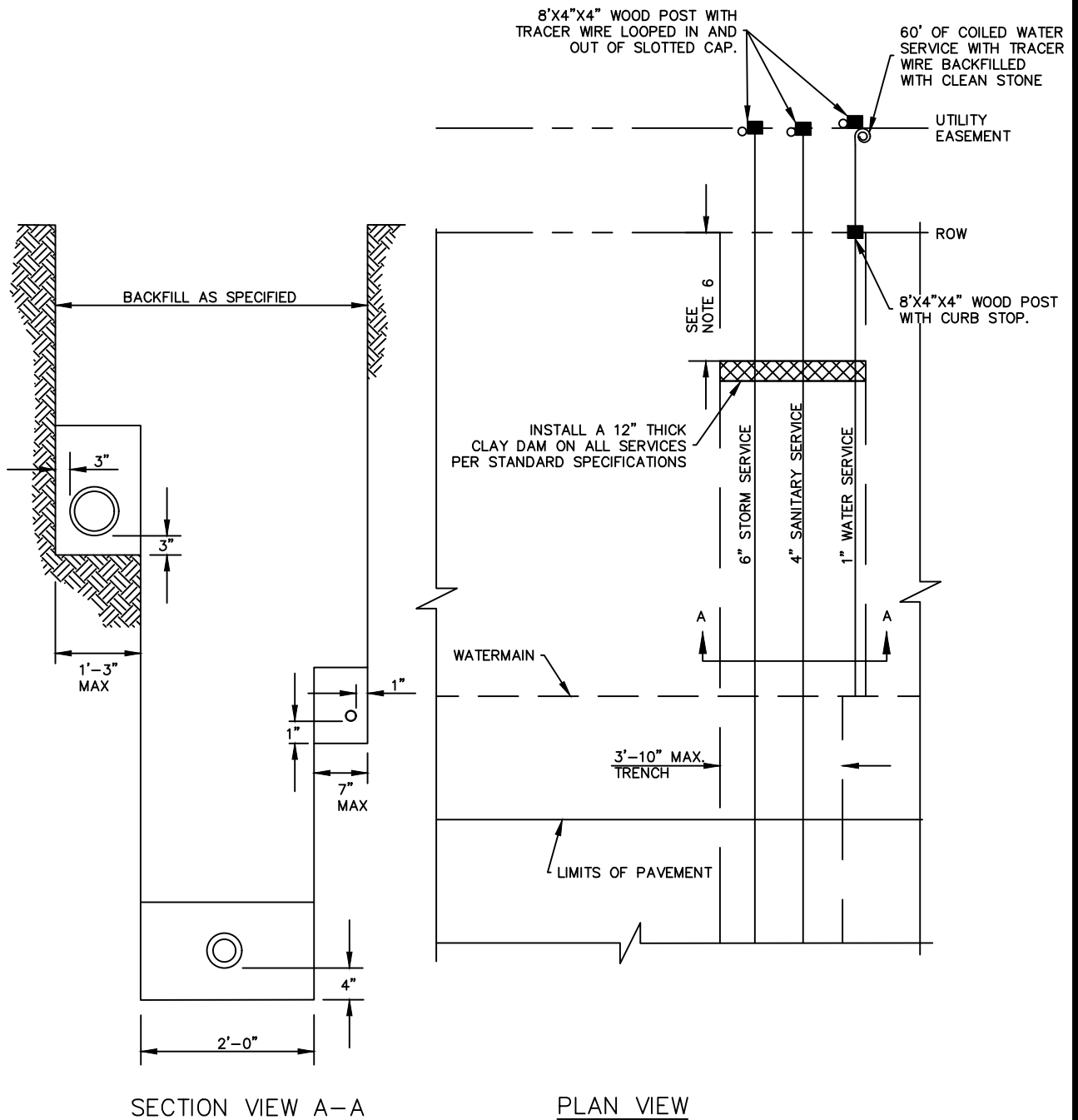
ENGINEERING DIVISION
925 S. SIXTH ST
DE PERE, WI 54115
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
TYPE B INLET

DIVISION: 33

DRAWING NO:
S-6

DATE: 12/2018
BY: KAD
CHECKED: EPR



NOTES:

1. ON A NORTH-SOUTH STREET, STORM SERVICES SHALL BE PLACED ON THE NORTH SIDE OF TRENCH.
2. ON AN EAST-WEST STREET, STORM SERVICES SHALL BE PLACED ON THE WEST SIDE OF TRENCH.
3. STORM SERVICES SHALL BE PLACED TO A DEPTH OF 4 FEET AT THE PROPERTY LINE OR AS DIRECTED.
4. SANITARY SEWER SERVICES SHALL BE A MINIMUM OF 10 FEET OR A MAXIMUM OF 11 FEET OF DEPTH AT THE PROPERTY LINE.
5. GRANULAR BACKFILL SHALL BE PLACED A MINIMUM OF 6 INCHES OVER THE SERVICES.
6. LOCATION OF CLAY DAM TO BE DETERMINED BY ENGINEER BASED ON SIDEWALK AND OTHER PAVED SURFACES



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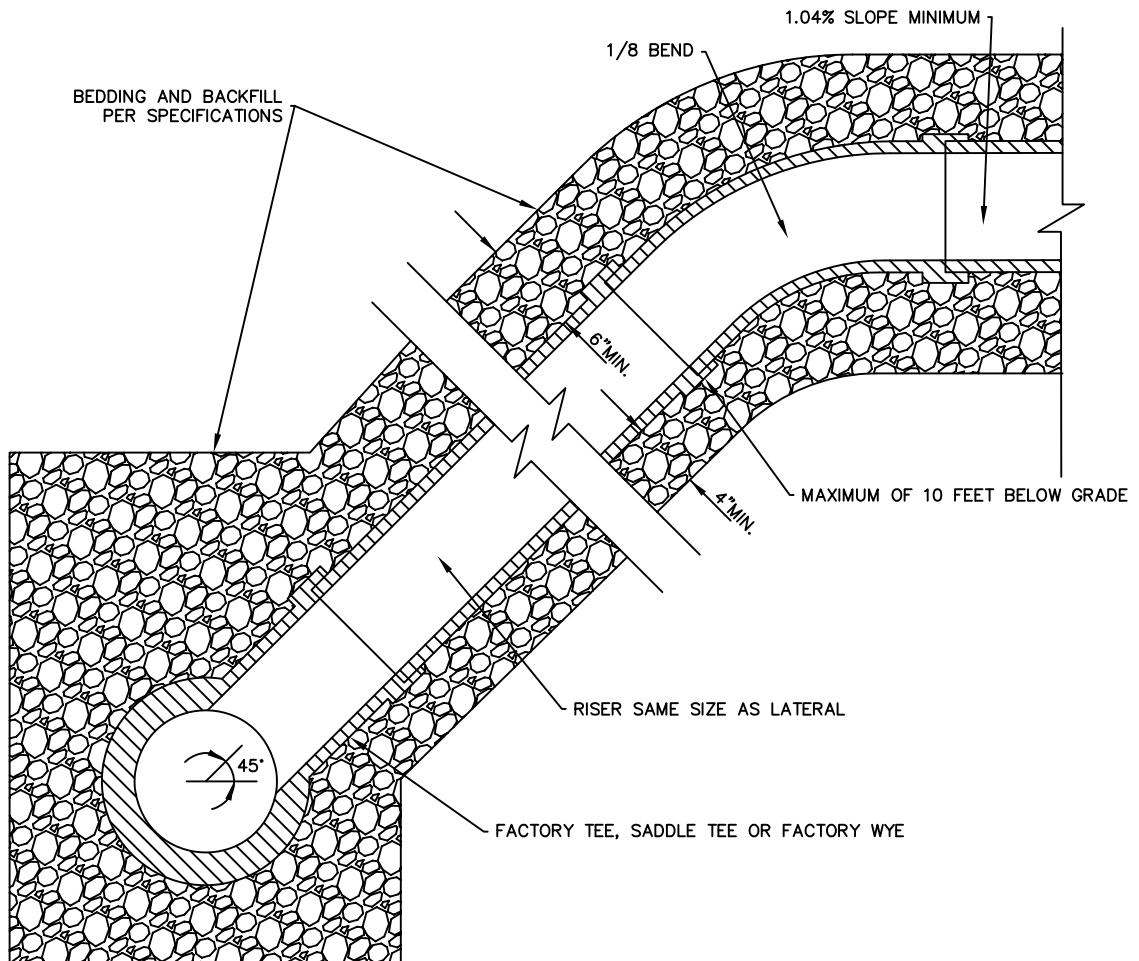
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
SANITARY, STORM
AND WATER
SERVICES

DIVISION: 33

DRAWING NO:
S-7

DATE: 01/2025
BY: KAD
CHECKED: EPR



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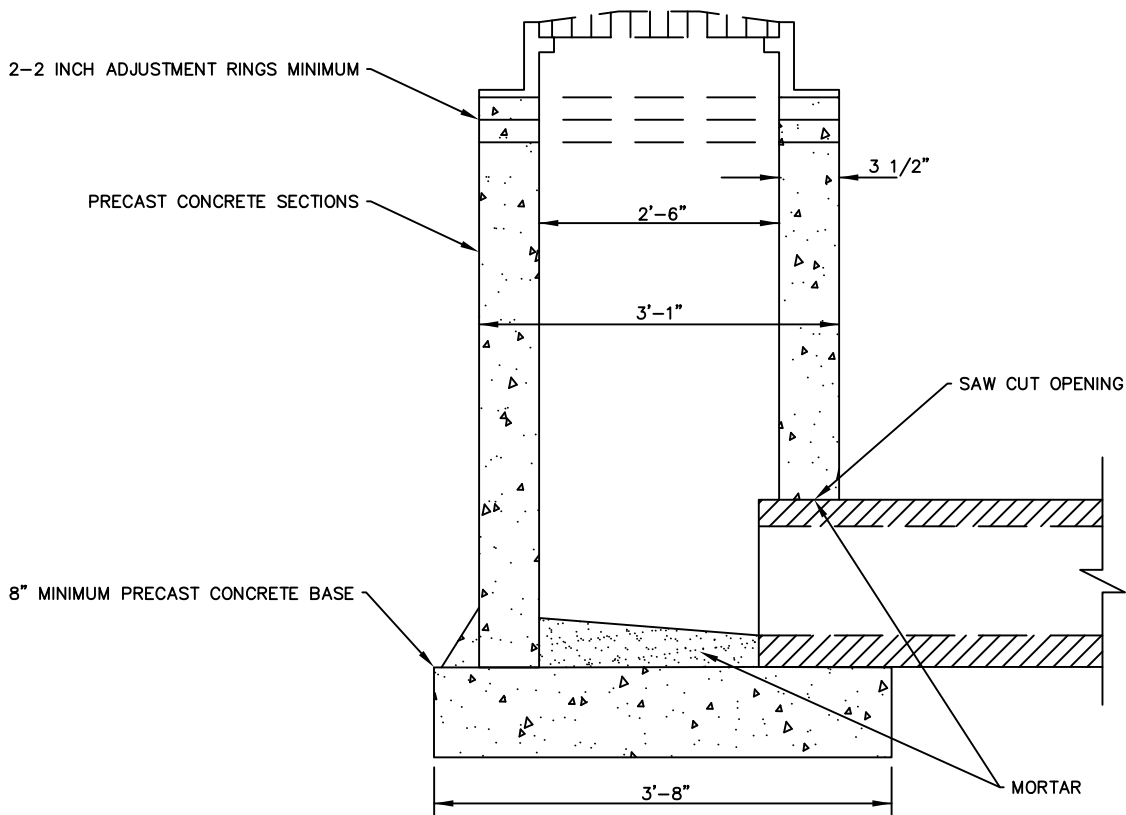
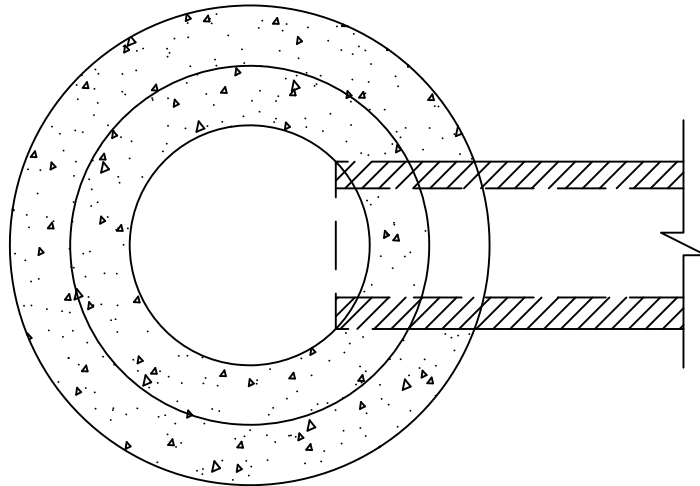
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
RISER FOR SERVICE
CONNECTIONS

DIVISION: 33

DRAWING NO:
S-8

DATE: 12/2018
BY: KAD
CHECKED: EPR



NOTE:

1. THE MINIMUM DEPTH OF FIELD INLETS FROM GRATE TO BOTTOM OF BASE SHALL BE 4'-8".



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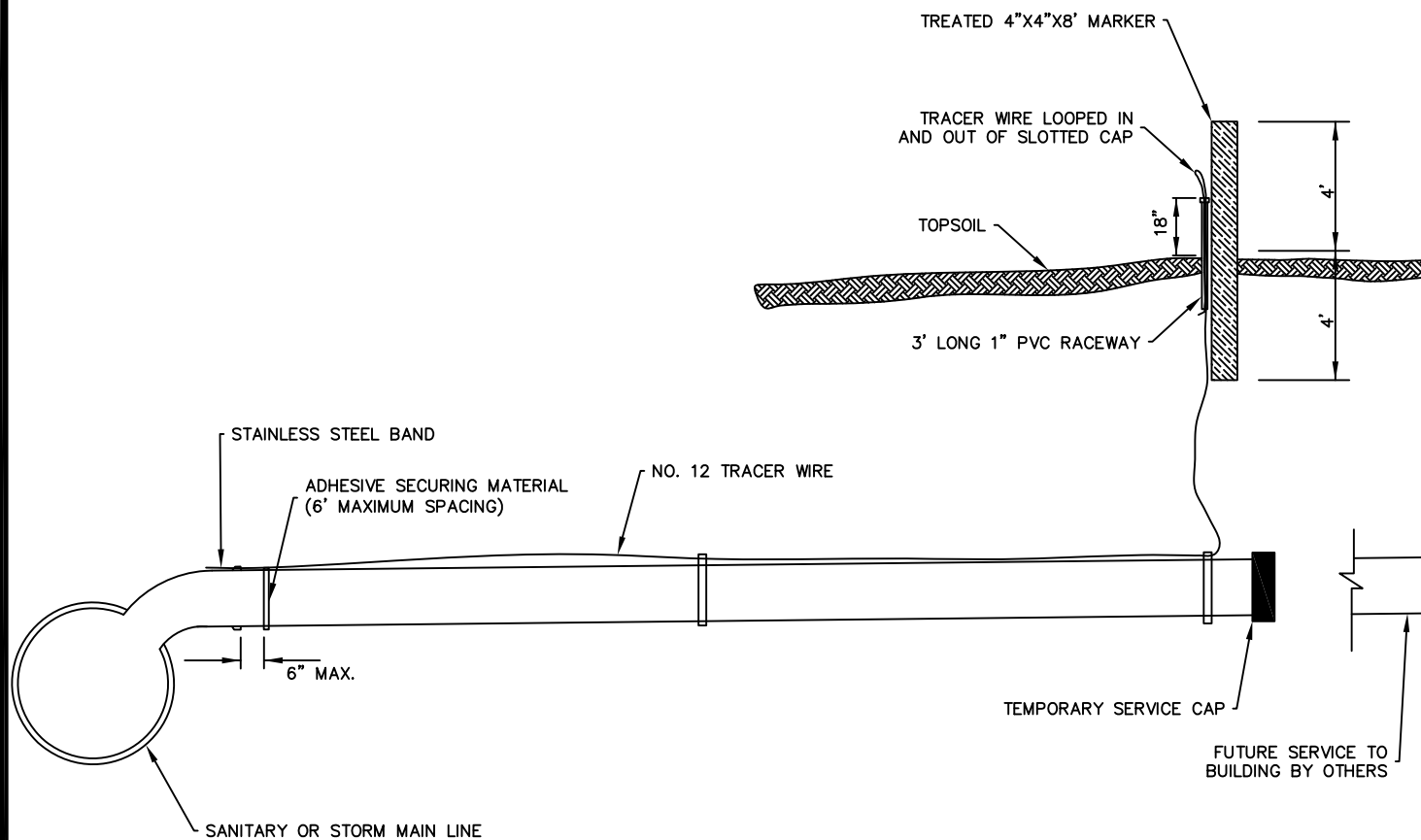
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
TYPE A FIELD INLET

DIVISION: 33

DRAWING NO:
FI-1

DATE: 12/2018
BY: KAD
CHECKED: EPR



NOTE:

1. TRACER WIRE — BROWN FOR STORM AND GREEN FOR SANITARY.



ENGINEERING DIVISION

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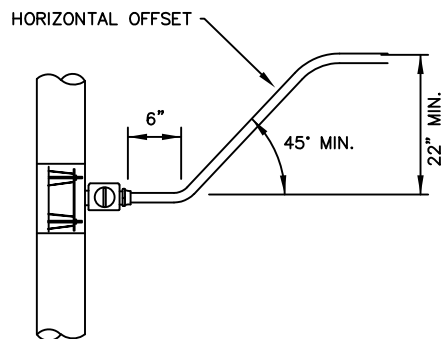
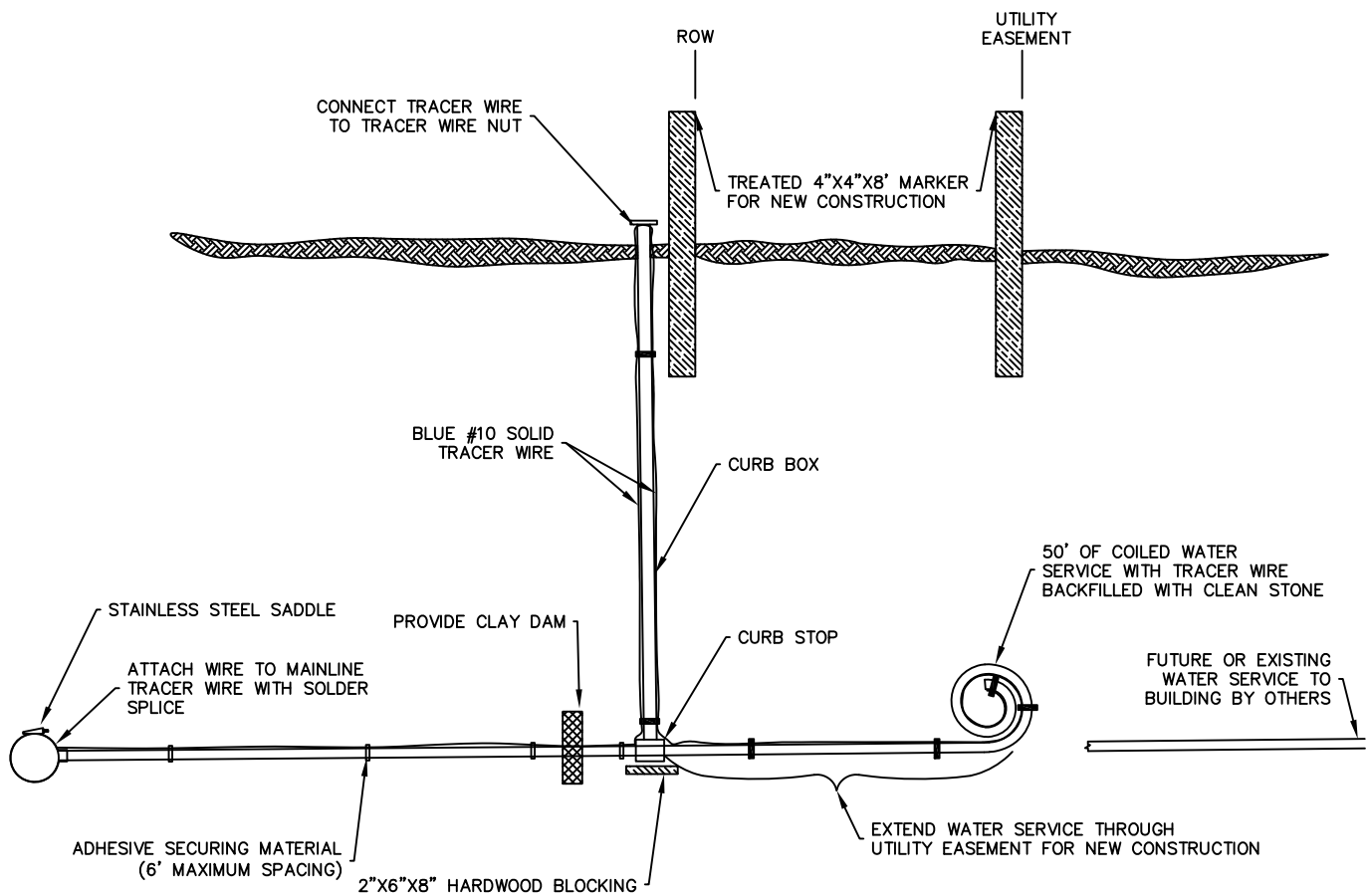
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
SEWER TRACER WIRE

DIVISION: 33

DRAWING NO:
TW-1

DATE: 12/2018
BY: KAD
CHECKED: EPR



ENGINEERING DIVISION

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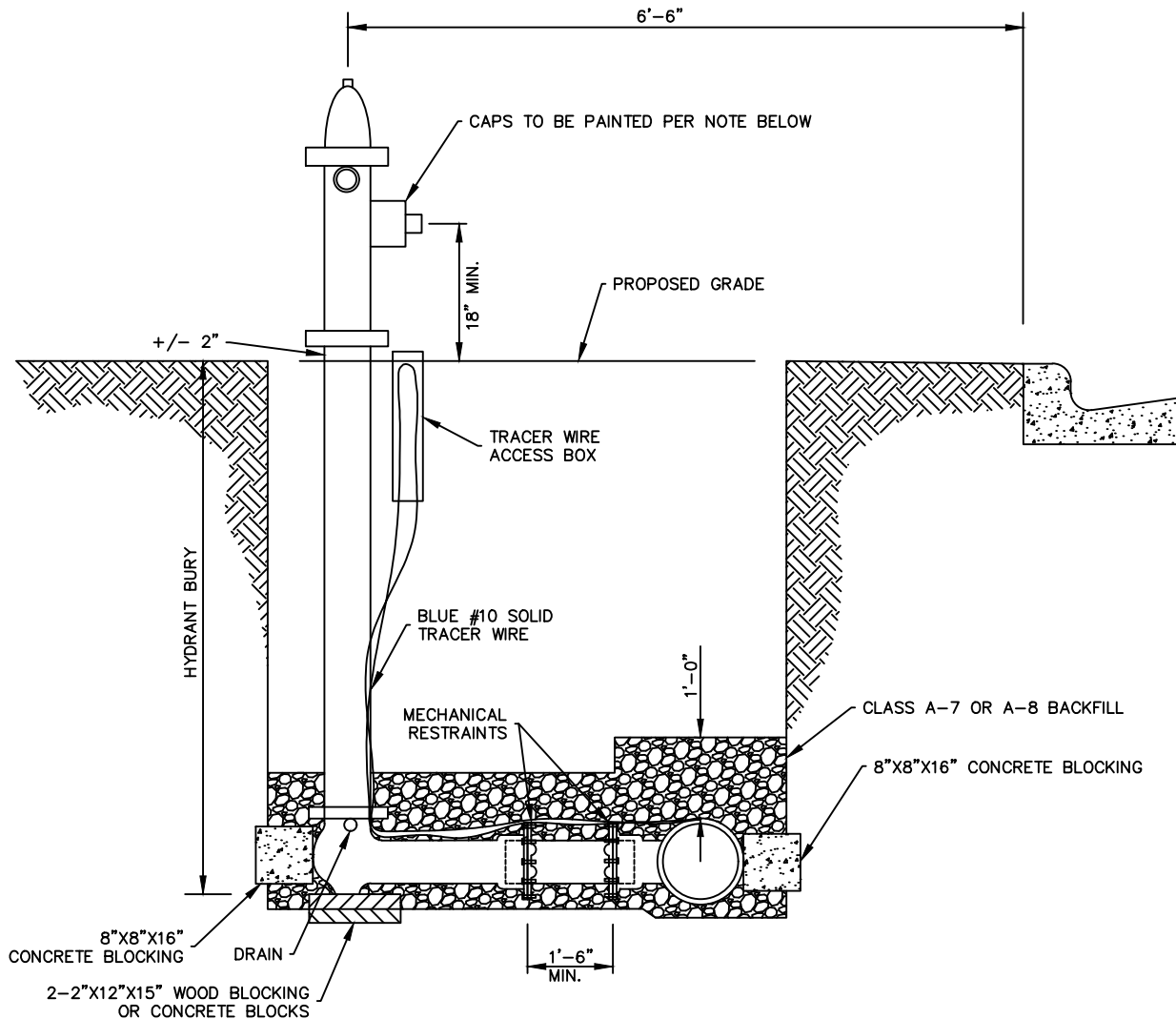
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
WATER TRACER WIRE

DIVISION: 33

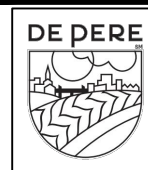
DRAWING NO:
TW-2

DATE: 12/2019
BY: KAD
CHECKED: EPR



NOTES:

- HYDRANTS SHALL BE SET VERTICAL.
- CONCRETE BLOCKING AND WOOD BLOCKING SHALL BE INSTALLED AGAINST FIRM NATURAL GROUND AS REACTION BACKING FOR TEE AND HYDRANT SHOE.
- REGARDLESS OF DEPTH OF MAIN, THE BREAKAWAY FLANGE MUST BE +/- 2 INCHES ABOVE THE PROPOSED GRADE.
- ALL HYDRANTS SHALL BE CLEANED AND REPAINTED TO ELIMINATE ANY SCRATCHED AND SURFACE IMPERFECTIONS. THIS SHALL BE ACCOMPLISHED AFTER THE HYDRANT HAS BEEN INSTALLED, BACKFILLED AND TESTED.
- ENCASE ENTIRE HYDRANT IN POLYETHYLENE ENCASEMENT.
- TRACER WIRE SHALL BE RUN UP HYDRANT.
- BLOCKING AND MEGA LUGS REQUIRED.
- HYDRANT CAPS TO BE PAINTED PER THE NFPA STANDARD 291, BASED ON FLOWS AS DETERMINED BY THE ENGINEER:
 - CLASS AA- LIGHT BLUE - RATED CAPACITY OF 1500 GPM
 - CLASS A - GREEN - RATED CAPACITY OF 1000-1499 GPM
 - CLASS B - ORANGE - RATED CAPACITY OF 500-999 GPM
 - CLASS C - RED - RATED CAPACITY OF LESS THAN 500 GPM



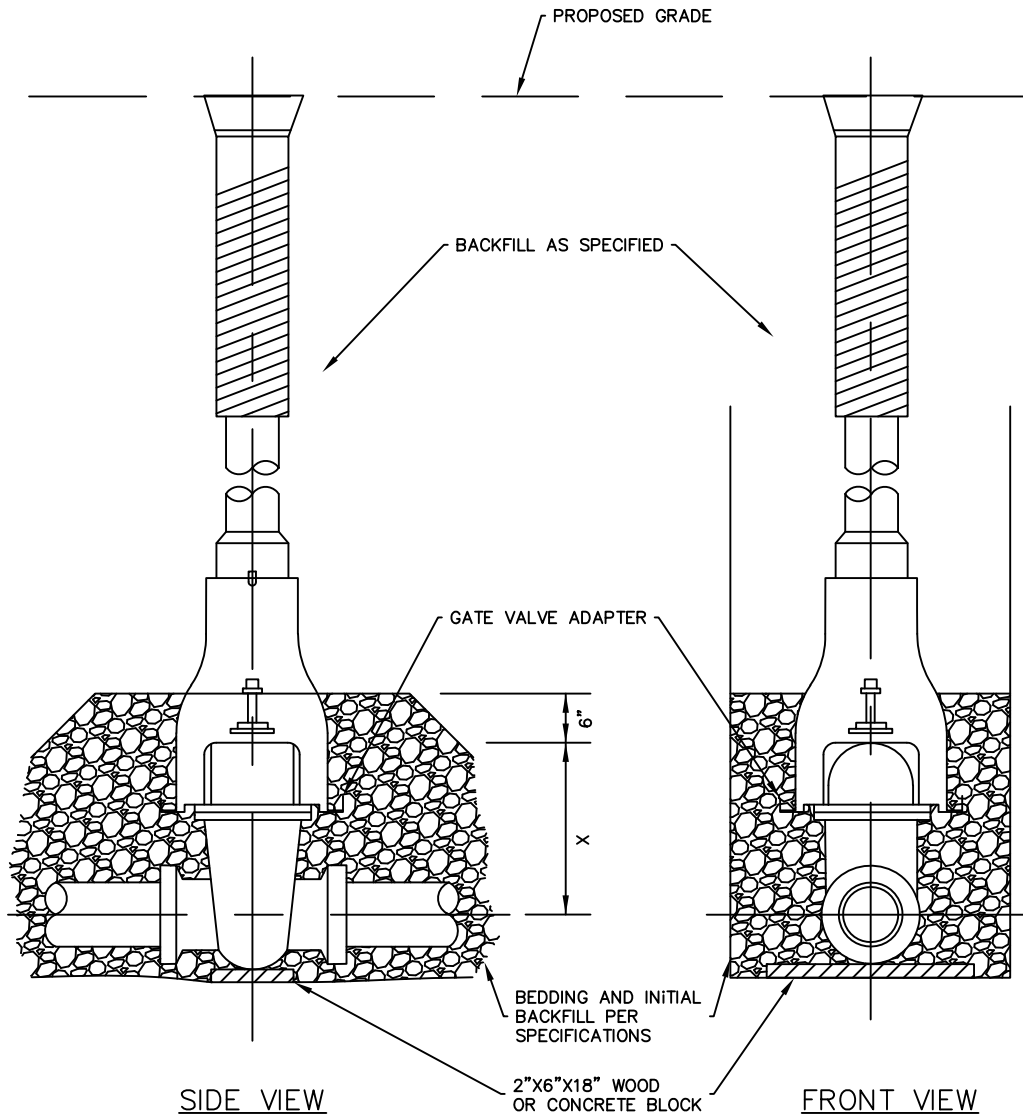
ENGINEERING DIVISION
 925 S. SIXTH ST
 DE PERE, WI 54115
 OFFICE 920-339-4061
 FAX 920-339-4071

TITLE:
HYDRANT

DIVISION: 33

DRAWING NO:
W-1

DATE: 12/2021
 BY: KAD
 CHECKED: EPR



PIPE DIA. INCHES	X=SETTING INCHES
6	12
8	13
10	17
12	21

NOTES:

1. ENCASE ENTIRE VALVE IN POLYETHYLENE ENCASEMENT.
2. VALVE BOXES SHALL BE SET VERTICAL.
3. JOINT RESISTANT PER SPECIFICATIONS.
4. VALVE EXTENTION STEM REQUIRED.



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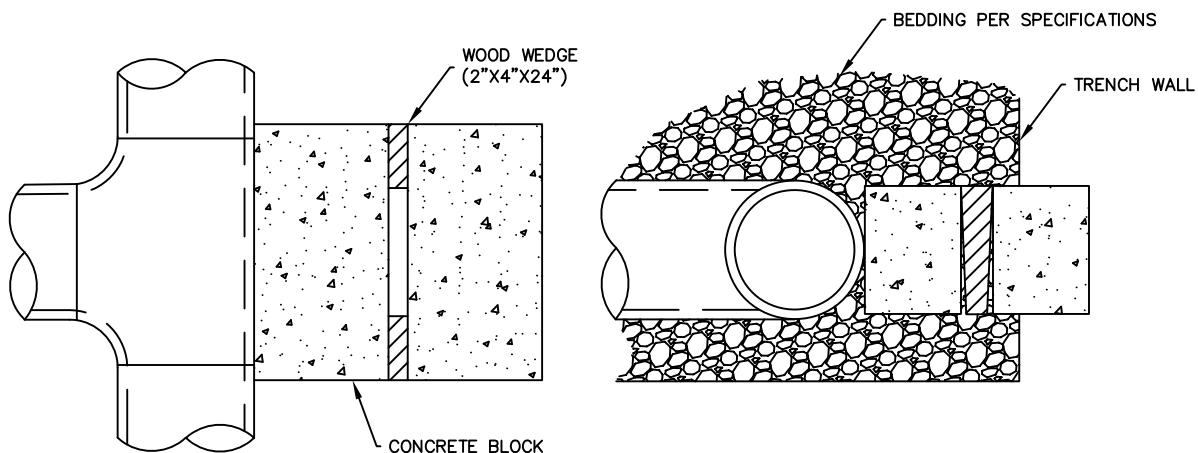
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
RESILIENT SEATED
GATE VALVE

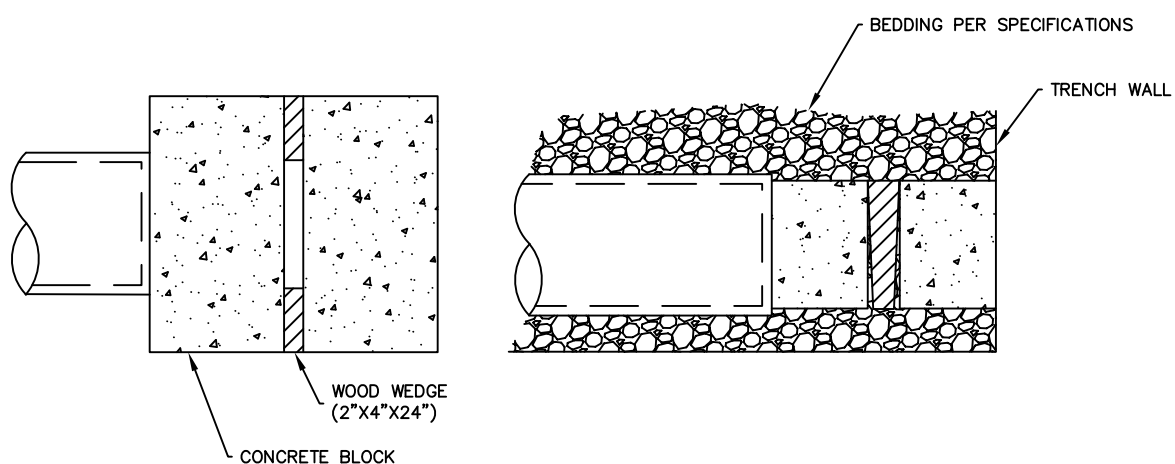
DIVISION: 33

DRAWING NO:
W-2

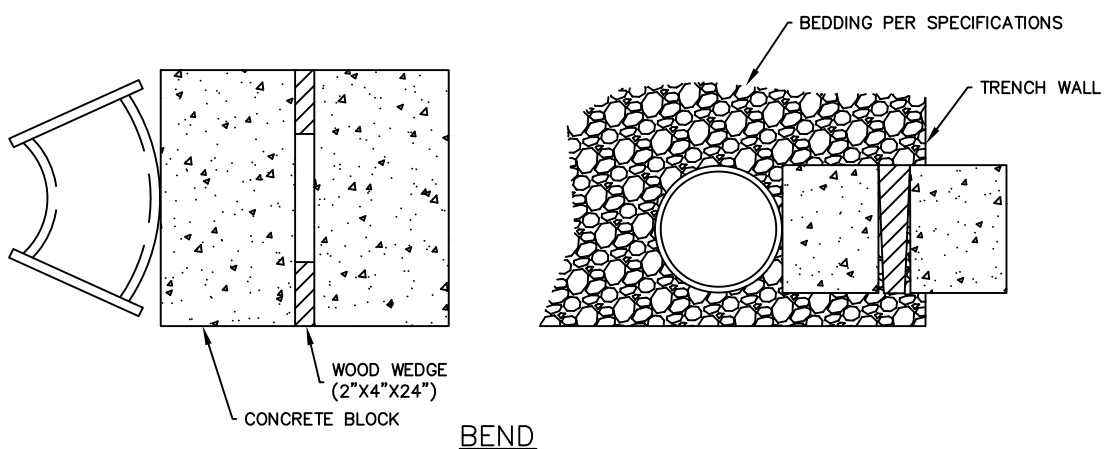
DATE: 12/2018
BY: KAD
CHECKED: EPR



TEE



CAP AND PLUG



BEND

NOTES:

1. USE 8"X8"X16" CONCRETE BLOCK FOR 6" OR 8" DIA. PIPE.
2. USE 12"X8"X16" CONCRETE BLOCK 10" AND 12" DIA. PIPE.
3. CONCRETE BLOCKING SHALL BE INSTALLED AGAINST FIRM NATURAL GROUND.



ENGINEERING DIVISION

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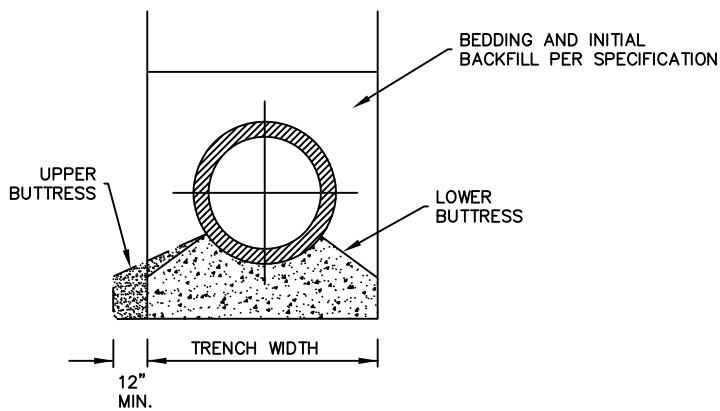
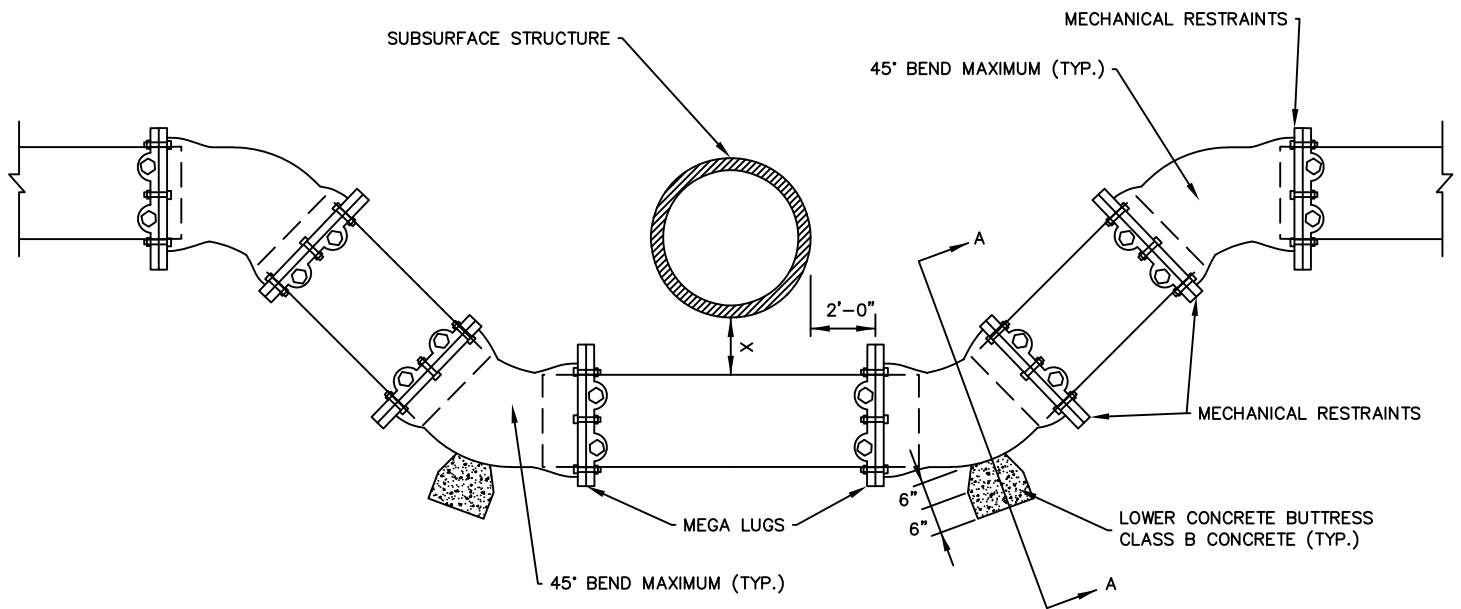
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
BUTTRESS FOR TEES
PLUGS AND BENDS

DIVISION: 33

DRAWING NO:
W-3

DATE: 12/2018
BY: KAD
CHECKED: EPR



SECTION A-A

SEPERATION TABLE

DESCRIPTION	X=DISTANCE
STRUCTURE	12"
UNDER SEWER	18"
OVER SEWER	6"

NOTES:

1. ALL FITTINGS TO BE WRAPPED WITH POLYETHYLENE ENCASEMENT BEFORE PLACEMENT OF BUTTRESSES.
2. MECHANICAL RESTRAINTS WILL BE REQUIRED IN ADDITION TO BLOCKING.



ENGINEERING DIVISION

925 S. SIXTH ST
DE PERE, WI 54115

OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
WATER MAIN OFFSET

DIVISION: 33

DRAWING NO:
W-4

DATE: 12/2018
BY: KAD
CHECKED: EPR

DE PERE[®]



DEPARTMENT OF PUBLIC WORKS

2025 STANDARD SPECIFICATIONS

JANUARY 13, 2025

SECTION 32 16 13

CONCRETE CURB AND GUTTER

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
- 1. Fine grading and compaction of subgrade.
 - 2. Curb and gutter construction.
 - 3. Backfilling and finish grading.
 - 4. Landscaping.

1.2 REFERENCES

- A. American Concrete Institute (ACI)
- 1. ACI 305 Recommended Practice for Hot Weather Concreting
 - 2. ACI 306 Recommended Practice for Cold Weather Concreting
- B. American Society for Testing and Materials (ASTM):
- 1. A615 Spec. for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
 - 2. C31 Making and Curing Concrete Test Specimens in the Field
 - 3. C33 Spec. for Concrete Aggregate
 - 4. C39 Test for Compressive Strength of Cylindrical Concrete Specimens
 - 5. C94 Spec. for Ready-Mixed Concrete
 - 6. C143 Test for Slump of Portland Cement Concrete
 - 7. C150 Spec. for Portland Cement
 - 8. C172 Sampling Fresh Concrete
 - 9. C231 Test for Air Content of Freshly Mixed Concrete by the Pressure Method
 - 10. C309 Standard Specifications for Liquid Membrane – Forming Compounds for Curing Concrete
 - 11. [C595](#) [Standard Specifications for Blended Hydraulic Cements](#)
 - 12. C1315 Spec. for Liquid Membrane-Forming Compounds Having Special properties for Curing and Sealing Concrete
 - 13. D1557 Test Methods for Moisture-Density Relations of Soils and Soils-Aggregate Mixtures Using 10-Lb. (4.54 Kg) Rammer and 18-In. (457 mm) Drop
 - 14. D1751 Spec. for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
 - 15. E329 Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction

2025 Specifications

City of De Pere

1. Tests to be taken for each 200 cubic yards of concrete placed or at least once each day.
2. Test one cylinder at 7 days.
3. Test two cylinders at 28 days.
4. Remaining cylinder shall be tested in the event prior tests fail.
5. 28 Day Test Requirements:
 - a. Compressive strength is 4,000 psi.
 - b. No individual test falls more than 500 psi below specified compressive strength.
 - c. If differential strengths of the two specimens is 350 psi or greater, the low strength specimen shall be discarded and the strength of the remaining cylinder shall then be the test result.
 - d. If the test result is below 3500 psi, the test is considered a failure. Also, if either of the two 28 day specimens falls below 3000 psi, the test result is considered a failure.
6. Failure of compressive strength tests shall result in following additional testing:
 - a. Provide two core samples of each portion of work affected and perform compressive strength tests.
 - b. Replace work if core samples do not equal or exceed specified compressive strength.
 - c. Additional testing shall be completed at the Contractor's expense.

PART 2 – PRODUCTS

2.1 CONCRETE

- A. Conform to ASTM C94, WisDOT State Specifications, and the following:
 1. Class II concrete
 2. Twenty-eight Day Compression Strength: 4000 psi.
 3. Aggregate shall conform to either of the following:
 - a. Soil Class A-7 (3/4-Inch Crushed Rock) (WisDOT Size No. 1 Aggregate per 501.2.5.4.5)
 - b. Soil Class A-6 (1 1/2-Inch Crushed Rock) (WisDOT Size No. 2 Aggregate per 501.2.5.4.5)
 4. Minimum Cement Content: 6 bags/c.y.
 5. Air entrainment:
 - a. Slip-formed concrete – 7.0 percent, +/- 1.5 percent
 - b. Other concrete – 6.0 percent, +/- 1.5 percent
 6. Maximum Water-Cement Ratio: .44
 7. Slump:
 - a. 2.5 inch or less – Slip-formed
 - b. 4.0 inch or less – Non slip-formed
- B. Admixtures to lower freezing point of concrete are not permitted.

2.2 CEMENT

- A. Conform to ASTM C150, Type 1 [or ASTM C595, Type 1L](#).

2.3 AGGREGATES

SECTION 32 16 20

CONCRETE SIDEWALKS AND DRIVEWAYS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Excavation.
 - 2. Compaction aggregate base.
 - 3. Sidewalk and driveway construction.

1.2 REFERENCES STANDARDS

- A. American Society for Testing and Materials (ASTM)
 - 1. A185 Specification for Welded Steel Wire Fabric for Concrete Reinforcement.
 - 2. C31 Making and Curing Concrete Test Specimens in the Field.
 - 3. C33 Specification for Concrete Aggregates.
 - 4. C39 Test for Compressive Strength of Cylindrical Concrete Specimens.
 - 5. C94 Specification for Ready-Mixed Concrete.
 - 6. C143 Test for Slump of Portland Cement Concrete.
 - 7. C150 Specification for Portland Cement.
 - 8. C172 Sampling Fresh Concrete.
 - 9. C231 Test for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - 10. C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - 11. [C595](#) [Standard Specifications for Blended Hydraulic Cements](#)
 - 12. C1315 Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
 - 13. D1557 Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Lb (4.54 kg) Rammer and 18-in. (457 mm) Drop.
 - 14. D1751 Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Type).
 - 15. E329 Standard Recommended Practice for Inspection Testing Agencies for Concrete, Steel and Bituminous Materials Used in Construction.
- B. American Concrete Institute (ACI)
 - 1. ACI 304 Measuring, Mixing, Transporting, and Placing Concrete.
 - 2. ACI 305 Recommended Practice for Hot Weather Concreting.
 - 3. ACI 306 Recommended Practice for Cold Weather Concreting.

2025 Specifications

City of De Pere

1. Tests to be taken for each 200 cubic yards of concrete placed or at least once each day.
2. Test one cylinder at 7 days.
3. Test two cylinders at 28 days.
4. Remaining cylinder shall be tested in the event prior tests fail.
5. 28 Day Test Requirements:
 - a. Compressive strength is 4,000 psi.
 - b. No individual test falls more than 500 psi below specified compressive strength.
 - c. If differential strengths of the two specimens is 350 psi or greater, the low strength specimen shall be discarded and the strength of the remaining cylinder shall then be the test result.
 - d. If the test result is below 3500 psi, the test is considered a failure. Also, if either of the two 28 day specimens falls below 3000 psi, the test result is considered a failure.
6. Failure of compressive strength tests shall result in following additional testing:
 - a. Provide two core samples of each portion of work affected and perform compressive strength tests.
 - b. Replace work if core samples do not equal or exceed specified compressive strength.
 - c. Additional testing shall be completed at the Contractor's expense.

PART 2 – PRODUCTS

2.1 CONCRETE

- A. Concrete shall conform to ASTM C94, the WisDOT State Specification, and the following:
 1. Class II concrete
 2. Twenty-eight Day Compressive Strength: 4,000 psi.
 3. Aggregate shall conform to either of the following:
 - a. Soil Class A-7 (3/4-Inch Crushed Rock) (WisDOT Size No. 1 Aggregate per 501.2.5.4.5)
 - b. Soil Class A-6 (1 1/2-Inch Crushed Rock) (WisDOT Size No. 2 Aggregate per 501.2.5.4.5)
 4. Minimum Cement Content: 6 bags/c.y.
 5. Air entrainment:
 - a. Slip-formed concrete – 7.0 percent, +/- 1.5 percent
 - b. Other concrete – 6.0 percent, +/- 1.5 percent
 6. Maximum Water-Cement Ratio: .44
 7. Slump:
 - a. 2.5 inch or less – Slipformed
 - b. 4.0 inch or less – Non-Slipformed

2.2 CEMENT

- A. Conform to ASTM C150, Type 1 [or ASTM C595, Type 1L](#).

2.3 AGGREGATES

- A. Conform to WisDOT State Specifications

SECTION 33 11 00

WATER DISTRIBUTION SYSTEMS

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes
 - 1. Underground installation of pressure pipe, fittings and appurtenances.
 - 2. Fire Hydrants
 - 3. Valves
 - 4. Polyethylene encasement for ductile iron pipe and fittings
 - 5. Tracer wire
 - 6. Insulation for pipe frost shield
 - 7. Disinfection of water mains.

1.2 REFERENCES

- A. American Water Works Association (AWWA):
 - 1. C105 Polyethylene Encasement of Ductile-Iron Pipe Systems
 - 2. C219 Bolted, Sleeve-Type Couplings for Plain-End Pipe
 - 3. C502 Dry-Barrel Fire Hydrants
 - 4. C504 Rubber-Seated Butterfly Valves
 - 5. C512 Air-Release, Air/Vacuum and Combination Air Valves for Waterworks Service
 - 6. [C153](#) [Ductile-Iron Compact Fittings](#)
 - 7. C515 Reduced Wall, Resilient Seated Gate Valves for Water Supply Services
 - 8. C550 Protective Epoxy Interior Coatings for Valves and Hydrants
 - 9. C600 Installation of Ductile-Iron Water Mains and Their Appurtenances
 - 10. C605 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
 - 11. C651 Disinfecting Water Mains
 - 12. C800 Underground Service Line Valves and Fittings
 - 13. C901 Polyethylene (PE) Pressure Pipe and Tubing, ½ Inch through 3 Inch for Water Service
 - 14. C906 Polyethylene (PE) Pressure Pipe and Fittings, 4 in. through 63 in. for Distribution and Transmission

2025 Specifications

City of De Pere

9. Operating Nut:

- a. The valve shall be equipped with a standard 2 inch square operating nut with cast-on directional arrow.
- b. Valve to open counter clockwise.

10. Acceptable Manufacturers:

- a. Mueller
- b. Kennedy
- c. American Flow Control/Waterous
- d. Clow

Deleted: <#>Valves will be fitted with a three (3) foot long extension stem with bottom bolts for tightening to the valve at 90 degrees to each other. ¶
<#>Extension stem manufacturer shall be Ess Brothers and Sons Inc. or approved equal. ¶

D. Valve Boxes

1. Cast iron, three-piece screw type, 5 ¼ inch shaft, round or oval base sized for valve.
2. Threads shall be cast into top and bottom sections.
3. Cover shall be anti-rattle type mark with the word "water" on top.
4. Acceptable Manufacturers:
 - a. Tyler 6860DD
 - b. Bingham Taylor
 - c. Sigma

2.4 POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPE AND FITTINGS

A. Conform to requirements of AWWA C105.

B. Type: I

C. Class: "A" (natural color) or "C" (black).

D. Grade: "E-1"

E. Thickness: 8 mils

2.5 WATER MAIN

A. Pipe material and size shall be stated in the Proposal and shown in the Drawings.

B. If the material is not stated, water main is to be Polyvinyl Chloride Pipe (PVC).

2.6 WATER SERVICES

A. Pipe and Tubing

1. Pipe and/or tubing material and size shall be as stated in the proposal and shown on the drawings.
2. Copper tubing shall conform to the requirements of ASTM B88, Type K for sizes up to 2 inches diameter.
3. Polyethylene (PE) tubing shall be blue and conform to the requirements of AWWA C901, PE

2025 Specifications

City of De Pere

letters with nut for trace wire.

3. Upper section shall be a minimum 1 ¼" I.D. steel pipe.
4. Base section shall be a minimum 1 ¼" I.D. cast iron.
5. The casting shall be thoroughly coated with bituminous pitch varnish or pipe dip.
6. Provide a McDonald 5660SS 48 inch stationary Type 304 Stainless Steel curb box rod.
7. Length shall be 7 ½ foot bury with a 6 ½ to 7 ½ foot adjustment range.
8. Acceptable Manufacturers:
 - a. Mueller H-10300
 - b. Ford EM2-60-57
 - c. McDonald 5614

2.7 TRACER WIRE

A. Wire for Water Main Construction.

1. Tracer wire shall be continuous, single-strand #12 AWG copper clad steel, high strength, with a minimum 30 mil HDPE thickness for open cut construction
2. Tracer wire shall be #12 AWG copper clad steel, extra high strength with a minimum 1150 lbs. break load with a minimum 30 mil HDPE insulation thickness for directional drilling/boring.
3. Tracer wire shall be 7x7 stranded copper clad steel, extreme strength with 4700 lb. break load, with minimum 50 mil HDPE coating for pipe bursting.

B. Tracer wire shall be color coated blue.

Deleted: <#>#10 AWG solid, 21% conductivity annealed copper-clad high carbon steel extra high strength wire.¶

Deleted: average tensile

Deleted: 30 mil high molecular weight high density blue polyethylene jacket, 30 volt rating...

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2.8 TRACER WIRE ACCESS BOX

A. Provide access box device in accordance with the following:

1. The covered access device (tracer wire access box) shall have:
 - a. Two pieces to allow for telescoping action adjustment and for frost control.
 - b. Top piece to extend below ground a minimum of 12 inches.
 - c. 2 ½ inch minimum diameter extension from the top piece of the access box to the top of the sewer pipe.
 - d. Lid to be heavy cast iron manufactured in accordance with ASTM A48 Class 25. The top of the lid to be permanently engraved with "WATER" by the manufacturer. The lid is to be furnished with a means of locking the lid such as a standard lockable pentagonal bolt head. Lid to be furnished with connection holes where the tracer wire is to be connected with stainless steel terminal bolts.
2. Acceptable access devices are:
 - a. The Valvco Water Tracer Wire Access Box manufactured by C. P. Test Services-Valvco, Inc, reference:
<http://www.fischer-harris.com/ValvcoTracerWireAccessBox.htm>
 - b. The Cathodic Test Box P200 series manufactured by Bingham & Taylor, reference:
<http://www.binghamandtaylor.com/cathodic.htm>
3. In lieu of the above access devices furnish materials required as shown on the drawing detail for Tracer Wire Access.

2025 Specifications

City of De Pere

4. In lieu of the above devices, a modified water valve box, approved by the Engineer will be considered, meeting the following requirements:
 - a. Cast iron, two-piece screw type, 5 ¼ inch shaft, with extension to top of sewer pipe.
 - b. Threads shall be cast into top section.
 - c. Cover shall be anti-rattle type mark with the word "WATER" on top.

2.9 COUPLINGS AND ADAPTERS

A. Flanged Coupling Adapters

1. Used for connecting plain end pipe to flanged equipment and fittings.
2. Ductile iron body and follower completely epoxy coated.
3. Plain rubber gasket.
4. Provide with anchor studs.

B. Bolted Couplings

1. Used for connecting plain end pipe to plain end pipe.
2. Steel sleeve completely epoxy coated.
3. Ductile iron follower.
4. Plain rubber gaskets.

5. [Meet the requirements of AWWA C-219.](#)

6. [Meet the requirements of AWWA C-153.](#)

C. Tapping Sleeves

1. Tapping sleeves shall be rated at 200 psi working pressure up to 12" diameter and 150 psi working pressure above 12" diameter.
2. Sleeve and outlet flange shall be 304 stainless steel.
3. Sleeve gasket shall be full length of the sleeve waffle style 360 degree around the pipe.
4. Provide full face gasket between the outlet flange and the valve flange.
5. Tapping sleeves shall be Mueller H-034, Smith Blair 665, Dresser Style 630, or Romac.

D. Couplings and adapters shall be Dresser, Smith-Blair, or Romac Industries.

2.10 INSULATION BOARD

- A. Extruded polystyrene conforming to ASTM C578, Type IV.
- B. Each board shall be 2 inches thick x 4 feet wide x 8 feet long.

2.11 PIPE EMBEDMENT MATERIAL

- A. Soil Class A-7 - ¾" or A-8-3/8" crushed rock per section "Soils and Aggregates for Earthwork."
- B. Soil Class G-2 - "Clean earth fill per section "Soils and Aggregates for Earthwork."
- C. Sand or engineer approved material for steel casing void.

1. Perform water system pressure and leakage tests for pressurized pipelines following the procedure identified in Section 01 45 23.

- i. For water relay projects, perform tests on the water main with the installation of corporations but prior to connecting water services.
- ii. For new water installation projects, perform tests after all services and curb stops are installed.

2. a. Continuity testing for tracer wire installed.

3.11 DISINFECTION AND BACTERIOLOGICAL TESTING

- A. Provide disinfection and bacteriological testing according to AWWA C651-14 and section NR 811.73, Wisconsin Administrative Code.
- B. If piping was contaminated during storage, construction, or repair, the pipe shall be flushed to remove any foreign material that may have entered the pipe prior to disinfection.
- C. Disinfect with Tablet Method.
 1. Place the required number of tablets as follows:
 - a. The inlet end of each pipe section, including branch lines. The number of tablets shall be per the following:

Pipe Diameter (Inches)	13 or less feet (Number of Tablets)	18 feet (Number of Tablets)	20 feet (Number of Tablets)
4	1	1	1
6	1	1	1
8	1	2	2
10	2	3	3
12	3	4	4
16	4	6	7

Refer to AWWA C651-14 for larger diameters

- b. Each hydrant, hydrant lead, and other appurtenances.
 2. Attach tablets with food-grade adhesive to the top inside surface of the pipe.
 - a. Use adhesive approved by USDA for contact with edible products.
 - b. Adhesive shall be Permatex Form-A-Gasket No. 2, Permatex Clear RTV Silicone, or equal.
 - c. Permatex Form-A-Gasket No. 1 is not acceptable.
 3. Fill in a manner such that the water velocity within the main will not exceed 1 fps.
 4. Water is to remain in the pipe for a minimum of 24 hours. If the water temperature is less than 41 degrees F, the water is to remain in the pipe a minimum of 48 hours.
- D. Verify Chlorine Residual. Confirm the chlorine residual after 24 or 48 hours is greater than 0.2 ppm.

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 b. Test shall be performed at water system pressure following the procedure identified in Section 01 45 23. ¶
 c. Close all curb stops in the section during the test.¶

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- A. A manufacturer's certification for each product stating that the products were manufactured in accordance with the designated reference standards with test results and date of tests.

PART 2 – PRODUCTS

2.1 PIPE

- A. Pipe Material
 - 1. PVC Sewer Pipe shall be in accordance with Section 33 00 02 Polyvinyl Chloride (PVC) Pipe and Fittings.
 - 2. Pipeline material shall be PVC Pipe unless stated elsewhere in the proposal schedule or as shown on drawings
 - 3. Pipe diameters shall be as shown on drawings.
- B. Wyes, Tees, Risers and Fittings
 - 1. Wyes, tees and fittings shall be the same type of material and class as the mainline pipe.
 - 2. Risers and fittings shall be the same material and class as the service connections.
 - 3. Tees can only be used for connecting to existing sanitary sewers when approved by the Engineer.
 - 4. Wye branches for a lined sewer shall be a saddle type connector compatible with the lined pipe. Acceptable manufacturers:
 - a. Fernco Tap Saddle
 - b. GPK gasketed sewer fittings,
 - c. Approved equals (saddle wye gasket branch and gasket skirt with straps) will be considered.

2.2 TRANSITION COUPLINGS

- A. Couplings for transition between dissimilar pipe diameters or dissimilar pipe materials
 - 1. Fernco Inc., Mission Rubber Company, and Maxadapter are acceptable manufacturers.
 - 2. Conform to ASTM C1173.
 - 3. Provide stainless steel shear rings, bands, nuts and housings of marine grade stainless steel conforming to ASTM A240.

2.3 MANHOLES

- A. Precast Reinforced Concrete Manholes
 - 1. Components including base sections, riser sections, grade rings (adjustment rings), eccentric cone, flat slab top and manhole reducing bench shall meet ASTM C478.
 - 2. Base section shall include base riser section with integral monolithic bottom extending minimum of 6 inches beyond riser section.
 - 3. Tops for manholes shall be eccentric cone or, if required elsewhere, flat slab top.
 - 4. Adjusting rings
 - a. Precast concrete minimum of 2 inches thick.
 - b. Rubber: Infra-Riser, Pro-Ring, [Flex-O-Ring](#), or approved equal.

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- c. HDPE: Tadtech or approved equal.
- 5. Eccentric cones, flat slab tops and adjusting rings.
 - a. Shall have a 24 inch diameter opening.
 - b. Shall support AASHTO H-20 loadings.
- 6. Joints between components.
 - a. Joint design shall be in accordance with ASTM C990.
 - b. Gasket shall be the 1 ¼ inch thick butyl rubber material meeting requirements of AASHTO M-198 Type B flexible plastic gasket and ASTM C990 butyl rubber sealant.
- 7. Connector between Precast Reinforced Manhole Structures
 - a. Resilient flexible connector shall meet ASTM C923.
 - b. The seal between the flexible connector and the manhole shall be by casting the connector integrally with the manhole wall.
 - c. The seal between the connector and the pipe shall be by compression of the resilient material against the outside of the pipe.
 - d. Factory made manholes shall use A-Lok, Z-Lok, [Kor N-Seal](#) or equal.
 - e. Where an existing manhole is core drilled in the field, the flexible connector shall be NPC Inc., Kor-N-Seal or Press-Seal Gasket Corporation PSX:Positive Seal.

B. Bituminous plastic cement shall meet Federal Specification SS-C-153C, Type I.

C. Manhole Steps

- 1. Steel reinforced copolymer polypropylene meeting ASTM C478.
- 2. Copolymer polypropylene shall meet ASTM D4101.
- 3. Steel reinforcement shall be ASTM A615, Grade 60, ½ inch minimum steel reinforcing rod.
- 4. Step shall be 12 inches wide and project from the wall between 5 inches and 7 inches.
- 5. Minimum design live load shall be a single concentrated load of 300 lbs. when in place.

D. Castings

- 1. Shall be ASTM A48, Class 35B, gray iron.
- 2. Manhole frame and covers shall be non-rocking.
- 3. Manhole covers for sanitary sewer shall be self-sealing with concealed pick hole.
- 4. Shall be of uniform quality free from blowholes, shrinkage, discoloration and other defects.
- 5. Shall be heavy duty designed for AASHTO H-20 loads.
- 6. Type 1 Frame and Cover: Neenah Foundry No. R1500 unless stated elsewhere in the proposal or as shown on the drawings.

2.4 PIPE EMBEDMENT MATERIAL

A. Soil Class A-7 or A-8 crushed rock per section "Soils and Aggregates".

2.5 TRACER WIRE

A. ~~Wire for sanitary sewer,~~

- 1. Tracer wire shall be continuous, single-strand #12 AWG copper clad steel, high strength, with a minimum 30 mil HDPE thickness for open cut construction

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2025 Specifications

City of De Pere

2. Tracer wire shall be #12 AWG copper clad steel, extra high strength with a minimum 1150 lbs. break load with a minimum 30 mil HDPE insulation thickness for directional drilling/boring.
3. Tracer wire shall be 7x7 stranded copper clad steel, extreme strength with 4700 lb. break load, with minimum 50 mil HDPE coating for pipe bursting.

B. Tracer wire on sanitary laterals will have green colored insulation.

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PART 3 – EXECUTION

3.1 GRAVITY SEWER INSTALLATION

A. General

1. Vertical and Horizontal Alignment
 - a. Install sewer pipe to maintain vertical and horizontal alignment as shown on the Drawings.
 - b. Use laser equipment mounted in a manner to permit beam to shine through pipe.
 - c. Use a target to check each pipe installed.
 - d. Check laser beam alignment and grade a minimum of every 100 feet.
 - e. Use a fan to control air temperature variations in pipe and reduce bending of laser beam.
2. Commence pipe installation only after the trench has been dewatered below the trench bottom and all necessary sheeting and bracing is in place.
3. Install pipe starting at the downstream end and proceed toward the upstream.
4. Install plastic pipe in accordance with ASTM D2321, as revised by these specifications.

B. Pipe Embedment

1. Plastic Pipe – Class “B” Embedment:
 - a. Bedding, Haunching and Initial Backfill
 - 1) 4” below pipe to 12” above the pipe, place Soil Class A-7 or A-8 material work by hand to insure all excavated voids are filled.
 - 2) If in rock, place Soil Class A-7 or A-8 material 6” below pipe to 12” above the pipe and work by hand to insure all excavated voids are filled.

C. Pipe Installation

1. Open Cut Method:
 - a. Trench requirements shall conform to Section “Trenching, Backfilling, and Compacting.”
 - b. Do not use support blocking.
 - c. Proceed pipe laying upgrade with spigot pointing in direction of flow.
 - d. Lay each pipe true to line and grade.
 - e. When pipe installation is not in progress, provide the forward end of the pipe with a temporary plug to prevent foreign material from entering.
 - f. Push “home” the spigot end of the pipe joint in the socket before proceeding to install the next pipe.

When connecting to an existing sewer not terminating in a manhole, uncover the end of the existing sewer prior to laying sewer to allow horizontal and vertical adjustments.

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g. Install pipe such that pipe joints are located far enough from the manhole outside wall to permit future pipe repair without damaging the manhole and the joints shall not fall within manhole walls.

h. Construct a bentonite clay dam at the upstream end of each sanitary sewer run prior to the upstream manhole.

1) Clay dam is to be 12" thick.

2) Install in place of bedding stone and initial backfill.

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2. Trenchless Excavation Method

a. Auger horizontal earth boring (boring and jacking)

- 1) Bore and jack steel casing pipe at location and diameter or larger shown on the
- 2) Drawings in accordance with Section "Trenchless Excavation Construction" at line and grade to accommodate the gravity carrier pipe.
- 3) Install the gravity carrier pipe at line and grade through the casing pipe blocked to prevent contact with the casing pipe.
- 4) Fill the annular space between casing pipe and gravity carrier pipe with sand or Engineer approved equal.

b. Horizontal directional drilling

- 1) Install gravity carrier pipe in accordance with Section "Trenchless Excavation Construction" at line and grade and location shown on the Drawings.
- 2) Fill the annular space between the bore hole and the gravity carrier pipe with a bentonite slurry.

D. Manholes

1. General Installation Requirements:

- a. Depths shown on Drawings shall be considered approximate.
- b. Establish flow lines and casting elevations from grade stakes and cut sheets.
- c. Provide 6 feet minimum height from top of casting to flowline.
- d. Place bases on a minimum of four (4) inches of bedding material:
 - 1) Soil Class A-7 or A-8.
 - 2) Place and work by hand to insure all excavated voids are filled.
 - 3) The maximum amount of adjusting rings is twelve inches.
- e. Seal exterior of lift holes with bituminous plastic cement.
- f. Fill the following with mortar and finished smooth.
 - 1) Interior lift holes.
 - 2) Annular space around pipes: interior bottom half only.
- g. Construct manholes in accordance with the appropriate detail drawings.
- h. Install structures plumb.

2. Detailed Installation:

- a. Unless indicated otherwise, provide precast concrete manhole construction.
- b. Four foot diameter shall be considered standard.
- c. Pitch casting to match street crowns where applicable.
- d. Provide precast risers in a combination of lengths to minimize the number of joints.
- e. Install Butyl Rubber Joint Sealant at risers:
 - 1) Rope configuration.

2025 Specifications

City of De Pere

2.3 MANHOLES AND INLETS

- A. Precast Reinforced Concrete Manholes and Inlets
 - 1. Components including base sections, riser sections, grade rings (adjustment rings), eccentric cone, flat slab top and manhole reducing bench shall meet ASTM C478 and rectangular, inlets and catch basins shall meet ASTM C913.
 - 2. Base section shall include base riser section with integral monolithic bottom extending minimum of 6 inches beyond riser section.
 - 3. Tops for manholes shall be eccentric cone or, if required elsewhere, flat slab top.
 - 4. Adjusting rings
 - a. Precast concrete: minimum of 2 inches thick.
 - b. Rubber: Infra-Riser, Pro-Ring, [Flex-O-Ring](#), or approved equal.
 - c. HDPE: Tadtech or approved equal. Inlet rings shall be tapered longitudinally when the inlet is not at the low point.
 - 5. Eccentric cones, flat slab tops and adjusting rings.
 - a. Shall have a 24 inch diameter opening.
 - b. Shall support AASHTO H-20 loadings.
 - 6. Joints between components.
 - a. Joint design shall be in accordance with ASTM C990.
 - b. Gasket shall be the 1 ¼ inch thick butyl rubber material meeting requirements of AASHTO M-198 Type B flexible plastic gasket and ASTM C990 butyl rubber sealant.
 - 7. Connection between Manhole Structures and Storm Sewer Pipe.
 - a. Provide a non-shrink grout.
- B. Bituminous plastic cement shall meet Federal Specification SS-C-153C, Type I.
- C. Manhole Steps
 - 1. Steel reinforced copolymer polypropylene meeting ASTM C478.
 - 2. Copolymer polypropylene shall meet ASTM D4101.
 - 3. Steel reinforcement shall be ASTM A615, Grade 60, ½ inch minimum steel reinforcing rod.
 - 4. Step shall be 12 inches wide and project from the wall between 5 inches and 7 inches.
 - 5. Minimum design live load shall be a single concentrated load of 300 lbs. when in place.
- D. Castings
 - 1. Shall be ASTM A48, Class 35B, gray iron.
 - 2. Manhole frame and covers shall be non-rocking.
 - 3. Shall be of uniform quality free from blowholes, shrinkage, discoloration and other defects.
 - 4. Shall be heavy duty designed for AASHTO H-20 loads.
 - 5. Manhole Castings: Neenah Foundry No. R1500, unless stated elsewhere in the proposal or as shown on the drawings.
 - 6. Type A Field Inlet Casting: Neenah Foundry No. 1500 with R2100 Grate Type "A".
 - 7. Type B Inlet Casting: Neenah Foundry No. 3067-L, 7007B curb box with language for dump no waste drains to freshwater.
 - 8. Beehive Grate and Casting: Neenah Foundry No. R-2560-D3.

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City of De Pere

2.7 TRACER WIRE

- A. Tracer wire shall be continuous, single-strand #12 solid copper or copper clad steel, high strength, with a minimum 30 mil HDPE thickness for open cut construction.

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- B. Tracer wire on storm sewer laterals will have brown colored insulation.

2.8 ENDWALLS

- A. Reinforced concrete apron endwalls shall be installed on the outlets of reinforced concrete storm sewer as called for on the plans. The concrete apron endwalls shall be constructed to conform to Section 33 00 01 Reinforced Concrete Pipe.
- B. Corrugated metal apron endwalls shall be installed on outlets corrugated metal culverts as called for on the plans. The metal apron endwalls shall be constructed to conform to Section 33 00 04 Corrugated Metal Culvert Pipe.

PART 3 – EXECUTION

3.1 GRAVITY SEWER INSTALLATION

A. General

1. Vertical and Horizontal Alignment
 - a. Install sewer pipe to maintain vertical and horizontal alignment as shown on the Drawings.
 - b. Use laser equipment mounted in a manner to permit beam to shine through pipe.
 - c. Use a target to check each pipe installed.
 - d. Check laser beam alignment and grade a minimum of every 100 feet.
 - e. Use a fan to control air temperature variations in pipe and reduce bending of laser beam.
2. Commence pipe installation only after the trench has been dewatered below the trench bottom and all necessary sheeting and bracing is in place.
3. Install pipe starting at the downstream end and proceed toward the upstream.
4. Install plastic pipe in accordance with ASTM D2321, as revised by these specifications.

B. Pipe Embedment

1. Circular Concrete Pipe – Class “C” Embedment:
 - a. Bedding:
 - 1) 4” below pipe place Soil Class A-7 or A-8 material.
 - 2) 6” below pipe place Soil Class A-7 or A-8 material if trench bottom is rock.
 - 3) Place and work bedding material by hand to insure all excavated voids are filled.
 - b. Haunching and Initial Backfill:
 - 1) From bedding material to one-sixth of pipe outside diameter, use Soil Class A-7 or A-8 material place and worked by hand to insure all excavated voids are filled.
 - 2) From one-sixth of pipe outside diameter to 12” above the pipe, use Soil Class G-2

D. Manholes and Inlets

1. General Installation Requirements:
 - a. Depths shown on Drawings shall be considered approximate.
 - b. Establish flow lines and casting elevations from grade stakes and cut sheets.
 - c. Provide four feet eight inches (4'-8") minimum height from top of casting to [the bottom of the](#) base.
 - d. Place bases on a minimum of four (4) inches of bedding material:
 - 1) Soil Class A-7 or A-8.
 - 2) Place and work by hand to insure all excavated voids are filled.
 - e. Seal exterior of lift holes with bituminous plastic cement.
 - f. Fill the following with mortar and finished smooth.
 - 1) Interior lift holes.
 - 2) Annular space around pipes
 - g. Construct manholes and inlets in accordance with the appropriate detail drawings.
 - h. Install structures plumb.
2. Detailed Installation:
 - a. Unless indicated otherwise, provide precast concrete manhole construction.
 - b. Four foot diameter shall be considered standard.
 - c. Pitch casting to match street crowns where applicable.
 - d. Provide precast risers in a combination of lengths which minimize the number of joints.
 - e. Install Butyl Rubber Joint Sealant at Risers:
 - 1) Rope configuration.
 - 2) Installed to be compressed by subsequent riser.
 - f. Manhole and Inlet Adjusting.
 - 1) Manholes and inlets must have only ONE concrete ring (2", 4", or 6") on top of the cone section.
 - a) Asphaltic Concrete Pavement – Secure ring to the pre-cast cone section with a 3 and ½ inch wide Kent Seal or equal.
 - b) Concrete Pavement – Secure ring to pre-cast cone section with concrete vibrated in place during the paving operation.
 - 2) For manholes in pavement, above the concrete ring attach a ½ inch thru 3 inch thick tapered rubber ring using two (2) 5/16 inch bead above and below the ring, of sealant type as recommended by the rubber ring manufacturer. There shall be a minimum of 2" in depth of rubber rings.
 - 3) For inlets in pavement, above the concrete ring attach a ½ inch thru 3 inch thick rubber ring using two (2) 5/16 inch bead above and below the ring, of sealant type as recommended by the rubber ring manufacturer. The ring shall be tapered along the flow line for at all locations excluding inlets at low points. There shall be a minimum of 2" in depth of rubber rings.
 - 4) The maximum amount of adjusting rings is 12 inches.
 - g. Do not enter manhole with pipe through cone section.
 - h. Pipe connections to manholes
 - 1) Grout pipe in-place inside and outside the manhole with mortar or gasket providing a soil tight seal.
 - i. Precast flat top may be used in lieu of a cone section when elevation is limited.

2025 Specifications

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1. If pipe are of the same material and size, then use a coupling of the same pipe material designed for coupling of the same material and size.
2. If pipe are of dissimilar material or size or there is no coupling made of the same material, then provide a transition coupling with a stainless steel shear ring. Provide bushings or inserts to maintain the flow line through the connection.

G. Joints

1. Construct joints in compliance with manufacturer's recommendations.
2. Utilize full length pipe except at manholes or service branches.

H. Endwalls

1. Reinforced concrete endwalls shall be connected to concrete pipe with steel bolts conforming to WisDOT Standard Specifications for Highway Construction, Latest Edition.
2. Reinforced concrete endwalls shall be connected to PVC or PP Pipe with a band on the PVC or PP and steel bolt on the endwall.
3. Corrugated metal endwalls and pipe shall be banded.

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3.2 INSULATION FOR PIPE FROST SHIELD

- A. Provide where shown on the Drawings.
- B. Install insulation board in an inverted U around the pipe.
- C. Install insulation board with the top insulation board the same width as the trench centered over the pipe.
- D. Install the sides of the U-shape tow feet high with the bottom of the legs at least to the springline of the pipe.
- E. Install the insulation board in layers to provide a minimum thickness of 4 inches or the thickness stated on the Drawings.
- F. Install such that there are no voids under the insulation.

3.3 BULKHEADS

- A. Bulkhead new construction to protect existing sewers from water, dirt, and debris.
- B. Do not remove bulkheads until new construction is accepted for use.
- C. Prior to removal of bulkhead, remove all material (liquid or solid) which accumulated behind bulkheads.

3.4 CLEANING AND REPAIRING SEWER LINES

2025 Specifications

City of De Pere

- A. Clean as follows:
 - 1. All new sewer lines installed under this contract.
 - 2. Any existing sewer lines which are affected by construction.
- B. Furnish water and jetting equipment for cleaning operation.
- C. Repair all visible leads and defects, whether or not the sewer lines have been subject to all required tests.
- D. Remove any stuck cleaning, inspection or testing equipment from sewer lines.

3.5 TRACER WIRE

- A. Provide for all non-metallic service laterals within public right-of-way.
- B. Lateral or branch tracer wire splice connections will be typical Western Union-type solder splice made by stripping the coating off the main run tracer wire and then tightly wrapping the branch tracer wire around the main run tracer wire a minimum of eight (8) times. Both wire splices would then be soldered with a self-flux, 50-50 rosin core solder and tightly with a 1 1/2 " wide 3.2 mm Scotchfill™ electrical insulation tape, or equivalent then coated with 3M Scotchkote™ electrical coating, or equivalent so that no copper wire is exposed. A Klein™ stripping tool shall be used to remove the plastic coating on the wire. The Contractor will be responsible to have all the correct types of tools necessary to install the tracer wire materials as specified above and to ensure that the tools are in good working order.
- C. Tracer wire will be securely attached to the mainline sewer pipe, within (6) six inches of each end of the pipe, and at equally spaced locations with a minimum spacing of (6) six feet. Any exposed copper wire will be sealed and covered with materials approved by the Engineer.
- D. Tracer wire at the end of laterals [for new developed areas](#) will be brought to the surface at the right-of-way perpendicular to the end of the lateral and will be inserted into a three (3) foot long piece of a one (1) inch PVC with a double slotted cap and securely attached to an eight (8) foot long, treated four by four ("4x4"). The top of the four x four will be placed such that thirty (30) inches extend above the finished grade. The one (1) inch PVC shall be placed such that eighteen (18) inches extend above the finished grade. The tracer wire at the top of the PVC will protrude out of one of the slots and back into the PVC pipe through the other slot with at least eighteen inches of slack.
- E. Tracer wire at the end of laterals [in existing developed areas shall be as follows:](#)
 - 1. Wrapped around the curb stop if near the curb stop.
 - 2. Extended to the surface and installed in a tracer wire box if not near the curb stop, [as directed by the engineer.](#)

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3.6 FIELD QUALITY CONTROL

1/13/2025

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Storm Sewer Systems

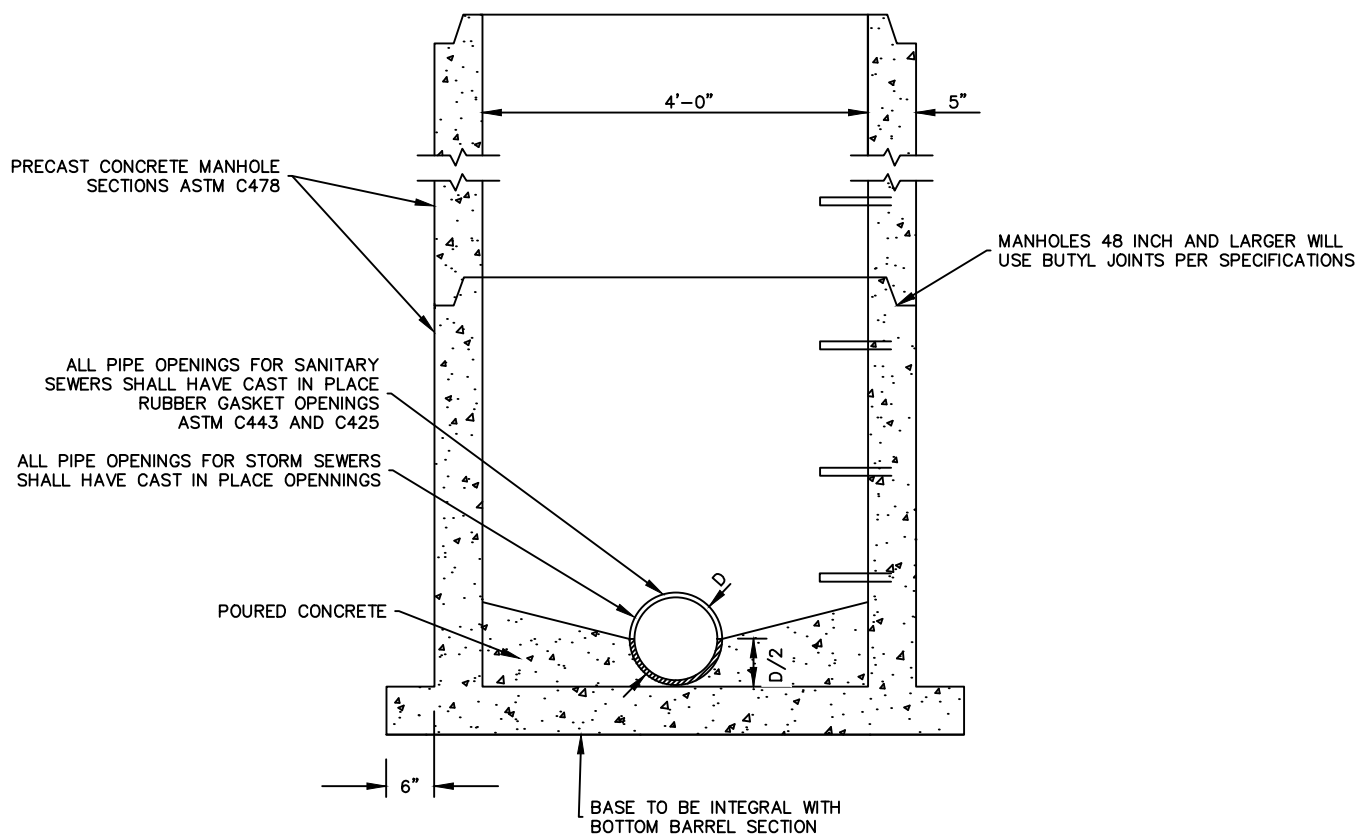
DE PERE[®]



DEPARTMENT OF PUBLIC WORKS

STANDARD DETAILS

JANUARY 13, 2025



DE PERE



ENGINEERING DIVISION
925 S. SIXTH ST
DE PERE, WI 54115

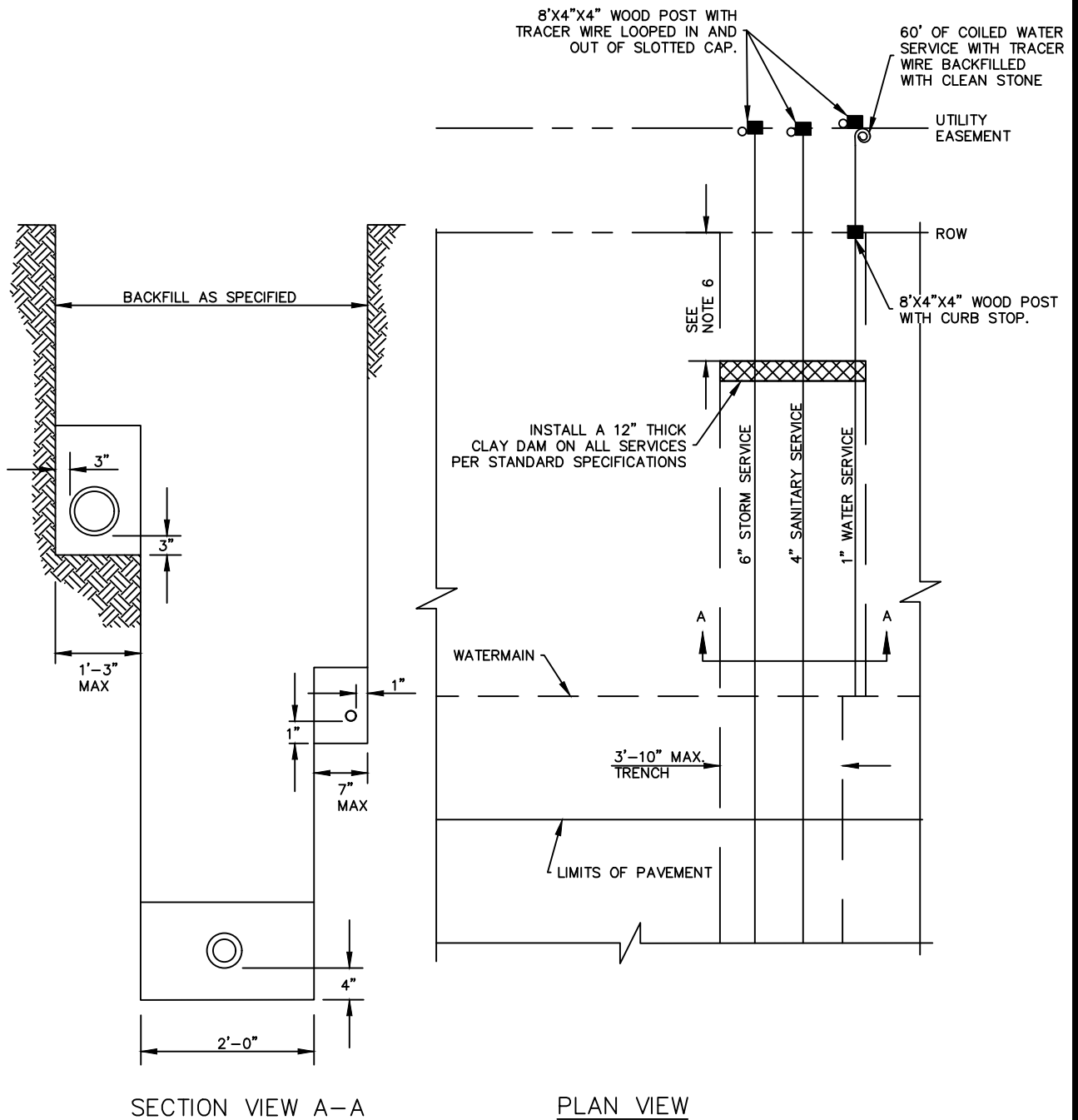
OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
PRECAST CONCRETE
MANHOLE

DIVISION: 33

DRAWING NO:
S-1

DATE: 01/2025
BY: KAD
CHECKED: EPR



NOTES:

1. ON A NORTH-SOUTH STREET, STORM SERVICES SHALL BE PLACED ON THE NORTH SIDE OF TRENCH.
2. ON AN EAST-WEST STREET, STORM SERVICES SHALL BE PLACED ON THE WEST SIDE OF TRENCH.
3. STORM SERVICES SHALL BE PLACED TO A DEPTH OF 4 FEET AT THE PROPERTY LINE OR AS DIRECTED.
4. SANITARY SEWER SERVICES SHALL BE A MINIMUM OF 10 FEET OR A MAXIMUM OF 11 FEET OF DEPTH AT THE PROPERTY LINE.
5. GRANULAR BACKFILL SHALL BE PLACED A MINIMUM OF 6 INCHES OVER THE SERVICES.
6. LOCATION OF CLAY DAM TO BE DETERMINED BY ENGINEER BASED ON SIDEWALK AND OTHER PAVED SURFACES



ENGINEERING DIVISION
925 S. SIXTH ST
DE PERE, WI 54115

OFFICE 920-339-4061
FAX 920-339-4071

TITLE:
SANITARY, STORM
AND WATER
SERVICES

DIVISION: 33

DRAWING NO:
S-7

DATE: 01/2025
BY: KAD
CHECKED: EPR