To: Honorable Mayor Boyd  
Members of the Board of Public Works  

From: Eric Rakers, P.E., City Engineer  
Date: January 10, 2022  

RE: Consideration and possible action on updates to 2022 General Conditions and Standard Specifications  

Listed in this memo are proposed updates to the City of De Pere’s 2022 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 December 2019. There are several changes to the document. Listed below is a summary of the major changes to the specifications.

Section 00 70 00 – General Conditions

1) Under SUBMISSION OF BIDS  
a. Update language for online bid and bid guarantee submissions

Section 01 45 23-10 – Testing & Inspection of Pipeline & Appurtenances

1) Under Section 3.6, Pressure and Leakage Test for Pressurized Pipelines  
a. Under Section B, item 5b, specify 2” corporation stops/valves with galvanized piping and threaded ends

Section 02 41 13 – Selective Site Demolition and Abandonment

1) Under Section 3.4, Backfilling  
a. Specify the use of granular or native backfill per Section 31 23 33, Trenching, Backfilling, and Compacting

Section 32 13 13 – Portland Cement Concrete Pavement

1) Under section 2.1, Materials  
a. Under Section D, specify concrete pavement joint material shall conform to Section 32 01 17, Crack and Joint Sealing  
b. Under Section E, specify the use and application of linseed oil for concrete curing

2) Under section 3.3, Placing and Finishing Concrete  
a. Add section C to include “All concrete joints shall be sealed”
Section 32 16 13 – Concrete Curb and Gutter

1) Under Section 2.1, Concrete
   a. Under Section A, update the air entrainment percentages for slip-formed concrete
2) Under Section 2.6, Curing Materials
   a. Under Section A, update the use of linseed oil for concrete curing to include the product details versus referencing the Wisconsin Department of Transportation.

Section 32 16 20 – Concrete Sidewalks and Driveways

1) Under Section 2.1, Concrete
   a. Under Section A, update the air entrainment percentages for slip-formed concrete
2) Under Section 2.4, Curing Materials
   a. Under Section A, update the use of linseed oil for concrete curing to include the product details versus referencing the Wisconsin Department of Transportation

Section 33 11 00 – Water Distribution Systems

1) Under Section 2.3, Valves
   a. Under Section C, specify valves will be fitted with a three foot long extension stem “with bottom bolts for tightening to the valve at 90 degrees to each other” and list the approved extension stem manufacturer
2) Under Section 2.6, Water Services
   a. Under Section E, update the curb box height to be “Length shall be 7 ½ foot bury with a 6 ½ to 7 ½ foot adjustment range”
3) Under Section 3.7, Polyethylene Encasement
   a. Add Section E, to clarify the requirement to “Wrap curb stop and box below grade”

Section 33 31 00 – Sanitary Sewer Systems

1) Under Section 2.3, Manholes
   a. Under Section A4 Adjusting rings, add c. HDPE: Tadtech or approved equal

Section 33 41 00 – Storm Sewer Systems

1) Under Section 2.1, Pipe
   a. Under Section B, allow for ADS Inserta Tee Onefit
2) Under Section 2.3, Manholes and Inlets
   a. Under Section A4 Adjusting rings, add c. HDPE: Tadtech or approved equal

Standard Detail Updates

1) Update C-5 – Concrete Curb, Curb and Gutter, and Gutter Transverse Joints to include flange slope and dimensions.
2) Create C-10 – Cracked Concrete Sidewalk Repair Detail drawing to show the minimum depth of patching at the crack.
3) Update W-1 – Hydrant to show the hydrant bury dimension/measurement location.
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.

(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.
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.
         1) Close all these corporation stops/valves before applying pressure or leakage tests.
         2) 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.
   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.
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, satisfactory soil, or with broken masonry and satisfactory soil, or with granular backfill.

1. Place materials in layers not more than 12 inches in thickness.
2. Thoroughly compact each layer by means of tampers, rollers, or vibrators.
   a. Do not use water to expedite settlement of backfill except with the approval of the Engineer.
3. Exclude broken masonry from the top 12 inches of the finished earth grades.
4. Unless otherwise provided, backfill earth subgrade, or finished slopes, as may be necessary due to the location of the removed structure.

END OF SECTION
PART 2 – PRODUCTS

2.1 MATERIALS

A. Concrete
1. Conform to the WisDOT Standard Specifications for Highway and Structure
   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:
      i. Soil Class A-7 (3/4-Inch Crushed Rock) (WisDOT Size No. 1 Aggregate
         per 501.2.5.4.5)
      ii. 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)

C. Reinforcement
1. Conform to the WisDOT Standard Specifications for Highway and Structure

D. Joint Sealing
1. All concrete pavement joints shall be sealed conform to Section 32 01 17, Crack and Joint Sealing.
E. Curing Material

   
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 screening 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.
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


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. Moist 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.

   B.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.
D. Compressive strength test shall consist of four standard test cylinders made from a single batch of concrete:
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)
5. Air entrainment:
   a. Slip-formed concrete – 7.0 percent, +/- 1.5 percent
   b. Other concrete – 6.0 percent, +/- 1.5 percent
6. Air Content: 6 percent ± 1.5 percent
7. Maximum Water-Cement Ratio: .44
   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.

2.7 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.

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.
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)

5. Air entrainment:
   a. Slip-formed concrete – 7.0 percent, +/- 1.5 percent
   b. Other concrete – 6.0 percent, +/- 1.5 percent

6. Air Content: 6 percent ± 1.5 percent.

7. Maximum Water-Cement Ratio: .44

8. 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.

2.3 AGGREGATES

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 CURING MATERIALS

   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.

2.5 EXPANSION JOINT

A. Conform to ASTM D1751.

B. Thickness: ½ inch.

2.6 REINFORCEMENT BAR


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
7. Test Plugs:
   a. The valve bonnet shall be provided with a ½ or ¾ 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.

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. Valves will be fitted with a three (3) foot long diversified fabricators extension stem with bottom bolts for tightening to the valve at 90 degrees to each other.

11. Acceptable Manufacturers:
   a. Mueller
   b. Kennedy
   c. American Flow Control/Waterous
   d. Clow

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

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).
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, 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 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 foot bury with a 6 to 8 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. #10 AWG solid, 21% conductivity annealed copper-clad high carbon steel extra high strength wire.
   2. 1150 lbs. average tensile break load.
   3. 30 mil high molecular weight high density blue polyethylene jacket, 30 volt rating.

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:
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.

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.
4. Adjusting rings
   a. Precast concrete minimum of 2 inches thick.
   b. Rubber: Infra-Riser, Pro-Ring, or approved equal.
   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.
   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, 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
   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. 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. Pipeline material shall be as stated in the proposal schedule or as shown on drawings
      5. 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. or Mission Rubber Company 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.
2022 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, or approved equal.
      c. HDPE: Tadtech or approved equal.
      d. 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.
      c. Joint design shall be in accordance with ASTM C990.
      d. 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
   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.
DEPARTMENT OF PUBLIC WORKS

STANDARD DETAILS

JANUARY 10, 2022
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### STANDARD DETAIL DRAWINGS

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NOTES:

1. 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.
CRACK (TYP)
CONCRETE SLAB (TYP)
JOINT LINES (TYP)

PLAN VIEW—CRACK LOCATION

CONCRETE EPOXY PATCH

2 MINIMUM

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.
NOTES:

1. HYDRANTS SHALL BE SET VERTICAL.

2. CONCRETE BLOCKING AND WOOD BLOCKING SHALL BE INSTALLED AGAINST FIRM NATURAL GROUND AS REACTION BACKING FOR TEE AND HYDRANT SHOE.

3. REGARDLESS OF DEPTH OF MAIN, THE BREAKAWAY FLANGE MUST BE +/- 2 INCHES ABOVE THE PROPOSED GRADE.

4. 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.

5. ENCASE ENTIRE HYDRANT IN POLYETHYLENE ENCASEMENT.

6. TRACER WIRE SHALL BE RUN UP HYDRANT.

7. BLOCKING AND MEGA LUGS REQUIRED.

8. HYDRANT CAPS TO BE PAINTED PER THE NFPA STANDARD 291, BASED ON FLOWS AS DETERMINED BY THE ENGINEER:
   A. CLASS AA – LIGHT BLUE – RATED CAPACITY OF 1500 GPM
   B. CLASS A – GREEN – RATED CAPACITY OF 1000–1499 GPM
   C. CLASS B – ORANGE – RATED CAPACITY OF 500–999 GPM
   D. CLASS C – RED – RATED CAPACITY OF LESS THAN 500 GPM