

ROCHESTER PUBLIC WORKS DEPARTMENT STANDARDS & SPECIFICATIONS BOOK	TRANSMITTAL LETTER NO (26-01) DATED MAY 1, 2026
Subject	General Conditions of the Contract, Sewer Specifications S100, Watermain Specifications W200, Service Connections C150, Trench Excavation T100, Sidewalk Specifications C700, Engineering Standards
Detail Plates	Standard Detail Plate Index, 1-01O,1-02N 1- 06I, 1-07H, 1-11Q, 1-13J, 1-15C, 1-16D, 1-18A, 2-02H, 2-07F, 3-01I, 3-02G, 3-06A, 3-07A, 4- 01L, 4-02E, 4-03E, 6-11I, 6-12G, 6-19G, 6-20A, 8-01E, 8-04C,8-05A

The Standards for Street and Utility Construction have been updated and are reinstated in their entirety at the City's web site for the Department of Public Works, Specifications and Standards section by selecting at the following address: <https://www.rochestermn.gov> (WEB)

INSTRUCTIONS:

Removals

Remove the following sections or subsections from the Specifications and Standards and remove the following Standard Detail Plates:

General Conditions of the Contract

Section 1005.1 Online Bidding.

Sewer Specifications S100

S100.204 Reinforced Concrete Pipe and Fittings, S100.208 Waterproofing Sanitary Manholes, S100.209 Metal Sewer Castings, S100.301 Notification by Contractor.

Watermain Specifications W200

W200.102 Reference Documentation, W200.202 Ductile Iron Pipe (D.I.P.), W200.208 Valve Box and Gate Valve Adaptor, W200.211 Galvanic Magnesium Anodes, W200.302 Placing Watermain and Appurtenances, W200.304 Pressure, Leakage, and Electrical Conductivity Testing, W200.504 Item List.

Service Connections Specifications C150

C150.202 Water Services, C150.205 Storm Sewer and Drain Service Material, C150.305 Sanitary Sewer, Storm Sewer and Drain Pipe Installation.

Trench Excavation, Backfill & Surface Restoration Specifications T100

T100.206 Aggregate for Hydrant Drainage Pit, T100.207 Bedding and Encasement, T100.213 Casing, T100.310 Jacking/Boring, T100.315 Restoration of Surface Improvements.

Sidewalks C700

C700.308 Joints, C700.311 Pedestrian Ramps, C700.314 Curing.

Engineering Standards

1002.1 Right of Way & Street Widths, 1002.3 Speed Limits, 1002.5 Design Standards by Speed Limit, 1002.15 Temporary Street Ends, 1002.17 Location of Utilities, 1002.19 Utility Easements, 1002.21 Bituminous Paving, 1004.1 Sizing Watermains, 1004.3.4 Surface Water Crossings, 1004.3.6 Roadway Classification "Arterial" Crossings, 1004.3.8 Spacing and Alignments - System Valves, 1005.2 Storm Water Design, 1005.5 Storm Sewer and Culvert Appetences, 1005.6 Storm Sewer Inlet Spacing and Trunk Alignment, 1005.7 Open Channel Design and Sizing, 1005.8 Permanent Stormwater Management Facilities, 1005.10 Subsurface Edge Drains, 1006.1.A Sanitary Sewer, 1009.1 General, 1009.2 Roadway Plans, 1012.2 Modifications to the Mn/DOT Sample Plan.

Detail Plates

1-01N, 1-02M, 1-06H, 1-07G, 1-11P, 1-13I, 1-15B, 1-16C, 2-02G, 2-07E, 3-01H, 3-02F, 3-04B, 3-05D, 4-01K, 4-02D, 4-03D, 6-11H, 6-12F, 6-19F, 8-01D, 8-04B.

Additions

Insert the following Sections and Subsections from the Specifications and Standards and insert the following Standard Detail Plates:

General Conditions of the Contract

Section 1005.1 Online Bidding

Sewer Specifications S100

S100.204 Reinforced Concrete Pipe and Fittings, S100.208 Waterproofing Sanitary Manholes, S100.209 Metal Sewer Castings, S100.301 Notification by Contractor

Watermain Specifications W200

W200.102 Reference Documentation, W200.202 Ductile Iron Pipe (D.I.P.), W200.202 Polyvinyl Chloride (PVC) Pressure Pipe, W200.206 PVC Service Saddles for PVC Water Main, W200.208 Valve Box and Gate Valve Adaptor, W200.210 PVC Mechanical Joint Restraints for PVC Pipe, W200.211 Galvanic Magnesium Anodes, W200.302 Placing Watermain and Appurtenances, W200.304 Pressure, Leakage, and Electrical Conductivity Testing, W200.504 Item List

Service Connections Specifications C150

C150.202 Water Services, C150.205 Storm Sewer and Drain Service Material, C150.305 Sanitary Sewer, Storm Sewer and Drain Pipe Installation

Trench Excavation, Backfill & Surface Restoration Specifications T100

T100.206 Aggregate for Hydrant Drainage Pit, T100.207 Bedding and Encasement, T100.213 Casing, T100.310 Jacking/Boring, T100.315 Restoration of Surface Improvements

Sidewalks C700

C700.308 Joints, C700.311 Pedestrian Ramps, C700.314 Curing

Engineering Standards

1002.1 Right of Way & Street Widths, 1002.3 Speed Limits, 1002.5 Design Standards by Speed Limit, 1002.15 Temporary Street Ends, 1002.17 Location of Utilities, 1002.19 Utility Easements, 1002.21 Bituminous Paving, 1004.1 Sizing Watermains, 1004.3.4 Surface Water Crossings, 1004.3.6 Roadway Classification "Arterial" Crossings, 1004.3.8 Spacing and Alignments - System Valves, 1005.2 Storm Water Design, 1005.5 Storm Sewer and Culvert Appetences, 1005.6 Storm Sewer Inlet Spacing and Trunk Alignment, 1005.7 Open Channel Design and Sizing, 1005.8 Permanent Stormwater Management Facilities, 1005.10 Subsurface Edge Drains, 1006.1.A Sanitary Sewer, 1009.1 General, 1009.2 Roadway Plans, 1012.2 Modifications to the Mn/DOT Sample Plan

Detail Plates

1-01O, 1-02N, 1-06I, 1-07H, 1-11Q, 1-13J, 1-15C, 1-16D, 1-18A, 2-02H, 2-07F, 3-01I, 3-02G, 3-04C, 3-05E, 3-06A, 3-07A, 4-01L, 4-02E, 4-03E, 6-11I, 6-12G, 6-19G, 6-20A, 8-01, 8-01E, 8-04C, 8-05A

If you have any questions, please contact Martin Ramirez: (507) 328-2433 or

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SPECIFICATION CHANGES MADE:

General Conditions of the Contract

Revise 1005.3 Bid Submittal

Bidvault website updated to [Bidvault \(WEB\)](#)

Sewer Specifications S100

Revise S100. 204 Reinforced Concrete Pipe and Fittings

A. Storm Sewer

Reinforced concrete (RC) pipe, fittings and specials shall conform to the requirements of Mn/DOT Section 2501, 2503, 3236 & Plate 3006, 3145G, ASTM C76 & C443, and the following supplementary provisions:

- 1) All branch fittings such as tees, etc. shall be cast as integral parts of the pipe. All fittings and specials shall be of the same strength class as the pipe to which they are attached.
- 2) Tie all joints on ~~Centerline Culverts~~, slopes greater than 10%, ~~and pipes terminating as an outfall.~~

Revise S100.208 Waterproofing Sanitary Manholes

The internal barrier is the preferred waterproofing method for adjusting rings for **both paved and non-paved areas.**

Revise S100.209 Metal Sewer Castings

5. "Unless otherwise specified, sanitary sewer manholes in areas subject to flooding by surface water, **or** in non-paved areas, ~~and in concrete pavements~~ shall have self-sealing, bolt-down, lid with an anti-seize compound applied to the threads."

Revise S100.301 Notification by Contractor.

4. After the Rochester Sewer Division has installed the plug, the Contractor may proceed with the installation of the sewer extension. Upon completion of the work including the cleaning of the sewer lines, air testing the sewer, and conducting the mandrel test, the Contractor shall notify the Rochester Sewer Division. Rochester Sewer Division will televise **all** ~~the public~~ sewer mains. Once the sewer extension passes all specified tests, the Rochester Sewer Division will remove the sewer plugs.

Watermain Specifications W200

Revise W200.102 Reference Documentation

Provisions of the General Conditions and Trench Excavation & Backfill/Surface Restoration shall apply to this work. The Contractor shall abide by the applicable provisions of state, federal and local laws and ordinances.

All references to Mn/DOT Specifications shall mean the latest published edition of the Minnesota Department of Transportation Standard Specifications for Construction as modified by any Mn/DOT Supplemental Specifications issued before the date of advertisement for bids. All references to Specifications of AASHTO, ASTM, ANSI, AWWA, etc. shall mean the latest published edition available on the date of advertisement for bids.

The following American Water Works Association (AWWA) ~~Specifications have been~~ **Standards are incorporated by** referenced in this Specification:

- C104 Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
- C105 Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems
- C111 Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
- C150 Standard for Thickness Design of Ductile-Iron Pipe
- C151 Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids
- C153 Standard for Ductile-Iron Compact Fittings, 3 In. Through 24 In. (76 mm Through 610 mm) and 54 In. Through 64 In. (1,400 mm Through 1,600 mm), for Water Service
- C500 Standard for Metal-Seated Gate Valves for Water Supply Service (Includes addendum C500a-95.)
- C502 Standard for Dry-Barrel Fire Hydrants (Includes addendum C502a-95.)
- C515 Standard for Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service
- C600 Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances
- C605 Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings**
- C651 Standard for Disinfecting Water Mains
- C900 Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 60 In.**

The following additional standards from ASTM International (ASTM) and National Science Foundation (NSF) are incorporated by reference in this specification.

NSF/ANSI 61	Drinking Water System Components Health Effects
ASTM D1248	Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
ASTM D1784	Standard Specification for Rigid Poly (Vinyl Chloride)(PVC) Compounds and Chlorinated Poly (Vinyl Chloride)(CPVC) Compounds
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM D3139	Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
ISO 8179-1	Ductile Iron Pipes – External Zinc Based Coating

Revise W200.202 Ductile Iron Pipe (D.I.P)

Ductile-Iron Pipe shall meet the requirements of ANSI A-21.51 (AWWA C151) for "Ductile-Iron Pipe Centrifugally Cast in Metal Molds or Sand-Lined Molds, for water or Other Liquids." Ductile-Iron pipe for water service shall be ~~SMART-® certified by the Institute for Market Transformation to Sustainability~~ and manufactured in the United States of America

Add W200.202-PVC Polyvinyl Chloride (PVC) Pressure Pipe

Polyvinyl chloride (PVC) pressure pipe shall be manufactured with compounds conforming to ASTM D1784 and shall conform to the requirements of AWWA C900 for the size, grade, and pressure class indicated on the plans. PVC pipe shall not be manufactured more than two years prior to the delivery date to the job site. PVC pipe shall have a minimum dimension ratio (DR) of 18, corresponding to a pressure class of 235 psi in accordance with AWWA C900.

PVC pipe shall be supplied with integral bell and spigot joints with elastomeric gaskets conforming to ASTM F477. Joints shall meet the requirements of ASTM D3139 for push-on joints.

All fittings used with PVC water main pipe shall be zinc coated ductile iron conforming to W200.204 Ductile iron fittings. Injection-molded PVC pressure fittings are prohibited for water main installation.

Each segment of PVC pipe shall be marked with the manufacturer's name or trademark, nominal size and pressure class, AWWA C900 designation, date and location of manufacture, and NSF-61 certification for potable water. Pipe shall be delivered in standard laying lengths (typically 20 feet) and handled per manufacturer recommendations to prevent damage.

The use of PVC material for water main pipe is limited to open trench installations, pipe diameters of 8-inches or less, bury depths less than nine (9) feet below finished grades, areas with maximum static system pressures of 70 psi or less, and installation locations that maintain a minimum separation of 10 feet from parallel sanitary and storm sewers. No PVC water main shall be installed in the urban core, including downtown and within the DMC Boundary.

A. Tracer Wire for Non-Conductive Pipe

Tracer wire for use with all thermoplastic pipe types shall be Underwriters Laboratories (UL) listed for use in direct burial applications, color coated blue. Wire insulation shall be High Molecular Weight Polyethylene (HMWPE) meeting ASTM D1248, with designation identified on the outside of the wire casing.

- Tracer wire shall meet the following additional criteria for the construction method specified:
 1. Open Trench - Tracer wire shall be direct burial #12 AWG Solid (0.0808" diameter), 21% conductivity copper-clad hard drawn high carbon steel extra high strength horizontal tracer wire, 450-pound average tensile break load. The conductor insulator shall consist of a high molecular weight, high density blue polyethylene jacket complying with ASTM-D-1248, 30-volt rating, with minimum 30 mil HDPE insulation thickness. Copperhead #12 High Strength (1030-HS), Copperhead #12 Superflex 1030-SF, or approved equal.
 2. Pipe Bursting/Slip Lining and Directional Drilling/Boring - In addition to the tracer wire requirements above for open trench, tracer wire shall be 7 x 7 Stranded Copper Clad Steel, Extreme Strength with 4,700 lb. break load, with minimum 50 mil HDPE insulation thickness. Copperhead SoloShot Extreme Strength (PBX-50) or approved equal.

All mainline tracer wires must be interconnected at tees and crosses, joined using a single 3-way or 4-way lockable connector for tees and crosses, respectively. Lockable connectors shall be for direct bury application and shall be dielectric silicon filled to seal out moisture and corrosion. Non-locking friction fit, twist on or taped connectors are prohibited. Copperhead 3-way locking connector (LCS 1230), Brundy type KS15, DryConn 3-way Direct Bury Lug #3WB-01, or approved equal.

The tracer wire termination box for in-ground tracer wire termination shall be an H20 rated utility box, Bingham & Taylor P525 or approved equal. The box covers for in-ground tracer wire termination boxes shall be cast iron with the legend "WATER". Tracer wire termination boxes for hydrants shall be Copperhead T3 Test station T3-75-F, or approved equal. The mounting bracket shall be a 14 gauge, stainless steel properly affixed to the hydrant grade flange (affixing with tape or plastic ties shall not be acceptable).

B. Tracer Wire Grounding Rod

Magnesium grounding anode rod with a minimum of 20 feet of #12 red HDPE insulated copper clad steel wire connected to the Anode (minimum 1.5 lb.) specifically manufactured for this purpose and buried at the same elevation as the utility. Copperhead (ANO-12) or approved equal.

C. Pipe Bedding Material

Pipe bedding and granular encasement materials shall meet the requirements of MnDOT Specifications 3149.2 B, Granular Material, except that one hundred percent (100%) by weight shall pass the one-inch (1") sieve.

Add W200.206 PVC Service Saddles for PVC Water Main

Service Saddles are required for all taps made on PVC Water main. The saddles shall be Smith-Blair 372 or approved equal. Service taps shall be made a minimum of three (3) feet apart as measured from the tap location. Saddles shall be a full faced gasket.

Revise 200.208 Valve Boxes and Gate Valve Adaptor

Valve boxes shall be **domestic** screw type, have a minimum inside shafter diameter of 5 1/4 inches, and have a cap with the word "WATER" plainly marked on top. In all respects the valve box shall be equal to Tyler 6860 Series.

Add 200.210 PVC Mechanical Joint Restraints for PVC Pipe

Mechanical joint restraints shall be used to transition from the plastic pipe to the fittings. Series 2000PV mechanical restraints as manufactured by EBAA Iron, Inc., Series 4000 PVC Stargrip as manufactured by Star Pipe Products, or approved equal.

Add W200.211 Galvanic Magnesium Anodes

Anodes shall be cast or extruded on a full length galvanized-steel core, shall conform to ASTM B843, and shall be composed of the following:

- **Manganese 0.50-1.3%**
- **Silicon 0.05 max**
- **Iron 0.03% max**
- **Nickel: 0.001 % max**
- **Copper 0.02% max**
- **Aluminum 0.001% max**
- **Others each 0.05% max**
- **Magnesium remainder**

Anodes shall be prepackaged in a water permeable cloth or paper bag containing a low resistivity backfill material, consisting of 75% hydrated Gypsum, 20% bentonite and 5% sodium sulfate. A minimum of 20 feet of unspliced AWG No. 10 THHN copper wire with TW insulation shall be attached to the anode. Anode lead wires shall be black in color.

Revise W200.302 Placing Watermain and Appurtenances

Section A. General

Installation of piping and appurtenances shall be in compliance with AWWA C600 **for Ductile Iron Pipe, AWWA C605 for Polyvinyl Chloride (PVC) Pressure Pipe**, and the project Plans, Specifications, and Special Provisions. Piping and appurtenances shall be laid to the required line and grades as outlined below, each section having a firm and uniform bearing throughout its entire length.

At the time of pipe placement, the bedding conditions shall be such as to provide uniform and continuous support for the pipe between bell holes. Bell holes shall be excavated as necessary to make the joint connections, but they shall be no larger than would be adequate to support the pipe throughout its length.

No pipe material shall be laid in water nor when the trench or bedding conditions are otherwise unsuitable or improper.

Contractor to center a full 20' stick of water main pipe on all crossings & structures where practical. If not practical, Contractor shall adjust water main pipe joints and fittings to be as far away from the crossings & structures as possible.

All crossings with water main are required to be 18" min. vertical separation and 12" min. vertical separation with water services (18" min preferred). If 12"-24" vertical separation between water main / water services and storm sewer, Contractor to F&I 64 SF (8' X 8") 4" polystyrene insulation centered on the crossing point and between the pipes.

PVC water main shall be bedded with MnDOT 3149.2 B Granular Material from a point eight (8) inches below the bottom of the pipe to twelve (12) inches above and around the sides of the pipe being installed. Extreme care must be taken in the bedding and the backfilling. Compaction of this material shall be to 95 percent of maximum density (ASTM N698). Furnishing, installing and compaction of granular materials around pipe shall be considered incidental to the installation of the pipe with no additional compensation. The trench shall be excavated and prepared to allow placement of the bedding materials specified. The bevel on the spigot end of the PVC water main pipe shall be cut off prior to installation.

Revise Section C.8 Installation of Pipe, Fittings, and Polyethylene Encasement

All **ductile iron** watermain systems within RPU jurisdiction shall be fully encased in polyethylene film meeting the requirements of these Specifications and City Standard Detail Plate. The film shall be furnished in tube form for installation on pipe and all pipe-shaped appurtenances such as bends, reducers, offsets, etc. Sheet film shall be provided and used for encasing all odd-shaped appurtenances such as valves, tees, crosses, etc. **PVC pipe is not required to be poly encased but DIP fittings are required to be poly encased.**

Revise Section C.14 Watermain Within Steel Casings

Watermain installed within a steel casing shall be single gasket, restrained joint type **(DIP) or fused HDPE conforming to ASTM 3035 and AWWA C906, Polyethylene (PE) Pressure Pipe and Fittings, 4" through 63", for Water Distribution.** Pipe furnished shall be approved for potable water and marked to indicate so with a continuous blue stripe. Pipe shall be **PE4710 compound for potable water transmission, pressure class 200, SDR 11, and shall conform to ductile iron pipe equivalent outside diameters. The method of joining material shall be the Thermal Butt-Fusion Method in accordance with ASTM 3261.** Electrical conductivity is to be maintained across restrained pipe joints. The watermain shall be mounted **pressure treated wood blocks or** plastic skids, two per length of pipe secured in place to support the pipe along the barrel rather than at the joints. The space between the pipe and casing shall be ~~backfilled with~~ **and** dried sand **or cellular grout injected** into the space and the ends of the casing shall be sealed with concrete bulkheads at least one foot thick. A 2-inch PVC or copper drain shall extend through the bulkhead at the lower end of the casing.

Add Section D. Tracer Wire Installation, Grounding, and Terminations

1. Tracer Wire Installation

Installation of PVC water mains shall include placement of tracer wire firmly attached to the bottom half of the pipe and secured (taped/tied) at 5' intervals. Tracer wire installation shall be performed in such a manner that allows proper access for connection of line tracing equipment, proper locating of wire without loss or deterioration of low frequency (512Hz) signal for distances in excess of 1,000 linear feet, and without distortion of signal caused by multiple wires being installed in close proximity to one another.

Tracer wire systems must be installed as a single continuous wire, except where using approved connectors. No looping or coiling of wire is allowed. Any damage occurring during installation of the tracer wire must be immediately repaired by removing the damaged wire and installing a new section of wire with approved connectors. Taping and/or spray coating shall not be allowed.

Lay mainline tracer wire continuously, bypassing around the outside of valves and fittings on the North or East side.

All service lateral tracer wires shall be a single wire, connected to the mainline tracer wire using a mainline to lateral lug connector, installed without cutting/splicing the mainline

tracer wire. In occurrences where an existing tracer wire is encountered on an existing utility that is being extended or tied into, the new tracer wire and existing tracer wire shall be connected using approved splice connectors and shall be properly grounded at the splice location as specified. Mainline tracer wire for new PVC water main being connected to existing ductile iron pipe (DIP) watermain shall be connected to the existing DIP via exothermic welding.

2. *Tracer Wire Grounding*

The grounding of tracer wire shall be achieved by use of a drive-in magnesium grounding anode rod. When grounding the tracer wire at dead ends/stubs, the grounding anode shall be installed in a direction 180 degrees opposite of the tracer wire. When grounding the tracer wire in areas where the tracer wire is continuous and neither the mainline tracer wire or the grounding anode wire will be terminated at/above grade, install grounding anode directly beneath and in-line with the tracer wire. Do not coil excess wire from grounding anode. In this installation method, the grounding anode wire shall be trimmed to an appropriate length before connecting to tracer wire with a mainline to lateral lug connector.

Install grounding anodes and access boxes at each hydrant. Where the anode wire will be connected to a tracer wire access box, a minimum of 2 ft. of excess/slack wire is required after meeting final elevation.

3. *Tracer Wire Terminations*

All tracer wire termination points must utilize an approved tracer wire access box (above ground access box or grade level/in-ground access box as applicable), specifically manufactured for this purpose. All grade level/in-ground access boxes shall be appropriately identified with "water" cast into the cap and be color coded. A minimum of 2 ft. of excess/slack wire is required in all tracer wire access boxes after meeting final elevation.

All tracer wire access boxes must include a manually interruptible conductive/connective link between the terminal(s) for the tracer wire connection and the terminal for the grounding anode wire connection. Grounding anode wire shall be connected to the identified (or bottom) terminal on all access boxes.

Termination at hydrants - Above-ground tracer wire access boxes shall be installed on all fire hydrants at an approved above-ground tracer wire access box, properly affixed to the hydrant grade flange. (affixing with tape or plastic ties shall not be acceptable)

Long-runs, in excess of 500 linear feet without hydrants - Tracer wire access must be provided utilizing an approved grade level/in-ground tracer wire access box, located at the edge of the road right-of-way, and out of the roadway. The grade level/inground tracer wire access box shall be delineated using a minimum 48" polyethylene marker post, color coded per APWA standard for the specific utility being marked.

Add Section E. Anode Installation

Galvanic magnesium anodes shall be installed along the lay length of new ductile iron pipe at maximum intervals of 800 feet and at termination ends of water main installation. Anodes shall also be installed at connection points between ductile/cast iron and PVC water main. When installing anodes, excavate a hole to a minimum of 3 inches larger than the anode diameter, and to a depth of one foot below the pipe or fittings to be protected prior to placement. Do not lift or support anode by the lead wire. Anodes shall be activated by applying a minimum of 2 gallons of water over the backfill material upon installation and prior to backfilling. Plastic packaging shall be removed from the anode prior to installation.

Anode connection to pipe shall be made with exothermic weld kit specifically designed by the manufacturer for welding the type of materials. Weld metal shall be type XF manufactured by Thermoweld or approved equal. All welds shall be made with copper wire sleeves. All exposed wires and welds shall be protected with an adhesive rubber Thermite Weld Cap or approved equal.

Revise W200.302 Pressure, Leakage, and Electrical Conductivity Testing

Section D Electrical Conductivity Testing

The Contractor shall perform conductivity testing on newly installed watermain in the presence of Rochester Public Utilities personnel within one week after completion of pressure and leakage testing to document electrical conductivity of the watermain.

All watermain, valves, fittings, and hydrants shall be tested for electrical conductivity and current capacity. The test shall be conducted while the watermain is at normal operating pressure. Backfilling shall have been completed. The watermain may be tested in sections of convenient length as approved by Rochester Public Utilities.

Direct Current (315 – 385 amps) shall be passed through the **ductile iron** watermain for five minutes. Current flow through the watermain will be measured continuously on a suitable ammeter and shall remain steady without interruption or excessive fluctuation throughout the 5-minute test period.

Tracer wire testing shall be conducted by Rochester Public Utilities personnel for PVC watermain to verify proper conductivity and traceability for both dual strands along all segments of watermain installed.

Insufficient current or intermittent current or arcing, indicated by large fluctuations of the ammeter needle, will be evidence of defective conductivity in the watermain. The cause shall be isolated and corrected. Thereafter, the section in which the defective test occurred shall be retested.

Direct current arc welders will typically be the source of direct current for this testing. Conductivity testing equipment shall be furnished by the Contractor, subject to the approval of Rochester Public Utilities.

Cables from the current source to the section of watermain under test shall be of sufficient size to carry the test current without overheating or excessive voltage drop.

Conductivity testing connections for the test shall be made at fire hydrants. Hydrants used for a test shall be in the open position with the caps on during the test. The cable shall be clamped to the

hydrant standpipe and flange bolt. The hydrant-operating nut shall not be used as a terminal during the test.

When conducting a conductivity test, the current control should be set **to** a minimum before starting. After starting the test, gradually increase the current until the current indicated on the ammeter is at the desired test value. Caution: the voltage drop across a defective watermain joint may be in the order of 50-100 volts.

Conductivity testing shall not be performed on non-metallic water main. Upon completion of rough grading and prior to final acceptance, all new tracer wire installations shall be located by Contractor using typical low frequency (512 Hz) line tracing equipment, witnessed by the Engineer and/or Rochester Public Utilities personnel. Contractor shall find and repair any broken tracer wires prior to acceptance.

Revise W200.504 Item List

Payment for watermain construction will be made on the basis of the following schedule:

ITEM NO	ITEM	UNIT
W200.511	AGGREGATE FOR PIPE FOUNDATION GRADATION __ (__)	CU YD
W200.514	FURNISH & INSTALL __ IN POLYSTYRENE INSULATION	SQ FT
W200.528	FURNISH & INSTALL __ IN DUCTILE IRON PIPE CLASS 52	LIN FT
W200.529	FURNISH & INSTALL __ IN POLYVINYL CHLORIDE PRESSURE PIPE C900	LIN FT
W200.530	FURNISH & INSTALL __ IN TYPE K COPPER WATER PIPE	LIN FT
W200.535	FURNISH & INSTALL __ IN CASING	LIN FT
W200.538	JACK & AUGER __ IN CASING	LIN FT
W200.545	CONSTRUCT STRUCTURE TYPE 4 (PRV) __ FT TO __ FT DEEP (__ IN)	STRUCTURE
W200.548	FURNISH & INSTALL CASTING ASSEMBLY	EACH
W200.550	FURNISH & INSTALL __ IN GATE VALVE AND BOX	EACH
W200.552	FURNISH & INSTALL __ IN CURB STOP AND BOX	EACH
W200.554	FURNISH & INSTALL __ IN CORPORATION STOP	EACH
W200.556	FURNISH & INSTALL __ IN X __ IN TAPPING SLEEVE AND VALVE	EACH
W200.558	FURNISH & INSTALL __ IN PLUG	EACH
W200.560	FURNISH & INSTALL HYDRANT	EACH
W200.562	FURNISH & INSTALL WATER MAIN FITTINGS	POUND
W200.564	REMOVE _____	EACH
W200.567	INSTALL _____	EACH
W200.570	RECONSTRUCT _____	EACH
W200.572	CONNECT TO EXISTING _____	EACH
W200.574	ADJUST _____	EACH
W200.574	HYDRANT EXTENSION	LIN FT
W200.576	TURN OFF EXISTING CORPORATION STOP	EACH
W200.578	LOWER WATERMAIN	LIN FT
W200.580	_____,_____,____ GAL. ELEVATED TANK	LUMP SUM
W200.582	EXISTING ELEVATED TANK - DEMOLITION	LUMP SUM
W200.585	RESTORATION	SQ YD

Service Connections C150

Revise C150.202 Water Services

Section C. Curb Stop & Box

1. Curb stop valves shall be **domestic**, of the compression type fitting, and shall be one of the following and specifically for the use with copper inlet and outlet service pipe. All curb stop valves shall be threaded and conform to the Minneapolis Pattern.

Revise C150.205 Storm Sewer and Drain Service Material

Storm sewer and drain service pipe located within 10 feet of water service or watermain shall meet the Sanitary Sewer Service material specifications. **Subservice edge drain services shall be a minimum of four (4) inch solid wall PVC. Schedule 40 PVC is required if installed within a common trench with the water and sanitary sewer services. SDR 35 PVC can be used if installed outside of the common trench with the water and sanitary sewer services.**

Revise C150.305 Sanitary Sewer, Storm Sewer and Drain Pipe Installation

Section B. Placing Sewer Pipes

1. Each section of service connection pipe (sanitary sewer, storm sewer, or drain) shall have a firm and uniform bearing throughout its entire length.
2. The ends of sewer service connections shall be sealed with a plug conforming to the requirements of Section C150.203 in this specification. Sub-drains will be plugged with a ~~2-inch~~ **4 inch** detectable PVC cap. Pipe shall be laid with the bell or grooved end up/grade.
3. Installing PVC Pipe
 - (a) PVC pipe shall be bedded and encased using specified materials. Pipe placement shall be in accordance with the pipe manufacturer's recommendations.
 - (b) The maximum allowable radial deflection shall be 5% of the diameter of the pipe.
 - (c) PVC sub-drain pipe shall be laid with the perforation down.

4. The sanitary sewer service pipe risers shall be constructed in accordance with the City Standard Detail Plates. **Risers shall be installed at the main.**
5. Cleanouts shall be placed at a maximum 100 foot intervals: **in straight runs and for each aggregate horizontal and/or vertical change in direction greater than or equal to 90 degrees. As-built location coordinates shall be verified for all cleanouts.**
6. Connections with Mains or Structures
 - (a) Sanitary Sewer Service connections shall be core drilled or, made at the main using tees, wyes. For clay pipes, the City shall install the tap. Manhole connections will be permitted only where approved by the City Engineer.
7. Storm Sewer Connections
 - (a) Connections to storm sewers shall be made with manholes, junction boxes, tees or cut-ins in accordance with the applicable standard detail plates of the City of Rochester.
 - (b) Near a tee or wye, where compression joint cannot be made with a commercial adapter, the connection shall be made by tapping the main. The existing connection shall be abandoned by plugging within 5 feet of the main.
 - (c) Sewer services to be abandoned in place shall be disconnected and plugged with a pressure plug or the end filled with concrete at the property line. A compression plug shall be used when disconnecting at the wye or tee connection.

Trench Excavation T100

Revise T100.206 Aggregate for Hydrant Drainage Pit

~~Aggregate for hydrant drainage pit shall meet ASTM #467 gradation. Refer to T100.204 for gradation requirements.~~

Foundation materials shall have one hundred percent (100%) by weight passing the one and one-half inch (1 ½") sieve and a maximum of ten percent (10%) by weight passing the No. 4 sieve. Not less than fifty percent (50%) of the material by weight that is retained on the No. 4 sieve shall have one (1) or more crushed faces. Hard, durable crushed carbonate quarry rock may be used for foundation materials.

Revise T100.207 Bedding and Encasement

Bedding and encasement materials shall meet the requirements of Mn/DOT Section 3138, Table 3138.2-1 for Class 2, 5, or 6.

Bedding and encasement materials for Flexible pipe shall meet the requirements of MnDOT Specification 3149 Granular Material, Table 3149.2-1, Granular Material, except that one hundred percent (100%) by weight shall pass the one-inch (1") Sieve.

Revise T100.213 Casing

A. Steel Casing

Steel casing pipe shall be new material, with minimum yield strength of 35,000 psig (pounds per square inch gauge). All joints in steel casing pipe shall be welded. **The minimum diameter of casing pipe shall be four (4) inches greater than the outside diameter of the bell of the carrier pipe.** The following minimum wall thickness shall be used:

Outside Diameter	Casing Pipe Wall Thickness Under Roadway
12" to 28"	0.250
30" to 34"	0.375
36" to 60"	0.500

Revise T100.310 Jacking/Boring

Strap two (2) **pressure treated** wooden saddle blocks **or plastic skids** to each pipe length to provide support at regular intervals. Center carrier pipe in casing at all times.

Revise T100.315 Restoration of Surface Improvements

Wherever any surface improvements such as pavement, **pavement markings**, curbing, pedestrian walks, fencing, or turf have been removed, damaged or otherwise disturbed by the Contractor's operations, they shall be repaired or replaced to the Engineer's satisfaction, as will restore the improvement in kind and structure to the preexisting condition. Each item of restoration work shall be done as soon as practicable after completion of installation and backfilling operations on each section of pipeline.

Sidewalk Standards C700

Revise C700.308 Joints

Expansion joints shall be ~~4/2~~ **1/4** inch wide unless otherwise specified, shall be the full thickness of the walk, and shall be of pre-formed expansion joint material in accordance with Mn/DOT Specification 3702 Types A-E. Expansion material secured in a manner that will prevent movement or displacement during the placement of the concrete.

Revise C700.312 Pedestrian Ramps

Pedestrian ramps shall be constructed in accordance with the City of Rochester Detail Plate and the Mn/DOT Pedestrian Curb Ramp Details Standard Plan 5-297.250. Grades shall not exceed the maximum grades shown on the Detail Plate or Standard Plan.

All pedestrian ramps should be designed as combined directionals or a one-way directional when crossing is not permitted in both directions. When a directional ramp cannot be constructed, a designer shall then consider a fan or modified fan followed by a depressed corner. A diagonal pedestrian ramp shall not be constructed without approval of the City Engineer.

Revise C700.314 Curing

Cold weather protection shall continue for ~~not~~ **no** less **than** least 7 days after casting. Straw, hay and similar loose materials shall not be used as cold weather protection.

Engineering Standards

Revise 1002.1 Right of Way & Street Widths

~~For classification of streets and resulting widths refer to the Planning 2 Succeed Rochester Comprehensive Plan 2040 "Right of Way Guidelines for Local Streets" available at~~

Add Table 1002.1-1 Right of Way & Street Width

SUBCLASS	WHEN TO USE	ROADWAY WIDTH (FT.)*	RIGHT OF WAY WIDTH (FT.**)
INDUSTRIAL	INDUSTRIALLY ZONED AREA WHERE ADT > 1000 VEHICLES PER DAY	38	66
COMMERCIAL	COMMERCIALLY ZONED AREA WHERE ADT > 2500 PER DAY	38	80
RESIDENTIAL	STREETS DESIGNATED AS RESIDENTIAL COLLECTOR WITH PARKING ON BOTH SIDES.	36	62
RESIDENTIAL	STREETS DESIGNATED AS RESIDENTIAL COLLECTOR WITH PARKING ON ONE SIDE.	30	60
RESIDENTIAL	STREETS DESIGNATED AS RESIDENTIAL COLLECTOR WITH NO ON-STREET PARKING.	26	60

SUBCLASS	WHEN TO USE	ROADWAY WIDTH (FT.)*	RIGHT OF WAY WIDTH (FT.**)
INDUSTRIAL	MINOR STREET IN INDUSTRIALLY ZONED AREA WITH C&G DRAINAGE.	34	66
COMMERCIAL	MINOR STREET IN COMMERCIALLY ZONED AREA WITH C&G DRAINAGE AND PARALLEL PARKING ON BOTH SIDES.	36	66
COMMERCIAL	MINOR STREET IN COMMERCIALLY ZONED AREA WITH C&G DRAINAGE AND ANGLE PARKING ON BOTH SIDES.	60	85

URBAN CONDITION	ROADWAY WIDTH (FT.)*	RIGHT OF WAY WIDTH (FT.**)
LOCAL RESIDENTIAL 2-WAY STREET WITH C&G AND PARKING ON BOTH SIDES	32	60
LOCAL RESIDENTIAL 2-WAY STREET WITH C&G AND PARKING ON ONE SIDE	28	60
LOCAL RESIDENTIAL 2-WAY STREET WITH C& AND NO ON-STREET PARKING	24	52
LOCAL RESIDENTIAL LIMITED LOCAL: 2-WAY TRAFFIC WITH C&G; NO PARKING AND ADT < 300	22	50
LOCAL RESIDENTIAL 1-WAY STREET WITH C&G AND PARKING ON ONE SIDE	20	44
LOCAL RESIDENTIAL 1-WAY STREET WITH C&G; NO ON-STREET PARKING < 500 FT	16	40
RESIDENTIAL 2 LANE PARKWAY WITH LANDSCAPED MEDIAN & PARKING	13 EACH SIDE	64
ALLEY WITH C&G AND NO PARKING	18.66	20

*Roadway width is the amount of space available for driving and parking, measured 8" from inside back of curb.

**City Engineer may approve right of way width reduction if detail plate minimums are met and may require additional right of way where bicycle and wider pedestrian facilities are present.

The City of Rochester Standard Detail Plate shows typical cross-section information. Private streets must conform to the same City of Rochester design standards as public streets.

On cul-de-sacs the minimum radius to back of curb shall be ~~40.67~~ **48.67** feet.

Revise 1002.3 Speed Limits

*The Urban Core is defined in the current Rochester-Olmsted Council of Governments ~~Long Range~~ **Metropolitan** Transportation Plan

Revise 1002.5 Design Standards by Speed Limit

Preliminary utility spacing design plans for roadway designs ~~less than 28'~~ **28' or less** shall be submitted to and approved by the City Engineer.

Revise 1002.15 Temporary Street Ends

All temporary street ends shall be closed with ~~temporary barricades (Mn/DOT 8000K Type III Barricade)~~ **two OM4-3 end of roadway object markers** and are to be fully reflectorized and properly maintained until the street is extended.

Revise 1002.17 Location of Utilities

Material	Horizontal Alignment	Vertical Depth
Sanitary Sewer*	Center of Street or, maximum 2 feet from center on curvilinear streets	6 feet over top
Watermain*	10 feet Clear and Parallel, north and east, to Sanitary sewers and 10 feet Clear and Parallel, south and west, to Storm sewers	7 feet over top
Storm Sewer*	5 feet – 10 feet Clear and Parallel, south and west, to Sanitary Sewer.	2 feet over top
Subsurface Edge Drain	Both sides of street behind curbs	3.5 feet over top
Electric Telephone Cable TV, Gas	Easement adjacent to R/W	3 feet

Revise 1002.19 Utility Easements

Public watermain(s) and hydrant(s) require its own minimum 20' watermain utility easement (WMUE). **Public sanitary sewer(s) requires its own minimum 30' sanitary easement. Deeper infrastructure may require a wider easement as determined by City Engineer.**

Revise 1002.21 Bituminous Paving

Reference MnDOT Standard Specifications – Table 2360.3-5 (Surface Requirements) for all bituminous paving requirements and tolerances. Final lift wear course out of tolerance, per Table 2360.3-5, will require a mill and overlay to centerline of roadway. Minimum length of patch is 25' and minimum depth is depth of final wear course. If greater than or equal to 25% of the final lift wear is out of tolerance, per Table 2360.3-5, contractor must complete a full-width mill and overlay of the final wear course. Final corrective action for bituminous paving out of tolerance shall be at the discretion of the City Engineer.

The following tables provide guidance in selecting a bituminous mix for each lift. However, pavement design will remain the responsibility of the Geotechnical Engineer:

TABLE 1002.21-1 Trails

Lift	Lift Thickness	Mix Design
1st	3"	SPWEA230B

TABLE 1002.21-2 Local Streets (<2,300 AADT)*

Lift	Lift Thickness	Mix Design
1st	1 1/2"	SPWEA230C
2nd	2 1/2"-3"	SPWEB230C

*Use 3.0% Air Voids for Low-Volume Wear Courses. Wear is defined as the top 3 inches.

TABLE 1002.21-3 Minor Collectors (2300<AADT<6000)

Lift	Lift Thickness	Mix Design
1st	1 1/2" - 2"	SPWEA340C
2nd	2" - 2 1/2"	SPWEB340C
3rd	2" - 3"	SPNWB330B

Revise 1004.1 Sizing Watermains

Twelve (12) inch or larger diameter watermains **or redundant feed** may be required by the City Engineer based on watermain hydraulic capacity requirements to serve future adjacent portions of the water distribution system. Proposed watermain sizing is to be reviewed with Rochester Public Utilities prior to final plan and specification preparation.

Revise 1004.3.4 Surface Water Crossings

~~Surface Water Crossings:~~ Watermains crossing under surface waters greater than 15 feet in width must be provided with **fused HDPE or** restrained joints from top of bank to top of bank. The restrained joints are to be called out on the plan sheet and are to be considered an incidental pay item. Valves shall be located at both sides of the crossing within an accessible area above the water table not subject to flooding. No service connections are allowed between the isolation valves. A fire hydrant shall be located between the isolation valves in an accessible area to allow for pressure testing of the crossing to determine leakage.

Add 1004.3.6 Roadway Classification “Arterial” Crossings

Water mains crossing under a roadway classified as an "arterial" must be installed within a steel casing in accordance with the provisions in Specification T100. The casing shall extend a minimum of 5' beyond the back-of-curb or bottom of ditch slope and valves shall be located at both sides of the crossing. No service connections are allowed between the isolation valves. The valves shall be located and restrained such that they can effectively isolate the crossing in the event that the water main within the casing needs to be removed or maintained.

Revise 1004.3.8 Spacing and Alignments – System Valves

Generally, valves shall be located at intersections in line with the right of way lines, **but outside of crosswalks and 4' minimum clear of conduit crossings**, for safer operation and located to allow a maximum 4-valve shutdown to isolate water main sections. Valves located mid-block shall be near a fire hydrant tee for reference and adequate flushing of the main. In residential areas valves shall be located such that no more than 24 customers would be isolated at a time in a shut down. In commercial areas fewer customers should be isolated depending on the size of the facility. Larger commercial/industrial facilities will require the installation of isolation valves on both sides of the service connection for improved reliability. In non-developed areas, valves shall be located at anticipated intersections and or at **800'** intervals to allow for proper flushing, testing, **and locating** of the main. **Sixteen (16)-inch and larger valves shall be butterfly valves. Twelve (12)-inch and smaller valves shall be gate valves.**

Revise 1005.2 Storm Sewer Design

Storm sewer systems shall be designed to convey the 10-year return frequency rainfall event without surcharge of the storm sewer system, i.e., open channel **(non-pressurized)** flow conditions must be maintained. The Rational Method shall be utilized for peak stormwater runoff rate estimates with pipe capacity determined using Manning's Equation. Storm sewer sizing shall include anticipated future

flows and flows from off site. If a permanent stormwater management facility, e.g., wet sedimentation pond, underground detention chamber, etc., is routed through a trunk storm sewer system, the trunk storm sewer system must convey both the 100-year peak discharge from the permanent stormwater management facility and the 10-year design discharge of the trunk storm sewer system. The minimum storm sewer diameter shall be 12 inches. To prevent the buildup of sediment within storm sewer, a minimum flow velocity of three feet per second (3 fps) shall be maintained. **The crowns of upstream and downstream storm sewer pipes running through a structure shall match where the downstream storm sewer increases in size or have a minimum drop of 0.1 feet across the structure for storm sewer pipes of the same size where feasible as determined by the City Engineer.**

Revise 1005.5 Storm Sewer and Culvert Appurtenances

Outlet protection shall be evaluated and implemented in accordance with design discharges and associated outlet velocities. Energy dissipation devices including, but not limited to, riprap basins, ring dissipators, stilling basins, etc. shall be utilized to decrease outlet velocities prior to entering erodible drainage channels and/or natural waterways. **The energy dissipation device design frequency shall match the design frequency of the storm sewer, e.g., a typical energy dissipation device for a storm sewer outfall requires a 10-year design frequency and the energy dissipation device for a pond outlet control structure requires a 100-year design frequency.** Newly constructed stormwater outfalls to public waters shall provide for filtering or settling of suspended solids and skimming of surface debris before discharge and must be consistent with Minnesota Rules, part 6115.0231.

Revise 1005.6 Storm Sewer Inlet Spacing and Trunk Alignment

Storm sewers shall be placed on alignments parallel with sanitary sewer, **as detailed in Section 1002.17**, with manholes at changes in horizontal and/or vertical alignment. Manhole spacing shall not exceed 400 feet for 12- through 15-inch pipes and 500 feet for 18- through 30-inch pipes. Change in flow direction at structures shall not exceed 90 degrees. For **narrow** street widths **typically** 32 feet or less measured from back-of-curb to back-of-curb, an alternate trunk storm sewer alignment is acceptable where it can run beneath the curb and gutter but outside of the boulevard to the maximum extent practicable. Details for the alternate alignment demonstrating the constructability of the storm sewer along with other utilities, i.e., edge drain, light poles, etc., shall be submitted to the City for review and approval by the City Engineer.

Local, local collector, and private streets shall provide for containment of stormwater spread for the 10-year return frequency rainfall event such that the center 6 feet remains clear of ponded water at the roadway low-point. In addition, the 100-year return frequency rainfall event shall be contained within **the** roadway right-of-way (ROW). All low-points shall have an emergency overflow route. An analysis for the 100-year event at all low points shall be performed to determine the anticipated ponding levels.

All roadways that exceed local and local collector classifications shall be designed in accordance with MnDOT spread requirements for the 10-year return frequency rainfall event per the latest edition of the MnDOT Drainage Manual. **Additionally, a minimum of six (6) feet shall remain clear in each driving lane.**

Spacing of catch basins shall be as necessary to meet the stormwater spread restrictions above, but in no case shall catch basin spacing exceed 500 feet ~~on residential, collector, and arterial streets.~~

Catch basins shall be located at intersections to prevent stormwater from flowing across the roadway (no valley gutters are allowed). Catch basins shall also be placed at pedestrian ramps such that no more than 0.3 cfs of stormwater passes by the pedestrian ramp during the 10-year return frequency rainfall event.

Revise 1005.7 Open Channel Design and Sizing

The design discharge for permanent channel conveyance (e.g. ditches, swales, etc.) linings shall have a 25-year design frequency while temporary linings shall be designed for a two-year frequency discharge based on allowable shear stresses as defined in the MnDOT Drainage Manual. The 100-year frequency discharge shall be contained within an easement or right-of-way.

Channel freeboard shall be the larger of one foot or two velocity heads for a 10-year frequency discharge; the channel shall contain the 25-year frequency discharge.

Where shear stress exceeds allowable limits as defined in the MnDOT Drainage Manual for vegetated channels, storm sewer or concrete-lined channels shall be utilized. Riprap lined channels and **turf reinforcement mat (TRM)** ~~(turf reinforcement mat)~~ lined channels are not allowed. At the discretion of the City Engineer, TRMs may be used as a substitute for storm sewer piping if the swale is to be contained within a City-owned outlot.

Where substantial intermittent, seasonal, or continuous discharges are possible based on, but not limited to, prevailing hydrologic/geologic conditions, e.g., Decorah shale, anecdotal evidence from adjacent development, inputs created from sump pump discharges, etc. vegetated channels shall not be allowed. In these instances, storm sewer or concrete-lined channels shall be utilized. Riprap lined channels are not allowed.

Vegetated channels shall not be allowed where the longitudinal slope is less than two percent. In these instances, storm sewer or concrete-lined channels shall be utilized. Riprap lined channels **and TRM lined channels** are not allowed.

For residential developments where four (4) or more lots and/or one (1) acre or more drain to a common point, a catch basin and storm sewer is required.

Revise 1005.8 Permanent Stormwater Management Facilities

6. All city-owned wet sedimentation ponds shall have a maximum bounce for the 100-year design storm of no more than five (5) feet

7. Pond liners required according to the National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit, Section 18.10 must be designed per the Minnesota Stormwater Manual, Level 2 liner specifications unless a Level 1 liner is required.

8. Storm sewer discharges to ponds shall be consolidated such that the number of outfalls is minimized to the maximum extent practicable. Furthermore, the storm sewer outfall(s) to the pond shall be located away from the outlet control structure to prevent short-circuiting.

10. All permanent stormwater management facilities that are contained within 100-year FEMA mapped floodplains, require a minimum separation (by physical barrier or otherwise) up to the 10-year elevation of the adjacent waterbody.

Revise 1005.10 Subsurface Edge Drains

~~A 6"x4" wye shall be installed at the same locations as the water and sewer service. Subsurface edge drain services shall be a minimum of four (4) inch solid wall PVC, extended to the edge of the utility easement. Schedule 40 PVC is required if installed in a common trench with water and sanitary service. SDR 35 PVC can be used if the subsurface edge drain service is installed outside of the common trench. A minimum pipe slope of 0.5% is required on this subsurface edge drain service. The subsurface edge drain service shall be plugged at the property line or at the building site with a four (4) inch detectable PVC cap.~~

A subsurface edge drain service shall be installed to a property requiring a water and sanitary sewer service. Subsurface edge drain services shall be a minimum of four (4) inch solid wall PVC, extended to the edge of the utility easement. Schedule 40 PVC is required if installed in a common trench with the water and sanitary sewer services. SDR 35 PVC can be used if installed outside of the common trench with the water and sanitary sewer services. A minimum pipe slope of 0.5% is required for this subsurface edge drain service. The subsurface edge drain service shall be plugged at the property line or at the building site with a four (4) inch detectable PVC cap.

Revise 1006.1.A Sanitary Sewer

Sanitary sewer services shall be a minimum of four (4) inches in diameter. **Single-family residences shall use four (4) inch services. All other uses, including multi-family, commercial, industrial, and institutional, shall use six (6) inch services unless otherwise approved by the City Engineer.**

Revise 1009.1 General

The objective of this section is to define elements of treatment of public infrastructure systems that traverse through "Decorah Edge" areas (\Decorah Edge areas defined in City of Rochester Code of Ordinances, Section 6-3-2. — Definitions and map [Unified Development Code \(UDC\)](#)). Primary features of the protection measures in this section include:

1. Avoiding "Decorah Edge" areas to the maximum extent practicable.
2. Allowing only Collector or higher classification roadways to transverse across these areas.
3. Allowing only large diameter underground trunk main public infrastructure with appropriate treatment elements to transverse across these areas.
4. For Roadways, require a subsurface drainage collection system. Require the subsurface system to discharge into the surface water storm sewer system, not reentering or infiltrating back into the subsurface system.

The following standards were developed to protect our surface/subsurface groundwater migration and hydrology by ensuring their proper care and protection and to ensure its compatibility with an efficient and dependable infrastructure system.

Revise 1009.2 Roadway Plans

Roadways across the Decorah Edge areas should be avoided, if at all possible. Only streets classified as Collectors or higher shall be constructed across the Decorah Edge areas. **Lower classification streets may be allowed when they serve as the secondary emergency access.** Roadways through the Decorah areas shall be installed according to the City of Rochester Detail Plate to mitigate these subsurface flows.

Revise 1012.2.D Sewer, water, and service connection plans

Notes for fittings and structures shall include the station and relationship to centerline. For structures, also provide the structure type, diameter, casting type, ring and center of invert elevation for inlets and outlets in the notes. Provide the center invert grades on the profile, along with pipeline grades at 25 foot intervals. For watermain, provide grades at 50 foot intervals and label as w/m invert elevations (No top of pipe elevations). Also provide all crossing information at crossings with watermain (top of pipe elevations **of lower pipe**, invert elevation of **higher pipe**, **actual** vertical **separation** dimension, and station of crossing points). **Crossing information to be shown / located on the plan & profile sheet in which the crossing is shown / located.**

DETAIL PLATE CHANGES MADE IN 2026:

1-01O

UPDATED “NOTE 10” with callouts on detail to include “INLET FRAME BOLT HOLES SHALL BE FULLY MORTARTED.”

1-02N

UPDATED “NOTE 11” callouts to only represent exterior waterproofing.

1-06I

UPDATED “NOTE 3” to “REFER TO PLANS AND S.D.P 1-11 AND 1-12 FOR CASTING REQUIRED.”

UPDATED “NOTE 6” to “REFERENCE S.D.P. 1-16 FOR CASTING ELEVATION REQUIREMENTS.”

ADDED detail “SIDE ELEVATION (NON-PAVEMENT).”

“NOTE 7” and with callouts to include “NEENAH R-1976.”

“NOTE 8” with callouts to include “INSTALL 6” AGGREGATE BASE CLASS 5, MINIMUM 2’ RADIUS AROUND CLEANOUT.”

1-07H

UPDATED “NOTE 5” to “REFERENCE S.D.P 1-16 FOR CASTING ELEVATION REQUIREMENTS.”

1-11Q

UPDATED grate type “FLAT GRATE” TO “FLAT GRATE (R-2390).”

UPDATED cover type “R-1642” to “R-1733”

1-13J

SHEET 1 **UPDATED “NOTE 4” to include “SEE MN/DOT S.P. 4010 FOR STRENGTH REQUIREMENTS AND ADDITIONAL INFORMATION.”**

ADDED "NOTE 5" to include "MORTAR JOINTS SHALL BE MAXIMUM ½" THICK.

UPDATED "NOTE 6" with callouts on detail to include "SHALL ONLY BE USED IN CONCRETE ROADWAYS USING PAVING MACHINES."

ADDED CIRCULAR RING PLAN VIEW DETAIL.

SHEET 2 **UPATED "NOTE 2" to "VARIABLE THICKNESS OF AT LEAST 2 AND NOT MORE THAN 3 STANDARD 1.25 – 4" RINGS WITH MAXIMUM ADJUSTMENT OF 8" ON NEW STRUCTURES. MAXIMUM ADJUSTMENT OF 12" ON RECONSTRUCTION OF INPLACE STRUCTURES."**

UPDATED "NOTE 3" to "IF ADDITIONAL ADJUSTMENT >12" IS REQUIRED ON RECONSTRUCTION OF INPLACE STRUCTURES, CONTRACTOR TO INSTALL A PRE-CAST RISER. TO BE APPROVED BY AN AUTHORIZED CITY REPRESENTATIVE PRIOR TO INSTALL."

UPDATED "NOTE 4" to "MAXIMUM (4) SLOPED RINGS TO MATCH GRADE. SHIMS NOT PERMITTED."

ADDED "NOTE 6" to include "CUT THE LIP OF THE BOTTOM RING AS NECESSARY TO ALLOW IT TO SIT FLUSH AND ALIGN ON THE MANHOLE ASSEMBLY."

1-15C

ADDED "NOTE 3" on detail to include "BLIND-TIE FIELD CONNECTIONS MUST BE CORE DRILLED INTO STORM SEWER MAIN.

1-16D

ADDED "NOTE 10" with callouts on detail to include "SET TOP OF CASTING 0 – ½" BELOW THE FLEXIBLE PAVEMENT OR FLUSH WITH THE RIGID PAVEMENT SURFACE."

UPDATED callout "FLUSH TO FINISHED PAVEMENT" to "CONCRETE DONUT FLUSH TO FINISHED PAVEMENT."

UPDATED "NOTE 9" to include "RESTORED AGGREGATE BASE, CONCRETE PAVEMENT (HIGH EARLY MIX) WITH CURING COMPOUND.

1-18A

ADDED SHEET 1-18 "OUTLET CONTROL STRUCTURE"

2-02H

ADDED "NOTE 4" with callouts on detail to include "USE AN APPROVED TYPE F 1/ 4" THICK SEPERATION MATERIAL. MATCH FULL HEIGHT DIMMENSION OF ADJACENT CONCRETE.

2-07F

SHEET 1 **ADDED "NOTE 5" with callouts to include "MAX. 10:1 TAPER TO EXPANSION JOINT."**

ADDED callout "MIN. 4" CONCRETE TO CURB LIP"

SHEET 2 **UPDATED call out on SECTION A-A to include "OFFSET MAX. 2" FOR APPROACH C.B."**

ADDED callout "TAPER TO RIM OF CASTING"

ADDED "NOTE 5" with callout to include "4" MIN. CONCRETE INFRONT OR BEHIND CASTING."

3-01I

UPDATED SHEET 10 OF 13 to include utility placement.

ADDED "NOTE 5" to include "REFER TO ENGINEERING SPECIFICATIONS SEC 1002.13 FOR DETAILS ON UTILITY PLACEMENT WITHIN 28' ROADWAY SECTION."

ADDED "NOTE 6"to include "REFER TO ENGINEERING SPECIFICATIONS SEC 1005.6 FOR DETAILS ON UTILITY PLACEMENT WITHIN 28' ROADWAY SECTION."

ADDED "NOTE 7" to include "REFER TO ENGINEERING SPECIFICATIONS SEC 1002.16 FOR DETAILS ON UTILITY PLACEMENT."

3-02G

UPDATED “NOTE 4” to include “STABILIZING AGGREGATE AS DIRECTED BY THE ENGINEER”.

3-04C

UPDATED all radius callouts to align with back of curb.

UPDATED all lane width callouts to meet face of curb.

3-05E

SHEET 1

UPDATED “NOTE 2” with callouts to “TWO MnMUTCD COMPLIANT OM4-3 END OF ROADWAY OBJECT MARKERS AND ARE TO BE FULLY REFLECTORIZED AND PROPERLY MAINTAINED UNTIL THE STREET IS EXTENDED.”

SHEET 2

UPDATED NOTE “REQUIRED ON ALL DEAD-END STREETS, 150' OR LONGER.” TO “REQUIRED ON ALL TEMPORARY STREET ENDS OR CUL-DE-SAC, 150' OR LONGER” ON

UPDATED “NOTE 2” to include TWO MnMUTCD COMPLIANT OM4-3 END OF ROADWAY OBJECT MARKERS TO BE FULLY REFLECTORIZED AND PROPERLY MAINTAINED UNTIL THE STREET IS EXTENDED”.

3-06A

ADDED SHEET 1.

3-07A

ADDED SHEET 1.

4-01L

SHEET 1

UPDATED “NOTE 10” to include “4” DIAMETER PCV, SCHEDULE 40 REQUIRED IN COMMON TRENCH, SDR 35 OUTSIDE OF COMMON TRENCH, MINIMUM PIPE SLOPE OF 0.5%.

ADDED callout “6”X4” WYE”

SHEET 2 ADDED CALLOUT "6"X4" WYE."

4-02E

UPDATED "NOTE 2" to "DUCTILE IRON PIPE SHALL BE USED FOR RISER CONSTRUCTION 3' OR GREATER. PVC RISER WITH CONCRETE ENCASED WYE SHALL BE USED BETWEEN 0 – 3'."

UPDATED "NOTE 3" with callouts on detail to "FURNISH AND COMPACT BEDDING MATERIAL TO COMPLETELY FILL TRENCH OF DEPTH OF THE 45° BEND AS SHOWN."

REMOVED "NOTE 4" and callouts on detail.

4-03E

UPDATED NATURAL GAS DUCT MINIMUM DEPTH TO 36". NOTE 3 "ELECTRIC DUCT TO BE NEAREST DUCT TO PROPERTY LINE" TO "ELECTRIC DUCT TO BE NEAREST DUCT TO EASEMENT LINE". SET BACK FROM RIGHT OF WAY CHANGED FROM 5' TO 0.5'.

UPDATED "NOTE 3" to include "ELECTRIC DUCT TO BE NEAREST DUCT TO EASMENT LINE".

6-11I

UPDATED detail from "2 of 2" sheets to "4 of 4" sheets.

SHEET 1

ADDED "NOTE 5" with callouts to include "1" COMPRESSION X 1" MIP BRASS ADAPTOR INCLUDING THE SOLID STIFFENER FOR PE SERVICE LINES (BY OWNER)"

UPDATED "NOTE 6" with callouts to include "1" THREADED BALL VALVE WITH A 1"X2" BRASS NIPPLE & BRASS 1" 90 DEGREE ELBOW (BY OWNER)".

UPDATED "NOTE 6" TO "NOTE 7"

UPDATED "NOTE 7" TO "NOTE 8"

UPDATED "NOTE 8" TO "NOTE 9"

ADDED meter tail to both sides of water meter with callout.

UPDATED NOTE to include " OWNER RESPONSIBLE FOR MAINTAINING TOP OF CURB BOX & TRACER WIRE ACCESS BOX FLUSH WITH GROUND SURFACE".

SHEET 2

ADDED "NOTE 7" with callouts to include "1" COMPRESSION X 1" MIP BRASS ADAPTOR INCLUDING THE SOLID STIFFENER FOR PE SERVICE LINES (BY OWNER)"

UPDATED NOTE to include " OWNER RESPONSIBLE FOR MAINTAINING TOP OF CURB BOX & TRACER WIRE ACCESS BOX FLUSH WITH GROUND SURFACE".

UPDATED NOTE to include "CURB BOX& TRACER WIRE ACCESS BOX SHALL NOT BE LOCATED UNDER MOBILE HOME."

UPDATED "NOTE 7" TO "NOTE 8"

UPDATED "NOTE 8" with callouts to include " 1" THREADED BALL VALVE WITH A 1"X2" BRASS NIPPLE & BRASS 1" 90 DEGREE ELBOW".

UPDATED "NOTE 8" TO "NOTE 9"

UPDATED "NOTE 9" TO "NOTE 10"

UPDATED "NOTE 10" TO "NOTE 11"

UPDATED "NOTE 11" with callouts to include "FLOW STOP VALVE (BY OWNER)"

ADDED meter tail to both sides of water meter with callout.

SHEET 3 ***REMOVED secondary valve callout at property line.***

REMOVED "NOTE 6" with callout.

UPDATED "NOTE 7" TO "NOTE 6"

UPDATED "NOTE 8" TO "NOTE 7"

UPDATED "NOTE 9" TO "NOTE 8"

UPDATED "NOTE 9" TO "NOTE 8" with callouts to include "TRACER WIRE ACCESS BOX IF PIPE MATERIAL NON-METALLIC FROM PROPERTY LINE TO BUILDING"

ADDED "NOTE 9" to include "REFER TO S.D.P 4-01 SHEETS 2& 3 FOR SERVICE CONNECTIONS COMPLETED INSIDE AND OUTSIDE OF R/W."

UPDATED NOTE to include "OWNER RESPONSIBLE FOR MAINTAINING TOP OF CURB BOX & TRACER WIRE ACCESS BOX FLUSH WITH GROUND SURFACE".

ADDED dimension to include "7' MIN. BURY".

SHEET 4 **REMOVED callout "STRAINER" and linework from detail.**

6-12G

UPDATED detail from "2 of 2" sheets to "3 of 3" sheets.

SHEET 1 **ADDED "NOTE 4" with callouts to include "1" COMPRESSION X 1" MIP BRASS ADAPTOR INCLUDING THE SOLID STIFFENER FOR PE SERVICE LINES (BY OWNER)".**

REMOVED "NOTE 5" STRAINER (BY RPU)" with callout and drawing detail.

UPDATED "NOTE 4" TO "NOTE 5" with callouts to include "1" THREADED BALL VALVE WITH A 1"X2" BRASS NIPPLE & BRASS 1" 90 ELBOW (BY OWNER)".

REMOVED "NOTE 6" to include "FULL FLOW STOP VALVE (BY OWNER)".

UPDATED "NOTE 6" TO "NOTE 7"

UPDATED "NOTE 7" TO "NOTE 8"

UPDATED "NOTE 8" TO "NOTE 9"

UPDATED "NOTE 9" TO "NOTE 10"

UPDATED "NOTE 10" TO "NOTE 11"

UPDATED "NOTE 10" with callouts to include "APPROVED BACKFLOW PREVENTER INSTALLED AFTER METERS (BY OWNER)".

ADDED meter tail to both sides of water meter with callout.

ADDED 24"-48" dimension for distance between floor and meter tail.

UPDATED dimension to include "6'-6" MIN."

REMOVED detail note "OUTDOOR SMALL METERING DETAIL (SEASONAL USE ONLY)".

SHEET 2 **ADDED "NOTE 4" with callouts to include "1" COMPRESSION X 1" MIP BRASS ADAPTOR**

UPDATED "NOTE 4" TO "NOTE 5"

UPDATED "NOTE 5" with callouts to include "1" THREADED BALL VALVE WITH A 1"X2" BRASS NIPPLE & BRASS 1" 90 ELBOW (BY OWNER)".

UPDATED "NOTE 5" TO "NOTE 6"

UPDATED "NOTE 6" TO "NOTE 7"

UPDATED "NOTE 7" TO "NOTE 8"

UPDATED "NOTE 8" TO "NOTE 9"

UPDATED "NOTE 9" TO "NOTE 10"

UPDATED "NOTE 10" TO "NOTE 11"

INCLUDING THE SOLID STIFFENER FOR PE SERVICE LINES (BY OWNER)".

ADDED meter tail to both sides of water meter with callout.

ADDED "18" MIN." dimension between concrete slab and air valve stem leg.

SHEET 3 **REMOVED "NOTE 5" with strainer callout on detail.**

REMOVED "NOTE 11"

REMOVED line work for curb box and moved tracer wire access box to property line.

UPDATED "NOTE 6" TO "NOTE 5"

UPDATED "NOTE 7" TO "NOTE 6"

UPDATED "NOTE 8" TO "NOTE 7"

UPDATED "NOTE 9" TO "NOTE 8"

UPDATED "NOTE 10" TO "NOTE 9"

UPDATED "NOTE 10" to include " TRACER WIRE ACCESS BOX IF PIPE MATERIAL IS NON-METALLIC FROM PROPERTY LINE TO BUILDING."

6-19G

REVISED "NOTE 1" from "COMPRESSIVE STRENGTH OF 35 PSI MIN WATER ABSORPTION OF 0.25% BY VOLUME MAX" TO "COMPRESSIVE STRENGTH OF 35 PSI MIN WATER ABSORPTION OF 0.30% BY VOLUME MAX".

ADDED "NOTE 4" to include "ALL CROSSINGS WITH WATER MAIN ARE REQUIRED TO BE 18" MIN. VERTICAL SERPERATION AND 12" MIN. VERTICAL SEPERATION WITH WATER SERVICES (18" MIN PREFERRED). IF 12"-24" VERTICAL SEPARATION BETWEEN WATERMAIN / WATER SERVICES AND STORM SEWER, CONTRACTOR TO F&I 64 SF (8'X8') 4" POLYSTYRENE INSULATION CENTERED ON THE CROSSING POINT AND BETWEEN THE PIPES."

6-20A

ADDED sheet “CASING DETAIL”

8-01E

SHEETS 1-5

ADDED DRIVEWAY TYPE “B” APPROACH TO ALL DRAWINGS

8-04C

SHEET 1

UPDATED “CALLOUT (1) LIGHT POLE” to “ALUMINUM POLE SHAFT OUTSIDE DIAMETER 4”.

UPDATED “CALLOUT (1) BASE” to “ABS FOUNDATION BASE COVER”.

REMOVED HORIZONTAL REBAR CAGE DRAWINGS.

SHEET 2

REMOVED callout “(3) #3 TIE RODS AT TOP – 2” O.C.”.

ADDED callout to include “(4) #6 REINFORCED BAR IN EACH CORNER”.

REMOVED HORIZONTAL REBAR CAGE DRAWINGS.

8-05A

ADDED “SIGNAL PAD DETAIL”