



SPECIAL PROVISIONS
FOR
WATER MAIN ON BRIDGE

Johnson County

BRM-3715(650)--8N-52

Effective Date:
October 16, 2012

THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

PART 1 GENERAL

1.01 SUMMARY

- A. This part of the Specification includes all labor, materials, equipment, testing, and disinfection required to install and accept the watermain under a bridge deck for service.
- B. The watermain installed as part of this project connects to new watermain installed as a part of the project BRM-3715(650)--8N-52. All testing and disinfection will be completed in association with this project.

1.02 QUALITY ASSURANCE

- A. Pipe shall be manufactured in conformance with AWWA C151.
- B. Steel pipe hangers and supports shall have the manufacturers name, part number, and applicable size stamped in the part itself for identification.
- C. Hangers and supports shall be designed and manufactured in conformance with MSS SP 58.

1.03 SUBMITTALS

- A. Product data on all hanger and support devices, including shields and attachment methods. Product data to include, but not limited to materials, finishes, approvals, load ratings, and dimensional information for proposed hanger configuration. If the hanger provided is different that detailed in the plans, the design of the hangers shall be provided and sealed by a Profession Engineer licensed in the State of Iowa.
- B. Product data on proposed spacers, casing, and end seal.
- C. Product Data on pipe insulation
- D. Product data on pipe.
- E. All submittals shall be approved prior to ordering or installing watermain and appurtenances.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: All materials shall be clearly marked and undamaged when they are delivered to the site.
- B. Storage and Handling: All materials shall be stored on pallets or supports so that no materials are in direct contact with the ground. All materials should be handled to protect them from damage and contamination. All materials shall be in working condition and free of contaminates when they are installed.

PART 2 PRODUCTS

2.01 DUCTILE IRON PIPE

- A. Minimum Thickness Class:
 - 1. 4 inch (100 mm) through 24 inch (600 mm) sizes: Class 53 per AWWA C151.
 - 2. Sizes over 24 inches (600 mm): as shown in the contract documents.
- B. Cement-mortar lined: per AWWA C104 with asphalt seal coat.

- C. External coating: asphalt per AWWA C 151.
- D. Joint Type: Use push-on type, except as otherwise required in the contract documents.
 - 1. Push-on: per AWWA C111.
 - 2. Mechanical: per AWWA C111.
 - 3. Restrained, buried: Pipe manufacturer's standard field removable system.
 - 4. Restrained, in structures: Restraining gland, flanged or grooved.
 - 5. Flanged: AWWA C111.
 - 6. Grooved: AWWA C606.
 - 7. Gaskets: Per AWWA C111.
- E. Markings on Pipe:
 - 1. Name of manufacturer.
 - 2. Size and class.
 - 3. Spigot insertion depth gauge.

2.02 PIPE INSULATION

- A. Use the following manufactured pipe insulation to enclose the pipe hanging under the bridge.
- B. Use the following Material:
 - 1. Fiber Glass Pipe Insulation: ASTM C 547 Type I
 - 2. Weather Protective Insulation Jacket: ASTM C1136

2.03 HANGERS

- A. The work covered under this section consists of the furnishing of all necessary labor, supervision, materials, equipment, and services to completely execute the pipe hanger and supports as described in this specification.
- B. References
 - 1. ASTM B633 - Specification for Electrodeposited Coatings of Zinc on Iron and Steel
 - 2. ASTM A123 - Specification for Zinc (Hot-Galvanized) Coatings on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, Bars, and Strip
 - 3. ASTM A653 - Specification for Steel Sheet, Zinc-Coated by the Hot-Dip Process
 - 4. ASTM A1011 – Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability (*Formerly ASTM A570*)
 - 5. MSS SP58 - Manufacturers Standardization Society: Pipe Hangers and Supports-Materials, Design, and Manufacture
 - 6. MSS SP69 - Manufacturers Standardization Society: Pipe Hangers and Supports- Selection and Application
- C. Insulated pipe: Adjustable steel yoke pipe roll with rod hangers and pipe covering protection saddle.

- D. Hanger Rods shall be threaded both ends, or continuous threaded rods of circular cross section. Use adjusting locknuts at upper attachments and hangers. No wire, chain, or perforated straps are allowed.
- E. Pipe protection saddles shall be formed from carbon steel, 1/8 inch minimum thickness, sized for insulation thickness. Saddles for pipe sizes greater than 12 inch shall have a center support rib.
- F. Hangers and strut located outdoors shall be hot dip galvanized after fabrication in accordance with ASTM A123. All hanger hardware shall be hot dip galvanized or stainless steel. Zinc plated hardware is not acceptable for outdoor or corrosive use.

2.04 SPACERS

- A. Use manufactured casing spacers to position carrier pipe in casing. Wood skids will not be allowed.
- B. Use the following material requirements for casing spacers:
 - 1. HDPE Band/Panel and Riser: ASTM D 638.
 - 2. Stainless Steel or Carbon Steel Band/Panel and Riser: Type 304 stainless steel per ASTM A 240 or carbon steel per ASTM 36.
 - a. Liner: Elastomeric PVC per ASTM D 149.
 - b. Spacer Skid/Runner: Abrasion resistant polymer with a low coefficient of friction.
 - c. Fasteners: Type 304 (18-8) stainless steel per ASTM A 193.

2.05 CASING AND END SEAL

- A. Manufactured synthetic rubber casing end seal with a minimum 1/8 inch (3 mm) thickness and stainless steel bands and fasteners.
- B. PCC meeting the requirements of Article 2403 of the Standard Specifications. Do not use PCC casing end seals with flexible pipes.

PART 3 EXECUTION

3.01 GENERAL PIPE INSTALLATION

- A. Install only approved materials.
- B. Protect pipe joints and valves from damage while handling and storing.
- C. Do not use deformed, defective, gouged, or otherwise damaged pipe or fittings.
- D. Clean pipe interior prior to placement in the trench.
- E. Provide bearing along the full length of the pipe barrel with pipe hangers and spacers. Provide bell holes.
- F. Install pipe with fittings and valves to the lines and grades shown in the plans.
- G. Clean joint surfaces thoroughly and apply lubricant approved for use with potable water.
- H. Push the pipe joint to the indication line on the spigot end of the pipe before making any joint deflections.
- I. Limit joint deflections to one degree less than pipe manufacturer's recommended maximum limit.

- J. Tighten bolts in a joint evenly around the pipe.
- K. Keep exposed pipe ends closed with rodent-proof end gates at all times when pipe installation is not occurring.
- L. Close ends of installed pipe with watertight plugs during nights and non-working days.
- M. Do not allow any water from the new pipeline to enter existing distribution system piping.
- N. Install Ductile Iron Pipe according to AWWA C600.
- O. Cut the pipe perpendicular to the pipe barrel. Do not damage the cement lining. Bevel cut the ends for push-on joints according to AWWA C600.

3.02 CARRIER PIPE INSTALLATION TROUGH ABUTMENTS AND PIERS

- A. Clean dirt and debris from the casing pipe after installation.
- B. Install casing spacers to pipe sections as necessary to support pipe barrel according to the pipe manufacturer's recommendation.
 - 1. Space according to the pipe manufacturer's recommendation. As a minimum, place a spacer at each opening in abutments and piers.
 - 2. Do not allow pipe to be supported by joint bells.
 - 3. Lubricate casing spacers with drilling mud or flax soap. Do not use petroleum-based lubricants or oils.

3.03 HANGER INSTALLATION

- A. Pipe shall be adequately supported by pipe hanger and supports. Hangers for insulated pipes shall be sized to accommodate insulation thickness.
- B. Do not support piping from other pipes, intermediate diaphragms, or other equipment that is not bridge structure.

3.04 TESTING AND DISINFECTIONS

- A. Shall be completed in accordance to Water Main Special Provision.