SECTION 330130.81 - REHABILITATION OF MANHOLES

1. GENERAL
   * + 1. RELATED WORK SPECIFIED ELSEWHERE
          1. Earthwork: Section 310000.
       2. REQUIREMENTS OF REGULATORY AGENCIES

Edit below to suit project.

* + - * 1. Obtain necessary permits from local authorities. Ascertain and comply with local requirements for materials and construction covering restoration of pavement.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Shop Drawings: Show fabrication details and connections to existing pipes.
         5. Product Data: Manufacturer’s catalog cuts, specifications, and installation instructions.

1. PRODUCTS
   * + 1. MANUFACTURERS
          1. Glass-Fiber Reinforced Polyester Liners: Containment Solutions Inc., 5150 Jefferson Chemical Rd., Conroe, TX 77301, (888) 409-7731, or approved equivalent.
          2. Grade Extension Rings: The Fort Miller Co., Inc., P.O. Box 98, Schuylerville, NY 12871, (518) 695-5000, or approved equivalent.
          3. PVC Sewer Pipe: CertainTeed Corp., 750 E. Swedesford Rd., Valley Forge, PA 19482, (610) 341-6820, or approved equivalent.
          4. Manhole Frames and Covers:

Neenah Foundry Company, P.O. Box 729, Neenah, WI 54957, (414) 729-3661.

East Jordan Iron Works, P.O. Box 190, South Bay Rd., Cicero, NY 13039, (315) 699-2601. Corporate Headquarters, 301 Spring Street, East Jordan, MI 49727, (800) 874-4100.

Or equal.

* + - * 1. Mortar Mix (channel and bench repair):

E-poxy Engineered Materials, L.L.C., 10 Broadway, Albany, NY 12202, (518) 463-3271.

Or equal.

* + - 1. MATERIALS
         1. Glass-Fiber Reinforced Polyester Liners:

Integral cylinder and concentric manway reducer having a bearing surface on which a cast iron frame and cover atop standard concrete grade-extension rings can be supported and adjusted to grade.

Dimensions:

Nominal inside cylinder diameter: 42 inches.

Manway reducer: Minimum 30-inch diameter clear opening.

Minimum wall thickness: 0.400 inch.

Load Rating: AASHTO H-20.

Material, Design and Manufacture Requirements: ASTM D3753.

Flexural strength (reducer): Circumferential - 15.4 x 103 psi; Axial - 17.2 x 103 psi.

Flexural strength (cylinder): Circumferential - 22.5 x 103 psi; Axial - 14.3 x 103 psi.

Compressive strength: 18.9 x 103 psi.

* + - * 1. Grade Extension Rings:

Designed for AASHTO H-20 loading, 30 percent impact.

Dimensions:

Minimum 6-inch wide radial bearing.

Thickness (height) as required.

Concrete: 4000 psi.

Reinforcement: ASTM A615, Grade 60 or ASTM A185, Grade 65.

Entrained Air: 5.0 to 9.0 percent.

* + - * 1. Frames and Covers:

Design of each shall be the same throughout the project unless otherwise specified or indicated on the drawings.

Units shall meet AASHTO H-20 wheel loading requirements. Manufacture, workmanship and certified proof-load tests shall conform to AASHTO M306-89 - Standard Specification for Drainage Structure Castings.

Material:

Cast iron: ASTM A48, Class 30B or 35B.

Delivered to the Site free of any coatings, unless otherwise specified.

Frames:

Round, 6-1/2 inches high with a 30-inch clear opening.

Minimum 3-7/8 inch wide flange with integral stiffeners.

Minimum 3/8 inch wall thickness above the cover seat.

Minimum weight: 135 lbs.

Covers:

Round, 1-1/2 inches thick at the perimeter bearing surface.

Minimum 7/8-inch wide perimeter bearing surface.

Minimum plate thickness:

Platen Lid: 1 inch.

Parabolic Lid: 1/2 inch.

Top surface checkered and provided with suitable lifting notches.

Minimum weight: 125 lbs.

Provide frames and covers of the locking type when indicated on the Drawings.

Acceptable Locking Devices: Type J or Type H by Neenah Foundry Company; Type A or Type B by Syracuse Casting Sales Corporation.

Acceptable Manhole Frames and Covers: Pattern R-1557-A with platen cover by Neenah Foundry Company; Pattern 1012A with platen cover by Syracuse Casting Sales Corporation.

* + - * 1. Polyvinyl Chloride (PVC) Pipe: ASTM D3034, SDR 41.
        2. Epoxy Mortar Mix for channel and bench repair:

Two component, 100 percent solids.

Non-shrink.

Chemically resistant.

Moisture insensitive.

Acceptable Epoxy Mortar Mix: Eva-Pox No. 3 by E-poxy Engineered Materials, L.L.C.

1. EXECUTION
   * + 1. PREPARATION
          1. Excavate an area around the upper part of the existing manhole sufficiently wide and deep to allow removal of old castings (frame and cover) and conical top section.

Place a covering over the manhole floor to collect debris and to prevent solids from entering the connecting sewer lines.

Remove existing step irons as necessary to allow installation of the liner.

* + - * 1. Restore existing channels and bench to original configuration with epoxy mortar mix.

Chip out unsound concrete and thoroughly remove all bond-limiting contaminants by pressure washing and mechanical abrading.

Build up new surfaces to original contours with a mix of epoxy and No. 1 silica sand as recommended by the manufacturer.

* + - * 1. Prepare and install liner as indicated on the Drawing and in accordance with printed instructions of the manufacturer.

Make precise cut-outs to accommodate existing pipe connections.

Provide uniform bearing of the bottom edge of the liner with the manhole bench.

* + - * 1. Extend existing pipe inlets and outlets through the liner wall with PVC pipe longitudinally slit and cut as necessary to reduce diameter. Insert PVC pipe at least 6 inches into existing pipe with a tight fit.
        2. Seal pipe insertions through the liner, plus the bottom edge of the liner at the manhole bench, with an epoxy grout recommended by the liner manufacturer.
        3. Install grade extension rings on a leveling bed of epoxy mortar atop the flat shoulder of the manway reducer.
        4. Backfill the annular space between the liner and the existing manhole wall with concrete stabilized sand having a Proctor Density of at least 90 percent.

END OF SECTION 330130.81