**SECTION 33 65 00**

**THERMAL UTILITIES**

**BASED ON DFD MASTER SPECIFICATIONS DATED 12/19/2022**

This section has been written to cover most (but not all) situations that you will encounter. Depending on the requirements of your specific project, you may have to add material, delete items, or modify what is currently written. The Division of Facilities Development expects changes and comments from you.

**P A R T 1 - G E N E R A L**

**SCOPE**

This section includes specifications for supports of all underground utility structures, equipment, and matrials as well as piping system anchors. Included are the following topics:

PART 1 - GENERAL

 Scope

 Related Work

 Regulatory Requirements

 Submittals

 Project Record Documents

 Delivery, Storage and Handling

 Coordination

PART 2 – PRODUCTS

 Waterproofing

 Bedding and Utility Cover

Steam Pit Frames and Covers

Ladders

Air Vent Screen

PART 3 - EXECUTION

 Excavation

 Bedding and Utility Cover

 Concrete Repair

 Waterproofing

 Temporary Sump Pumps

 Locator Tape

 Fabrication

 General

**RELATED WORK**

Section 07 10 16 Waterproofing for Utilities

Section 23 05 29 Hangers and Supports for HVAC and Piping

Section 31 23 16.13 Trenching

**REGULATORY REQUIREMENTS**

NFPA 70 - National Electrical Code

**SUBMITTALS**

Submit shop drawings and product data for pit accessories under provisions of General Conditions of the Contract.

Indicate material specifications, dimensions, capacities, size and location of openings, reinforcing details, and accessory locations.

Submit manufacturer's installation instructions under provisions of General Conditions of the Contract.

**PROJECT RECORD DOCUMENTS**

Submit under provisions of General Requirements.

Accurately record actual locations and depths of each steam pit.

**DELIVERY, STORAGE, AND HANDLING**

Deliver, store, protect, and handle products to site under provisions of General Requirements.

Accept products on site. Inspect for damage.

**COORDINATION**

Obtain all available information on underground utilities before starting excavation. If underground utilities interfere with shown location of pits, tunnels, box conduits and vaults, bring this to the attention of the Engineer as soon as possible.

Pits, tunnels, box conduits, direct buried conduits and vaults shall be revised or relocated only with the approval of the Engineer.

# P A R T 2 - P R O D U C T S

**WATERPROOFING**

Complete waterproofing top, bottom, and sides of steam pits, tunnels and box conduits in accordance with Section 07 10 16 Waterproofing for Utilities.

**BEDDING AND UTILITY COVER**

See Section 31 23 16.13 – Trenching.

**STEAM PIT FRAMES AND COVERS**

Furnish manhole entrance covers and frames as shown. Frames shall be installed as shown on drawings.

Cover: 1/4“ thick aluminum diamond plate, 300 psf live load rating, mill finish, lifting mechanism with reinforced composite tubes and electro coated compression springs, automatic hold open arm, forged aluminum hinges with stainless steel pins, neoprene gasketed, padlock hasp in recessed pocket with weather door.

State standard is the padlock pocket with weather door. For walkable tunnels coordinate with PM if slam lock with underside release knob is required. If underside release is required change the above section for this requirement.

Cover and frames shall be Bilco Type J-AL, Nystrom FDDP, Halliday Type WIR, or approved equal.

Frame: 1/4” thick extruded aluminum channel with continuous concrete anchor, with continuous EPDM debris gasket and 1-1/2” aluminum coupling for drain.

Guarantee: 10-year material.

**SUMP PUMP GRATE FRAMES**

Sump pump grate frames shall be 304 Stainless steel or hot dipped galvanized steel.

**STEAM PIT LADDERS**

Construct ladders of 1-5/8 w x 1-1/8" depth aluminum bar side rails with 2 1/4” wide channel with nonslip surface, headed into rails, approximately but not over 10" o.c.

McNichols Traction Tread plank grating or approved equal. Channel shall be rated for 300 lbs minimum. Ream holes rails, plug weld solid and grind smooth. Anchor ladder at top, bottom and intermediate points not over 5'-0" o.c. with brackets secured to wall with SS expansion bolts. Bolts shall be Red Head stainless steel bolts and washers. Refer to drawing detail.

**LADDER “SAFETY POST”**

Manufacturer: Bilco “Ladder up LU-2”, Halliday, or Okeeffe’s.

Provide galvanized assembly with release rod and pull up loop.

Safety post shall be steel.

Safety post shall NOT have twist type locking mechanism.

**AIR VENT SCREENS**

Provide stainless steel rodent screen mounted to outside face of concrete (behind the brick face). Fasten screen over vent openings with stainless steel clip angles and stainless steel bolts and expansion shields.

Screen: 304SS, welded wire 2 Mesh, 0.0630 wire diameter, 0.52 lb/Sqft, 76 percent free area.

**P A R T 3 - E X E C U T I O N**

**EXCAVATION**

The Contractor is responsible for all demolition, excavation, bedding and backfilling required to install steam pits, tunnels, box conduits and direct buried conduits in accordance with Division 2 and Division 33.

Direct buried conduits are furnished and installed by Mechanical Contractor.

Where the native soil condition is determined to be poor provide excavation below subgrade (EBS) and undercut backfill material to underside of steam pits, box conduit or tunnels mud slab.

Work shall be made and erected square, plumb, straight and true, smooth, with accurately fitted joints and intersections. Work shall be reinforced and anchored in place.

Contractor shall be responsible for location and levels of work of this Section, except such parts as may be delivered to others and set by them. In such cases, this Contractor shall assist others in properly locating those parts.

**bedding AND UTILITY cover**

Coordinate material installation in accordance with the applicable requirements of Section 31 23 16.13– Trenching.

Provide bedding from excavation to bottom of steam pits, direct buried conduits, tunnels and/or box conduits a minimum of 6”.

Provide utility cover to 12” above top of steam pits, tunnels, direct buried conduits and/or box conduits.

**CONCRETE REPAIR**

Clean existing concrete surfaces of steam pits, tunnels and box conduits.

General Primer Contractor shall smooth surfaces of existing concrete steam pits, tunnels and box conduits with repair mortar to accept new waterproofing.

**WATERPROOFING**

Waterproofing and insulate steam pits and box conduits in accordance with the provisions of Section 07 10 16.

**LOCATOR TAPE**

Provide metallic detectable locator tape, at minimum 6 inch width; meet APWA color code requirements for the type of material being conveyed in the pipeline (blue for water systems); with the legend "CAUTION: Buried Direct Buried Steam Conduits"; suitable for underground use. Metallic and detectable tape: minimum of 6 inches wide, designed for 12" bury; THOR Enterprises, Inc., MagnaTec; Marking Services, Inc., Underground Warning Tape # 52219; Carlton Industries, Inc. # 1667DT6; D & G Sign and Label Co., # 40412; Seton Name Plate Co., Detection Tape # 6 WAT; or approved equal.

**FABRICATION**

Mechanical Contractor shall provide steel embedment plates for steel pipe and anchor bolts for pipe supports, anchors, and guides to General Contractor to install.

Work shall be made and erected square, plumb, straight and true, smooth, accurately fitted joints and intersections. Work shall be adequately reinforced and anchored in place. Shearing and punching shall leave clean, true lines and surfaces. Weld permanent connections. Insofar as possible, work shall be fitted and shop assembled, ready for erection. At all materials exposed to skin welds shall be ground smooth. Grind off sharp areas of exposed steel including sheared edges.

Do cutting, fitting, drilling, welding, tapping, etc., as may be required to complete this work and to join or accommodate work of other trades.

New steel pipe anchors, guides and supports shall be shop primed and intermediate coat applied in accordance with paint requirements of Section 23 05 29 Hangers and Supports.

Welding shall be in accordance with code of American Welding Society. Before welding, clean surfaces of loose scale, rust, paint or other foreign matter and properly align. After welding, brush welds with wire brushes.

Welds shall show uniform section, smoothness of weld metal, weather edges without overlaps and freedom from porosity and clinkers. Where necessary to achieve smooth connections, joints shall be dressed smooth. All welding shall be done by certified welders.

**STEAM PIT LADDERS**

Install ladders plum and level. Ladder hand rails shall have all sharp edges smoothed and rounded. Ladders shall be mounted as to have no movement, wiggle or noticeable deflection.

**STEAM PIT FRAMES AND COVERS**

Install frame and cover according to manufacturers instructions.

Coat aluminum frames that come into contact with concrete with bitumastic or epoxy coating. Where frame coating has been damaged or is missing recoat before pouring concrete. Duct tape is NOT a suitable protective coating.

Frames and covers shall be flush with the pit top. Frames and covers shall be oriented such that access to the pit is not impeded by the cover or frame.

**GENERAL**

Include fabrication and erection of all metal work complete, including all required shapes, clip angles, bolts, hangers and accessories to complete metals work. Grind off sharp areas of exposed metals including sheared edges.

Except as amended herein, materials and workmanship shall be in accordance with each applicable and appropriate standard practice issued by National Association of Architectural Metal Manufacturers.

Fabricate structural steel connections, parts and accessories in accordance with current edition of Specifications and Code of Standard Practice adopted by AISC.

Metals shall be made with structural properties to safely sustain and withstand stresses and strains to which normally subjected, true to detail, clean, straight, with sharply defined profiles, lines and angles and unless other wise noted, with smooth finished surfaces.

Contractor shall be responsible for location and levels of work of this Section, except such parts as may be delivered to others and set by them. In such cases, this Contractor shall assist others in properly locating those parts.

\*\*\*END OF SECTION\*\*\*