1. GENERAL

.1 The Engineer is to ensure that the access vaults are designed and constructed according to accepted engineering practice.

.2 The material and construction specification prepared by the Engineer.

2. FABRICATION

.1 Steel access vaults (AVs) shall be prefabricated, complete with all piping, fittings, and accessories.

.2 Fabricator to provide shop drawing, to be approved by the Engineer.

.3 Access vaults are to be finished, inspected and tested in the prefabrication shop prior to shipping. A certificate of testing shall be provided for each access vault. The certificate shall include the date of testing, method of testing and test results, and shall be signed by the inspector.

.4 All piping and fittings shall be set horizontally and vertically as shown on the detail drawing and in approved shop drawings.

3. MATERIALS

.1 Access vault to be constructed of steel plate:

.1 Sides (interior and exterior) – 6 mm thick steel plate

.2 Cover – 6 mm thick steel plate

.3 Bottom – 10 mm thick steel plate

.2 Urethane foam insulation shall be injected from above to prevent the formation of voids. Urethane foam insulation to have the following properties:

.1	Density (kg per cubic metre core) (ASTM D-1622):	35
.2	Compressive Strength kPa @ 25°C 10% Deflection measured axially (ASTM D-1621-64):	240
.3	Thermal Conductivity W/m°C @ 25°C (ASTM D-2326-64T):	0.0187
.4	Operating temperature range °C Cyrogenic to +:	93
.5	Closed cell content % (ASTM D-2856):	90 min
.6	Water absorption gm/1000cc (ASTM D-2856):	12
.7	Dimensional Stability, % (ASTM D2126 Procedure B & E):	3

.3 Pipe Fittings shall be constructed from “Tube Turn”, or approved equal standard wall welding fittings and 1,030 kPa (150 psi) flanges). All fitting shall be hot dipped galvanized inside and outside after fabrication.

.4 Flanged cast iron fittings shall be “Grinnell” 1,030 kPa (150 psi), standard fittings, coated inside and outside with asphaltic coat tar epoxy paint, or approved equal.

.5 Fabricated steel pipe supports shall be hot dipped galvanized.

.6 Styrofoam insulation shall be Dow Chemical Company HI 410 kPa Styrofoam or approved equal.

.7 All bolts and washers shall be cadmium plated.

4. ACCESS VAULT CONSTRUCTION

.1 Access Vaults shall be constructed to a size to allow the required piping and fitting to be installed and maintained, and shall have a minimum inside dimension of 1830 millimetres.

.2 Interior piping and fittings to be set horizontally and vertically as specified on Access Vault Design Drawings. Where an access vault has both water mains and sanitary sewers and unless otherwise specified, the water main and sanitary sewer shall be grade separated through the access vault.

.3 All interior and exterior surfaces of the access vault, with the exception of the access vault top plate, lid and ladder shall be sandblasted and epoxy coated after fabrication as follows:

.1 Surface Preparation: steel surfaces shall be prepared in accordance to the Steel Structures Painting Council specification SSPC #10 near white blast condition.

.2 Painting: Access vault to be painted with two coats of epoxy paint, 8mils dry film thickness. Interior colour to be off white and exterior colour to be grey. Floors painted with Indurall Ruff Stuff 3300 or equal. Paint specifications to be submitted to the Engineer for approval.

.4 Access vault top plate, lid and ladder shall be hot dipped galvanized after fabrication. Galvanizing to conform to CSA G164 (minimum 610 g/m^2).

.5 The access vault cover shall have the words “Confined Space, Entry by Permit Only” stencilled on the exterior cover in red epoxy paint.

5. ACCESS VAULT LOCATION

.2 Access vaults shall be located as per drawing G-04-1 or G-04-2

6. INSTALLATION

.1 All work to be carried out in a dry excavation.

.2 Access vaults shall be placed on 300 mm of Modified Granular 'C' bedding compacted to 95% standard proctor, and 38 mm thick Styrofoam insulation base. Bedding and Styrofoam to extend 300 mm beyond the base plate.

.3 Base plate to be covered with 38 mm Styrofoam insulation, to extend 300 mm beyond the edge of the base plate. 10 mm thick filler piece to be installed between insulation below and above base plate

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.4 Access vault to be backfilled with 300 mm modified granular 'C', 300 mm above insulation and adjacent to access vault.

.5 Access vault shall be installed to maintain design alignments and grades.

.6 Access vault shall extend above grade between 150 to 450 mm.

.7 Damaged to exterior finish shall be repaired by repainting with epoxy paint to match manufactured finish.

7. INSPECTION AND TESTING

.1 All materials are subject to inspection and testing at the discretion of the Engineer. Any materials found to be flawed or defected shall be rejected and shall be removed from the site and replaced.

.2 The Contractor shall provide sufficient notice to the Engineer to allow the Engineer to witness and approve the test.

.3 Written certificates shall be issued to the Contractor by the Engineer verifying successful completion of testing.

8. STATIC LEAKAGE TEST

.1 Upon completion of the fabrication of the inner shell and the installation of the piping, and prior to the installation of the exterior shell the access vault shall have a static leakage test preformed. The inner shell shall be support above the floor, conduit entries capped and the access vault filled with water. There shall be no signs of leakage after 4 hours.

9. WATER PRESSURE TEST

1. Water main piping shall be water pressure tested at 1,380 kPa for four hours. There shall be no leakage or signs of leakage during the testing period.

10. AIR PRESSURE TEST

1. Sanitary sewer piping shall be air pressure/bubble tested at 100 kPa for two hours. There shall be no leakage or signs of leakage during the testing period.

2. Water pressure testing shall be an accepted alternative.

END OF SECTION 02584