



City of Estevan

Construction Specifications

SECTION 1600
AUGERED, TUNNELED, OR BORED INSTALLATIONS

1.0 GENERAL

This section governs the requirement of augured, tunneled, or bored installation of water or sewer mains to cross under railways, highways, watercourses, utilities or structures to avoid disruption or damage where conditions prevent open cut excavations.

Excavation and backfill to conform to the following codes and standards:

- Saskatchewan Labour Standards Act, Occupational Health and Safety Regulations
- National Building Code
- City of Estevan Bylaws

2.0 MATERIALS

2.1 Encased Installations:

- .1 Granular materials and aggregates shall conform to the gradation shown
- .2 Casing Pipe: Steel pipe, schedule 40 conforming to CSA B 36.10 or ASTM A52 Grade A sized to provide a minimum 15mm clearance between casing pipe and carrier pipe bell-ends.
- .3 Casing Spacers: fusion coated steel c/w 200mm wide, 304 stainless steel band and 25mm wide glass reinforced polyester runner.
- .4 Encasement end seals Model C custom pull-on type, synthetic rubber end seals as manufactured by Pipeline Seal and Insulator.

2.2 Augured, Tunneled or Bored Installations

- .1 Carrier pipe: PVC sewer or watermain conforming to Section 1200 Water Distribution Mains and Appurtenances and Section 1300 Sewer Mains and Appurtenances; or Reinforced Concrete Pipe conforming to AST C76 as specified in Section 1300 Sewer Mains and Appurtenances; or Polyethylene pipe conforming to Section 1300 Sewer Mains and Appurtenances; or Steel pipe, Schedule 40 conforming to CSA B36.10 or ASTM A52 Grade A.
- .2 Annular space backfill: Water propelled sand or Sand/Cement grout applied under pressure.

3.0 INSTALLATION

- 3.1 Excavate Auguring or Tunneling shafts or working pit in conformance with Section 1100 Trench excavation and Backfill, providing all the necessary shoring to protect workmen and adjacent structures. Locate shaft or pit outside railway

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right-of-way and at a sufficient distance from structures to prevent undermining them.

Install timber or steel backstop and bulkhead. Auger, tunnel, jack or core casing or carrier pipe by coring, jacking, or augering equipment or by hand methods. (if a liner of sufficient size is installed). Ensure that casing pipe is not in tension. Push, pull or jack casing and carrier pipe to exact line and grade, joining pipe one length at a time using cable/winch method. Jack or tunnel with auger or cutting bits. Plug lead end of pipe to prevent damage or entry of foreign material into the pipe. Use drilling mud as lubricant.

- 3.2 Place spacers on carrier pipe as required by the manufacturer. Insert carrier pipe into casing pipe in conformance with manufacturer's instructions, ensuring that pipe bell-ends do not rest directly on the bottom of casing pipe. Ensure that pipe is true to line and grade. Seal casing pipe ends with end seals.
- 3.3 Fill annular space between carrier pipe and hole (tunneled, augered, cored) with water or air propelled sand or pressure applied sand/cement grout. When pressure grouting ensure after delivery pressure has been established that there is no increase in pressure in excess of 15 kPa over the delivery pressure.

4.0 TOLERANCES

Deviation from design limited to the following:

<u>Installation</u>	<u>Elevation</u>	<u>Alignment/Location</u>
Casing Pipe	± 12mm	± 100mm
Carrier Pipe	± 6mm	N/A

Redo if deviation exceeds specified limits.

5.0 MEASUREMENT AND PAYMENT

- 5.1 The work items in this section shall be paid in accordance with the Contract Unit Price which shall be a lump sum amount for the entire installation as shown on the drawings which shall be deemed full compensation for all labour, materials, equipment, supplies, superintendance, overhead, and profit for all work items described and referenced in this section which shall be deemed incidental to the supply, installation, completion, and maintenance during warranty period or the work.