Part 1 General

1.1 MEASUREMENT AND PAYMENT

.1 Pipe culvert abandonment by pipe grouting with unshrinkable fill will be measured for payment in cubic metres, in place, to pipe culvert limits as reviewed by Departmental Representative. The unit price shall include survey, layout, dewatering, materials, placing, curing, protecting and all Work incidental thereto.

1.2 REFERENCE STANDARDS

.1 ASTM International

.1 ASTM C117, Standard Test Method for Material Finer Than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing

.2 ASTM C136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

.3 ASTM C144, Standard Specification for Aggregate for Masonry Mortar

.4 ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 600 kN-m/m^3

.2 Canadian General Standards Board (CGSB)

.1 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric

.3 CSA International

.1 CSA A3000, Cementitious Materials Compendium

.2 CSA A23.1/A23.2-, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete

.3 CAN/CSA G401, Corrugated Steel Pipe Products

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for unshrinkable fill and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports including sand gradation tests in accordance with CAN/CSA-A179 showing compliance with specified performance characteristics and physical properties.

.2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials in accordance with manufacturer's recommendations.

Part 2 Products

2.1 CORRUGATED STEEL PIPE

.1 Corrugated steel pipe: to CAN/CSA-G401.

2.2 UNSHRINKABLE FILL MATERIALS

.1 Unshrinkable fill: proportioned and mixed to provide:

.1 Maximum compressive strength of 5.0 MPa at 28 days.

.2 Concrete aggregates: to CSA A23.1/A23.2.

.3 Cement: to CSA A3000, Type GU.

.4 Slump: 160 to 200 mm.

.2 Cement:

.1 Portland Cement: to CAN/CSA-A3000,

.1 Use low VOC products in compliance with SCAQMD Rule 1168.

.2 Masonry Cement: to CAN/CSA-A3002 and CAN/CSA-A179,

.3 Mortar Cement: to CAN/CSA-A3002 and CAN/CSA-A179,

.1 Use low VOC products in compliance with SCAQMD Rule 1168.

.4 Packaged Dry Combined Materials for mortar: to CAN/CSA-A179.

.3 Aggregate: supplied from airport stockpile.

.4 Water: clean and potable.

2.3 MIX TESTS

.1 Testing Grout Mix:

.1 Test grout to requirements of Section 01 45 00 - Quality Control and in accordance with CAN/CSA-A179. Test prior to construction for:

.1 Compressive strength.

.2 Sand/cement ratio.

.3 Water content and water/cement ratio.

.4 Slump.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for pipe culvert grout placement in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after review with Departmental Representative.

3.2 PREPARATION

.1 Temporary Erosion and Sedimentation Control:

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 UNSHRINKABLE FILL PLACEMENT

.1 Install unshrinkable fill in accordance with manufacturer's instructions.

.2 Install unshrinkable fill in accordance with CAN/CSA-A179.

.3 Place unshrinkable fill in areas as indicated.

.4 Consolidate and level unshrinkable fill with internal vibrators. Work unshrinkable fill into cavities to eliminate voids and air pockets.

3.4 FIELD QUALITY CONTROL

.1 Site Tests, Inspection: in accordance with:

.1 Test and evaluate mortar prior to construction in accordance with CAN/CSA-A179.

.2 Test and evaluate grout prior to construction to CAN/CSA-A179; test in conjunction with masonry unit sections specified.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION