

**Part 1 General**

**1.1 MEASUREMENT AND PAYMENT**

- .1 METHOD OF MEASUREMENT – Measurement for "Intake Screens and Intake Pipes" will be based on units on intake screens and intake pipes supplied and installed as indicated on the plans and drawings and described in the Specifications. Airburst line, concrete block, anchoring, pipe, installation, air-burst tank, buoys, connections to screen, connections to utility vault shall be considered incidental to "Intake Screens and Intake Pipes".
- .2 BASIS OF PAYMENT – Payment for " Intake Screens and Intake Pipes" shall be based on the Contract Unit Price for "Intake Screens and Intake Pipes" measured as specified herein which shall be payment in full for those operations described on the plans and drawings and in the Specifications for those operations incidental to the Work for which no price or prices or provisions for payment are included in the Contract.

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  - .2 ASTM A269-08, Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .2 CSA International
  - .1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
  - .2 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .3 CSA S16-09, Design of Steel Structures.
  - .4 CSA W48-06, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
  - .5 CSA W59-M03(R2008), Welded Steel Construction (Metal Arc Welding).

**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 screens and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
  - .1 Submit drawings indicating materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

#### **1.4 QUALITY ASSURANCE**

- .1 Certifications: 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 with manufacturer's written instructions.
- .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 in clean, dry, well-ventilated area.
  - .2 Replace defective or damaged materials with new.

### **Part 2 Products**

#### **2.1 INTAKE SCREENS (x3)**

- .1 T-Model StaticOrb Intake Screen (or approved equivalent): 460 O.D., 1400mm long, 750mm high.
- .2 2.54 mm slot size (maximum).
- .3 Design approach velocity of 0.038 m/s at design flow of 31.5 L/s (500 USgpm).
- .4 Bolts and anchor bolts: to ASTM A307.
- .5 Buoys: Polyform A-2 buoy (or approved equivalent). Provision of 10 kg marine anchor with 4 m length of 5 mm chain. Two buoys to be provided, immediately upstream and immediately downstream from screens.
- .6 Airburst tank: capacity according to screen manufacturer recommendations, skid mounted and sized for mounting on a pick-up truck, with provision of connection to the air-burst lines according to manufacturer recommendations.

#### **2.2 SUCTION STRAINER (BOOSTER PUMP STATION INTAKE)**

- .1 Minimum open area 2000 cm<sup>2</sup>.
- .2 Maximum diameter of perforations of 10 mm.
- .3 Stainless steel.
- .4 Connection to 250 mm HDPE suction pipe according to manufacturer recommendations.

## **2.3 FABRICATION**

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for installation.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

## **2.4 ERECTION**

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Make field connections with bolts to CSA S16.

## **2.5 PROTECTION**

- .1 Protect installed products and components from damage during construction.

## **Part 3 Execution**

### **3.1 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 adjacent properties and walkways, according to requirements of the sediment and erosion control plan, specific to site, that complies with 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.

### **3.2 PIPE AND SCREEN INSTALLATION**

- .1 Install pipes to manufacturer's standard instructions and specifications.
- .2 Join pipes and screens in accordance with manufacturer's recommendations.
- .3 Bottom of screen at 0.3 m from base of riverbed.
- .4 Pipe to be anchored to concrete block using two stainless steel pipe anchors and cast-in-place bolts as approved by the Departmental Representative.
- .5 Screen installation to be installed within 5 m of the toe of the riverbank slope.
- .6 Buoys to be placed immediately adjacent to the screens.

- .7 Pipe installation methods to conform to Sediment Control Plan for in-river work.
- .8 Pipe and screen to be backflushed following installation to remove any sediment within pipe and screen.
- .9 Pipe grades as shown on the Drawings. Any alteration to the pipe grading and layout to be approved by the Departmental Representative.
- .10 Cut pipes in approved manner as recommended by pipe manufacturer, without damaging pipe or its coating and to leave smooth end at right angles to axis of pipe.
- .11 Align pipes before jointing.
- .12 Minimize deflection after joint has been made.
- .13 Apply sufficient pressure in making joints to ensure that joint is completed to manufacturer's recommendations.
- .14 Ensure completed joints are restrained by compacting bedding material alongside and over installed pipes or as otherwise approved by Departmental Representative.

### **3.3 DIRECTIONAL BORING**

- .1 The Contractor shall submit a detailed plan for the directional drilling, including drawings, sketches, design calculations, and proposed equipment and procedures for performing the work.
- .2 The Contractor shall ensure that the loading subjected to the pipe during the installation, and after the work is complete does not exceed allowable stresses or deflection as recommended by the manufacturer. Should the methodology require a different pipe wall thickness, the Contractor shall supply the pipe according to the manufacturer's recommendations, and to the approval of the Departmental Representative.
- .3 The Contractor must ensure that all other buried services are located prior to performing the operations. Any buried services or other structures, which are damaged as a result of the Work performed by the Contractor shall be rectified to the satisfaction of the Departmental Representative at the Contractor's expense.
- .4 The Contractor shall arrange all civic and provincial approvals and/or permits as required by the departments and authorities having jurisdiction over the right-of-ways being crossed.
- .5 The Contractor shall ensure that the methodology used is executed in a manner to ensure that records of the pipe profile can be kept accurately for As-built purposes.
- .6 The pipe installation shall be performed according to its approved plan for installation by directional drilling. The pipe shall be installed to the lines and grades shown on the drawings. The Contractor shall ensure that any pavement damaged during the execution is repaired to the satisfaction of the Departmental Representative, and that settlement of the roadway above the pipe does not occur. The Contractor will maintain any settlement which may occur for one year after the substantial completion of the project.

**END OF SECTION**