DIVISION 33 - UTILITIES

Section 33 00 00 Utilities - General / Site Services

1 Reference Standards
- 1.1 Halifax Regional Municipality, Engineering & Works Department Standards for site servicing, Latest Edition.
- 1.2 Standard Specification for Municipal Services - NSRBA and NSCEA, Latest Edition.
- 1.3 Halifax Regional Water Commission Engineering Design Standards, Latest Edition.
- 1.4 Guidelines Respecting On Site Sewage Disposal - Nova Scotia Department, Latest Edition.

2 Quality Assurance
- 2.1 Requirements of Regulatory Agencies:
  - 2.1.1 Give necessary notices, obtain permits, pay for fees and furnish certificates as evidence that the Work as installed conforms with the laws and regulations of governing authorities.
  - 2.1.2 Determine detailed requirements of jurisdictional authorities and conform to those requirements.

3 Submittals
- 3.1 As-built Drawings:
  - 3.1.1 On completion of Work, of this Section, submit one set of "as-built" drawings, showing exact locations of service lines, tanks, disposal beds, manholes and catch basins, top and invert elevations at service lines and manholes.

4 Permits and Fees
- 4.1 Apply and pay for all permits, fees and inspections required from the authorities having jurisdiction on each service system. Comply with all by-laws, codes and regulations.

5 On-Site Sewage Disposal Systems
- 5.1 If required shall be designed, permitted by the NS Department of Environment and Labour, inspected and approved by an engineer licensed to practice in the Province of Nova Scotia and experienced in such work.

6 Materials
- 6.1 Sewage Piping:
  - 6.1.1 Generally: Rigid polyvinyl chloride (PVC) pipe, push on joints conforming to the CSA B137.3-M90, including lubricant standard cast iron, mechanical joint fittings, complete with glands, rubber gaskets, nuts and bolts.

OR

6.1.2 Concrete Pipe and Fittings: 6"-10" diameter, non-reinforced concrete, over 10", reinforced concrete extra strength, rubber gasket joints to ASTM C14 and CSA A257- 01 as manufactured by L.E. Shaw Ltd. Rubber gaskets for concrete pipe to ASTM C443 and CSA A257-3.

6.2 Water Supply Lines

6.2.1 Ductile iron cement mortar lined to AWWA C151 Class 52 minimum with mortar lined fittings having minimum pressure rating of 1035 ka to AWWA C110. Cement mortar lining to AWWA C104.

6.3 Gate Valves:

6.3.1 Buried to: AWWA C500, minimum pressure rating 1025 ka, minimum working pressure rating 1380 ka and as follows:

6.3.1.1 Body: cast-iron with mechanical joint ends.

6.3.1.2 Mechanism (AWWA C500): bronze mount solid wedge or double disc gates, non- rise spindle, and 0-ring seals.

6.3.1.3 Mechanism (AWWA C509): wedge disc resilient rubber seat ring and machined seating surface, non-rising spindle, and 0-ring seals.

6.3.1.4 Direction of opening: counter-clockwise.

6.3.1.5 Operating nut: 50 mm square.

6.3.1.6 Provide centering disc.

6.3.1.7 Supply one key of appropriate length operator valves.

6.4 Valve Boxes: to AWWA C500 and as follows:

6.4.1 Cast-iron, slide type, adjustable for depth of pipe below finished grade.

6.4.2 Covers marked "Water".

6.4.3 Lugged to prevent turning and rolling of cover and cover notched to suit.

6.5 Concrete for thrust blocks, encasement, cradles and supports: to meet the requirements of 5.3 Concrete.

6.6 Disinfectant: sodium hypochlorite or calcium hypochlorite to AWWA B300 or liquid chlorine to AWWA B301.

6.7 Culverts: Plain, galvanized corrugated steel pipe, conforming to Corrugated Steel Pipe Institute Specification No. 501-78, complete with coupling bands, bolts and end flares as detailed, all to Department of Transportation and Infrastructure Renewal' approval.

6.8 Precast Manholes: Reinforced concrete sections to ASTM C478. Provide sections with closed cell neoprene gaskets conforming to ASTM C443. Sizes as indicated on drawings, as manufactured by L. E. Shaw Ltd., Borcherdt Concrete Products Ltd. or Gorden Shaw Concrete Products.

6.9 Precast Catch Basins: Reinforced concrete units conforming to same specifications as for manholes. Sizes as indicated on drawings.

6.10 Manhole Frame and Cover: IMP Group Ltd. Type No. R10 or L.E. Shaw Model 5405-15.

6.11 Catch Basin Frame and Cover: IMP Group Ltd. Type No. R11 or L.E. Shaw Model 5405- 35W.

6.12 Manhole Ladder: IMP Group Ltd. Type No. L1 in lengths to suit.

6.13 Pipe Bedding: To meet specified requirements of Reference Standards.

6.14 Concrete

6.14.1 To meet specified requirements of 5.3 Concrete.

6.14.2 Bases and Aprons for Manholes and Catch Basins: 3,000 psi compressive strength for bases and 5,000 psi for aprons after 28 days. Air entraining admixture to ASTM C260- 66T. Air content of concrete 5% to 7%. Reinforcing steel of yield stress Grade 50 20,000 psi.

6.15 Installation

6.15.1 Pipe Laying:

6.15.1.1 Handle, lay, bed, join and cover pipes carefully and in such a manner as to preclude any possibility of damage thereto.

6.15.1.2 Lay and join pipes in strict accordance with written manufacturer's instructions and generally as follows:

6.15.1.2.1 in straight lines and to required even grades

6.15.1.2.2 clean pipe thoroughly before laying and protect from dirt and water infiltration.

6.15.1.2.3 support pipe on Class B bedding, if not shown or noted otherwise. Provide suitable pockets for the bells or coupling of pipe, so that the total length of the bottom segment of the pipe barrel is evenly and firmly supported.

6.15.1.2.4 Where pipes enter or leave manhole or other structure, support them on compacted crushed stone bed or concrete cradle through the backfilled area. The pipe support shall extend laterally from undisturbed soil to the face of the wall through which the pipes pass.

6.15.2 Install PVC plastic pipe, and corrugated steel pipe in strict accordance with manufacturer's written instructions.

6.15.3 Face bell ends of water pipe in direction of laying. On grades 5% or greater lay pipe up grade. Do not exceed maximum joint deflection recommended by manufacturer. Deflect only after joint is completed.

6.15.4 Prevent entry of bedding material, water or other foreign matter into pipe.

Use temporary water-tight heads when pipe laying is not in progress.

6.15.5 Install gaskets in accordance with manufacturer's instructions. During cold weather store gaskets in heated area to assure flexibility.

6.15.6 Install concrete pipe in accordance with AWWA M.9 manual for concrete pipe installation, where applicable.

Section 33 42 00 Pipe Culverts

1 All pipe inlets and outfalls on and adjacent to the school site shall be made safe.

2 For all pipes greater than 300 mm in diameter, ends shall be covered with secure safety grate to prevent access by children.

3 All inlets and outfalls shall include a headwall constructed as a single precast concrete unit. If industry available precast units do not correspond to the necessary dimensions or applications then the headwall shall be constructed with dry laid rock or pre-cast concrete retaining wall block and approved by civil engineer for application. Used only to retain slopes greater than 1:3 (rise:run).

4 All vertical drops greater than 1.0 metres and other hazards shall be protected with chain link fence or other approved guard.

Section 33 71 00 Electrical Utility Transmission and Distribution

1 Overhead Electrical Service

1.1 The primary service from the street to the padmount transformer can utilize poles, provided the overhead cables do not cross school driveways, sidewalks, playgrounds, sports fields, or any part of a building.

1.2 Communication cables (telephone and cable T.V.) shall follow the same overhead routing as power cables.

2 Underground Electrical Service

2.1 Three-phase power is a requirement. Although some rural sites may only have single- phase power, this must be upgraded to 3 phase.

2.2 An underground power service is a safety requirement for all schools. The power cables from the padmount transformer to the building will always be underground.

2.3 Communication cables (telephone and cable T.V.) shall follow the same underground routing as power cables except where they must separate to terminate in their respective service rooms.

2.4 Electrical power, telephone, and Cable T.V. services are to enter the building from the rear side of property, and not from front.

2.5 Padmount transformers are to be located at the rear side of building property and

be protected from vehicle and pedestrian traffic.

Section 33 80 00 Communications Utilities

1 The Contractor shall include for all the costs associated with the provision and installation of CATV services to the building. Provide all hardware as required for a complete operating system. The installation of this service is to be coordinated with DTIR and the school board.

2 The Contractor shall include for all the costs assocaited with the provision and installation of internet services via optical fibre link (or the highest level of service available) to the building. Provide all hardware required for a complete operating system. The installation of these services is to be co-ordinated with DTIR and the school board.

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