

DIVISION 33 UTILITIES

Section 33 05 00 Common Work Results for Utilities

- 1 Specify Pipe Laying to include the following:
 - 1.1 Handle, lay, bed, join and cover pipes carefully and in such a manner as to preclude any possibility of damage thereto.
 - 1.2 Lay and join pipes in strict accordance with written manufacturer's instructions and generally as follows:
 - 1.2.1 In straight lines and to required even grades
 - 1.2.2 Clean pipe thoroughly before laying. Prevent entry of bedding material, water or other foreign matter into pipe. Use temporary water-tight heads when pipe laying in not in progress.
 - 1.2.3 Provide suitable pockets for the bells and coupling of pipe, so that the total length of the bottom segment of the pipe barrel is evenly and firmly supported.
 - 1.2.4 Where pipes enter or leave manholes 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.
 - 1.3 Face bell ends of water pipe in direction of laying. On grades of 5% or greater lay pipe up grade. Do not exceed maximum joint deflection recommended by manufacturer. Deflect only after joint is completed.
 - 1.4 Ensure concrete pipe is installed in accordance with AWWA M9 2008 manual for concrete pipe installation.
 - 1.5 Form concrete benching in manholes to provide a smooth unobstructed flow channel in the bottom of manhole with slopes of 8%.
 - 1.6 Test pipes as required by authorities having jurisdiction.
 - 1.7 Flush and disinfect water mains to AWWA C651-14

Section 33 10 00 Water Utilities

- 1 Reference Standards
 - 1.1 Halifax Water Design and Construction Specifications and Drawings

- 1.2 Standard specification for Municipal Services - NSRBA and NSCEA
 - 1.3 Halifax Regional Municipality Red Book or Local Municipal Standards
 - 1.4 Nova Scotia Environment Regulations
 - 1.5 Environment Act of Nova Scotia
- 2 General
- 2.1 Shop Drawings
 - 2.1.1 Submit shop drawings in accordance with SECTION 01 10 00 for all pipe, fittings, valves and all other items necessary for a complete water main installation.
 - 2.2 Certificates
 - 2.2.1 Submit manufacturer's test data and certification that products and materials meet the requirements of the specifications and drawings.
 - 2.3 Materials
 - 2.3.1 Diameter, material and strength class of pipe and fittings: as indicated
 - 2.3.2 Any material that comes in contact with drinking water must comply with NSF 61.
 - 2.3.3 Store materials to prevent retention of water and damage by freezing.
- 3 Municipal service may be available but may not have sufficient pressure for sprinkler systems of the building. Review availability of such service and incorporation into design with the Department's project team coordinator. Otherwise, confirm that adequate pressure and water volume for both the building's sprinkler system and domestic water system are available.

Section 33 20 00 Wells

- 1 Ensure appropriate drilling and testing are carried out prior to commencing design.
 - 1.1 Well is to be constructed in accordance with the Nova Scotia Well Construction Regulations (Sections 66 and 110 of the Environment Act).

- 2 Ensure chemical analysis and 72 hour flow test are performed on each drilled well associated with the project. Ensure that, as well as the standard suite of chemical parameters, the analysis includes arsenic, uranium and radioactive lead - 210.
- 3 Ensure well provides water a minimum rate sufficient for the size of the project as per the engineer's design, without exceeding the approved short-term or long-term safe yield, as determined during the 72 hour pump test.
- 4 Well cap and casing to be protected from vehicular traffic and from vandalism.
- 5 Well water system to be flushed and disinfected. Testing and provision of total and fecal coliform, bacteria counts, in compliance with Canadian Drinking Water Quality Guidelines for 3 days in a row must be provided prior to acceptance.
- 6 Provide concrete filled steel bollard protection on all sides of well cap. The well cap must be protected from damage by vehicles, including snow removal and turf maintenance equipment. The well cap shall be surrounded by bollards with an open space not to exceed 1500 mm. The bollards shall be durable and permanent in construction such as 150 mm diameter, galvanized steel pipe filled with concrete, or approved equal. The bollards shall be 1.0 m in height above finished grade, painted bright yellow for good visibility, and installed to a depth of 1.0 m in a 300 mm diameter concrete foundation.
- 7 Do not disturb well cap or casing. Should any damage to the water well occur during construction, this damage shall be repaired, or a new water well provided by the Contractor at his / her own expense, to the approval of the Province. Wells must be installed by a licensed well installer as regulated under the Nova Scotia Environment Act.
- 8 Provide manholes with lockable covers over top of dug well.

Section 33 30 00 Sanitary Sewage Utilities

- 1 Reference Standards
 - 1.1 Halifax Regional Municipality, Red Book
 - 1.2 Halifax Water Design and Construction Specifications and Drawings
 - 1.3 Standard specification for Municipal Services - (NSRBA and NSCEA)
 - 1.4 NSE Technical Guidelines for On Site Sewage Disposal
 - 1.5 Atlantic Canada Wastewater Design Guidelines

2 Materials

2.1 Sewage Piping

2.1.1 Diameter, material and strength class of pipe and fittings: as indicated

- 3 Provide, where on-site sewage disposal is part of the design requirement, engineering design services by a qualified Professional Engineering Consultant having demonstrable expertise in large scale on site sewage disposal system design. On-site sewage disposal also includes options using treatment by advanced on-site sewage treatment technologies approved for use in Nova Scotia by NSE.
- 4 Where central services are not immediately available, develop the property in such a manner that an acceptable location for the on-site sewage disposal system is protected from traffic.
- 5 Install on-site sewage disposal systems in accordance with the Regulations Respecting On-site Sewage Disposal, the Nova Scotia Department of the Environment policies under the Environment Act, and any conditions included with the Approval to install the system.

Section 33 40 00 Storm Drainage Utilities

1 Reference Standards:

- 1.1 Nova Scotia Department of Environment and Labour Handbook for Sedimentation and Erosion Control.
- 1.2 Standard Specification for Municipal Services (NSRBA and NSCSA)
- 1.3 Halifax Regional Municipality, Red Book
- 1.4 Halifax Water Design and Construction Specifications and Drawings
- 1.5 Nova Scotia Environment Regulations
- 1.6 Environment Act of Nova Scotia

2 Naturalized drainage areas shall be retained whenever possible and protected from construction activities.

3 All site designs for Provincial Buildings are required to approach, as much as possible, a “balanced design” for storm water management including pre and post development runoff rates, volumes and water quality. This includes efforts to match pre and post development runoff hydrographs, not only peak flow. Adherence to local Municipal requirements for pre and

post development balancing is required.

- 4 Provide adequate management of surface water drainage.
- 5 Address retention, detention and drainage of stormwater from roofs, driveways, parking lots and landscaped areas in a manner that does not adversely affect neighboring sites or existing watercourses. Consider stormwater detention through detention ponds, existing wetlands, bioswales, vegetated swales, or sub-surface storm water detention systems. Where detention ponds are provided in the design, area is to be enclosed by appropriate fencing complete with vehicle access gates.
- 6 Use vegetation adapted to expected hydrologic conditions to improve run off reduction and water quality. Use native plant species whenever possible.
- 7 Sport Fields - Drainage Considerations
 - 7.1 Where surface and subgrade conditions are dry, surface drainage will be sufficient; provide a drainage path for the run-off.
 - 7.2 Where the Sports Field is located in a low areas or surface or subgrade conditions are wet, use perforated PVC under drains, granular fill and other methods necessary to create good drainage.
 - 7.3 A grading plan and details shall be prepared and submitted for review and approval by the Province prior to commencement of construction.

Section 33 71 00 Electrical Utility Transmission and Distribution

- 1 Overhead Electrical Service
 - 1.1 Overhead service may be acceptable for small buildings. Obtain DTIR approval before proceeding.
 - 1.2 Obtain data from the Power Authority regarding point of connection, service characteristics and requirements, extent and cost of services provided by the Authority, and the best method of metering (primary or secondary, power sources etc.).
 - 1.3 Obtain approval for the following from Power and Inspection Authority having jurisdiction for the following:
 - 1.3.1 Proposed service entrance equipment.
 - 1.3.2 Switchgear.

- 1.3.3 Transformers.
 - 1.3.4 Termination pole.
 - 1.3.5 Associated equipment.
 - 1.4 Overhead power lines shall not cross over parking lots, driveways, sidewalks, playgrounds, sports fields, or any part of a building.
 - 1.5 Keep records of all correspondence with the power authority and forward copies to DTIR.
 - 1.6 Coordinate installation with power utility and include their costs. Provide hardware as required for a complete operating system.
- 2 Underground Electrical Service
- 2.1 Where incoming main electrical service must be underground including the following:
 - 2.1.1 primary/secondary runs to/from pad mounted transformer,
 - 2.1.2 primary/secondary runs to the building,
 - 2.1.3 primary/secondary runs from existing utility poles, unless an overhead electrical service has been approved by DTIR. Cable and installation shall be to the approval of the Power and Inspection Authorities. Provide spare ducts for future additions or maintenance.
 - 2.2 Obtain data from the Power Authority regarding point of connection, service characteristics and requirements, extent and cost of work provided by the Authority, whether a transformer vault or exterior pad mounted equipment is required and the best method of metering (primary or secondary, etc.).
 - 2.3 Obtain approval for the following from the Power Authority and Inspection Authority having jurisdiction:
 - 2.3.1 Proposed service entrance equipment.
 - 2.3.2 Switchgear.
 - 2.3.3 Duct-manhole systems.
 - 2.3.4 Transformers.
 - 2.3.5 Termination pole.

- 2.3.6 Associated equipment.
- 2.4 Keep records of all correspondence with the power authority and forward copies to DTIR.
- 2.5 Existing Services: Obtain and indicate on drawings the locations of all buried services, i.e. power, telephone, cable T.V., water and sewer lines, gas mains, etc. Contractor is to take necessary precautionary measures prior to commencing with any types of excavating.
- 2.6 Duct Systems: Determine the size and location of incoming underground service ducts for power, telephone, cable T.V. and indicate them on the associated construction documents.
- 2.7 Show trench details for all underground services. Clearly define the electrical contractor's scope of work.
- 2.8 Coordinate installation with power utility and include for all costs. Provide all hardware as required for a complete operating system.

Section 33 80 00 Communications Utilities

1 Incoming Telephone Service

- 1.1 Overhead or underground service to match the electrical service. Underground service is required if a security system is being used. Installation should be to the approval of the Telephone Authority. Provide spare ducts for future additions or maintenance. Obtain data from the Telephone Authority regarding point of connection, service requirements and extent and cost of services provided by the same Authority.
- 1.2 If Cable T.V. service conductors are not allowed to be pulled into the same duct as telephone service conductors, provide an additional underground duct for Cable T.V. along with telephone ducts.
- 1.3 Overhead telephone lines shall not cross over parking lots, driveways, sidewalks, playgrounds, sports fields or any part of a building.
- 1.4 Existing Services: Obtain and indicate (on drawings) the locations of all buried services, i.e. telephone, cable T.V., power, water and sewer lines, gas mains, etc. Contractor is to take necessary precautionary measures prior to commencing with any types of excavating.
- 1.5 Duct Systems: Determine the size and location of incoming (underground) service ducts and indicate them on the associated construction documents.
- 1.6 Show trench details for all underground services. Clearly define the electrical contractor's

scope of work.

- 1.7 Keep records of all correspondence with the Telephone Authority and forward copies to DTIR.
- 1.8 Coordinate installation with telephone utility and include for all costs. Provide all hardware as required for a complete operating system.
- 1.9 Provide active telephone lines until the end of the warranty period to accommodate the following:
 - 1.9.1 Elevators
 - 1.9.2 Mechanical Controls
 - 1.9.3 Fire Alarm / Security
- 1.10 Where a main communications room is provided, the telephone service is to terminate at this location, i.e. the demarcation point is to be located in the main communications room.

END