

PART 1 - GENERAL

1.1 WORK INCLUDED

- .1 This section specifies requirements for constructing watermains and appurtenances. Work includes supply, installation and testing of pipe, fittings and electrical connection of heat tracing.

1.2 RELATED SECTIONS

- .1 Concrete: Section 03 30 00
- .2 Metal Fabrications: Section 05 50 00
- .3 Excavating, Trenching and Backfill: Section 31 23 10
- .4 Reinstatement: Section 32 98 00

1.3 REFERENCE STANDARDS

- .1 ANSI/ASME B16.1-2010, Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800.
- .2 ANSI/AWWA C509-09, Resilient-Seated Gate Valves for Water and Sewerage Systems.
- .3 ANSI/AWWA C900-07, Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. Through 12 in., for Water Distribution
- .4 ANSI/AWWA C901-08, Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. (13 mm) Through 3 in. (76 mm), for Water Service.
- .5 ANSI/AWWA C906-07, Polyethylene (PE) Pressure Pipe and Fittings, 4 in. (100 mm) Through 63 in. (1,600 mm), for Water Distribution and Transmission.
- .6 ASTM D3035-10 Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
- .7 ASTM F714-10, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR, Based on Outside Diameter.

- .8 ASTM F1290-98a(R2011), Standard Practice for Electrofusion Joining Polyolefin Pipe and Fittings.
- .9 CAN/CSA B137 Series-09, Thermoplastic Pressure Piping Compendium.
- .10 NSF/ANSI Standard 61: Drinking Water System Components.

1.4 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00.

1.5 CERTIFICATES

- .1 Submit manufacturer's test data and certification that products and materials meet requirements of this Section in accordance with Section 01 33 00 for all pipe used in the Work.
- .2 For fusion butt jointing for polyethylene pipe provide certification that personnel are trained by manufacturer in current methods and use of equipment.

1.6 HANDLING AND STORAGE

- .1 Handle and store pipe, valves, fittings, in such a manner as to avoid shock and damage. Do not use chains or cables passed through pipe bore. Do not damage coatings or linings.
- .2 Store gaskets in cool location, out of direct sunlight, and away from petroleum products.

PART 2 - PRODUCTS

2.1 POLYVINYL CHLORIDE PIPE AND FITTINGS

- .1 Pipe material: polyvinyl chloride (PVC) pressure pipe to AWWA C900 and certified to CSA B137.3.
- .2 Size: As indicated.
- .3 Class: IPS Schedule 80.
- .4 Pipe joints: solvent cemented, cement to ANSI/ASTM D2564 except clauses 5.5 and 6.3.3

- .5 Fittings: PVC Class 150, solvent weld moulded fittings.
- .6 Flanges: PVC in accordance with ASTM A181, Grade 1-150 lbs., with neoprene gaskets.
- .7 Provide flanges and flange to socket transitions where applicable and as shown on the drawings, suitable to connect to valves and equipment. Fittings 50 mm and below are not necessarily shown on the drawings and may be threaded or solvent cemented."

2.2 POLYETHYLENE  
PIPE AND FITTINGS

- .1 13 to 76 mm diameter: to AWWA C901.
- .2 100 mm diameter and larger: to AWWA C906.
- .3 Watermain pipe to be DR 11 high density polyethylene to PE 3408 resin listed in PPI TR4. Acceptable product: KWH Pipe or approved equivalent.
- .4 Joints:
  - .1 Thermal Butt Fusion.
    - .1 Mechanical Connections: polyethylene flange end with stainless steel back-up ring.
    - .2 Electrofusion coupling to ASTM F 1290. Acceptable product: Central Plastics Company or approved equivalent.
- .5 Fittings:
  - .1 Polyethylene: to AWWA C901 and AWWA C906.
  - .2 Flanged: to AWWA C110.
- .6 Pipe and fittings to meet NSF 61 standards.

2.3 INSULATION

- .1 Insulation, 50mm thick rigid polyurethane foam, factory applied over HDPE pipe. Acceptable product: Urecon U.I.P or approved equivalent.
- .2 Joints and fittings to be insulated with 50mm thick rigid polyurethane foam prefabricate to be

consistent with factory insulated pipe and jacket.

- .3 Heat tracing: conduits of an extruded molding applied to the pipe prior to the application of the insulation. Fluoropolymer insulated heat trace cable rated with power and termination kit.
  - .1 Acceptable product: Urecon Thermocable, or approved equivalent.
- .4 Temperature Sensors: Two (2) low temperature RTD sensor with 15m lead, one(1) high temperature RTD sensor with 6m lead.
  - .1 Acceptable product: Urecon URTD Series, or approved equivalent.
- .5 Outer Jacket: 24ga factory applied spiral stainless steel jacket.
  - .1 Acceptable product: Urecon Spiwrap System, or approved equivalent.

#### 2.4 PIPE HANGERS

- .1 Wall pipe support, 316 stainless steel.
  - .1 Acceptable product: National Pipe Hanger Fig. 160 or approved equivalent.
- .2 Hold down strap, 316 stainless steel.
  - .1 Acceptable product: National Pipe Hanger Fig. 136 or approved equivalent.
- .3 Offset pipe clamp, 316 stainless steel.
  - .1 Acceptable product: National Pipe Hanger Fig. 430 or approved equivalent.
- .4 Standard pipe clamp, 316 stainless steel.
  - .1 Acceptable product: National Pipe Hanger Fig. 400 or approved equivalent.
- .5 Insulation protection shield, 316 stainless steel saddle.
  - .1 Acceptable product: National Pipe Hanger Fig. 307 or approved equivalent.
- .6 Thread rod, nuts and washers, 316 stainless steel.
- .7 Anchor bolts: 316 stainless steel
  - .1 Acceptable product: Hilti Kwik Bolt TZ or approved equivalent.

- .8 Adhesive anchoring system.
  - .1 Acceptable product: Hilti HIT-RE 500 or approved equivalent.
- 2.5 BALL VALVES
  - .1 Size 100 mm and smaller; all stainless construction, 2 piece body, 5,500 kPa rated, full port ball valve with threaded end connections.
  - .2 Acceptable product: Watts, Crane, PMP, Velan or approved equivalent.
- 2.6 THRUST RESTRAINT
  - .1 Thrust blocks and anchors: 20 MPa portland cement concrete and 15M, grade 400 reinforcing steel where indicated.
- 2.7 DISINFECTANT
  - .1 Sodium hypochlorite or calcium hypochlorite: to AWWA B300.
  - .2 Liquid chlorine: to AWWA B301.
- 2.8 REDUCING AGENT
  - .1 Hydrogen peroxide, 35% by mass commercial grade.
- 2.9 INSULATION (BURIED)
  - .1 Rigid polystyrene insulation to CGSB-51.20, type 4, minimum compressive strength 41.5 KPG (60 psi). Standard of Acceptance: HI60 by Dow Chemical Canada.
- 2.10 Marker Tape
  - .1 Underground warning tape: minimum 75 mm wide, metal detector tape, clearly marked "Caution - Buried Waterline", Colour Blue.
- 2.11 PIPE BEDDING
  - .1 Sand Bedding: as per PEI DOTIE.
- 2.12 Curb Stop
  - .1 Curb stop: brass to ASTM B62, Compression type joints. Minimum pressure rating of 1035 kPa.
    - .1 Acceptable product: 19-50mm Mueller 300 ball curb valve or approved equal complete with pack joint connection kit.
  - .2 Service Box: adjustable type, cast iron bottom section, stainless steel operating rod and cotter pin, cast iron lid with recessed pentagon nut and

internal stem to suit depth of bury. Service box to have foot piece to provide a firm base for the curb valve and to prevent the valve from moving.

.1 Acceptable products:

.1 Mueller or approved equal.

.3 Provide 316 stainless steel off set pipe clamp anchored to wall to support service box upper section.

2.13 Domestic cold  
Water Back-Flow  
Preventer (BFPD)

.1 To CAN/CSA-B64 Series.

.2 Reduce pressure type valve assembly complete with isolating shut off valves and test cocks, complete air gap fitting attached to drain outlet, strainer. Size as indicated on drawings.

.1 Acceptable materials: Watts Series - LF009 or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Carefully inspect material for defects and remove defective materials from site.

.2 Immediately before installation, remove any water, debris, and foreign material from interior of pipe, fittings and valves.

3.2 TRENCHING,  
BEDDING AND  
BACKFILLING

.1 Provide trenching, bedding and backfilling to PEI DOTIR.

.2 Use sand bedding for pipe bedding and protection unless otherwise specified.

.3 Clear stone may be used in wet or freezing conditions only where specified or with the prior approval of the Departmental Representative.

3.3 PIPE  
INSTALLATION -  
GENERAL

.1 Lay and join pipe, fittings, and valves as specified herein and according to manufacturer's published instructions.

.2 Lay pipe and fittings on prepared bed, true to line and grade indicated, within following tolerances: Horizontal Alignment: 150 mm Vertical Alignment: 75 mm.

.3 Lay pipe to grade as indicated on drawings.

- .4 Do not exceed maximum joint deflection recommended by manufacturer.
- .5 Prevent entry of bedding material, water or other foreign matter into pipe. Use temporary watertight bulkheads when pipe laying is not in progress.
- .6 Join pipes in accordance with manufacturer's published instructions. Do not use excessive force to join pipe sections.
- .7 Align pipes carefully before joining.
- .8 Support pipes as required to assure concentricity until joint is properly completed.
- .9 Keep pipe joints free from soil or other foreign materials.
- .10 Complete each joint before laying next length of pipe.
- .11 Join polyethylene pipe in accordance with manufacturer's published instructions.
- .12 Where deflection at joints is permitted, deflect only after joint is completed.
- .13 At structures provide flexible joint not more than 1 metre from outside face of structure.
- .14 Cut pipe as required for specials, fittings or closure pieces, square to centerline, and as recommended by manufacturer.
- .15 Provide concrete thrust blocks to undisturbed ground on all unrestrained tees, bends, plugs and caps. Construct as indicated and keep joints and couplings free of concrete.

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#### 3.4 HDPE PIPE

- .1 Join pipe sections by thermal butt fusion welding process or by electrofusion fittings as per manufacturer's recommendations. Perform jointing
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by qualified personnel in accordance with manufacturers requirements using pipe jointing equipment approved by the manufacturer.

- .2 Provide temporary closed shelter for the jointing equipment as required by the manufacturer to maintain suitable ambient conditions while jointing is in progress.
- .3 Pipe shall be cleaned of surface dust and dirt and prepared for adhesion of foam insulation.
- .4 Heat trace conduit to be checked following insulation application to insure they are not plugged.
- .5 Plug pipe and heat trace conduit for shipping and installation protection.
- .6 Pipe joints and fittings to be field insulated, sealed and jacketed as per the manufacturer's recommendations.
- .7 Pipe support:
  - .1 Provide pipe supports at 1500 mm intervals maximum.
  - .2 Provide additional support at concentrated load locations such as bends, valves, specialties.
  - .3 Open topped wall pipe supports at every second support location where used.

### 3.5 Insulation Application

- .1 Apply insulation after required tests have been completed and approved. Insulation and surfaces shall be clean and dry when installed and during application of any finish. Apply insulation materials, accessories and finishes in accordance with manufacturer's recommendations and as specified herein.
- .2 Insulation sections to have all joints firmly butted together and sealed.
- .3 Fittings to be pre-shaped or mitered segments, thickness of which is equal to that of the adjoining pipe insulation. Ends to be firmly butted together and sealed.



- .4 Flanges to be insulate and jacketed with removable sections so that the flange bolts and nuts can be removed without damage to the insulation or jacket.
- .5 Expansion joints to provide for adequate movement without damage to adjacent insulation or jacketing.
- .6 Jacketing to overlap by at least 50mm, longitudinally and peripherally. All jacketing shall be positioned to shed water. Position and seal joints to eliminate ingress of water.
- .7 Use piping saddles and shields at hangers and supports.

### 3.6 COMMISSIONING PLAN

- .1 The Contractor shall provide a Water System Commissioning Plan outlining the measures that will be taken for the hydrostatic testing, chlorination and disinfection of the water system. This plan is to indicate the areas to be tested, the sequence of testing and the sample locations for bacteriological tests. This plan shall follow all requirements set forth in this specification and be provided to and approved by the Departmental Representative prior to any testing taking place. Unless otherwise approved, the maximum length of water main that can be tested shall be limited to 450m.

### 3.7 HYDROSTATIC AND LEAKAGE TESTING

- .1 If water used for flushing or testing is obtained from a potable water supply, the supply is to be continuously separated from the service being flushed or tested by an air gap or a level of protection equal to or greater than that provided by a double check valve backflow prevention device.
- .2 Provide labour, equipment and materials required to perform hydrostatic and leakage tests.
- .3 Notify Departmental Representative at least 24 hours in advance of all proposed tests. Perform tests in presence of Departmental Representative.

- .4 Open all valves in test section.
- .5 Expel air from main by slowly filling with water. Install corporation stops at high points where no air-vacuum release valves are installed. After testing, remove corporation stops and install plugs.
- .6 Apply test pressure of 1035 kPa or pressure equal to 1.5 times working pressure, whichever is greater, measured at lowest point in test section. The test shall be conducted over a full two (2) hour period, maintaining a constant test pressure. No leakage is permitted by the test process.
- .7 Locate and repair defects if test fails. Retest.

3.8 FLUSHING AND  
DISINFECTION

- .1 Chlorination of any water system can proceed only after system has been successfully pressure tested. The chlorination test is to be witnessed by the Departmental Representative.
- .2 Flush and disinfect water mains to AWWA C651 and as herein specified. Notify the Departmental Representative 24 hours in advance of flushing and disinfection.
- .3 Flush water mains with potable water through available outlets until foreign materials have been removed and water is clear. The size and number of taps should conform to Table 3 of AWWA C651.

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available outlets until foreign materials have been removed and water is clear. The size and number of taps should conform to Table 3 of AWWA C651.

Pipe Diameter	Flow Required to Produce 2.5 ft/s (approx.) Velocity in Main	Size of Tap, In. (mm)	Number of Hydrant Outlets
In. (mm)	Gpm (L/S)	1(25) 1½(38) 2(51)	2½" (64mm)
4 (100)	100 (6.3)	1 - -	1
6 (150)	200 (12.6)	- 1 -	1
8 (200)	400 (25.2)	- 2 1	1
10 (250)	600 (37.9)	- 3 2	1
12 (300)	900 (56.8)	- - 2	2
16 (400)	1600 (100.9)	- - 4	2

- .4 Slowly open and close valves and hydrants to ensure thorough flushing.
- .5 If satisfactory results cannot be achieved by flushing, swab pipe by approved methods and re-flush.
- .6 Disinfect water main upon completion of flushing using chlorine solution distributed throughout entire system.
- .7 Inject 1% chlorine solution through a corporation stop in the top of newly laid pipe, at point close to where main is being filled and at rate proportioned to filling rate. Prepare stock chlorine with concentration of 1% free chlorine by volume as follows:

<u>Product</u>	<u>Amount Of Compound</u>	<u>Quantity of Water (litre)</u>
high test calcium hypochlorite (67-70%Cl)	1.0 kg	60 litres
liquid laundry bleach (5.25% CI)	1.0 litre	3.5 litres
3.5 litres		

(10.5% Cl)                      1.0 litre                      7.0 litres

- .8 Calcium hypochlorite is not to be used when water temperature is less than 5 C.
- .9 The following table indicates the quantity of 1% chlorine stock solution required per 100 metre length of pipe.

<u>Pipe Diameter (mm)</u>	<u>1% Hydrogen Peroxide Solution (litres)</u>
100	4.9
150	10.9
200	19.4
250	30.4
300	42.9
350	58.4
400	76.3

- .10 Operate valves, hydrants, and appurtenances while main contains chlorine solution.
- .11 Take water samples at all hydrants and termination points, in suitable sequence, to test chlorine residual. When tests indicate minimum chlorine residual of 50 mg/L, leave system charged with disinfectant solution for 24 hours. At the end of this 24-hour period, the treated water in all portions of the main shall have a residual of not less than 25 mg/L. If the residual has fallen below 25 mg/L the system shall be rechlorinated.
- .12 Flush disinfectant solution from line after 24 hours. Under no circumstances shall disinfectant solution remain in the line longer than 48 hours. Add 1.0% hydrogen peroxide reducing agent to the disinfectant solution at point of discharge or within a retention facility such that the solution is disposed to the environment with a total chlorine residual no greater than 0.0 mg/L in accordance with the requirements of the Department of the Environment, Labour and Justice. Check chlorine residuals before disposal and at regular intervals during disposal to ensure compliance. This de-chlorination requirement can only be excluded with the written consent of the Department of Environment, Labour and Justice.

- .13 Dispose of de-chlorinated disinfectant solution. Where disposing to the environment, disposal of the de-chlorinated solution must be at least 100 meters from the nearest watercourse.
- .14 Where disinfectant solution is de-chlorinated at point of discharge, inject stock reducing agent at a rate proportioned to discharge rate. Injection and discharge rates must be monitored continuously to ensure proper proportioning.
- .15 Prepare stock reducing agent with concentration of 1% Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>) by volume, as follows:

<u>Liquid Reducing Agent</u>	<u>Amount of Agent (litres)</u>	<u>Quantity of Water (litres)</u>
Hydrogen Peroxide (35% H <sub>2</sub> O <sub>2</sub> by mass)	1.0	34.0
34.0		

- .16 The following table indicates quantity of 1% Hydrogen Peroxide required to reduce total chlorine residual of disinfectant solution contained per 100 metre length of pipe, from 50 mg/L to 0.0 mg/L.

<u>Pipe Diameter (mm)</u>	<u>1% Hydrogen Peroxide Stock Solution (litres)</u>
100	4.5
150	10.2
200	18.1
250	28.2
300	40.6
350	55.3
400	72.3

- .17 Where total chlorine residual of disinfectant solution exceeds 50 mg/L, quantity of stock reducing agent for de-chlorination can be increased in direct proportion to the quantity indicated in the above table.
- .18 After disinfectant solution is flushed from water main, assist Departmental Representatives in

obtaining two water samples on each of two consecutive days (at least 24 hours apart) for bacteriological tests. Hydrants shall not be used as sampling points. Repeat disinfection procedure if bacteriological tests fail.

- .19 Bacteriological samples are to be obtained from a test sampling tap or a copper service lateral if available. Sampling shall take place from every 366m (1200 ft) of new water main, plus one set from the end of the line and from every branch (See AWWA C651-99, Section 5.1). Coliform tests must indicate 0 on two consecutive days combined with background count of less than 150.
- .20 Should any of the test results be positive, repeat disinfection, flushing, sampling and analysis.
- .21 After testing and submission of the written results for the passing of the bacteriological tests, remove corporation stops and install plugs. Check visually for leakage after plugs are installed with water main under normal operating pressure.

PART 1 - GENERAL

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|-----|--|----|--|
| 1.1 | <u>RELATED<br/>REQUIREMENTS</u>                    | .1 | Section 26 05 00 - Electrical General Requirements   |
| 1.2 | <u>ACTION AND<br/>INFORMATIONAL<br/>SUBMITTALS</u> | .1 | Provide submittals in accordance with Section 01 33 00 - Submissions/Shop Drawings   |
|     |  | .2 | Product Data:  |
|     |  | .1 | Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations. |
| 1.3 | <u>QUALITY<br/>ASSURANCE</u>                       | .1 | Quality assurance submittals: submit following in accordance with Section 01 45 00 - Testing Laboratory Services   |
|     |  | .1 | Certificates: signed by manufacturer certifying materials comply with specified performance characteristics and physical properties.   |
| 1.4 | <u>DELIVERY,<br/>STORAGE AND<br/>HANDLING</u>      | .1 | Deliver, store and handle materials in accordance with manufacturer's written instructions.  |
|     |  | .2 | Delivery and Acceptance Requirements:  |
|     |  | .1 | Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.   |

PART 2 - PRODUCTS

- |     |                                   |    |  |
|-----|-----------------------------------|----|--|
| 2.1 | <u>PVC DUCTS AND<br/>FITTINGS</u> | .1 | Rigid PVC duct: Type DB2/ES2, with fabricated or moulded fittings, for direct burial.  |
|     |                                   | .1 | Nominal length: [6] [3] m plus or minus 12 mm.   |
|     |                                   | .2 | Rigid PVC bends, couplings, reducers, bell end fittings, plugs, caps, adaptors same product material as duct, to make a complete installation. |
|     |                                   | .3 | Rigid PVC 90 degrees, 45 degrees bends as required.  |

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|-----|------------------------------------|----|--|
| 2.2 | <u>SOLVENT WELD<br/>COMPOUND</u>   | .1 | Solvent cement for PVC duct joints.  |
| 2.3 | <u>CABLE PULLING<br/>EQUIPMENT</u> | .1 | 6 mm stranded nylon pull rope tensile strength 5 kn.   |
| 2.4 | <u>MARKERS</u>                     | .1 | Concrete type cable markers: as indicated, with words: "Cable", "Joint" or "Conduit" impressed in top surface, with arrows to indicate change in direction of duct runs. |
| 2.5 | <u>WARNING TAPE</u>                | .1 | Standard 4-mil polyethylene 76 mm wide tape, yellow with black letters, imprinted with "CAUTION BURIED ELECTRIC CABLE BELOW".  |

### PART 3 - EXECUTION

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|-----|--|----|---|
| 3.1 | <u>MANUFACTURER'S<br/>INSTRUCTIONS</u> | .1 | Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.                   |
| 3.2 | <u>INSTALLATION</u>                    | .1 | Install duct in accordance with manufacturer's instructions and at elevations as indicated.   |
|     |  | .2 | Clean inside of ducts before laying.  |
|     |  | .3 | Install plastic duct spacers and ensure full, even support every 1.5 m and smooth transition throughout duct length.  |
|     |  | .4 | Slope ducts with 1 to 400 minimum slope.  |
|     |  | .5 | Install plugs and cap both ends of ducts to prevent entrance of foreign materials during and after construction.  |
|     |  | .6 | Pull through each duct wooden mandrel not less than 300 mm long and of diameter 6 mm less than internal diameter of duct, followed by stiff bristle brush to remove sand, earth and other foreign material. |



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- .1 Pull stiff bristle brush through each duct immediately before pulling-in cables.
  - .7 Install a pull rope continuous throughout each duct run with 3 m spare rope at each end.
  - .8 Place continuous strip of warning tape 300 mm above duct before backfilling trenches.
  - .9 Install markers as required.
  - .10 Notify the Consultant for field review upon completion of direct buried ducts and obtain acceptance prior to backfill.
- 3.3 CLEANING
- .1 Clean in accordance with Section 01 74 00.
  - .2 Remove surplus materials, excess materials, rubbish, tools and equipment.

PART 1 - GENERAL

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|-----|--|----|---|
| 1.1 | <u>REFERENCES</u>                          | .1 | Canadian Standards Association (CSA International)  |
| 1.2 | <u>ACTION AND INFORMATIONAL SUBMITTALS</u> | .1 | Provide submittals in accordance with Section 01 33 00 - Submissions/Shop drawings.   |
|     |  | .2 | Product Data: <ul style="list-style-type: none"><li>.1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.</li></ul> |
| 1.3 | <u>QUALITY ASSURANCE</u>                   | .1 | Quality assurance submittals: submit following in accordance with Section 01 45 00 - Testing Laboratory Services.   |
|     |  | .2 | Regulatory Requirements: <ul style="list-style-type: none"><li>.1 Perform Work to comply with applicable Provincial/Territorial regulations.</li></ul>  |
|     |  | .3 | Co-ordinate and meet requirements of power supply authority. <ul style="list-style-type: none"><li>.1 Ensure availability of power when required.</li></ul>   |
|     |  | .4 | Certificates: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical properties.  |
| 1.4 | <u>DELIVERY, STORAGE AND HANDLING</u>      | .1 | Deliver, store and handle materials in accordance with Section 01 61 00 - Material and Equipment.   |
|     |  | .2 | Delivery and Acceptance Requirements: <ul style="list-style-type: none"><li>.1 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.</li></ul>   |

PART 2 - PRODUCTS

2.1 MATERIALS

- .1 Underground ducts: rigid type DB2, size as indicated.
- .2 Conductors: copper type RWU-90, size and number of conductors as indicated.
- .3 Meter socket: and approval of supply authority.
- .4 Concrete: to CAN/CSA A23.1/A23.2.
- .5 Backfill: clean and free of debris.
- .6 Pulling Iron:
  - .1 22 mm diameter hot dipped galvanized steel bar with exposed triangular shaped opening.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Install cables in trenches and in conduit in accordance with Section 26 05 44 - Installation of Cables in Ducts.
  - .2 Allow adequate conductor length for connection to supply by power supply authority.
  - .3 Install meter socket and conduit.
  - .4 Allow adequate conductor length for connection to service equipment.
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- .5 Make grounding connections in accordance with Section 26 05 28 - Grounding - Secondary.
  - .6 Install concrete encased ducts for electrical systems as indicated and in accordance with CAN/CSA A23.1.
  - .7 Install pulling irons as required.
  - .8 Seal ducts and conduits at building entrance location after installation of cable.
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- 3.2 FIELD QUALITY CONTROL
    - .1 Site Tests:
      - .1 Perform tests in accordance with Section 26 05 00 - Electrical General Requirements.
      - .2 Perform additional tests if required by authority having jurisdiction.
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- 3.3 CLEANING
    - .1 Clean in accordance with Section 01 74 00 - Cleaning.
    - .2 Remove surplus materials, excess materials, rubbish, tools and equipment.
-