

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 26 05 44: Installation of Cables in Trenches and Ducts.

1.2 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA-A3000-13, Cementitious Materials Compendium.
Includes:
 - .2 CSA A23.1/A23.2-14, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
 - .3 CAN/CSA-G30.18-09(R2014), Billet-Steel Bars for Concrete Reinforcement.

PART 2 - PRODUCTS

2.1 RIGID PVC CONDUITS AND FITTINGS

- .1 PVC conduits encased in reinforced concrete.
- .2 Rigid PVC opaque solvent welded type couplings, bell end fittings, plugs, caps, adaptors as required to make complete installation.
- .3 Convert PVC underground conduits to rigid aluminum prior to exiting the ground.
- .4 Expansion joints where ducts exit the ground.

2.2 SOLVENT WELD COMPOUND

- .1 Solvent cement for PVC conduit joints.

2.3 CABLE PULLING EQUIPMENT

- .1 6 mm stranded polypropylene pull rope, tensile strength 5 kN, continuous throughout each conduit run with 3 m spare rope at each end.

2.4 MARKERS

- .1 Refer to Section 26 05 44 – Installation of Cables in Ducts for markers.

2.5 CONCRETE

- .1 Refer to Section 03 30 00 – Cast-in-Place Concrete.

PART 3 - EXECUTION

3.1 INSTALLATION GENERAL

- .1 Install underground duct banks including formwork.
- .2 Build duct bank on undisturbed soil or on well compacted granular fill not less than 150 mm thick, compacted to 95% of maximum proctor dry density.
- .3 Open trench completely before ducts are laid and confirm no obstructions will necessitate change in grade of ducts.
- .4 Install ducts at elevations and with slope as indicated and minimum slope of 1 to 400.
- .5 Install base spacers at maximum intervals of 1.5 m levelled to grades indicated for bottom layer of ducts.
- .6 Lay PVC conduits with configuration and reinforcing as indicated with preformed interlocking, rigid plastic intermediate spacers to maintain spacing between ducts at not less than 190 mm horizontally and vertically. Stagger joints in adjacent layers at least 150 mm and make joints watertight. Encase duct bank with minimum 75 mm thick concrete cover.
- .7 Make transpositions, offsets and changes in direction using 5 degree bend sections, do not exceed a total of 20 degree with duct offset.
- .8 Use conduit adapters when switching from PVC to aluminum.
- .9 Cut, ream and taper end of ducts in field in accordance with manufacturer's recommendations, so that duct ends are fully equal to factory-made ends.
- .10 Allow concrete to attain 50% of its specified strength before backfilling.
- .11 Use anchors, ties and trench jacks as required to secure ducts and prevent moving during placing of concrete. Tie ducts to spacers with twine or other non-metallic material. Remove weights or wood braces before concrete has set and fill voids.

- .12 Clean ducts before laying. Cap ends of ducts during construction and after installation to prevent entrance of foreign materials.
- .13 Immediately after placing of concrete, pull through each duct 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 matter. Avoid disturbing or damaging ducts where concrete has not set completely. Pull stiff bristle brush through each duct immediately before pulling-in cables.
- .14 In each duct install pull rope continuous throughout each duct run with 3 m spare rope at each end.

3.2 MARKERS

- .1 Install markers as specified in Section 26 05 44 - Installation of Cables in Ducts.

3.3 INSPECTIONS

- .1 Inspection of duct will be carried out by the Departmental Representative prior to placing concrete. Placement of concrete and duct cleanout to be done when the Departmental Representative present.

END OF SECTION