

54.7 SUPPLY OF CULVERT PIPE AND COUPLERS

54.7.1 GENERAL

The Work consists of supplying corrugated metal pipe and pipe arches up to 1500 mm equivalent diameter and corrugated polyethylene pipe up to 900 mm in diameter to the worksite.

54.7.2 MATERIALS

54.7.2.1 General

Abbreviations for the various types of pipe are as follows:

- CSP Corrugated Steel Pipe
- CSP Arch Corrugated Steel Pipe Arch
- CAP Corrugated Aluminum Pipe
- CAP Arch Corrugated Aluminum Pipe Arch
- CPP Corrugated Polyethylene Pipe

Previously installed pipe shall not be used. All pipe supplied shall be clearly marked with the following information at intervals of not more than 3 metres.

- Manufacturer's name or trade mark
- Nominal thickness and type of material
- Specification designation
- Plant designation code
- Date of manufacture

54.7.2.2 Corrugated Metal Pipe

The Contractor shall ensure that the supply and fabrication of all galvanized, polymer coated and aluminum coated corrugated steel pipe (CSP) and pipe arches, including couplers and appurtenances, are in accordance with the latest edition of Canadian Standards Association Specification CAN 3-G401, and the supply and fabrication of corrugated aluminum pipe (CAP) and pipe arches including couplers and appurtenances, are in accordance with the latest edition of AASHTO Designation M196 and M197, with the following modifications:

- Sloped End Sections
 - Sloped end sections are required for each culvert. When 4:1 and 3:1 sloped end sections are specified, drawings CB-6.5.15.M1 and CB-6.5.15.M2 shall apply.
- Coating of Cut Edges
 - Edges of sheets or pipes saw cut after coating shall be recoated with the appropriate material in accordance with CAN 3-G401.
- Couplers
 - Annular corrugated couplers for pipe greater than 300 mm in diameter shall be of

sufficient width to cover at least two outside crest corrugations on each recorruagated end.

- Coupler Bands
 - Coupler bands for pipe greater than 800 mm in diameter shall have a minimum of three bolts.
- Termination of Lock Seams
 - On pipes 1000 mm diameter or larger, lock seams terminating at the cut edges of sloped or square ended sections shall have a 50 mm long fillet weld run along the lock seam at each cut edge. The weld and surrounding area shall be recoated with the appropriate material in accordance with CAN 3-G401.
- Recorruagated Ends
 - Spirally corrugated metal pipe shall have ends recorruagated to provide annular corrugations for couplers.

54.7.2.3 Polyethylene Pipe

The Contractor shall ensure that the supply and fabrication of all polyethylene pipe, couplers and appurtenances are manufactured from high density polyethylene resin which meets or exceeds the requirements of Type III, Category 4 or 5, Grade P33 or P34, Class C per ASTM D1248 of the latest revision and the requirements shown in the following table:

POLYETHYLENE PIPE REQUIREMENTS

Nominal Dia. (mm)	100	150	200	250	300	400	450	500	600	750	900
Outside Dia. (mm)	120	175	235	300	355	470	525	580	710	900	1080
Minimum Weights (kg/m)	0.5	1.0	1.7	3.0	4.0	7.0	8.8	12.0	17	25	32
Minimum Wall Thickness (mm)	0.5	0.7	0.9	1.6	2.0	3.0	3.4	4.0	4.2	5.0	5.0
210 kPa Sectional Area (mm ² /mm)		2.07	3.37	3.66	4.57	5.84	6.35	7.87	8.89	10.16	10.92

applicable standards: ASTM F405, ASTM F667, AASHTO M294

- Couplers
 - The pipe shall normally be joined with external screw-on couplers or split couplers. Couplers shall be of sufficient width to cover at least two outside crest corrugations on each end of the pipe to be joined. Nylon ties for split couplers shall have a minimum loop tensile strength of 530N.

54.7.3 EQUIPMENT

The Contractor shall supply all equipment necessary to complete the Work.

54.7.4 INSPECTION, ACCEPTANCE SAMPLING AND TESTING

All materials shall be subject to inspection, sampling and quality assurance testing by the Department. The Contractor shall provide safe, convenient access, acceptable to the Engineer for inspection and sampling of the materials and shall

co-operate in the inspection and sampling process.

The Contractor shall contact the Engineer at least 72 hours prior to shipping the materials to coordinate any inspection, sampling or testing deemed necessary at the manufacturing location and the delivery site .

Any material found unacceptable by the Engineer shall be replaced with acceptable material by the Contractor at his expense.

54.7.5 TIME TO COMPLETE

The Contractor shall complete the Work within 60 days of the issuance of the Work Order.

54.7.6 MEASUREMENT AND PAYMENT

Measurement will be in metres based on the length of each size and type of pipe supplied.

Payment will be made at the applicable unit price bid per metre for "Supply of Corrugated Metal Pipe" or "Supply of Corrugated Polyethylene Pipe" for the size of pipe specified. This payment will be full compensation for supplying, hauling and unloading the pipe at the worksite, and all labour, materials, equipment, tools and incidentals necessary to complete the Work.

54.7.7 WARRANTY

The warranty period for this Work shall be 1 year.