

PART 1 GENERAL

1.1 SECTION INCLUDES

- .1 Materials and installation for the construction and placement of manholes frames and covers.

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 Section 03 20 00 – Concrete Reinforcement.
- .3 Section 03 30 00 - Cast-in-Place Concrete.
- .4 Section 31 05 16 - Aggregate Materials.
- .5 Section 31 23 33.01 - Excavation, Trenching and Backfilling.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM International).
 - .1 ASTM A48/A48M, Standard Specification for Gray Iron Castings.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-8.1, Sieves, Testing, Woven Wire, Inch Series.
 - .2 CAN/CGSB-8.2, Sieves, Testing, Woven Wire, Metric.
- .3 Canadian Standards Association (CSA International).
 - .1 CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
 - .2 CAN/CSA-G30.18-M92, Billet Steel Bars for Concrete Reinforcement.
 - .3 CAN/CSA-G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

1.4 SUBMITTALS

- .1 Submit manufacturer's test data and certification at least 4 weeks prior to beginning Work. Include manufacturer's drawings, information and shop drawings where pertinent.

1.5 SCHEDULING OF WORK

- .1 Schedule work to minimize interruptions to existing services and/or access.
- .2 Submit schedule of expected interruptions for approval and adhere to approved schedule.

PART 2 PRODUCTS

2.1 MATERIALS

- .1 Cast-in-place concrete: to Section 03 30 00 - Cast-in-Place Concrete.
- .2 Concrete reinforcement: to Section 03 30 00 - Concrete Reinforcement.
- .3 Frames and covers to dimensions as indicated and following requirements:
 - .1 Metal gratings and covers to bear evenly on frames. A frame with grating or cover to constitute one unit. Assemble and mark unit components before shipment.
 - .2 Gray iron castings: to ASTM A48/A48M, strength class 30B.
 - .3 Castings: coated with two applications of asphalt varnish or cleaned and ground to eliminate surface imperfections.
 - .4 Manhole frames and covers: heavy duty municipal type for road service; Cover cast without perforations and complete with two 25 mm square lifting holes.
- .4 Granular bedding and backfill: in accordance with Section 31 05 16 - Aggregate Materials and following requirements:
 - .1 Crushed screed stone, gravel or sand.
 - .2 Granulations to be within limits specified when tested to ASTM C136. Sieve sizes to CAN/CGSB-8.1.
 - .3 TABLE

Sieve Designation	% Passing Stone/Gravel	Gravel/Sand
200 mm	-	-
75 mm	-	-
50 mm	-	-
38.1 mm	-	-
25 mm	100	-
19 mm	-	-
12.5 mm	65-90	100
9.5 mm	-	-
4.75 mm	35-55	50-100
2.00 mm	-	30-90
0.425 mm	10-25	10-50
0.180 mm	-	-
0.075 mm	0-8	0-10

- .4 Concrete mixes and materials: in accordance with Section 03 30 00 - Cast-in-Place Concrete.

PART 3 **EXECUTION**

3.1 **EXCAVATION AND BACKFILL**

- .1 Excavate and backfill in accordance with Section 31 23 33.01 - Excavating Trenching and Backfilling and as indicated.
- .2 Obtain approval of Departmental Representative before installing, manhole frames and covers.

3.2 **CONCRETE WORK**

- .1 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete.

3.3 **INSTALLATION**

- .1 Set frame and cover to required elevation to match top of concrete slab.

END OF SECTION