

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Modular precast concrete manhole sections with tongue-and-groove joints with masonry transition to lid frame covers, anchorage, and accessories.

1.2 RELATED SECTION

- .1 Section 03 30 00 - Cast-in-place Concrete.
- .2 Section 31 23 25 - Rock and Gravel Fill.

1.3 REFERENCES

- .1 Codes and standards referenced in this section refer to the latest edition thereof.
- .2 American Society for Testing and Materials International (ASTM):
 - .1 ASTM A48/A48M-03(2008) - Gray Iron Castings.
 - .2 ASTM C55-09 - Concrete Brick.
 - .3 ASTM C62-08 - Building Brick (Solid Masonry Units Made From Clay or Shale).
 - .4 ASTM C478-09 - Precast Reinforced Concrete Manhole Sections.
 - .5 ASTM C923M-08 - Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals. ASTM C923-08b - Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
 - .6 ASTM D3753-05e1 - Glass-Fibre-Reinforced Polyester Manholes and Wetwells.

- .3 IMIAC (International Masonry Industry All-Weather Council) - Recommended Practices and Guide Specification for Cold Weather Masonry Construction.

1.4 SUBMITTALS FOR REVIEW

- .1 Section 01 33 00: Submittal Procedures.
- .2 Shop Drawings: Indicate manhole locations, elevations, manhole diameter, pipe sizes, direction of flow and invert elevations. Product Data: Provide manhole covers, component construction, features, configuration, dimensions.

1.5 SUBMITTALS FOR INFORMATION

- .1 Section 01 33 00 - Submittal Procedures.

1.6 CLOSEOUT SUBMITTALS

- .1 Section 01 33 00 - Submittal Procedures.

1.7 QUALITY ASSURANCE

- .1 Products of This Section: Manufactured to ISO 9000 certification requirements.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Section 01 35 43: Environmental Procedures.
- .2 Maintain materials and surrounding air temperature to minimum 10 degrees C prior to, during, and forty-eight (48) hours after completion of masonry work.

1.9 MEASUREMENT FOR
PAYMENT

- .1 Manholes and catch basin structures will be measured and paid by the each.

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 20 00 - Concrete Reinforcement.
- .3 Precast manhole units: to ASTM C478M, circular or oval. Top sections eccentric cone or flat slab top type with opening offset for vertical ladder installation.
- .4 Precast catch basin sections: to ASTM C478M.
- .5 Joints: to be made watertight using rubber rings.
- .6 Mortar:
 - .1 Aggregate: to CSA A82.56.
 - .2 Cement: to CAN/CSA-A8.
- .7 Non-shrink grout to Section 03 30 00.
- .8 Frames, gratings, 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.
- .9 Backfill Material: in accordance with Section 31 23 25 - Rock and Gravel Fill and following requirements:
 - .1 Concrete mixes and materials: in accordance with Section 03 30 00 - Cast-in-Place Concrete.

2.2 COMPONENTS

- .1 Ladder rungs: to CAN/CSA-G30.18, No.25M billet steel deformed bars, hot dipped galvanized to CAN/CSA-G164. Rungs to be safety pattern (drop step type).
- .2 Adjusting rings: to ASTM C478M.
- .3 Concrete Brick: to CAN3-A165 Series.
- .4 Drop manhole pipe: to be same as sewer pipe.
- .5 Steel gratings, I-beams and fasteners: as indicated.
- .6 Safety landings: shall be placed in all manholes having a depth greater than 5 metres as measured from the top of cover to the invert of outlet pipe. They

shall be constructed and located as specified by the Departmental Representative.

2.3 CONFIGURATION

- .1 As detailed on construction drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- .1 Verify existing conditions before starting work.
- .2 Verify items provided by other sections of Work are properly sized and located.
- .3 Verify that built-in items are in proper location, and ready for roughing into Work.
- .4 Verify excavation for manholes is correct.

3.2 EXCAVATING AND BACKFILL

- .1 Excavate and backfill in accordance with Sections 31 23 25 - Rock and Gravel Fill.
- .2 Obtain approval of Departmental Representative before installing outfall structures, manholes, catch basins, valve chambers or ditch inlets.
- .3 Do not backfill any manholes or other structures for which a leakage test is required, prior to completion of testing and acceptance of test by Departmental Representative.

3.3 CONCRETE WORK

- .1 Do concrete work in accordance with Section 03 30 00 - Cast-in-Place Concrete.
- .2 Place concrete reinforcement in accordance with Section 03 20 00 - Concrete Reinforcement.
- .3 Position metal inserts in accordance with dimensions and details indicated.

3.4 INSTALLATION

- .1 Construct units in accordance with details indicated plumb and true to alignment and grade.
- .2 Complete units as pipe laying progresses. Maximum of three units behind point of pipe laying will be allowed.
- .3 Pump excavation free of standing water and remove soft and foreign material before placing base. Fill any excavation below level of bottom of specified bedding as outlined in Section 31 23 25 - Rock and Gravel Fill.
- .4 Cast base directly on undisturbed ground or when permitted by Departmental Representative, set a precast concrete base on 150 mm minimum of compacted granular material compacted to ASTM D698-78 Method D.
- .5 For precast units:
 - .1 Make each successive joint watertight with approved rubber ring gaskets. Each lifting ring hole shall be grouted with non-shrink grout.

- .2 Clean surplus grout and joint compounds from interior surface of unit as work progresses.
- .6 Place frame and cover on top section to required elevation. If adjustment required use concrete adjustment ring.
- .7 Clean units of debris and foreign materials. Remove fins and sharp projections. Prevent debris from entering system.
- .8 Remove existing gratings, frames and store for re-use at locations designed by Departmental Representative.

3.5 PREPARATION

- .1 Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.