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PUBLIC WORKS
8401 Laguna Palms Way
Elk Grove, California 95758



Standards Update Transmittal

Reference Number: 2024v-15
Standards: Standard Drawing, ST-8A; Specifications 39-2.01, 39-4.02

Update:

1. Modification to Standard Drawing:
 - a. ST-8A MANHOLE BACKFILL
2. Modification to Specifications:
 - a. 39-2.01 PRECAST CONCRETE STORM DRAIN MANHOLES
 - b. 39-4.02 MANHOLE PIPE ZONE BACKFILL OVER 4FT DEEP

Effect of Update:

1. This will clarify and clean up requirements of Detail ST-8A for Manhole Backfill Detail.
2. Specification 39-2.01 and 39-4.02
 - a. Change Type C to Type D for CDF to match storm drainpipe zone material in SD-6.

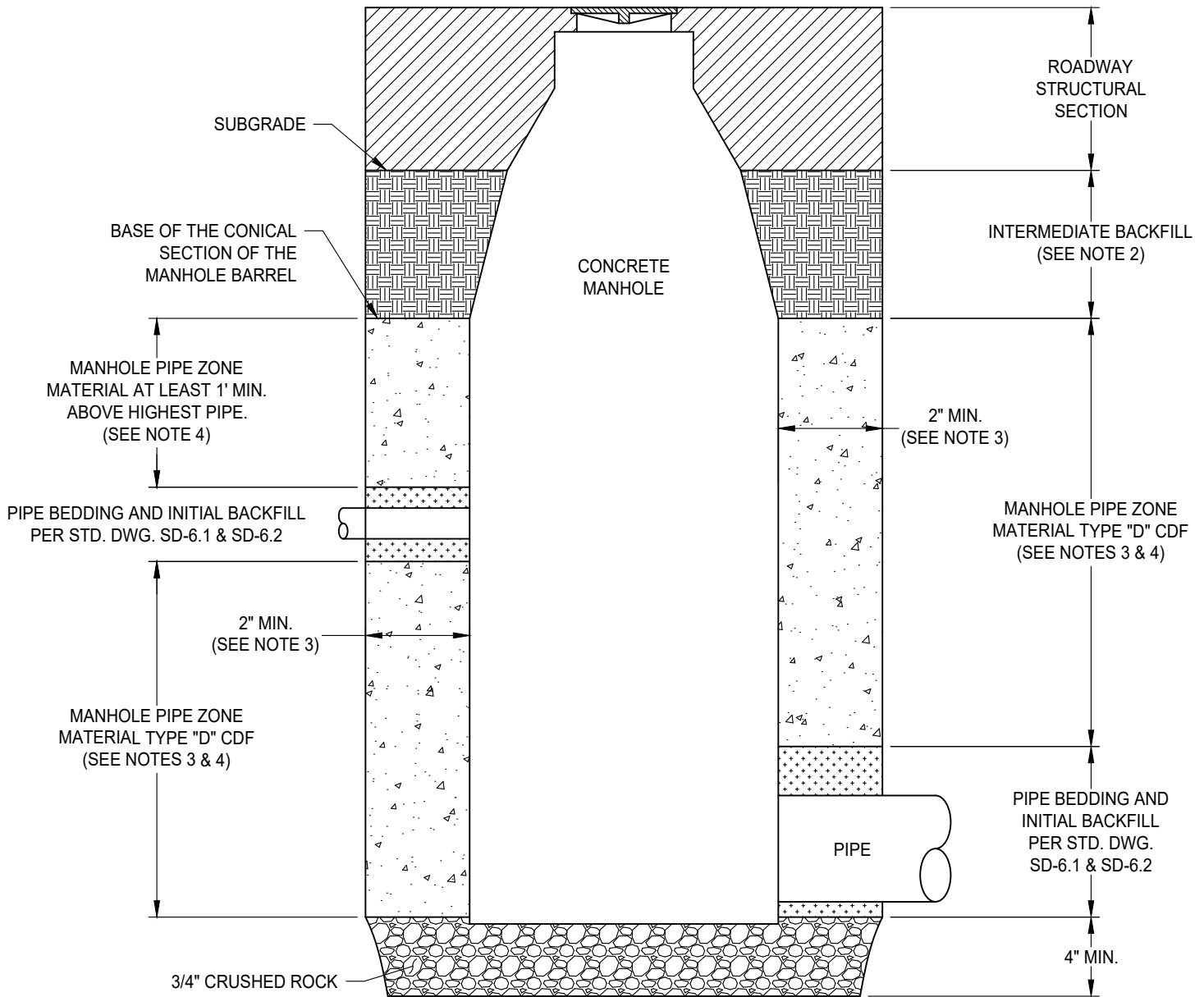
Request for Update Initiated By: Ed McCarthy

Update Reviewed for Conformity and Consistency to Standards:

Shoaib Ahrary 5/13/2025 | 12:29 PM PDT
Shoaib Ahrary, PE, ESD Manager Date

Update to Standards Approved:

Kristin Parsons 5/8/2025 | 6:43 PM PDT
Kristin Parsons, PE, City Engineer Date



NOTES:

1. SEE CONSTRUCTION SPECIFICATIONS SECTION 50-15 FOR TYPE "D" CONTROLLED DENSITY FILL (CDF).
2. INTERMEDIATE BACKFILL SHALL BE PLACED PER STD. DWG. SD-6.0
3. MANHOLE PIPE ZONE MATERIAL SHALL BE TYPE "D" CDF AND SHALL EXTEND 2 FEET MINIMUM HORIZONTALLY, SURROUNDING MANHOLE BARREL OR TO THE EDGE OF THE EXCAVATION (VARIES).
4. MANHOLE PIPE ZONE MATERIAL SHALL BE TYPE "D" CDF AND SHALL EXTEND 4 FEET MINIMUM VERTICALLY, ABOVE THE TOP OF THE LOWEST ASSOCIATED PIPE OR 1 FOOT VERTICALLY ABOVE THE TOP OF THE HIGHEST ASSOCIATED PIPE, OR TO THE BASE OF CONICAL SECTION OF THE MANHOLE BARREL AND BELOW THE SUBGRADE, WHICHEVER IS GREATER (VARIES).

DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	SJB	SMA	5-01-2025

CITY OF ELK GROVE - PUBLIC WORKS

MANHOLE BACKFILL DETAIL


APPROVED BY: _____

5-08-2025
DATE

CITY ENGINEER

DRAWING NUMBER

ST - 8A



39-2.01 Precast Concrete Storm Drain Manholes

Precast manhole barrels, risers, cones, flat tops, and grade rings shall conform to ASTM Designation: C 478 with the additional requirement that the cement used shall be Type II. Manhole sections shall be manufactured without the provision for steps.

Flat slab tops shall be constructed of Class "A" concrete conforming to Section 50-5, "Portland Cement Concrete", of these Specifications and shall conform to Standard Drawing SD-7.

Unless approved by the City, manhole bases shall be precast when the internal diameter of the largest pipe is less than thirty-three inches (33"). Precast manhole bases shall be placed on a minimum of four inches (4") of three-quarter-inch (3/4") crushed rock conforming to Section 50-16, "Clean Crushed Rock", of these Specifications. Pipe connections to manholes shall be made using a resilient connector conforming to ASTM Designation: C 923. For precast bases the connection shall be made with a flexible compression gasket, which is set during the precast process, or a boot connector. For cast in place bases the connection shall be made with a water stop. All connections shall be water and soil tight. The surface finish shall conform to Section 51-1.03F(2), "Ordinary Surface Finish", of the State Specifications.

When the inside diameter of the largest pipe is thirty-three inches (33") or greater, the manhole base may be cast-in-place. The base shall not be cast higher than six inches (6") above the outside top of the main incoming or outgoing pipe. Concrete used shall be Class "A" conforming to Section 50-5, "Portland Cement Concrete", of these Specifications. Slump shall not exceed two inches (2") as determined by the slump cone method of ASTM Designation: C143, or an equivalent slump as determined by Test Method No. California 533. Minimum and maximum wall thickness for the cast-in-place sections shall conform to the following Table 39-1 and shall be strictly adhered to:

TABLE 39-1 MINIMUM/MAXIMUM WALL THICKNESSES FOR CAST-IN-PLACE SECTIONS		
Manhole Diameter(inches)	Minimum Wall Thickness (inches)	Maximum Wall Thickness (inches)
48	5	7
60	6	8
72	7	9
84	8	10
96	9	11

Inside diameters of the cast-in-place portions shall equal the diameter of the manhole specified. Standard precast manhole riser sections and other components as specified in this Section shall be used above the cast-in-place base to bring the manhole rim to grade. Manholes with cast-in-place bases and all of the associated connections and joints shall be capable of passing the leakage test as specified in this Section.

Concrete on the cast portion may be placed against undisturbed earth provided wall thickness requirements are met; otherwise, outside forms shall be required. Forms shall be removed and the structure visually inspected prior to backfill. The surface finish shall conform to Section 51-1.03F(2), "Ordinary Surface Finish" of the State Specifications. Standard concentric cones conforming to ASTM Designation: C 478 shall be used on all manholes shown on the Plans unless otherwise specified. Where depth is insufficient for cones, concentric flat slab tops shall be used.

Joints in precast manhole shafts shall be sealed by buttering the joint space of the previously laid barrel section or base with mortar or shall be sealed with preformed plastic sealing compound conforming to Federal Specifications SS-S-0021A and installed as recommended by the manufacturer. All joint surfaces shall be thoroughly cleaned prior to placing the sealing compound or buttering with mortar. The inside and outside of mortared joints shall be plastered with mortar and the inside brushed to a smooth finish with a wet brush. Special precautions shall be taken to see that the entire joint space is filled with mortar and is watertight.

Manhole frames and covers shall be of the type and size shown on the Plans and shall conform to Section 50-31, "Storm Drain Castings", of these Specifications, Standard Drawing SD-9, or SD-10 in paved areas or Standard Drawing SD-11 in unpaved areas, and these Specifications, unless otherwise shown on the Plans or specified in the Special Provisions. The joint between the manhole frame and the cone or grade ring shall be sealed by buttering the joint space with mortar, or the joint shall be sealed using an epoxy adhesive. The adhesive shall be as described in Section 95-1.02E, "Epoxy Adhesive for Pavement Markers", of the State Specifications. A concrete collar shall be placed on all manhole frames per Standard Drawing SD-7. The concrete collar shall be Class "A-2" in conformance with Section 50-5, "Portland Cement Concrete", of these Specifications. The in-place depth of the twenty-four-inch (24") manhole opening shall not exceed eighteen inches (18") from the top of the frame to the top of the cone or from the top of the frame to the soffit of the flat slab top. If the depth of the twenty-four inch (24") opening must exceed eighteen inches (18"), a thirty-six inch (36") frame and cover with the corresponding thirty-six inch (36") manhole components shall be used. The depth of a thirty-six inch (36") opening as described above shall not exceed twenty-four inches (24"). Components for construction of manholes shall be selected to provide the least achievable vertical dimension between the finished frame surface and the top of the cone or soffit of the flat slab top. The depth of precast grade rings or cast-in-place grade rings shall not exceed eight inches (8") on new or reconstructed manholes.

All castings shall be manufactured true to pattern and with satisfactory fit of all component parts. Round frames and covers shall have machined bearing surfaces. All manhole covers which do not fit neatly and bear firmly in the ring will be rejected.

The pipe zone material surrounding pre-cast concrete manholes and extending out minimum of two feet (2') horizontally from the manhole barrel shall be backfilled with Type "D" material (CDF). The Type "D" backfill shall extend a minimum of four feet (4') vertical above the top of the lowest associated pipe or a minimum of one foot (1') vertical above the top of the highest associated pipe, or to the base of the conical section of the manhole barrel and below the subgrade, whichever is greater. The material shall extend horizontally to the edges of the manhole

excavation where adjoining trenches do not exist. In no case shall the Type "D" backfill material extend above the base of the conical section of the manhole barrel.

39-4.02 Manhole Pipe Zone Backfill Over 4ft Deep

The pipe zone material surrounding manholes and extending out a minimum of two feet (2') horizontally from the manhole barrel shall be backfilled with Type "D" material (CDF). CDF material must be in contact with firm and stable material. The Type "D" backfill shall extend a minimum of four feet (4') vertical above the top of the lowest associated pipe, or a minimum of one foot (1') vertical above the top of the highest associated pipe, or to the base of the conical section of the manhole and below the subgrade, whichever is greater. The material shall extend horizontally to the edges of the manhole excavation where adjoining trenches do not exist. In no case shall the Type "D" backfill material extend above the base of the conical section of the manhole barrel.