

Phone: 916.683.7111
Fax: 916.627.4400

www.elkgrovecity.org

PUBLIC WORKS
8401 Laguna Palms Way
Elk Grove, California 95758



Standards Update Transmittal

Reference Number: 2024v-07
Standards: Standard Drawing, SD-7.0/SD-7.1

Update:

The creation of a new standard drawing, SD-7.1, will address the construction of cast-in-place manhole bases.

- Included detailed reinforcement specifications as per Stockton's standard for manholes of various diameters.
- Introduced detailed height requirements for manhole construction in paved and unpaved streets as per Stockton's standards.
- Adopted Stockton's more detailed standard drawings for manhole construction to provide comprehensive visual guidance and ensure precise adherence to construction specifications.
- Section 39-2.01 of the Standard Construction Specifications is updated to specify Class "A-2" concrete for manholes.

Effect of Update:

- Enhanced structural integrity of manholes through detailed reinforcement guidelines.
- Consistent material quality with standardized concrete strength.
- Clarity in construction practices with precise height specifications.

Request for Update Initiated By: _____

Date

Update Reviewed for Conformity and Consistency to Standards:

Shoaib Ahrary

Shoaib Ahrary, PE, ESD Manager

3/7/2025 | 3:29 PM PST

Date

Update to Standards Approved:

Kristin Parsons

Kristin J. Parsons, PE, City Engineer

3/12/2025 | 9:46 AM PDT

Date

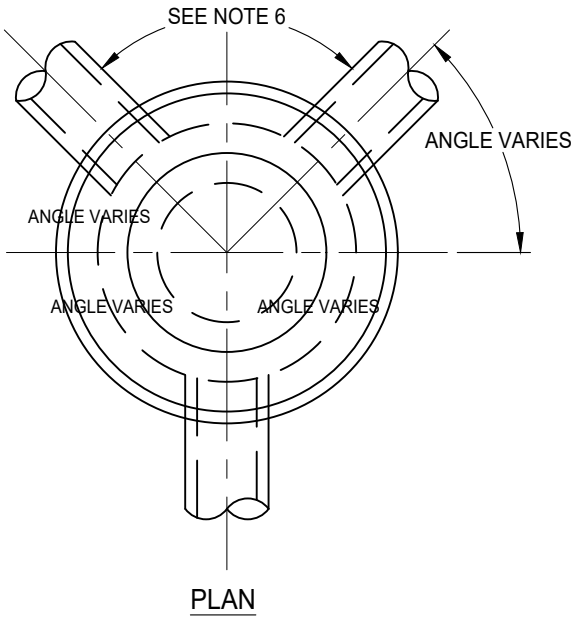
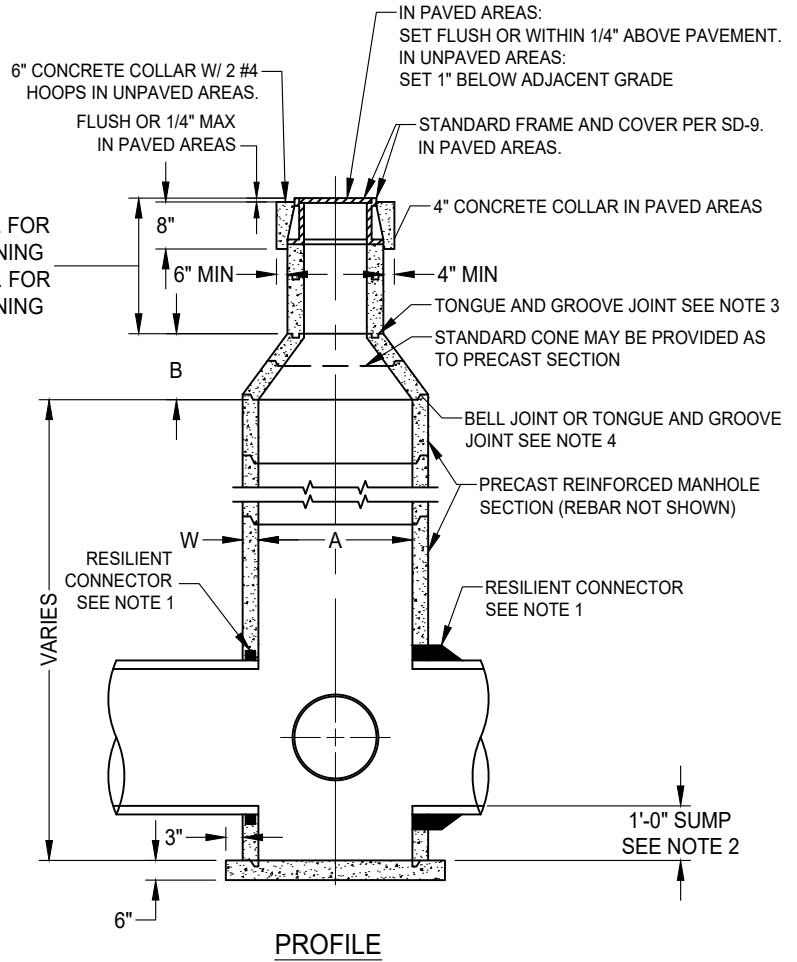


TABLE OF MINIMUM DIMENSIONS

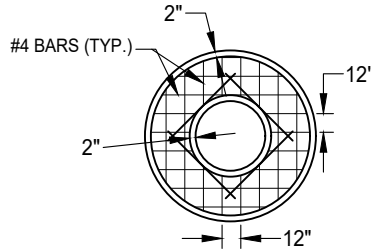
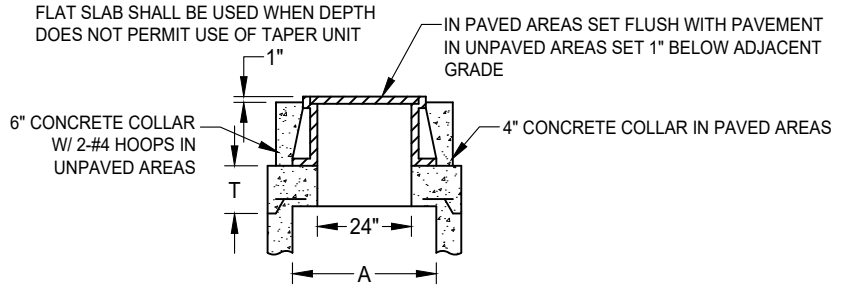
M.H.	A	B	T*	W
48"	48"	18"	8"	4'
60"	60"	28"	9"	6'
72"	72"	SEE NOTE 8	10"	7'



NOTES:

- ON ALL PIPES UP TO 30" I.D. USE FLEXIBLE COMPRESSION GASKET OR BOOT CONNECTOR CONFORMING TO ASTM C-923. CONNECTION SHALL BE WATER AND SOIL TIGHT. FOR PIPES GREATER THAN 30" I.D., BASE MAY BE CAST-IN-PLACE (SEE SD 7.1) AND A WATER STOP CONFORMING TO ASTM C-923 SHALL BE USED.
- SUMP SHALL BE 1'-0" DEEP, MEASURED FROM INVERT OF OUTFALL PIPE. SUMP NOT REQUIRED IF OUTFALL PIPE IS 24" I.D. OR LARGER.
- RISER SECTIONS, CONES, AND ADJUSTING RINGS SHALL CONFORM TO ASTM C-478.
- ALL JOINTS SHALL BE MADE WITH PREFORMED PLASTIC JOINT SEALING COMPOUND. FOLLOWING INSTALLATION GROUT ALL INTERIOR AND EXTERIOR JOINTS.
- CONCENTRIC COMPONENTS SHALL BE USED UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- PRECAST MANHOLES SHALL BE SIZED TO PROVIDE THE FOLLOWING: THE ANNULAR SPACE ON THE INSIDE OF THE MANHOLE BARREL BETWEEN CORED PIPE CONNECTION HOLES SHALL BE A MINIMUM OF 10 INCHES, IF THE CONNECTION HOLE IS CAST MONOLITHICALLY WITH THE MANHOLE BARREL THE MEASUREMENT SHALL BE TAKEN FORM THE FINISHED CONCRETE CONNECTION.
- SEE SECTION 39, CONSTRUCTION SPECIFICATIONS, "MANHOLES"
- CONE FOR MANHOLES GREATER THAN 60" DIAMETER SHALL BE INDIVIDUALLY DESIGNED.

FLAT SLAB SHALL BE USED WHEN DEPTH DOES NOT PERMIT USE OF TAPER UNIT



FLAT SLAB TOP


DATE: 09/22/2017		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	SJB	SMA	04-12-2024
2	SJB	SMA	02-27-2025

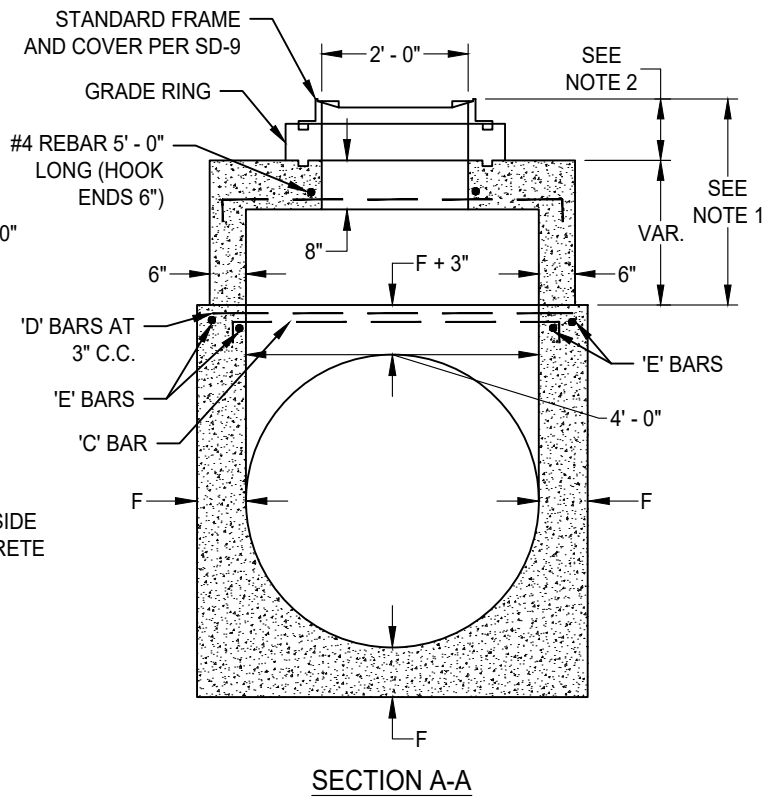
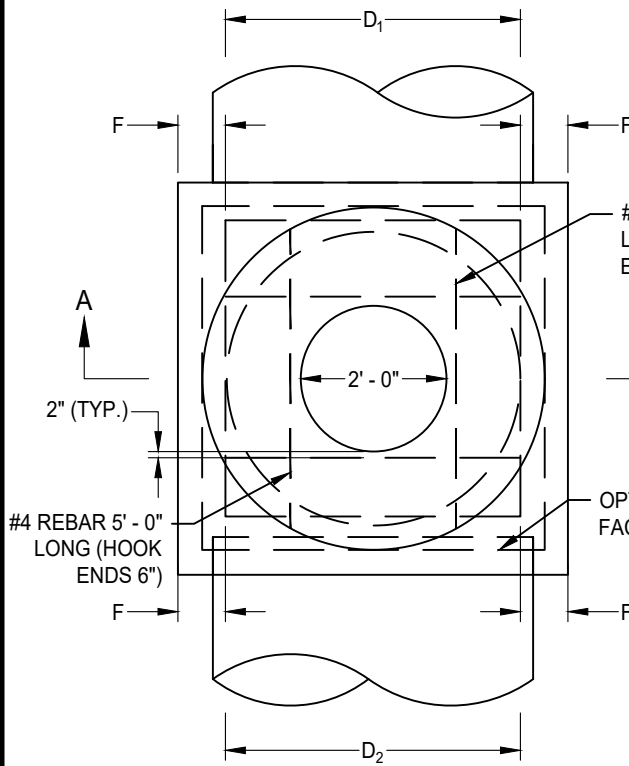
CITY OF ELK GROVE - PUBLIC WORKS

STANDARD PRECAST CONCRETE DRAINAGE MANHOLE

APPROVED BY: _____ 03-12-2025
CITY ENGINEER DATE

DRAWING NUMBER
SD - 7.0





PLAN

SECTION A-A

REINFORCING STEEL FOR M.H. BOX

D ₂	'C' BAR $45^{\circ}/45^{\circ}$ HOOK ENDS 6"			'D' BAR			'E' BAR		
	DIA.	NO.REQ'D	SIZE	NO.REQ'D	SIZE	LENGTH	NO.REQ'D	SIZE	LENGTH
36"	2	# 4	6'-4"	4	# 4	4'-6"	2	# 4	5'-2"
39"	2	# 4	6'-4"	4	# 4	4'-7"	2	# 4	5'-2"
42"	2	# 4	6'-4"	4	# 5	4'-7 $\frac{1}{2}$ "	2	# 4	5'-2"
45"	2	# 4	6'-4"	4	# 5	4'-8 $\frac{1}{2}$ "	2	# 4	5'-2"
48"	2	# 4	6'-4"	4	# 5	5'-0"	4	# 4	5'-2"
51"	2	# 4	6'-4"	4	# 5	5'-4"	4	# 4	5'-2"
54"	2	# 4	6'-4"	4	# 5	5'-8"	4	# 4	5'-2"
57"	2	# 4	6'-4"	4	# 5	5'-11 $\frac{1}{2}$ "	4	# 4	5'-2"
60"	2	# 4	6'-4"	4	# 5	6'-3"	4	# 4	5'-2"
63"	2	# 4	6'-4"	4	# 5	6'-7"	4	# 4	5'-2"
66"	2	# 4	6'-4"	4	# 5	6'-10 $\frac{1}{2}$ "	4	# 4	5'-2"
69"	2	# 4	6'-4"	4	# 5	7'-2 $\frac{1}{2}$ "	4	# 4	5'-2"
72"	2	# 4	6'-4"	4	# 5	7'-6"	4	# 4	5'-2"
78"	2	# 4	6'-4"	4	# 5	8'-1 $\frac{1}{2}$ "	4	# 4	5'-2"
84"	2	# 4	6'-4"	4	# 5	8'-9"	4	# 4	5'-2"
90"	2	# 4	6'-4"	4	# 6	9'-4 $\frac{1}{2}$ "	4	# 4	5'-2"
96"	2	# 4	6'-4"	4	# 6	10'-0"	4	# 4	5'-2"

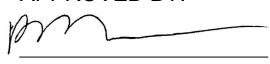
NOTES:

1. WHEN DEPTH OF MANHOLE FROM STREET G RADE TO TOP OF BOX IS LESS THAN 2' - 10.5", CONSTRUCT MONOLITHIC SHAFT AS SHOWN. THE CONTRACTOR SHALL HAVE THE OPTION OF CONSTRUCTING SHAFT AS SHOWN FOR ANY DEPTH OF MANHOLE.
2. PER SECTION A - A , MAXIMUM HEIGHT SHALL BE 10.5" AND MINIMUM HEIGHT 7.5".

DATE 03/12/2025		NOT TO SCALE	
REVISION	BY	APPROVED	DATE


CITY OF ELK GROVE - PUBLIC WORKS

CAST-IN-PLACE CONCRETE DRAINAGE MANHOLE

APPROVED BY:  03-12-2025
DATE

CITY ENGINEER

DRAWING NUMBER
SD - 7.2



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-2" concrete conforming to Section 50-5, "Portland Cement Concrete", of these Specifications and shall conform to Standard Drawing SD-7.0.

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-2" 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, SD-10.1 or SD-10.2 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 "C" material (CDF) up to a level at least one foot (1') over the highest associated pipe, unless specified otherwise. The Type "C" backfill shall extend a minimum of 4 vertical feet (or to the base of the conical section of the manhole barrel) above the top of the lowest associated pipe. The material shall extend horizontally to the edges of the manhole excavation where adjoining trenches do not exist. In no case shall the Type "C" backfill material extend above the base of the conical section of the manhole barrel.