

SAMPLE SPECIFICATION FOR PRECAST MANHOLES

SANITARY AND STORM SEWER MANHOLES

GENERAL: Manhole bases, barrel and cone sections shall be constructed of precast concrete. These, plus frames, covers and steps, shall be manufactured/supplied in accordance with details shown on Standard Drawings by Vaughn Concrete Products, Inc., or pre-approved comparable manufacturers. All other manufacturers must present submittals for verification of compliance with design criteria. Supplier approval must be obtained 21 days prior to bid opening; a full three days must be given to the engineer for submittal review. No late approvals will be allowed. A plant inspection will also be required for production facility inspection and to review record-keeping for material certification. The submittal information must be supplied in accordance with requirements found in the following submittal section.

SUBMITTALS: The manufacturer must provide certification that all materials used for manufacturing meet with the following ASTM specifications:

Aggregates	- ASTM - C-33
Cement	- ASTM - C-150
Sampling Specimens	- ASTM - C-39
Reinforcing	- ASTM - A-185, A-615, A706
Manhole Steps	- ASTM - C-478

A. Precast Concrete Barrel and Cone. Precast Concrete Sections for manholes shall conform to specifications for "Precast" Reinforced Concrete Manhole Risers and Tops," ASTM C-478. Compressive strength test results must be furnished to verify concrete strengths meet 4000 PSI minimum.

Adjusting rings may be used for adjusting the manhole top elevation to coincide with existing ground elevations, except the total height of adjusting rings used per manhole shall not exceed 12 inches. Adjusting rings shall be reinforced with the same percentage of steel as the riser and top.

B. Steps. When steps are required non-corrosive steps of rubber encased steel shall be used. Step shall withstand vertical loads of 400 pounds and pull-out resistance of 1,000 pounds. Manholes shall use eccentric cone sections to allow access into manhole straight down one wall of manhole. Steps to be spaced at 12 inch centers.

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SANITARY AND STORM SEWER MANHOLES, CONTINUED

C. All manholes shall be designed to withstand H-20 AASHTO loading. Lifting holes shall not protrude through manhole wall; one full inch of concrete thickness must remain between lift hole and outside wall of manhole for all standard size sections.

D. Rings and Covers. Rings and covers shall be in accordance with Owner's Standards. Covers shall be non-ventilated type unless called out otherwise on the plans.

E. Concrete Base. Precast concrete base shall be either separate or cast with manhole barrel section. Concrete mix design shall conform to appropriate section of ASTM C-478, with 4000 PSI minimum strength.

F. Construction. Manholes shall be constructed to the general dimensions shown. Invert channels shall be smooth and semi-circular in shape conforming to the inside of the adjacent sewer section. Changes in directions of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit. Changes in size and grade of the channels shall be made gradually and evenly. Precast inverts may be used or the invert channels will be formed directly in the precast base sections after it/they are set and pipe is laid. The floor of the manhole outside the channel shall be semi-smooth and shall slope toward the channel not less than one inch per foot, nor more than two inches per foot.

Free drop inside the manhole shall not exceed two feet measured from the invert of the inlet pipe to the outlet pipe. Where the drop exceeds two feet, drop manholes shall be constructed as shown on the standard manhole detail.

For all connections between wall sections the joint shall be joined with Conseal Joint Sealant or approved equal, in such a manner as to make the manhole watertight. Pipe to manhole connections can be made with Press-In Type Boots, or pipe can be grouted in with non-shrink grout.

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SANITARY AND STORM SEWER MANHOLES, CONTINUED

See attached drawings for pipe size to manhole diameter.

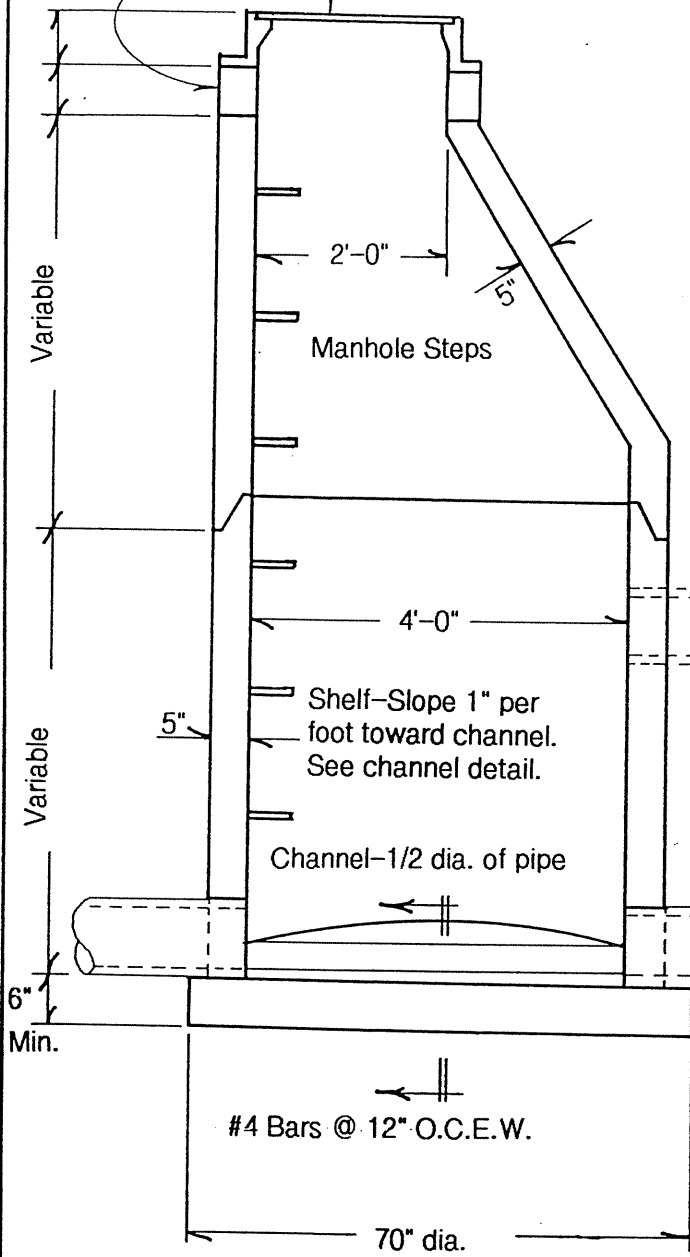
Additional design information:

For Sanitary Manholes - The information contained in this sample specification is meant to serve as a guide only. Some municipalities may have their own standards.

For Storm Sewer Manholes - Consult Vaughn Concrete Products to determine standard blockout sizes available for different size manhole. It is industry standard to allow two inches minimum, five inches maximum free space all around a pipe where it enters a manhole to allow storm sewer pipe placement. This allows room for some fluctuation in angle and elevation of storm sewer piping as well as adequate space for efficient grouting. Storm sewer manhole sizes are determined considering storm sewer pipe outside diameters, standard holeformer sizes, free space required around piping and the need to have at least 6" of inside wall space between storm sewer piping blockouts. Consult Vaughn Concrete Products if designer is in question.

Standard Casting: Manhole Ring & Cover with Solid Cover or Equal. Ring & Cover shall be adjusted to Crown and Grade of street.

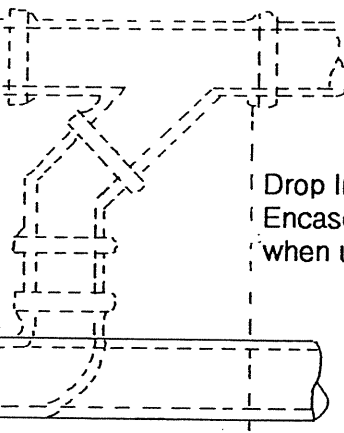
Adjustable rings—
12" Maximum



FOR STANDARD SANITARY SEWERS
USE MANHOLE SIZE AS FOLLOWS:

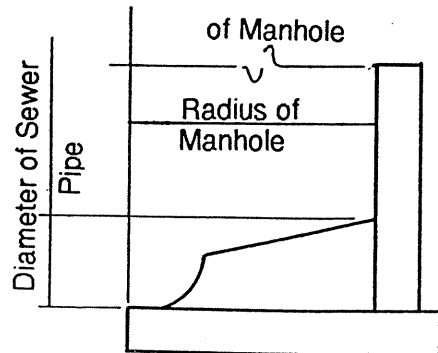
PIPE SIZE:	MANHOLE DIAMETER
Up to 15"	48" I.D.
Up to 24"	60" I.D.
Up to 36"	72" I.D.
Larger	90" I.D.

Precast reinforced concrete manhole riser & eccentric cone top manufactured in accordance with ASTM designation C-470

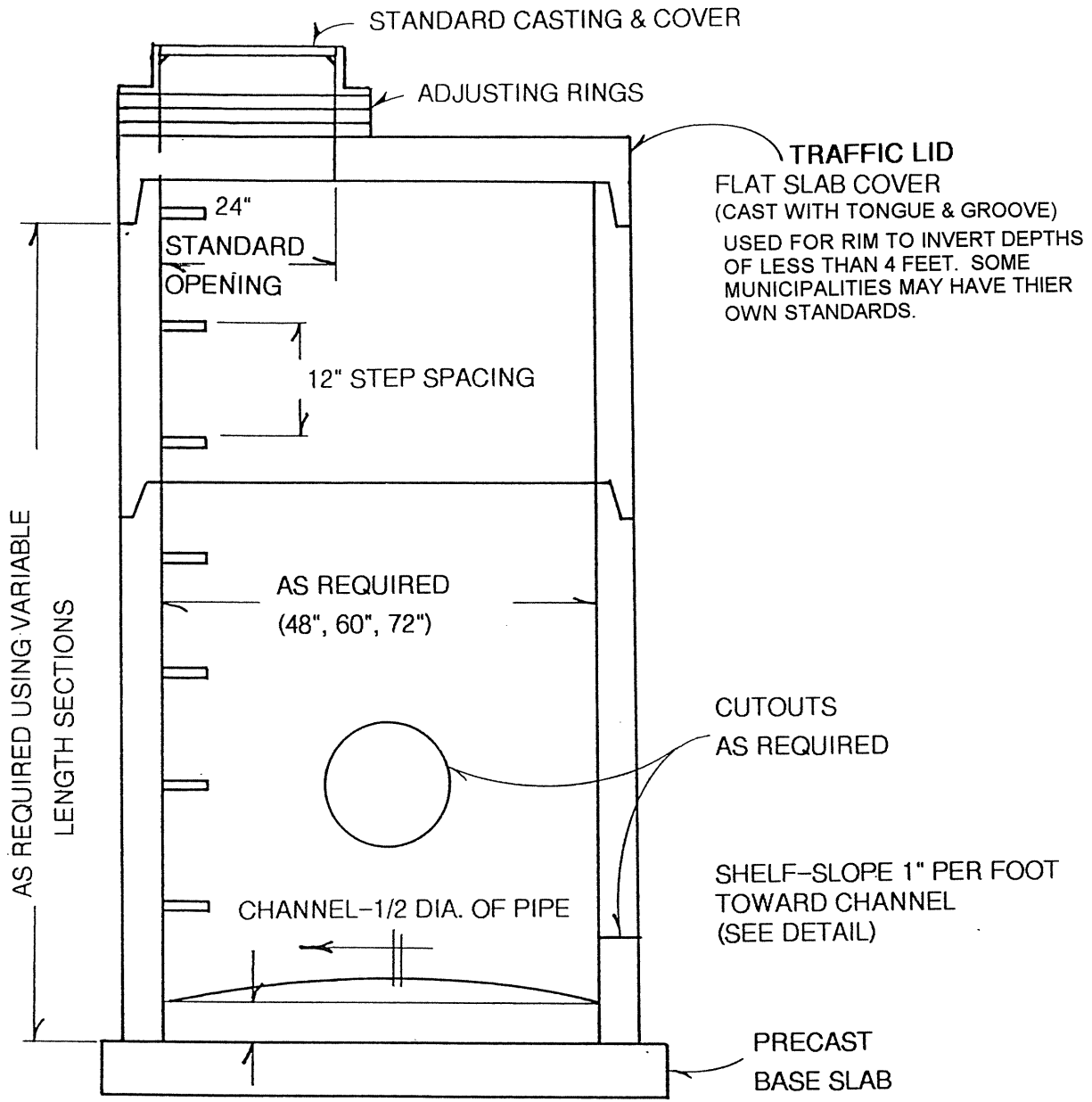


Drop Inlet—
Encased in concrete
when used for Drop Manhole

Concrete Encasing



NOTE: (1) All joints between manhole sections, manhole ring & top section, & around sewer pipe into manhole shall be water-tight. Jointing material shall be "Ram-Nek", Conseal or equal.
(2) All steps shall be 12" spacing.



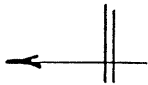
AS REQUIRED USING VARIABLE LENGTH SECTIONS

TRAFFIC LID
 FLAT SLAB COVER
 (CAST WITH TONGUE & GROOVE)
 USED FOR RIM TO INVERT DEPTHS OF LESS THAN 4 FEET. SOME MUNICIPALITIES MAY HAVE THEIR OWN STANDARDS.

CUTOUTS AS REQUIRED

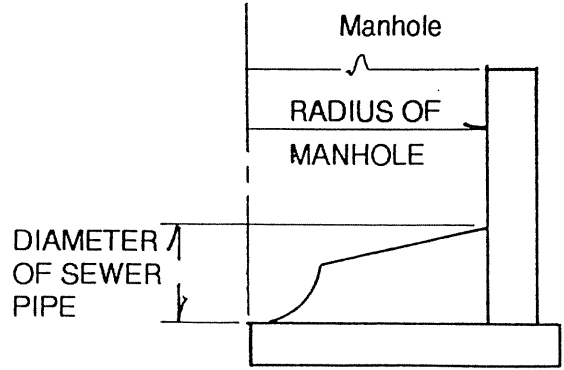
SHELF-SLOPE 1" PER FOOT TOWARD CHANNEL (SEE DETAIL)

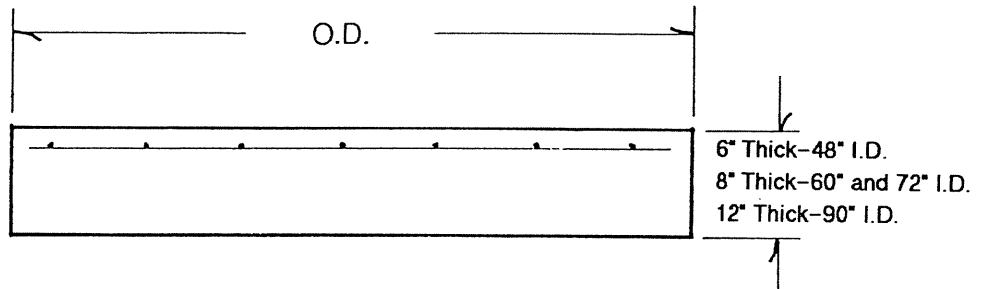
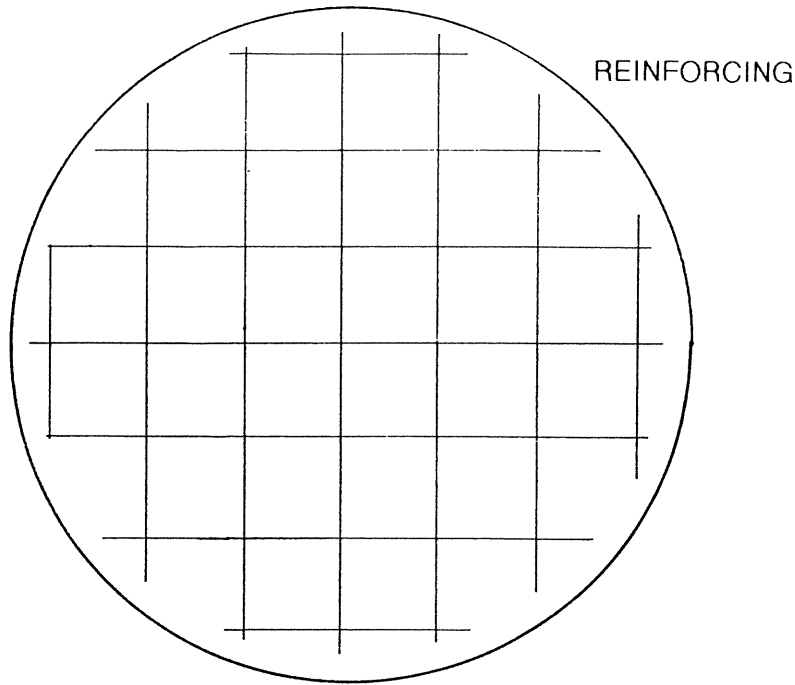
PRECAST BASE SLAB



FOR STANDARD SANITARY SEWERS USE MANHOLE SIZE AS FOLLOWS:

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Up to 15"	48" I.D.
Up to 24"	60" I.D.
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SIZE	O.D.	REIN.	WT.
48"	70"	#4 @ 12" O.C.E.W.	2850#
60"	84"	#4 @ 12" O.C.E.W.	3850#
72"	96"	#4 @ 12" O.C.E.W.	5100#

Reinforcing To Have 2" Cover Off Top Of Base

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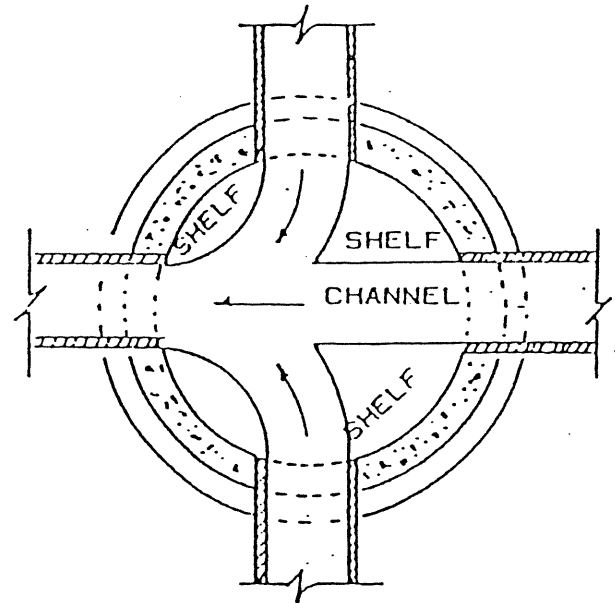
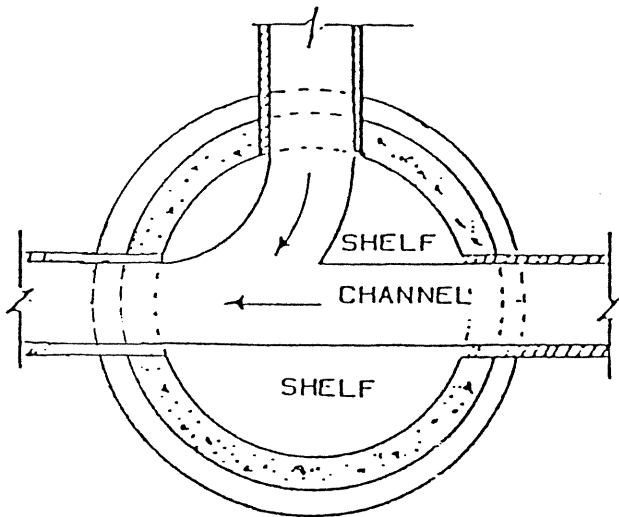
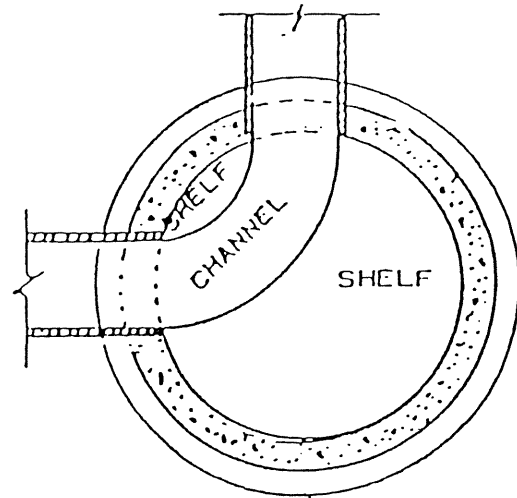
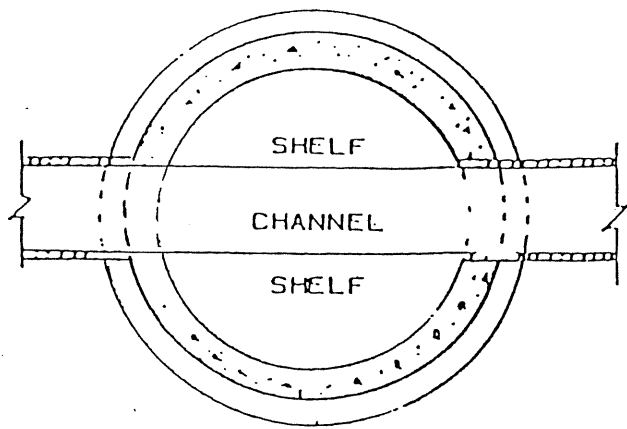
vaughn
concrete products, inc.

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2671 So. Greeley Hwy - Cheyenne, Wyoming 82007 - 307-834-0895, Fax 307-834-0894
10021 Amarillo Blvd., East - Amarillo, Texas 79108 - 806-374-3747, Fax 806-355-3117

SCALE:
NONE

PRECAST MANHOLE BASES
48", 60", 72"

Standard
Drawing
No 3



- NOTE:**
1. SLOPE ALL SHELVES TO CHANNEL AT 1" PER FOOT
 2. SEE PLAN-PROFILE SHEETS FOR SLOPE OF CHANNEL

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