

SECTION 11

SPECIFICATIONS AND STANDARD DETAILS

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GRANT WATER & SANITATION DISTRICT EASEMENT STANDARDS

The following items are minimum requirements for real property descriptions for all easements provided to the Grant Water & Sanitation District. We ask that you be familiar with our needs as stated below.

1. Bearings as recited in the written description must share the same direction in accompanying sketch.
2. Each “course” must be separated by the word thence.
3. If a “course” lies coincident with a line of “RECORD” then state so.
4. If the end of a line lies on a line of “RECORD” then state so.
5. Provide basis of bearings. If your basis of bearings changes during your description, then state so.
6. Provide a point of beginning or point of commencement, as appropriate.
7. Provide a true point of beginning or true point of commencement, as appropriate.
8. Do not state that the easement is _____ feet wide unless this is true throughout the description.
9. If creating multiple easement parcels that are intended to join one another, then there must be a conclusive “TIE” indicating such.
10. Provide pagination when appropriate.
11. If instruments of “RECORD” are recited, then their location must be included, i.e. County Seat.
12. Your description must be tied to a section corner. Include physical description of monument together with stating found or set.
13. Provide your name, company name, address and phone number along with PLS signature and seal at the end of the written description.
14. Written descriptions preferred on 8 ½” x 11” format. Sketches preferred at 8 ½” x 11” format.
15. Area of parcel to be expressed in square feet and acres.

When reviewing your written descriptions and sketches, we are looking for brevity, clarity and uniquely locatable real property parcels.

GRANT WATER & SANITATION DISTRICT GENERAL NOTES

REVISED 4/97

GENERAL

1. All sanitary sewer work shall be in accordance with the Grant Water & Sanitation District's specifications and those of The Wastewater Management Division. If the Grant Water and Sanitation District's standard notes or details are in conflict with The Wastewater Management Division (WMD), Wastewater Management Division standards apply with the exception of:
 - A. Eccentric cones shall be used for all sanitary sewer and underdrain manholes.
 - B. The district's sanitary sewer with overdrain trench section shall be used in lieu of the WMD trench section.
 - C. All underdrain manhole lids are required to be identified as underdrain.
 - D. A cut-off wall shall be placed at the property line of all sanitary sewer and underdrain services.

The details provided within this plan set are provided for convenience during construction. The Contractor shall maintain a copy of the Wastewater Management Division Standard Details on the site at all times. The Wastewater Management Division Details shall be used in the event of a discrepancy.

2. All work performed within the public rights-of-way shall conform to construction specifications and design standards for the local jurisdiction. In addition, any work performed within the public right-of-way will obtain the applicable State, County or City construction permit.
3. At least 48 hours in advance of beginning construction, the Contractor is responsible to notify the Utility Notification Center of Colorado, 534-6700 for location of underground utilities. The Contractor shall also notify the Grant Water & Sanitation District, 674-3379 to allow for scheduling of construction observation. The Contractor shall replace all disturbed buried utilities and surface improvements to their original condition whether shown on the plans or not.
4. During construction activity, the Contractor shall have at the job site at all times, one copy of the plans signed by the District.
5. Horizontal and Vertical Control: All survey work shall be tied to section corners and recognized vertical datum. The following benchmarks shall be used.

Benchmark Q 409 Elevation = 5540.69
Set by NGS in 1984

Original Description

In the Columbine Hills Subdivision, at the junction of South Wadsworth Boulevard and West Bowles Avenue, 159.8 meters (557.1 ft.) south of the centerline of West Bowles Avenue, 49.1 meters (161.1 ft.) southeast of the centerline of the east end of a 5.0 foot metal culvert, 20.4 meters (66.9 ft.) east of the centerline of the north bound lanes of the Boulevard, and 17.7 meters (58.1 ft.) southeast of the south end of a guardrail. Note: Access to the datum point is through a 5-inch logo cap. A stainless steel rod set to the depth of 10.7 meters encased in a pipe flush with the ground, 0.9 meters below the Boulevard, 0.3 meters west from a witness post and fence.

Construction

1. Prior to construction the Contractor shall install a temporary pipe plug in the downstream end of the tie-in manhole for the new sewer. The pipe plug must be secured to the first step of the manhole to prevent plug from moving out of reach. All mud and debris must be removed from the new pipe and manhole prior to connecting it to the existing system.
2. The Contractor shall verify elevations, based on the District benchmark listed above, of existing sewers at points of connection prior to construction or staking of sanitary sewer.
3. Pipe material shall be seamless open profile pipe meeting the requirements of ASTM F794 or closed profile pipe meeting ASTM D3034 for sewer pipe. Acceptable products include PVC pipe (SDR 35) and Ultra-Rib PVC Gravity Sewer Pipe. Joints shall be intergral bell and spigot with rubber gasket. Contractor shall follow manufacturer's installation instructions. Pipe shall be bedded in Class B Bedding Material.
4. All precast manhole sections, flat tops, barrels, reducers, etc., shall conform to ASTM C-478 Standard Specification for precast reinforced manhole sections.
5. Flat top sections shall be designed for HS-20 loading.

6. The Contractor shall be responsible for removing any surface or groundwater encountered during construction of this project. Water shall be pumped, piped, removed and disposed of in a manner which does not cause flooding of the existing streets nor erosion on abutting properties. No concrete shall be placed where groundwater is visible or until the groundwater table has been lowered below the proposed improvements. Any unstable areas as a result of groundwater improvements shall be stabilized as agreed upon by the Contractor, the District and the Design Engineer at the time of their occurrence.
7. Trenches are to be sloped or braced and sheeted as necessary for the safety of the workmen and protection of other utilities in compliance with applicable State and Federal Regulations. The Owner, District, District Engineer or Design Engineer is not responsible for safety in, on or about the project site nor for the compliance by the appropriate party of any regulations relating thereto.
8. All trenches shall be compacted to the standards established by the authority having jurisdiction. Where no standards exists the following minimum shall be used for trench compaction:
 - Paved Areas - 95% Standard Proctor
 - Unpaved/Landscape Areas - 90% Standard Proctor
9. Manhole rim elevations shown on drawings are approximate only. Rim elevations shall be adjusted to final grade using a maximum of 12 inches composed of three or fewer concrete rings. Final rim elevations shall be set as follows:
 - Paved areas: 0 to 1" below surrounding pavement surface
 - Mowed Grass Area: 0 to 1" above surrounding soil surface
 - Other Areas: 2" to 6" above surrounding surface

Final Acceptance

1. In public right-of-way, compaction of all trench backfill must be attained according to the local authority standards prior to probationary acceptance. The Contractor shall submit compaction test results to the Design Engineer, the District Engineer and local jurisdiction as required.
2. The Contractor shall provide as-built elevations to the Design Engineer which represent the constructed elevations and lengths of the sanitary sewer and underdrain systems. The Design Engineer will then furnish record drawings to the Grant Water & Sanitation District prior to probationary acceptance, in accordance with the District's Rules and Regulations, as explained in Notes 1 through 4 of the "Wastewater Management Division's "As Built" Notes.
3. All sewer lines in Denver shall be video taped and mandrel tested by WMD. The Contractor shall video tape and mandrel test 100% of sewer lines outside of the City and County of Denver.
4. The Contractor shall air pressure test 100% of the sewer in the presence of the District Engineer after backfilling in accordance with the District specifications prior to probationary acceptance.
5. Final acceptance of the sanitary sewer system will occur at the latter of the following. The end of the one year warranty period or 60 days after final pavement. If probationary acceptance begins prior to paving, Sellards & Grigg, Inc. will provide inspection services immediately following asphalt placement to verify acceptability of the system.
6. At least 8 months after the probationary acceptance but no later than 30 days prior to final acceptance, the Contractor shall perform, in the presence of the District Engineer, a 5% diameter deflection test. All pipe exceeding this deflection shall be relaid or replaced prior to final acceptance by the District, at the Contractor's expense.

NO.	REVISIONS	DATE	BY		
	GENERAL	4/97	KLK	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> CONSULTING ENGINEERS </div> <div style="text-align: center;"> SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO </div> </div> <hr/> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> DESIGNED BY: KLK DRAWN BY: EAB CHECKED BY: KGR DATE ISSUED: - </div> <div style="width: 40%; text-align: center;"> GRANT WATER & SANITARY DIST. <div style="border: 1px solid black; padding: 10px; font-size: 1.2em; font-weight: bold;">GENERAL NOTES</div> </div> <div style="width: 25%;"> S & G JOB NO: 92990-09 FILE NO: SCALE: N.T.S. SHEET NO: S-GN </div> </div>	

GRANT WATER AND SANITATION DISTRICT

NO EXCEPTIONS TAKEN _____ MAKE CORRECTIONS NOTED _____

REJECTED _____ REVISE AND RESUBMIT _____


SUBMIT SPECIFIED ITEM _____

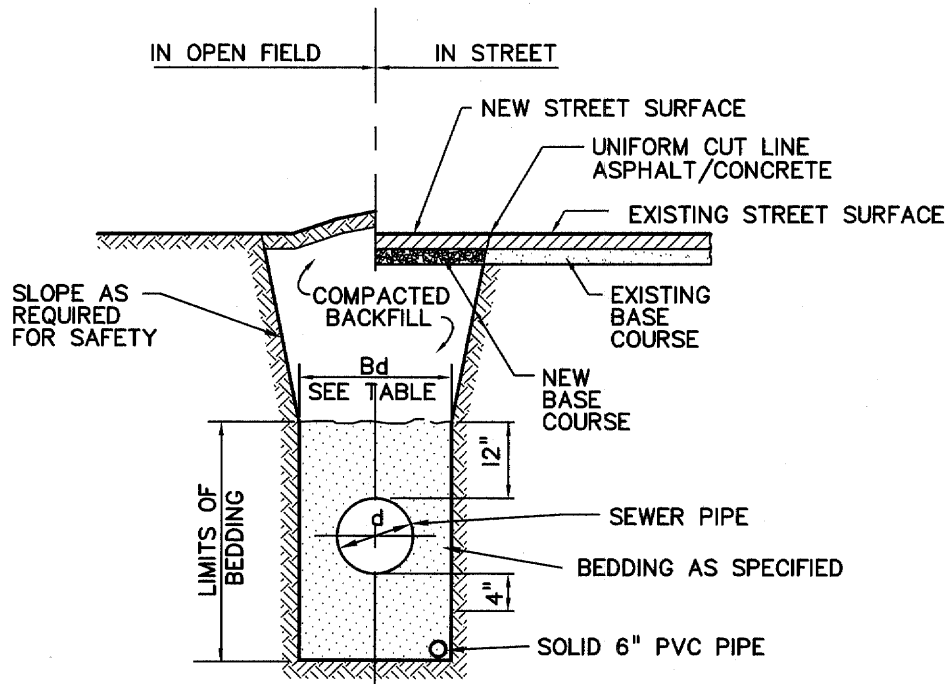
FOR PURPOSES OF THIS REVIEW, IT IS ASSUMED THAT THE DESIGN PROFESSIONAL WHOSE REGISTRATION STAMP APPEARS ON THE DRAWINGS HAS PREPARED THE DESIGN INCLUDING SPECIFICATIONS, IF ANY, IN ACCORDANCE WITH THE APPROPRIATE STANDARD OF CARE FOR THE PARTICULAR PROJECT. SELLARDS & GRIGG, INC. HAS MADE A GENERAL REVIEW IN AN EFFORT TO ASCERTAIN WHETHER THE SUBMISSION COMPLIES WITH THE GRANT WATER & SANITATION DISTRICT'S APPLICATION CRITERIA. NO DETAILED OR EXTENSIVE DESIGN REVIEW HAS BEEN MADE. UNDER NO CIRCUMSTANCES SHALL SELLARDS & GRIGG, INC. HAVE ANY LIABILITY OR RESPONSIBILITY WHATSOEVER FOR THE DESIGN OR CONSTRUCTION OF THE IMPROVEMENTS DESCRIBED IN THE SUBMISSION. THE REVIEW AND/OR COMMENTS UPON THIS SUBMISSION IS SOLELY FOR THE USE AND BENEFIT OF THE GRANT WATER & SANITATION DISTRICT AND ALTHOUGH SELLARDS & GRIGG, INC. IN ITS DISCRETION MAY OBSERVE SOME ASPECTS OF THE CONSTRUCTION, SELLARDS & GRIGG, INC. DOES NOT APPROVE OR COMMENT UPON CONSTRUCTION MEANS, METHODS, SEQUENCES, AND TECHNIQUES. NO SOILS OR GEOTECHNICAL ANALYSIS HAS BEEN MADE BY SELLARDS & GRIGG, INC.

BY: SELLARDS & GRIGG, INC.

DATE: _____

NO.	REVISIONS	DATE	BY

 SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO	
DESIGNER: KLK	PROJECT: GRANT WATER & SANITARY DIST.
DRAWN BY: EAB	REVIEW BLOCK
CHECKED BY: KGR	
DATE PLOTTED: 9/22/95	
SHEET NO: S-BLK	



TRENCH WIDTH (Bd)		
PIPE SIZE (Bd)	MINIMUM	MAXIMUM
8"-10"	2'-0"	4'-0"
12"-16"	2'-2"	4'-6"
18"-21"	2'-6"	5'-0"
24"	3'-0"	5'-6"

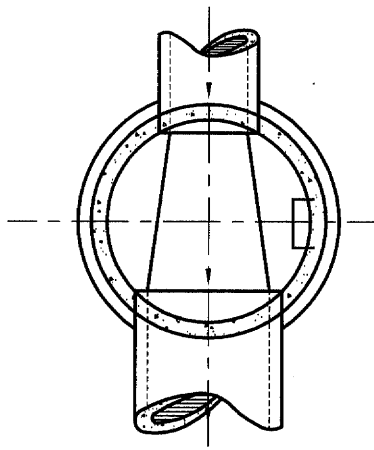
SEWER BEDDING MATERIAL GRADATION	
NOMINAL SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90-100
3/8"	20-55
NO. 4	0-10
NO. 8	0-5

*NO. 67 COURSE AGGREGATE (AASHTO M43)

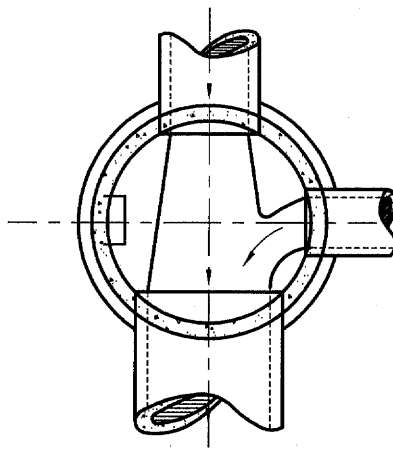
TYPICAL SANITARY SEWER W/ UNDERDRAIN

NTS

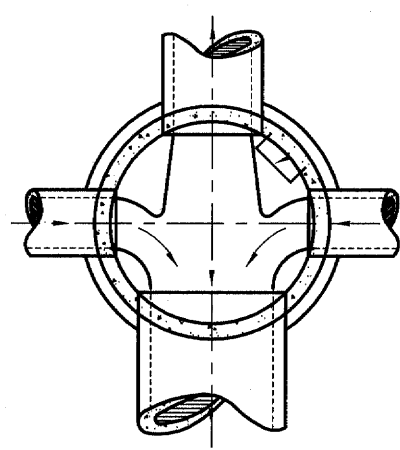
NO.	REVISIONS	DATE	BY	SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO	
				DRAWN BY: EAB	GRANT WATER & SANITARY DIST.
				CHECKED BY: KGR	TYPICAL SANITARY SEWER W/ UNDERDRAIN
				DATE ISSUED: 7/4/95	
					SHEET NO: S-1
1	REMOVED UNDERDRAIN BEDDING SPECS	5-97	KGR		



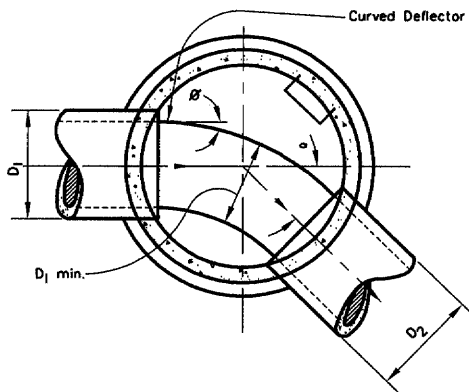
THROUGH PIPE



**THROUGH PIPE
ONE COLLECTION LINE**

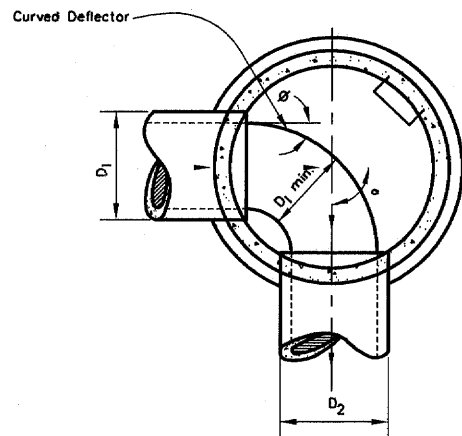


**THROUGH PIPE
TWO COLLECTION LINES**



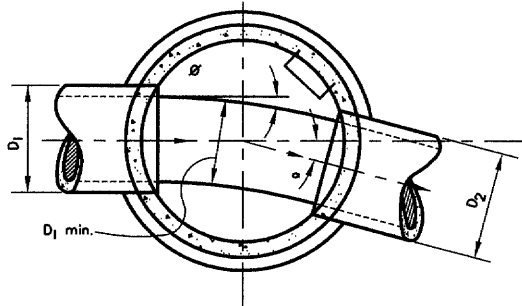
INTERMEDIATE ANGLE

$\theta = \frac{\alpha}{2}$
 $30^\circ < \alpha < 90^\circ$



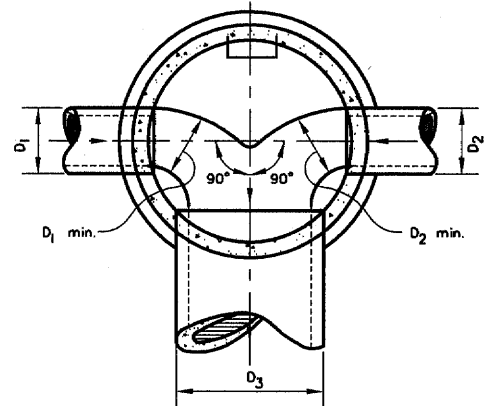
SHARP ANGLE

$\theta = 45^\circ$
 $\alpha = 90^\circ$



SLIGHT ANGLE


$\theta \leq 15^\circ$
 $\alpha \leq 30^\circ$

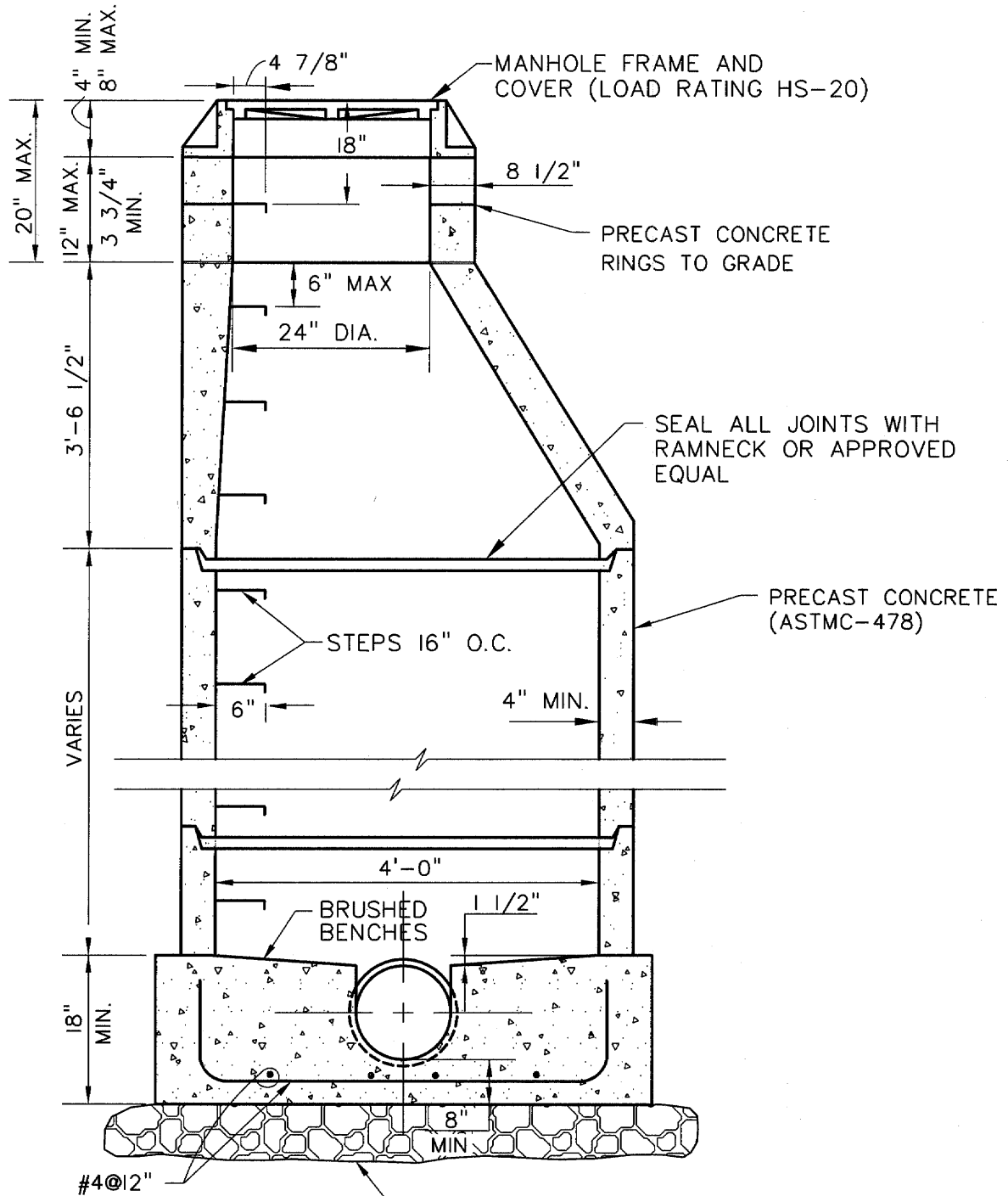


OPPOSED LATERALS

NOTE:
 DETAILS SHOWN ARE TYPICAL ONLY FOR INSTALLATIONS
 WITH A MAXIMUM OF UP TO 18 INCHES DIFFERENCE IN
 INVERTS.

NO.	REVISIONS	DATE	BY

CONSULTING ENGINEERS  SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO		S & G JOB NO: 92990-08
DESIGNED BY: KLK	GRANT WATER & SANITATION DIST.	
DRAWN BY: EAB	BASE CHANNELIZATION	
CHECKED BY: KGR		
DATE ISSUED: 7/5/95		
SCALE: N.T.S.		SHEET NO: S-3




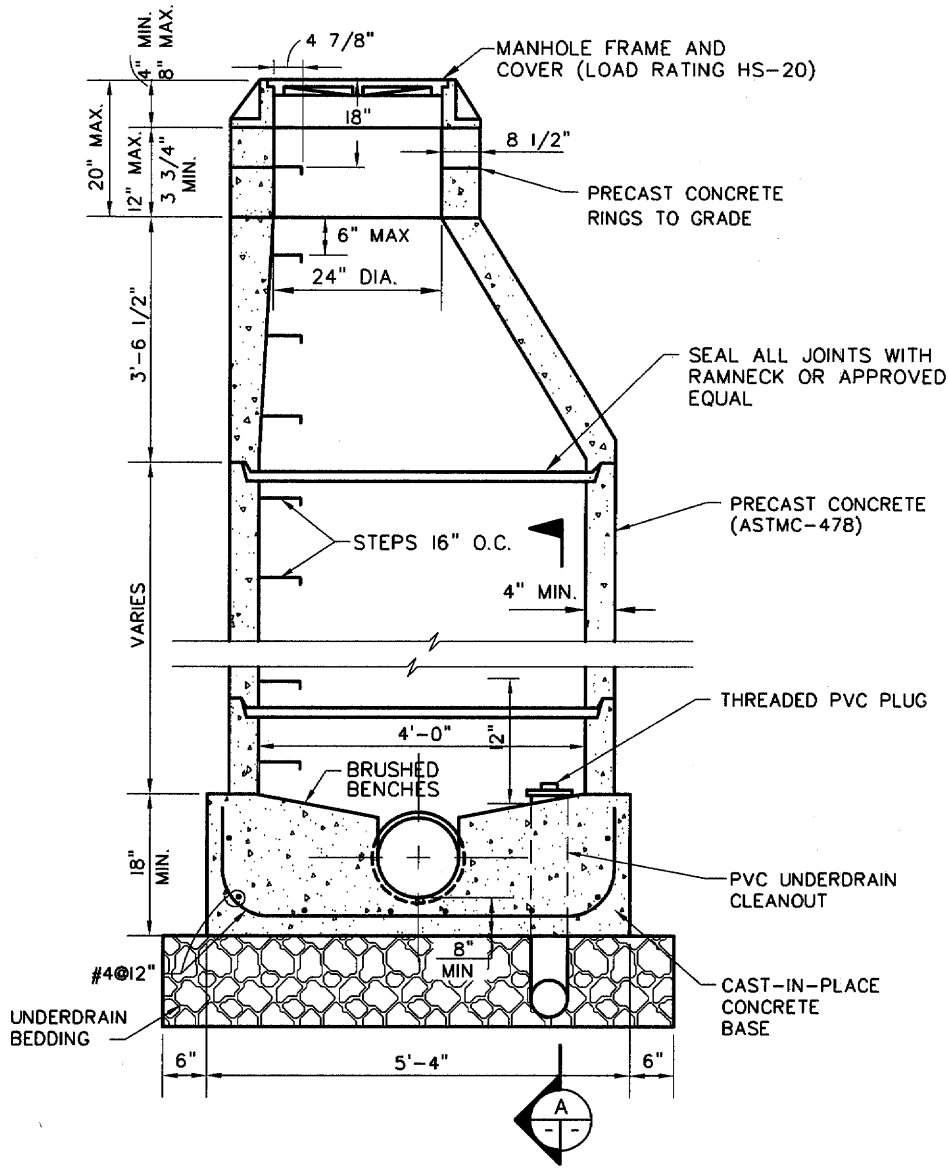
NOTE:
 MANHOLE INVERTS WILL BE FORMED AS INDICATED ON BASE CHANNELIZATION DETAIL TO INSURE SMOOTH FLOW THROUGH MANHOLE.

MANHOLE
 N.T.S.

6" OF NO. 4 COURSE AGGREGATE

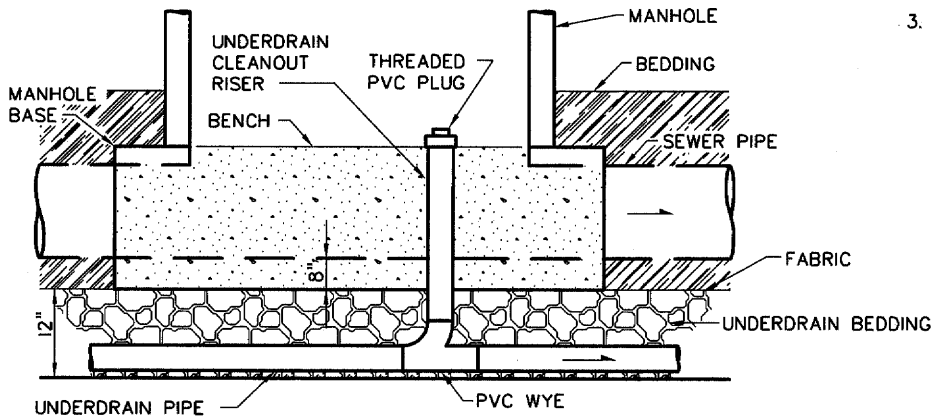
NO.	REVISIONS	DATE	BY
	GENERAL	10/96	KLK

CONSULTING ENGINEERS  SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO		S & G JOB NO: 92990-08
DESIGNED BY: KLK	GRANT WATER & SANITATION DIST.	
DRAWN BY: EAB	<h1>MANHOLE</h1>	
CHECKED BY: KGR		
DATE ISSUED: 9/18/95		
SCALE: N.T.S.		SHEET NO: S-4



NOTES:

1. ALL CLEANOUTS SHALL HAVE FIPT X SEWER HUB ADAPTOR W/RISED MIPT SHALL NOT PROJECT MORE THAN 2".
2. ALL WYES SHALL ALLOW FOR UPSTREAM ACCESS OF UNDERDRAIN.
3. FOR USE OUTSIDE CITY AND COUNTY OF DENVER ONLY



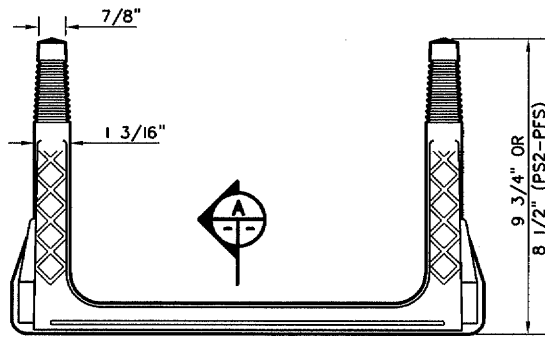
SECTION
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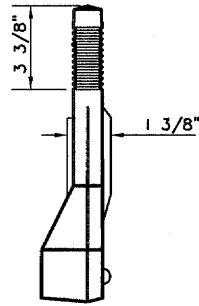
**MANHOLE W/ UNDERDRAIN
CLEANOUT**
N.T.S.

NO.	REVISIONS	DATE	BY
	GENERAL	10/96	KLK

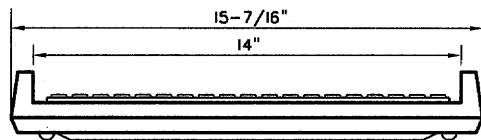
CONSULTING ENGINEERS 	SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO	S & G JOB NO: 92990-08
DESIGNED BY: KLK	GRANT WATER & SANITATION DIST.	FILE NO:
DRAWN BY: EAB	MANHOLE W/UNDERDRAIN CLEANOUT	SCALE: N.T.S.
CHECKED BY: KGR		SHEET NO: S-5
DATE ISSUED: 9/18/95		



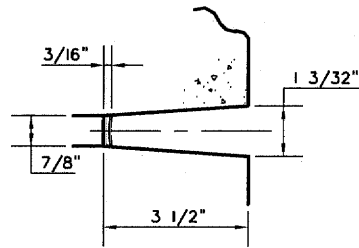
PLAN



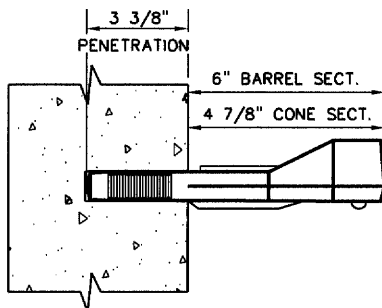
END VIEW



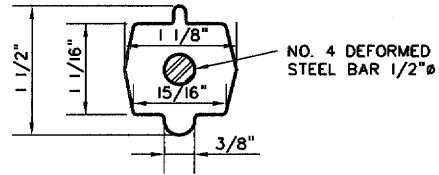
ELEVATION



DETAIL PIN BLOCK OUT



DETAIL
SCALE: N.T.S. A




SECTION
SCALE: N.T.S. A

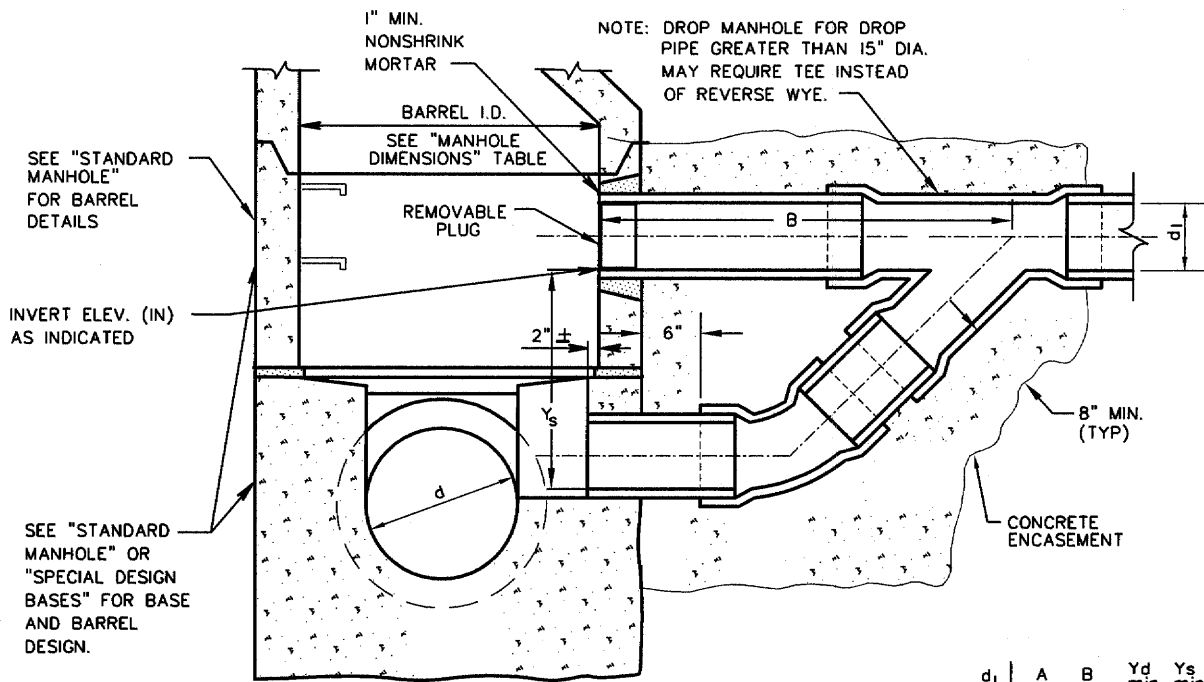
POLYPROPYLENE REINFORCED STEP

NOTES:

1. ASTM SPECIFICATIONS:
 - A. ASTM C-478
 - B. ASTM A-615 GRADE 80 (STEEL REBAR)
 - C. ASTM 2148-69, TYPE II, GRADE 16906 (POLYPROPYLENE)
2. STEPS INSTALLED IN MANHOLE BARREL SECTIONS OF VERTICAL WALLS OF STRUCTURES SHALL HAVE 9 3/8" LEG AND SHALL PROJECT FROM THE WALL 6 INCHES.
3. STEPS INSTALLED IN MANHOLE CONE SECTIONS SHALL HAVE AN 8 1/4" LEG AND SHALL PROJECT FROM THE WALL 4 7/8".
4. ALL STEPS SHALL HAVE A PENETRATION DEPTH INTO THE WALL OF 3 3/8".
5. STEPS SHALL BE INSTALLED BY THE "PRESS-FIT" METHOD UTILIZING A SPECIALLY TAPERED PIN TO FORM THE INSERT HOLE AS SHOWN, FOLLOWING MANUFACTURER'S RECOMMENDED PROCEDURE AND SHALL NOT BE GROUTED IN PLACE.
6. INSTALLED STEPS SHALL BE CAPABLE OF WITHSTANDING A PULLOUT FORCE OF 2500 LB PER LEG FOR A MINIMUM PERIOD OF TWO MINUTES.
7. PINS MUST BE SMOOTH AND CONTINUOUSLY TAPERED. DIMENSIONS OF THE PIN AND THE INSERTED PORTION OF THE MANHOLE STEP ARE TYPICAL ONLY. W.M.D. INSTALLATION REQUIRE A MATCHED COMBINATION OF A TAPERED INSERT PIN AND MANHOLE STEP, AS RECOMMENDED OR REQUIRED BY SPECIFIC MANUFACTURER OF THE STEP TO BE USED.
8. THIS STEP CAN ALSO BE USED IN TOE POCKET INSTALLATIONS PROVIDED 5" TOE CLEARANCE IS ALLOWED.

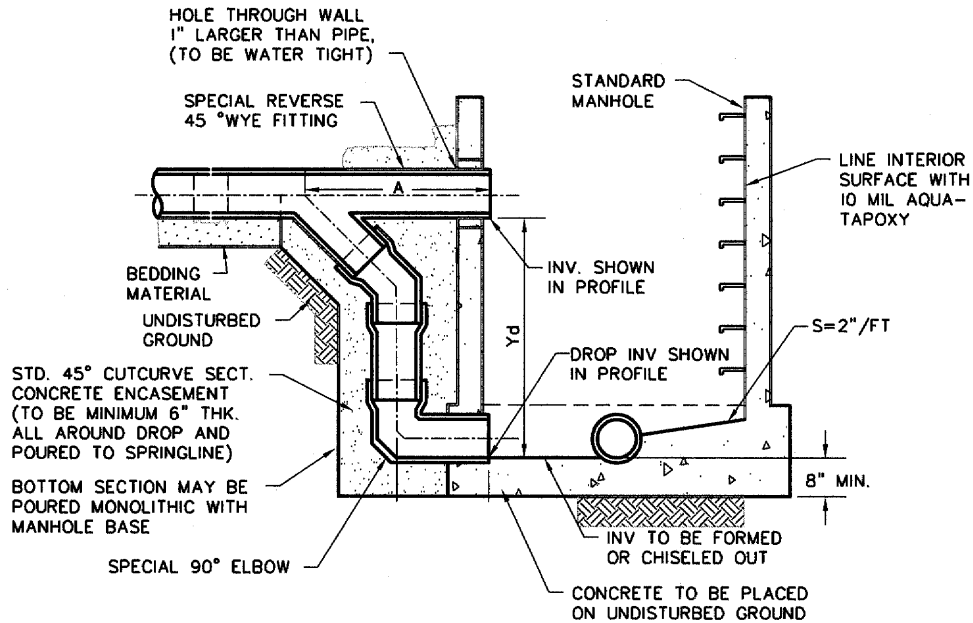
NO.	REVISIONS	DATE	BY

 SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO		S & G JOB NO: 92990-08
DESIGNED BY: KLK	GRANT WATER & SANITATION DIST.	
DRAWN BY: EAB	<div style="border: 2px solid black; padding: 10px; font-size: 24px; font-weight: bold;">MANHOLE STEPS</div>	
CHECKED BY: KGR		
DATE ISSUED: 7/4/95		
FILE NO: SCALE: N.T.S.		SHEET NO: S-7



SHALLOW DROP MANHOLE
NOT TO SCALE

d ₁	A	B	Y _d min.	Y _s min.
8	42	41	31	18
10	47	43	37	18
12	49	51	39	22
15	65	61	55	28



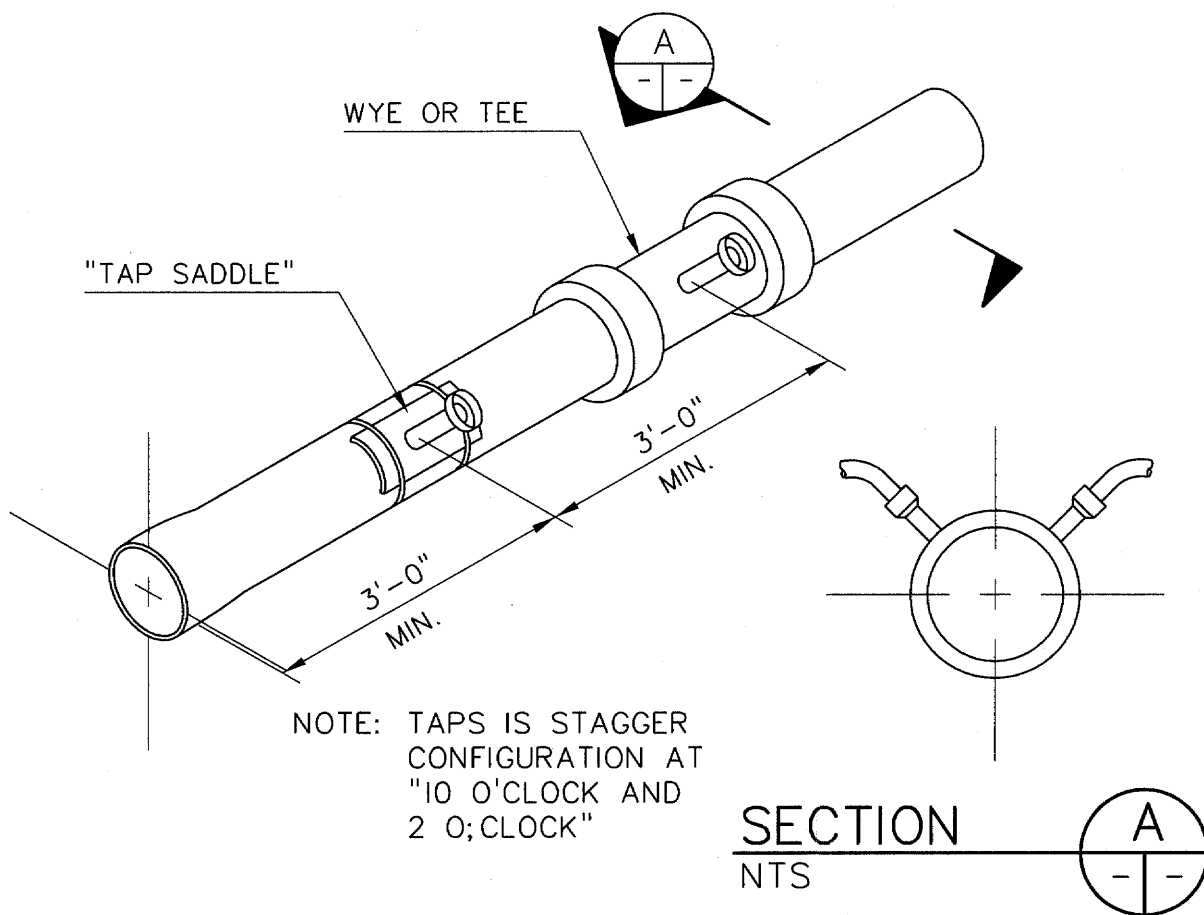
NOTE: WALL OPENING SHALL BE PRECAST BLOCKOUT. JACK HAMMERING NOT ALLOWED.

EXTERIOR DROP TYPE MANHOLE

NTS

NO.	REVISIONS	DATE	BY


		SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO
DESIGNED BY: KLK	GRANT WATER & SANITATION DIST.	S & G JOB NO: 92990-08
DRAWN BY: EAB	DROP MANHOLE	FILE NO.:
CHECKED BY: KGR		SCALE: N.T.S.
DATE ISSUED: 7/5/95		SHEET NO.: S-8

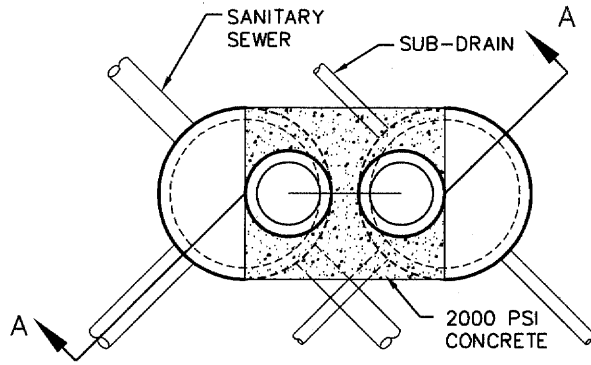


SEWER

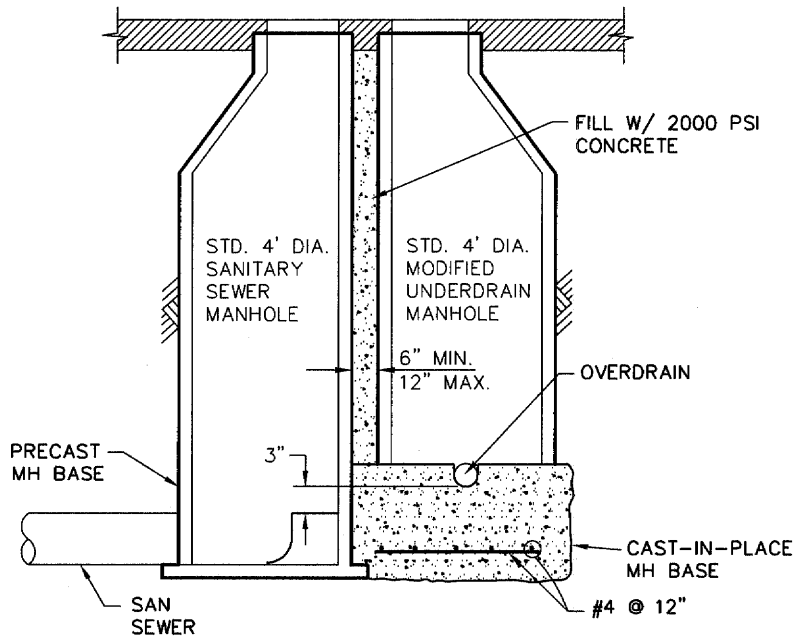
SERVICE CONNECTIONS – SEWER SERVICE CONNECTIONS SHALL BE POSITIONED AT EITHER THE 2 O'CLOCK OF THE 10 O'CLOCK POSITION OF THE CIRCUMFERENCE OF THE SEWER MAIN. ON NEW INSTALLATIONS, EITHER WYE OR TEE FITTINGS SHALL BE USED. WHEN TAPPING INTO AN EXISTING SEWER MAIN, A SADDLE CONNECTION AND APPROVED CORING METHOD SHALL BE USED. THE MINIMUM DISTANCE BETWEEN SERVICE CONNECTIONS MADE ALONG THE PIPE SHALL BE 3- FEET. THE MINIMUM DISTANCE FROM EITHER THE BELL OR SPIGOT END OF PIPE SHALL BE 3- FEET. THE MINIMUM DISTANCE FROM THE CENTER OF A MANHOLE TO A SERVICE CONNECTION SHALL BE EITHER 5- FEET OR THE TRANSITION POINT FROM THE MANHOLE TRENCH TO THE NORMAL PIPE TRENCH., WHICHEVER IS GREATER. A MAXIMUM OF 4 SEWER SERVICE CONNECTIONS SHALL BE ALLOWED 20- FOOT LENGTH OF PIPE. IN ALL CASES, A SPECIFIC SOILS INVESTIGATION SHOULD BE CONDUCTED TO ASSURE THAT THE EXTERNAL LOADING WILL BE WITHIN ALLOWABLE LIMITS REGARDLESS OF THE NUMBER OF TAPS INVOLVED.

NO.	REVISIONS	DATE	BY

CONSULTING ENGINEERS  SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO		S & G JOB NO: 92990-08
DESIGNED BY: KLK	GRANT WATER & SANITATION DIST.	FILE NO: N.T.S.
DRAWN BY: EAB	DOMESTIC SEWER TAP	SCALE: N.T.S.
CHECKED BY: KGR		SHEET NO: S-9
DATE ISSUED: 7/5/95		



PLAN




SECTION A-A

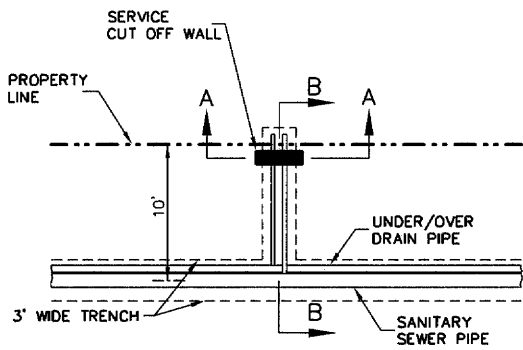
NOTE: IF SUB-DRAIN IS LOCATED BELOW SANITARY SEWER
USE PRECAST BASE FOR UNDERDRAIN AND CAST-
IN-PLACE FOR SANITARY SEWER

DOUBLE MANHOLE GROUTING DETAIL

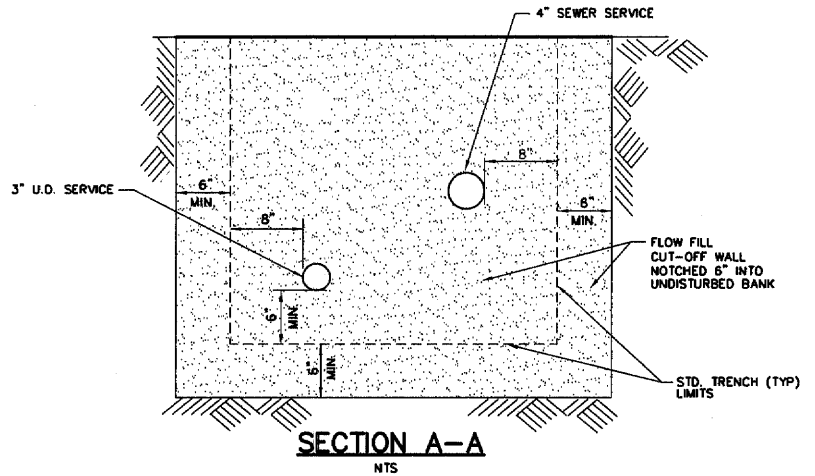
N.T.S.

NO.	REVISIONS	DATE	BY

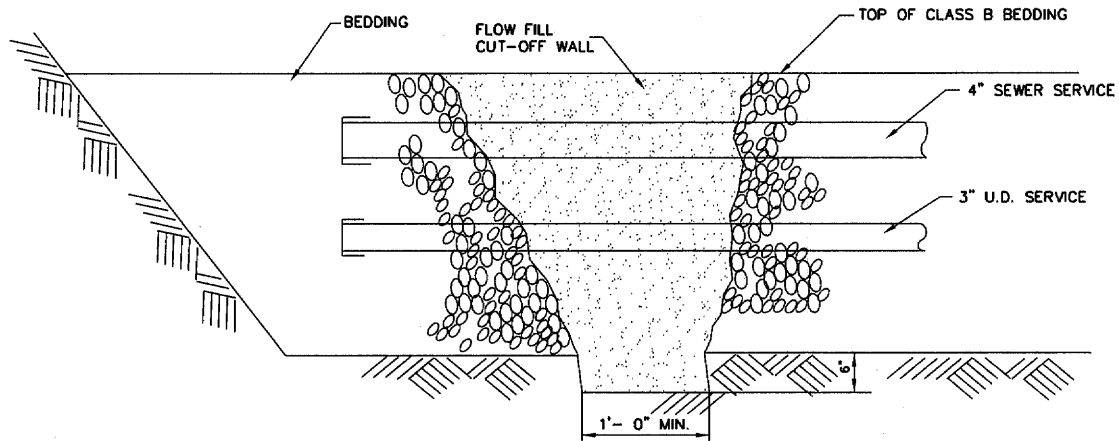
CONSULTING ENGINEERS  SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO		S & G JOB NO: 92990-08
DESIGNED BY: KLK	GRANT WATER & SANITARY DIST.	
DRAWN BY: EAB	DOUBLE MANHOLE GROUTING DETAIL	
CHECKED BY: KGR		
DATE ISSUED: 7/5/95		
FILE NO: SCALE: N.T.S.		SHEET NO: S-10



PLAN VIEW OF SANITARY & U.D. SERVICE CUT-OFF WALL
NTS



SECTION A-A
NTS

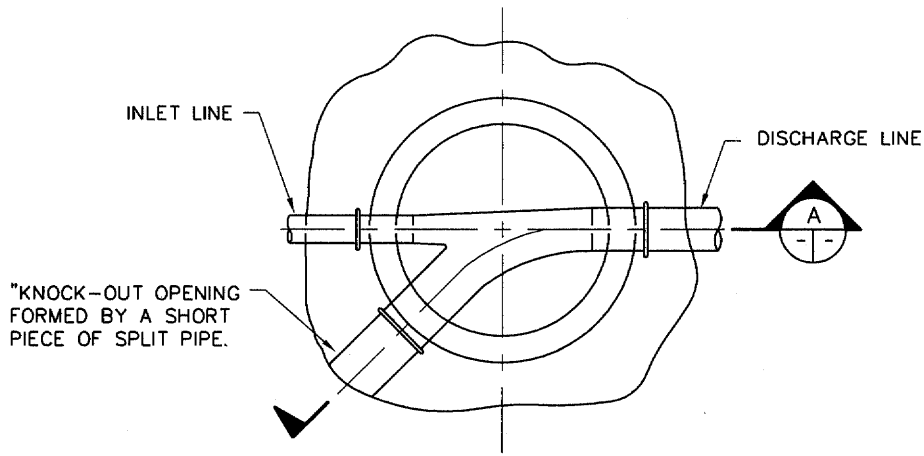


SECTION B-B
NTS

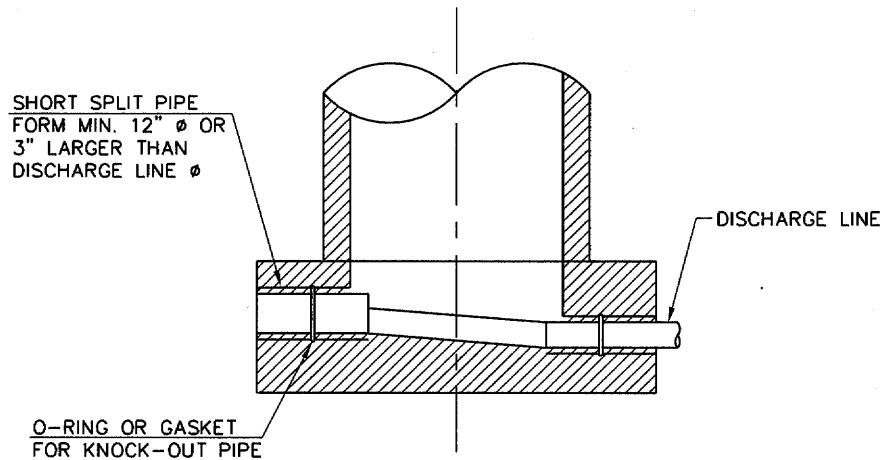
SANITARY AND UNDERDRAIN SERVICE CUTOFF WALL

NO.	REVISIONS	DATE	BY

<p>SELLARDS & GRIGG, INC. LAKWOOD, COLORADO</p>		<p>S & G JOB NO: 92990-08</p>
<p>DESIGNED BY: KLK</p>	<p>GRANT WATER & SANITATION DIST.</p>	
<p>DRAWN BY: EAB</p>	<p>SANITARY AND UNDERDRAIN SERVICE CUTOFF WALL</p>	
<p>CHECKED BY: KGR</p>		
<p>DATE ISSUED: 9/18/95</p>		
<p>FILE NO:</p>		<p>SCALE: N.T.S.</p>
<p>SHEET NO:</p>		<p>S-11</p>



NOTE: "KNOCK-OUT" OPENING IN BASE SHALL BE FORMED WITH A SHORT PIECE OF "SPLIT PIPE" AND BENCH FORMED ACCORDINGLY. THE PIPE SHALL BE A MINIMUM OF 12" IN DIA. OF 3" LARGER THAN THE DISCHARGE LINE SIZE. AN "O" RING GASKET SHALL BE USED ON THE LINE TO FORM A GASKET "KEY" FOR USE WHEN THE FUTURE PIPE IS CONSTRUCTED. AFTER THE CONCRETE HAS BEEN SET THE "SPLIT PIPE" SHALL BE BROKEN OUT AND THE CLOSED WITH BRICK AND MORTAR.




SECTION A-A

KNOCK-OUT MANHOLE

N.T.S.

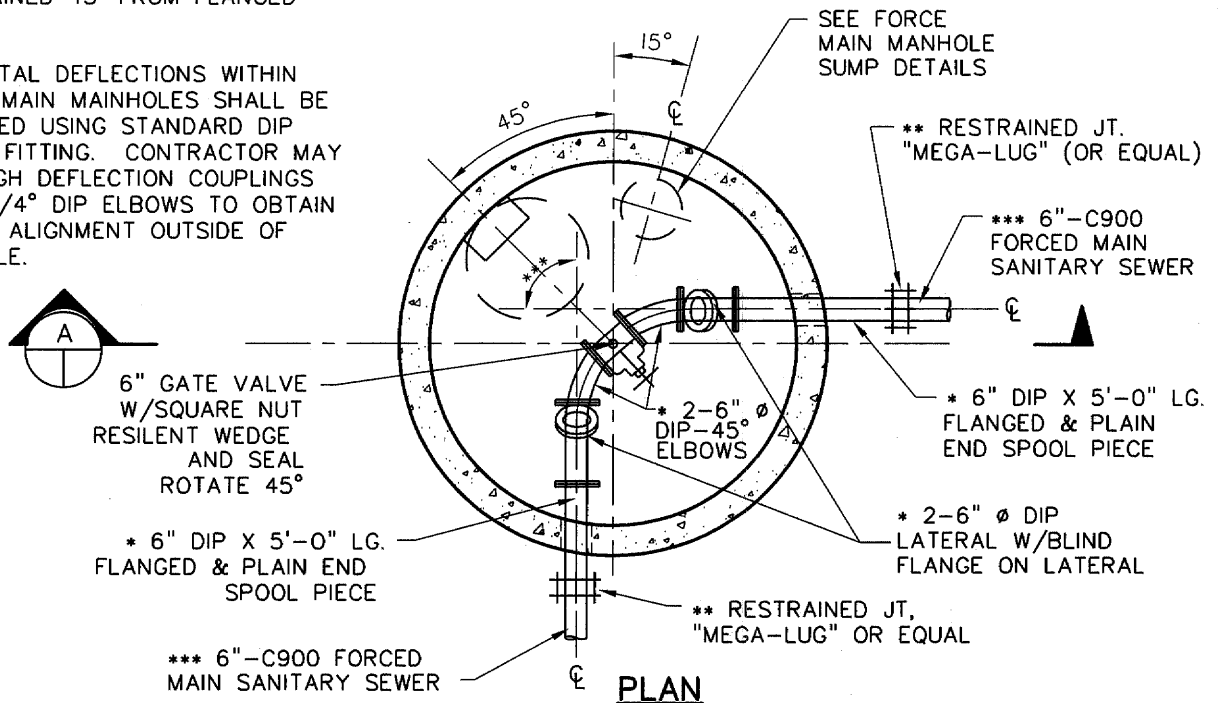
NO.	REVISIONS	DATE	BY

 SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO		S & G JOB NO: 92990-08
DESIGNED BY: KLK	GRANT WATER & SANITARY DIST.	
DRAWN BY: EAB	<div style="border: 1px solid black; padding: 10px; display: inline-block;"> KNOCK-OUT MANHOLE </div>	
CHECKED BY: KGR		
DATE ISSUED: 9/18/95		
SCALE: N.T.S.		SHEET NO: S-12

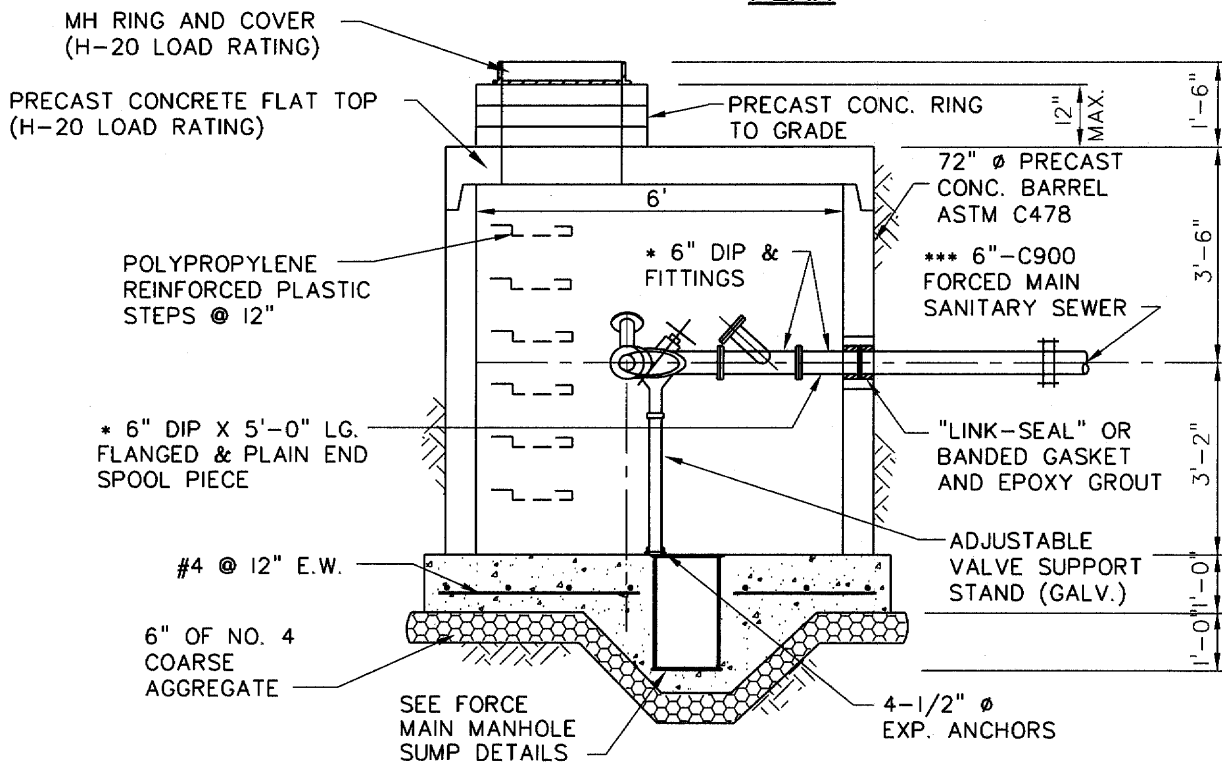
* ALL DIP PIPE FITTINGS SHALL BE EPOXY LINED PER SPECIFICATIONS.

** 6" FORCED MAIN SHALL BE RESTRAINED 45' FROM FLANGED JOINT.

*** HORIZONTAL DEFLECTIONS WITHIN FORCE MAIN MAINHOLES SHALL BE OBTAINED USING STANDARD DIP ELBOW FITTING. CONTRACTOR MAY USE HIGH DEFLECTION COUPLINGS OR 11 1/4° DIP ELBOWS TO OBTAIN DESIGN ALIGNMENT OUTSIDE OF MANHOLE.



PLAN




SECTION

SCALE: N.T.S.



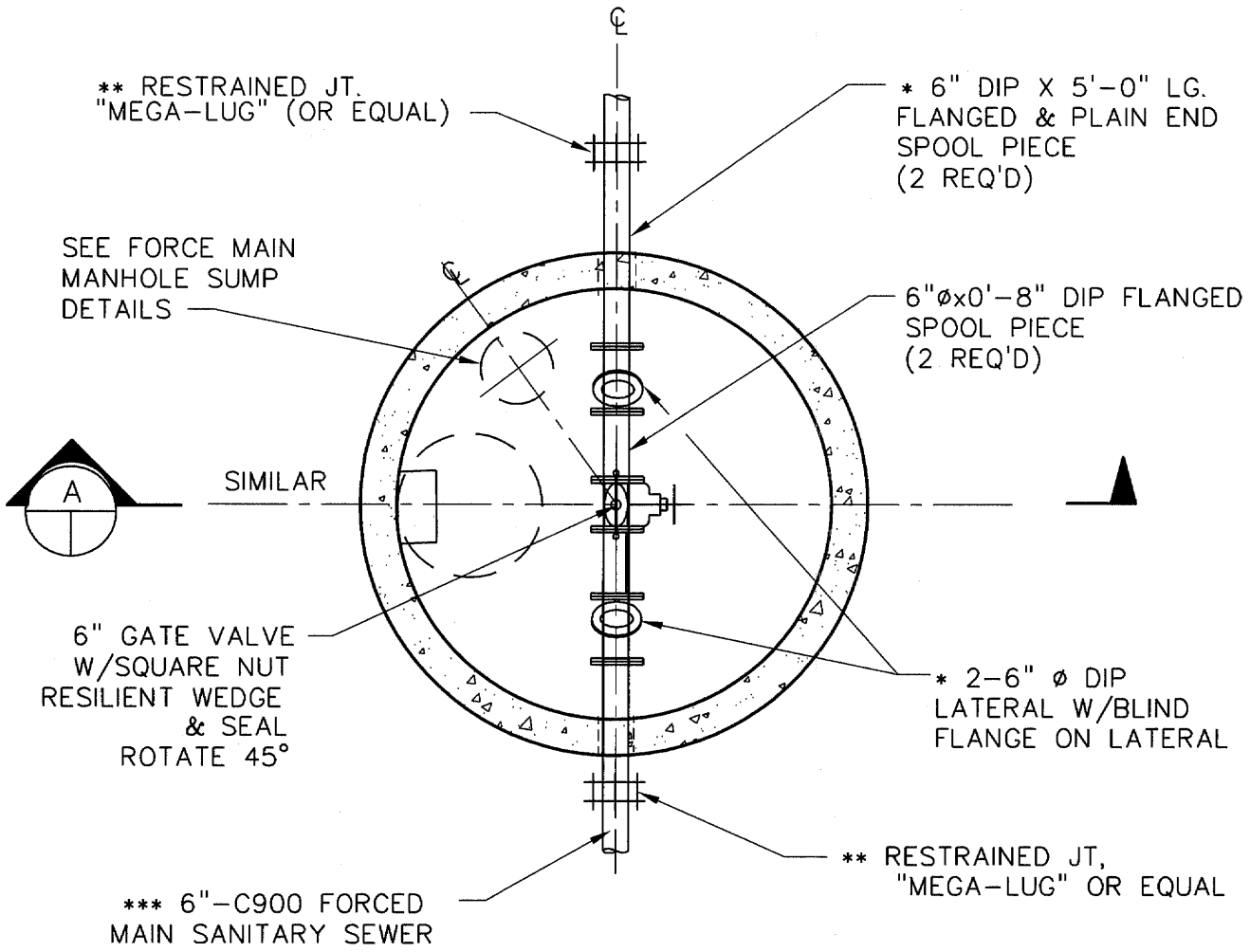
NO.	REVISIONS	DATE	BY


SELLARDS & GRIGG, INC.
 LAKEWOOD, COLORADO

DESIGNED BY: KGR
 DRAWN BY: GER
 CHECKED BY: KGR
 DATE ISSUED: -

GRANT WATER & SANITARY DIST.
FORCE MAIN MANHOLE DETAILS

S & G JOB NO: 92990-09
 FILE NO:
 SCALE: N.T.S.
 SHEET NO: S-13

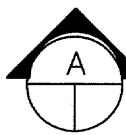


** RESTRAINED JT.
"MEGA-LUG" (OR EQUAL)

* 6" DIP X 5'-0" LG.
FLANGED & PLAIN END
SPOOL PIECE
(2 REQ'D)

SEE FORCE MAIN
MANHOLE SUMP
DETAILS

6" ϕ x 0'-8" DIP FLANGED
SPOOL PIECE
(2 REQ'D)



SIMILAR

6" GATE VALVE
W/SQUARE NUT
RESILIENT WEDGE
& SEAL
ROTATE 45°

* 2-6" ϕ DIP
LATERAL W/BLIND
FLANGE ON LATERAL

*** 6"-C900 FORCED
MAIN SANITARY SEWER

** RESTRAINED JT,
"MEGA-LUG" OR EQUAL

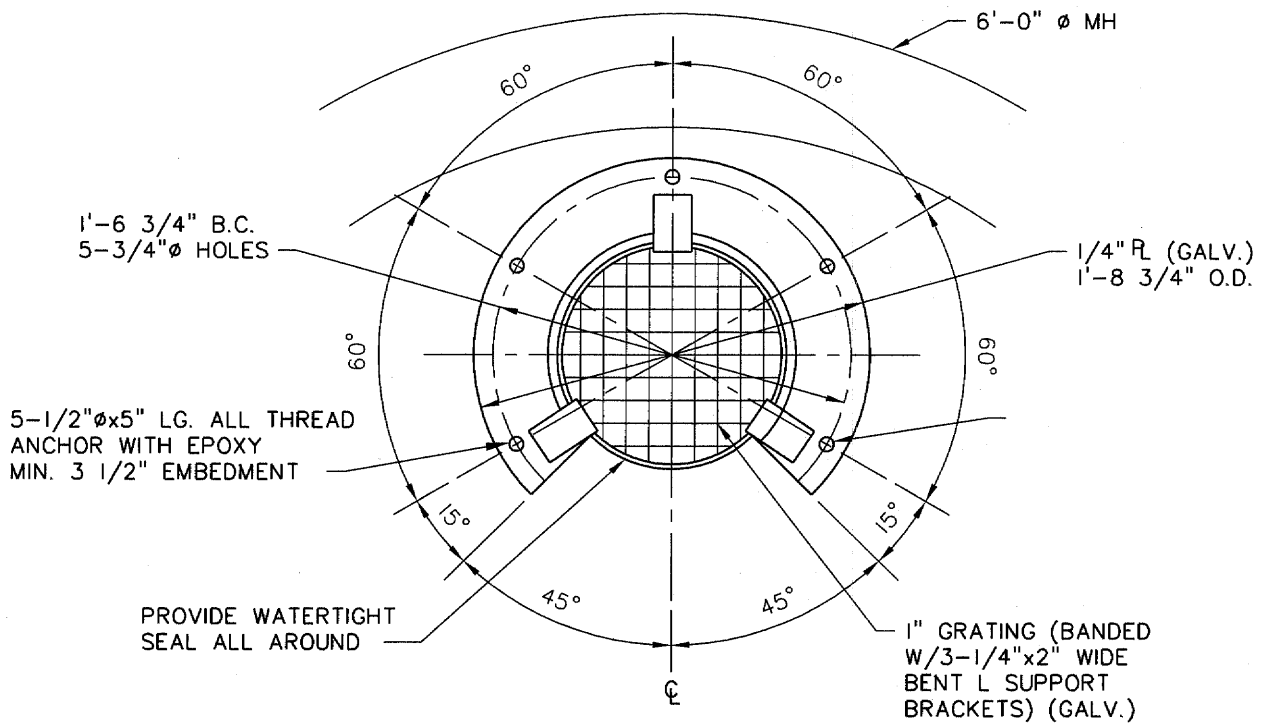
* ALL DIP PIPE FITTINGS SHALL BE
EPOXY LINED PER SPECIFICATIONS.

** 6" FORCED MAIN SHALL BE
RESTRAINED 45' FROM FLANGED
JOINT.

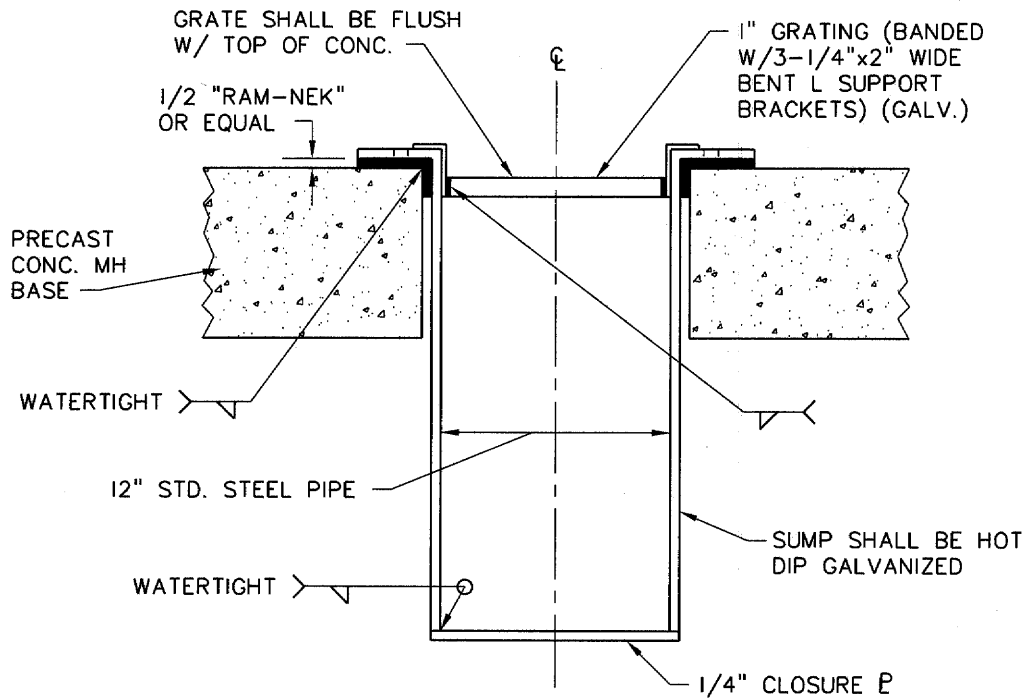
*** HORIZONTAL DEFLECTIONS WITHIN
FORCE MAIN MANHOLES SHALL BE
OBTAINED USING STANDARD DIP
ELBOW FITTING. CONTRACTOR MAY
USE HIGH DEFLECTION COUPLINGS
OR II 1/4° DIP ELBOWS TO OBTAIN
DESIGN ALIGNMENT OUTSIDE OF
MANHOLE.

NO.	REVISIONS	DATE	BY

		SELLARDS & GRIGG, INC. LAKEWOOD, COLORADO
DESIGNED BY: TWR	EAST JEFFERSON COUNTY SANITATION DISTRICT	
DRAWN BY: EMM	FORCE MAIN MANHOLE PLAN STRAIGHT THRU.	
CHECKED BY: TWR	S & G JOB NO: 2000644	FILE NO: S-14
DATE ISSUED: 9/2000	SCALE: N.T.S.	SHEET NO: S-14



PLAN



SECTION

NO.	REVISIONS	DATE	BY


SELLARDS & GRIGG, INC.
 LAKEWOOD, COLORADO

DESIGNED BY: KGR
 DRAWN BY: GER
 CHECKED BY: KGR
 DATE ISSUED: -

GRANT WATER & SANITARY DIST.

**FORCE MAIN MANHOLE
SUMP DETAILS**

S & G JOB NO: 92990-09
 FILE NO:
 SCALE: N.T.S.
 SHEET NO: S-15