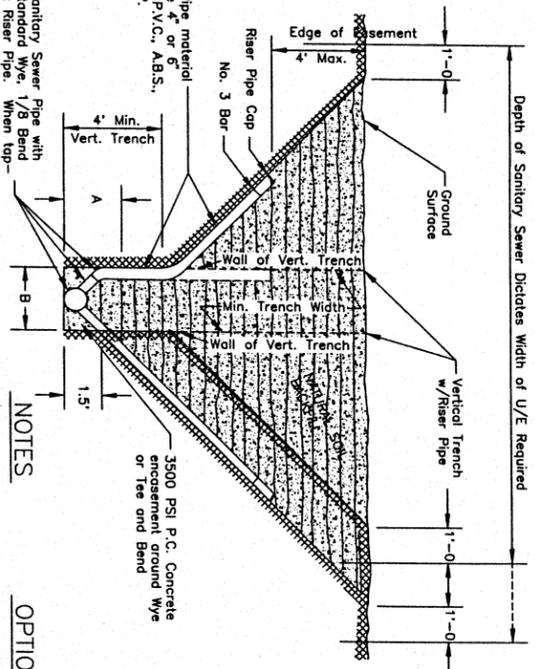


TYPICAL SECTION  
PAVING CUTS AND PERMANENT REPAIR



Pipe Size	A	B	Length of Conc. Encase
6"	1.5'	2.2'	2'
10"	2.0'	2.2'	2'
12"	2.0'	2.2'	2'
15"	2.5'	2.6'	2'

- Sanitary Sewer Pipe with standard Wye, 1/8 Bend & Riser Pipe. When toping an existing sewer a Wye Saddle will be used.
1. The Engineer shall submit detailed drawings for those special cases not depicted in this typical section.
2. Additional encasements will be required for depths greater than 12' deep.
3. Tests may be allowed in lieu of wyes.
4. Backfill or shoring will be required for all vertical riser pipe encasements with trenching operations with specifications. A trench box may be used in lieu of bracing or shoring.
5. Use No. 3 Bars to support San. Sewer Riser Pipe where required.

NOTES

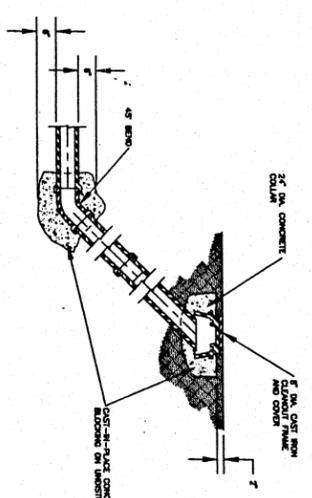
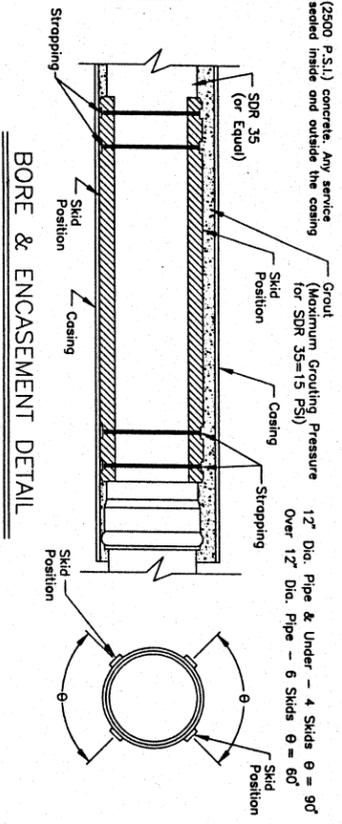
OPTIONS

1. All construction shall be in accordance with the GSDH Standards and Specifications and these plans and attached specifications. In case of conflict between documents, on interpretation shall be made by the Engineer.
2. Verified clay pipe joint material shall have resilient properties and conform to ASTM C425/72.
3. The Contractor shall be responsible for the safety of all utilities, either public or private as shown on these plans.
4. All work not classified as a contract pay item shall be considered as incidental and the cost thereof shall be included in the unit bid prices for items which are classified for payment.
5. Bid item "4" Dia. Manholes Complete, 0'-6" Deep" shall consist of furnishing all materials (including ring and cover) and constructing manholes complete up to 6' deep. Where manholes are greater than 6' deep, the cost of the additional vertical foot of wall shall be paid for as Extra Depth Manhole Walls.
6. Place P.C. Concrete (3500 P.S.I.) encasement around each wye connection in accordance with the Riser Pipe Detail shown on this sheet.
7. Water temp or water flush sand backfill as directed by the Field Engineer.
8. Backfill under existing and future paving with river sand.
9. Backfill with river sand around all existing waterlines exposed during construction, or other obstructions necessary for construction will not be paid for as such, but shall be included in the unit bid prices for other items.
10. The cost of removing or moving and replacing all fences, trees under 6" structures or other obstructions necessary for construction will not be paid for as such, but shall be included in the unit bid prices for other items.
11. Poly(Vinyl Chloride) Sewer Pipe, referred to hereinafter as PVC Plastic, shall conform to the requirements of ASTM Standard D3034 and only subsequent revisions thereto. PVC joints shall comply with Standard Specifications for Elastomeric Seals (Gaskets) for joining plastic pipe - ASTM F477.
12. Acrylonitrile-Butadiene-Styrene (ABS), hereinafter referred to as ABS, composite sewer pipe shall conform to ASTM D2680-72 and any subsequent revisions thereto. Ductile Iron Pipe shall be polyethylene lined and shall conform to the requirements of the Standards Specifications for the construction of Public Improvements and appurtenances.
13. Acrylonitrile-Butadiene-Styrene (ABS), hereinafter referred to as ABS, composite sewer pipe shall conform to ASTM D2680-72 and any subsequent revisions thereto. Ductile Iron Pipe shall be polyethylene lined and shall conform to the requirements of the Standards Specifications for the construction of Public Improvements and appurtenances.
14. Pipe leakage test shall be performed by the contractor in accordance with the Oklahoma State Department of Health Engineering Bulletin No. 0387, Standards for Water Pollution Control Facilities, Paragraph 21.3.2 (adopted April, 1989) for any pipe installed and tested. Test of pipe shall conform to test procedure described in ASTM C-828-80 entitled Low-Pressure Air Test of Verified Clay Pipe Lines or latest revision.
15. Deflection test shall be performed on all pipe. The test shall be conducted after the final backfill has been in place at least 30 days. No pipe shall exceed a deflection of 5% if the deflection test is to be run using a rigid ball or mandrel. It shall have a diameter equal to 95% of the inside diameter of the pipe. The test shall be performed without mechanical pulling devices.
16. Backfill material shall be compacted to 90% Standard Proctor Density. Compaction tests will be performed in accordance with the standard specifications.

TYPICAL SECTION  
TRENCH & RISER PIPE INSTALLATION

TABLE OF CASING SIZES

Normal Pipe Size (Inside Diameter)	Casing Size	Maximum Skid Support Spacing
4"	8" to 10"	4.7'
6"	10" to 12"	6.3'
8"	14" to 16"	7.4'
10"	18" to 11 1/2"	8.5'
12"	18" to 20"	9.6'
15"	20" to 22"	11.0'
18"	24" to 26"	12.0'
24"	31" to 33"	12.0'



1. Solvent cemented joints may be used in lieu of bell joints in order to reduce height of the casing of the centerline of the casing. Solvent cemented joints will be made in accordance with ASTM D2855. The solvent cement must comply with the requirements of ASTM D2564. Handling of the solvent cements will be in accordance with ASTM F402.
2. Skid supports will be used and fastened securely to pipe with steel strapping. Skid supports will be used and fastened securely to pipe with steel strapping. Skid supports will be used and fastened securely to pipe with steel strapping. Skid supports will be used and fastened securely to pipe with steel strapping.
3. Plug both ends of the casing with Class "C" (2500 P.S.I.) concrete. Any service openings in the casing will be sealed inside and outside the casing with Class "C" (2500 P.S.I.) concrete.

BORE & ENCASUREMENT DETAIL

CLEANOUT DETAILS

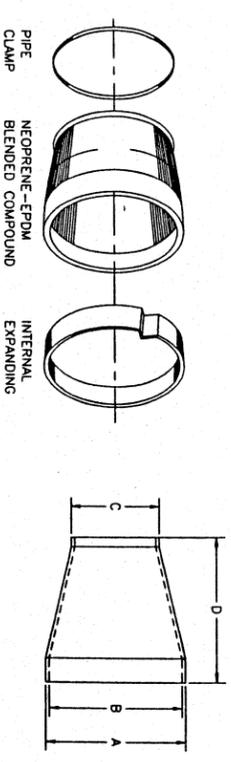
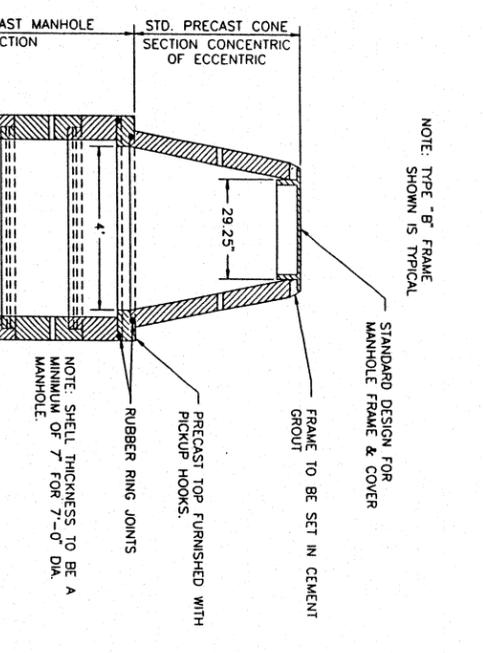
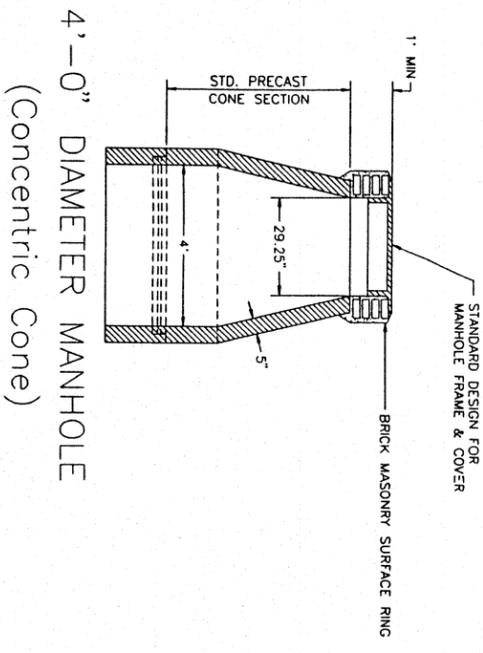
GENERAL CONSTRUCTION NOTES

City of  
Duncan, Oklahoma

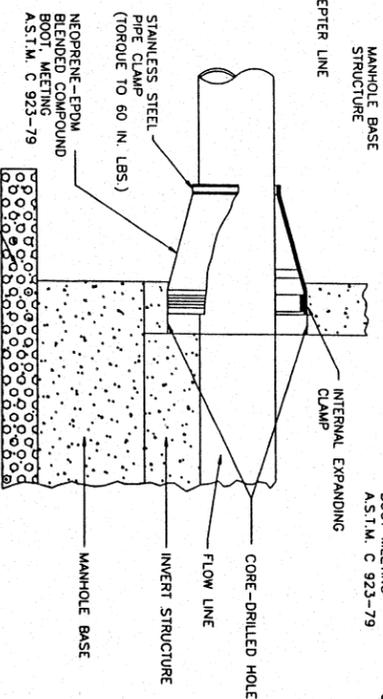
DATE: 10/93  
DESIGNED: GTC  
CHECKED: GTC  
APPROVED: GSI  
DRAWN: CCG  
PROJ.:

GENERAL NOTES

1. ALL PRECAST COMPONENTS SHALL BE REINFORCED WITH THE RESPECTIVE A.S.T.M. SPECIFICATIONS. (C-478-72)
2. REINFORCED CONCRETE WALL THICKNESS SHALL BE COVERED BY A.S.T.M. SPECIFICATIONS.
3. ALL JOINTS SHALL HAVE APPROVED RUBBER RINGS.
4. ALL LIFTING HOLES SHALL BE REPAIRED WITH A MIXTURE OF CEMENT AND SAND GROUT FIRMLY PACKED.
5. THE INTERIOR SURFACES OF MANHOLE AND CONE SECTIONS SHALL BE COATED WITH TWO COATS OF INERTOL OR APPROVED EQUAL.
6. ALL MASONRY FOR HANDWORK SHALL CONFORM TO STANDARD SPECIFICATIONS.
7. ALL CASTINGS SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
8. THE MINIMUM COMPRESSIVE STRENGTH OF THE CONCRETE IN MANHOLE AND CONE SECTIONS SHALL BE 4,000 P.S.I.



5'-0", 6'-0", 7'-0" DIAMETER MANHOLE

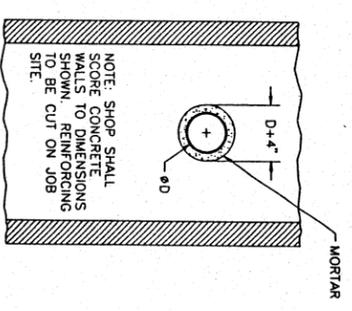


NOTE: ALL CLAMPS SHALL BE STAINLESS STEEL.

SUGGESTED PIPE O.D. RANGE	HOLE & BOOT DIAMETER DIMENSIONS			
	A	B	C	D
3.5" - 4.5"	7"	6.125"	4.25"	6"
5.375" - 7.0"	12"	10.875"	6.5"	8"
7.0" - 8.5"	12"	10.875"	8"	8"
8.1875" - 9.75"	12"	10.875"	9.25"	8"
9.25" - 11.0"	16"	14.875"	10.5"	8"
10.75" - 12.5"	16"	14.875"	12"	8"
12.0" - 12.75"	16"	14.875"	13.25"	8"
14.5" - 16.25"	20"	18.875"	15.75"	8"
15.75" - 17.5"	20"	18.875"	17"	8"
19.5" - 21.25"	24"	22.875"	20.75"	8"

PIPE INSTALLATION DETAIL

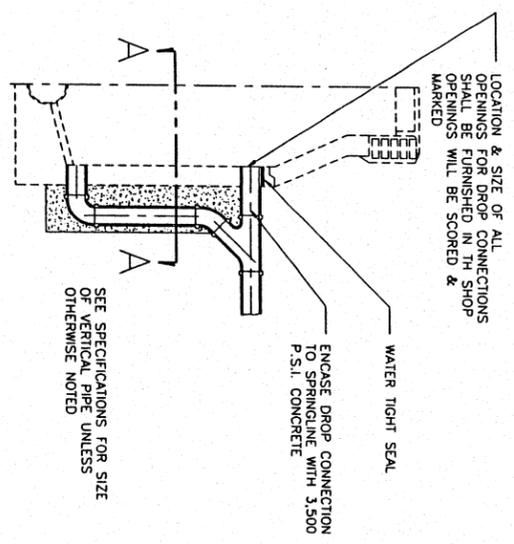
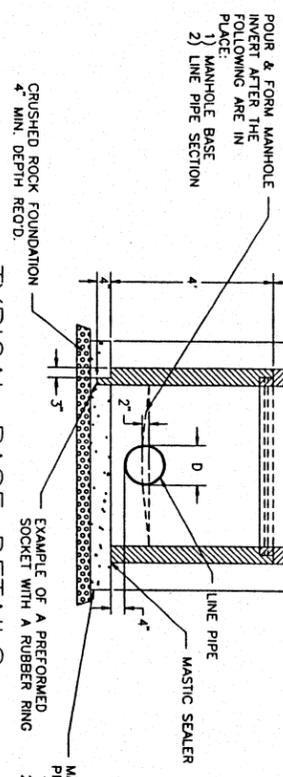
NOT TO SCALE



PIPE CONNECTION DETAILS

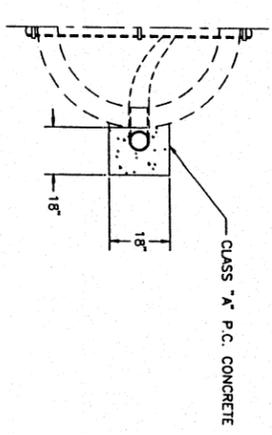
- MANHOLE BOTTOM WILL BE POURED OR PRECAST PRECAST SHALL BE OF TWO TYPES:
- 1) FLAT PRECAST WITH MASTIC SEALER OR
  - 2) BOTTOM WITH PREFORMED SOCKET TO ACCEPT A RUBBER RING.

TYPICAL BASE DETAILS  
4'-0" DIAMETER MANHOLE  
(Eccentric Cone)



DROP MANHOLE CONNECTION

SECTION A-A



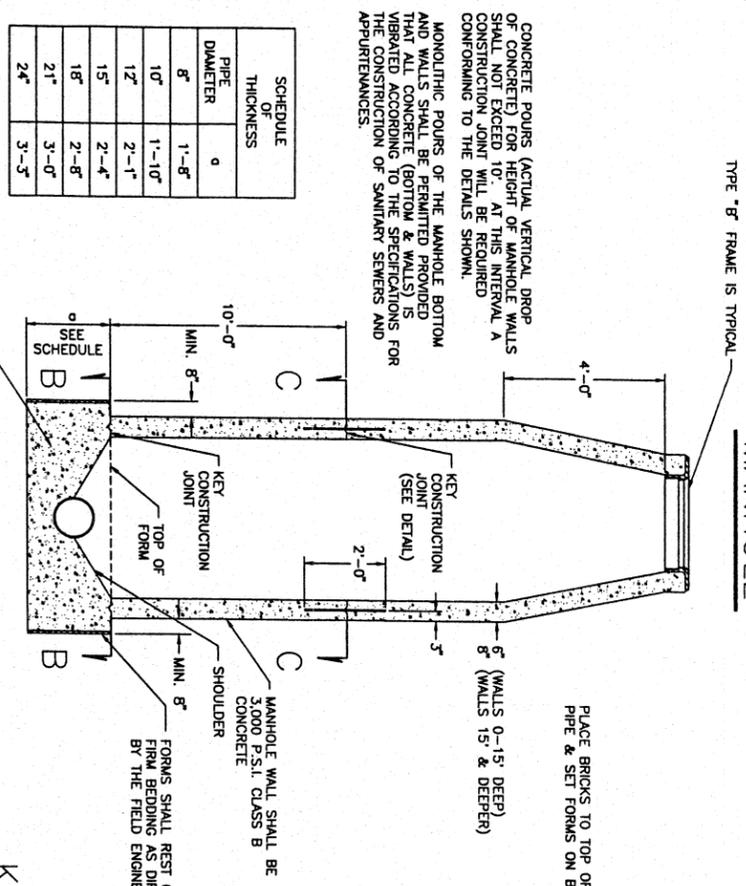
SCALE

City of Duncan, Oklahoma

DATE:	
DESIGNED:	
CHECKED:	
APPROVED:	
DRAWN:	JMB
PROJ.:	

STANDARD DETAILS  
PRE-CAST MANHOLES

### STANDARD POURED-IN-PLACE MANHOLE



CONCRETE POURS (ACTUAL VERTICAL PROPORTION OF CONCRETE) FOR HEIGHT OF MANHOLE WALLS SHALL NOT EXCEED 10' AT THIS INTERVAL. A CONSTRUCTION JOINT WILL BE REQUIRED CONFORMING TO THE DETAILS SHOWN.

MONOLITHIC POURS OF THE MANHOLE BOTTOM AND WALLS SHALL BE PERMITTED PROVIDED THAT ALL CONCRETE (BOTTOM & WALLS) IS VIBRATED ACCORDING TO THE SPECIFICATIONS FOR THE CONSTRUCTION OF SANITARY SEWERS AND APPURTENANCES.

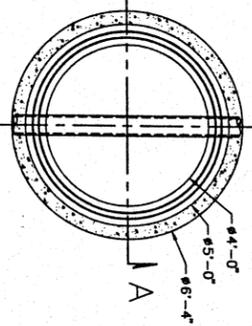
3500 P.S.I. CLASS A CONCRETE

### CASTING WEIGHTS (FOR COVERS)

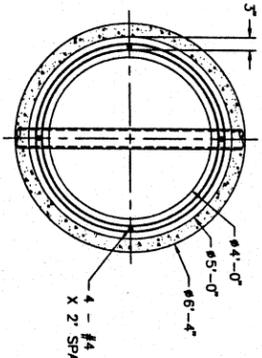
THE AVERAGE WEIGHTS OF CASTING WILL NOT BE LESS THAN 98% OF WEIGHTS SHOWN BELOW.

WEIGHTS OF INDIVIDUAL CASTINGS SHALL NOT BE LESS THAN 95% OF WEIGHTS SHOWN BELOW.

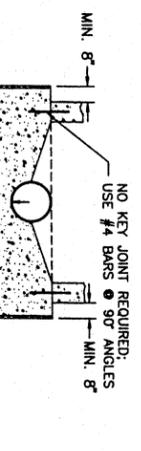
TOTAL TYPE "A" 300 LBS.  
TOTAL TYPE "B" 551 LBS.



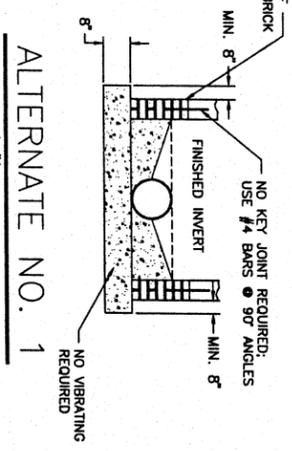
SECTION B-B



SECTION C-C

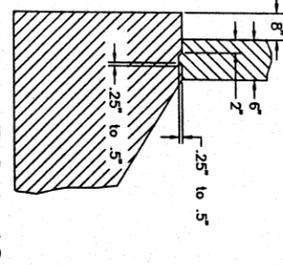


ALTERNATE NO. 1



ALTERNATE NO. 1

### KEY CONSTRUCTION JOINT DETAIL FOR BOTTOM & WALLS



SCALE = 2X

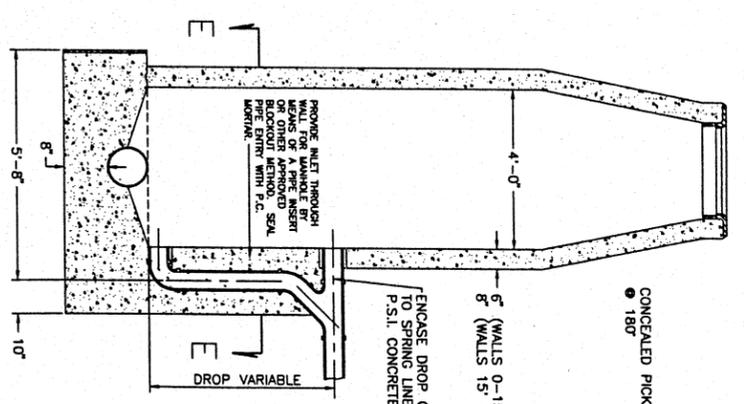
THIS MANHOLE IS STANDARD ONLY FOR SEWERS 36" IN DIAMETER OR LESS. PROVIDED THAT AT JUNCTION POINTS, SPECIAL MANHOLES MAY BE REQUIRED FOR SEWERS SMALLER THAN 36" IN DIAMETER.

INTERIOR SURFACES OF ALL MANHOLE WALLS SHALL RECEIVE TWO (2) COATS OF INERTOL (BLACK SEWER TYPE) PAINT, A MINIMUM INTERVAL OF 24 HOURS SHALL ELAPSE BETWEEN APPLICATIONS OF COATINGS.

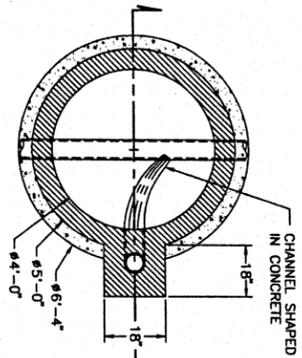
FORMS SHALL BE PROVIDED FOR THE SHAPING & FINISHING OF THE MANHOLE BOTTOMS. A MINIMUM OF 24 HOURS SHALL ELAPSE PRIOR TO POURING OF MANHOLE WALLS. CONSTRUCTION OF MANHOLE BOTTOM SHALL COMPLY WITH THE STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF SANITARY SEWERS AND APPURTENANCES.

MORTAR FOR FINISHING AND SEALING SHALL BE CLASS "C". ANY HONEYCOMBING OF CONCRETE LESS THAN 1/2" MORTAR.

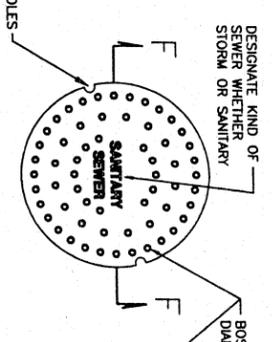
### STANDARD POURED-IN-PLACE DROP MANHOLE



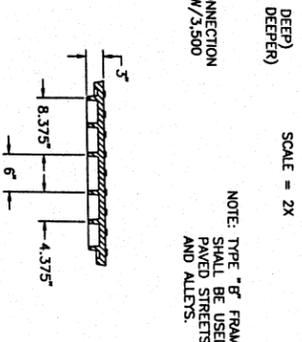
SECTION D-D



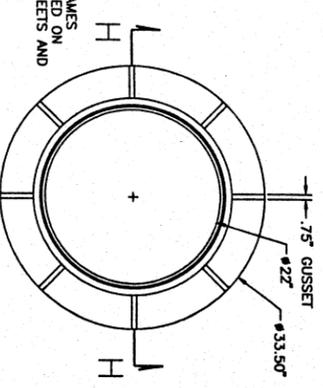
SECTION E-E



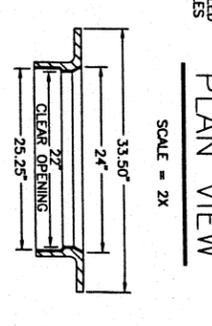
MANHOLE COVER  
PLAN VIEW



SECTION F-F  
STANDARD COVER



TYPE A  
STANDARD FRAME  
PLAN VIEW



TYPE B  
STANDARD FRAME  
PLAN VIEW

GENERAL NOTES

- CASTING SHALL CONFORM TO THE A.S.T.M. SPECIFICATIONS FOR GRAY-IRON CASTINGS, SERIAL DESIGNATION A 48-74.
- WHEN EACH COVER IS PLACED IN ANY POSITION IN ITS ASSOCIATED FRAME, THE SIDE PLAY IN ANY DIRECTION SHALL NOT EXCEED ONE-EIGHTH (1/8) INCH.
- NO WORDING OR MARKINGS OF ANY KIND, OTHER THAN THOSE SHOWN ON THE PLAN, WILL BE PERMITTED ON THESE CASTINGS.



SCALE

City of Duncan, Oklahoma	DATE: 9/73
DESIGNED:	CHECKED:
APPROVED:	APPROVED:
DRAWN: JMB	PROJ: