

# HUNTWOOD TERRACE

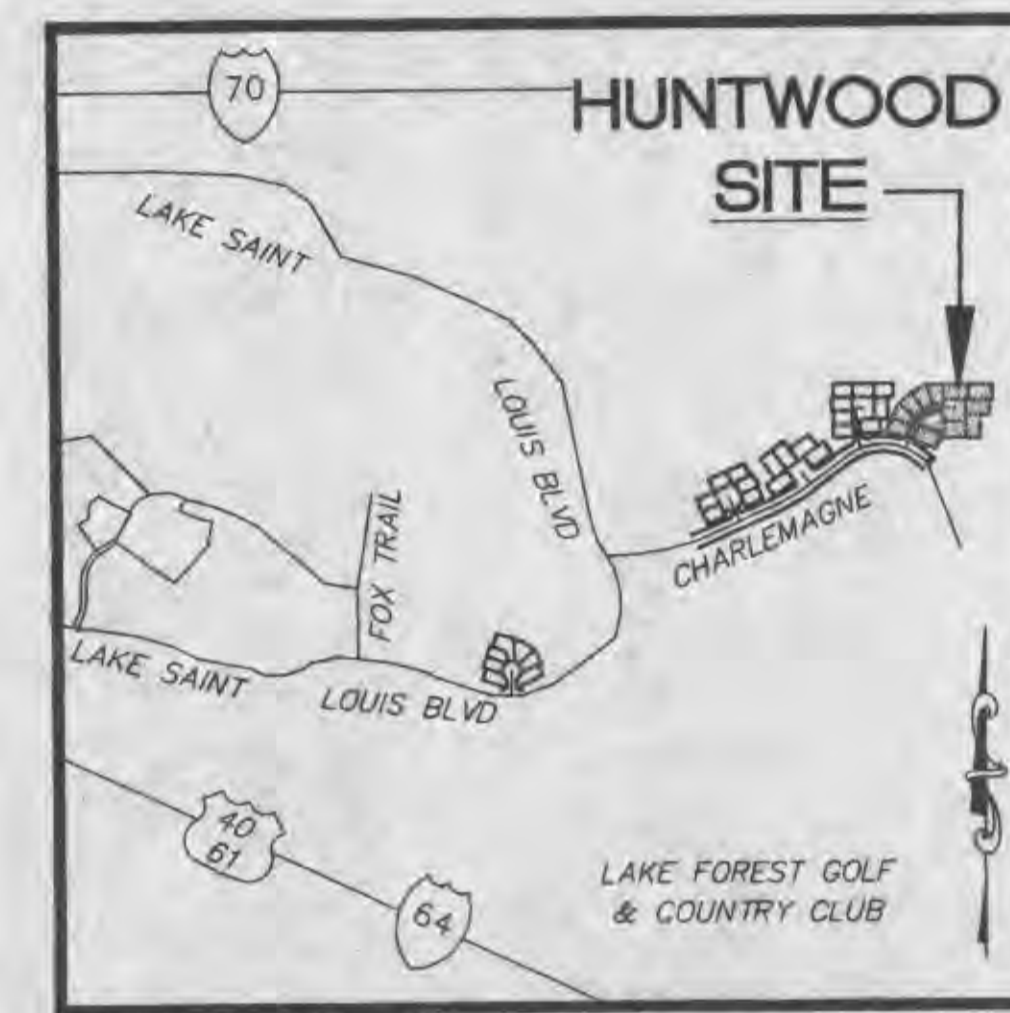
PART OF LAKE SAINT LOUIS PATIO COVE PLAT NO. THREE PB25, PG583  
A TRACT OF LAND IN FRACTIONAL SECTION 36,  
TOWNSHIP 47 NORTH, RANGE 2 EAST  
ST. CHARLES COUNTY, MISSOURI

## IMPROVEMENT PLANS

### 12 LOTS

#### CITY OF LAKE SAINT LOUIS GENERAL NOTES

- Gas, water and other underground utilities shall not conflict with the depth or horizontal locations of existing and proposed sanitary and storm sewers, including house laterals.
- Underground utilities have been plotted from available information and, therefore, their locations must be considered approximate only. The verification of the location of underground utilities, either shown or not shown on these plans, shall be the responsibility of the contractor and shall be located prior to grading or construction of improvements.
- Polyvinyl Chloride (PVC) shall conform to the requirements of ASTM D-3034 Standard Specifications for the PSM Polyvinyl Chloride (PVC) Sewer Pipe and Fittings, SDR-35.
- Storm sewers 18" in diameter or smaller shall be ASTM C-14.
- Storm sewers 21" in diameter or larger shall be ASTM C-76, Class II.
- All storm sewer pipe under pavement, regardless of size, shall be reinforced concrete pipe (ASTM C-76, Class III) unless noted otherwise in the plans.
- Corrugated metal pipe shall conform to the standard specifications for corrugated culvert pipe M-36, A.A.S.H.T.O. See plans for gauge.
- Topsoil shall be stored and used for the finishing of lot grading.
- All filled places under buildings, proposed sanitary and storm sewer lines, and/or paved areas including trench backfills, and all earthen filled places within State, County, or City roads (highways), shall be compacted to at least 90% of the maximum dry density as determined by the "Modified A.A.S.H.T.O. T-190 Compaction Test" (ASTM D-1557) unless otherwise specified by the local governing authority specifications. All tests will be verified by a soils engineer.
- All storm and sanitary trench backfills shall be water juffed. 1" clean rock compacted in place will be under paved areas.
- Easements shall be provided for storm sewers, sanitary sewers, and all utilities on the record plat. See record plat for location and size of easements. This does not apply to house laterals.
- No area shall be cleared without the permission of the City Engineer and Developer.
- All proposed grades shall be within 0.2 feet (more or less) of those shown on the grading plan.
- No slope shall be greater than 3:1 and shall be either sodded or seeded and mulched or stabilized as determined by the City Engineer.
- All manholes and curb inlet tops built without elevations furnished by the Engineer will be the responsibility of the sewer contractor. At the time of construction stake-out of the sewer lines, all curb and grate inlets will be face staked. If normal face stakes fall in line with sewer construction, the Engineer will set these stakes on a double offset. It shall be the responsibility of the sewer contractor to preserve all face stakes from destruction.
- All standard street curb inlets to have front of inlet 2 feet behind curb.
- The minimum vertical distance from the low point of the basement to the flowline of a sanitary sewer at the corresponding house connection shall not be less than the diameter of the sanitary sewer plus a vertical distance not less than two and one-half feet (2-1/2').
- Water lines, valves, sleeves, meters and etc., shall meet all specifications and installation requirements of the local governing authority.
- All cast iron pipe for water mains shall conform to A.W.W.A. specification C-106 and/or C-108. The cast iron fittings shall conform to A.W.W.A. specification C-110. All rubber gasket joints for water cast iron pressure pipe and fittings shall conform to A.W.W.A. specification C-111.
- All water hydrants and valves shall be cast iron and installed in accordance with plans and details.
- All sanitary and storm sewers shall meet all specifications and installation requirements of the local governing authority.
- All PVC water pipe shall have a minimum pressure rating of PR-200 or SDR-21.
- All PVC sanitary sewer pipe shall be DR-35 or equal with crushed stone bedding uniformly graded between 1" and 1/4" size. This bedding shall extend from 6" below the pipe to 12" above the top of the pipe.
- All grading on Missouri State Highway and City of Lake Saint Louis Right-of-way shall be seeded and mulched and all disturbed right-of-way markers shall be reset at the completion of grading.
- All streets must meet the specifications and installation requirements of the City of Lake Saint Louis.
- All sanitary manholes top shall be set 0.2' higher than the proposed ground except in pavement areas.
- All sanitary manholes shall have a 31 mil thick coat of coal tar pitch waterproofing.
- All sanitary service lines shall have a 6" diameter for Multi-family and a 5" diameter for single-family developments.
- Manhole frame and cover shall be Clay and Bell No. 2008 or Heesch R-1738 or Diester 1315 or approved equal.
- A drop of 0.2 feet is required through each sanitary manhole.
- The City of Lake Saint Louis shall be notified at least 48 hours prior to construction of sanitary sewers for coordination and inspection.
- Brick shall not be used on manholes.
- Sewer contractor shall maintain 24" vertical separation between all storm sewers and the sludge force main. Contractor shall be responsible for verifying separation prior to storm sewer installation.
- Waterproofing: Waterproofing will be required on the exterior of all manholes. The bitumen shall consist of two coats of asphalt, coat-for-pitch, or a coating meeting American Society for Testing and Materials (ASTM) D-41. Asphalt shall conform to the requirements of ASTM D 449. Coat-for-pitch shall conform to the requirements of ASTM D-450. Coating shall be 31 mils thickness.
- The grading and elevations shown on the grading plan are for construction purposes only. Finished grades and slopes will vary from those shown on the plans depending upon the location, size and type of house built on the lot. However, care should be taken to insure that finished grading conforms to drainage area maps.
- All excavations, grading, or filling shall have a finished grade not to exceed a 3:1 slope (33%) - Steeper grades may be approved by the City Engineer if the excavation is through rock or the excavation or the fill is adequately protected (a designed head wall or toe wall may be required). Retaining walls that exceed a height of four (4) feet shall require the construction of safety guards as identified in the appropriate section(s) of the adopted BOCA Codes and must be approved by the City Building Department. Permanent safety guards will be constructed in accordance with the appropriate section(s) of the adopted BOCA Codes.
- Sediment and erosion control plans for sites shall provide for sediment or debris basins, silt traps or filters, staked straw bales or other approved measures to remove sediment from run-off waters. The design to be approved by the City Engineer. Temporary siltation control measures (structures) shall be maintained until vegetative cover is established at a sufficient density to provide erosion control on the site. (Refer to Appendix A.)
- Where natural vegetation is removed during grading, vegetation shall be re-established in such a density as to prevent erosion. Permanent type grasses shall be established within 30 days or less if during the seedling period after grading has been completed. (Refer to Appendix A.)
- When grading operations are completed or suspended for more than 30 days permanent grass must be established of sufficient density to provide erosion control on the site. Between permanent grass seeding periods, temporary cover shall be provided according to the City Engineer recommendation. (Refer to Appendix A.)
- All finished grades (areas not to be disturbed by future improvements) in excess of 20% slopes (S:1) shall be mulched and laced at the rate of 100 pounds per 1,000 square feet when seeded.
- Provisions shall be made to accommodate the increased runoff caused by changed soil and surface conditions during and after grading unvegetated open channels shall be designed so that gradients result in velocities of 2 fps (feet per second) or less. Open channels with velocities more than 2 fps and less than 5 fps shall be established in permanent vegetation by use of commercial erosion control blankets or lined with rock, baffle or concrete or other suitable materials as approved by the City Engineer. Detention basins, diversions, or other appropriate structures shall be constructed to prevent velocities above 5 fps. (Refer to Appendices B, C, D, E, and F.)
- The adjoining ground to development sites (lots) shall be provided with protection from accelerated and increased surface water, silt from erosion, and any other consequences of erosion. Run-off water from developed areas (parking lots, paved sites and buildings) above the area to be developed shall be directed to diversions, detention basins, concrete gutters and/or underground outlet systems. Sufficiently anchored straw bales may be temporarily substituted with the approval of the City Engineer. (Refer to Appendices B, C, D, E and F.)
- Front and side yards shall be sodded. Rear yards shall be seeded or sodded. Cash escrows can be established during winter months to allow occupancies during unfavorable ground conditions.
- All erosion control devices shall be constructed and in place prior to grading. A staging area shall be provided next to the grading area. This area will be used for storage and project staging. The staging shall have all erosion control devices in place prior to construction.
- All erosion control must be installed as shown on Sediment / Erosion Control Detail sheet.
- Site is served by or located in the following:  
A) Water - St. Charles County Water District No. 2  
B) Sanitary Sewers - St. Charles County Water District No. 2  
C) Gas - St. Charles Gas Company  
D) Telephone - GTE Missouri  
E) Fire - Lake St. Louis Fire Protection District  
F) Electric - Culver River Electric  
G) School - Wentzville "R-4" School District  
H) Cable TV - AT&T
- Perforated tin grates, schedule 40 or better 4" in diameter with fabric sleeve shall be provided at all low points within the vertical profile of the streets, and connected to curb inlets or manholes.



LOCATION MAP  
NTS

#### DRAWING INDEX

Sheet	Description
1	COVER SHEET
2	SITE PLAN
3	PROFILES AND DETAILS
4	EROSION CONTROL DETAILS
5-10	CONSTRUCTION DETAILS

#### LEGEND

Sanitary Sewer (Proposed)	Sanitary Structure	R.C.P.	Reinforced Concrete Pipe	
Sanitary Sewer (Existing)	Storm Structure	C.M.P.	Corrugated Metal Pipe	
Storm Sewer (Proposed)	Test Hole	C.I.P.	Cast Iron Pipe	
Storm Sewer (Existing)	Power Pole	P.V.C.	Polyvinyl Chloride	
Water Line & Size	Light Standard	V.C.P.	Vitrified Clay Pipe	
Existing water line	Double Water Meter Setting			
Tee & Valve	Single Water Meter Setting	C.O.	Clean Out	
Hydrant	C.I.	Curb Inlet	V.T.	Vent Trap
Cap	S.C.I.	Skewed Curb Inlet	T.B.R.	To Be Removed
18 Lot or Building Number	D.C.I.	Double Curb Inlet	T.B.R.&R	To Be Removed & Relocated
Existing Fence Line	G.I.	Grate Inlet	T.B.P.	To Be Protected
Existing Tree Line	A.I.	Area Inlet	T.B.A.	To Be Abandoned
Street Sign	D.A.I.	Double Area Inlet	B.C.	Base Of Curb
Existing Contour	C.C.	Concrete Color	T.C.	Top Of Curb
Proposed Contour	F.E.	Flared End Section	T.W.	Top Of Wall
Grouted Rip-Rap	E.P.	End Pipe	B.W.	Base Of Wall
End of Lateral	E.D.	Energy Dissipator	(TYP)	Typical
Asphalt Pavement	M.H.	Manhole	U.N.O.	Unless Noted Otherwise
Concrete Pavement	C.P.	Concrete Pipe	U.I.P.	Use In Place

#### REVISIONS

REVISED PER L.S. - 8-25-99 - CBD/SLH  
REVISED - 11-06-00 - KDN  
REVISED NOTE 46 PER CITY, 3-12-01, RM

BENCHMARK : U.S.G.S. DATUM  
ELEVATION = 508.91  
CHISELED CROSS (+) ON NORTHWEST WINGWALL ON  
U.S. HIGHWAY 40-61 BRIDGE WESTBOUND LANES  
OVER PERDUE CREEK AT SOUTH END OF LAKE  
SAINT LOUIS

# PICKETT RAY & SILVER INC.

Civil Engineers  
Planners  
Land Surveyors

333 Mid Rivers Mall Dr.  
St. Peters, MO 63376

387-1211 FAX 387-1104

ENGINEERS AUTHENTICATION  
The responsibility for professional engineering liability on this project is hereby limited to the act of those authorized by the seal, signature and date hereunder attested. Responsibility is disclaimed for all other engineering plans prepared in the project and specifically includes revisions after the date unless re-attested.

PICKETT, RAY & SILVER, INC.



#### DEVELOPER

GREATER MISSOURI BUILDERS INC.

1550 WALL STREET  
SUITE 31  
ST. CHARLES, MO. 63303

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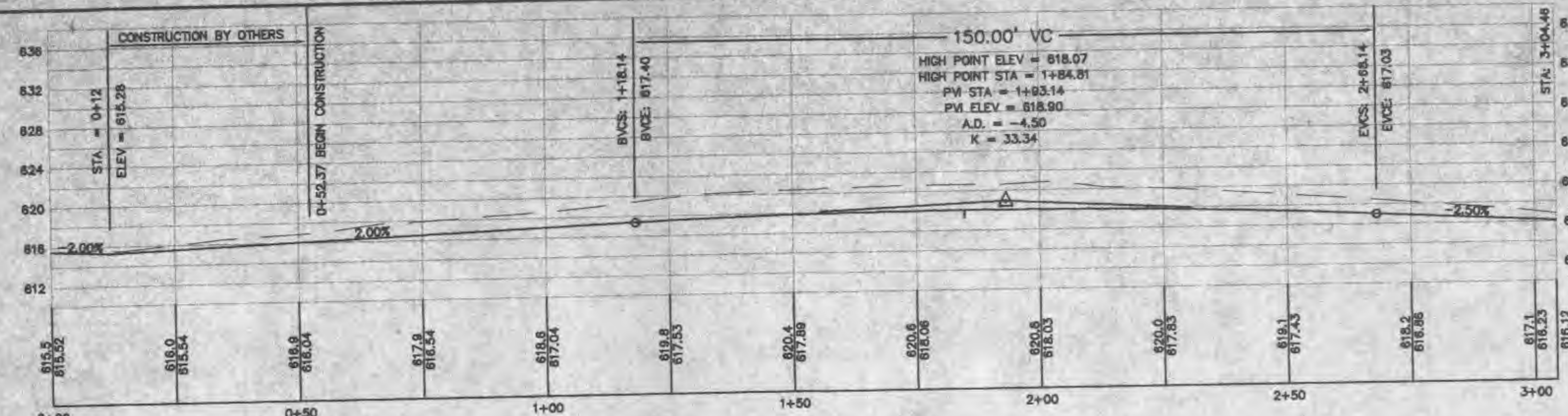
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CHECKED		DATE	
FIELD BOOK	677	PROJECT #	98-178A
		JOB ORDER #	DKQ

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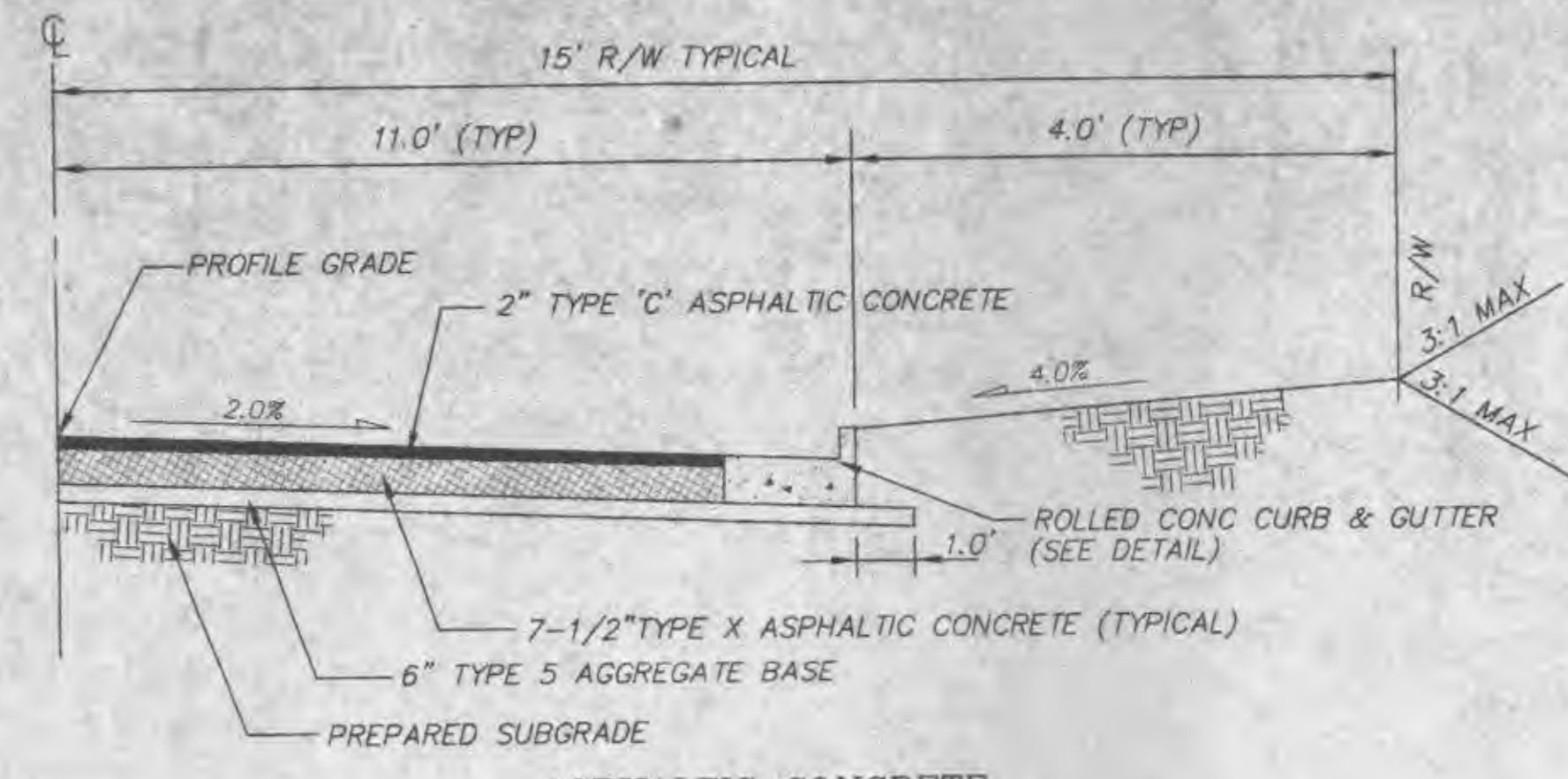




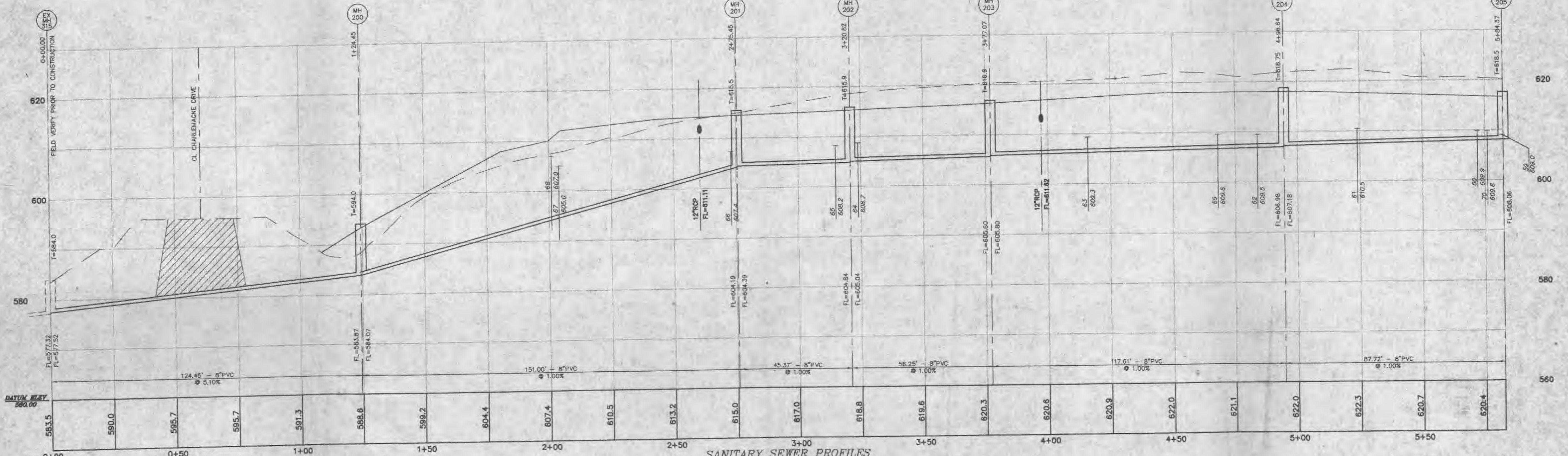




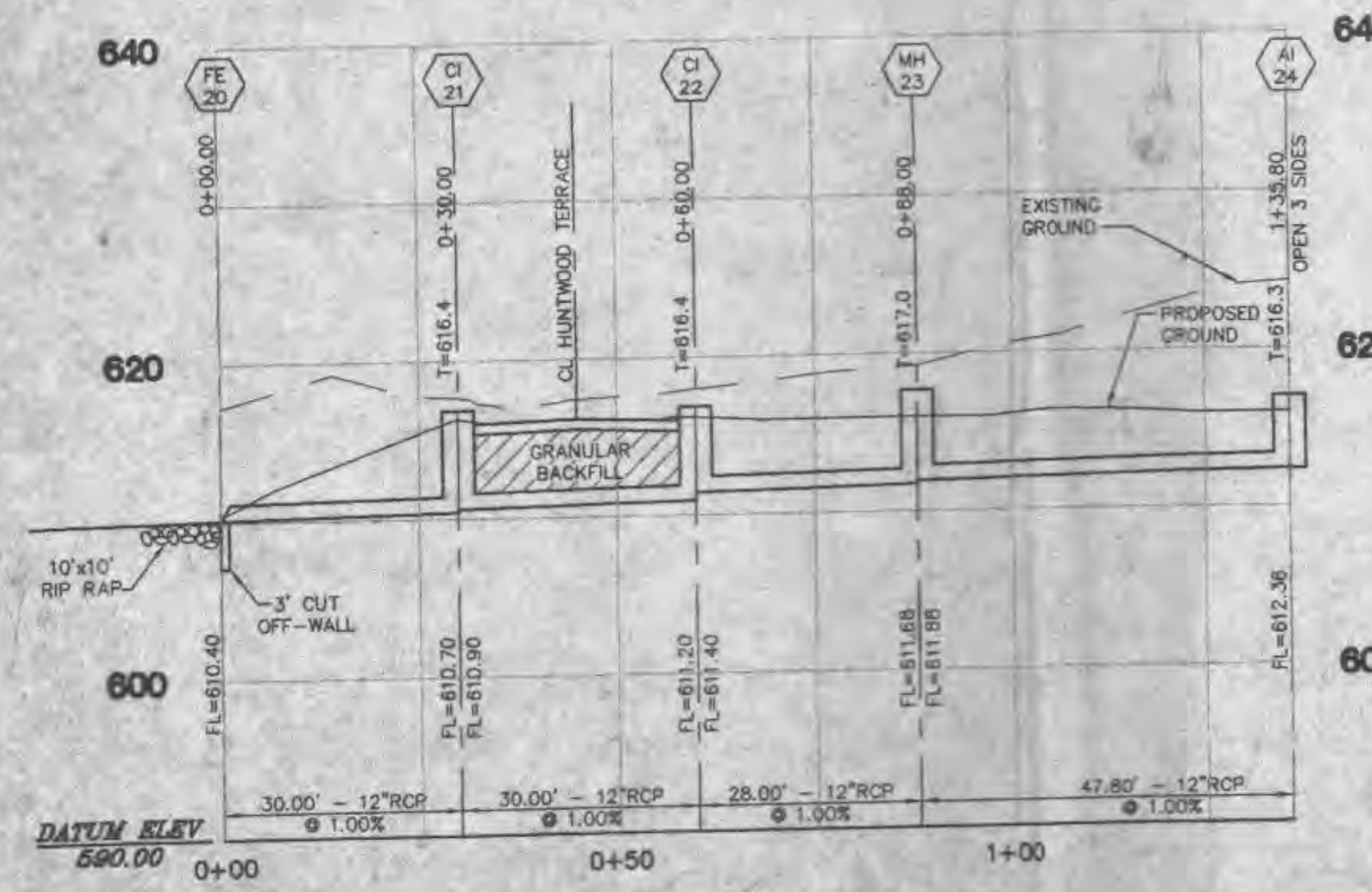
HUNTWOOD TERRACE  
SCALE: 1"=20' HORIZONTAL  
1"=10' VERTICAL



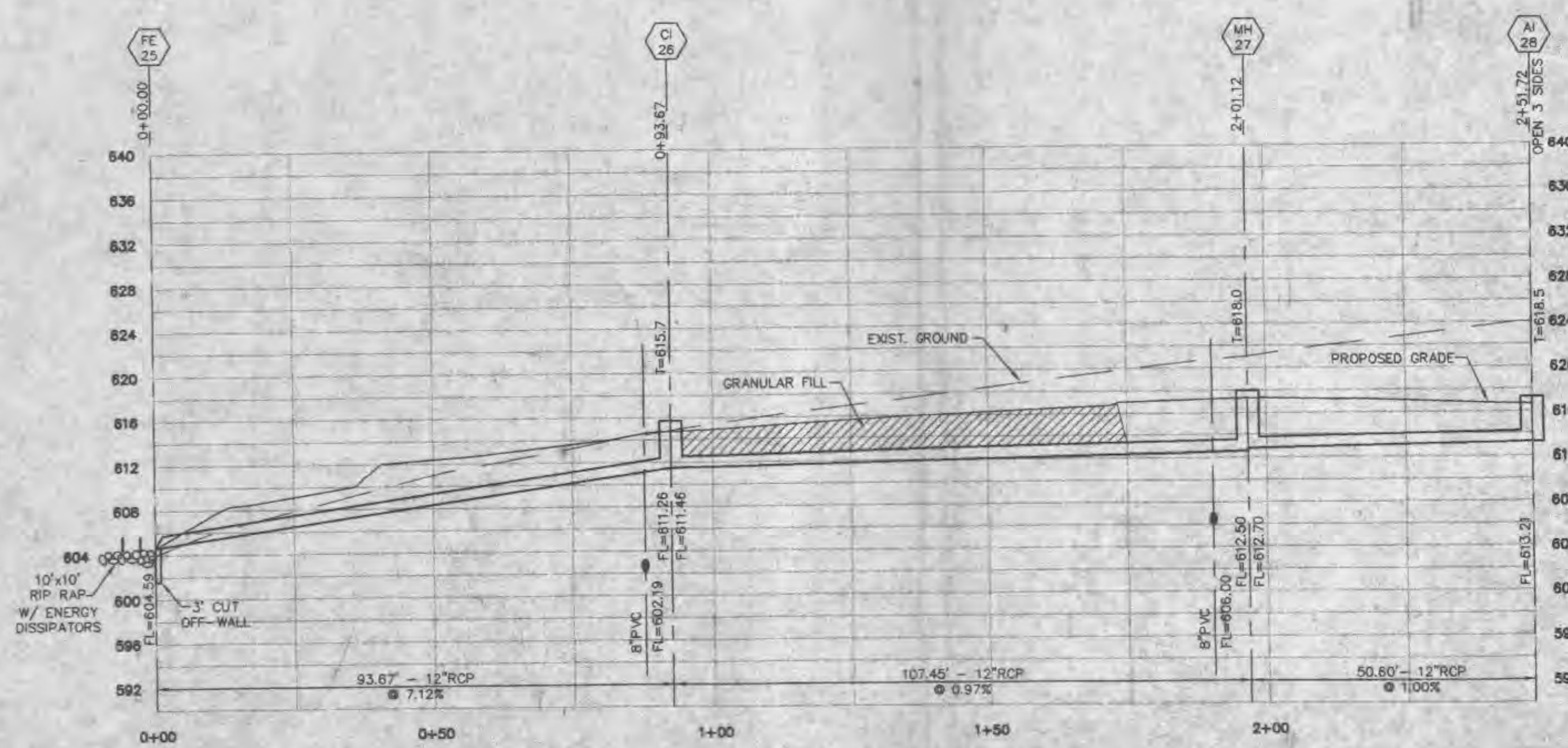
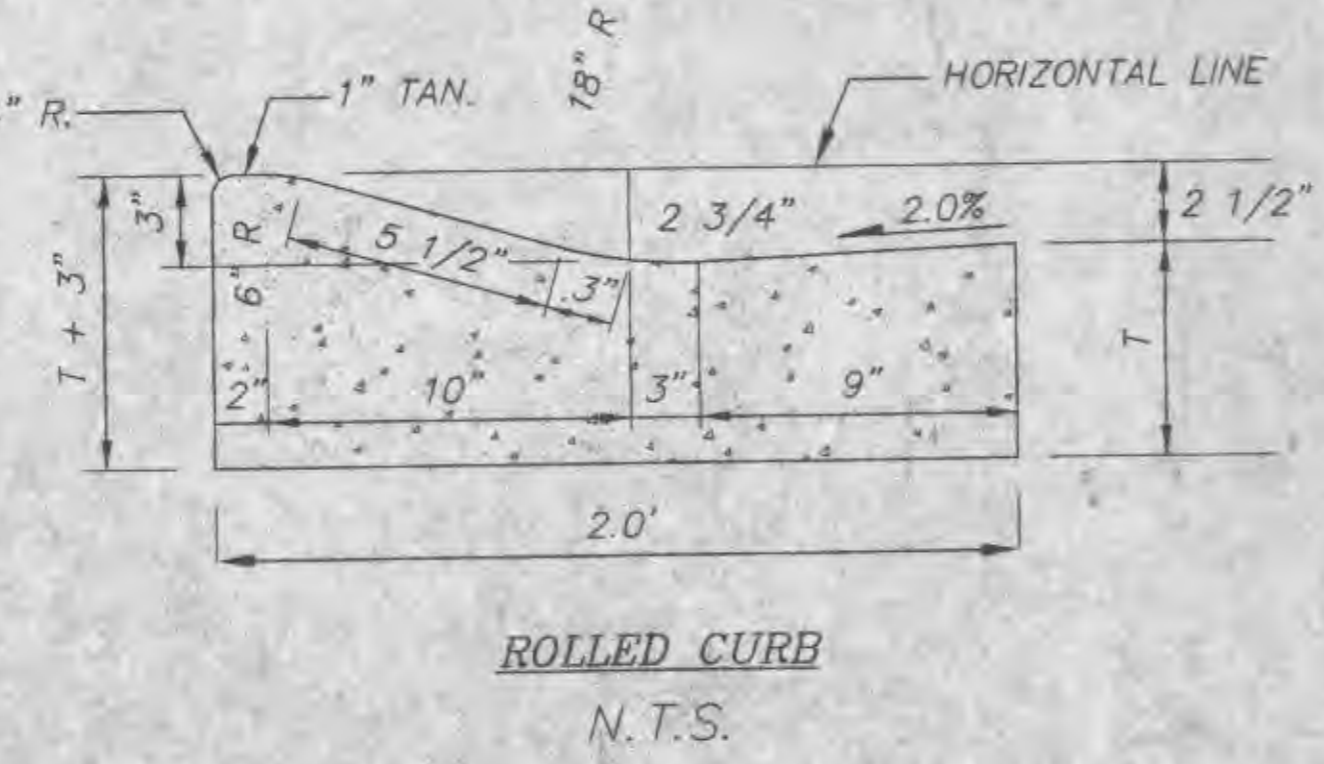
ASPHALTIC CONCRETE  
TYPICAL PAVEMENT 1/2 SECTION



SANITARY SEWER PROFILES  
SCALE: 1"=20' HORIZONTAL  
1"=10' VERTICAL



STORM SEWER PROFILES  
SCALE: 1"=20' HORIZONTAL  
1"=10' VERTICAL

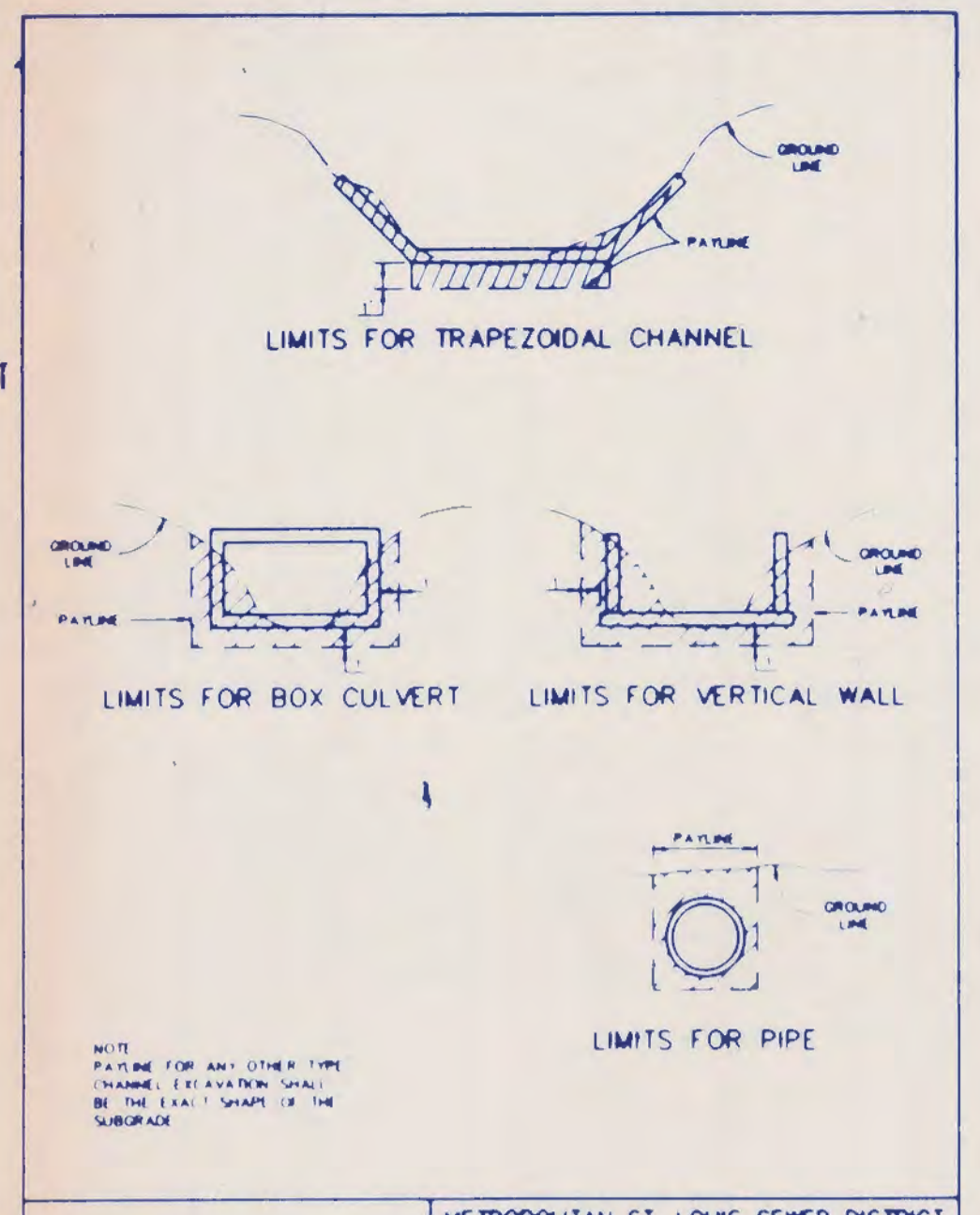


STORM SEWER PROFILES  
SCALE: 1"=20' HORIZONTAL  
1"=10' VERTICAL

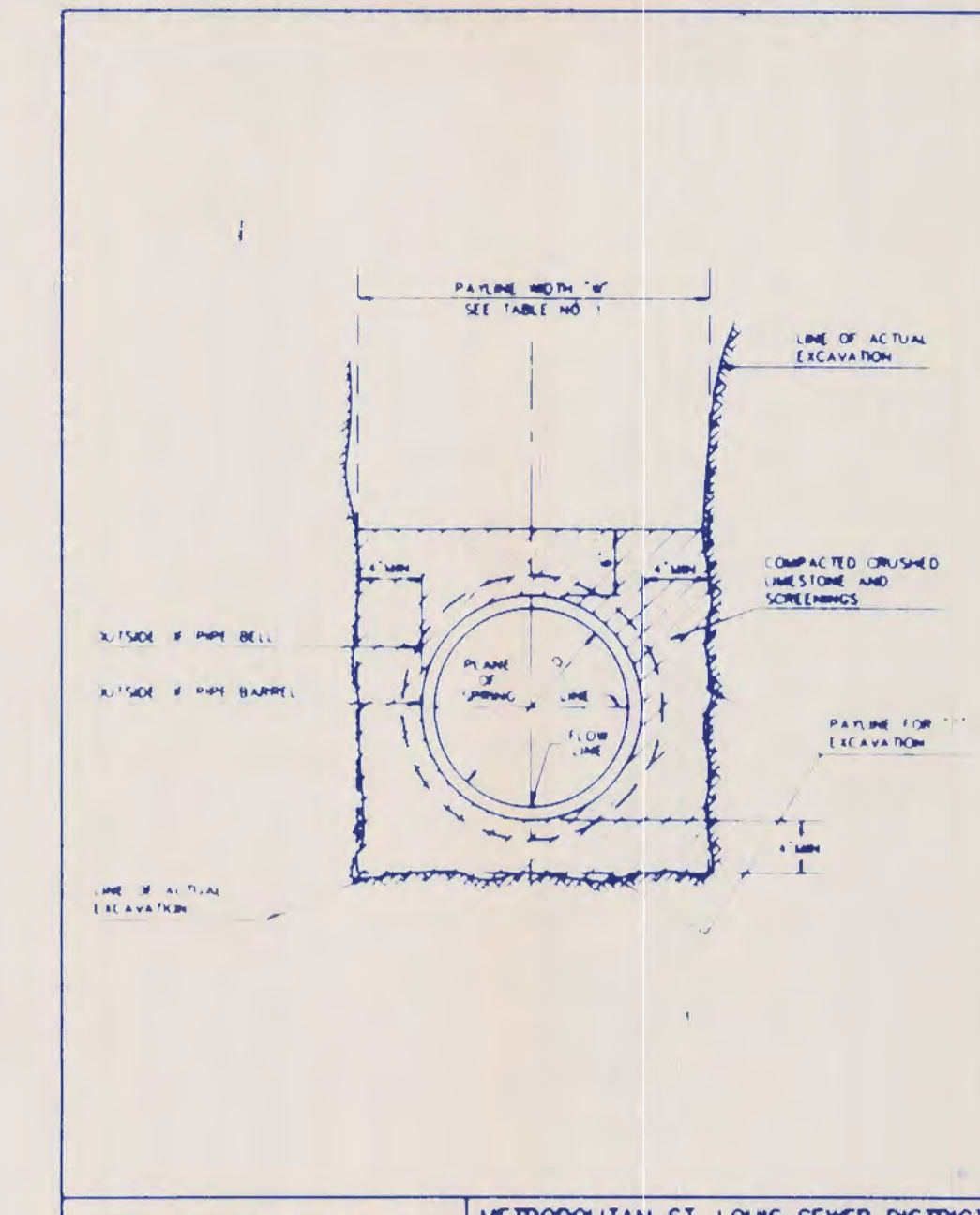


ROUND PIPE				HORIZONTAL ELLIPTICAL PIPE			
INSIDE DIAMETER OF PIPE (INCHES)	"W" PAYLINE WIDTH OF TRENCH (INCHES)	"W" PAYLINE WIDTH OF TRENCH (FEET)	PAY-VOLUMES CU FT PER FT CONCRETE ENCASUREMENT	INSIDE DIMENSIONS OF PIPE (INCHES)	"W" PAYLINE WIDTH OF TRENCH (INCHES)	"W" PAYLINE WIDTH OF TRENCH (FEET)	PAY-VOLUMES CU FT PER FT CONCRETE ENCASUREMENT
4	30	2.50	3.28				
6	30	2.50	3.58				
8	30	2.50	3.87				
10	30	2.50	4.08				
12	30	2.50	4.25				
15	36	3.00	5.55				
18	36	3.00	5.77	14 x 23	41	3.42	5.94
21	36	3.25	6.81				
24	42	3.50	7.39	19 x 30	49	4.08	7.88
27	45	3.75	8.18	22 x 34	53	4.42	8.61
30	48	4.08	9.30	24 x 38	58	4.83	9.70
33	53	4.42	10.53	27 x 42	62	5.17	10.71
36	56	4.67	11.43	28 x 45	66	5.50	11.72
39	61	5.00	13.10	32 x 49	71	5.83	13.14
42	63	5.25	13.38	34 x 53	75	6.25	14.05
48	70	5.83	15.87	38 x 60	83	6.82	16.18
54	77	6.42	18.15	43 x 68	92	7.67	18.81
60	84	7.00	20.73	48 x 78	101	8.42	21.58
66	91	7.58	23.45	53 x 83	109	9.08	24.35
72	98	8.17	26.37	58 x 91	118	9.83	27.45
78	105	8.75	29.38	63 x 98	126	10.50	30.50
84	112	9.33	32.57	68 x 108	135	11.25	33.91
90	119	9.92	35.90	72 x 113	143	11.92	36.99
96	126	10.50	38.37	77 x 121	152	12.67	40.89
102	133	11.08	42.99	82 x 128	160	13.33	44.45
108	140	11.67	48.75	87 x 136	168	14.00	47.79
114	147	12.25	50.68	92 x 143	176	14.67	51.70
120	154	12.83	54.73	97 x 151	185	15.42	56.01
126	161	13.42	58.92				
132	168	14.00	63.27	106 x 166	202	16.83	64.48
144	182	15.17	72.40	116 x 180	218	18.17	73.58

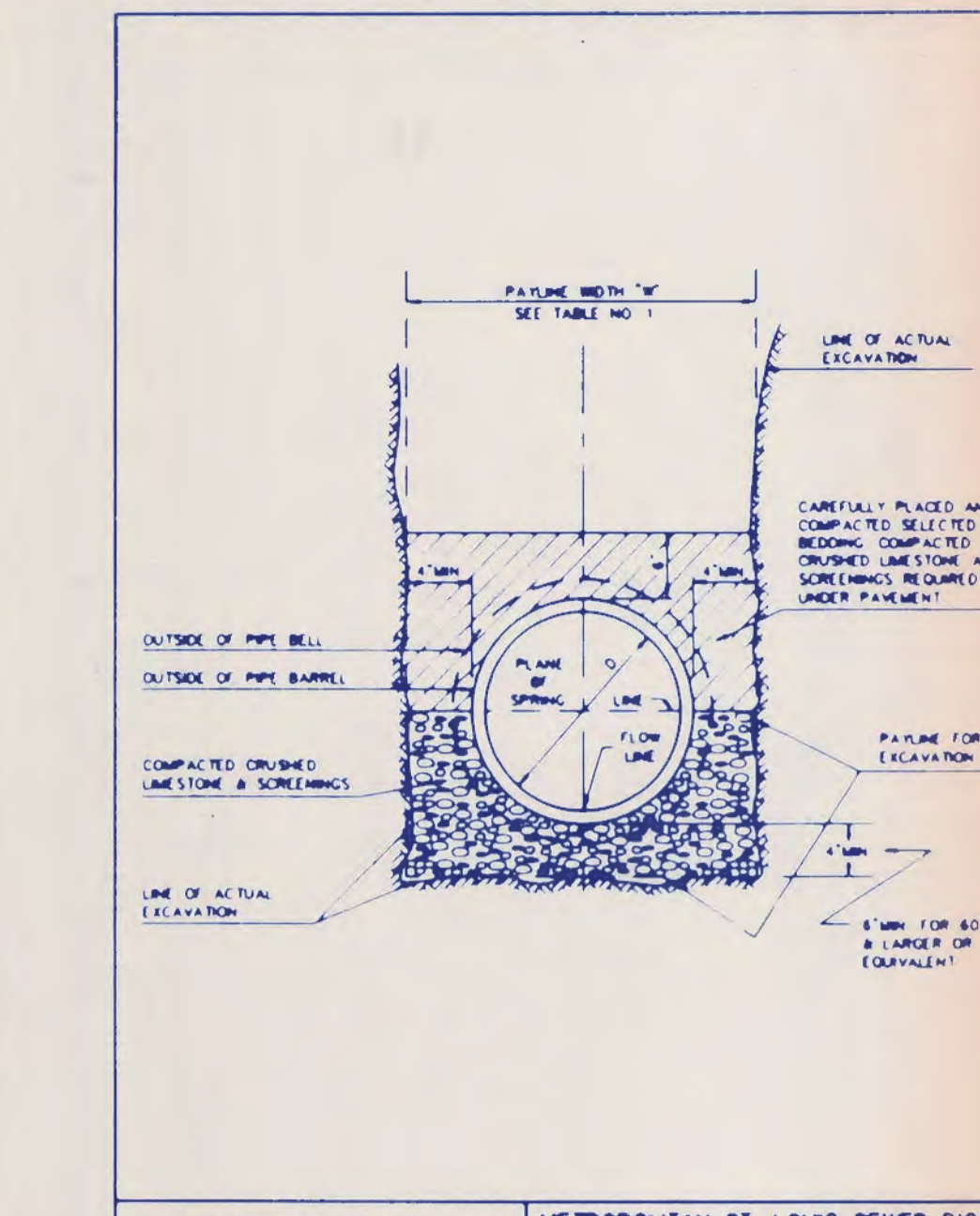
TABLE 1  
PAYLINE WIDTHS OF TRENCH AND PAY-VOLUMES OF CONCRETE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. B.E.B. Ch. J.C.K. 1992 SHEET 1



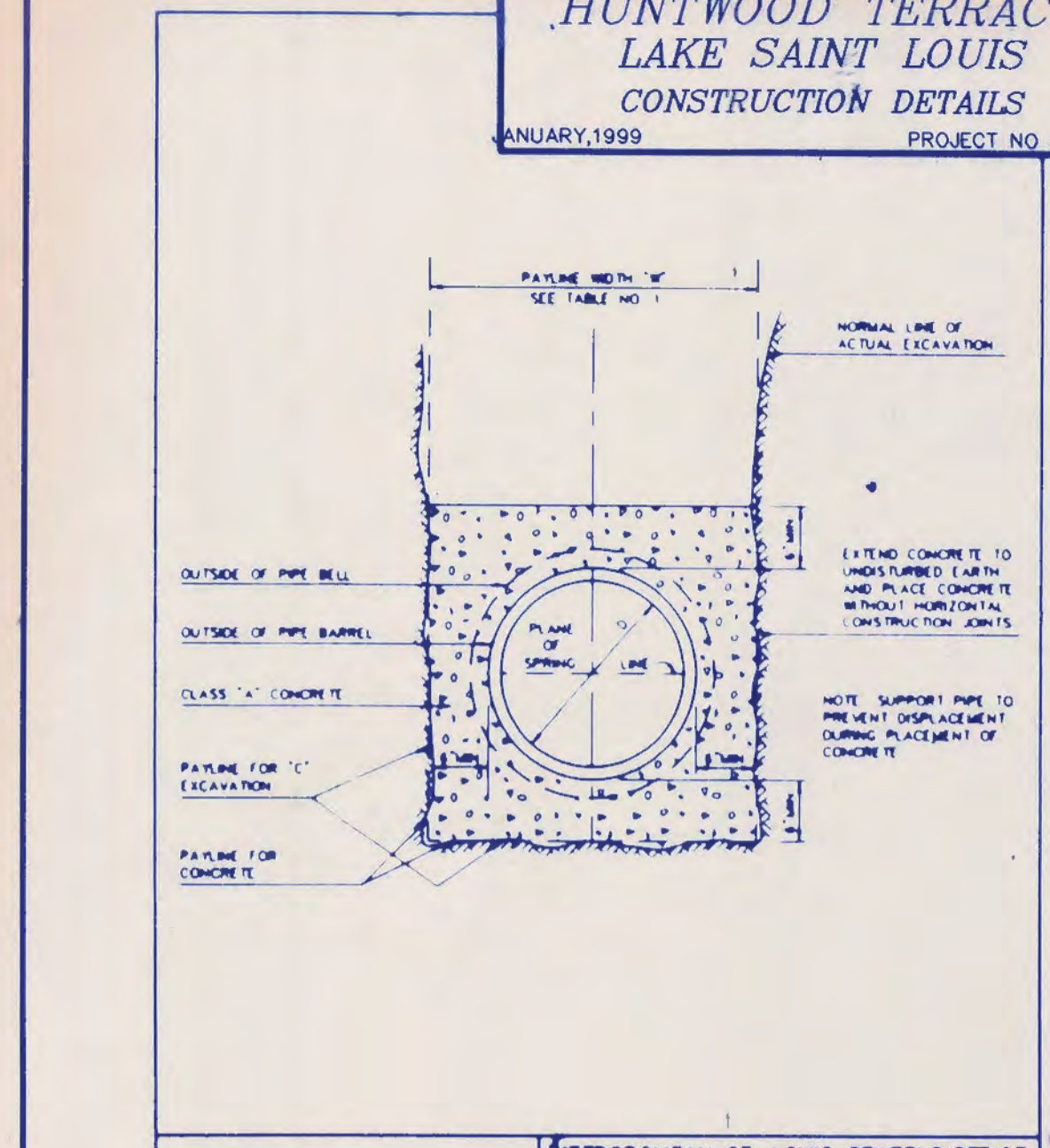
PAYLINE LIMITS FOR EXCAVATION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 2



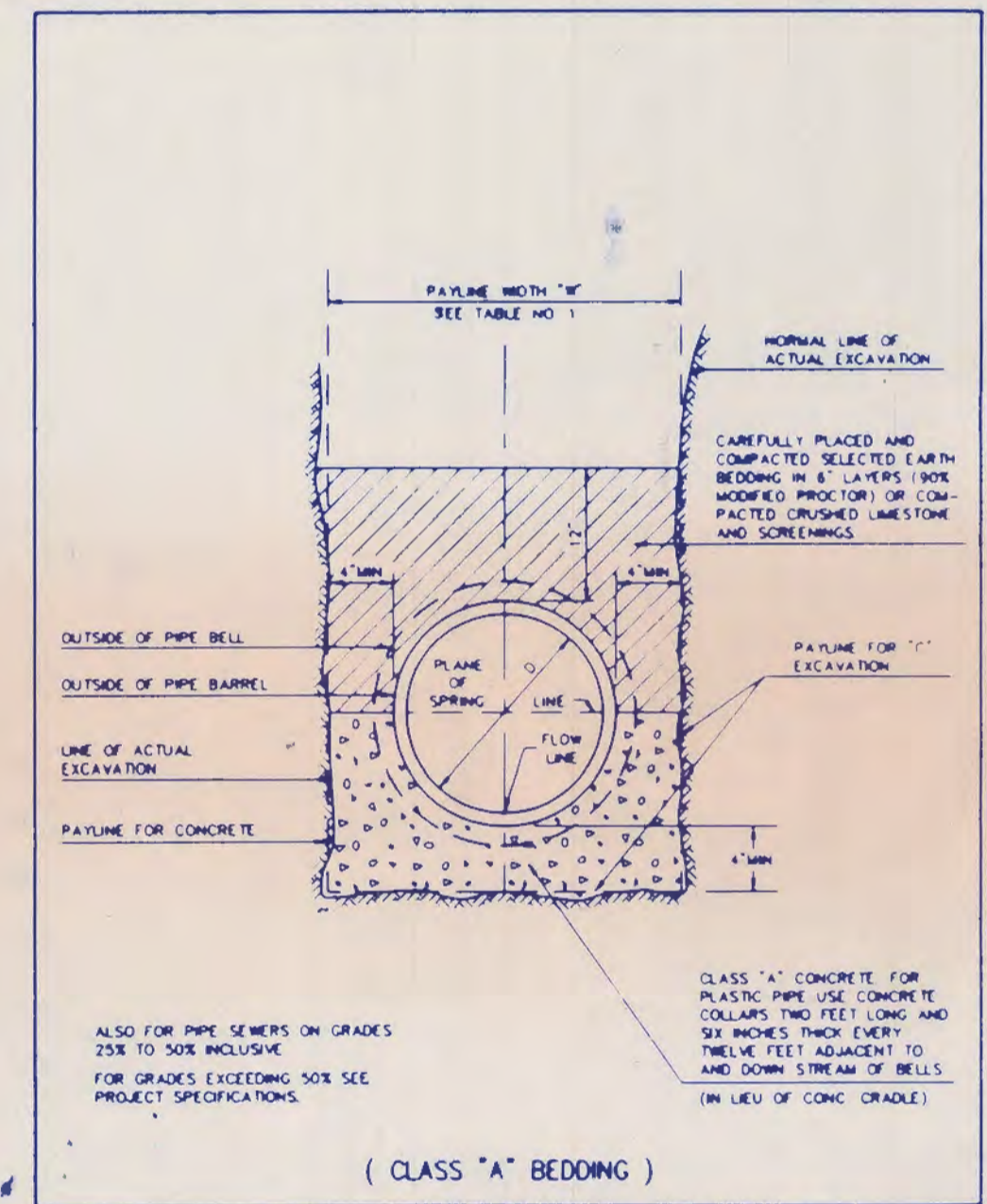
PIPE BEDDING CLASS "C" (FOR ALL PIPE EXCEPT REINFORCED CONCRETE PIPE)  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 3



PIPE BEDDING CLASS "C" (MODIFIED FOR REINFORCED CONCRETE PIPE)  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 4



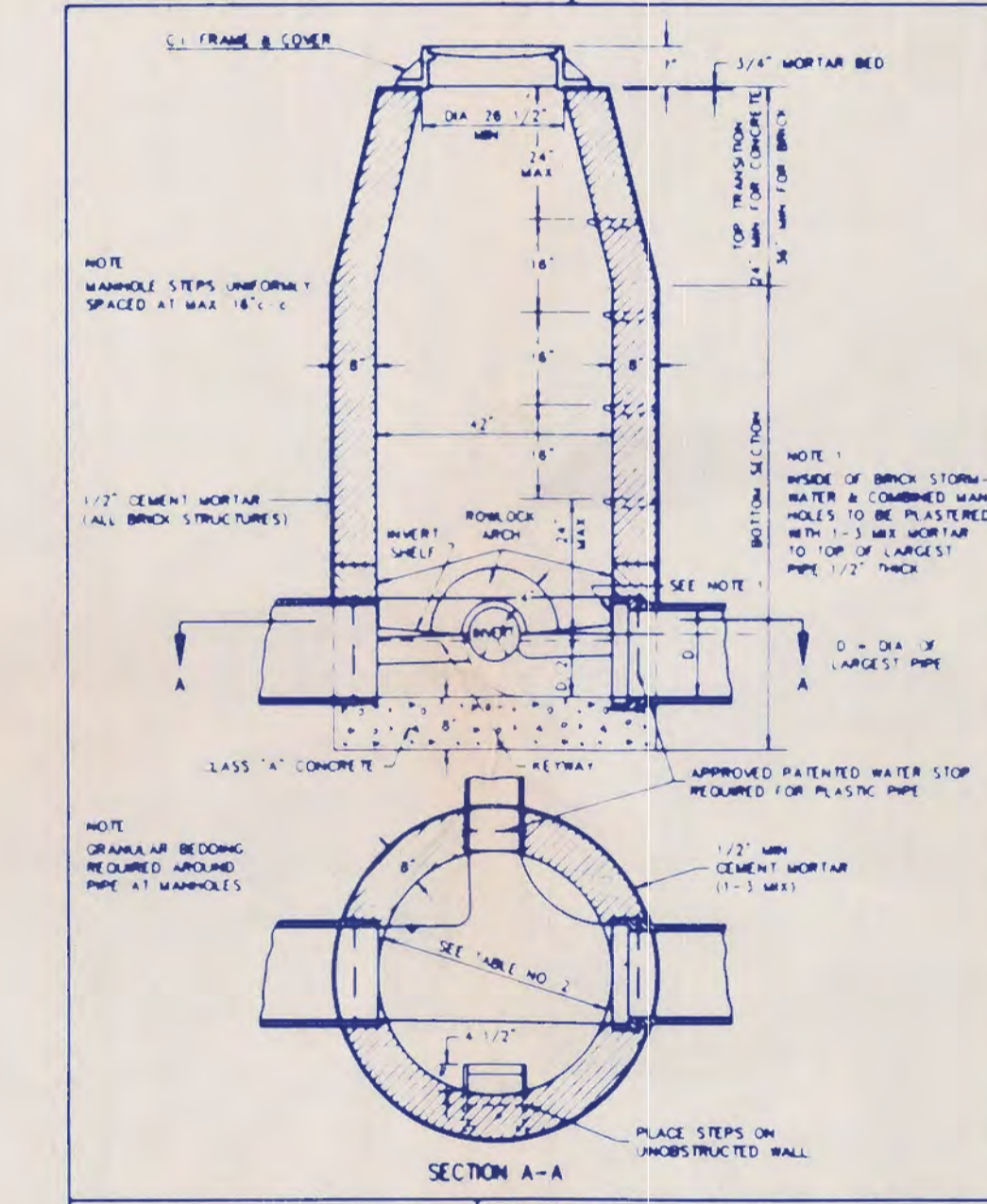
CONCRETE ENCASUREMENT  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 5



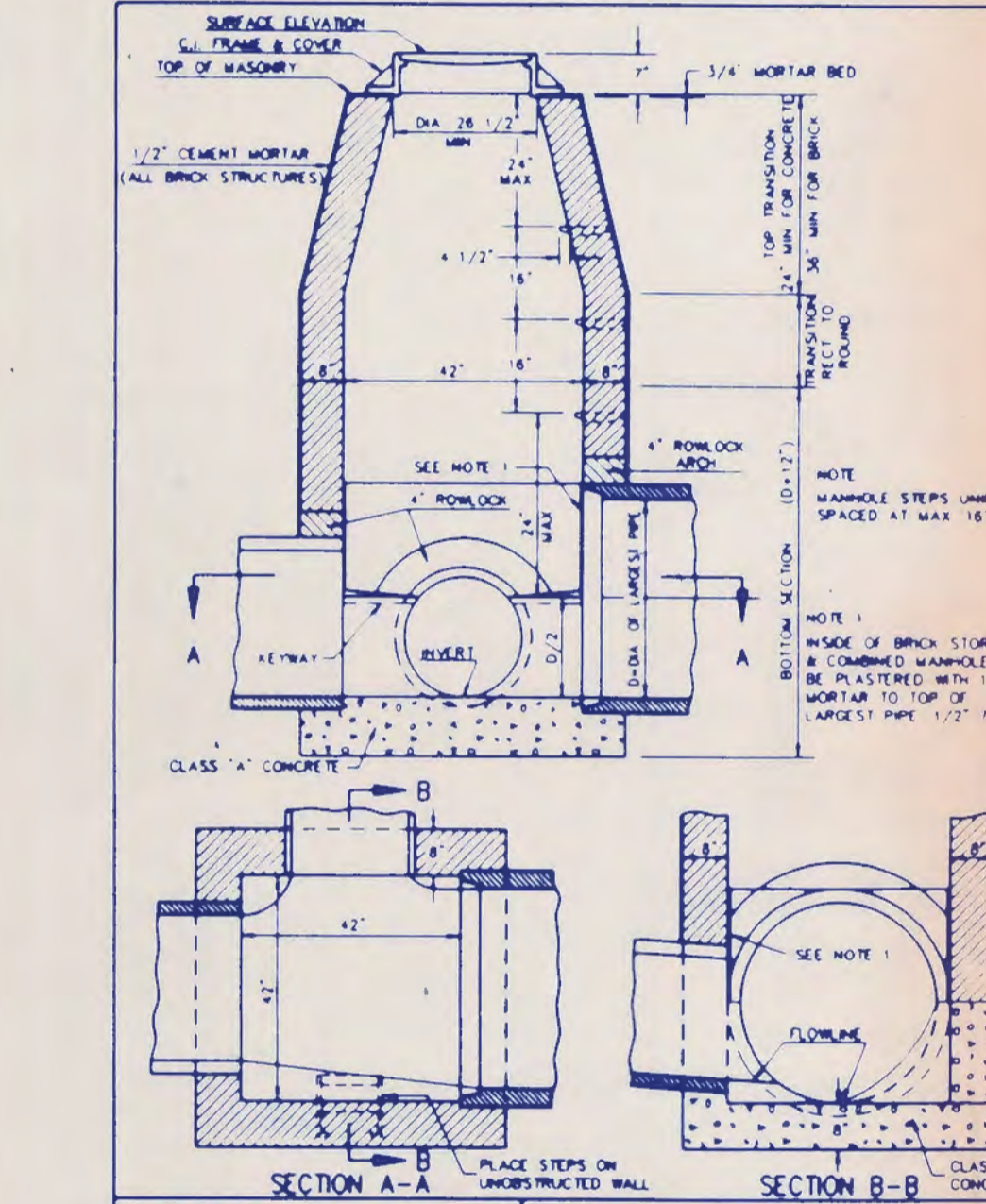
CONCRETE CRADLE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 6

SECTION	TOP	TRANSITION	BOTTOM	SECTION	DIMENSION
SECTION A-A	UPPER	26 1/2" DIA			
	LOWER	42" DIA			
SECTION B-B	8" THRU 24" DIA PIPE	42" DIA			
	27" THRU 36" DIA PIPE	42" SQUARE			

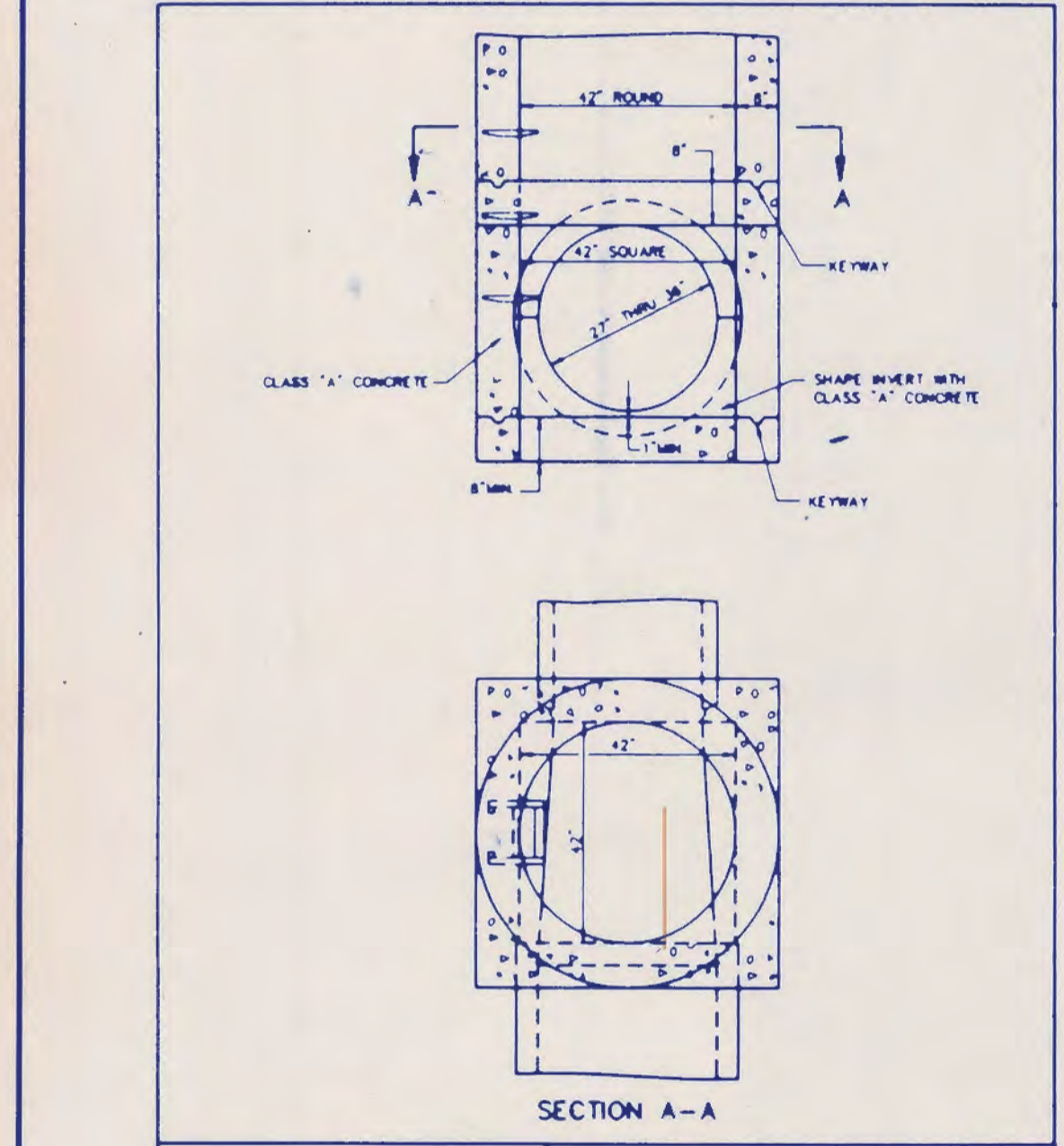
TABLE NO. 2  
STANDARD MANHOLE DIMENSIONS  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 7



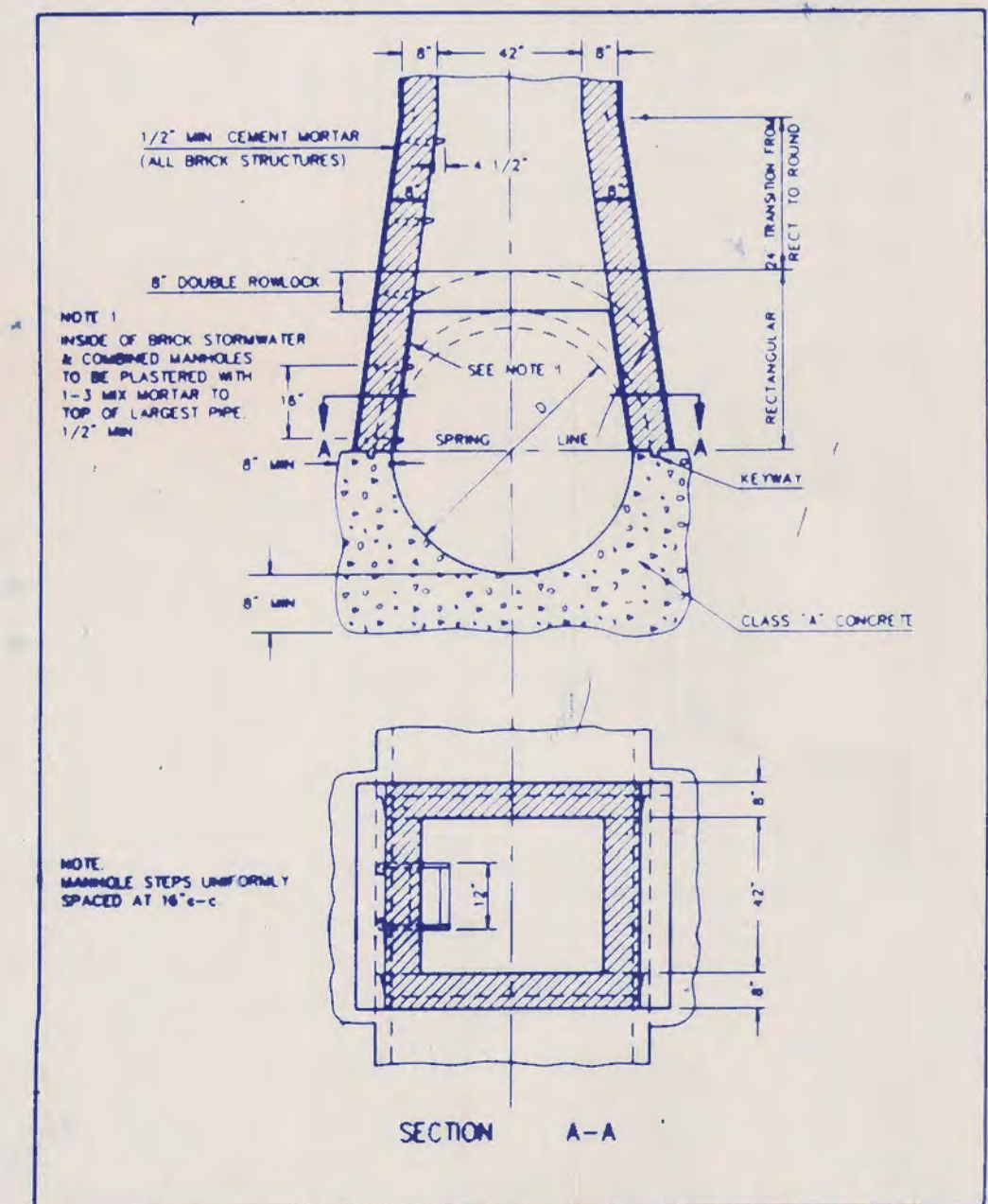
LINE MANHOLE PIPE SEWERS 8"-24" DIA  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 8



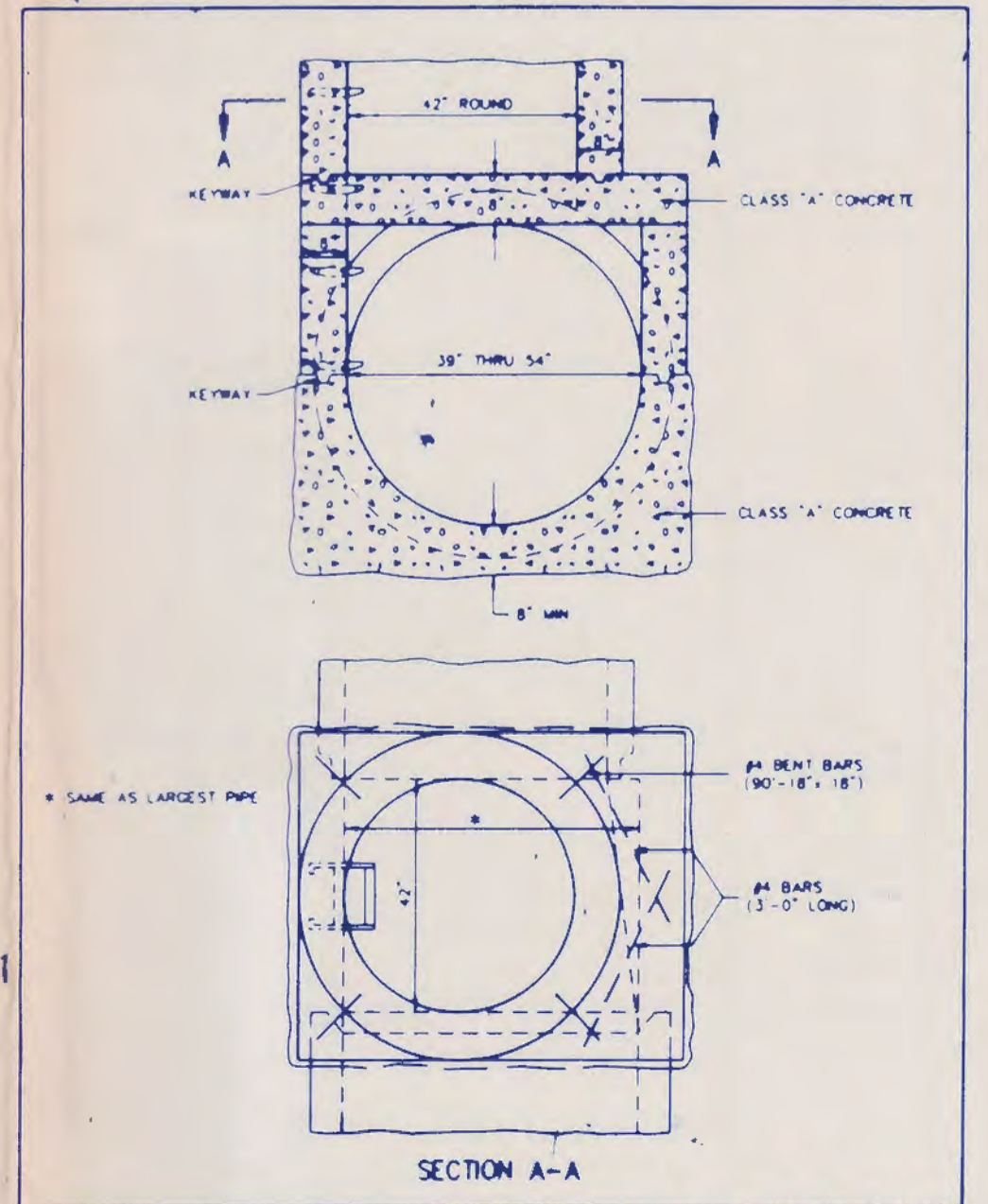
TYPICAL LINE MANHOLE ON PIPE SEWER 27" THRU 36" IN DIAMETER  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 9



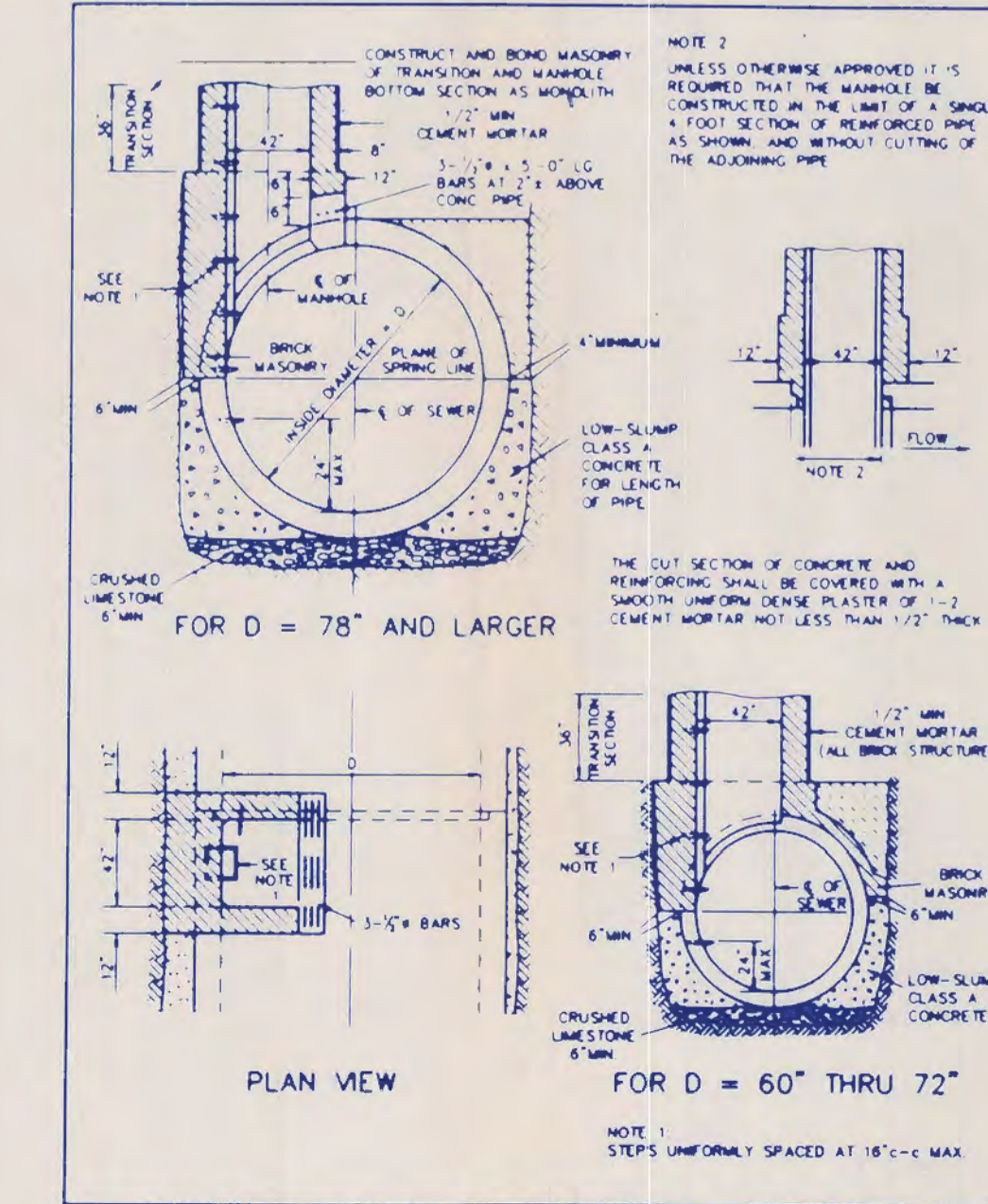
MANHOLE ON PIPE SEWER 27" THRU 36" (ALTERNATE)  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. D.A.B. Ch. J.C.K. 1992 SHEET 10



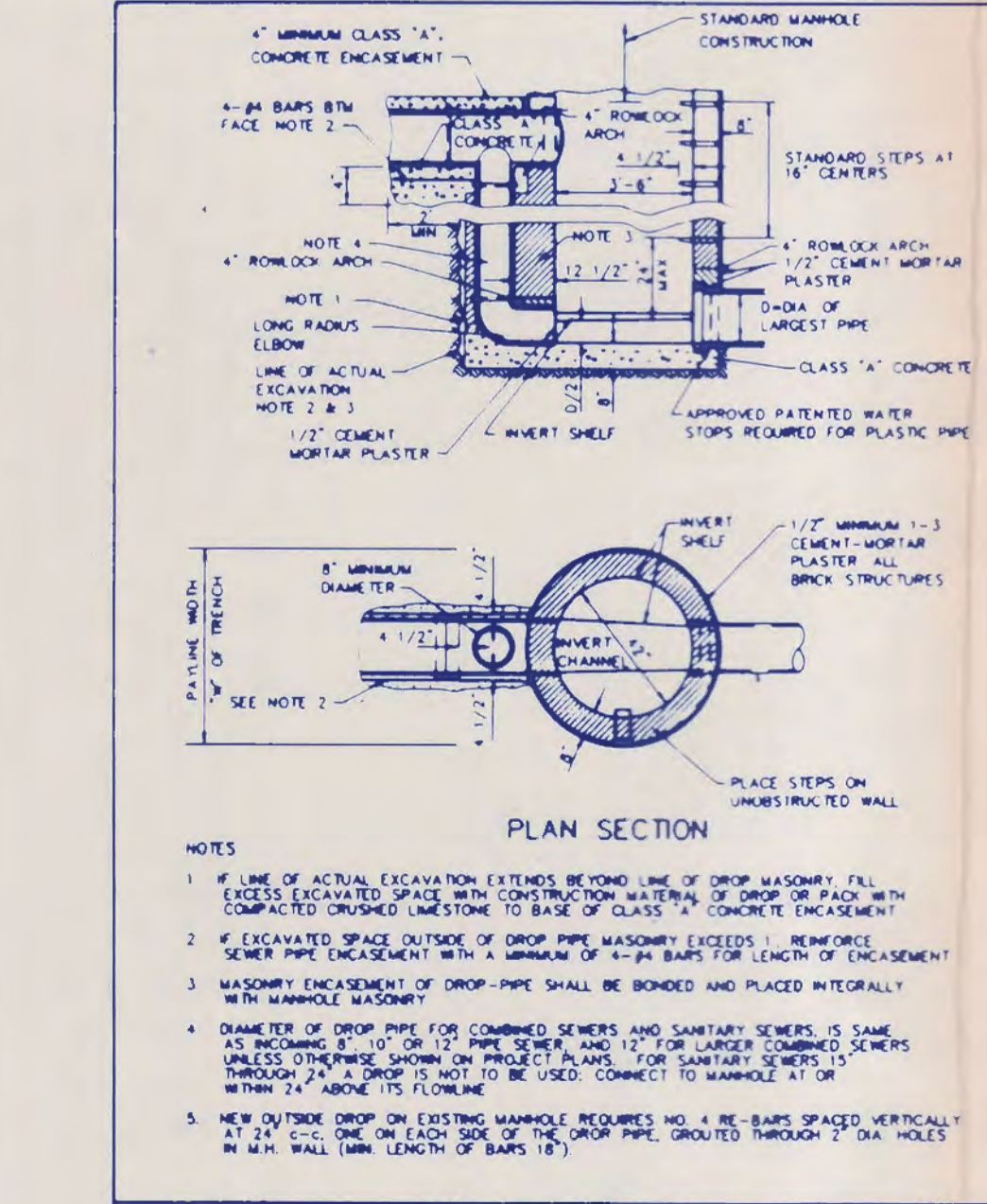
MANHOLE ON CONCRETE PIPE SEWERS 39" THRU 54" DIAMETER  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 11



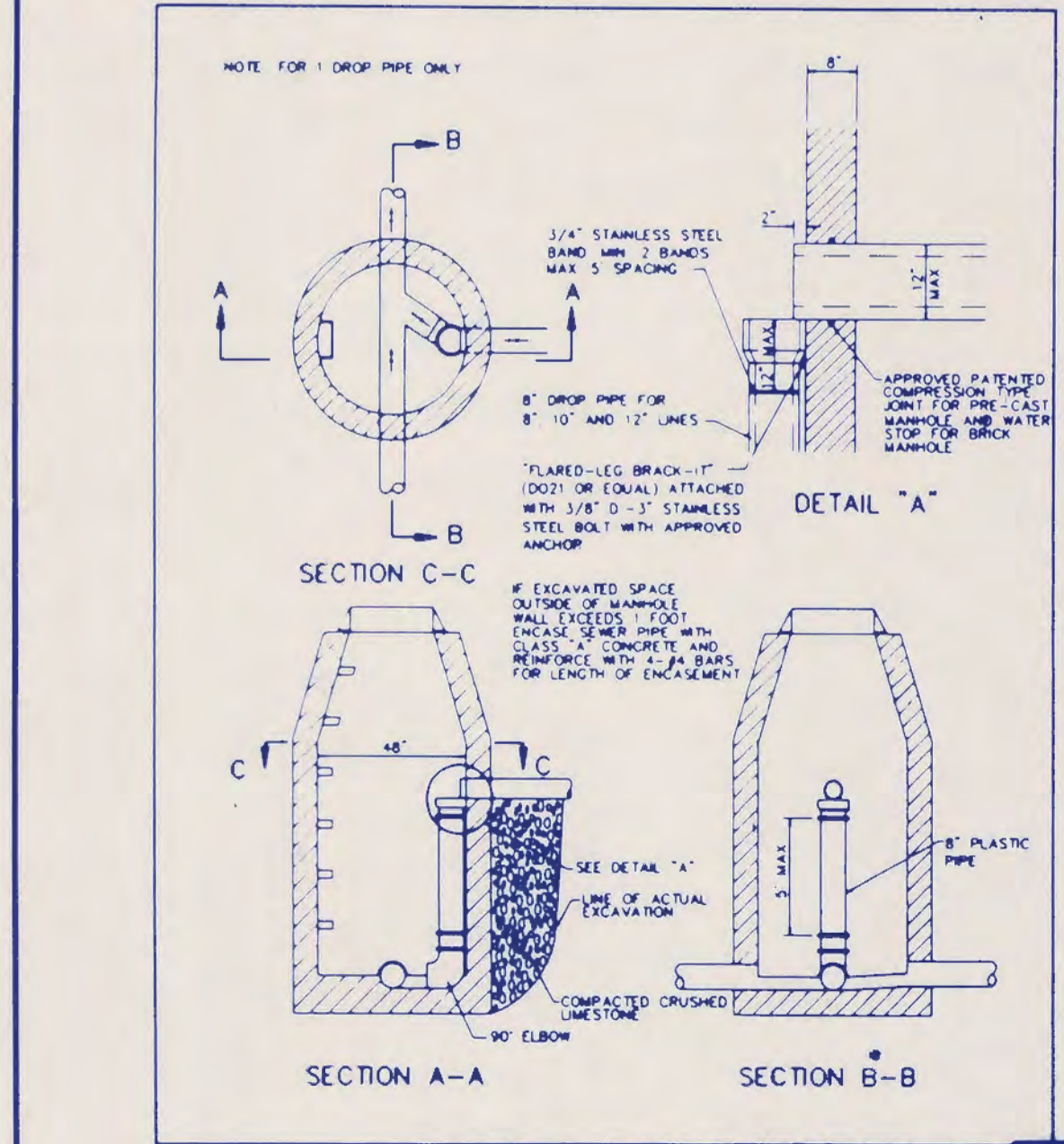
MANHOLE ON CONC. PIPE 39" THRU 54" (ALTERNATE)  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 12



TYPICAL MANHOLE BASE REINFORCED CONCRETE PIPE SEWERS 60" AND LARGER IN DIAMETER  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 13

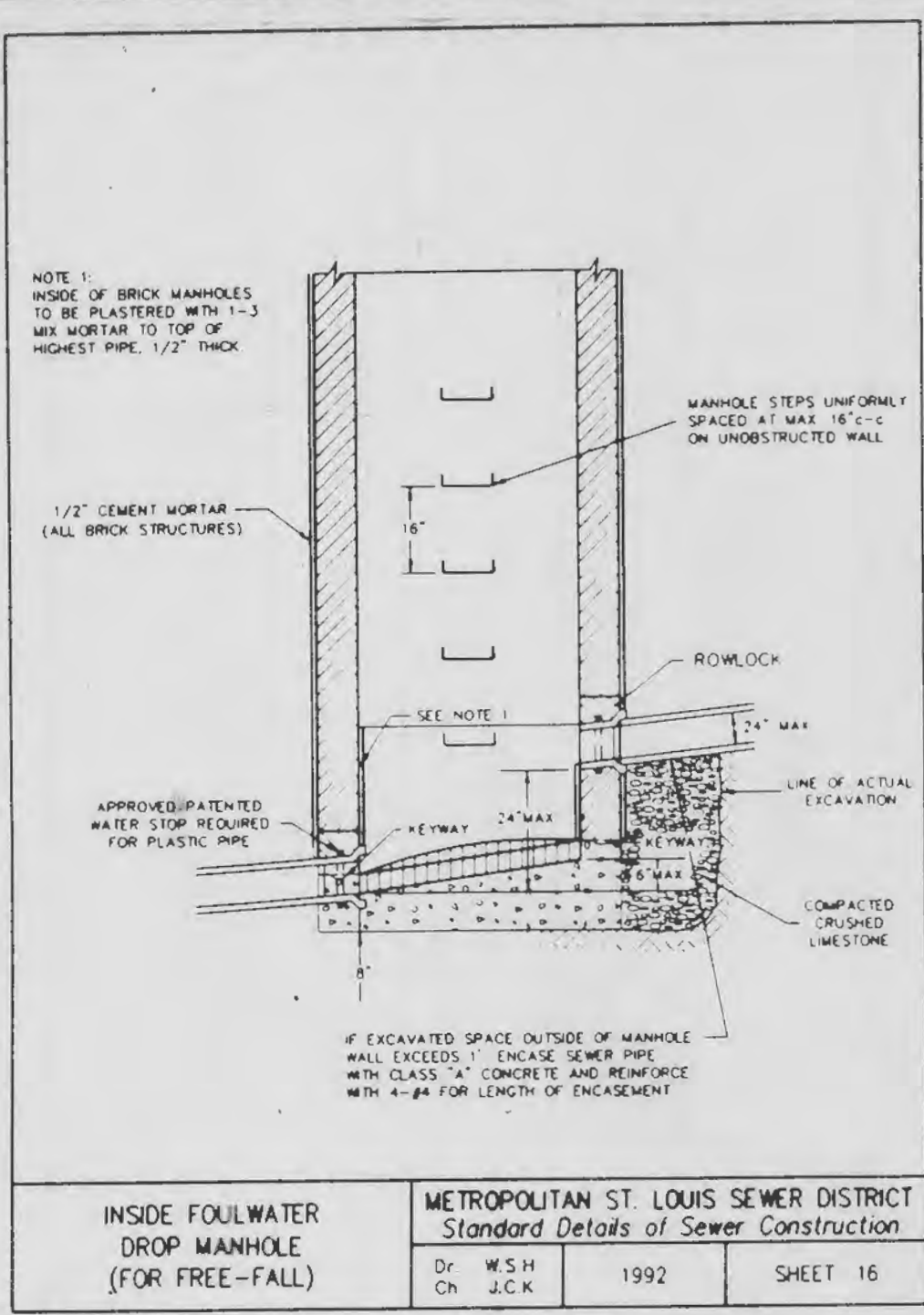


OUTSIDE FOULWATER DROP MANHOLE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 14

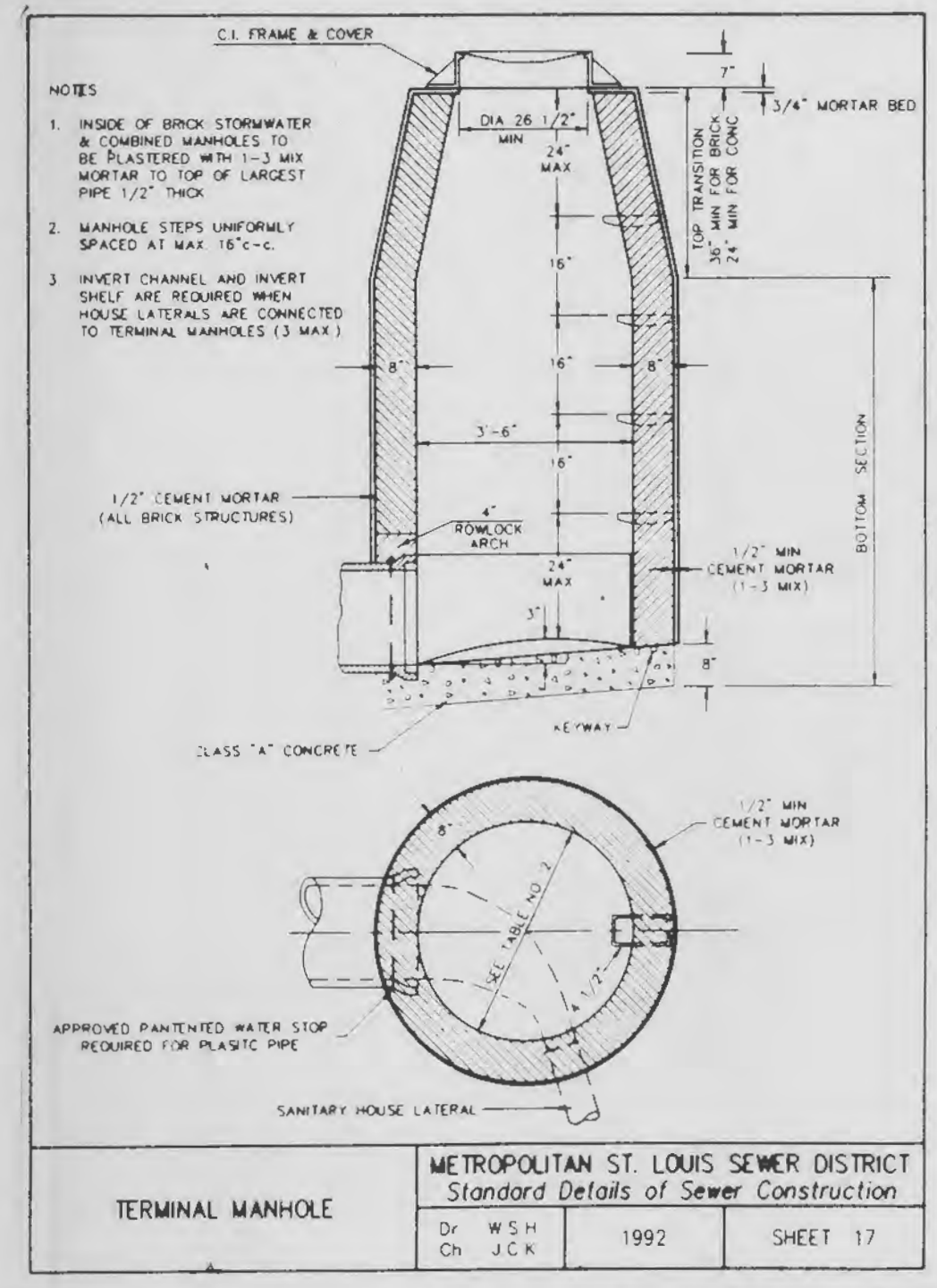


INSIDE FOULWATER DROP MANHOLE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 15

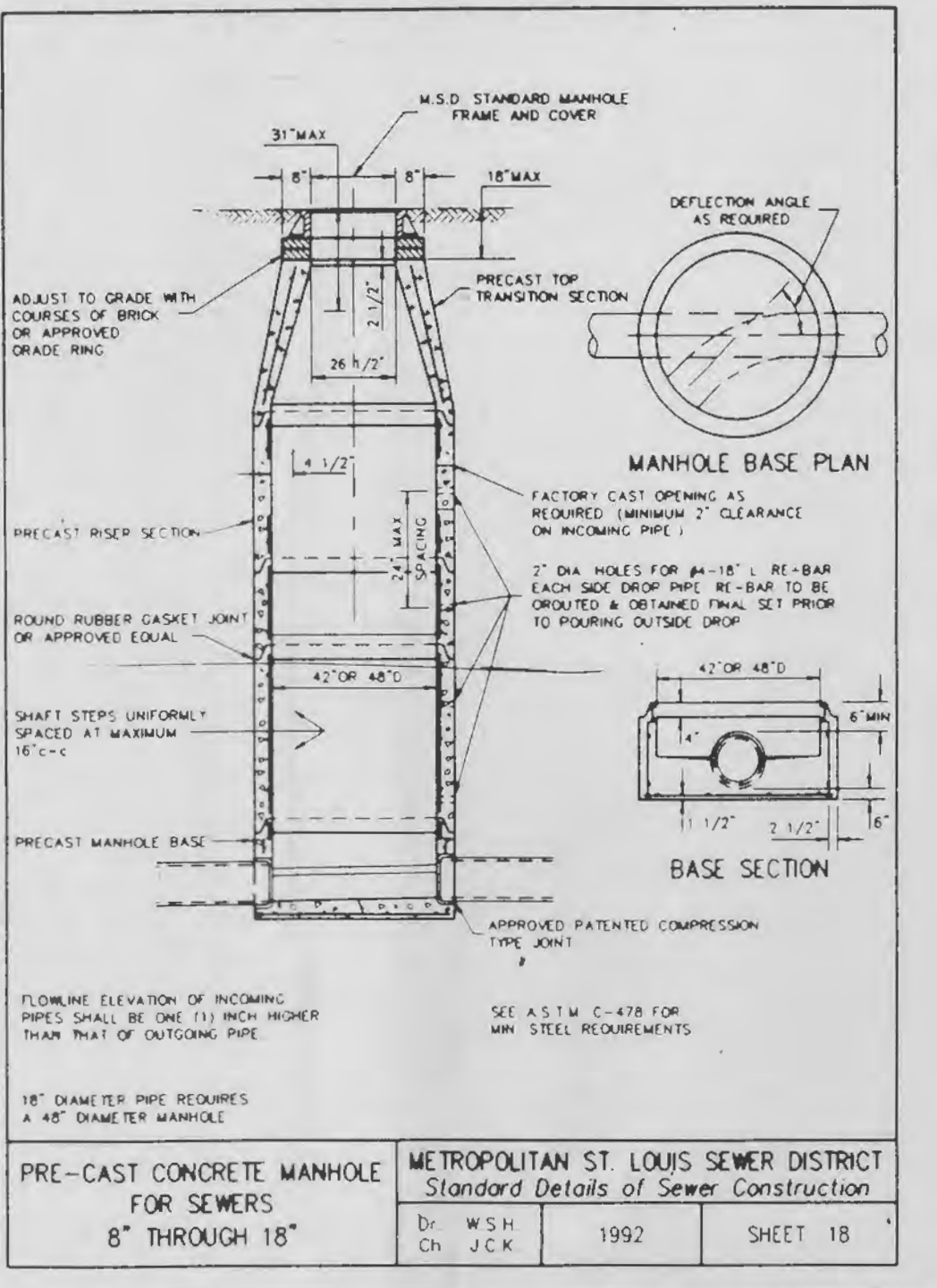




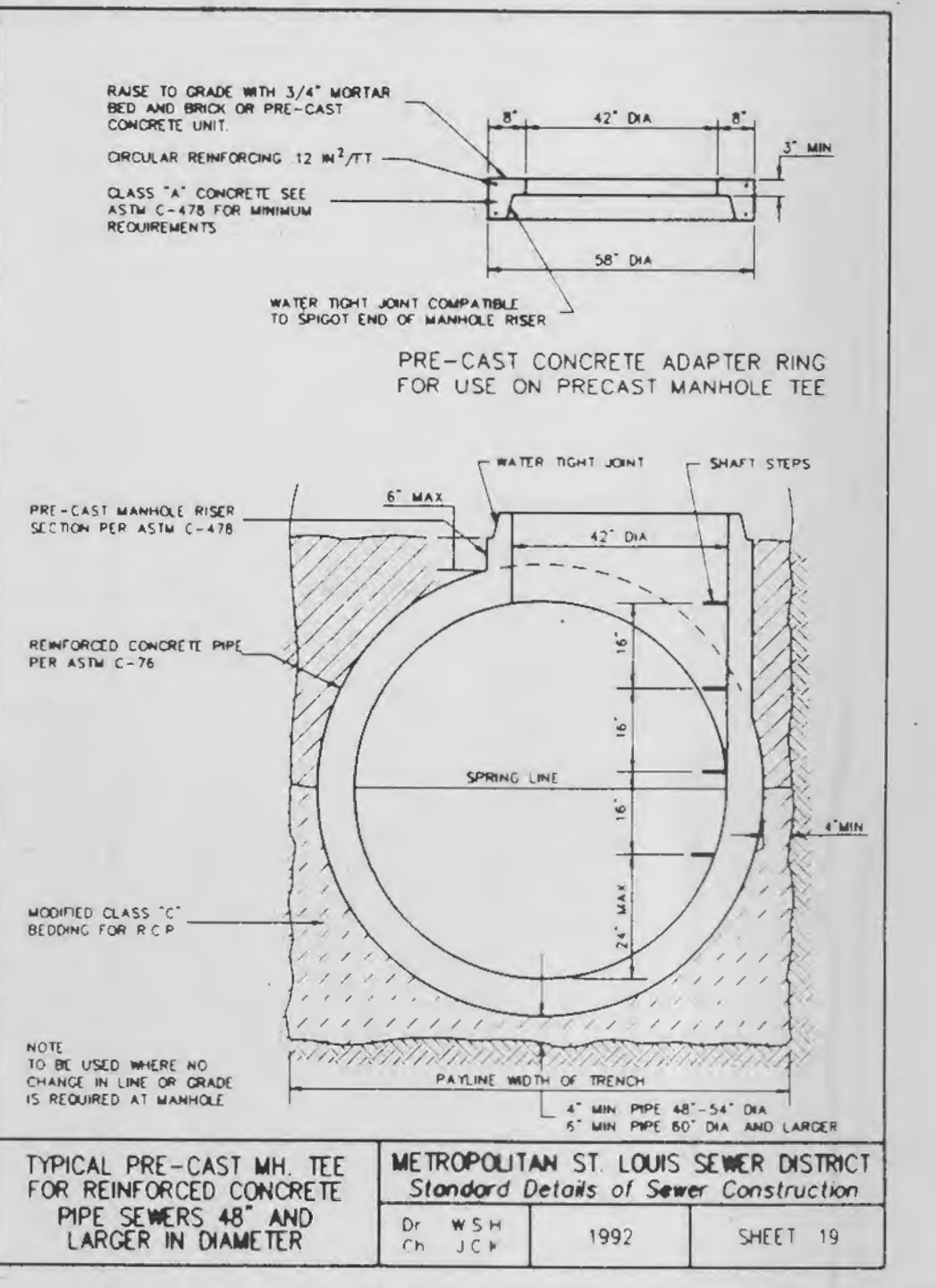
INSIDE FOULWATER DROP MANHOLE (FOR FREE-FALL)  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 16  
Ch. J.C.K.



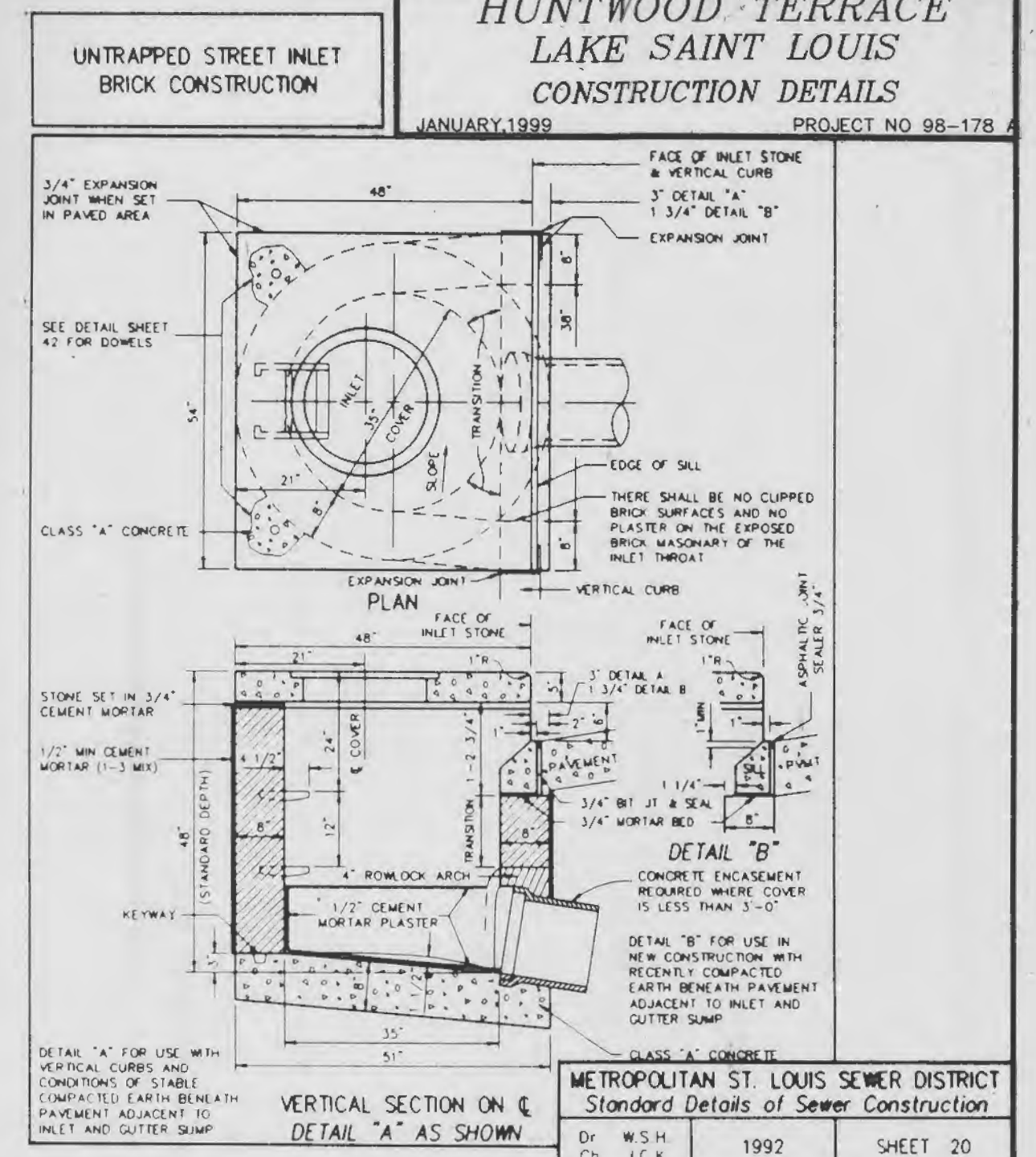
TERMINAL MANHOLE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 17  
Ch. J.C.K.



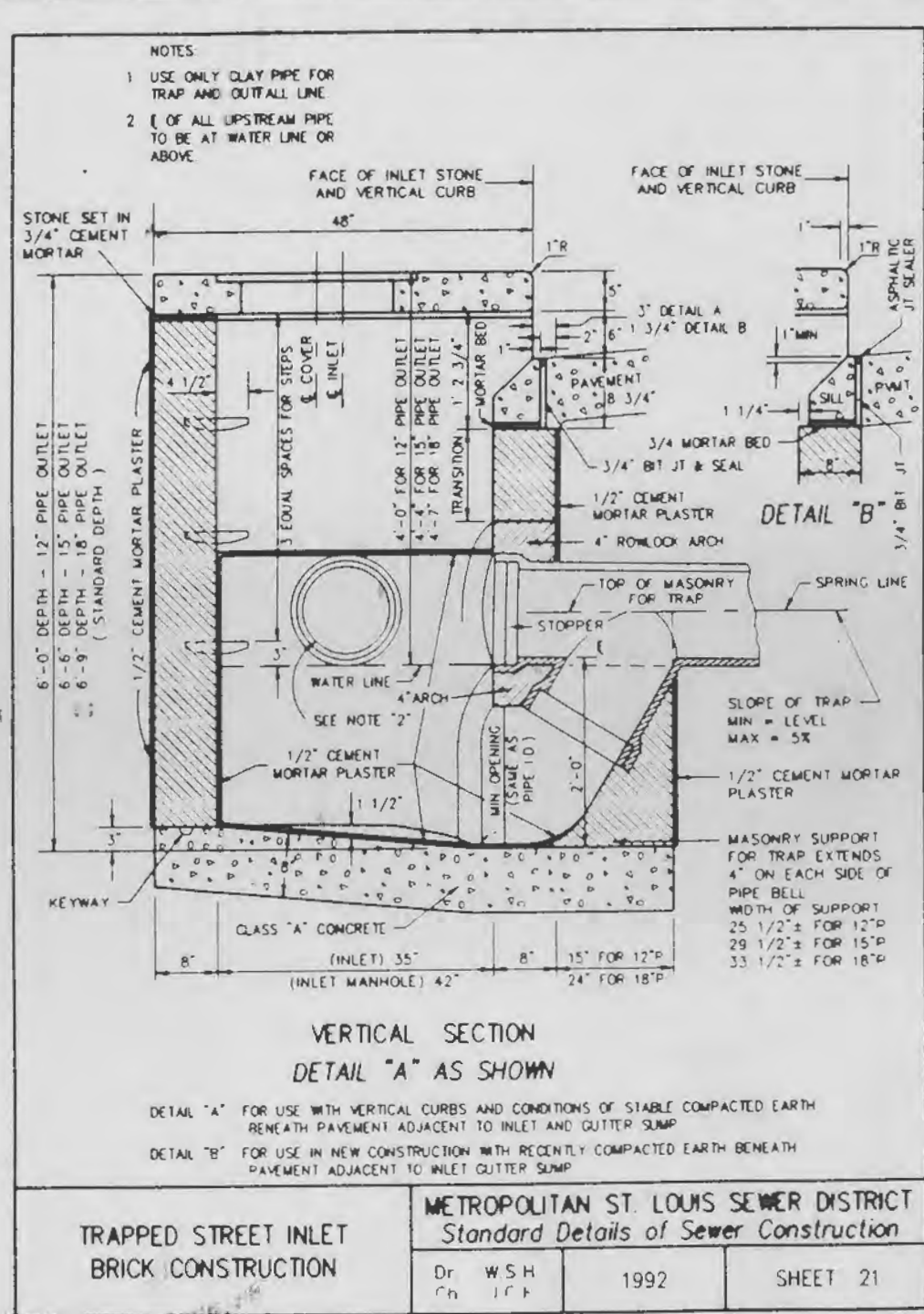
PRE-CAST CONCRETE MANHOLE FOR SEWERS 8" THROUGH 18"  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 18  
Ch. J.C.K.



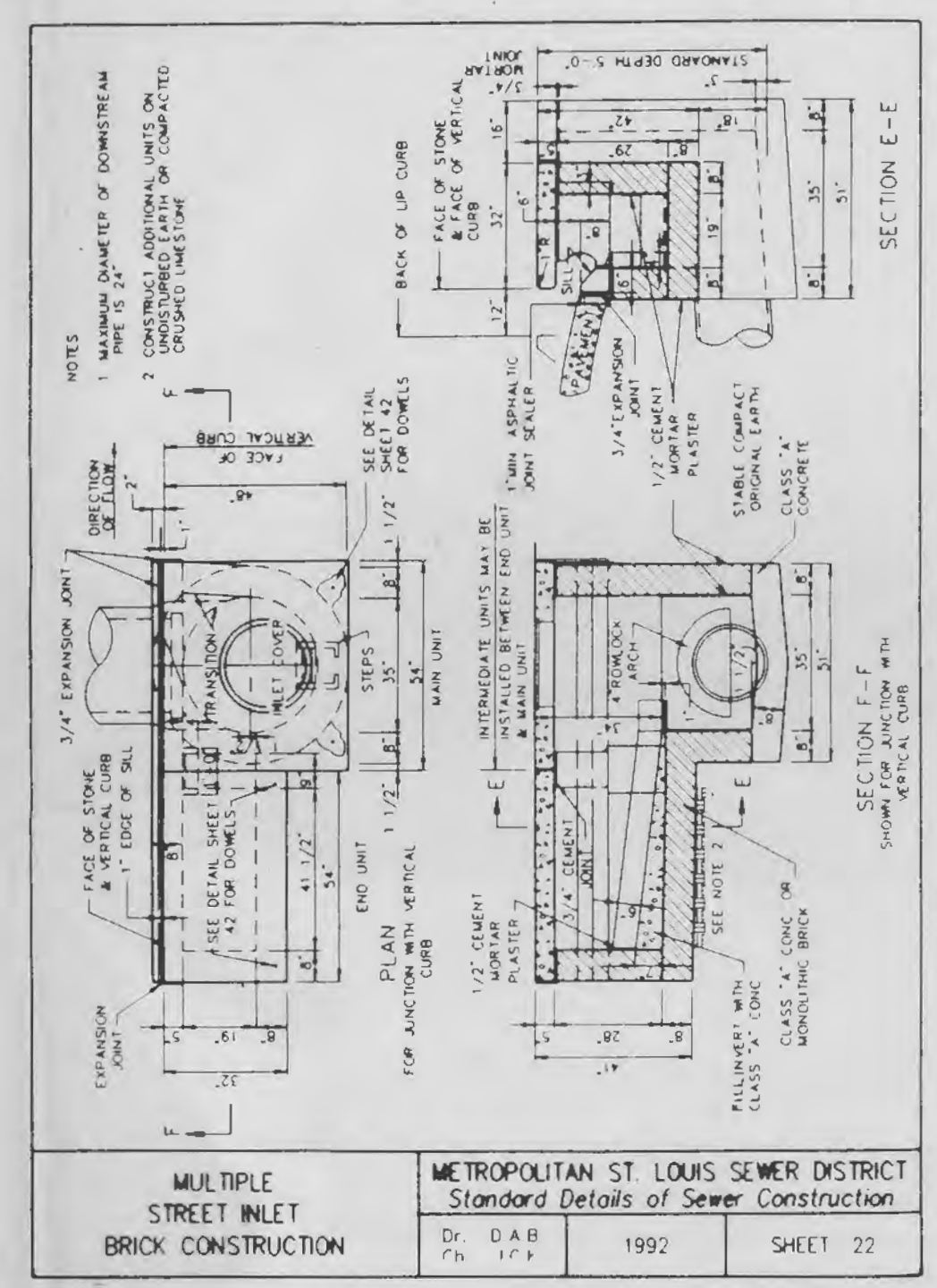
TYPICAL PRE-CAST MANHOLE TEE FOR REINFORCED CONCRETE PIPE SEWERS 48" AND LARGER IN DIAMETER  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 19  
Ch. J.C.K.



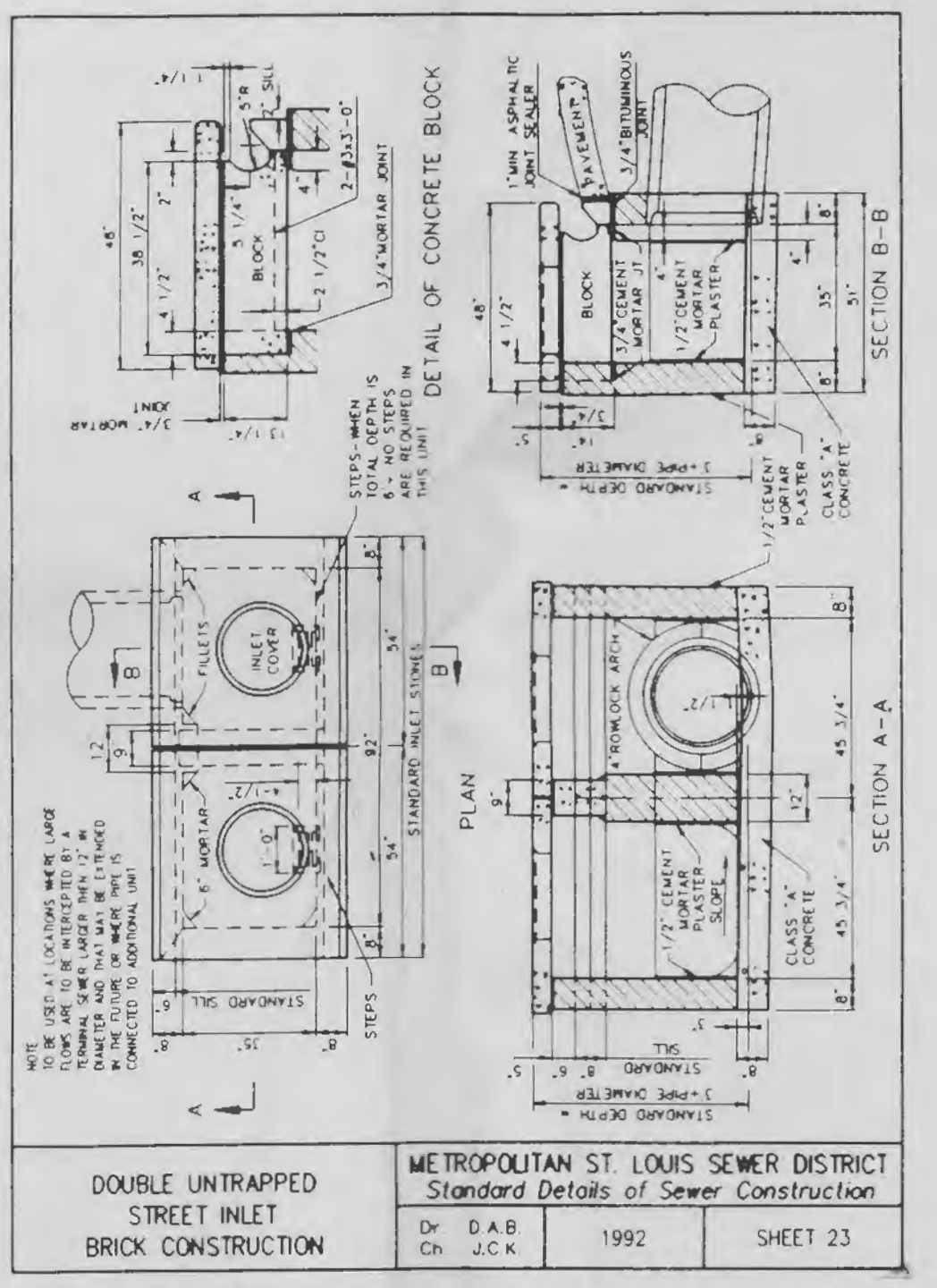
UNTRAPPED STREET INLET BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 20  
Ch. J.C.K.



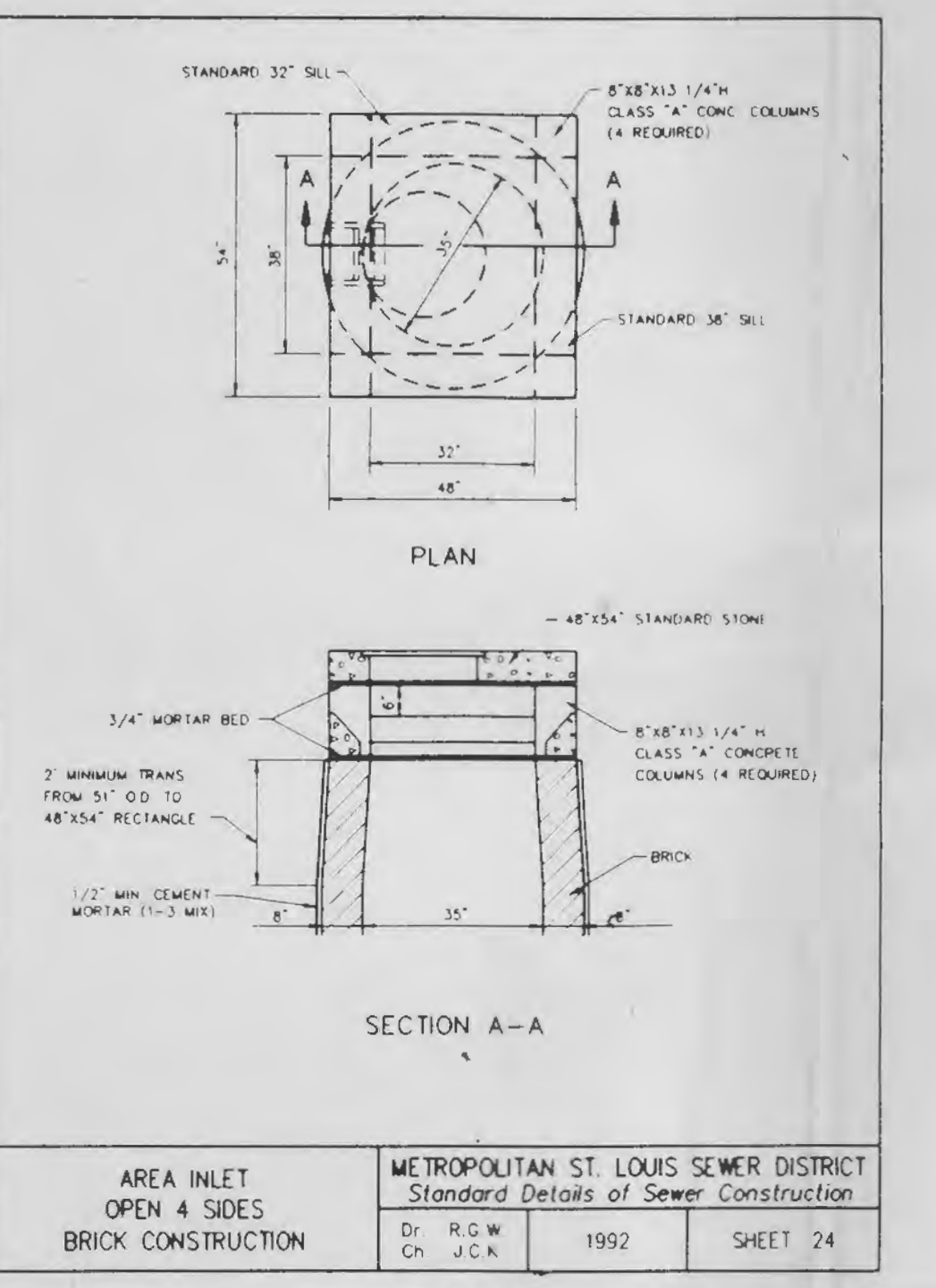
TRAPPED STREET INLET BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 21  
Ch. J.C.K.



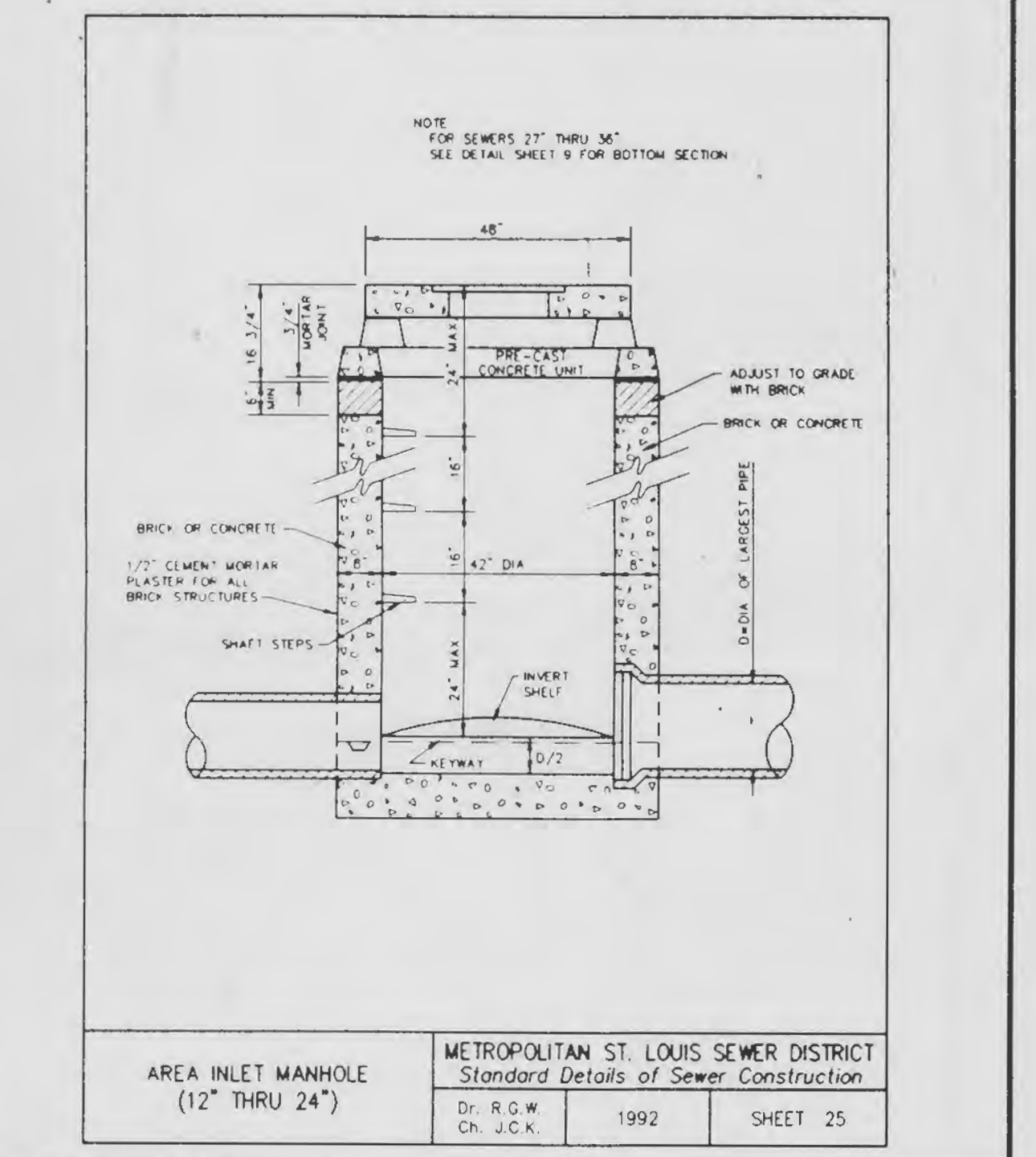
MULTIPLE STREET INLET BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. D.A.B. 1992 SHEET 22  
Ch. J.C.K.



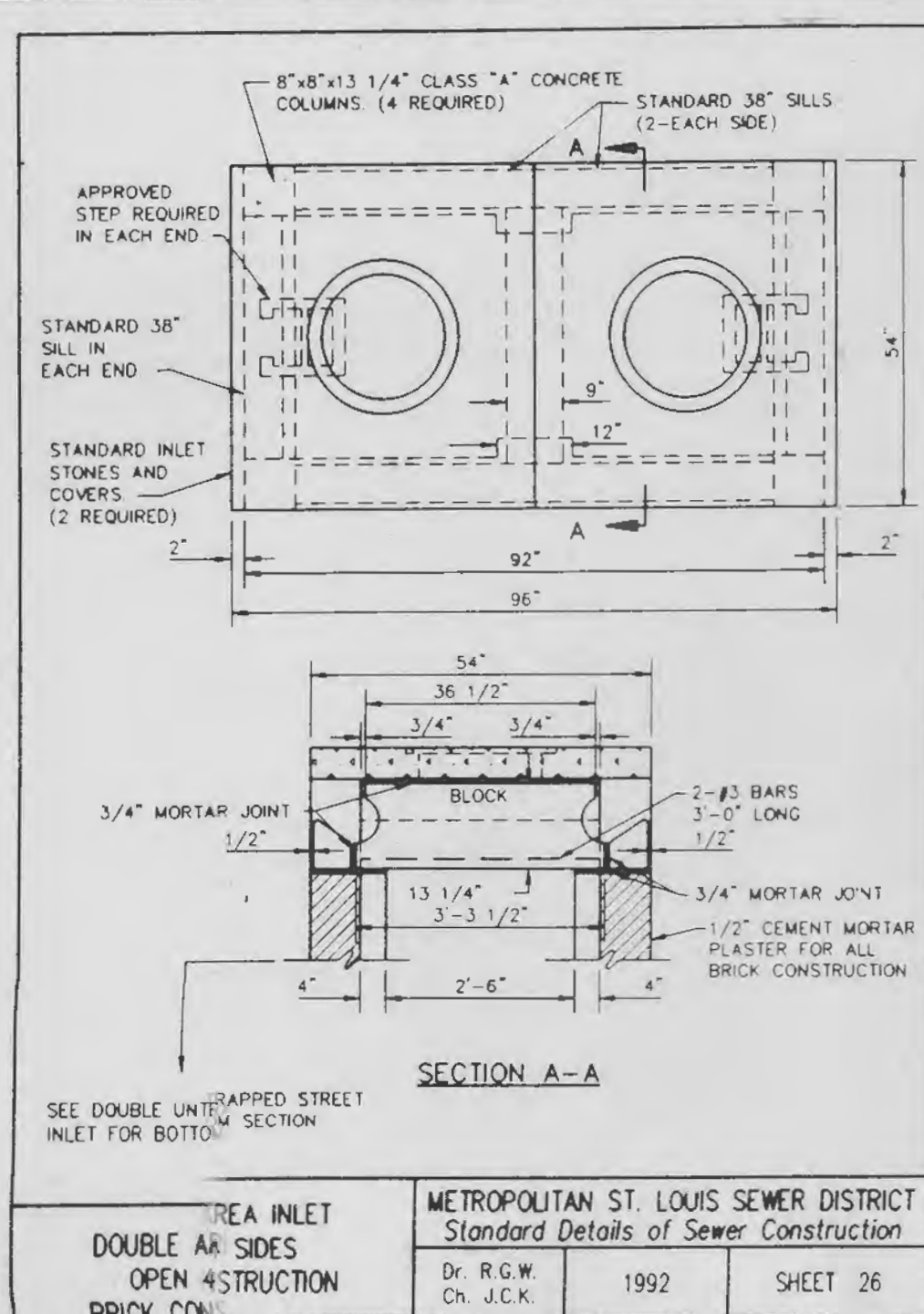
DOUBLE UNTRAPPED STREET INLET BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. D.A.B. 1992 SHEET 23  
Ch. J.C.K.



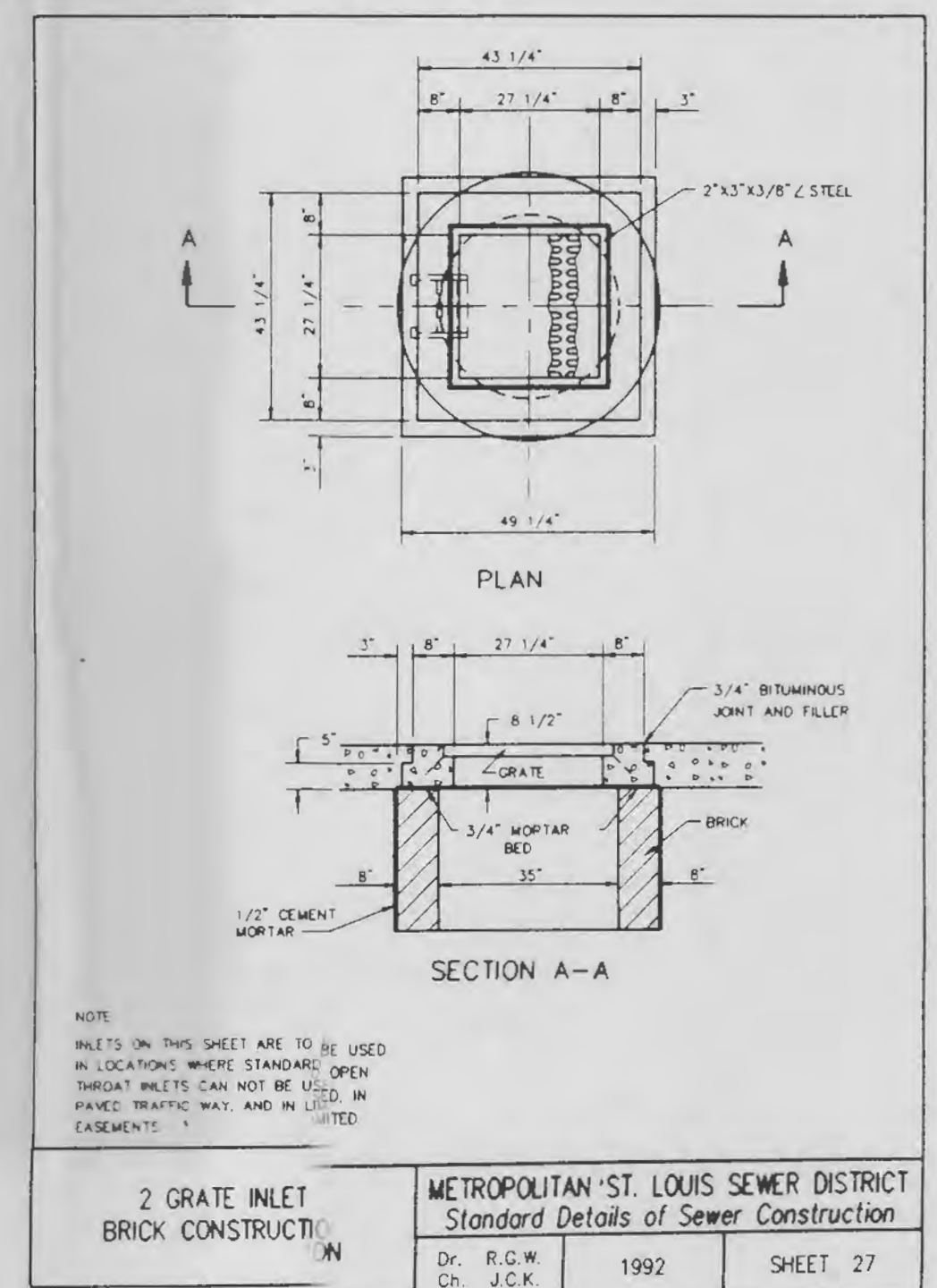
AREA INLET OPEN 4 SIDES BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 24  
Ch. J.C.K.



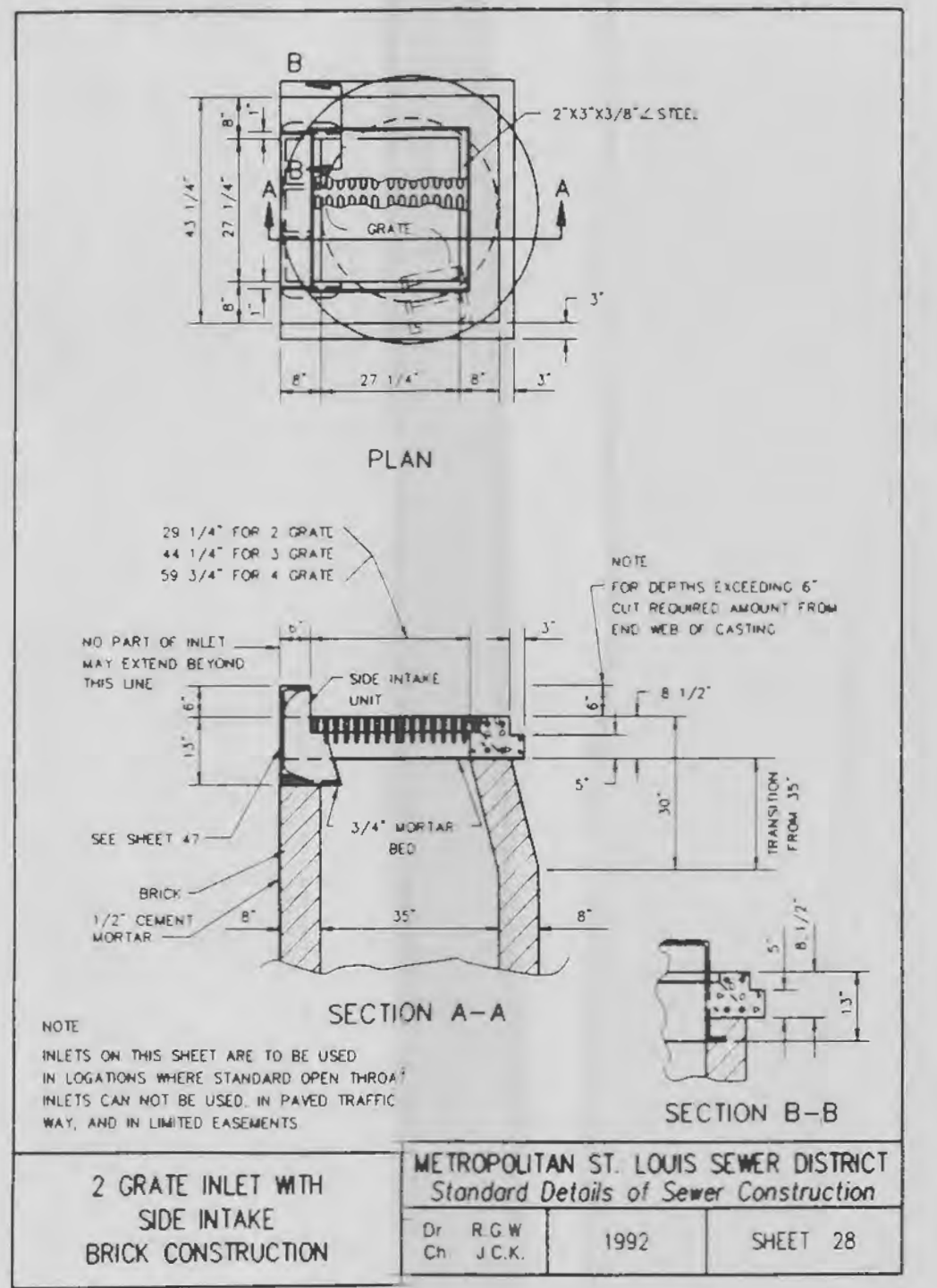
AREA INLET MANHOLE (12" THRU 24")  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 25  
Ch. J.C.K.



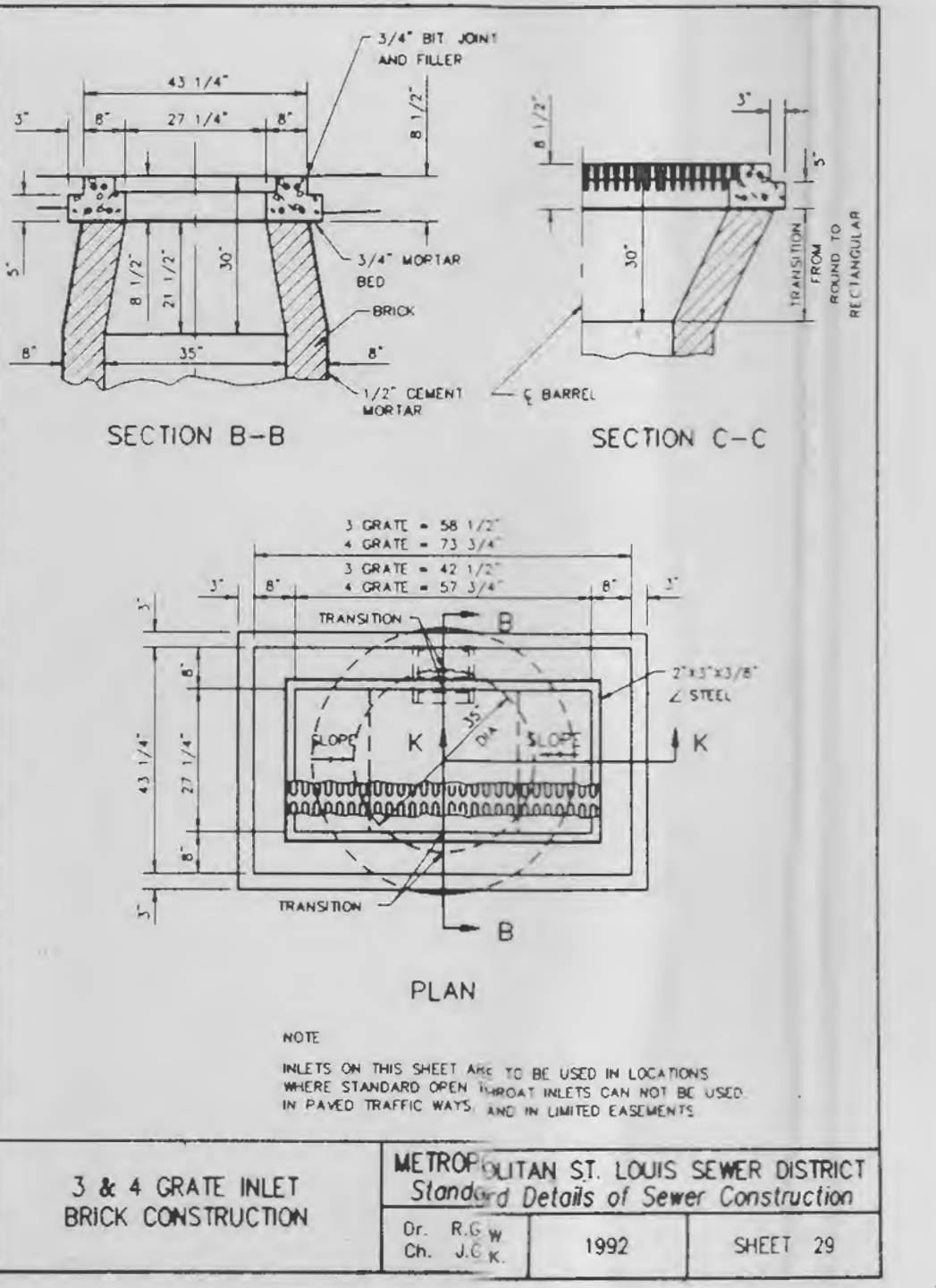
AREA INLET DOUBLE AIR SIDES OPEN 4 SIDES BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 26  
Ch. J.C.K.



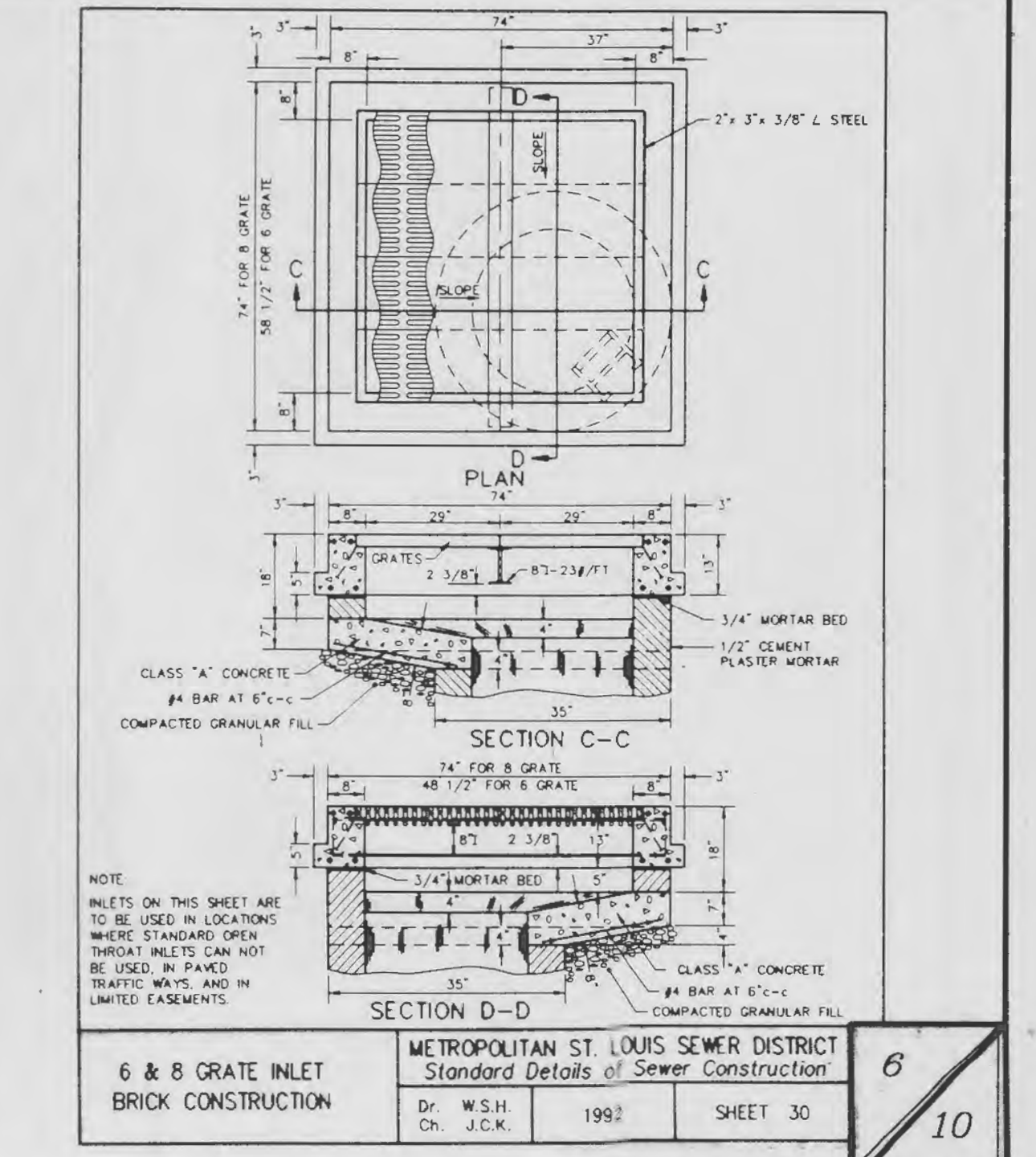
2 GRATE INLET BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 27  
Ch. J.C.K.



2 GRATE INLET WITH SIDE INTAKE BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 28  
Ch. J.C.K.



3 & 4 GRATE INLET BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 29  
Ch. J.C.K.



6 & 8 GRATE INLET BRICK CONSTRUCTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 30  
Ch. J.C.K.



**PRECAST CONCRETE STORMWATER STRUCTURES**

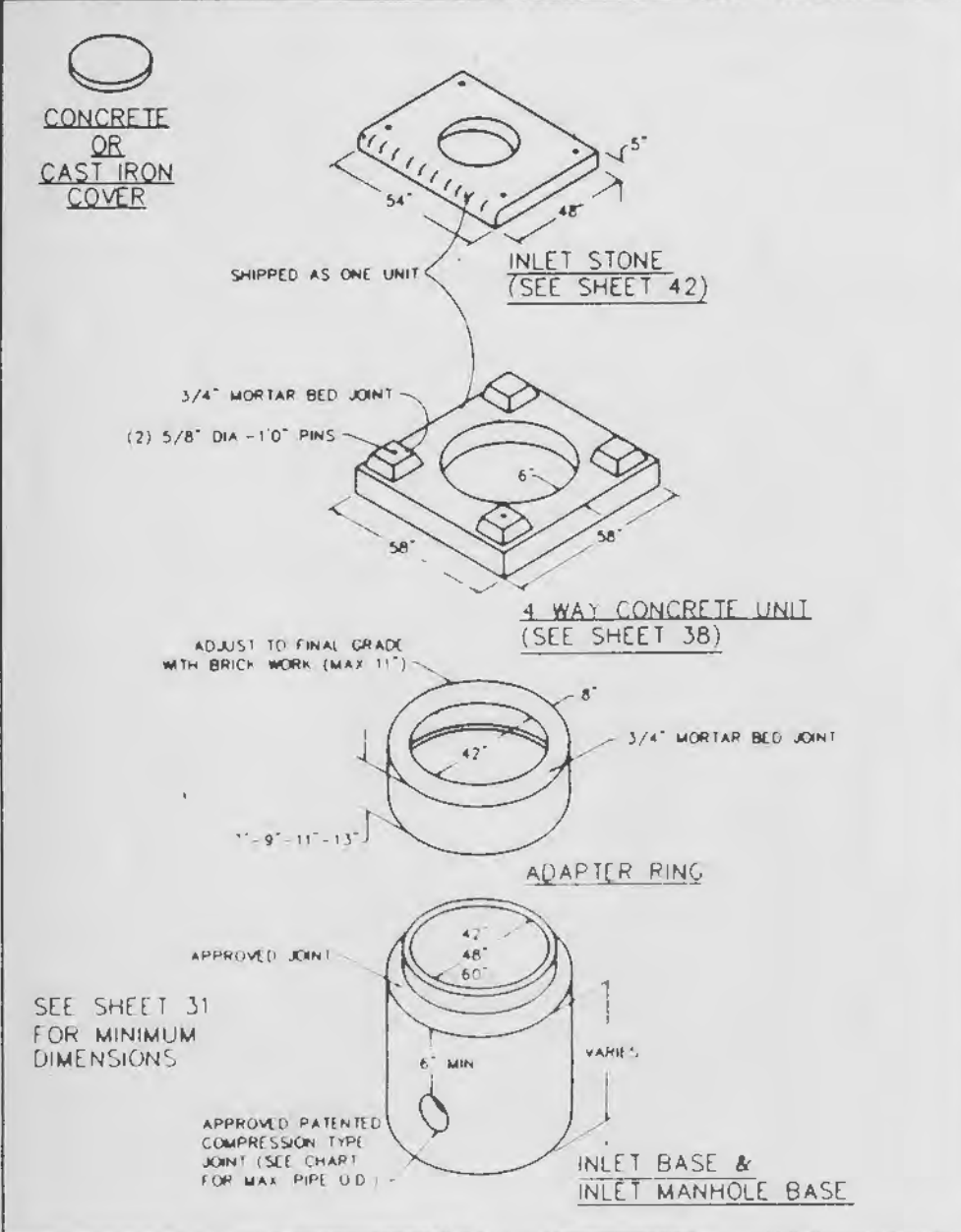
MINIMUM DISTANCE FLOWLINE TO TOP OF STONE OR GRATE

PIPE Ø NOMINAL INCHES	AREA INLET CIRCULAR BASE DIA.		2 GRATE INLET CIRCULAR BASE DIA. SQUARE (MAX.)		SINGLE STREET INLET CIRCULAR BASE DIA. RECTANGLE (MAX.)	
	42"	48"	42"	48"	42"	48"
12"	45"	58"	42"	48"	42"	48"
15"	48"	61"	42"	48"	42"	48"
18"	52"	64"	42"	48"	42"	48"
21"	55"	67"	42"	48"	42"	48"
24"	58"	70"	42"	48"	42"	48"
27"	61"	73"	42"	48"	42"	48"
30"	64"	76"	42"	48"	42"	48"
33"	67"	79"	42"	48"	42"	48"

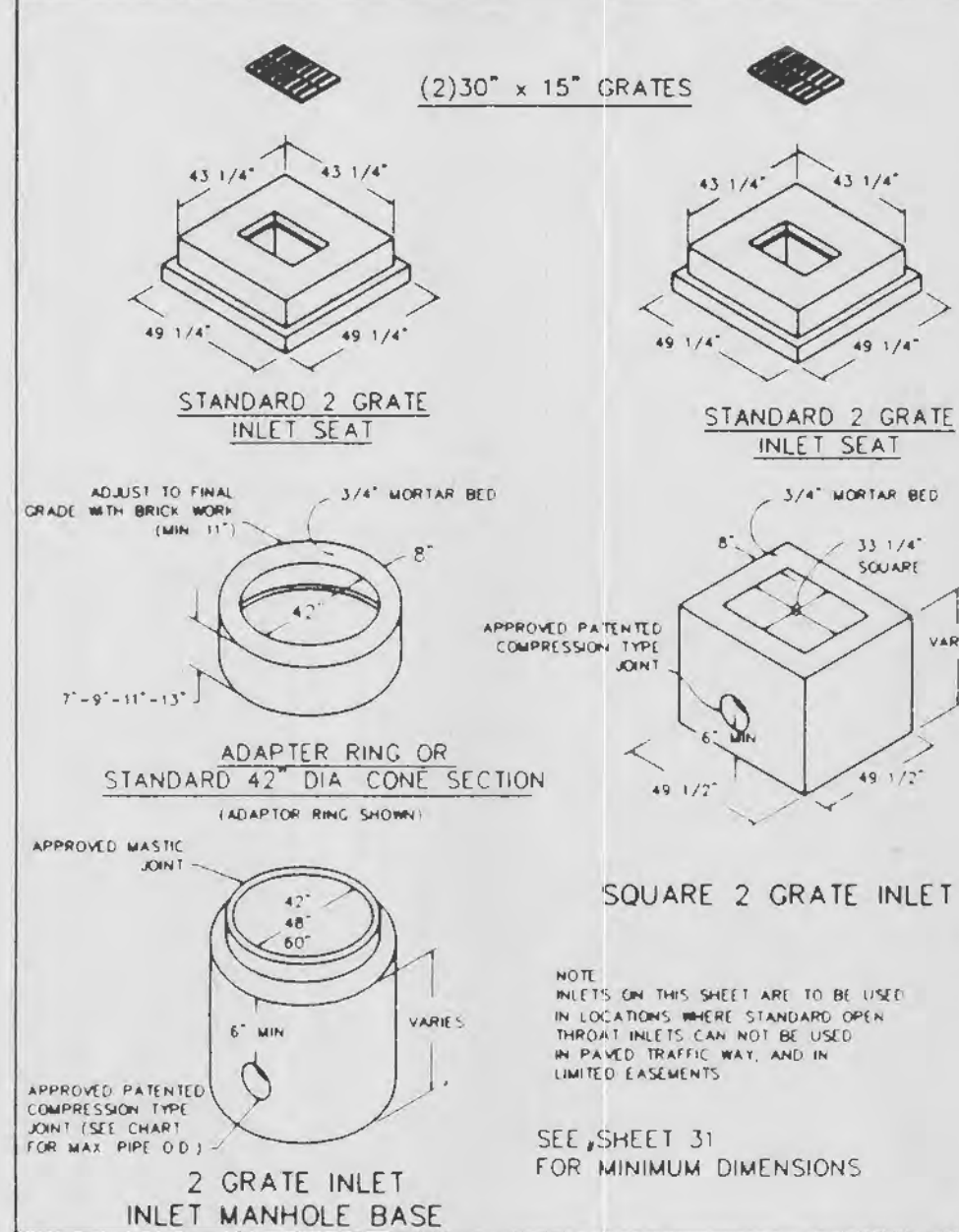
(SEE SHEET 32 FOR DETAIL) (SEE SHEET 33 FOR DETAIL) (SEE SHEET 34 FOR DETAIL)

NOTE 1: 48" DIA. BASE REQUIRES 7" HIGH TRANSITION SECTION TO 42" DIA. SIMILAR TO "ADAPTER RING" SHEET 32.  
NOTE 2: 60" DIA. BASE REQUIRES 24" HIGH CONCENTRIC REDUCER TRANSITION TO 42" DIA. SIMILAR TO "ADAPTER RING" SHEET 32.

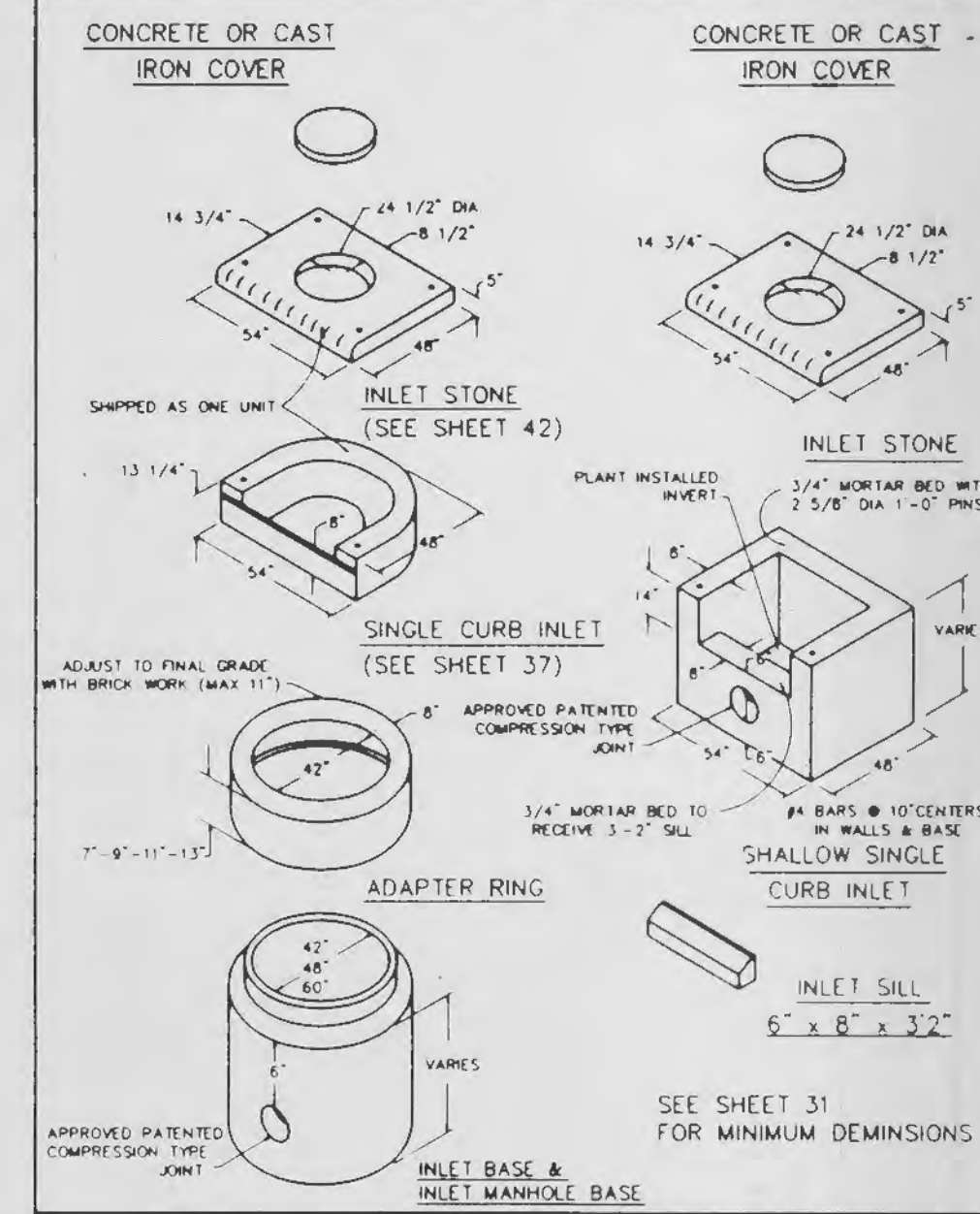
PRECAST CONCRETE STORMWATER STRUCTURES  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. J.L.G. Ch. J.C.K. SEPT 1990 SHEET 31



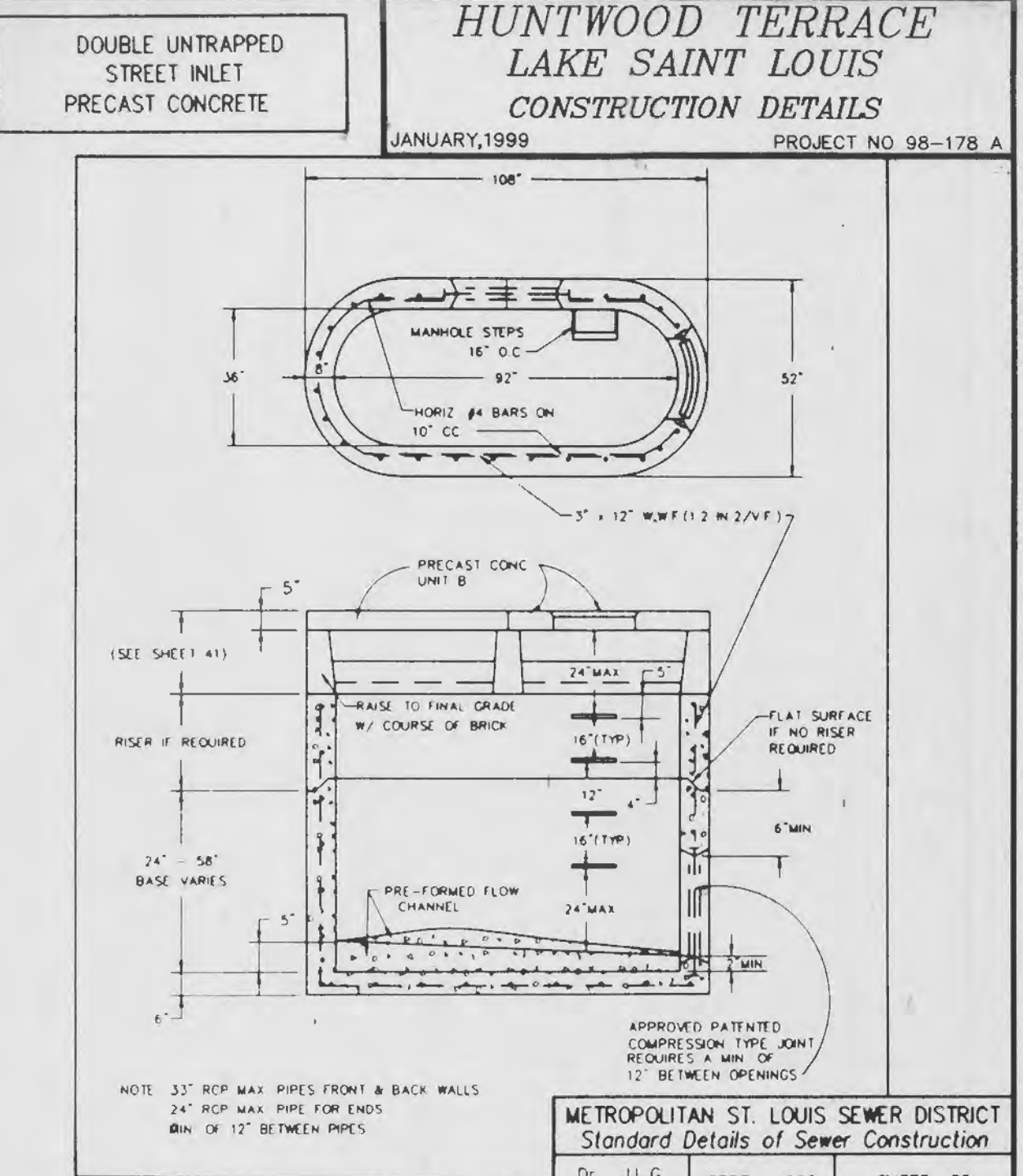
AREA INLET PRECAST CONCRETE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. J.L.G. Ch. J.C.K. APRIL 1992 SHEET 32



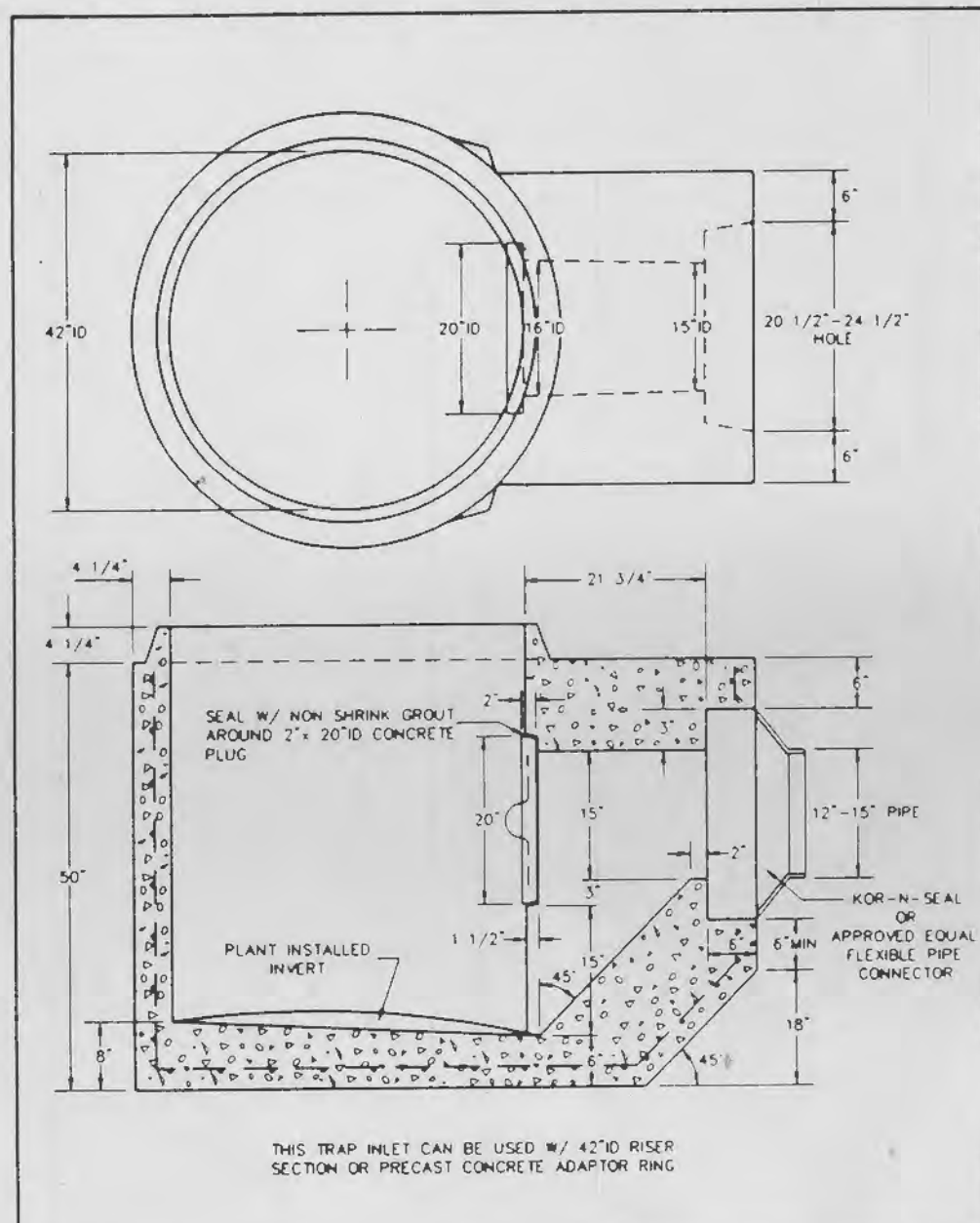
2 GRATE INLETS PRECAST CONCRETE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. J.L.G. Ch. J.C.K. APRIL 1992 SHEET 33



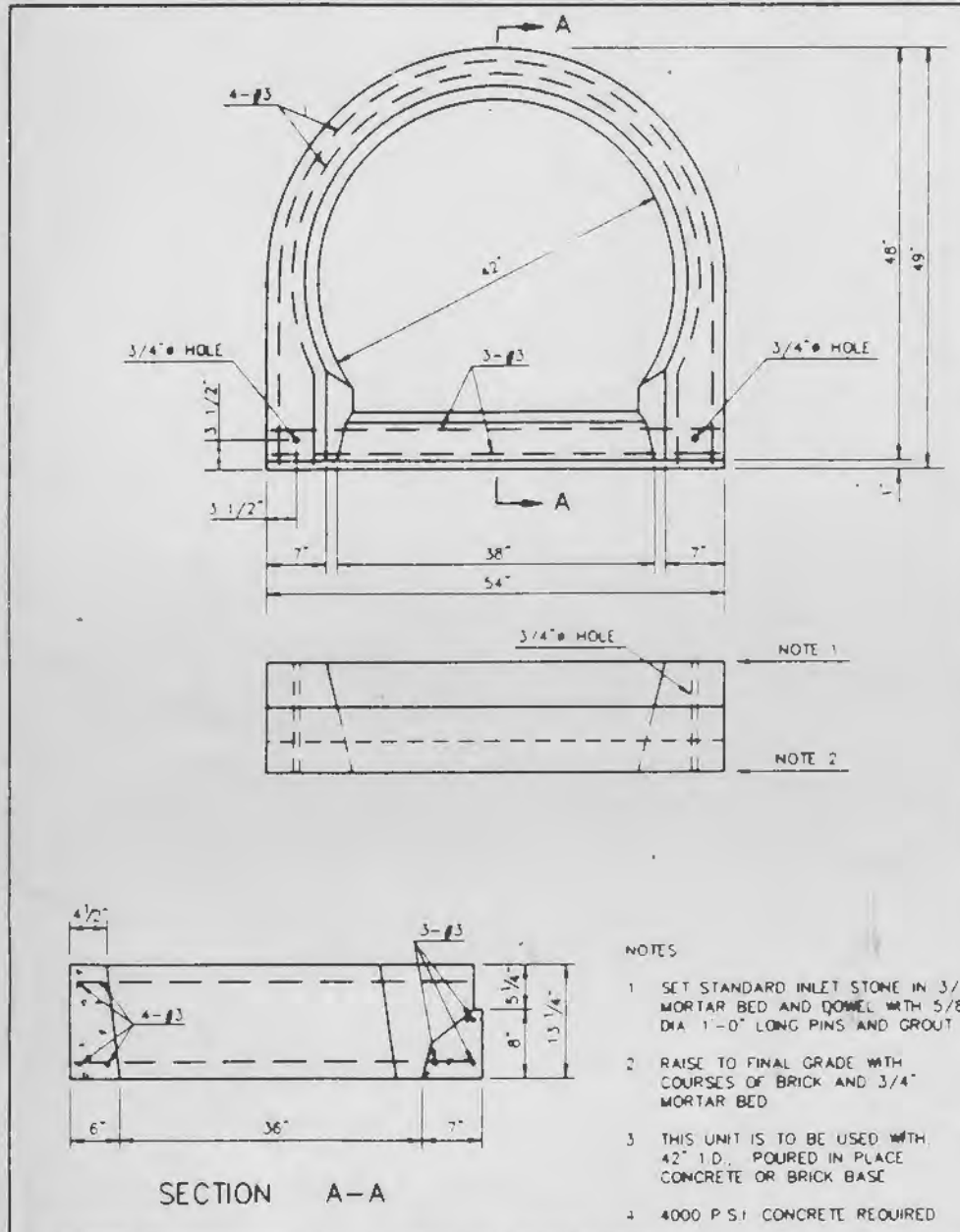
SINGLE STREET INLETS PRECAST CONCRETE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. J.L.G. Ch. J.C.K. APRIL 1991 SHEET 34



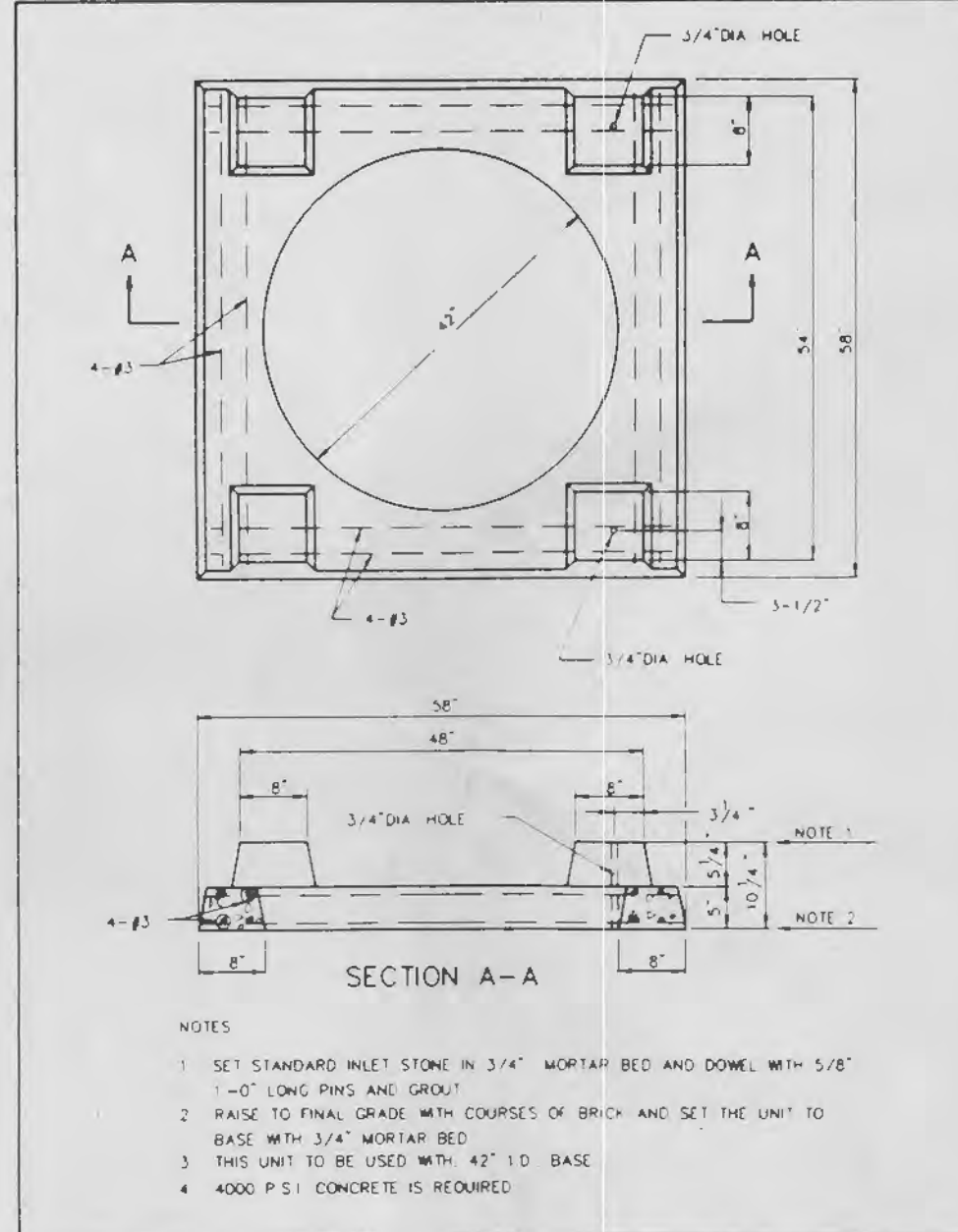
DOUBLE UNTRAPPED STREET INLET PRECAST CONCRETE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. J.L.G. Ch. J.C.K. SEPT 1992 SHEET 35



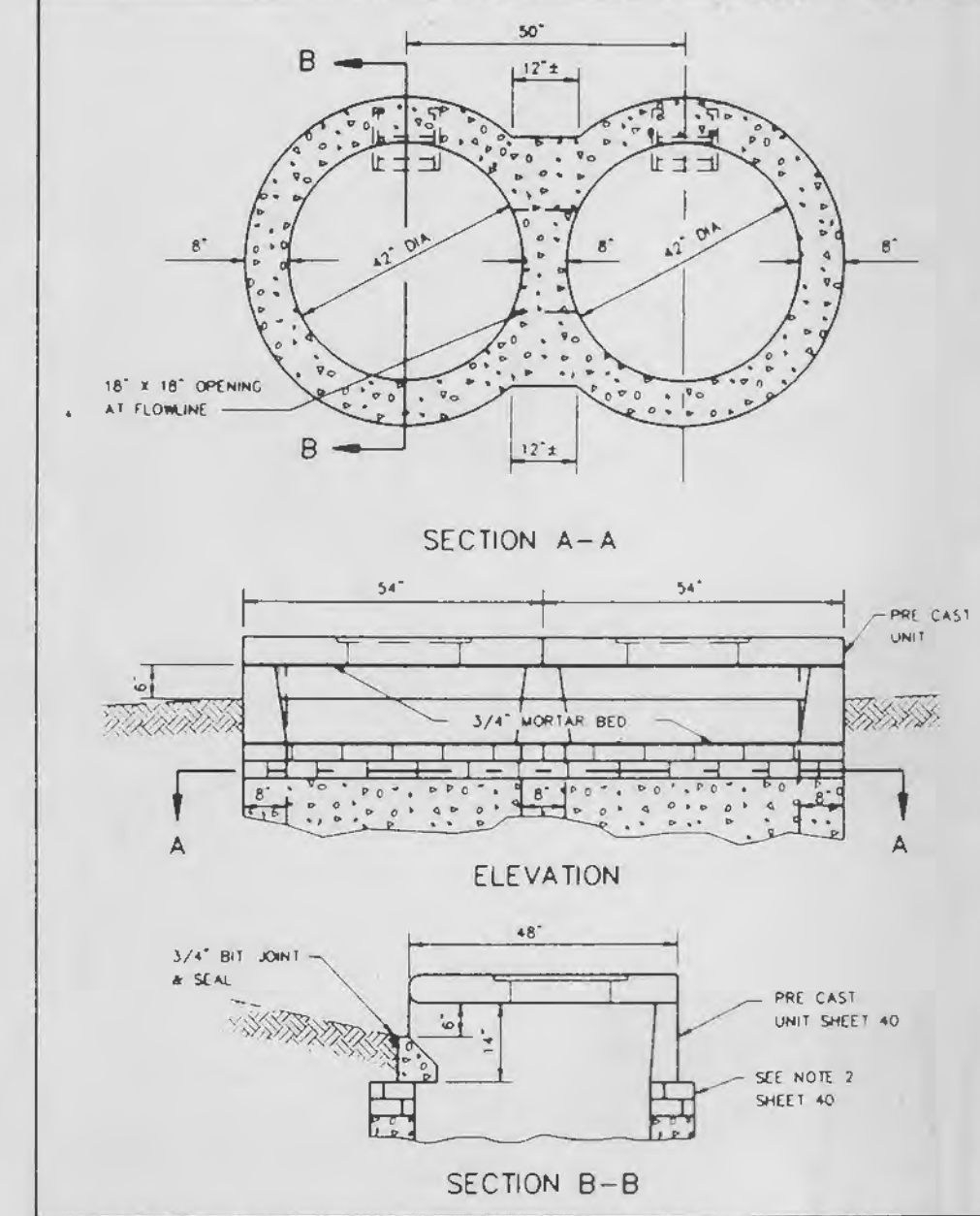
TRAPPED STREET INLET BASE PRECAST CONCRETE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 36



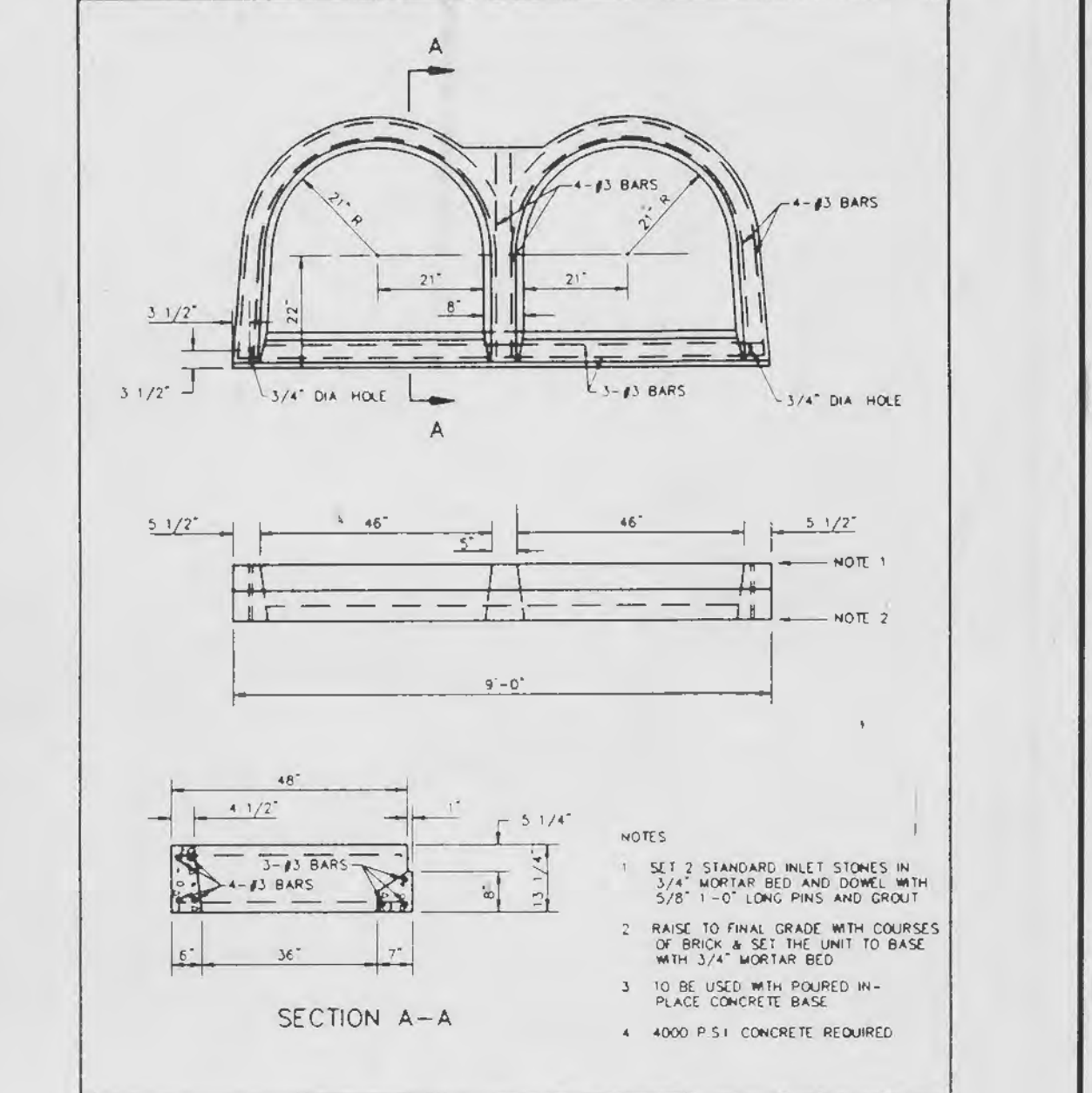
PRE-CAST CONCRETE UNIT FOR SINGLE STREET INLET  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 37



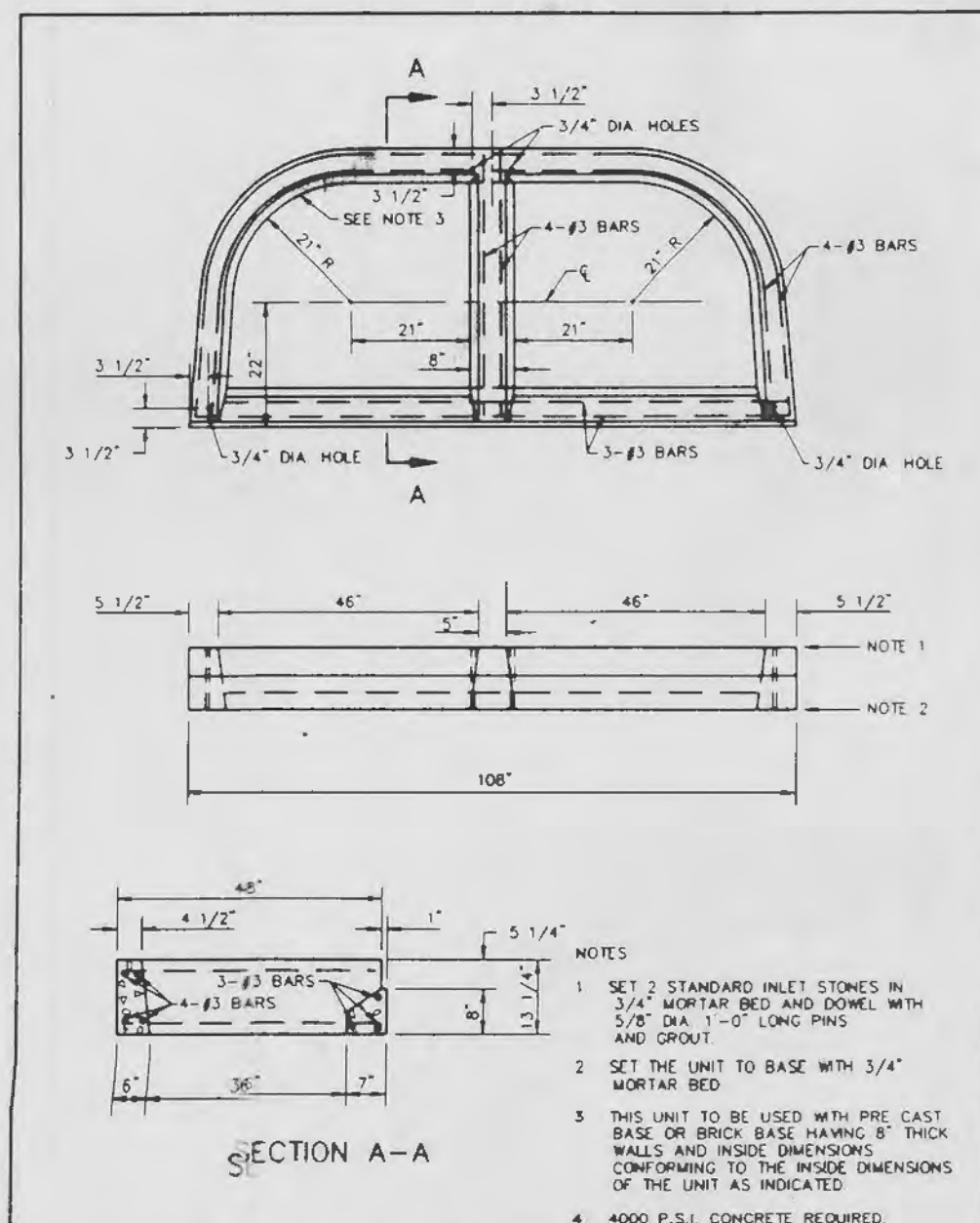
PRE-CAST CONCRETE UNIT FOR 4 WAY AREA INLET  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. D.A.B. Ch. J.C.K. 1992 SHEET 38



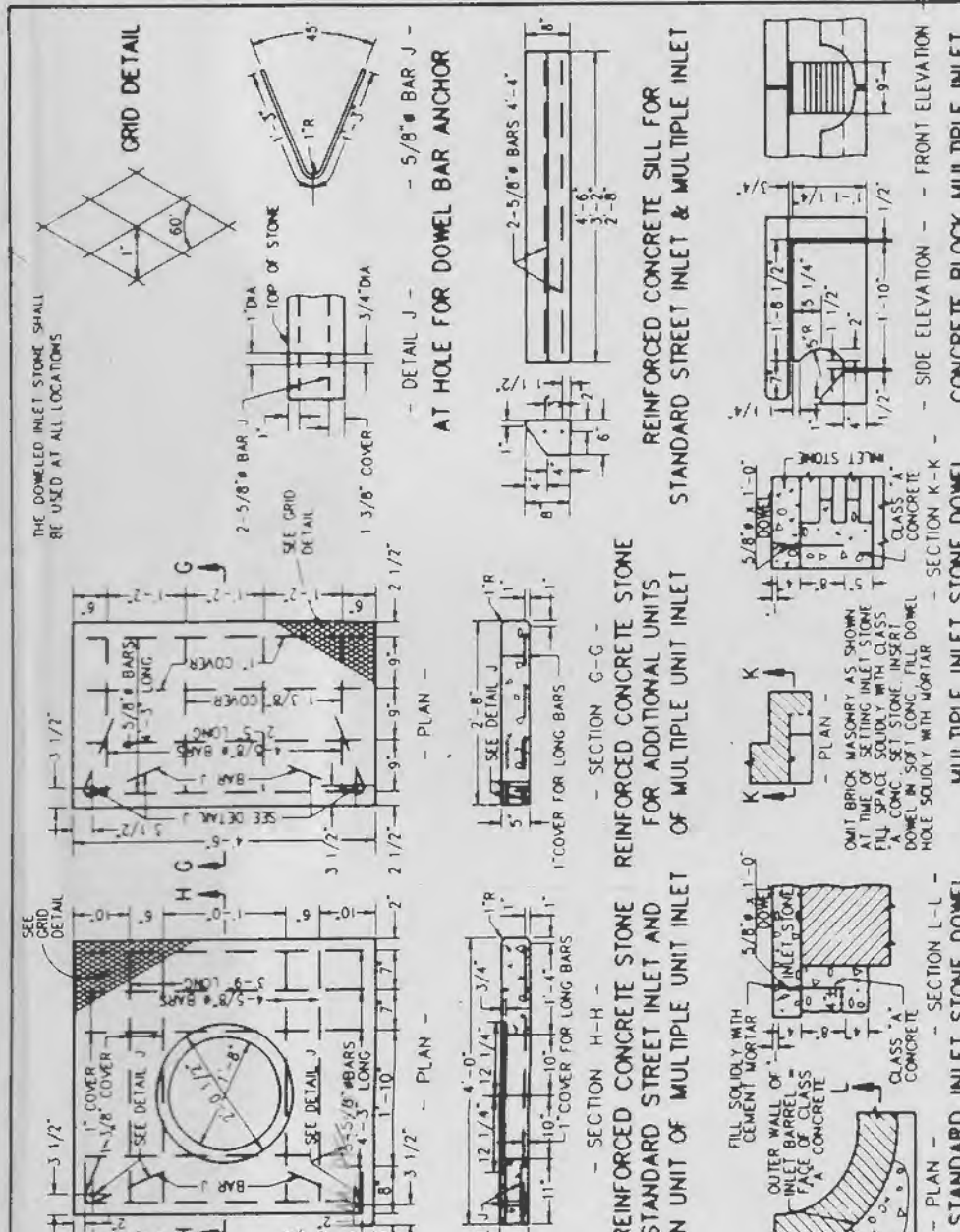
CONCRETE DOUBLE STREET INLET W/PRE CAST CONCRETE UNIT A  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 39



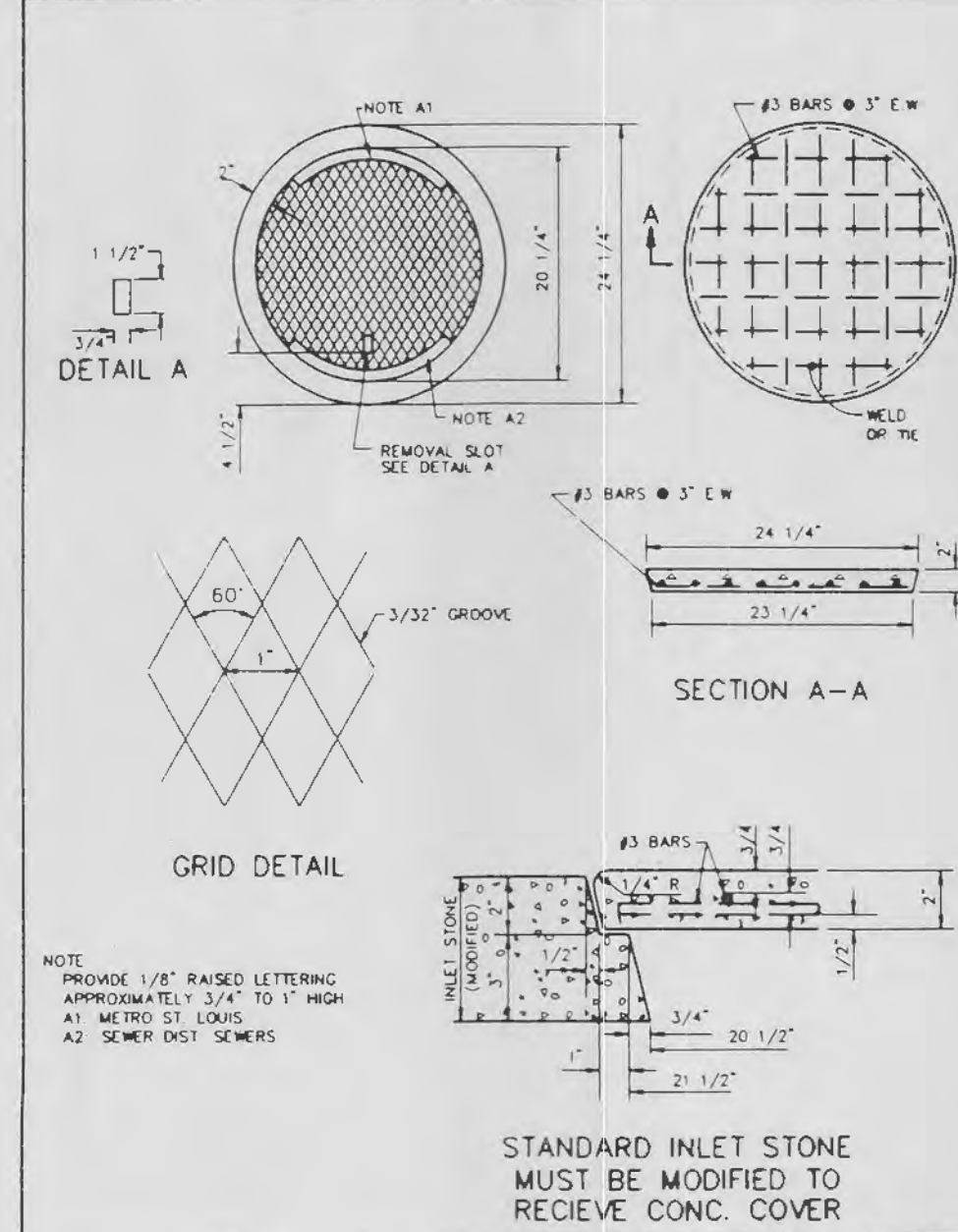
PRE-CAST CONCRETE UNIT A FOR STREET DOUBLE INLET  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 40



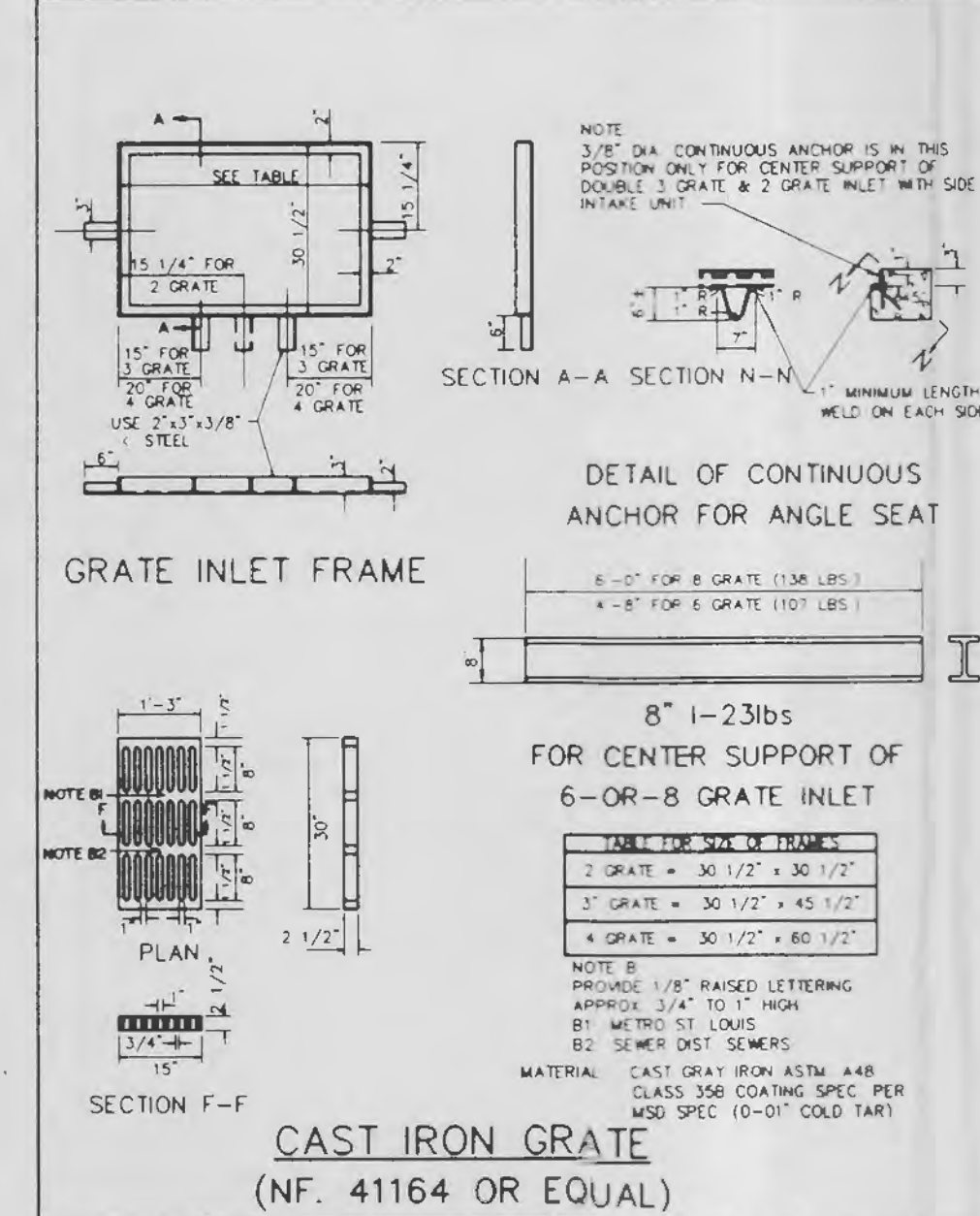
PRE-CAST CONCRETE UNIT B FOR STREET DOUBLE INLET  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 41



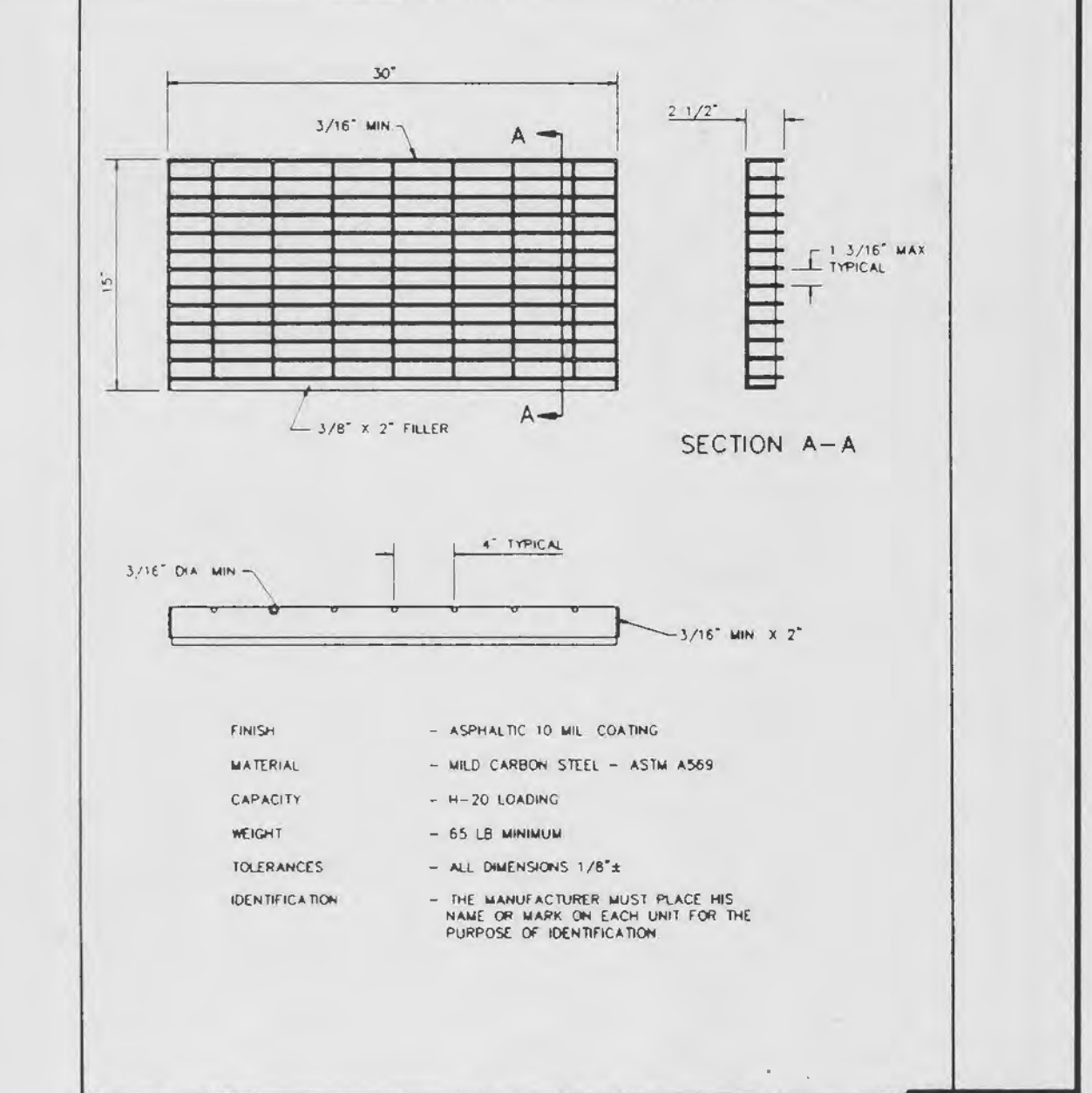
STANDARD - INLET STONES, BLOCKS & DESIGN DETAILS  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. Ch. J.C.K. 1992 SHEET 42



PRE-CAST CONCRETE INLET COVER  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 43



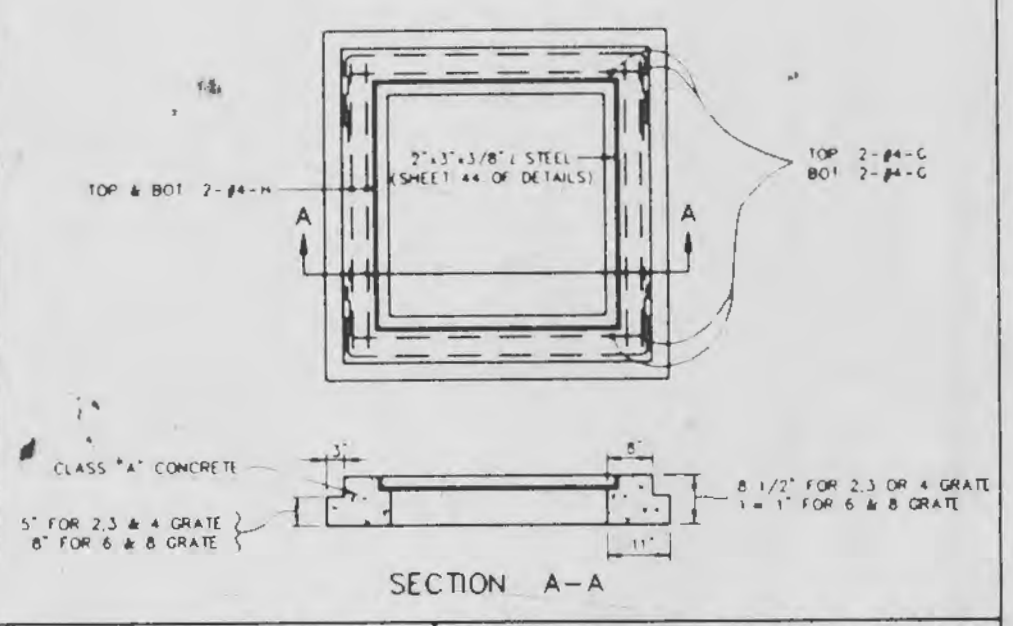
DETAILS OF INLET FRAME AND GRATES  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 44



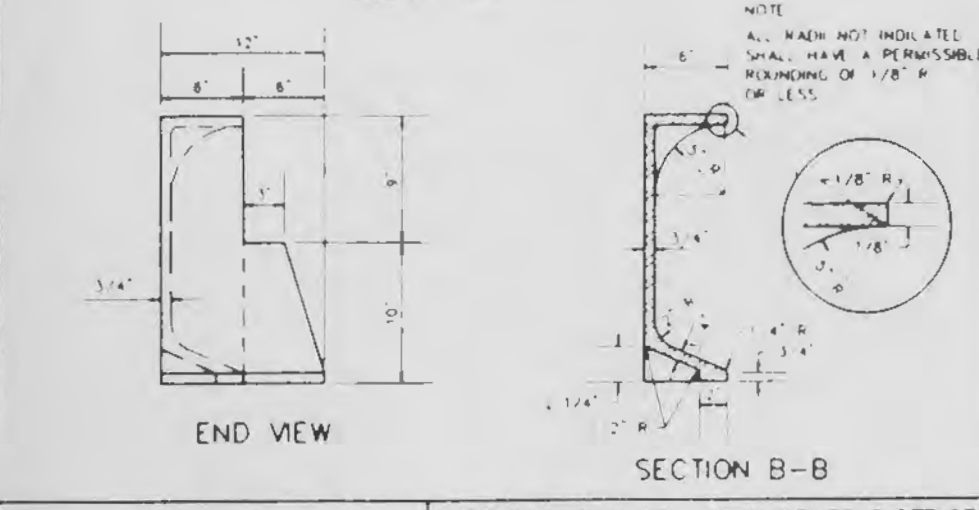
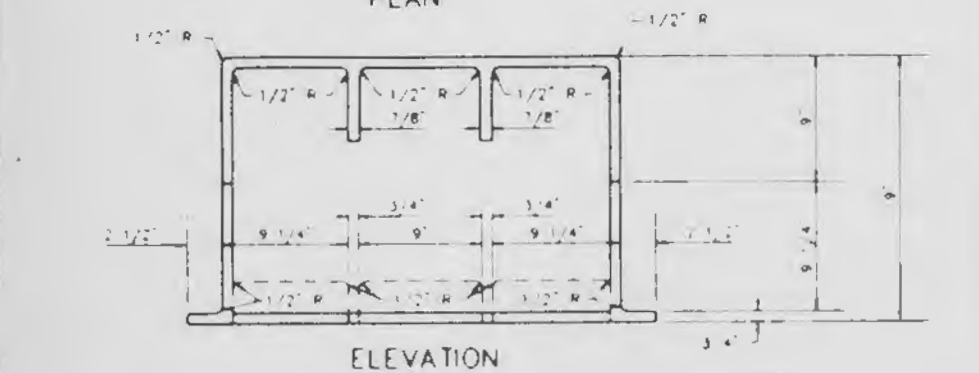
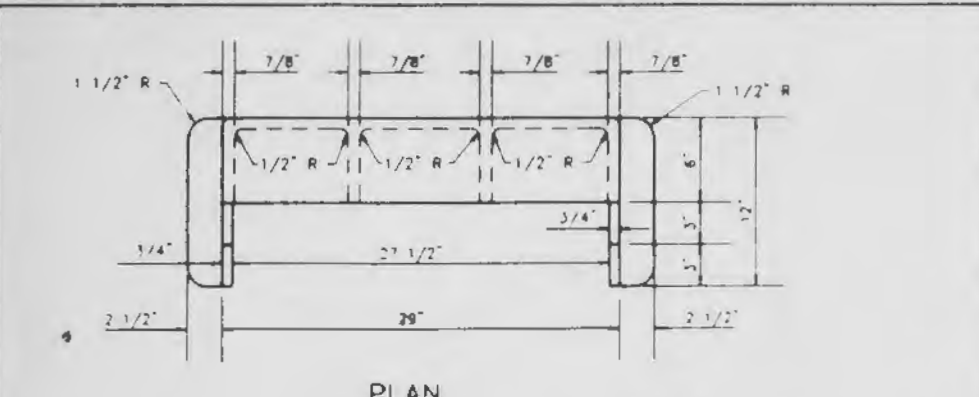
DETAIL OF STEEL GRATE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. Ch. J.C.K. 1992 SHEET 45



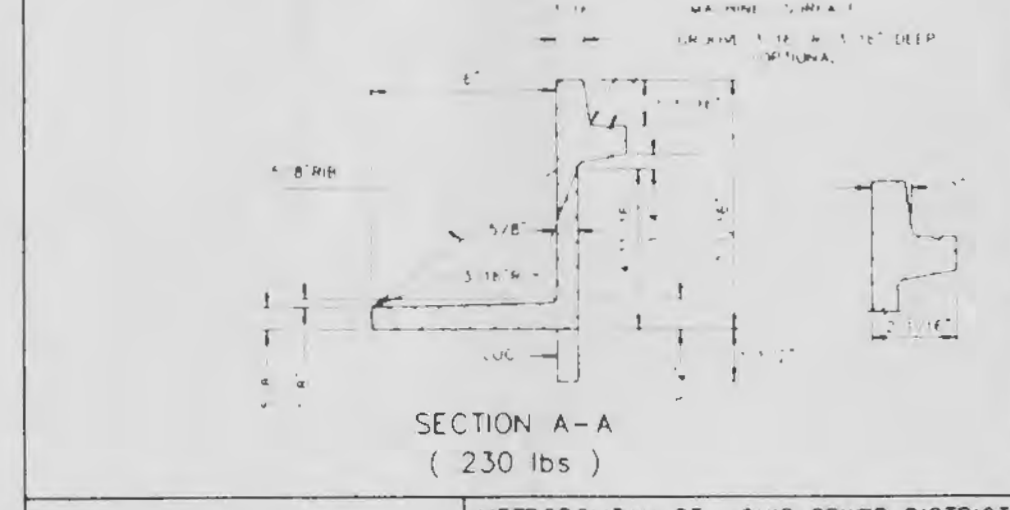
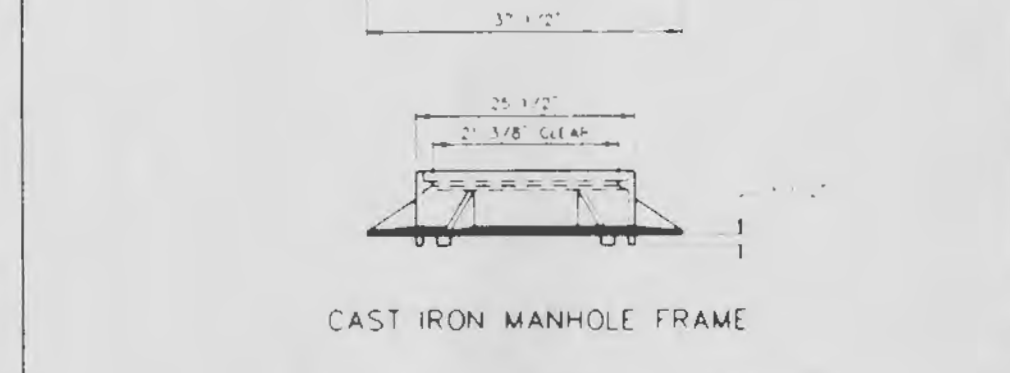
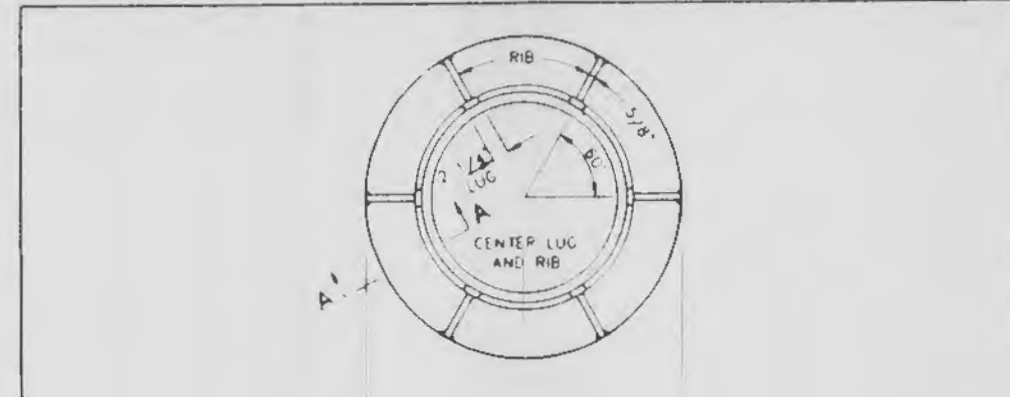
CALL	USE	Ø	STRAIGHT BARS
G-1	2, 3, OR 4 GRATE	3'-4"	
G-2	6 & 8 GRATE	5'-10"	
H-2	2 GRATE	3'-6"	
H-3	3 & 6 GRATE	4'-9"	
H-4	4 & 8 GRATE	6'-0"	



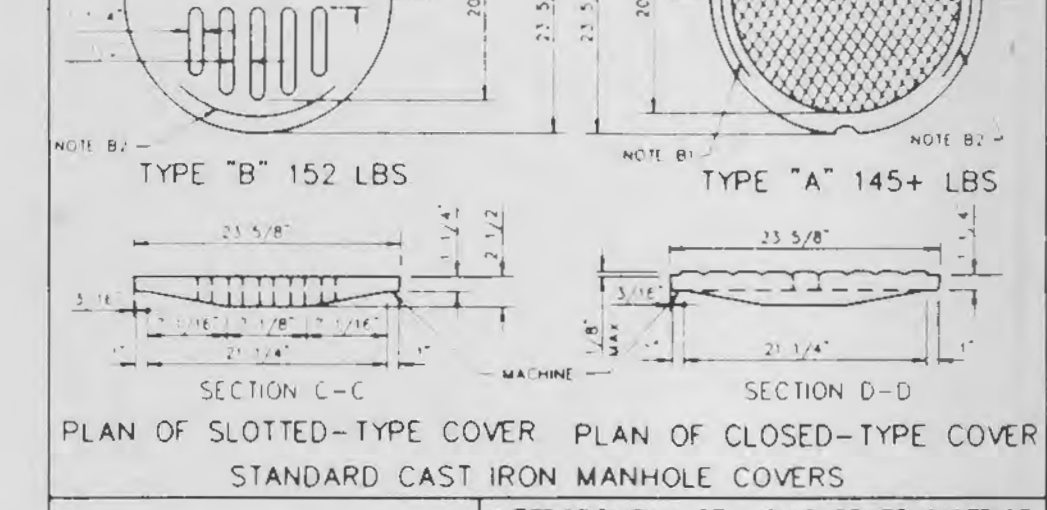
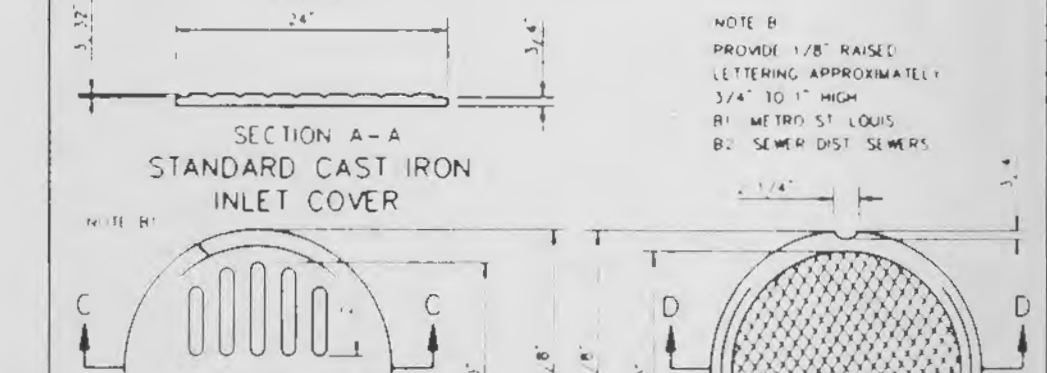
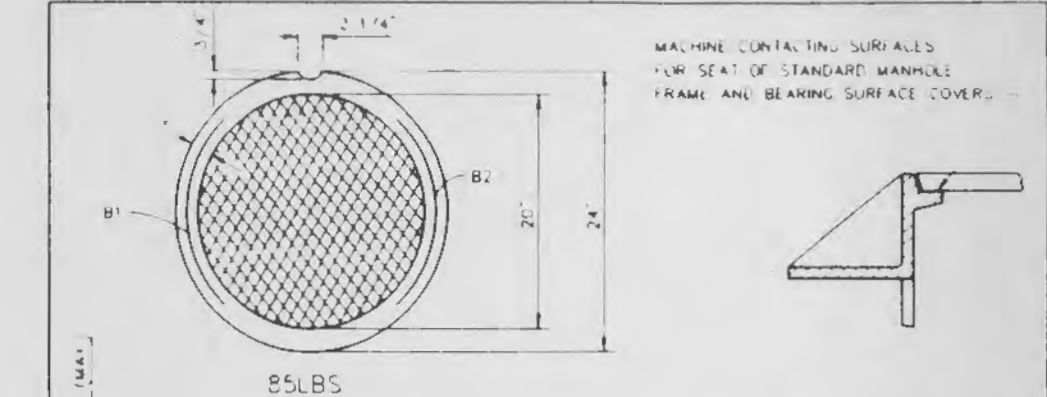
STEEL REQUIREMENTS FOR GRATE INLET SEAT  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 46



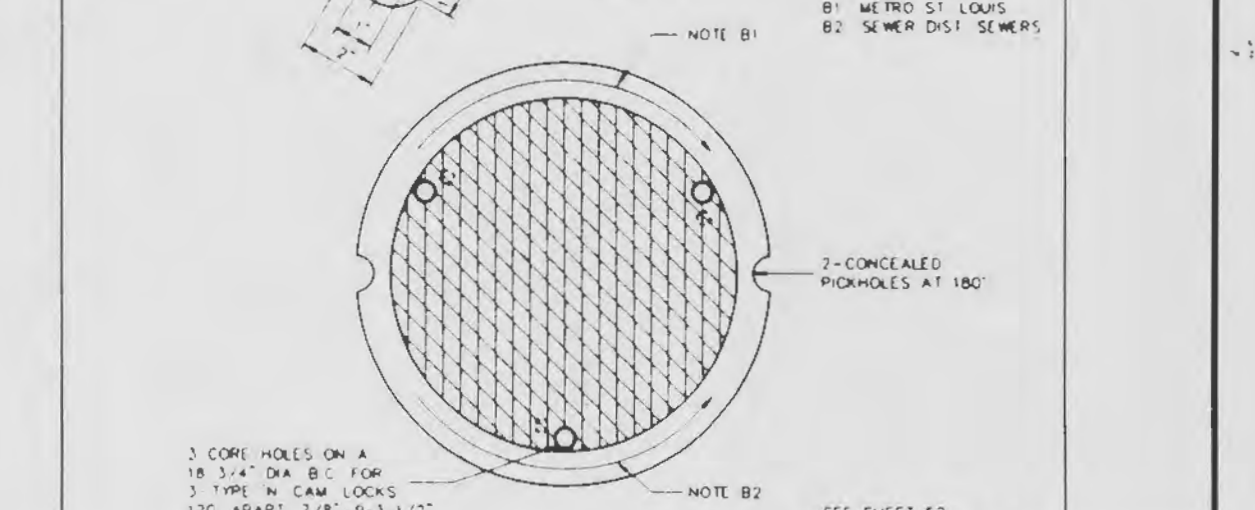
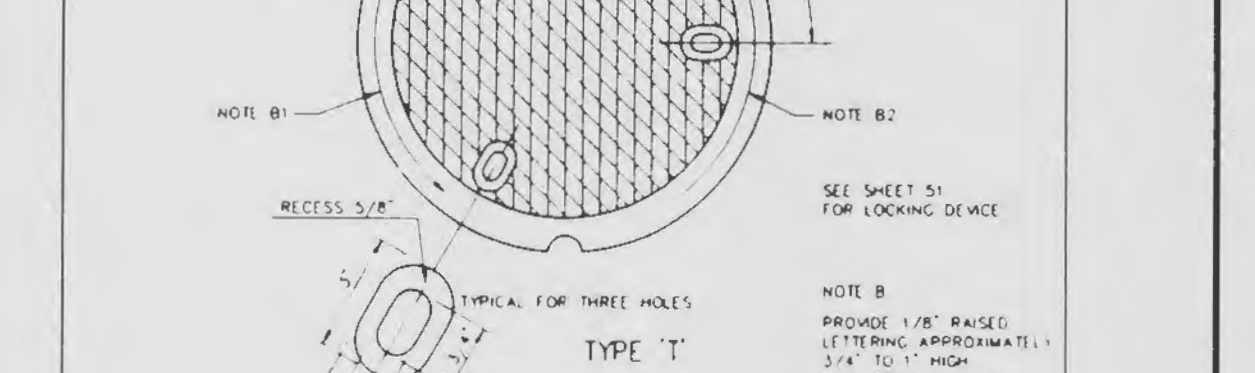
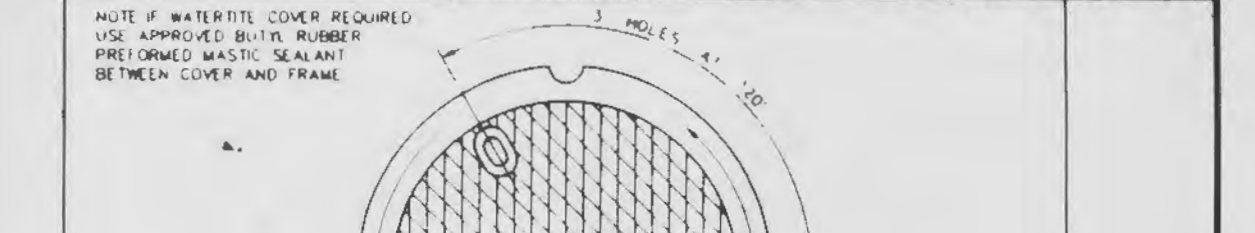
CAST IRON SIDE INTAKE UNIT FOR GRATED INLETS  
249 LBS  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 47



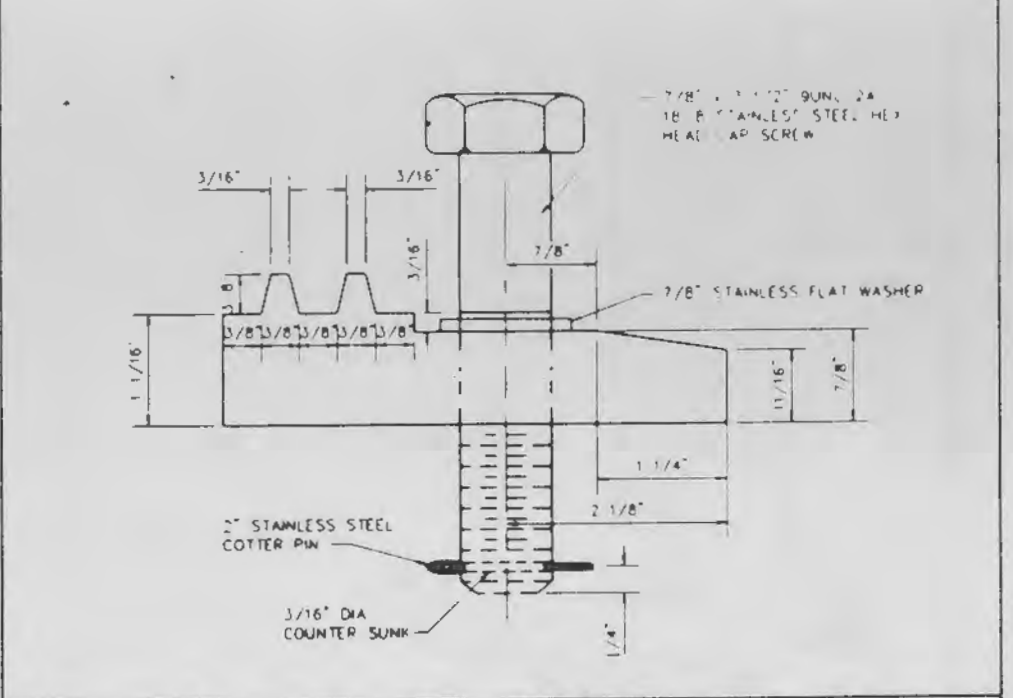
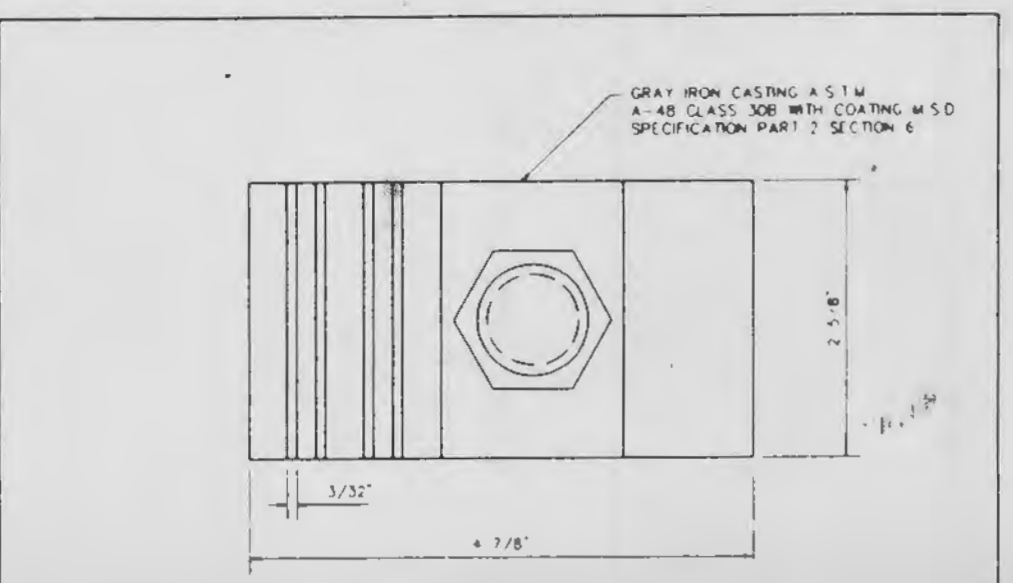
CAST IRON MANHOLE FRAME  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. D.A.H. 1992 SHEET 48



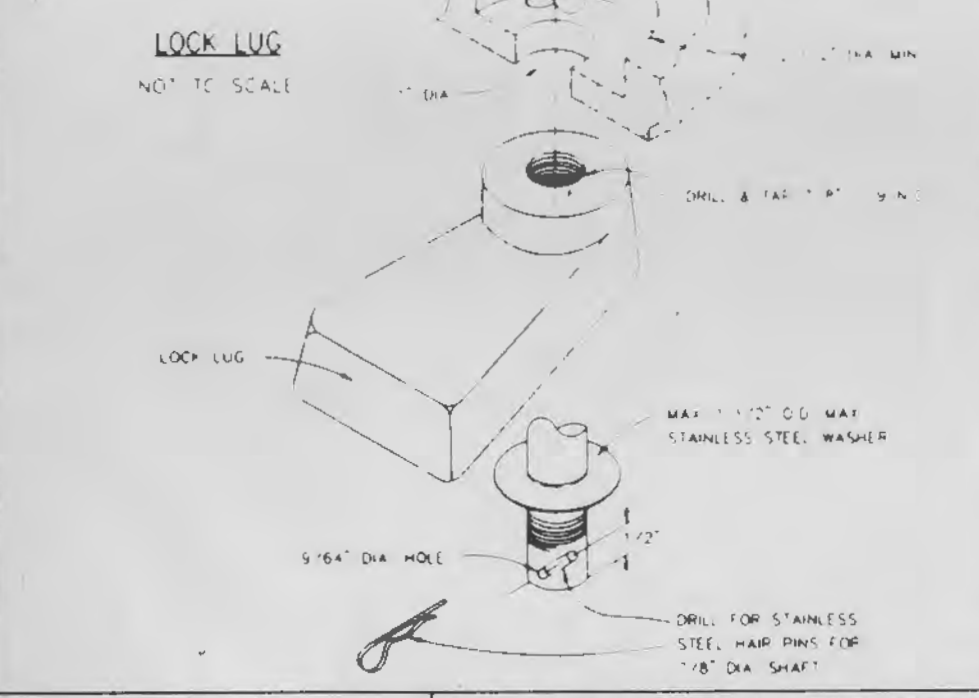
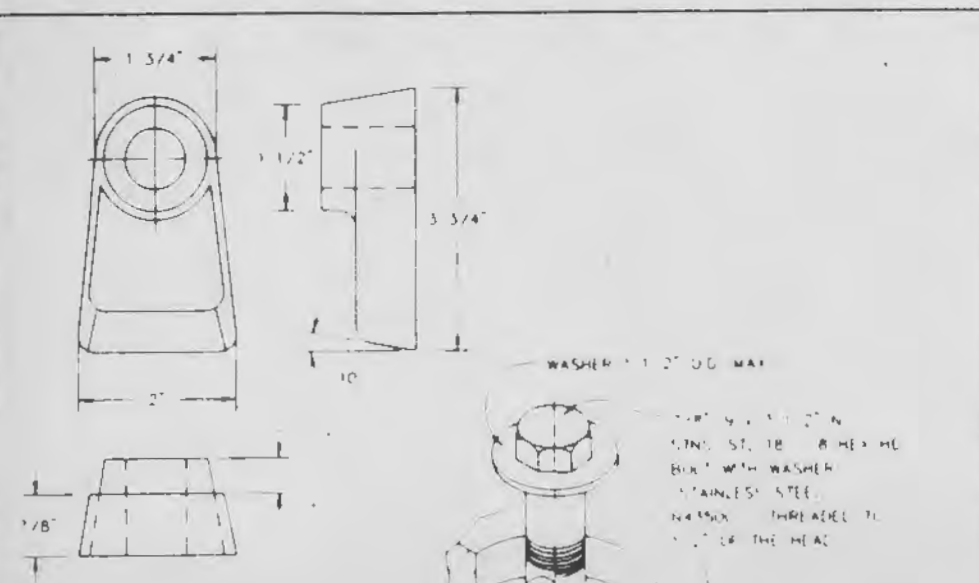
CAST IRON COVERS MANHOLES AND INLETS  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 49



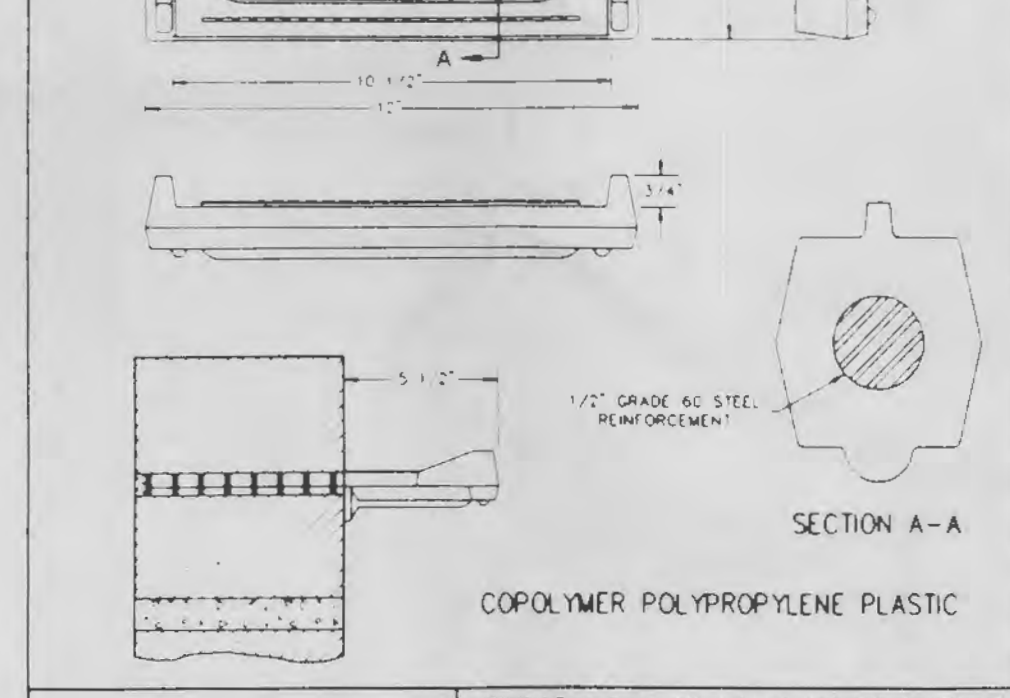
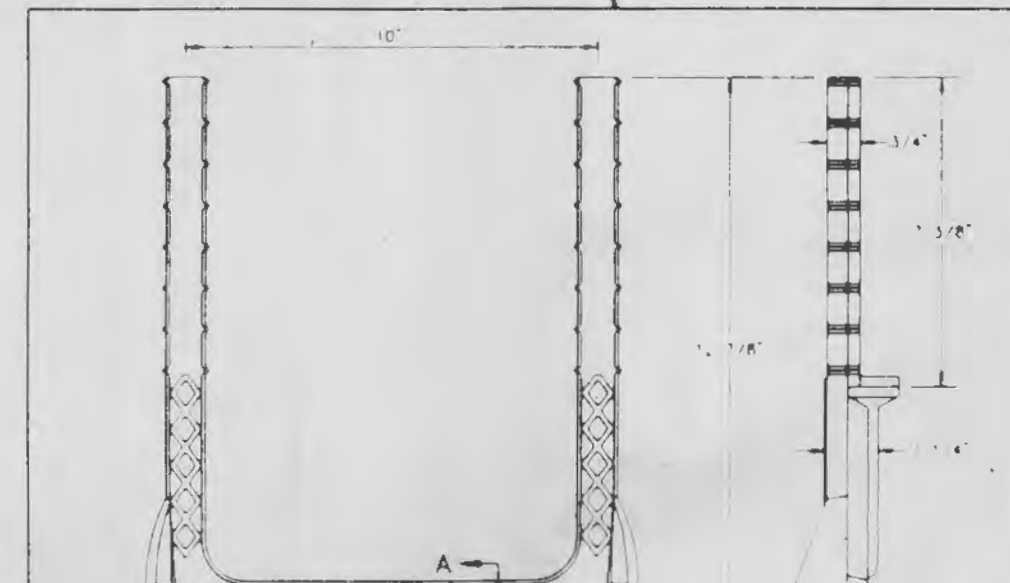
CAST IRON MANHOLE COVERS (LOCK TYPE)  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 50



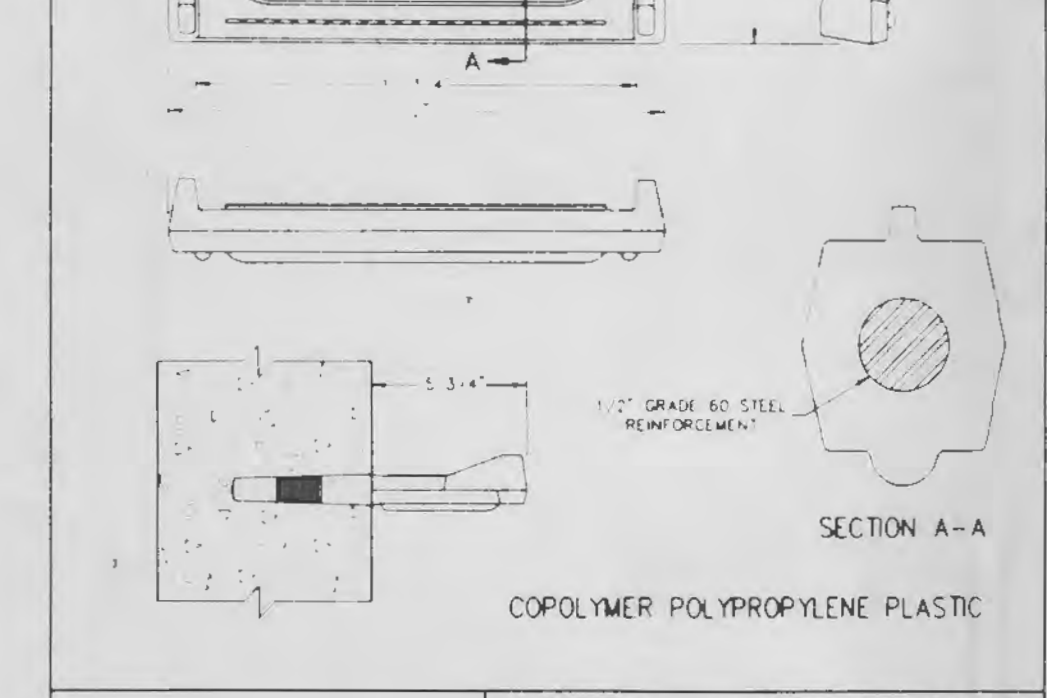
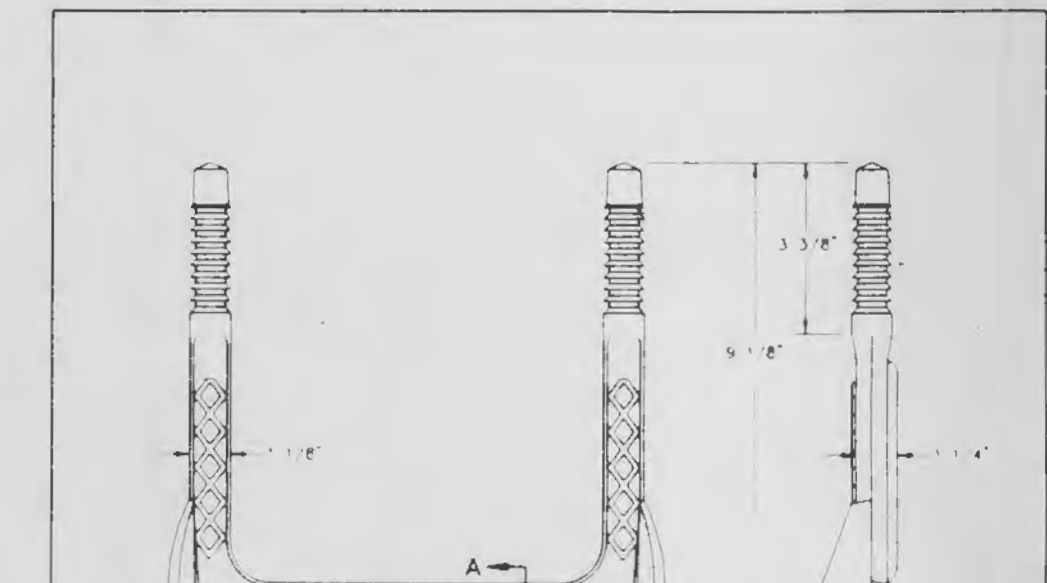
LOCKING DEVICE FOR TYPE "T" LOCK TYPE MANHOLE COVER  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 51



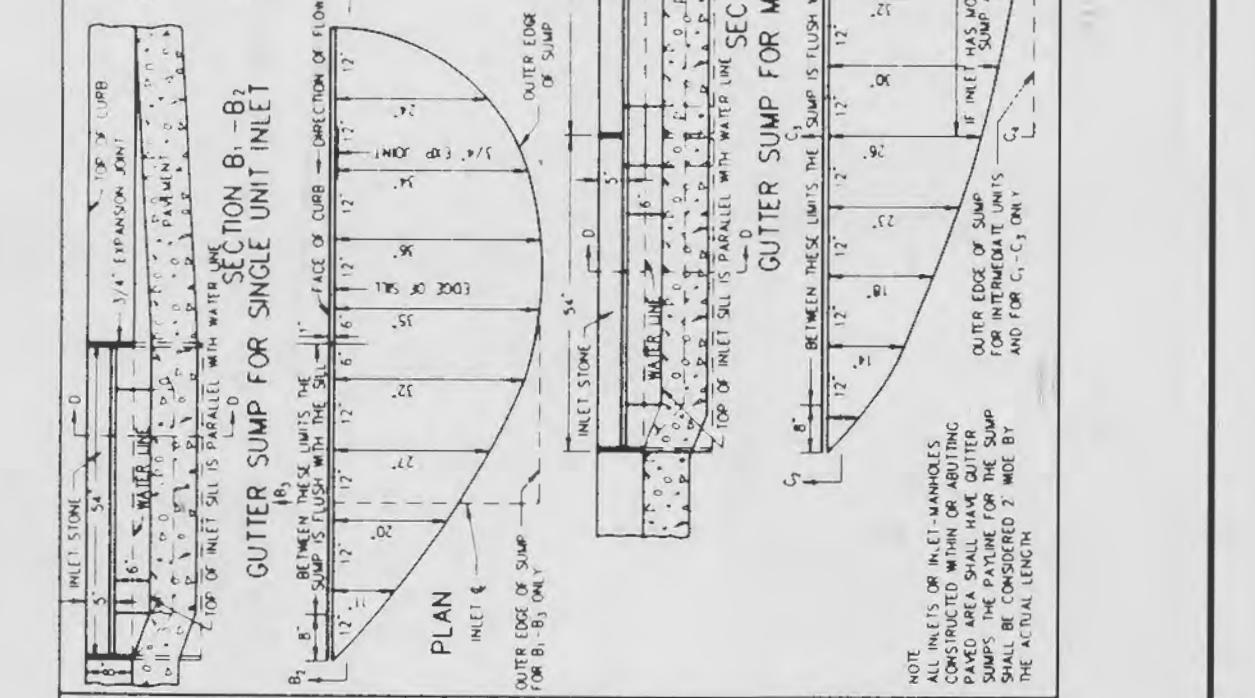
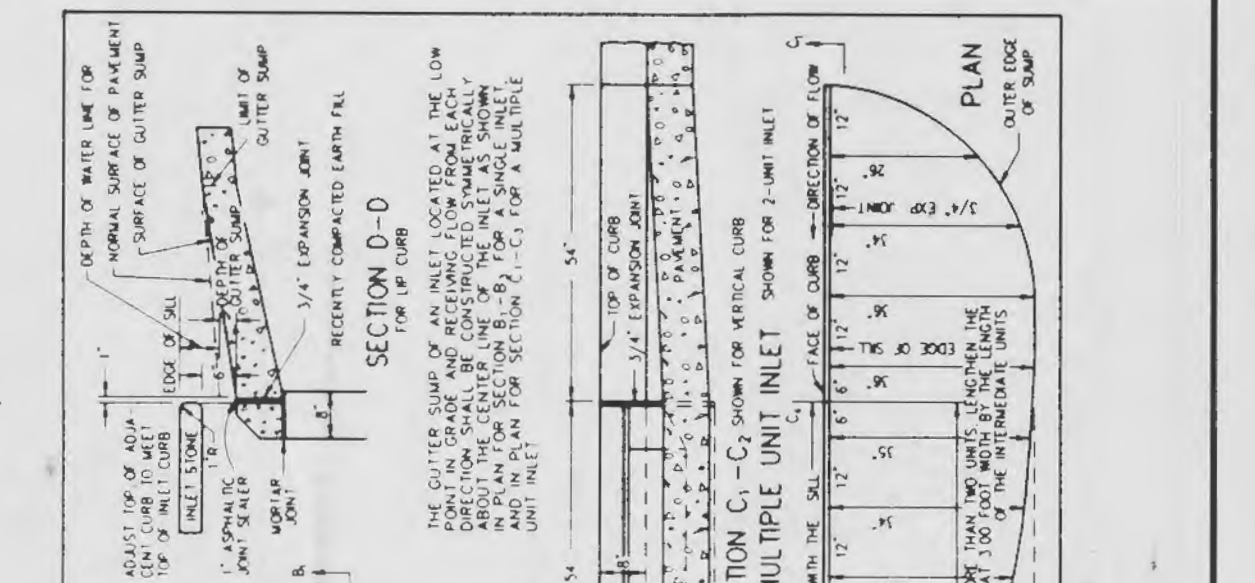
LOCKING DEVICE FOR TYPE "N" LOCK TYPE MANHOLE COVER  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. J.L.G. 1992 SHEET 52



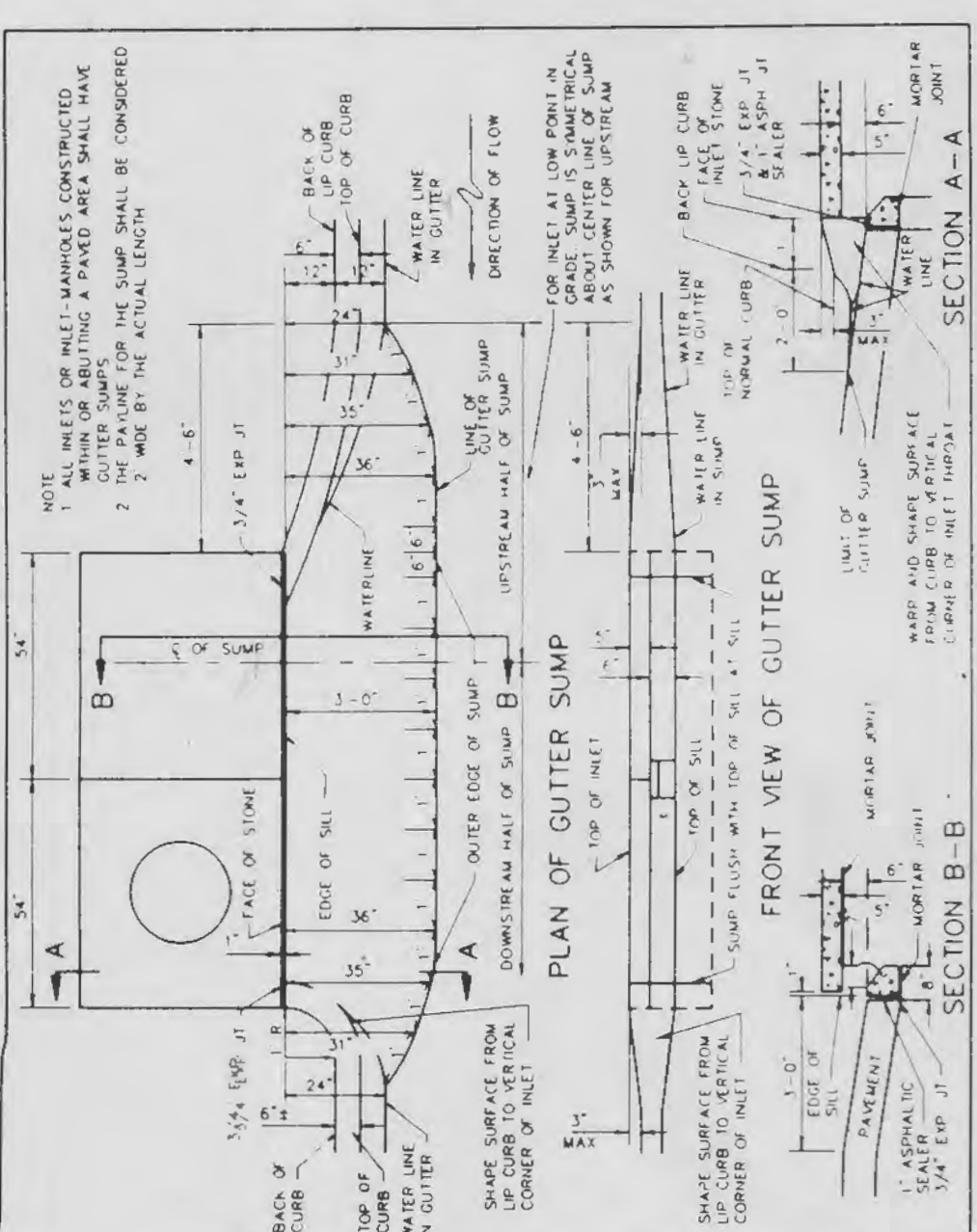
PSI-B MANHOLE STEP INTO JOINT  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 53



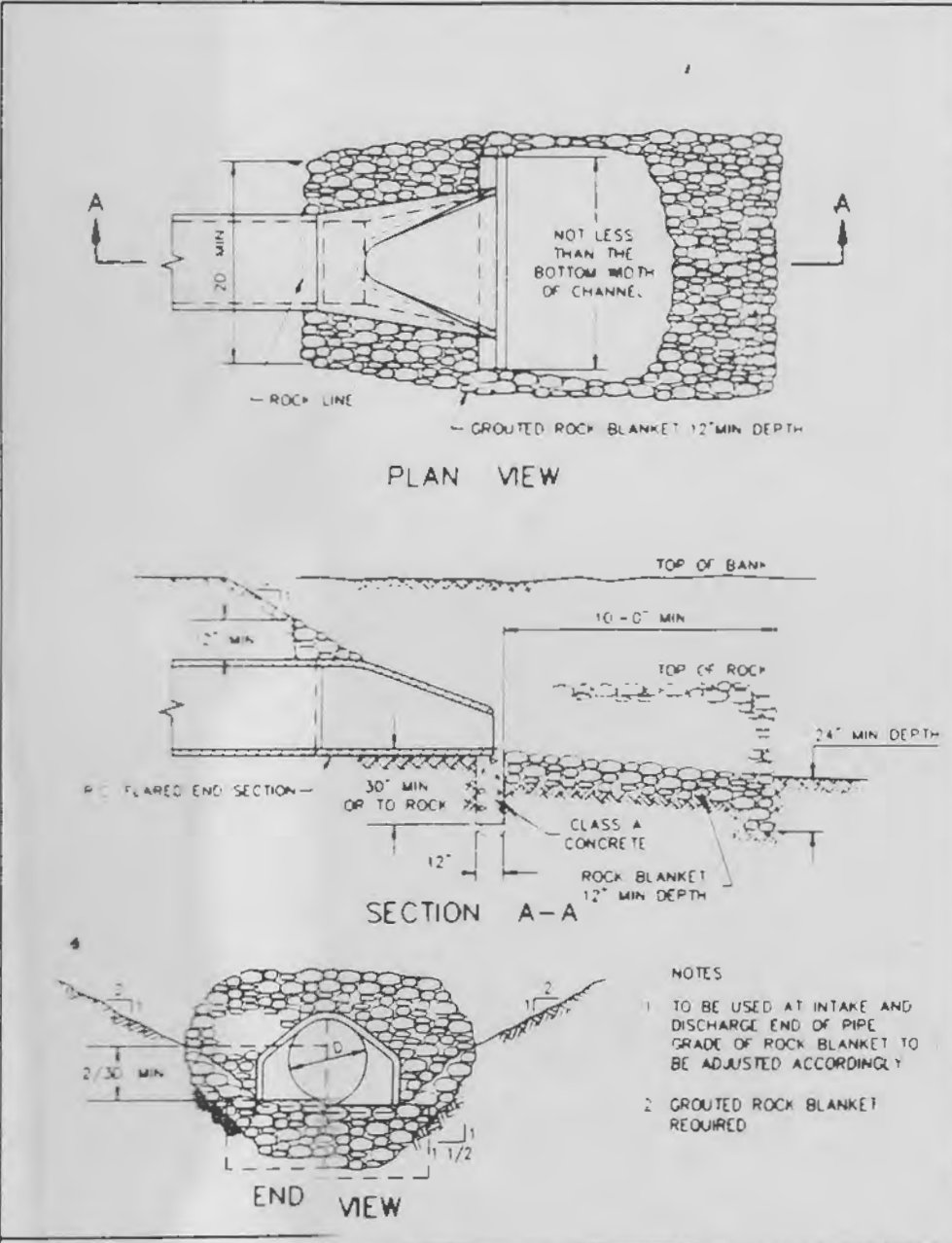
MANHOLE STEP FOR PRECAST MANHOLE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. C.A.B. 1992 SHEET 54



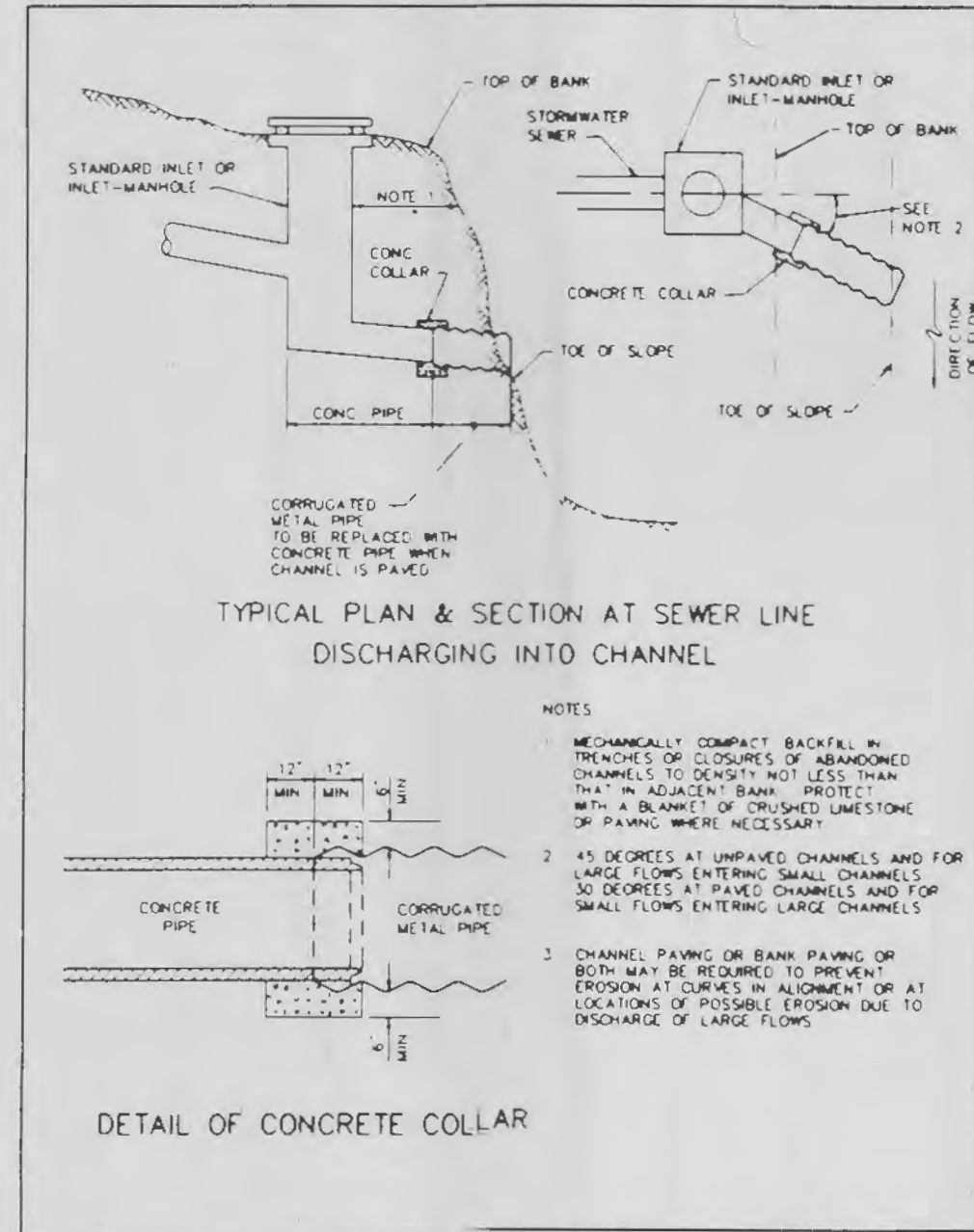
GUTTER SUMPS FOR VERTICAL CURB  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 55



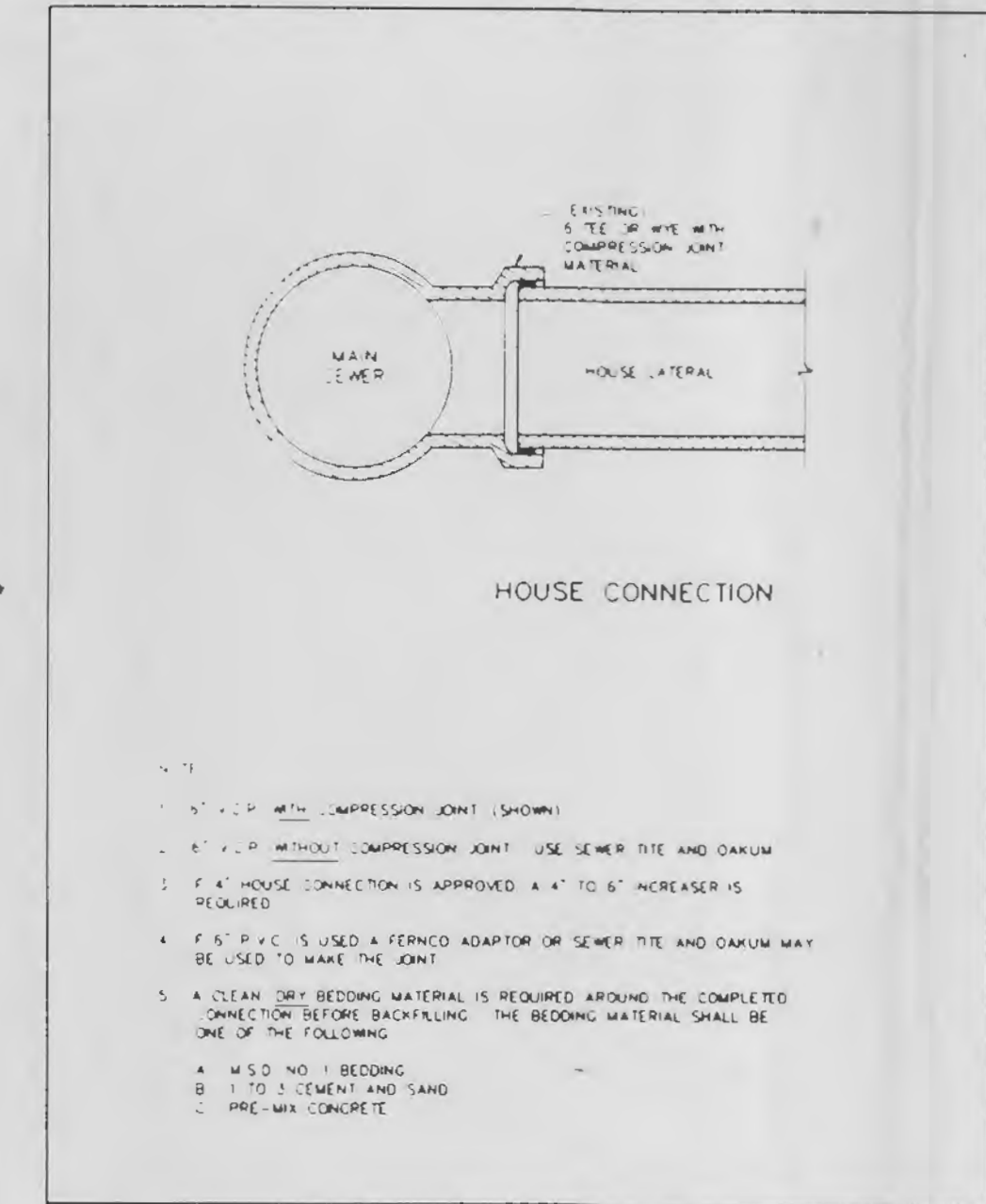
GUTTER SUMP FOR LIP CURB  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 56



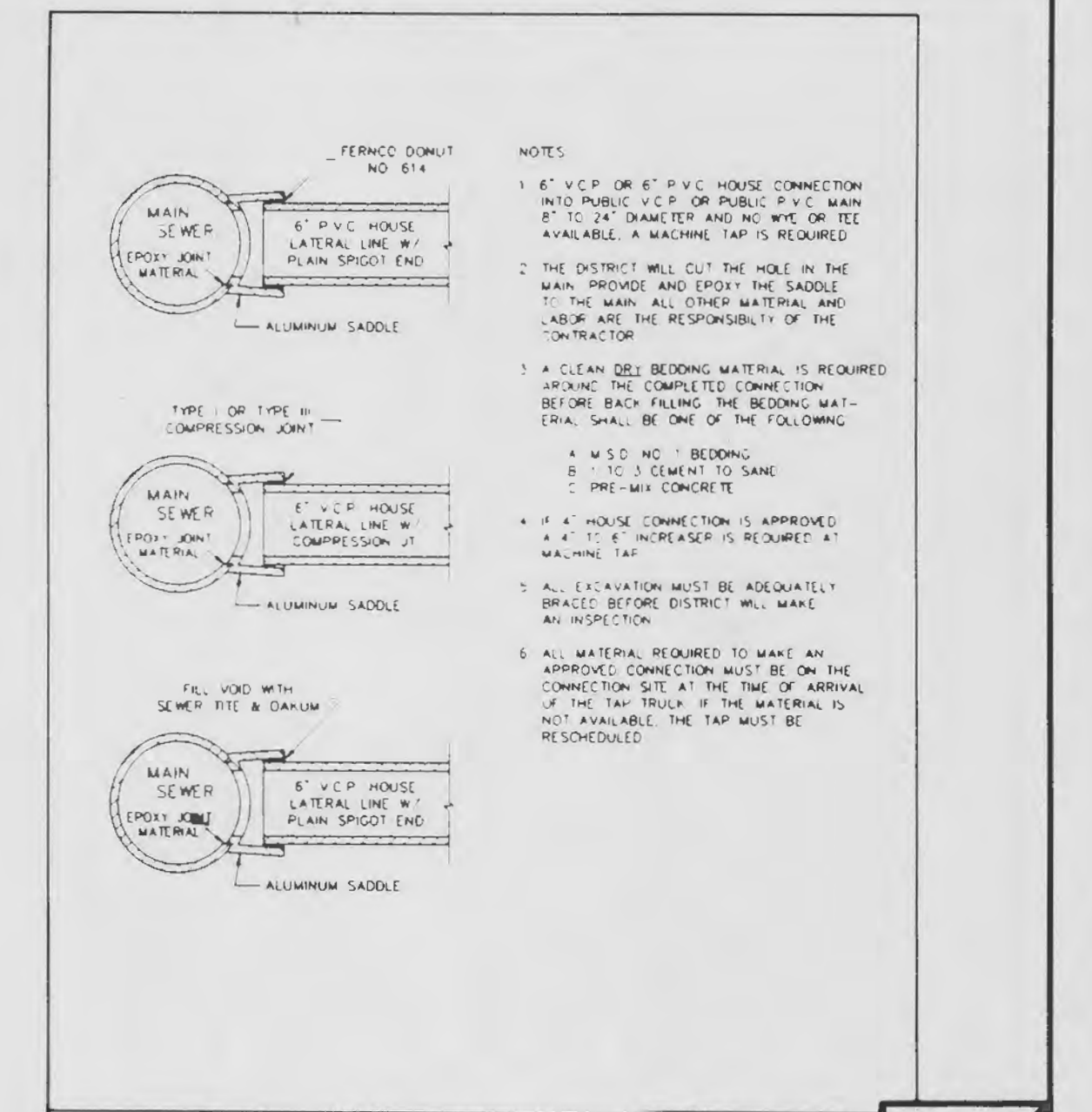
FLARED END SECTION  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 57



STORMWATER CHANNELS  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. R.G.W. 1992 SHEET 58

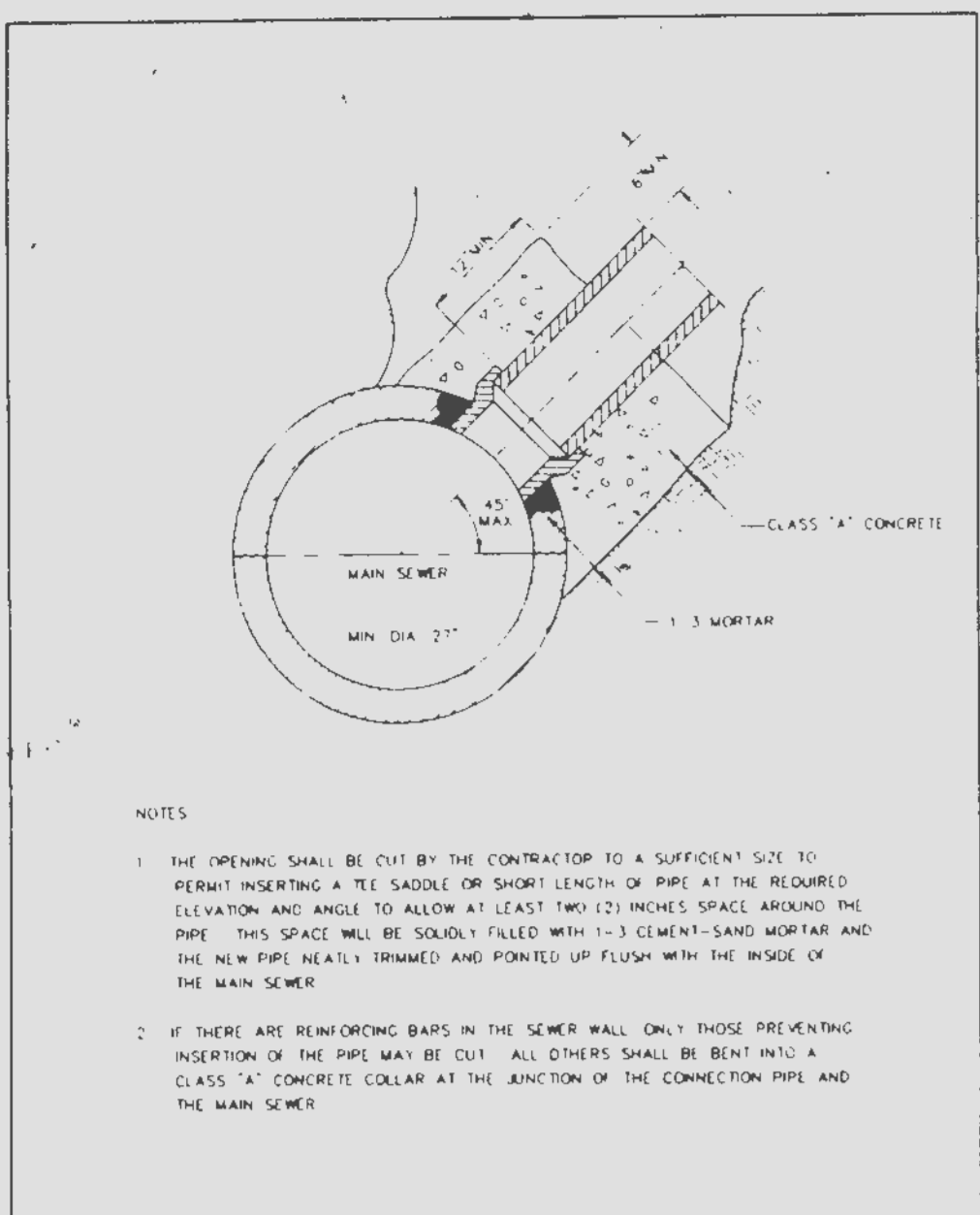


HOUSE CONNECTION TO EXISTING TEE OR WYE  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. D.A.B. 1992 SHEET 59



MACHINE TAP  
METROPOLITAN ST. LOUIS SEWER DISTRICT  
Standard Details of Sewer Construction  
Dr. W.S.H. 1992 SHEET 60

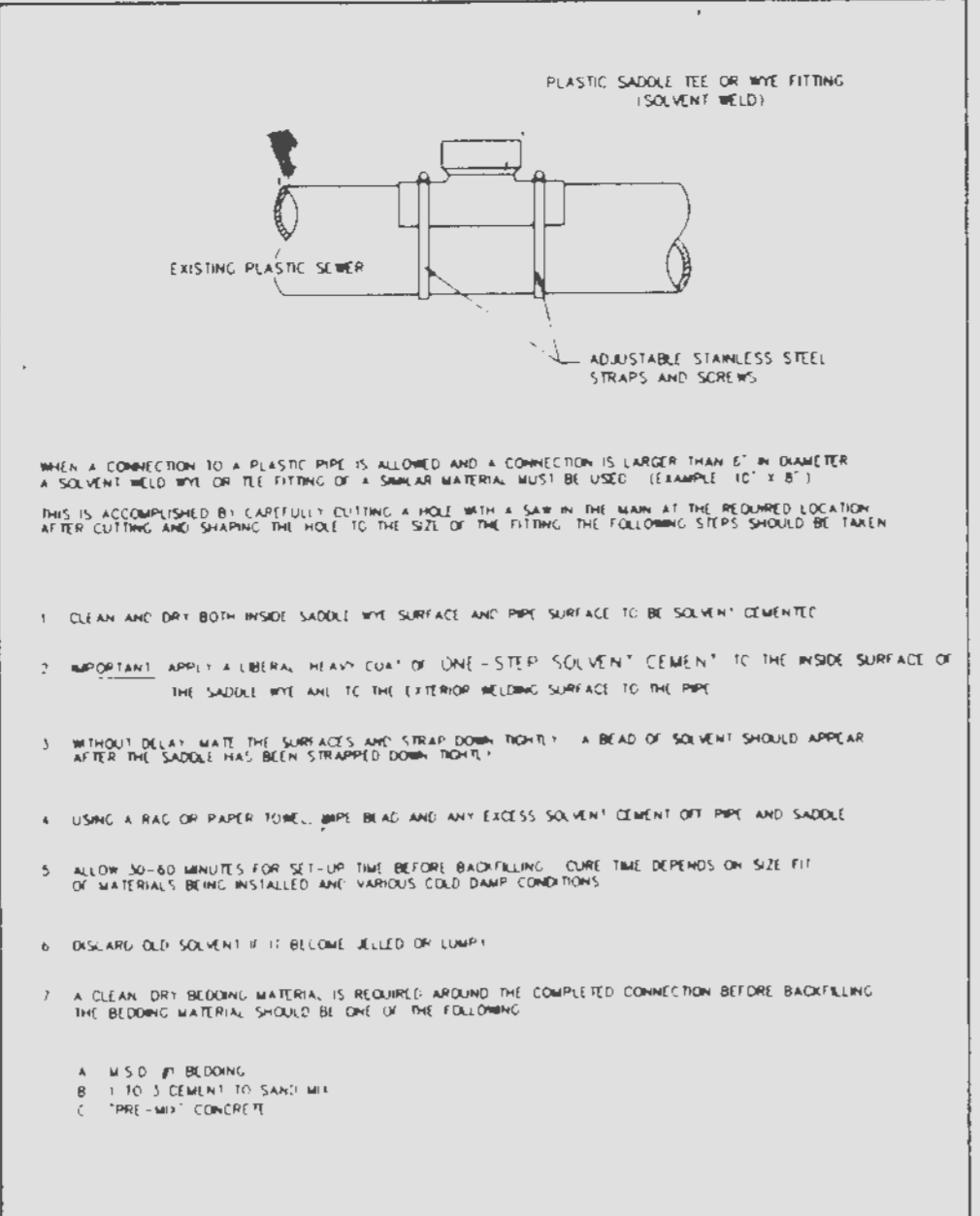




NOTES

1. THE OPENING SHALL BE CUT BY THE CONTRACTOR TO A SUFFICIENT SIZE TO PERMIT INSERTING A TEE SADDLE OR SHORT LENGTH OF PIPE AT THE REQUIRED ELEVATION AND ANGLE TO ALLOW AT LEAST TWO (2) INCHES SPACE AROUND THE PIPE. THIS SPACE WILL BE SOLIDLY FILLED WITH 1:3 CEMENT-SAND MORTAR AND THE NEW PIPE NEATLY TRIMMED AND POINTED UP FLUSH WITH THE INSIDE OF THE MAIN SEWER.
2. IF THERE ARE REINFORCING BARS IN THE SEWER WALL ONLY THOSE PREVENTING INSERTION OF THE PIPE MAY BE CUT. ALL OTHERS SHALL BE LEFT IN PLACE. A CLASS 'A' CONCRETE COLLAR AT THE ANJUNCTION OF THE CONNECTION PIPE AND THE MAIN SEWER.

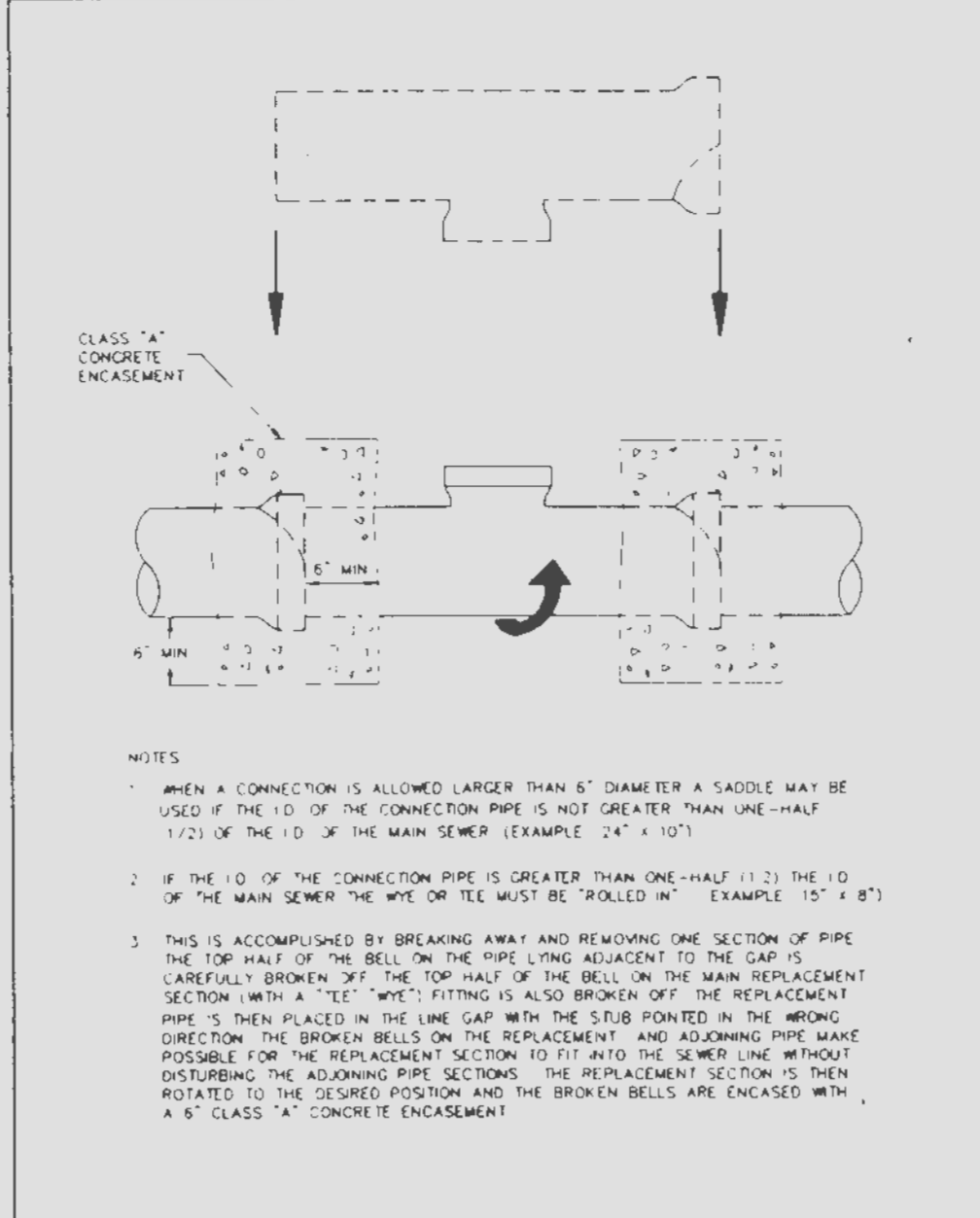
HOUSE CONNECTIONS ALLOWED BY TEE SADDLE	METROPOLITAN ST. LOUIS SEWER DISTRICT Standard Details of Sewer Construction		
	Dr. D A B Ch. J C A	1992	SHEET 61



WHEN A CONNECTION TO A PLASTIC PIPE IS ALLOWED AND A CONNECTION IS LARGER THAN 6" IN DIAMETER A SOLVENT WELD PIPE OR TEE FITTING OF A SIMILAR MATERIAL MUST BE USED. (EXAMPLE: 10" P.V.C.) THIS IS ACCOMPLISHED BY CAREFULLY CUTTING A HOLE WITH A SAW IN THE MAIN AT THE REQUIRED LOCATION AFTER CUTTING AND SHAPING THE HOLE TO THE SIZE OF THE FITTING. THE FOLLOWING STEPS SHOULD BE TAKEN:

1. CLEAN AND DRY BOTH INSIDE SADDLE PIPE SURFACE AND PIPE SURFACE TO BE SOLVENT CEMENTED.
2. IMPROPERLY APPLY A LIBERAL HEAVY COAT OF ONE-STEP "SOLVENT" CEMENT TO THE INSIDE SURFACE OF THE SADDLE PIPE AND TO THE EXTERIOR SURFACE OF THE PIPE.
3. WITHOUT DELAY, WAT THE SURFACES AND STRAP DOWN TIGHTLY. A BEAD OF SOLVENT SHOULD APPEAR AFTER THE SADDLE HAS BEEN STRAPPED DOWN TIGHTLY.
4. USING A RAG OR PAPER TOWEL, Wipe AWAY ANY EXCESS SOLVENT CEMENT OFF PIPE AND SADDLE.
5. ALLOW 30-60 MINUTES FOR SET-UP TIME BEFORE BACKFILLING. CURE TIME DEPENDS ON SIZE FIT OF MATERIALS BEING INSTALLED AND VARIOUS CLIMATE CONDITIONS.
6. DISCARD OLD SOLVENT IF IT BECOMES SKILLED OR UNWIP.
7. A CLEAN DRY BEDDING MATERIAL IS REQUIRED AROUND THE COMPLETED CONNECTION BEFORE BACKFILLING THE BEDDING MATERIAL SHOULD BE ONE OF THE FOLLOWING:
  - A. 1/2" #1 BEDDING
  - B. 1" TO 3" CEMENT TO SAND MIX
  - C. 1" TO 3" CONCRETE

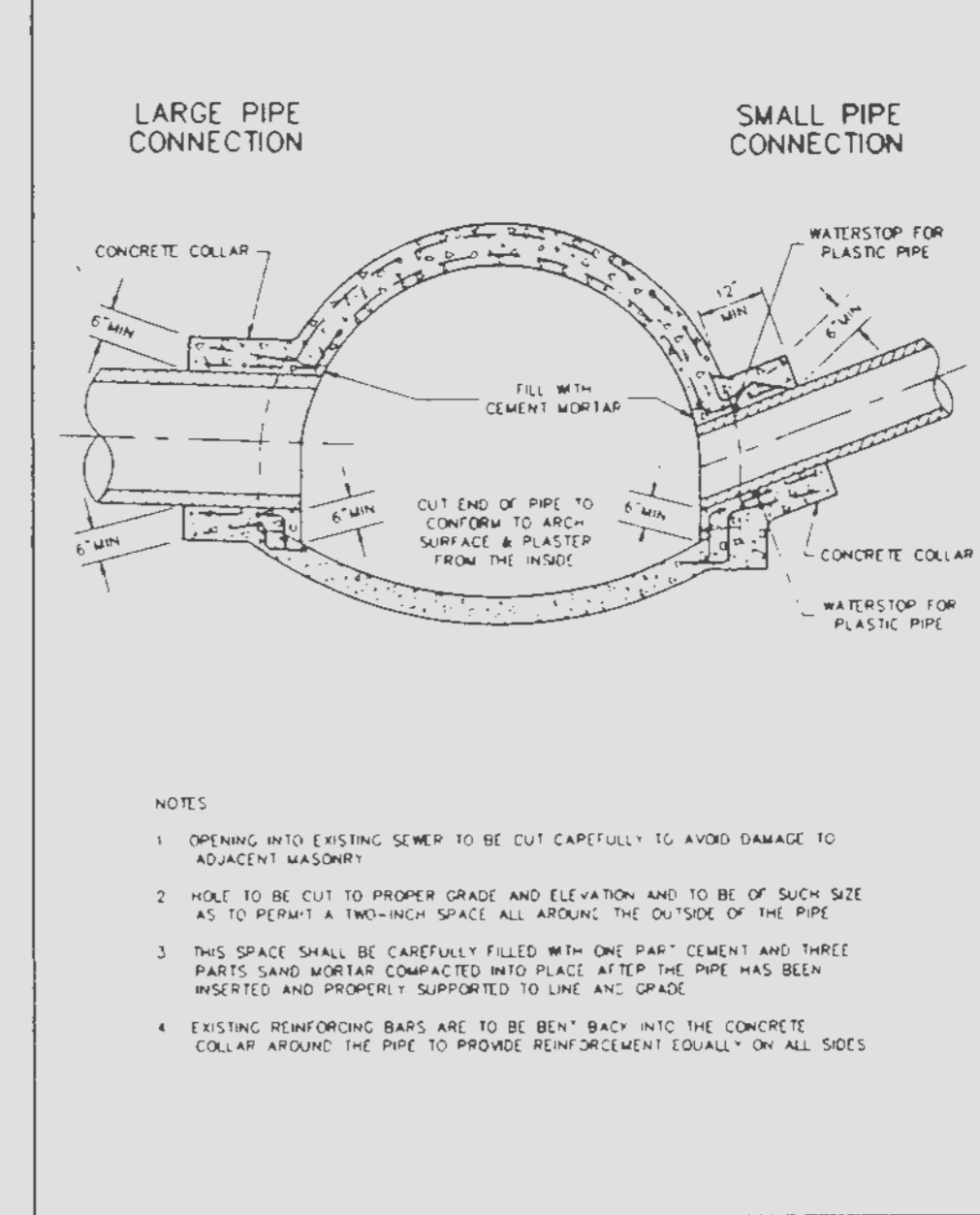
8" (& LARGER) CONNECTION TO PLASTIC MAIN	METROPOLITAN ST. LOUIS SEWER DISTRICT Standard Details of Sewer Construction		
	Dr. D A B Ch. J C K	1992	SHEET 62



NOTES

1. WHEN A CONNECTION IS ALLOWED LARGER THAN 6" DIAMETER A SADDLE MAY BE USED IF THE I.D. OF THE CONNECTION PIPE IS NOT GREATER THAN ONE-HALF (1/2) OF THE I.D. OF THE MAIN SEWER. (EXAMPLE: 24" x 10")
2. IF THE I.D. OF THE CONNECTION PIPE IS GREATER THAN ONE-HALF (1/2) THE I.D. OF THE MAIN SEWER THE WYE OR TEE MUST BE "ROLLED IN". (EXAMPLE: 15" x 8")
3. THIS IS ACCOMPLISHED BY BREAKING AWAY AND REMOVING ONE SECTION OF PIPE THE TOP HALF OF THE BELL ON THE PIPE LYING ADJACENT TO THE GAP IS CAREFULLY BROKEN OFF THE TOP HALF OF THE BELL ON THE MAIN REPLACEMENT SECTION WITH A "TEE" WYE FITTING IS ALSO BROKEN OFF THE REPLACEMENT PIPE IS THEN PLACED IN THE LINE GAP WITH THE STUB POINTED IN THE WRONG DIRECTION. THE BROKEN BELLS ON THE REPLACEMENT AND ADJOINING PIPE MAKE POSSIBLE FOR THE REPLACEMENT SECTION TO FIT INTO THE SEWER LINE WITHOUT DISTURBING THE ADJOINING PIPE SECTIONS. THE REPLACEMENT SECTION IS THEN ROTATED TO THE DESIRED POSITION AND THE BROKEN BELLS ARE ENCASED WITH A 6" CLASS 'A' CONCRETE ENCASUREMENT.

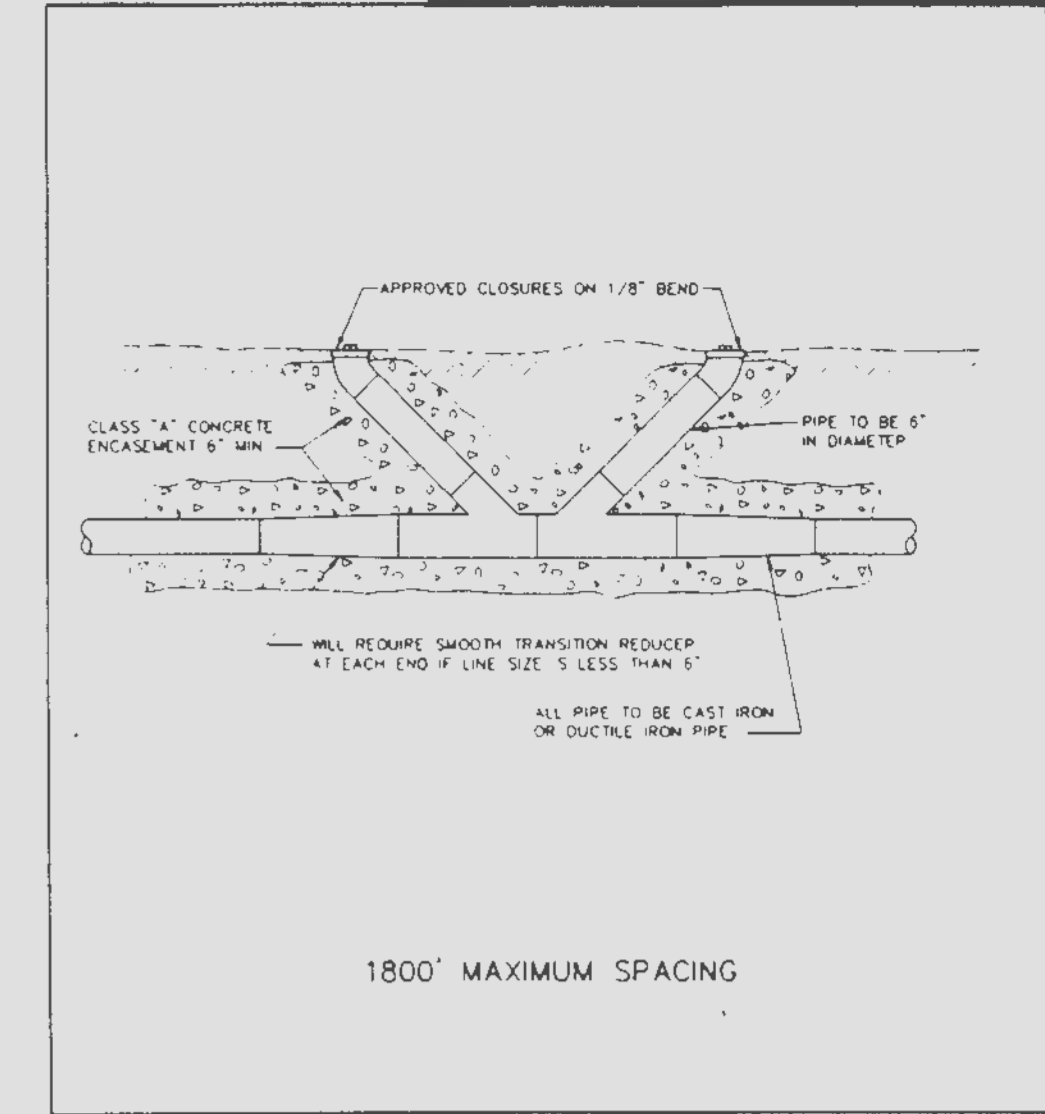
"ROLL-IN" (FOR EXISTING CLAY OR CONCRETE PIPE)	METROPOLITAN ST. LOUIS SEWER DISTRICT Standard Details of Sewer Construction		
	Dr. D A B Ch. J C K	1992	SHEET 63



NOTES

1. OPENING INTO EXISTING SEWER TO BE CUT CAREFULLY TO AVOID DAMAGE TO ADJACENT MASONRY.
2. HOLE TO BE CUT TO PROPER GRADE AND ELEVATION AND TO BE OF SUCH SIZE AS TO PERMIT A TWO-INCH SPACE ALL AROUND THE OUTSIDE OF THE PIPE.
3. THIS SPACE SHALL BE CAREFULLY FILLED WITH ONE PART CEMENT AND THREE PARTS SAND MORTAR COMPACTED INTO PLACE AFTER THE PIPE HAS BEEN INSERTED AND PROPERLY SUPPORTED TO LINE AND GRADE.
4. EXISTING REINFORCING BARS ARE TO BE BENT BACK INTO THE CONCRETE COLLAR AROUND THE PIPE TO PROVIDE REINFORCEMENT EQUALLY ON ALL SIDES.

CONNECTIONS TO LARGE SEWERS	METROPOLITAN ST. LOUIS SEWER DISTRICT Standard Details of Sewer Construction		
	Dr. W S H Ch. J C A	1992	SHEET 64



APPROVED CLOSURES ON 1/8" BEND

CLASS 'A' CONCRETE ENCASEMENT 6" MIN

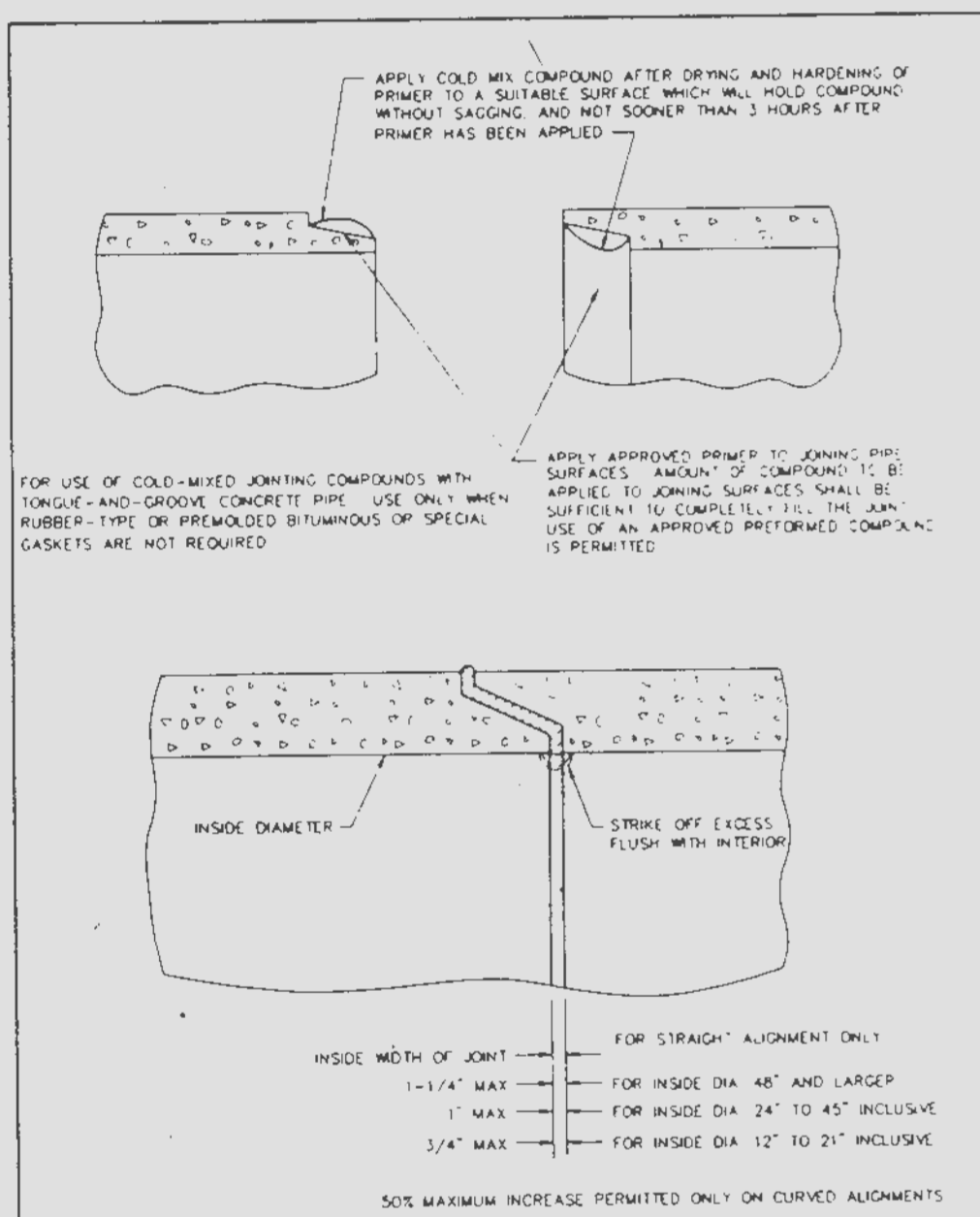
PIPE TO BE 6" IN DIAMETER

WILL REQUIRE SMOOTH TRANSITION REDUCER AT EACH END IF LINE SIZE IS LESS THAN 6"

ALL PIPE TO BE CAST IRON OR DUCTILE IRON PIPE

1800" MAXIMUM SPACING

FORCE MAIN CLEANOUT (6" DIA. & SMALLER)	METROPOLITAN ST. LOUIS SEWER DISTRICT Standard Details of Sewer Construction		
	Dr. R G W Ch. J C K	1992	SHEET 65



APPLY COLD MIX COMPOUND AFTER DRYING AND HARDENING OF PRIMER TO A SUITABLE SURFACE WHICH WILL HOLD COMPOUND WITHOUT SAGGING AND NOT SOONER THAN 3 HOURS AFTER PRIMER HAS BEEN APPLIED.

APPLY APPROVED PRIMER TO JOINTING PIPE SURFACES. AMOUNT OF COMPOUND TO BE APPLIED TO JOINTING SURFACES SHALL BE SUFFICIENT TO COMPLETELY FILL THE JOINT. USE OF AN APPROVED PREFORMED COMPOUND IS PERMITTED.

FOR USE OF COLD-MIXED JOINTING COMPOUNDS WITH TONGUE-AND-GROOVE CONCRETE PIPE. USE ONLY WHEN RUBBER-TYPE OR PREFORMED BITUMINOUS OR SPECIAL GASKETS ARE NOT REQUIRED.

STRIKE OFF EXCESS FLUSH WITH INTERIOR

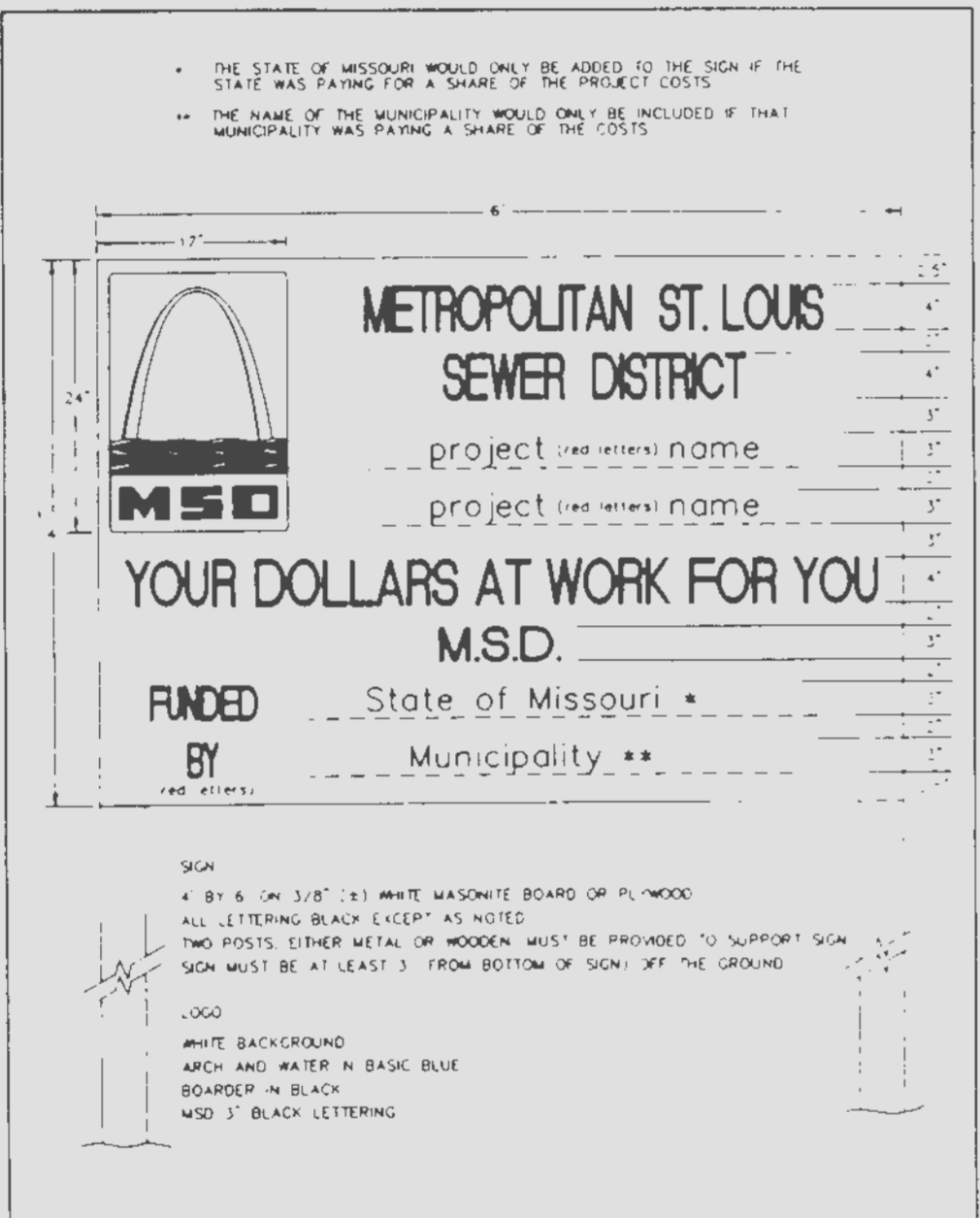
INSIDE DIAMETER

INSIDE WIDTH OF JOINT

FOR STRAIGHT ALIGNMENT ONLY	
1-1/4" MAX.	FOR INSIDE DIA. 48" AND LARGER
1" MAX.	FOR INSIDE DIA. 24" TO 48" INCLUSIVE
3/4" MAX.	FOR INSIDE DIA. 12" TO 24" INCLUSIVE

NOTE: MAXIMUM INCREASE PERMITTED ONLY ON CURVED ALIGNMENTS

TONGUE AND GROOVE CONCRETE PIPE JOINTS	METROPOLITAN ST. LOUIS SEWER DISTRICT Standard Details of Sewer Construction		
	Dr. D A B Ch. J C K	1992	SHEET 66



THE STATE OF MISSOURI WOULD ONLY BE ASKED TO THE SIGN IF THE STATE WAS PAYING FOR A SHARE OF THE PROJECT COSTS

THE NAME OF THE MUNICIPALITY WOULD ONLY BE INCLUDED IF THAT MUNICIPALITY WAS PAYING A SHARE OF THE COSTS

**METROPOLITAN ST. LOUIS SEWER DISTRICT**

project (and internal) name

project (and internal) name

**YOUR DOLLARS AT WORK FOR YOU**

**M.S.D.**

FUNDED BY State of Missouri

BY Municipality

SIGN

4' BY 6' ON 3/8" (1) WHITE MASONITE BOARD OR PLYWOOD

ALL LETTERING BLACK EXCEPT AS NOTED

TWO POSTS (EITHER METAL OR WOODEN) MUST BE PROVIDED TO SUPPORT SIGN

SIGN MUST BE AT LEAST 3' FROM BOTTOM OF SIGN OFF THE GROUND

LOGO

WHITE BACKGROUND

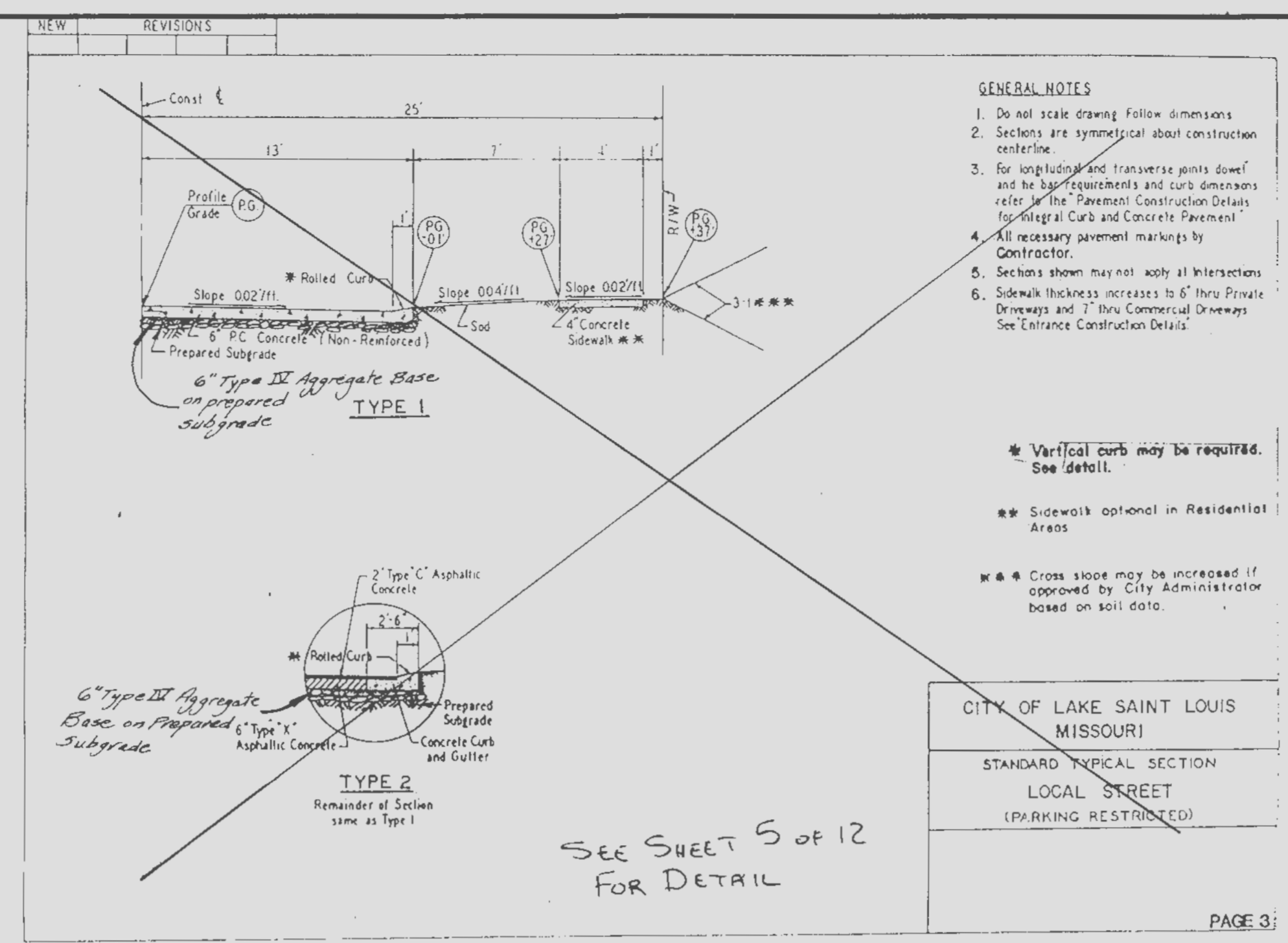
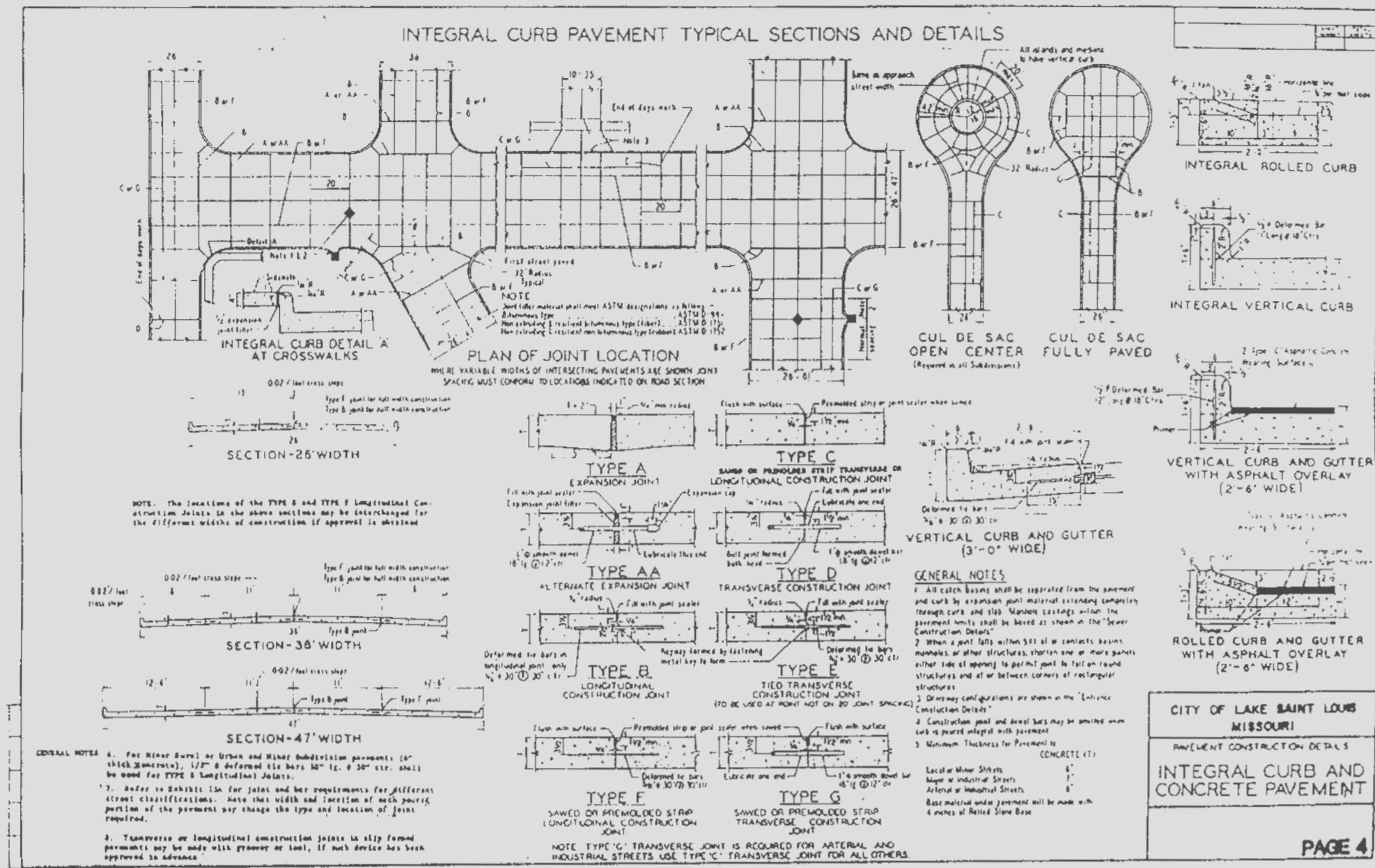
ARCH AND WATER IN BASIC BLUE

BOARDER IN BLACK

M.S.D. 3" BLACK LETTERING

SIGNS	METROPOLITAN ST. LOUIS SEWER DISTRICT Standard Details of Sewer Construction		
	Dr. W S H Ch. J C A	1992	SHEET 67





**GENERAL NOTES**

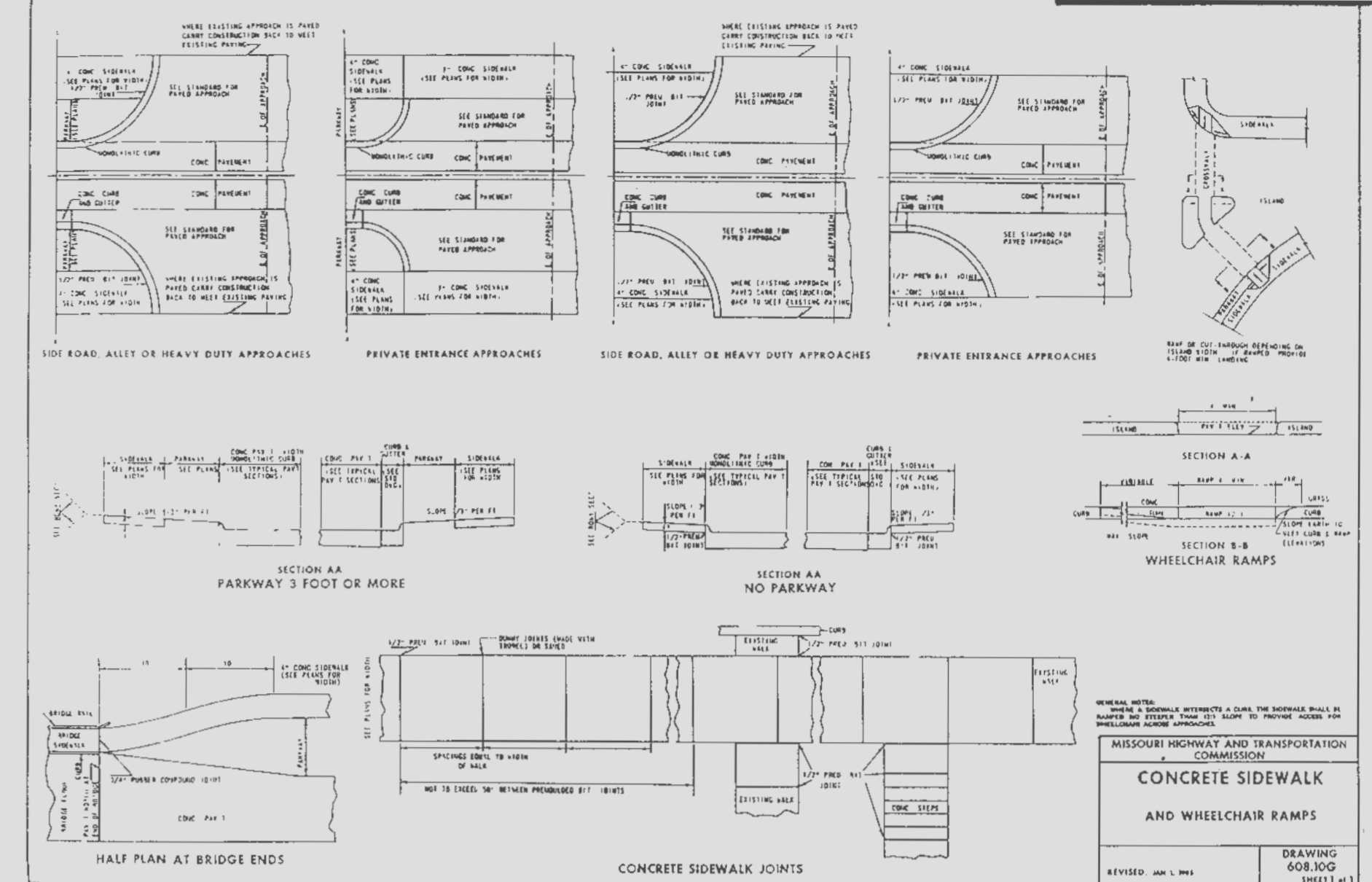
1. Do not scale drawing. Follow dimensions.
2. Sections are symmetrical about construction centerline.
3. For longitudinal and transverse joint details and the requirements and curb dimensions refer to the Pavement Construction Details for Integral Curb and Concrete Pavement.
4. All necessary pavement markings by Contractor.
5. Sections shown may not apply at intersections.
6. Sidewalk thickness increases to 6" thru Private Driveways and 7" thru Commercial Driveways. See Entrance Construction Details.

\* Vertical curb may be required. See detail.

\*\* Sidewalk optional in Residential Areas.

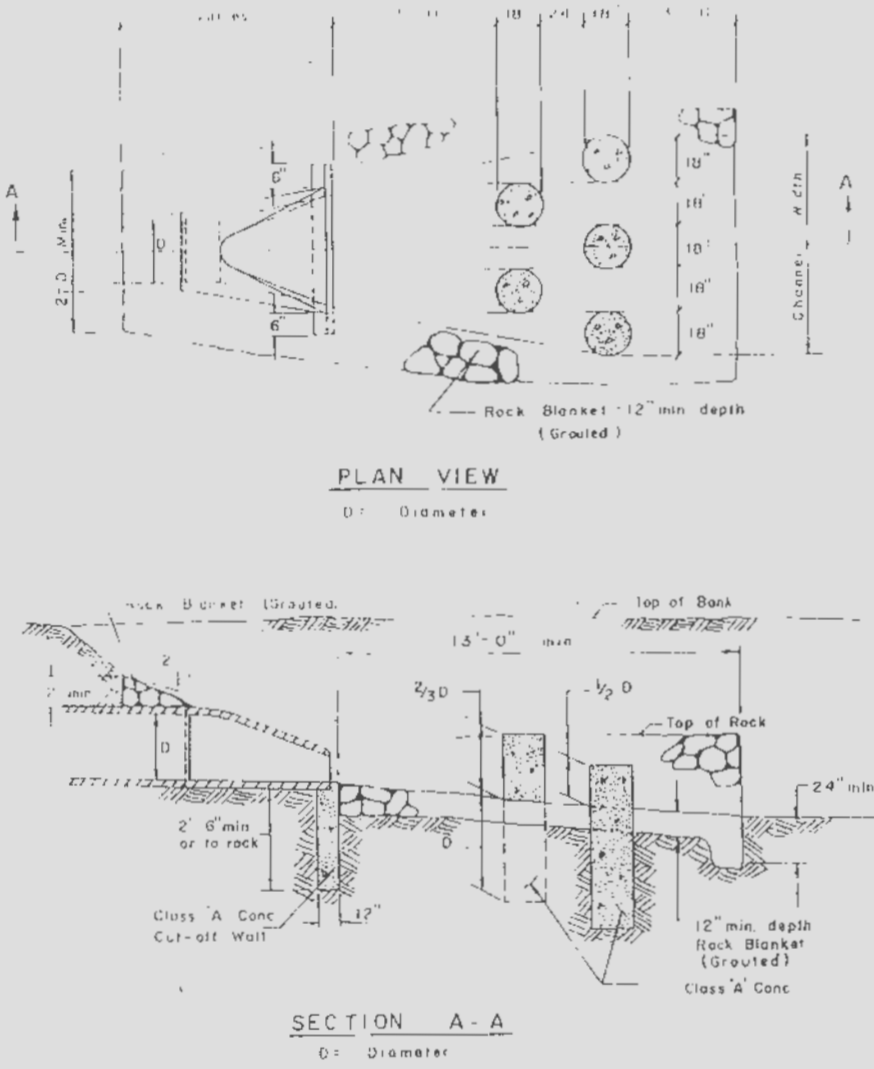
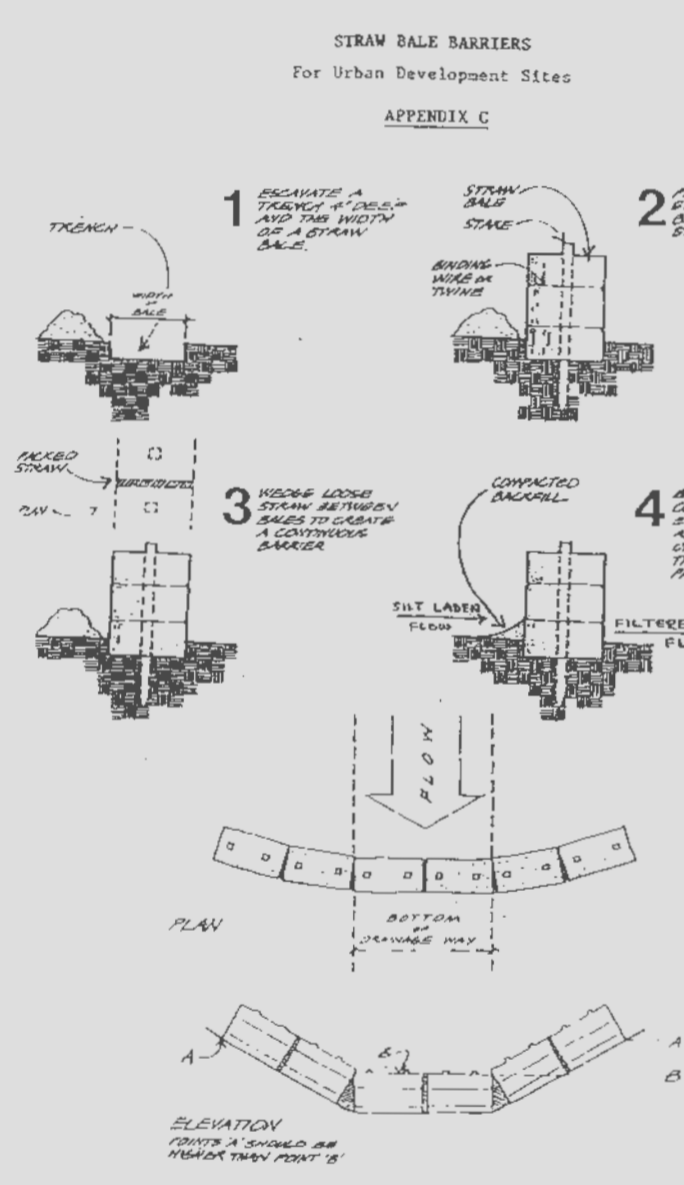
\*\*\* Cross slope may be increased if approved by City Administrator based on soil data.

CITY OF LAKE SAINT LOUIS  
MISSOURI  
STANDARD TYPICAL SECTION  
LOCAL STREET  
(PARKING RESTRICTED)



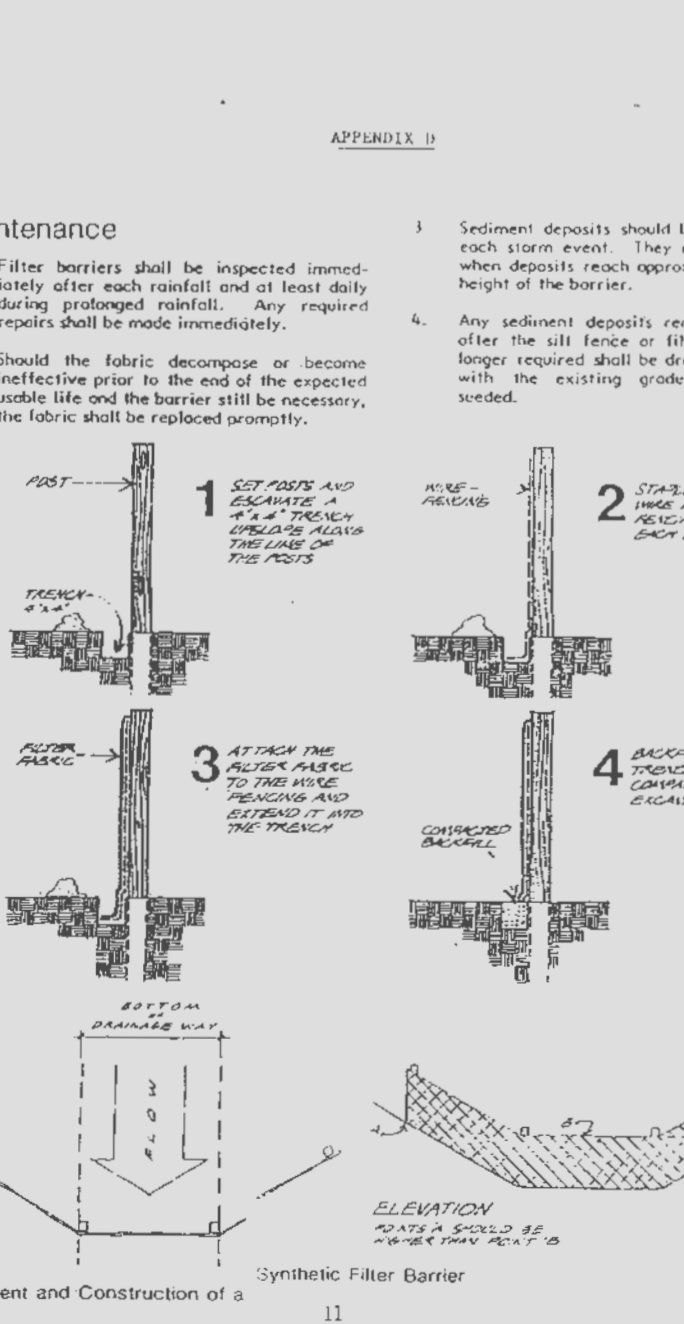
- 1) "A six inch aggregate base, Type 4, as per the Missouri State Highway Specifications shall be required for all street construction."
- 2) Perforated tile drain 4" in diameter with fabric sleeve shall be provided at all low spots within the vertical profile of the streets and connected to curb inlets.
- 3) Longitudinal and transverse joint reinforcing is required for all concrete pavements. Per page 4 of Appendix A pavement construction details.

Placement and Construction of a Synthetic Fiber Barrier



Flared End Section with Energy Dissipator

Placement and Construction of a Straw Bale Barrier



Placement and Construction of a Synthetic Fiber Barrier

