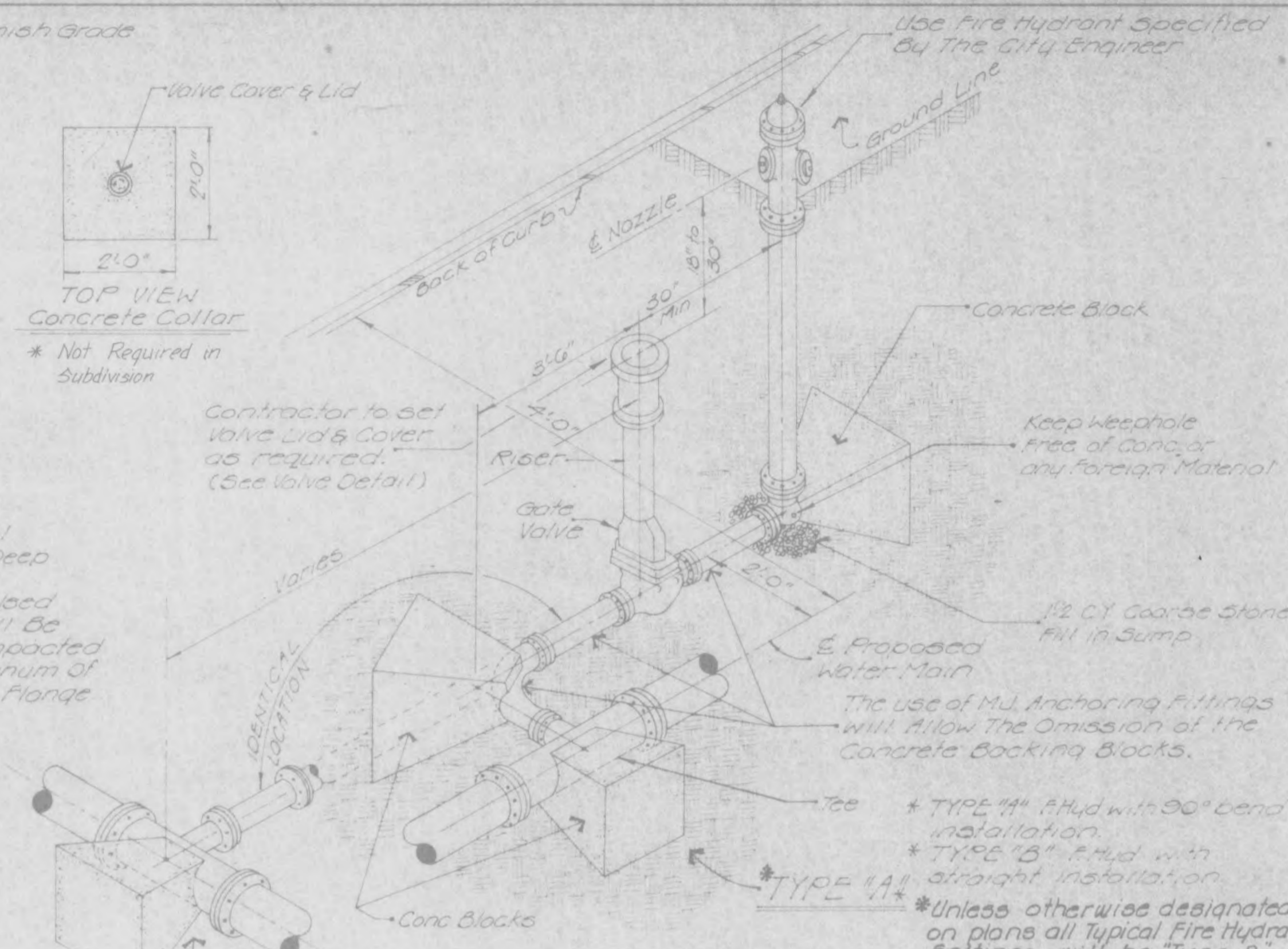
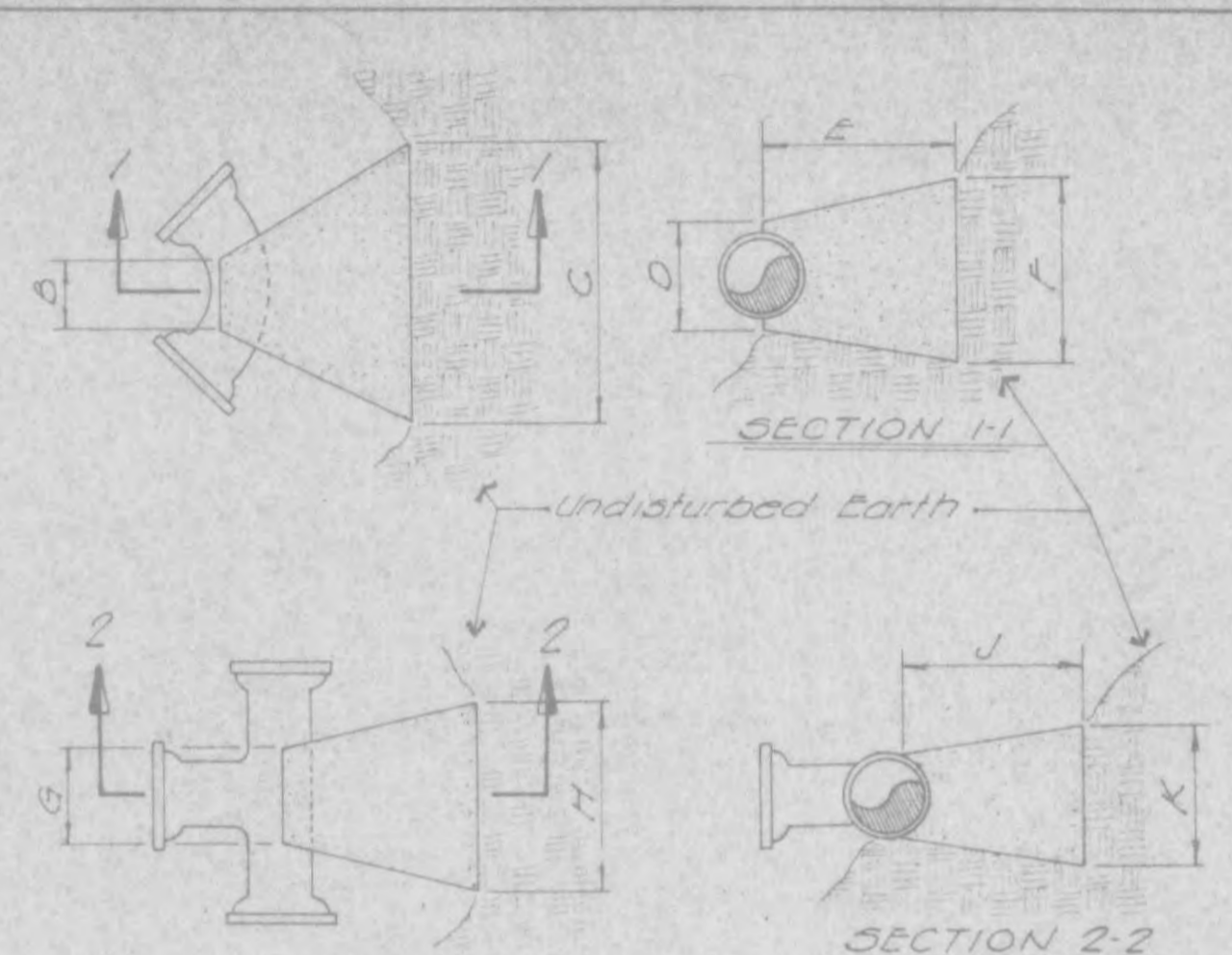


WATER VALVE DETAIL



FIRE HYDRANT DETAIL

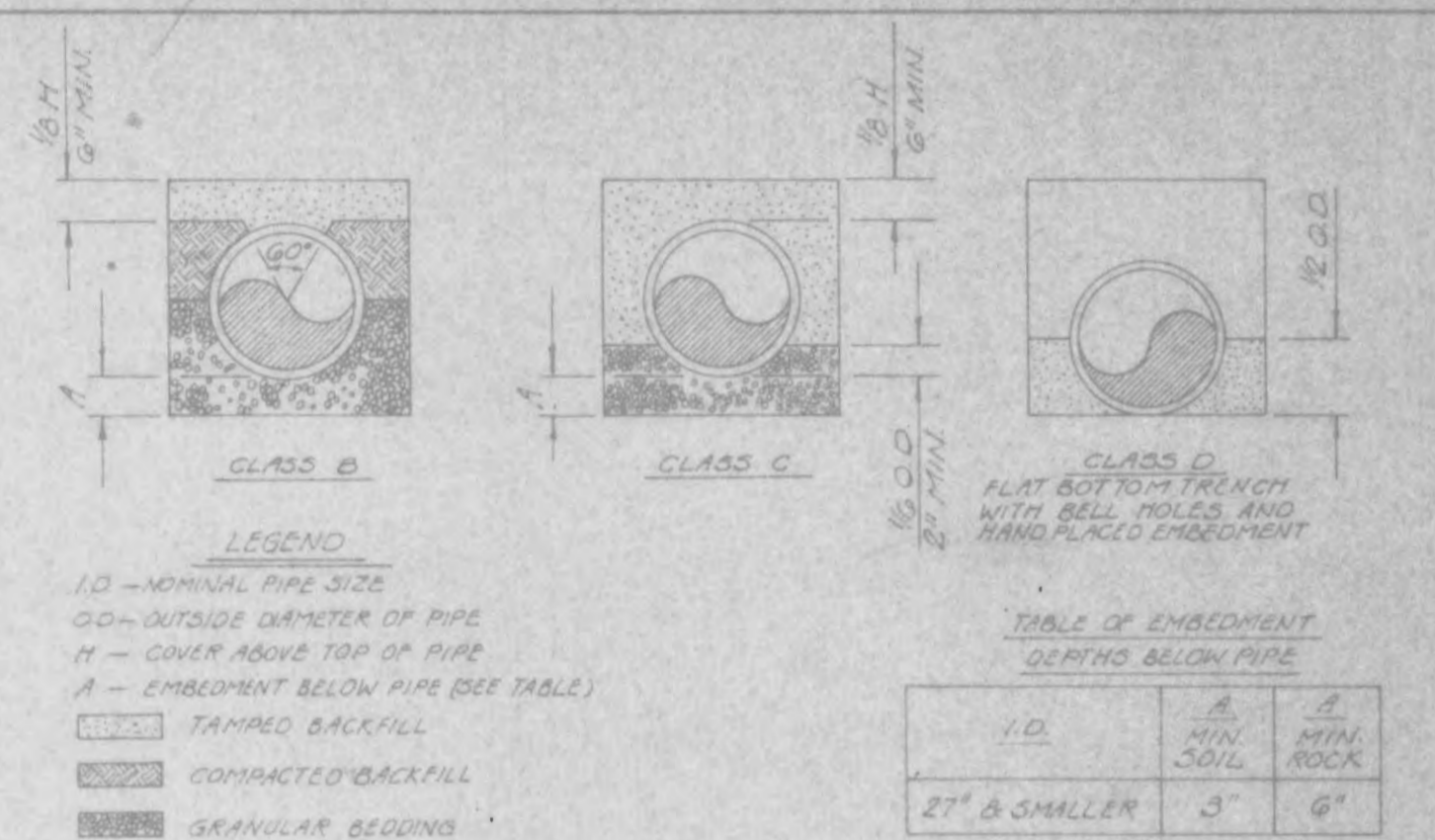


BENDS	B	C	D	E	F
6" 11 1/2"	6" 15"	12" 24"	10"		
6" 22 1/2"	6" 19"	12" 24"	13"		
6" 45"	6" 30"	12" 24"	14"		
6" 90"	6" 30"	12" 24"	21"		
6" 11 1/4"	6" 30"	12" 24"	10"		
6" 22 1/2"	6" 22"	12" 24"	11"		
6" 45"	6" 30"	12" 24"	24"		
6" 90"	6" 36"	12" 24"	36"		
12" 11 1/4"	6" 30"	12" 24"	10"		
12" 22 1/2"	6" 35"	12" 24"	25"		
12" 45"	6" 40"	12" 24"	40"		
12" 90"	6" 60"	12" 24"	52"		

TEES	G	H	J	K
6" 1 1/2" x 6"	12"	24"	24"	18"
6" 1 1/2" x 6"	12"	24"	24"	18"
6" 1 1/2" x 6"	12"	24"	24"	18"
12" 1 1/2" x 6"	12"	24"	24"	18"
12" 1 1/2" x 6"	12"	36"	24"	36"

CUBIC FEET OF CONCRETE REQUIRED	BEND	11 1/4"	22 1/2"	45"	90"
6"	1.7	2.4	3.5	5.5	
6"	2.1	3.1	5.0	6.5	
12"	3.7	5.3	9.7	17.5	

TEE x	6"	8"	12" FLUG
6"	4.0	~	4.0
8"	4.0	5.0	5.0
12"	4.0	5.5	10.5

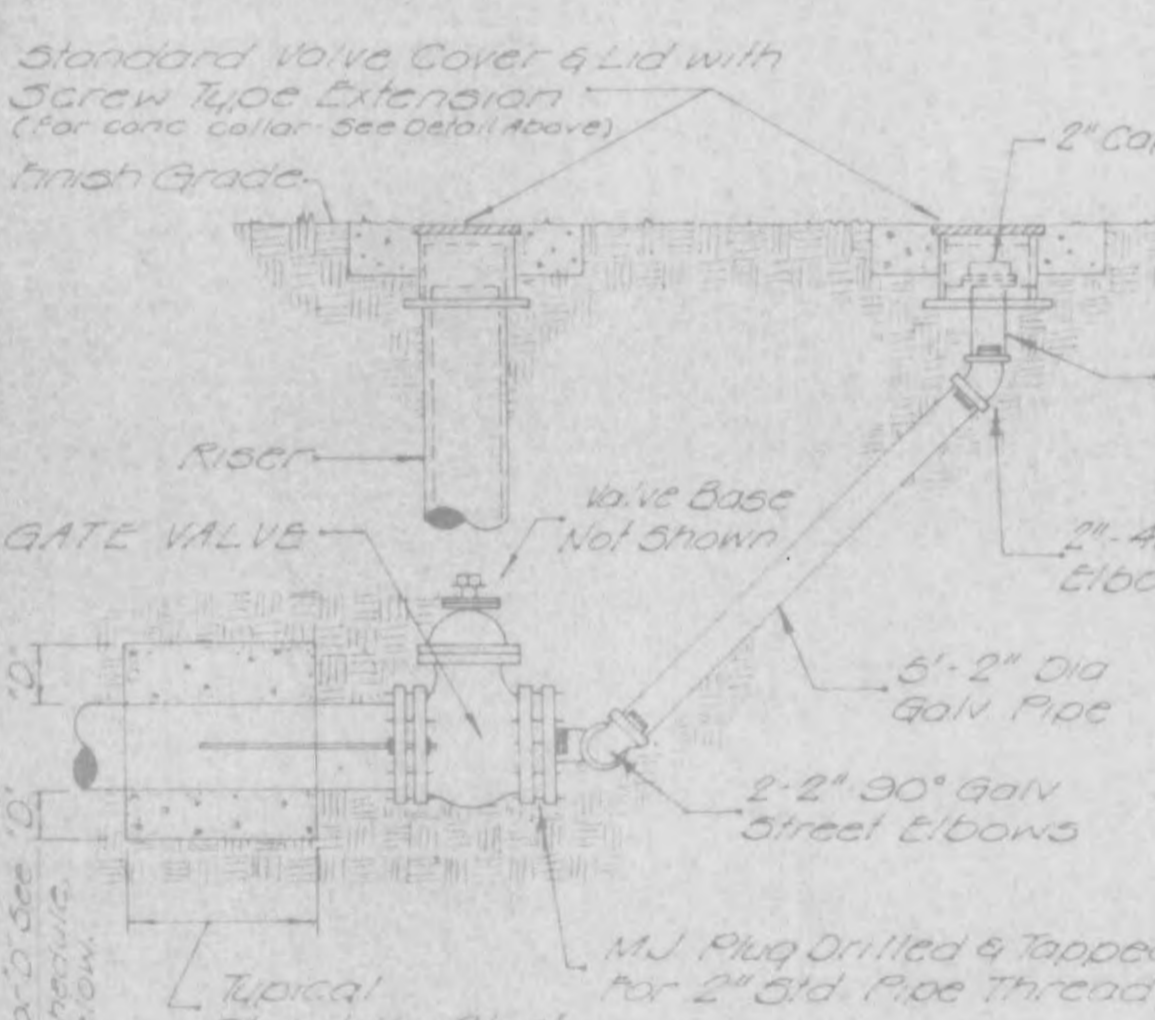


LEGEND
 10 - NOMINAL PIPE SIZE
 OD - OUTSIDE DIAMETER OF PIPE
 H - COVER ABOVE TOP OF PIPE
 A - EMBEDMENT BELOW PIPE (SEE TABLE)

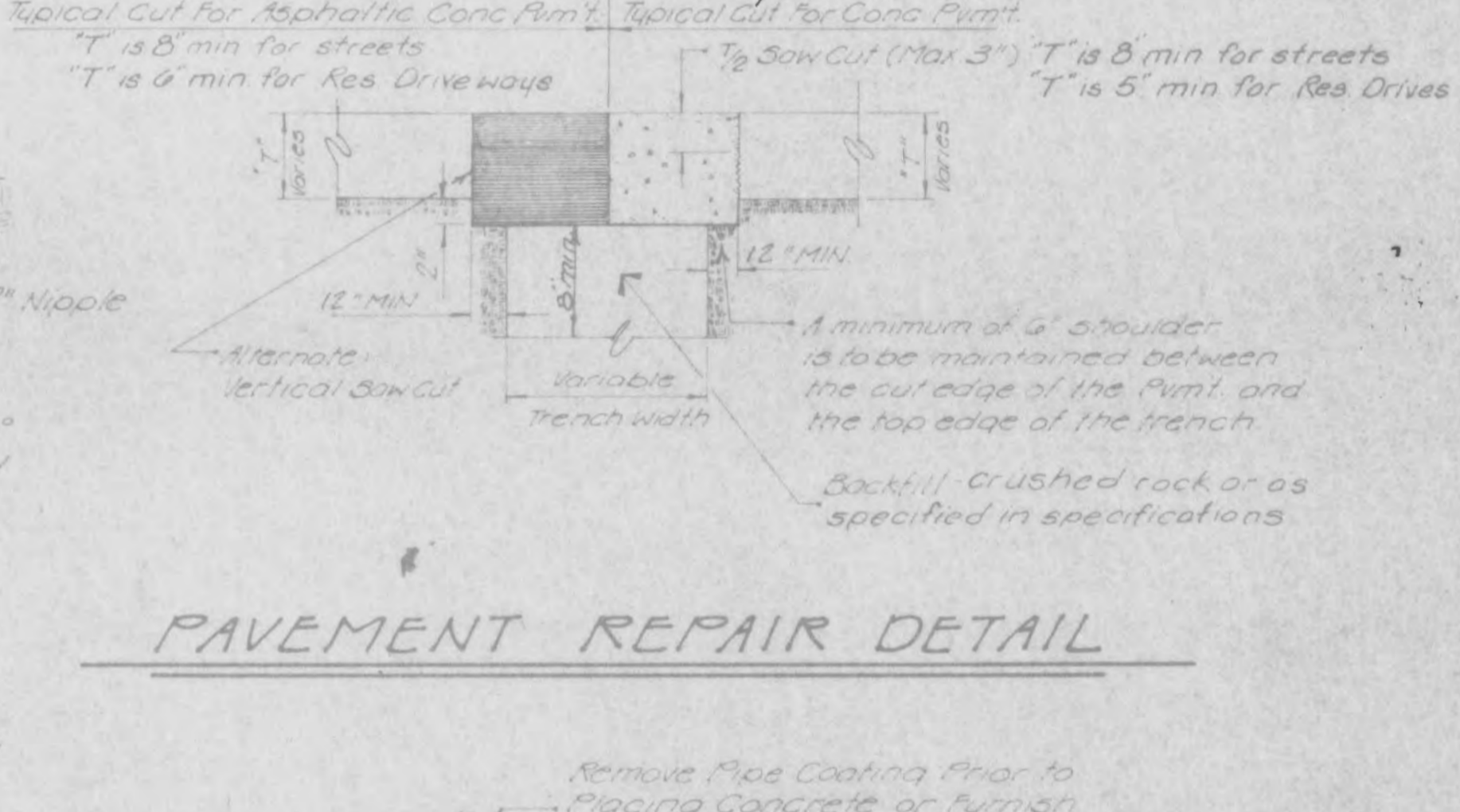
TABLE OF EMBEDMENT DEPTHS BELOW PIPE

I.D.	MIN. SOIL	MIN. ROCK
21" & SMALLER	3"	6"

NOTES:
 Granular Bedding shall be crushed rock or pea gravel with not less than 95% passing 1/2" (95% passing 3/4" for 30" and larger pipe) and not less than 95% retained on a #4; to be placed in not more than 6" layers and compacted by slicing with a shovel or vibrating.
 Compacted Backfill shall be finely divided job excavated material free from debris, organic material and stones, placed in uniform layers not more than 6" thick, compacted to 95% maximum density as determined by A.S.T.M. D698, or graded aggregate. Granular backfill material may be substituted for all or part of compacted backfill.
 Tamped Backfill shall be finely divided job excavated material free from debris, organic material and stones, hand placed in uniform layers not more than 8" thick and tamped around conduit pipe. Granular backfill material may be substituted for all or part of tamped backfill.
 Trench Backfill shall be as required in the "Laying and Backfill" Section of the Detailed Specifications.
 Embedment: Embedment shall be class C unless otherwise specified or shown on plans.

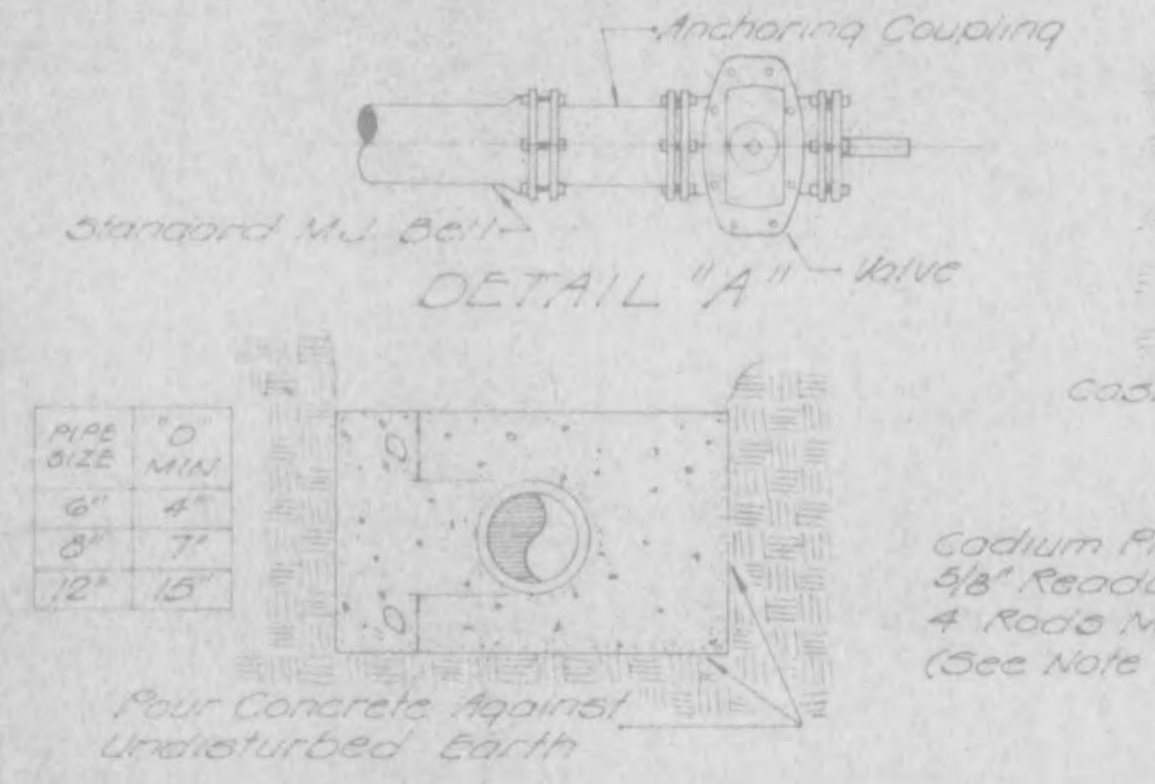


FLUSHING ASSEMBLY

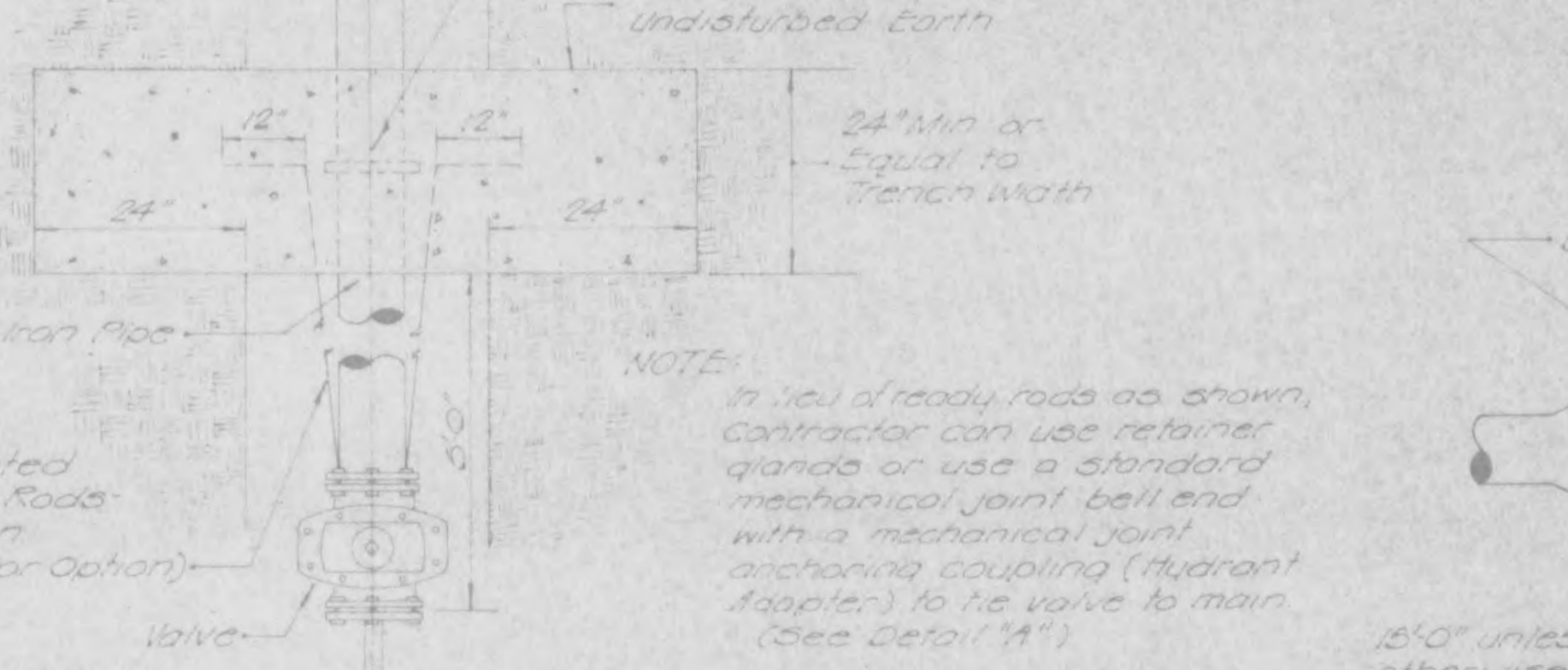


PAVEMENT REPAIR DETAIL

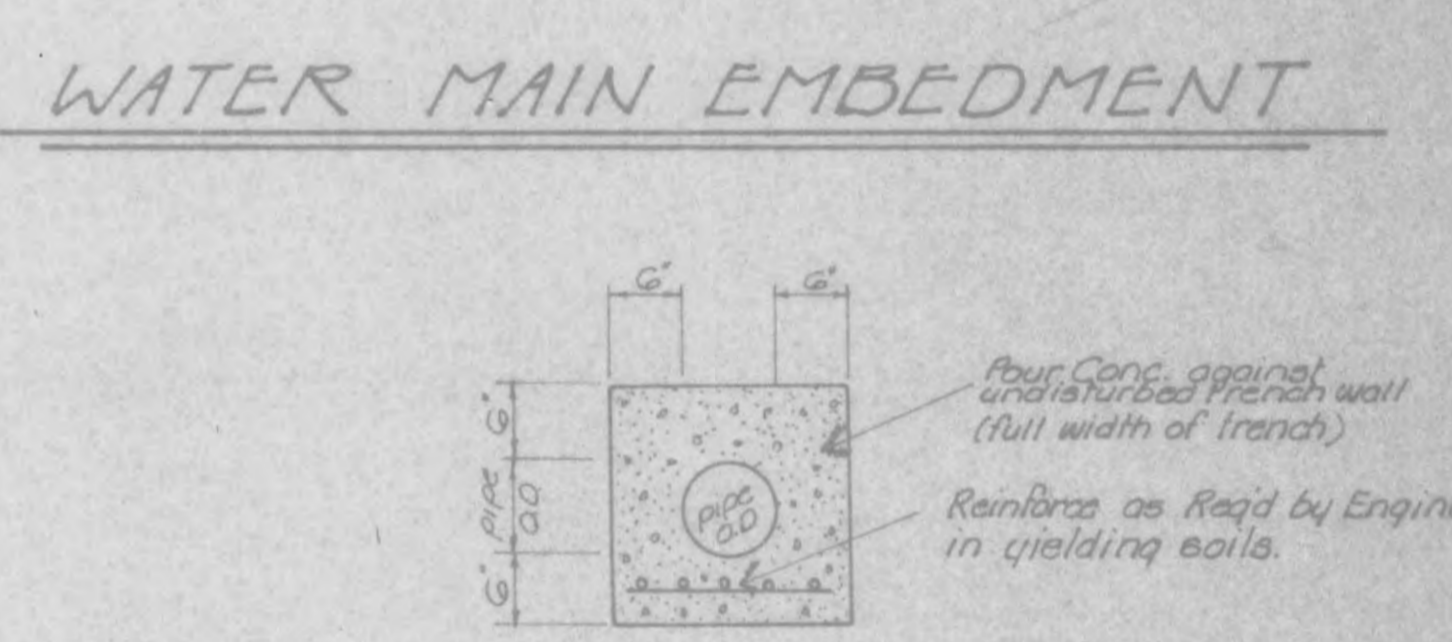
- GENERAL NOTES:**
- All construction shall be done in accordance with the standards set forth by the City and installation shall be done under the supervision of the City Engineer.
 - Water Main Pipe to be #8 Class 200 P.V.C.
 - All fittings shall be mechanical joint, cast iron.
 - All fire hydrants shall have 5-1/4" valve opening, pump nozzle and 2 hose nozzles with 6" inlet connection, as specified by City Engineer.
 - Bids for fire hydrants shall include 6" valve and box.
 - Water and sewer main crossings shall conform to the Missouri Clean Water Commission Standards.
 - Trench backfill shall be granular material through street crossings. All trench backfill to be compacted to 95% maximum density.
 - Testing, sterilization and flushing shall be performed to the satisfaction of the City Engineer.
 - All house service connections are to be done in a manner prescribed by the City Engineer.
 - The price for the construction items shall include the cost for labor and materials for installation.
 - All bends, tees and hydrants shall be blocked with concrete per the detail.



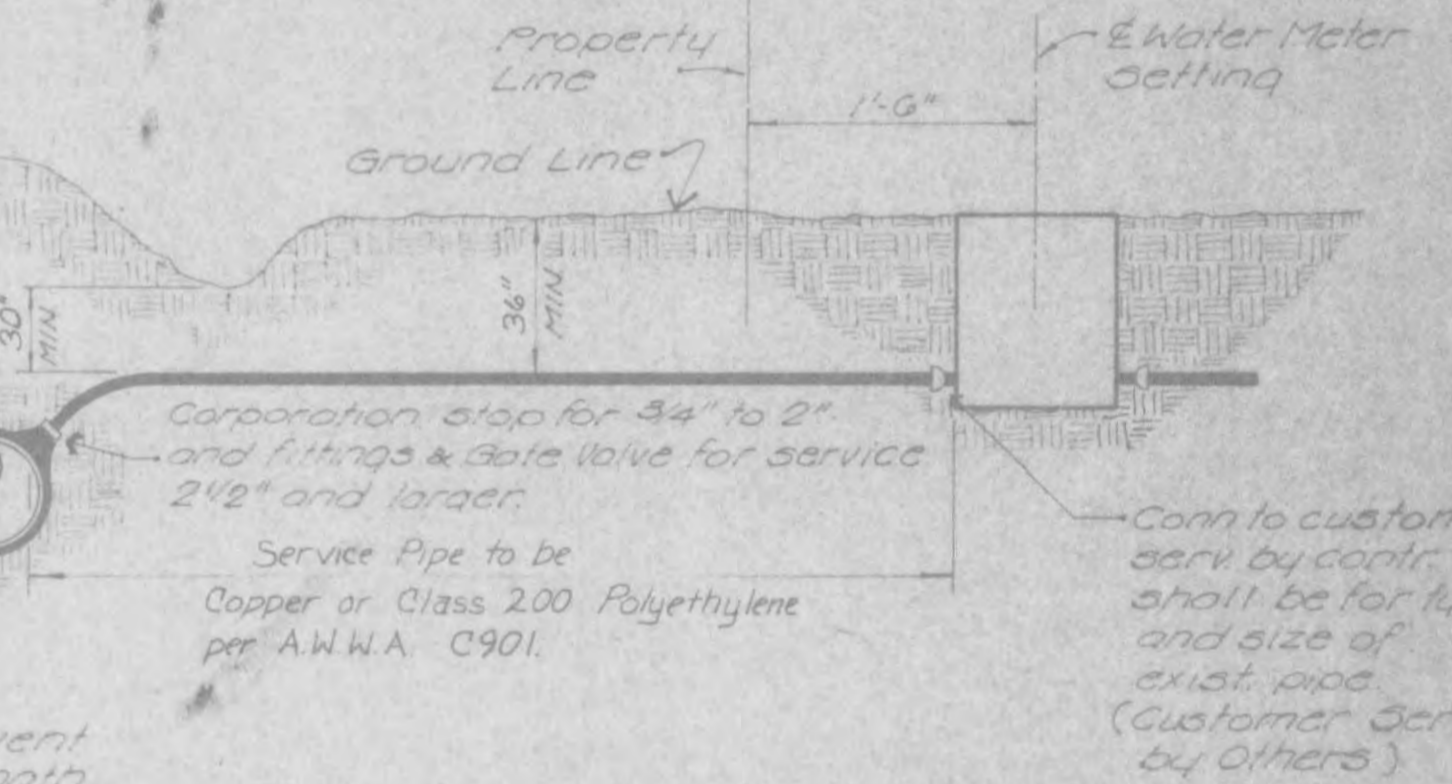
STRADDLE BLOCK DETAIL



TUNNEL LINER DETAIL



CONCRETE ENCASEMENT



TYPICAL SERVICE ASSEMBLY

GBA
 GEORGE BUTLER ASSOCIATES
 CONSULTING ENGINEERS ARCHITECTS
 LANDSCAPE ARCHITECTS PLANNERS

300 S. 225 S. Main St.
 O'Fallon, Missouri 63368

K-LAND
WATER MAIN DETAILS

DESIGNED BY: Std
 DRAWN BY: J.R. YARD
 CHECKED BY: G.R.H.

JOB NO: 4576-81
 DATE: Dec 11, 1987
 SCALE: As Shown
 SHEET: 15 OF 15