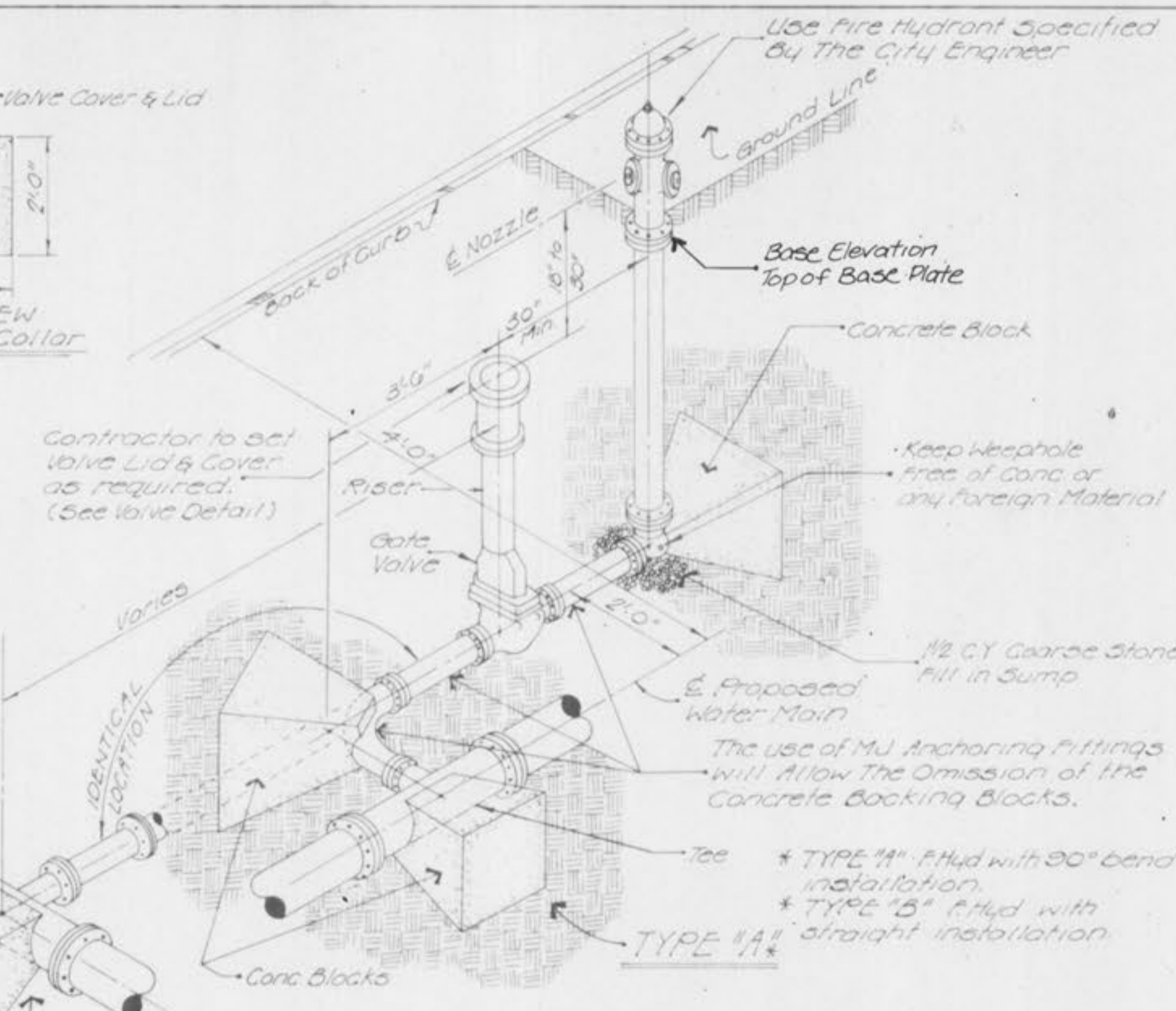
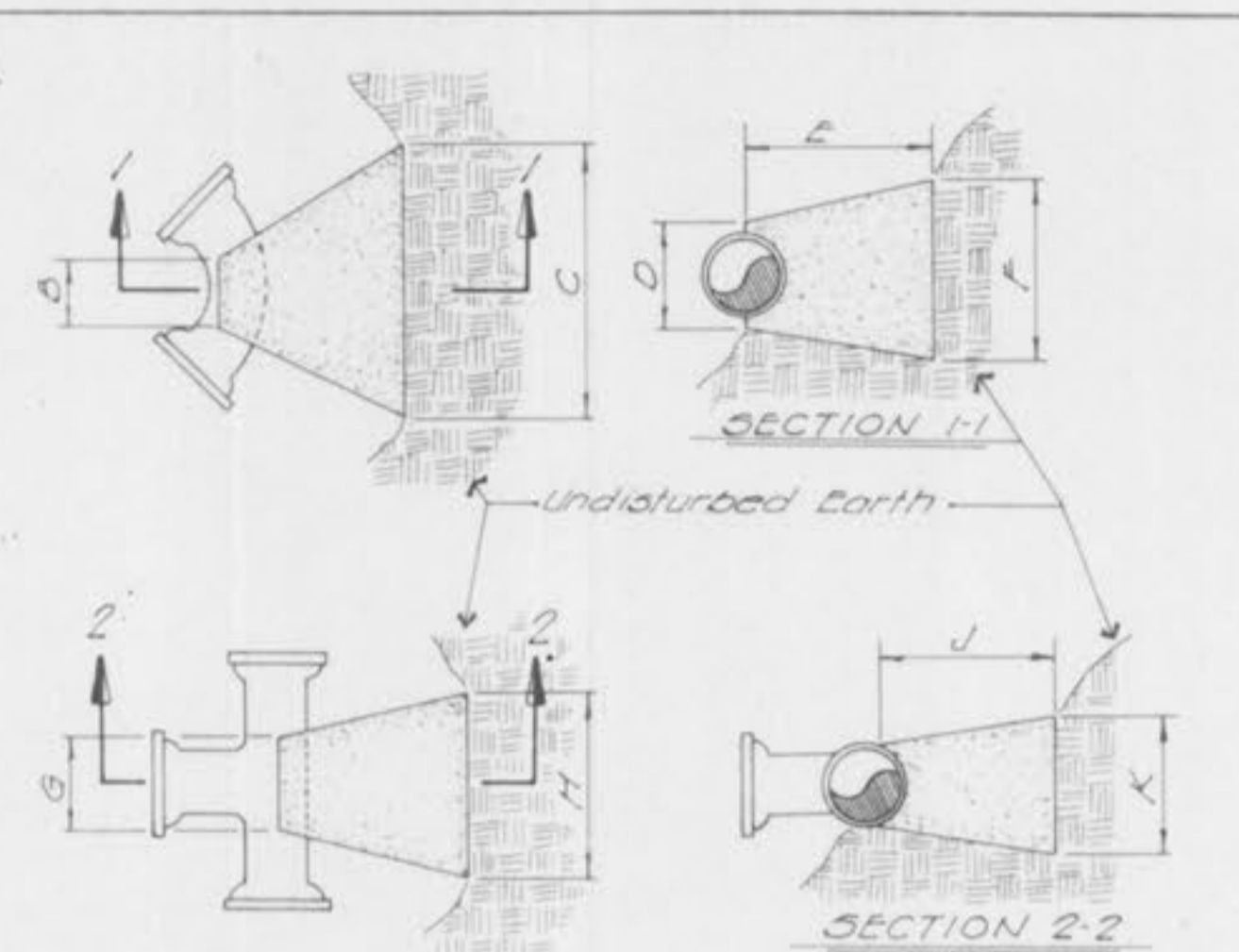


WATER VALVE DETAIL



FIRE HYDRANT DETAIL



BENDS				
BEND	B	C	D	E
6"-11 1/4"	6"	15"	12"	24"
6"-22 1/2"	6"	18"	12"	24"
6"-45"	6"	30"	12"	24"
6"-30"	6"	30"	12"	24"
8"-11 1/4"	8"	20"	12"	24"
8"-22 1/2"	8"	22"	12"	24"
8"-45"	8"	30"	12"	24"
8"-30"	8"	38"	12"	24"
12"-11 1/4"	6"	30"	12"	24"
12"-22 1/2"	6"	35"	12"	24"
12"-45"	6"	40"	12"	24"
12"-30"	6"	60"	12"	24"

TEES				
BEND	G	H	J	K
6"x6"x6"	12"	24"	24"	18"
6"x6"x6"	12"	24"	24"	18"
6"x8"x6"	12"	24"	24"	18"
6"x8"x6"	12"	24"	24"	18"
12"x12"x6"	12"	24"	24"	18"
12"x12"x6"	12"	30"	24"	36"

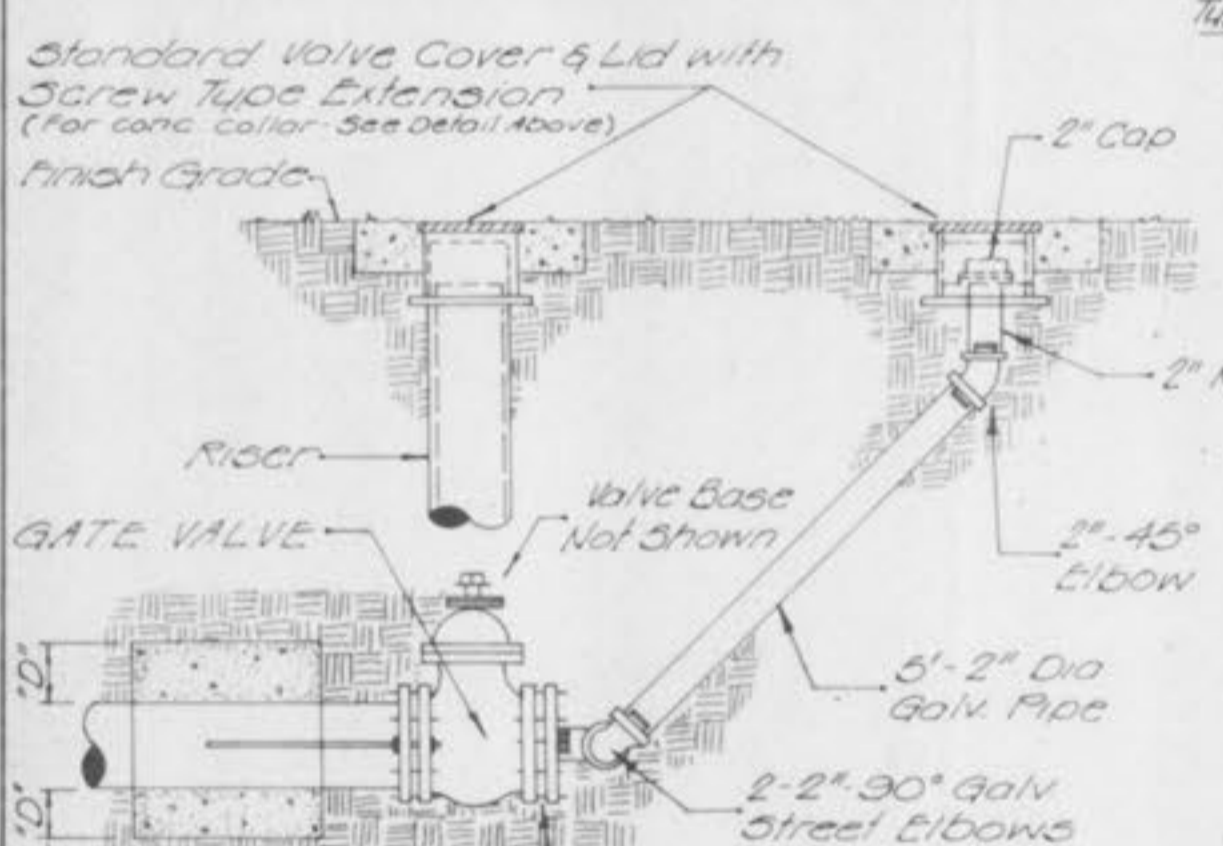
CUBIC FEET OF CONCRETE REQUIRED				
BEND	11 1/4"	22 1/2"	45"	30"
6"	1.7	2.4	3.5	3.0
8"	2.1	3.1	5.0	3.5
12"	3.7	5.3	3.7	17.5

TEE X				
TEE X	6"	8"	12"	PLUS
6"	4.0	~	~	4.0
8"	4.0	5.0	~	5.0
12"	4.5	5.5	10.5	10.5

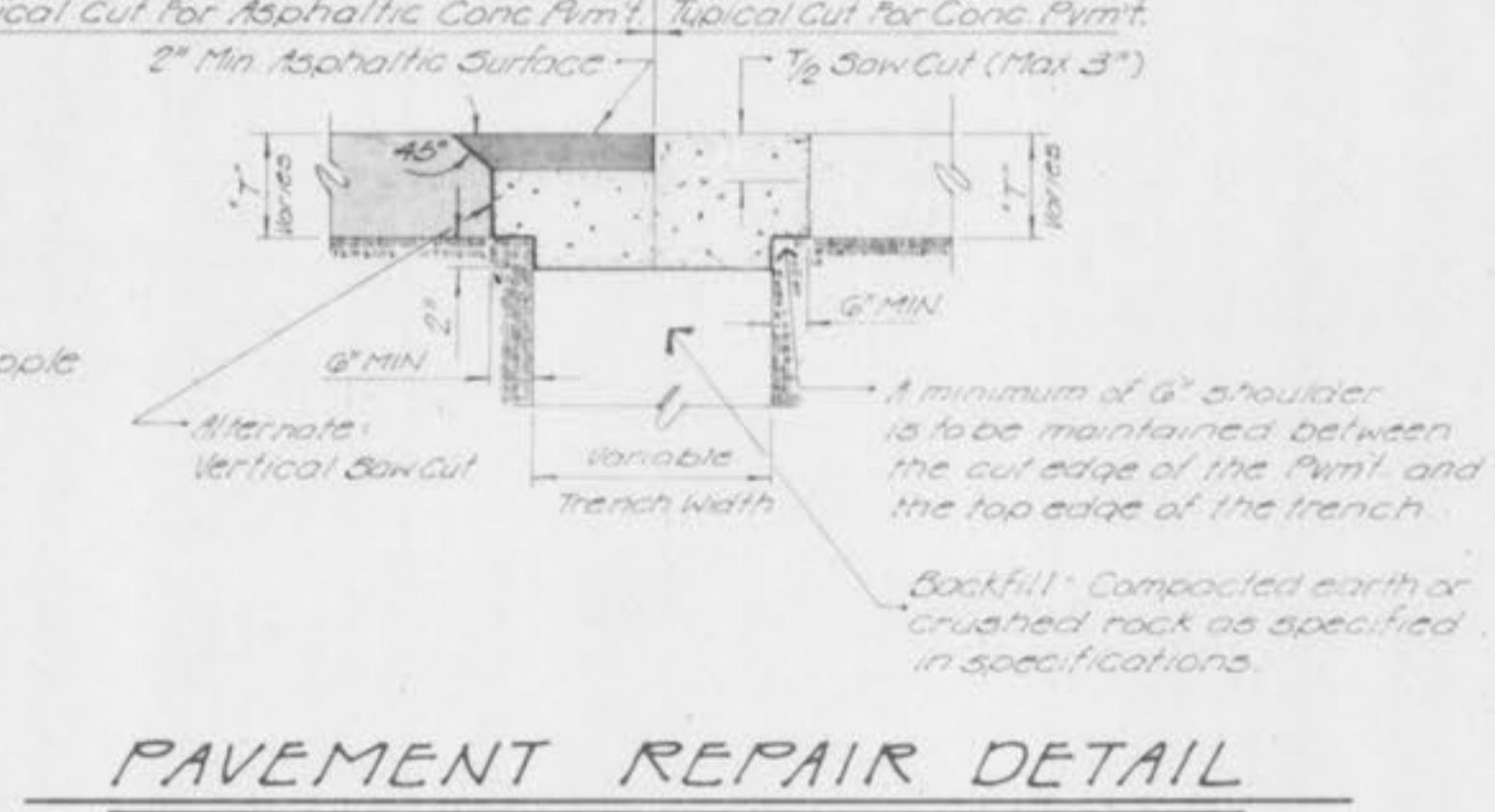
NOTES:
 1. 2" & 4" FITTINGS EQUIVALENT TO 6" FITTINGS.
 2. TAPPING SLEEVES TO HAVE BACKING BLOCKS SAME SIZE AS REQUIRED FOR TEES.
 3. 10" FITTINGS EQUIVALENT TO 12" FITTINGS.

BACKING BLOCKS

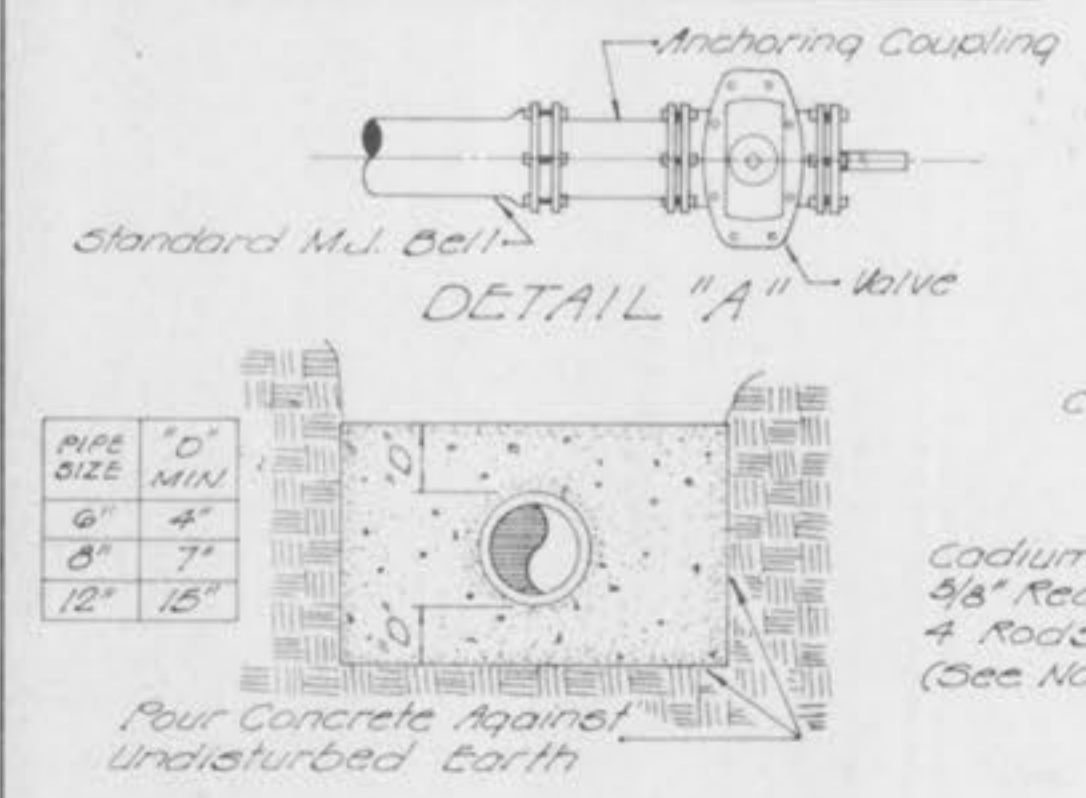
GENERAL NOTES:



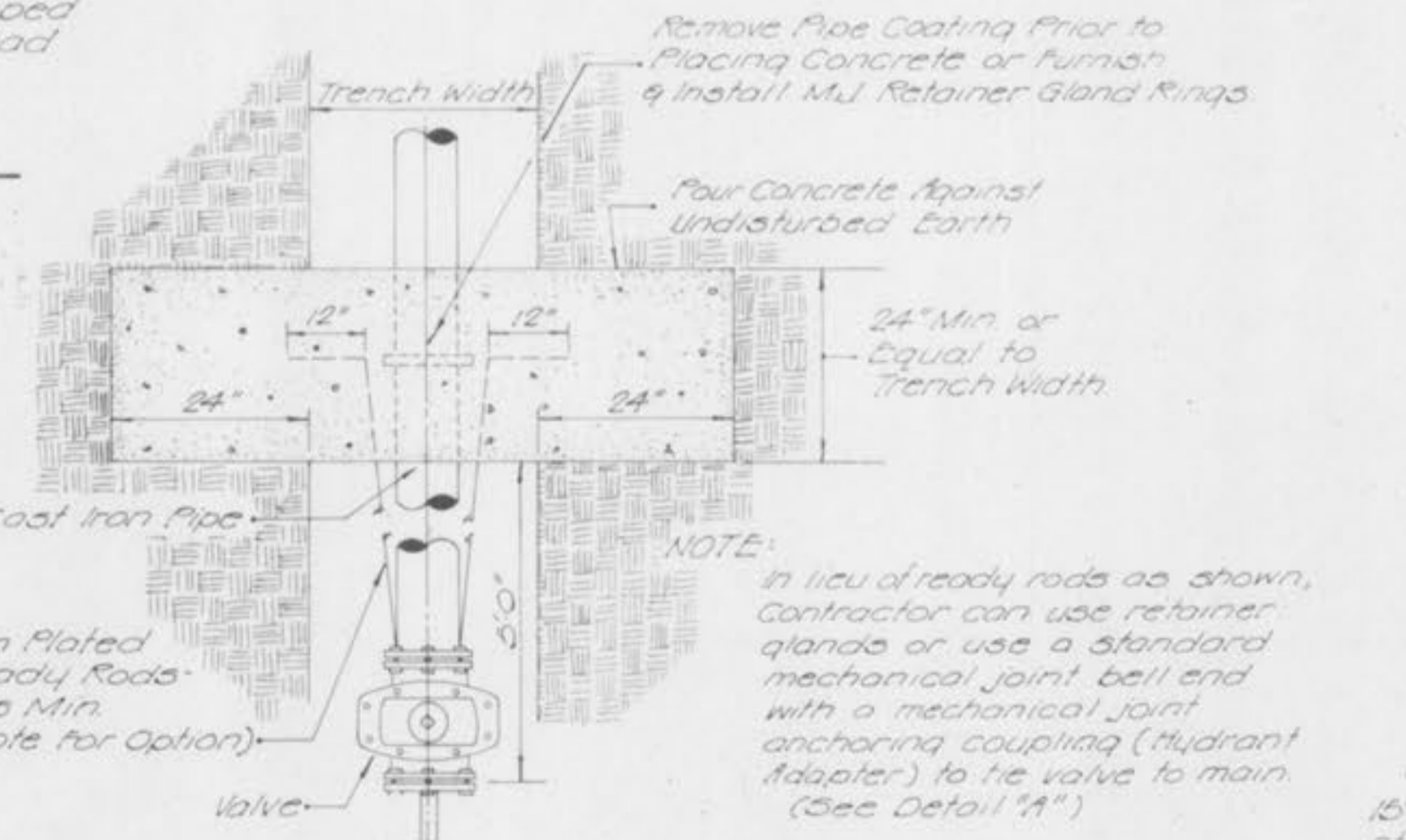
FLUSHING ASSEMBLY



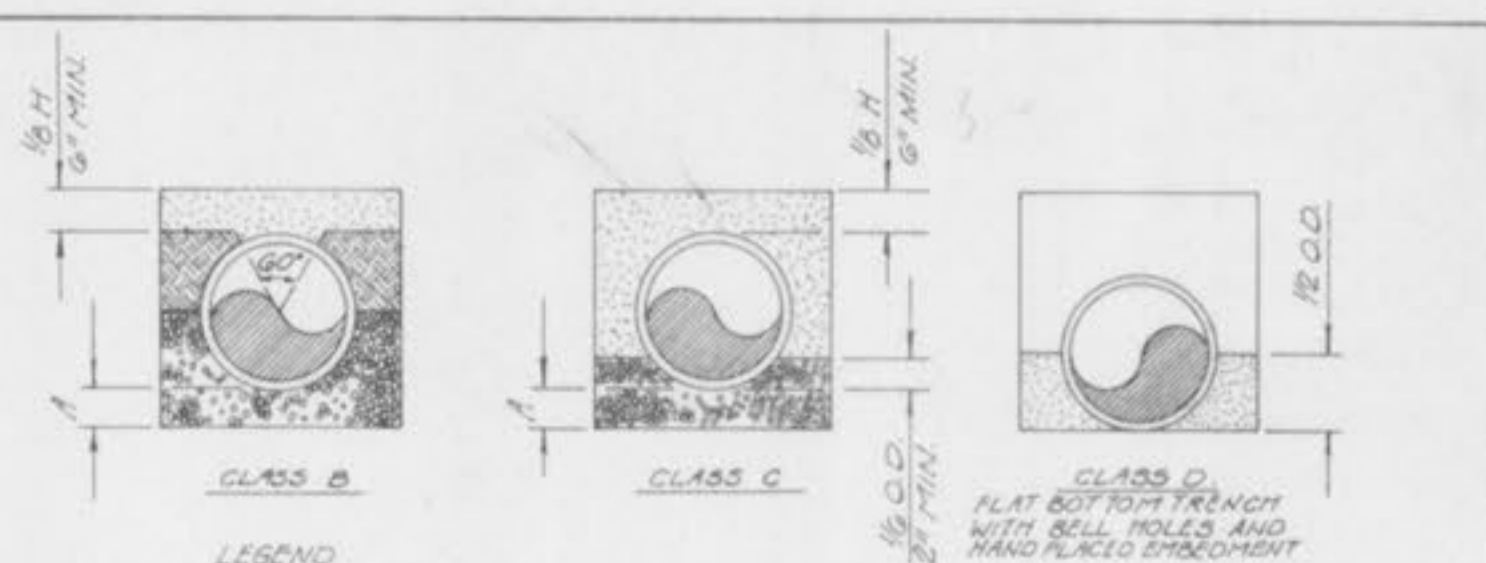
PAVEMENT REPAIR DETAIL



STRADDLE BLOCK DETAIL



TUNNEL LINER DETAIL

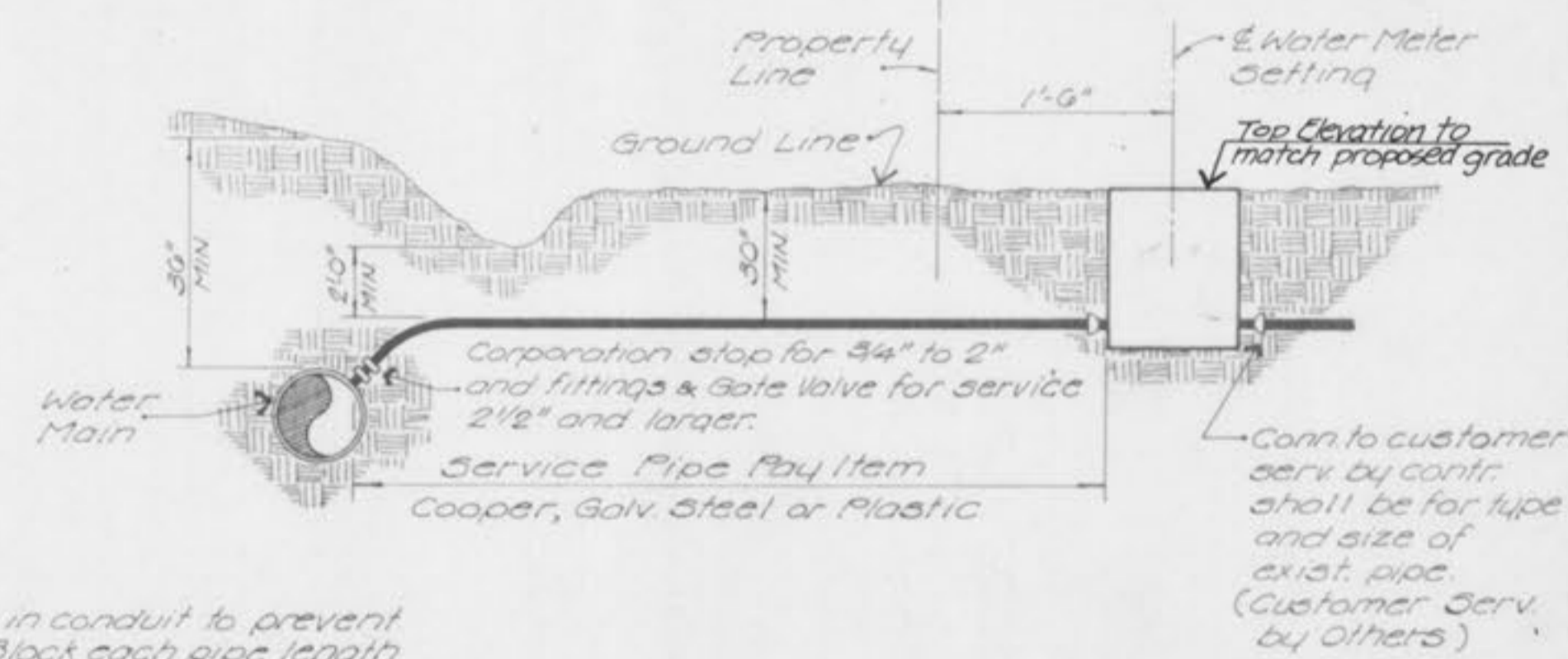


LEGEND:
 I.D. - NOMINAL PIPE SIZE
 O.D. - OUTSIDE DIAMETER OF PIPE
 H - COVER ABOVE TOP OF PIPE
 A - EMBEDMENT BELOW PIPE (SEE TABLE)

TABLE OF EMBEDMENT DEPTHS BELOW PIPE			
I.D.	A	B	C
2\"/>			

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, hand placed in uniform layers not more than 6" thick, compacted to 95% maximum density as determined by A.S.T. 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: The type of embedment to be used shall be as specified in the plans and specifications.

WATER MAIN EMBEDMENT



TYPICAL SERVICE ASSEMBLY

GBA
 GEORGE BUTLER ASSOCIATES
 CONSULTING ENGINEERS - ARCHITECTS
 LANDSCAPE ARCHITECTS - PLANNERS

OFFICES:
 3025 S.W. FAIRWAY OFFICE CENTER
 4310 JOHNSON DRIVE - SHAWNEE MISSION - KANSAS 66205
 1100 CITY CENTER SQUARE
 1100 MAIN - KANSAS CITY - MISSOURI 64105
 3075 134 LAMAR BLVD. #2
 8200 CORPORATE DRIVE - KANSAS CITY - MISSOURI 64120

HIGHWAY 'M'
UTILITY RELOCATIONS
PHASE 1

DESIGNED BY: DRAWN BY: T.R. YORD CHECKED BY: R.E.H.

JOB NO: 5951
 DATE: 4-16-80
 SCALE: NOT TO SCALE
 SHEET NO: 9 OF 10