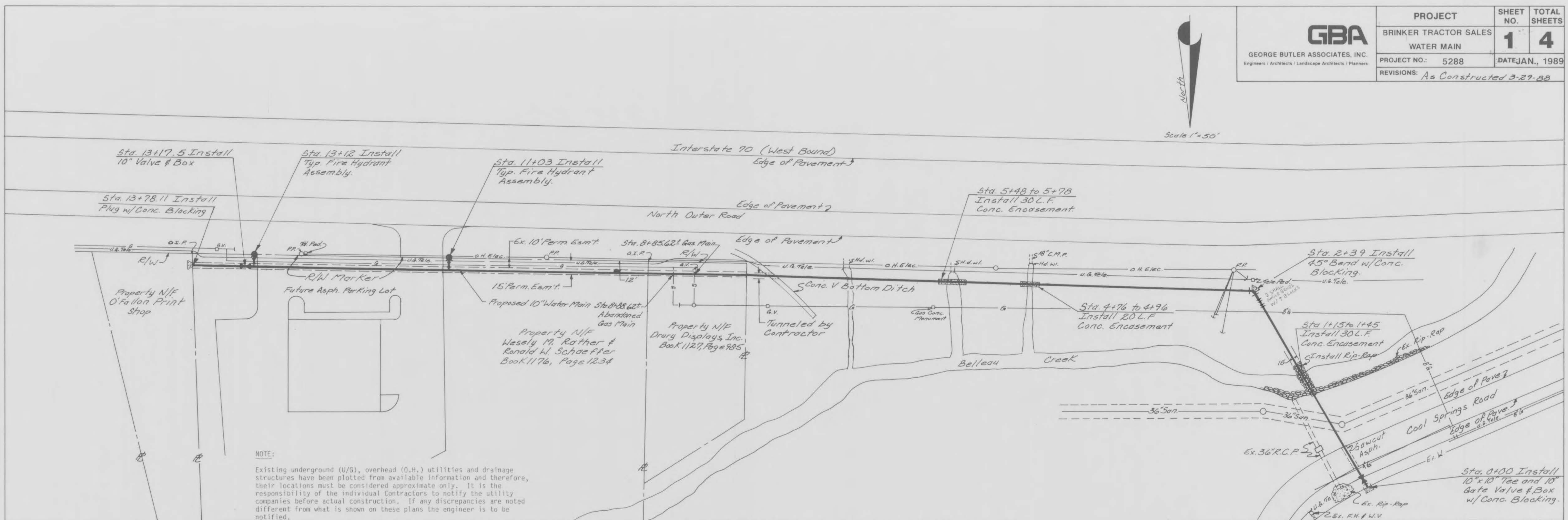


GBA GEORGE BUTLER ASSOCIATES, INC. <small>Engineers / Architects / Landscape Architects / Planners</small>	PROJECT	SHEET NO.	TOTAL SHEETS
	BRINKER TRACTOR SALES WATER MAIN	1	4
	PROJECT NO.: 5288	DATE JAN., 1989	
	REVISIONS: As Constructed 3-29-88		

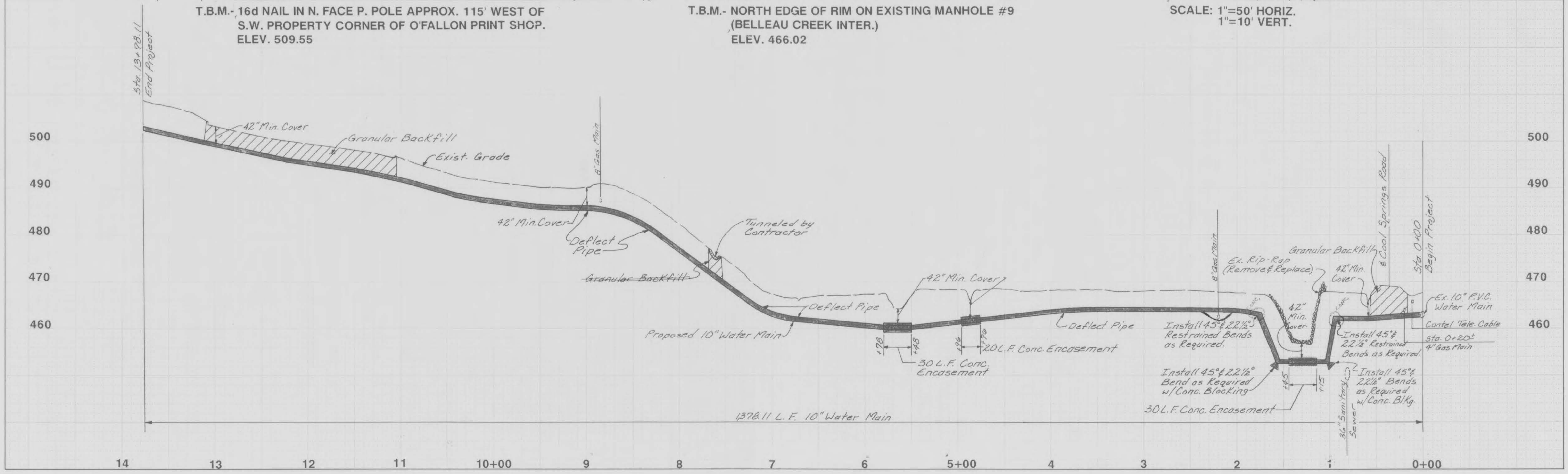


NOTE:
Existing underground (U/G), overhead (O.H.) utilities and drainage structures have been plotted from available information and therefore, their locations must be considered approximate only. It is the responsibility of the individual Contractors to notify the utility companies before actual construction. If any discrepancies are noted different from what is shown on these plans the engineer is to be notified.

T.B.M.- 16d NAIL IN N. FACE P. POLE APPROX. 115' WEST OF S.W. PROPERTY CORNER OF O'FALLON PRINT SHOP. ELEV. 509.55

T.B.M.- NORTH EDGE OF RIM ON EXISTING MANHOLE #9 (BELLEAU CREEK INTER.) ELEV. 466.02

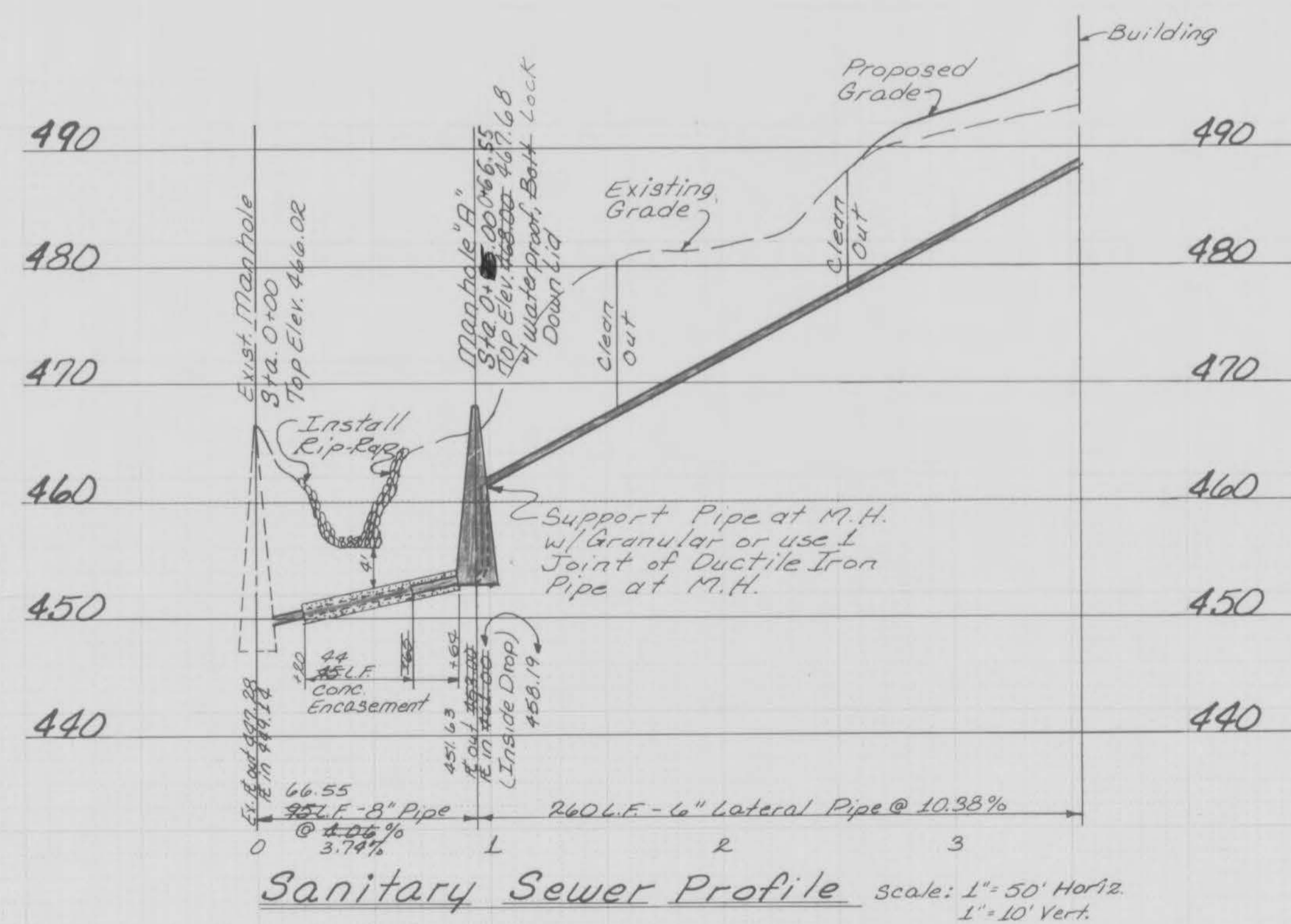
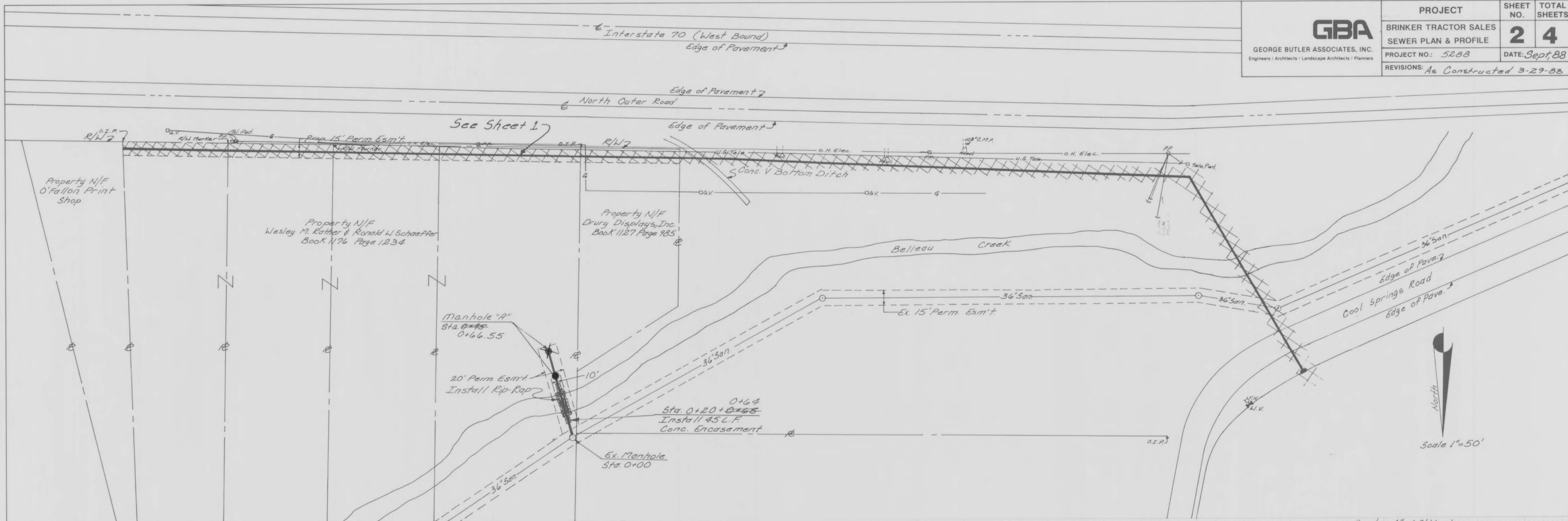
SCALE: 1"=50' HORIZ.
1"=10' VERT.

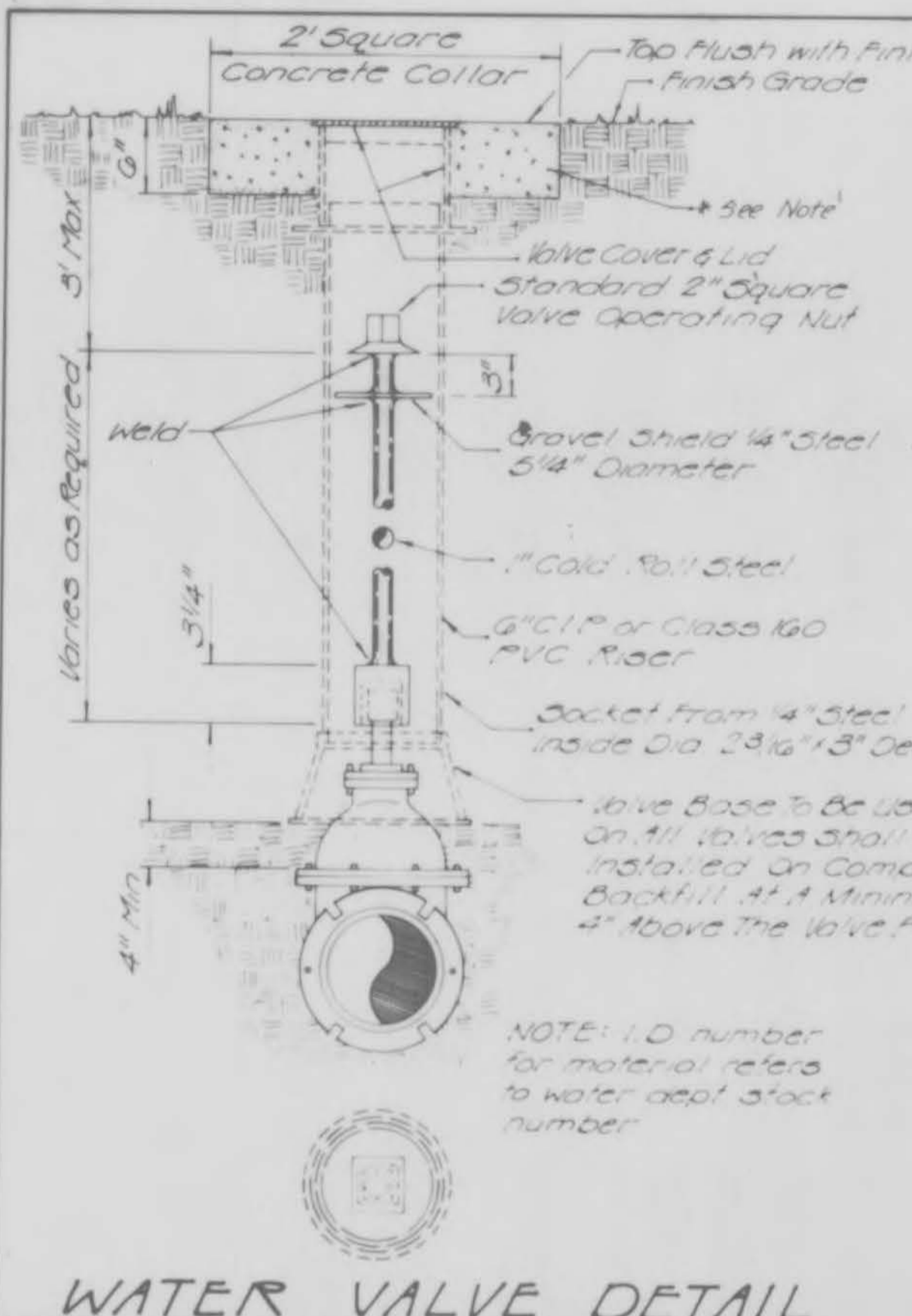




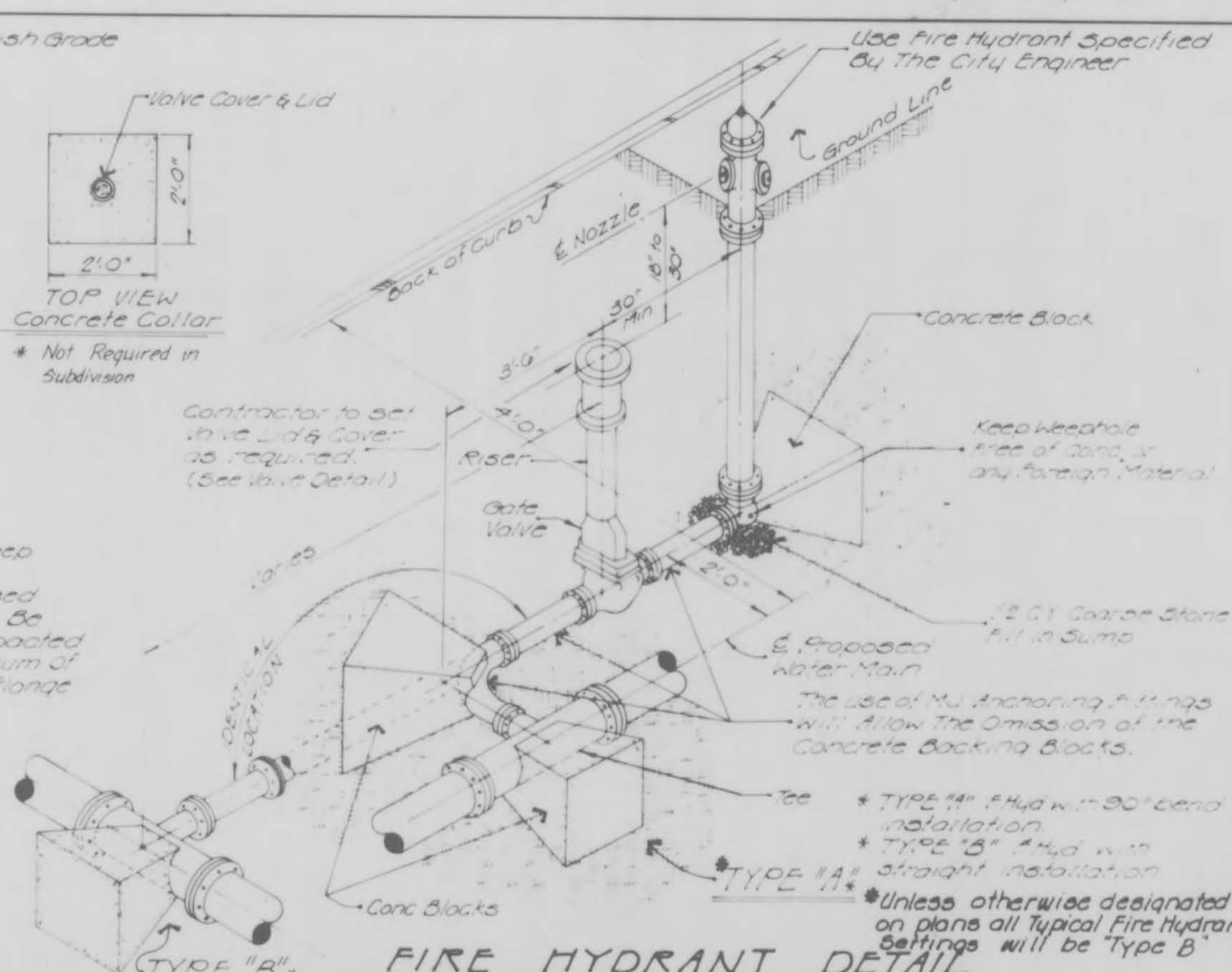
GEORGE BUTLER ASSOCIATES, INC.
Engineers / Architects / Landscape Architects / Planners

PROJECT	SHEET NO.	TOTAL SHEETS
BRINKER TRACTOR SALES SEWER PLAN & PROFILE	2	4
PROJECT NO.: 5288	DATE: Sept, 88	
REVISIONS: As Constructed 3-29-88		

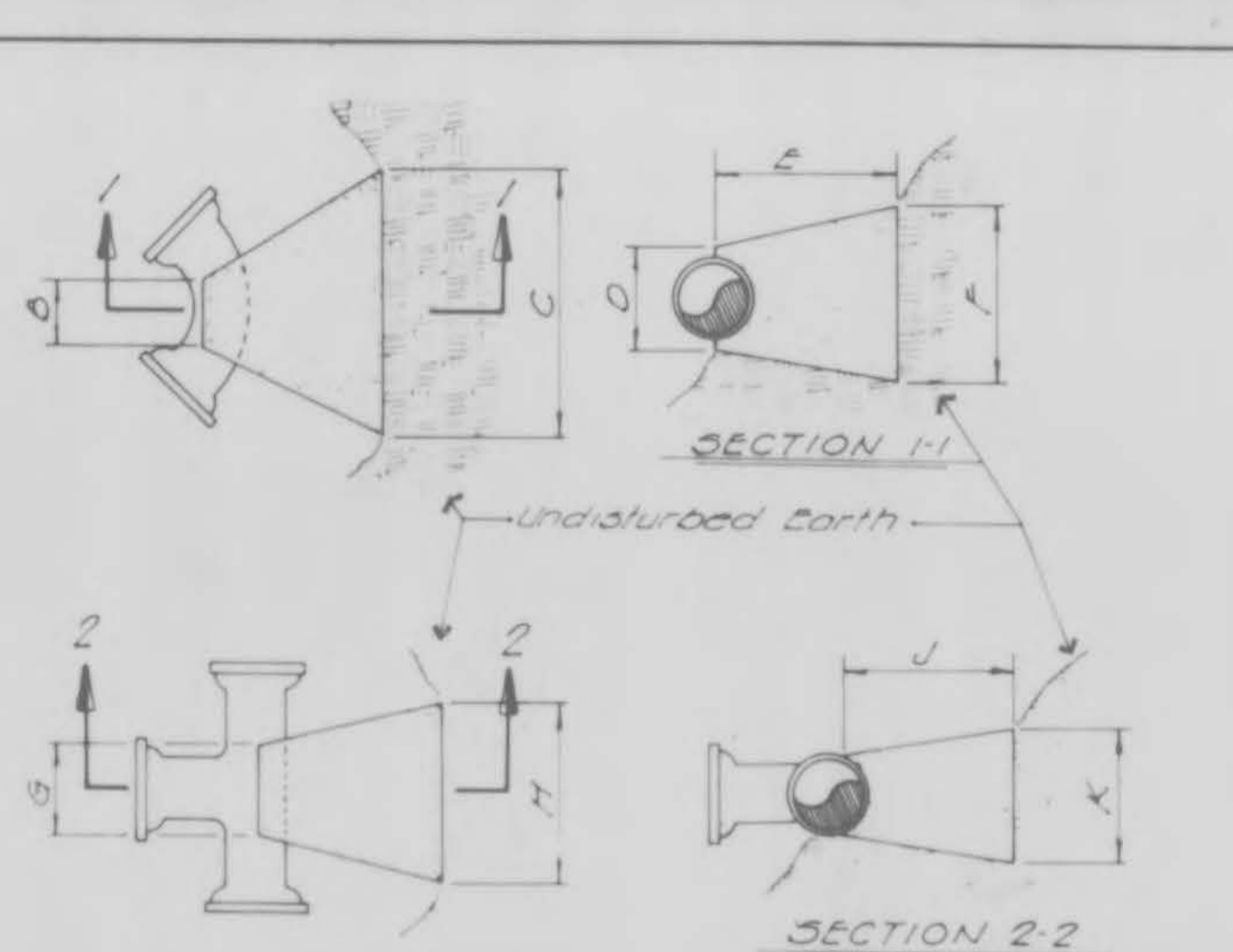




WATER VALVE DETAIL



FIRE HYDRANT DETAIL

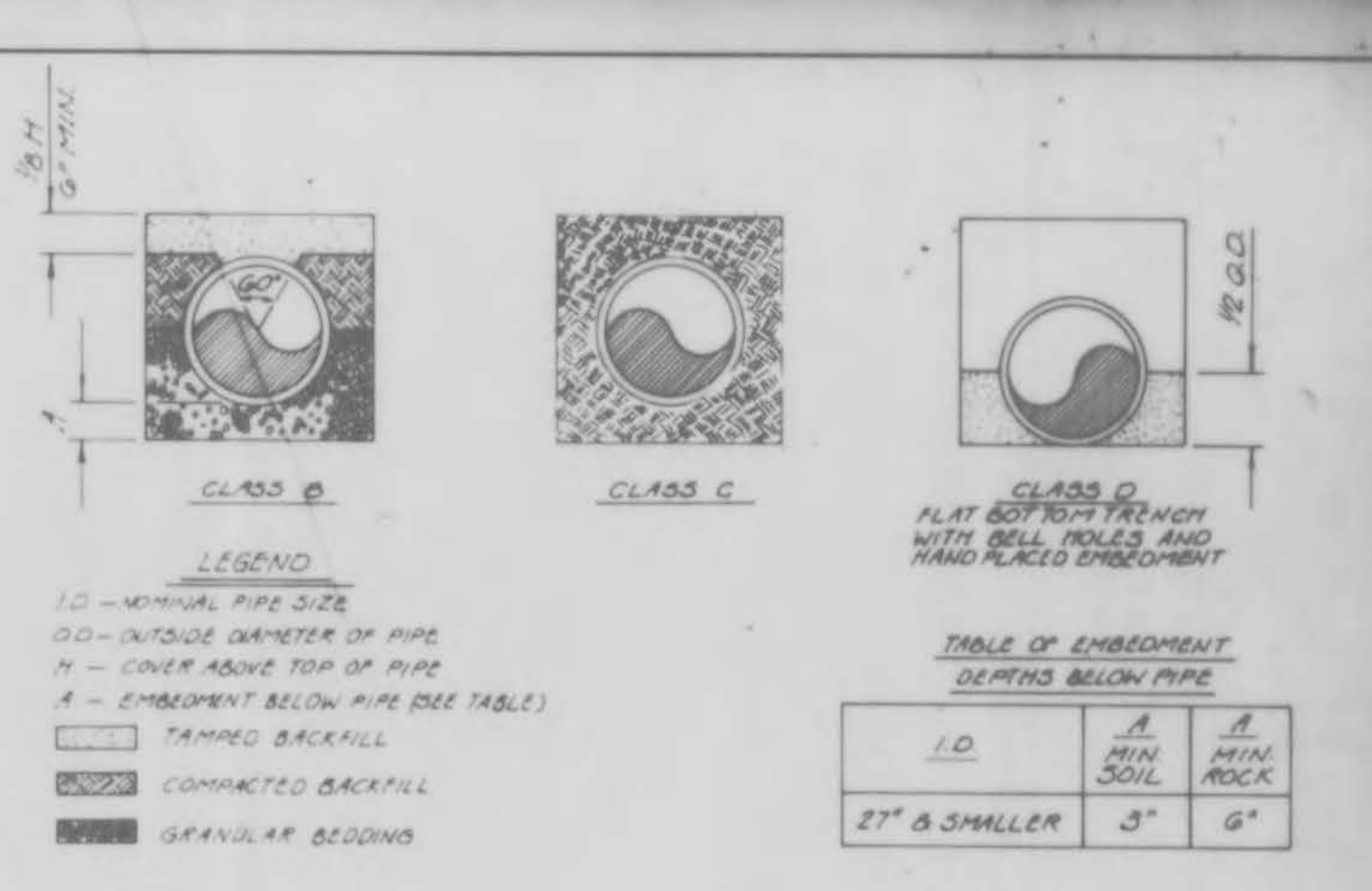


BENDS				
B	C	D	E	F
6" 11 1/4"	8" 15"	12" 24"	10"	
6" 22 1/2"	8" 30"	12" 24"	15"	
6" 30"	8" 30"	12" 24"	24"	
6" 11 1/4"	8" 20"	12" 24"	10"	
6" 22 1/2"	8" 22"	12" 24"	17"	
6" 45"	8" 30"	12" 24"	24"	
6" 30"	8" 35"	12" 24"	36"	
12" 11 1/4"	8" 30"	12" 24"	15"	
12" 22 1/2"	8" 35"	12" 24"	25"	
12" 45"	8" 40"	12" 24"	40"	
12" 30"	8" 60"	12" 24"	52"	

TEES				
G	H	J	K	L
6" 6" x 6"	12" 24"	24"	24"	18"
8" 6" x 6"	12" 24"	24"	24"	18"
8" 8" x 6"	12" 24"	24"	24"	18"
12" 2" x 6"	12" 24"	24"	24"	18"
2" x 2" x 2"	12" 36"	24"	36"	

CUBIC FEET OF CONCRETE REQUIRED				
BEND	11 1/4"	22 1/2"	45"	30"
6"	17	24	35	55
8"	21	31	50	65
12"	37	53	97	175

TEE X				
6"	8"	12"	PLUG	
6"	40	~	40	
8"	40	30	~	40
12"	45	55	105	105

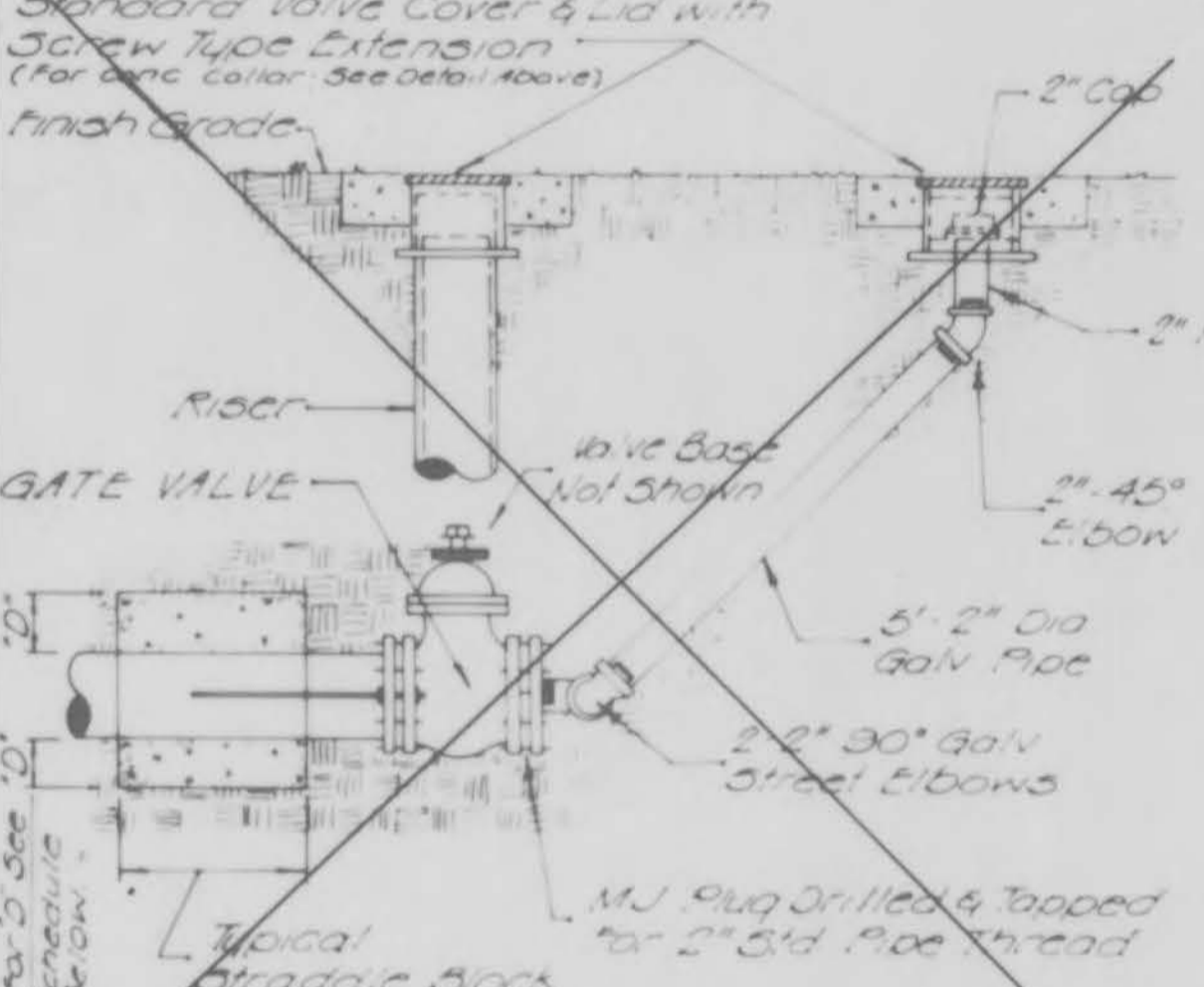


LEGEND
 I.D. - NOMINAL PIPE SIZE
 O.D. - OUTSIDE DIAMETER OF PIPE
 H - COVER ABOVE TOP OF PIPE
 A - EMBEDMENT BELOW PIPE (SEE TABLE)

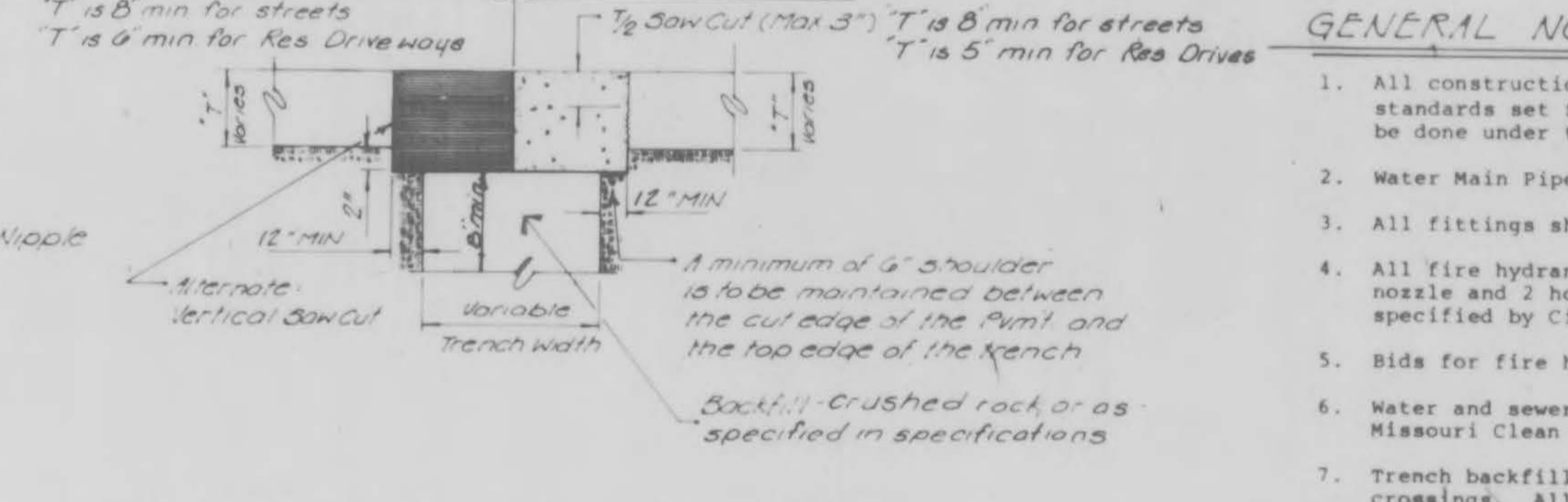
TABLE OF EMBEDMENT DEPTHS BELOW PIPE

I.D.	A MIN SOIL	A MIN ROCK
27" & SMALLER	3"	6"

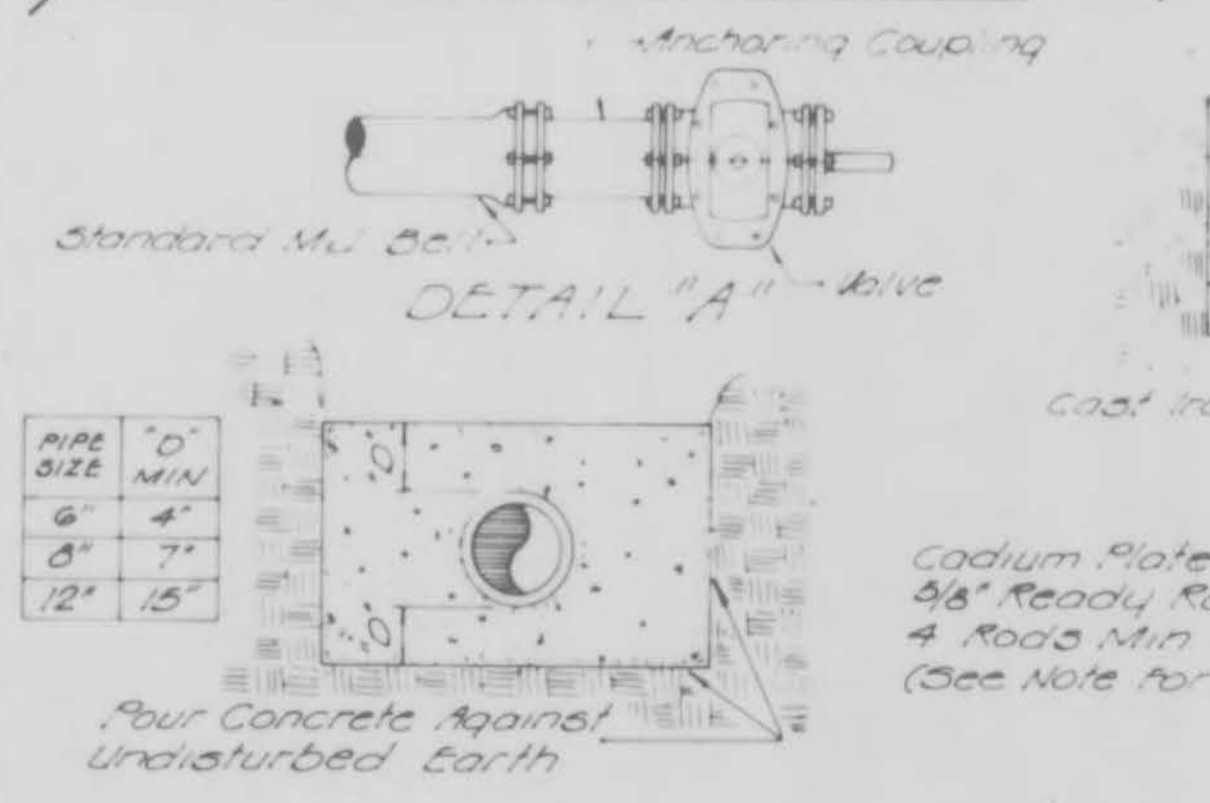
NOTES:
 Granular Bedding shall be crushed rock or pea gravel with not less than 95% passing 1/2" (95% passing 3/4" for 30" and larger pipe) and not less than 95% retained on a #4; to be placed in not more than 6" layers and compacted by slicing with a shovel or vibrating.
 Compacted Backfill shall be 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. 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.



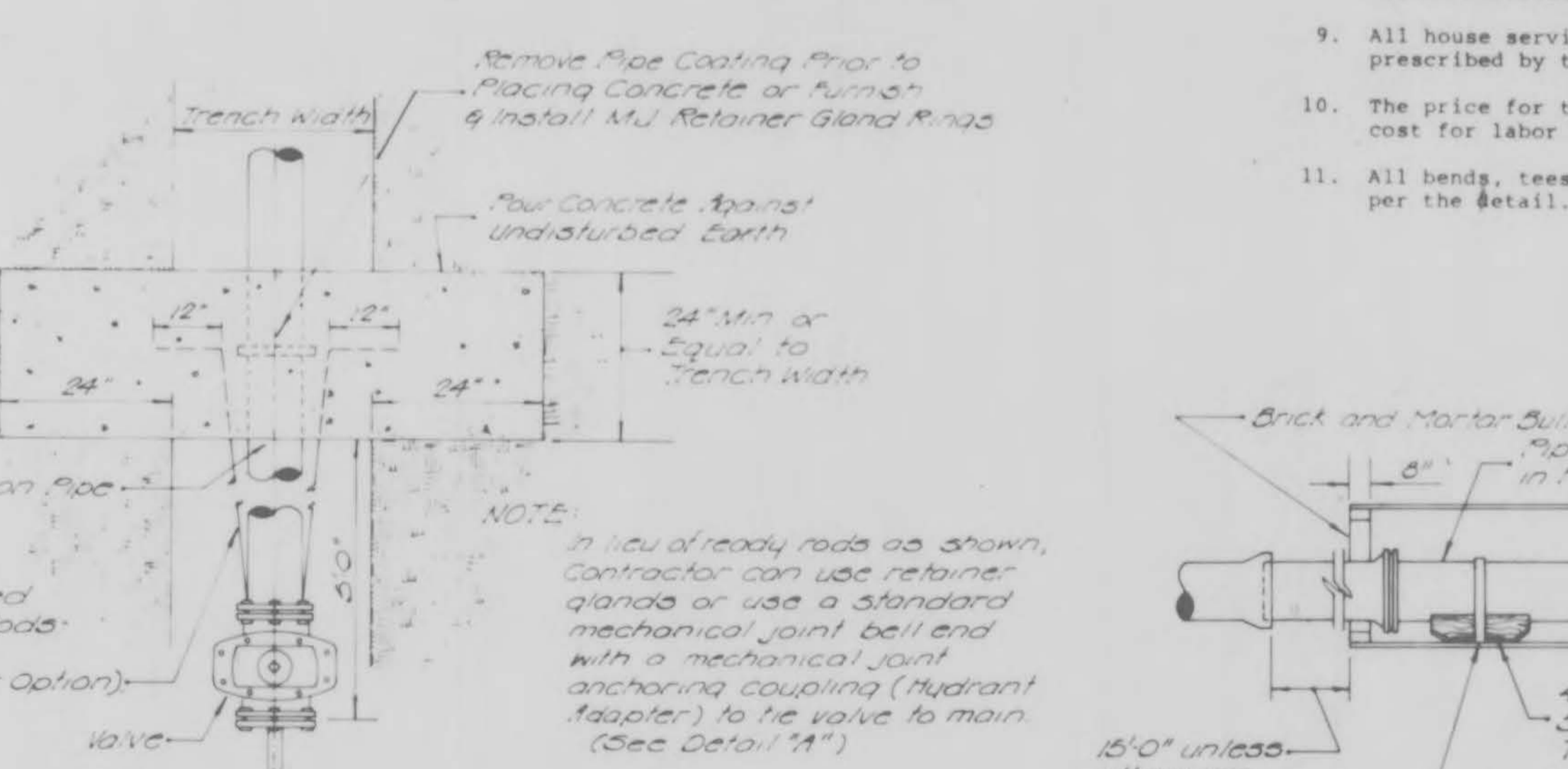
FLUSHING ASSEMBLY



PAVEMENT REPAIR DETAIL



STRADDLE BLOCK DETAIL

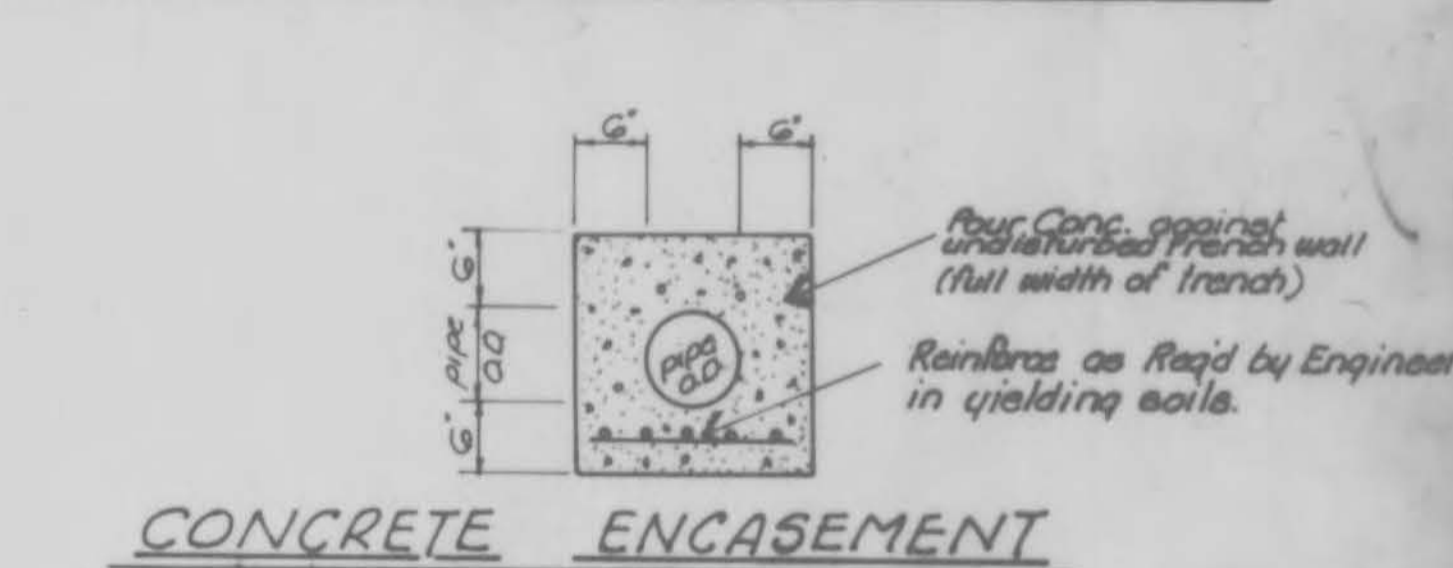


TUNNEL LINER DETAIL

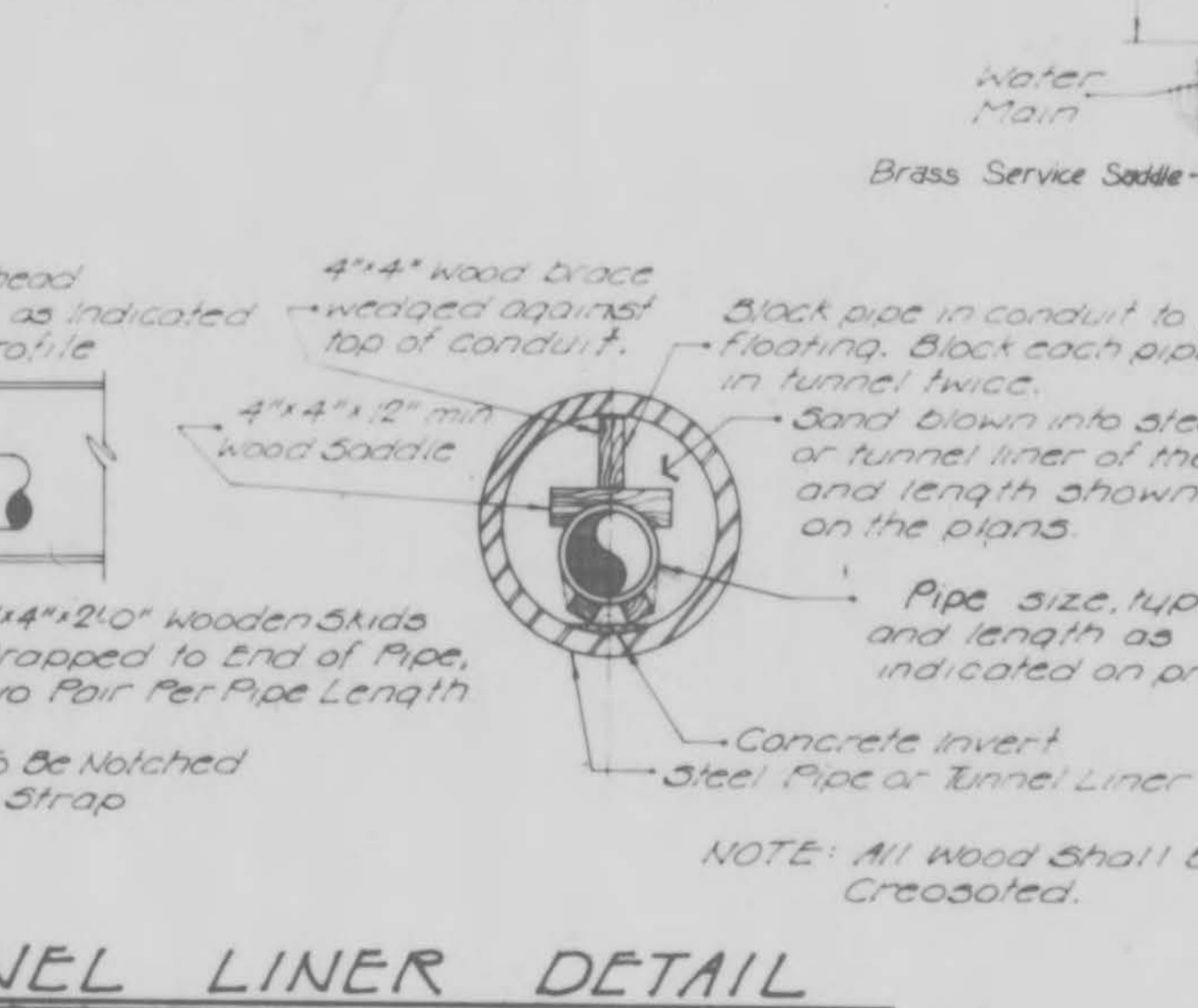
BACKING BLOCKS

- 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 10" 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.

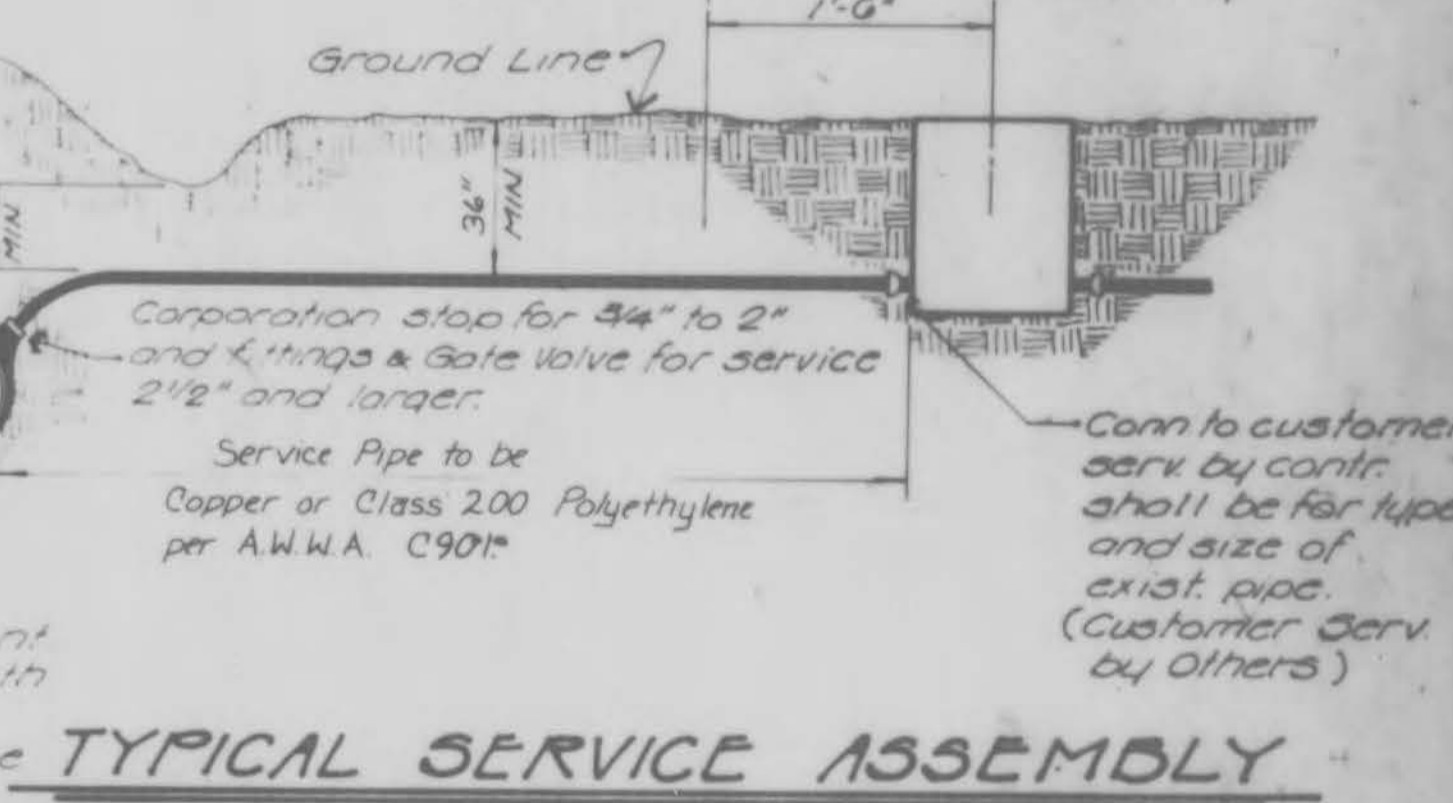
WATER MAIN EMBEDMENT



CONCRETE ENCASUREMENT



TYPICAL SERVICE ASSEMBLY



WATER METER SETTING

GBA
 GEORGE BUTLER ASSOCIATES
 CONSULTING ENGINEERS ARCHITECTS
 LANDSCAPE ARCHITECTS PLANNERS
 Suite 200 / 225 S. Main St.
 O'Fallon, Missouri 63366

BRINKER TRACTOR SALES

WATER MAIN DETAILS

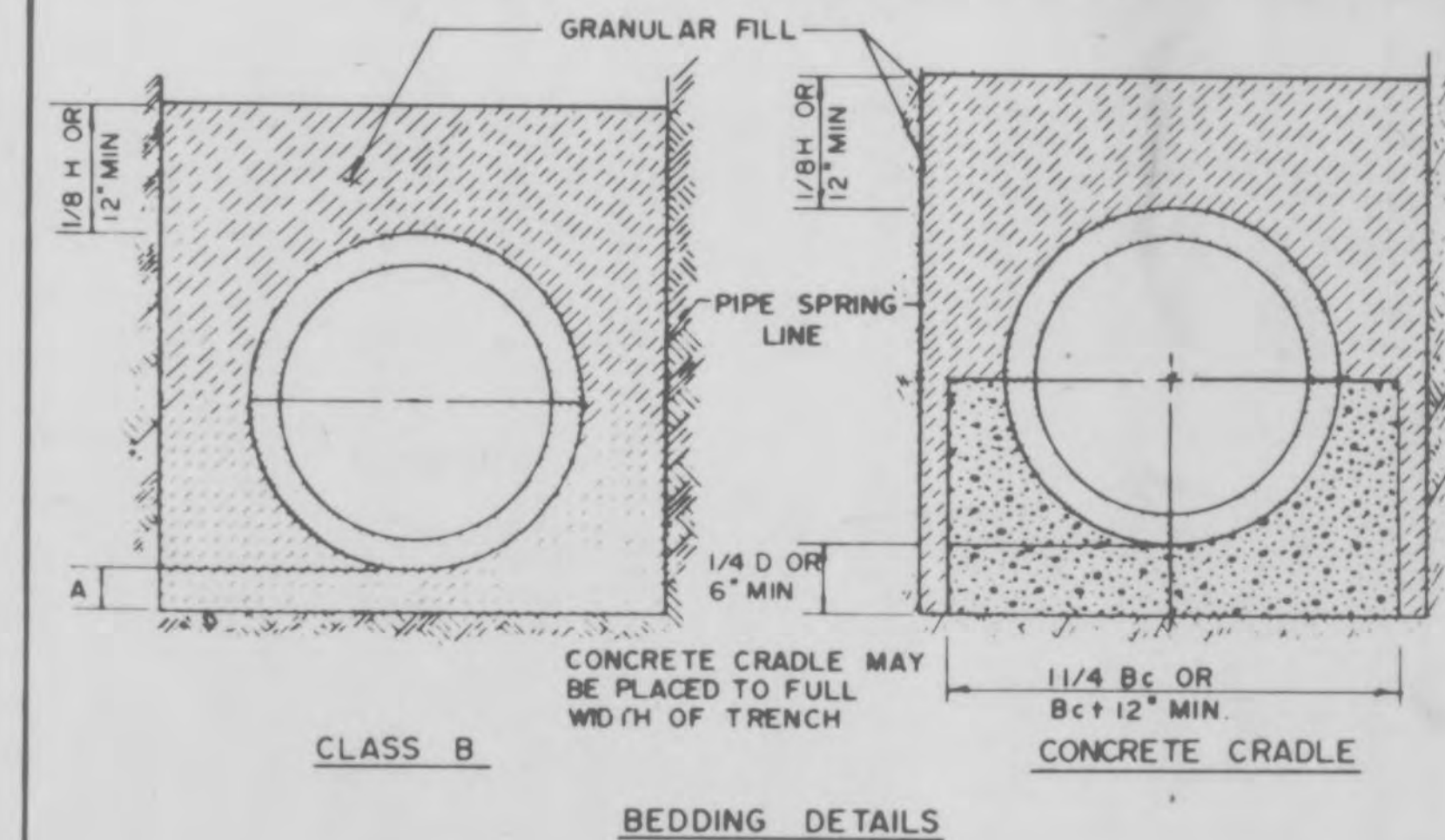
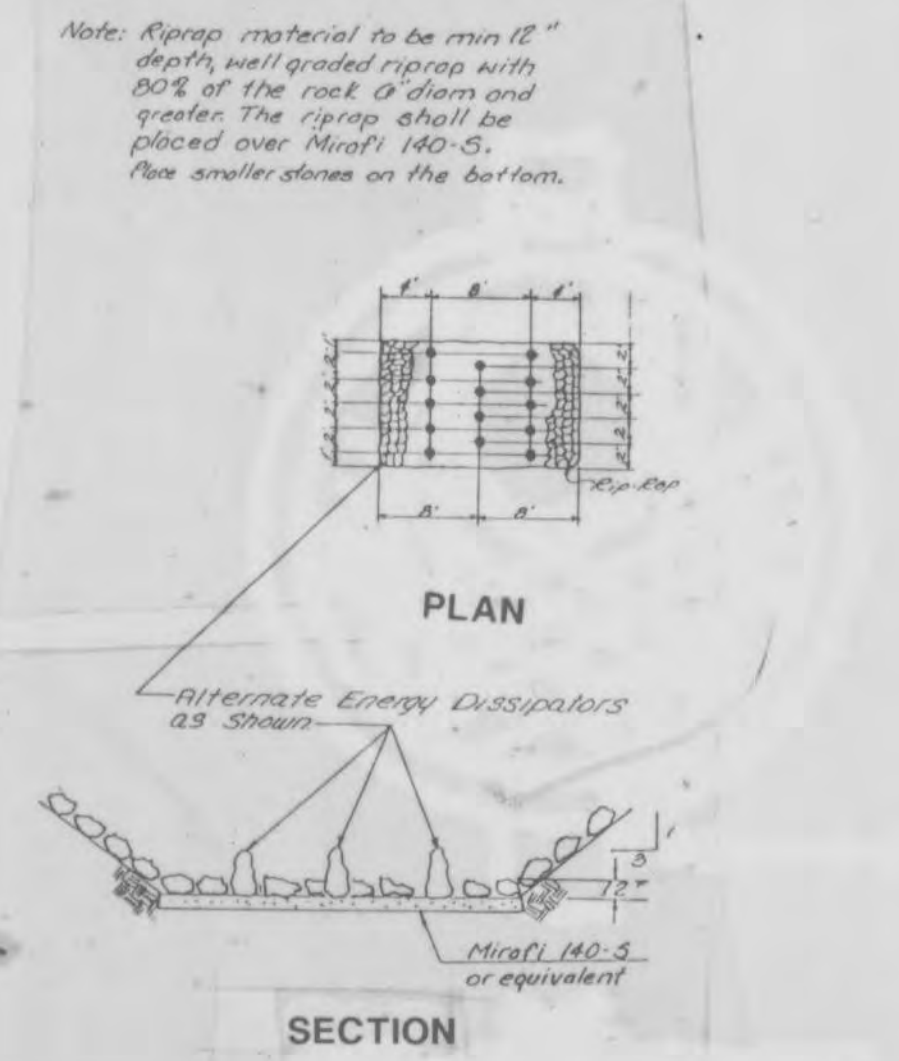
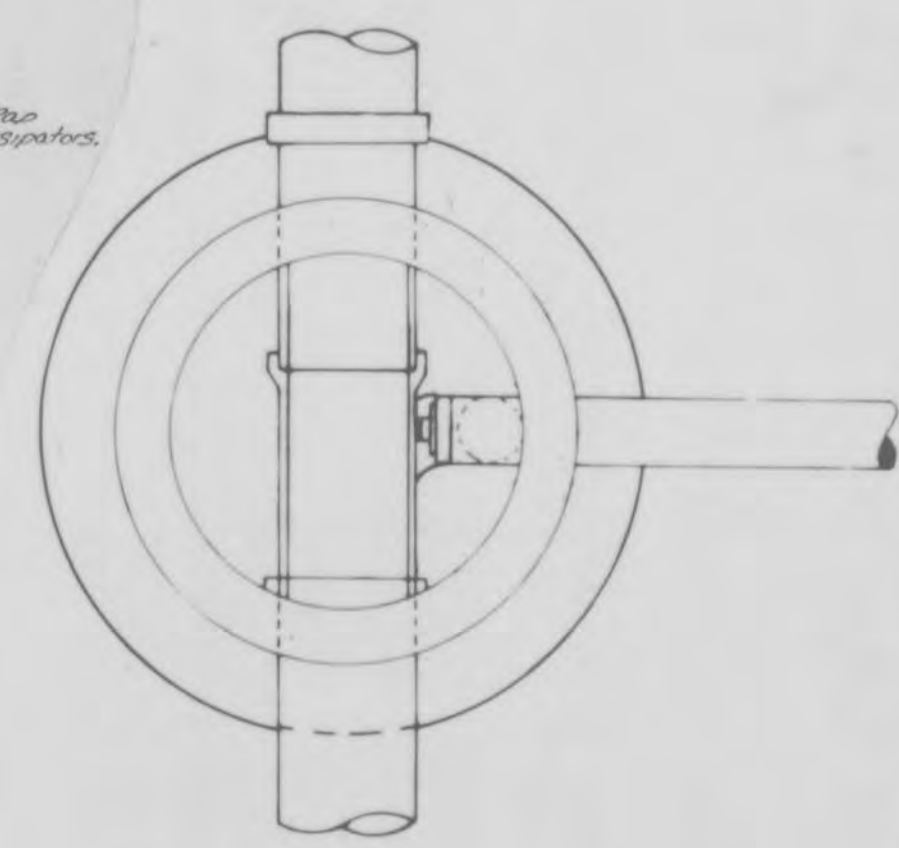
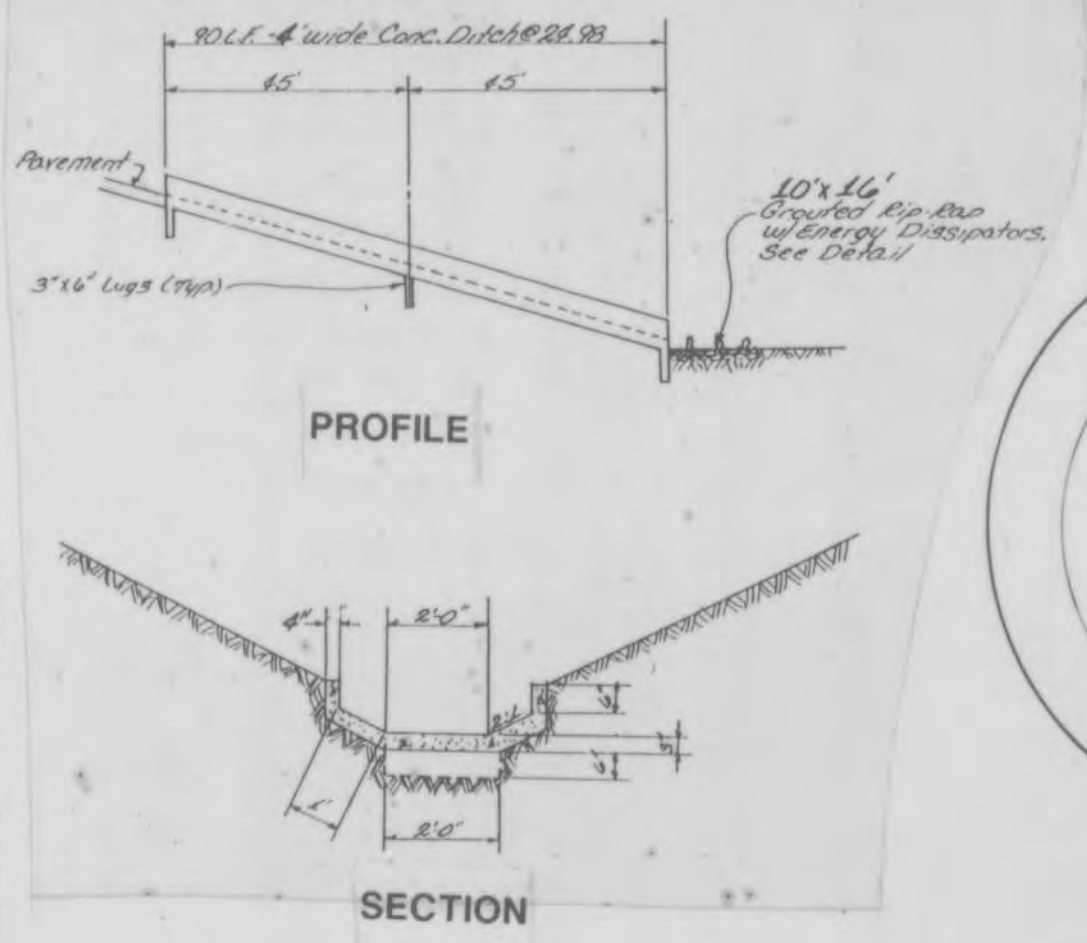
DESIGNED BY: FLK DRAWN BY: S.A.S. CHECKED BY: G.R.H.

As Constructed 3-29-88

JOB NO: 5288
 DATE: Jan. 1989
 SCALE: As Shown
 SHEET NO: 3 of 4

WALL THICKNESS	
DIA MH	"D" DIM PRE CAST
4' & 4 1/2'	5"
60"	6"
72"	7"

MANHOLE BASE THICKNESS	
DEPTH (FEET)	"D" DIM
0-20	8" w/ 4 BARS @ 12" CTRS EACH WAY
20-30	8" w/ 4 BARS @ 9" CTRS EACH WAY
30-40	10" w/ 5 BARS @ 10" CTRS EACH WAY



LEGEND:

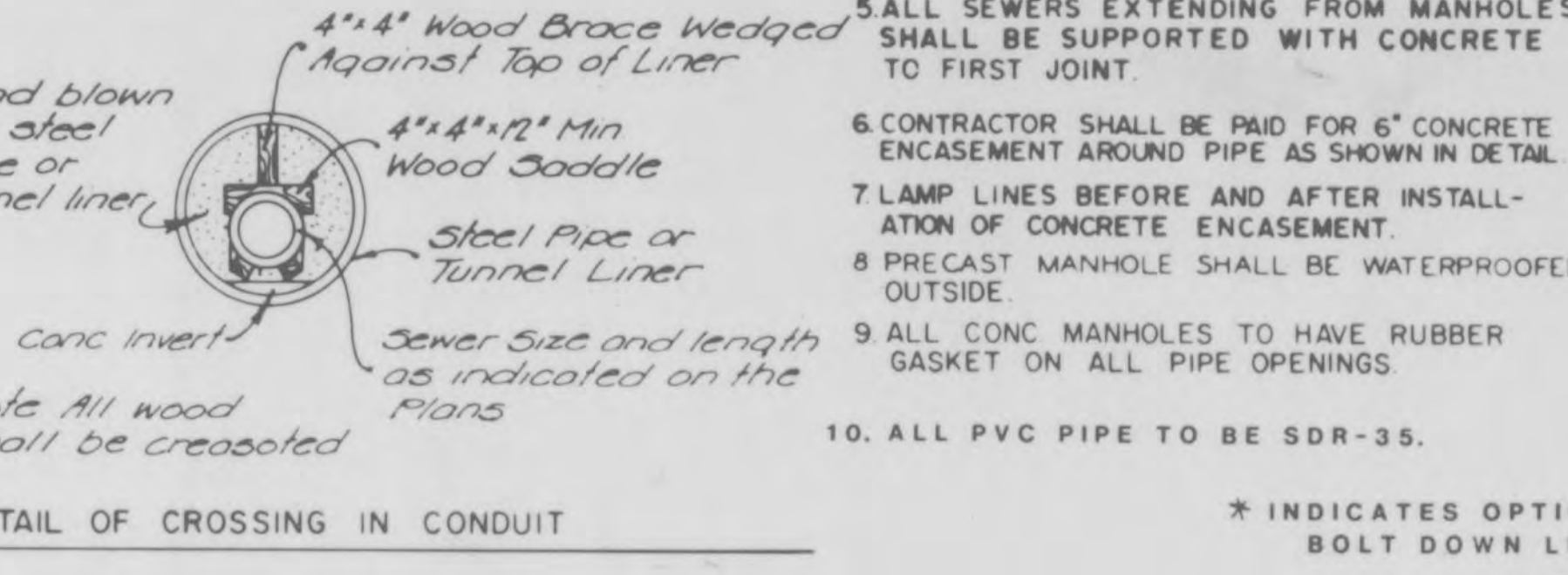
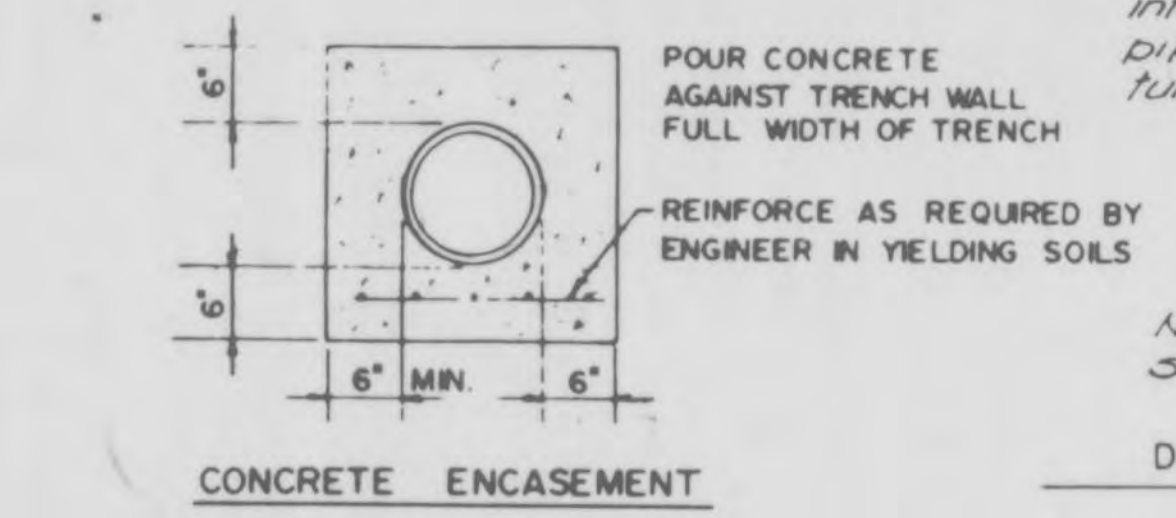
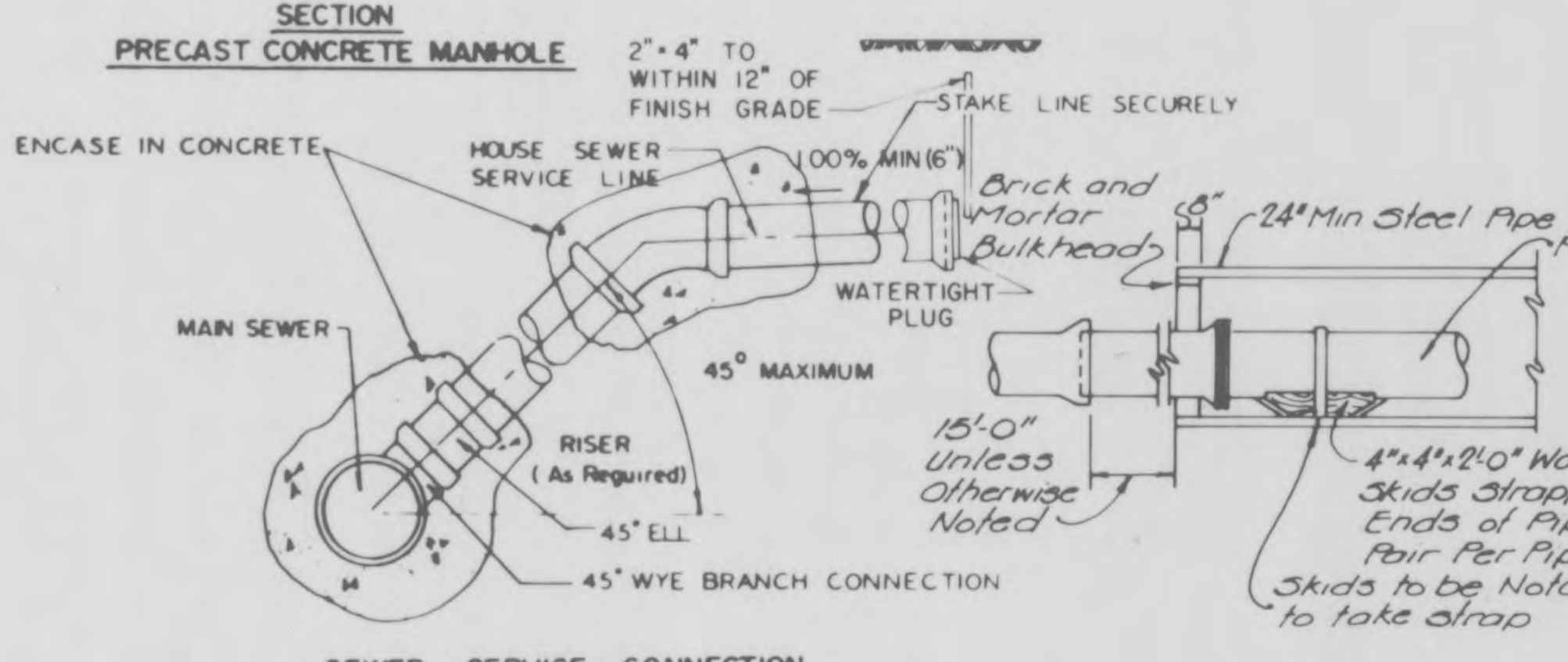
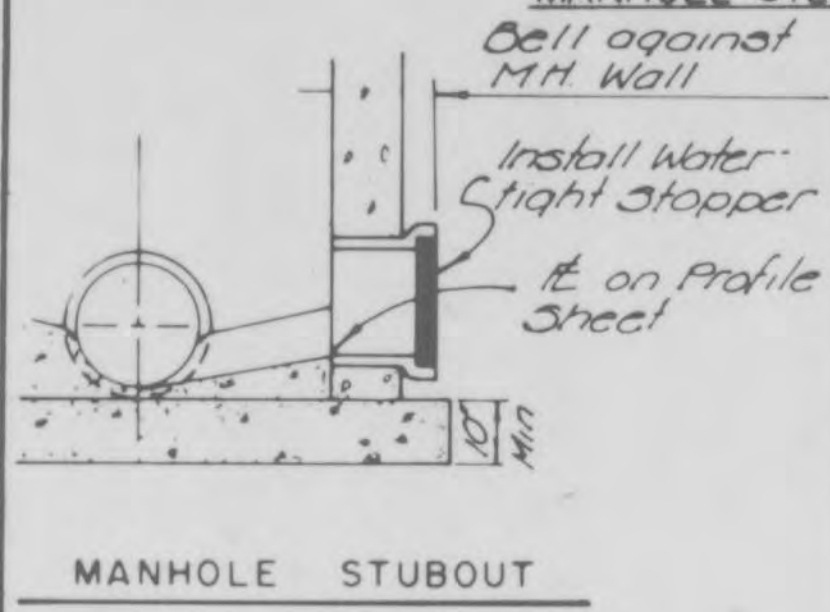
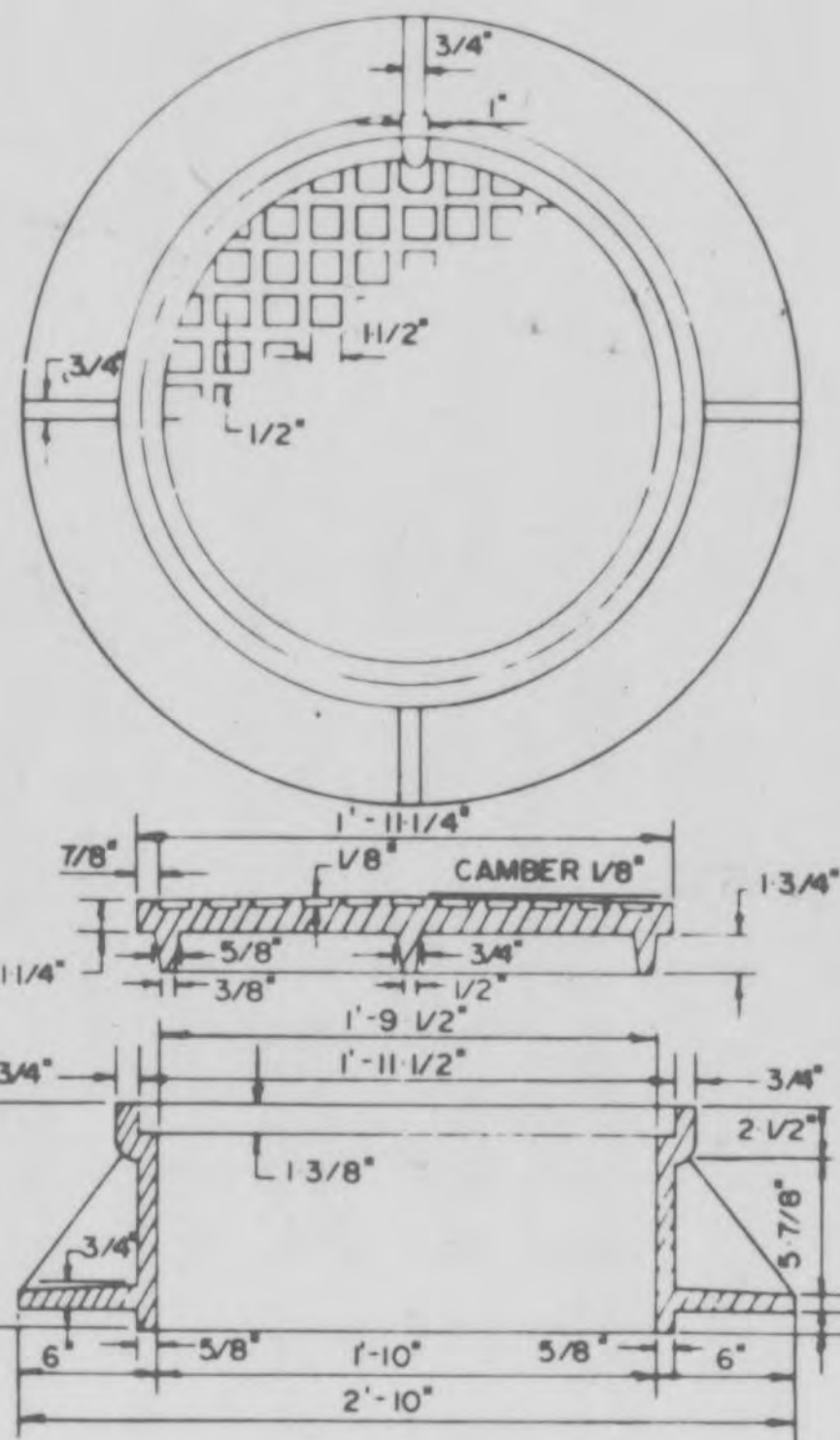
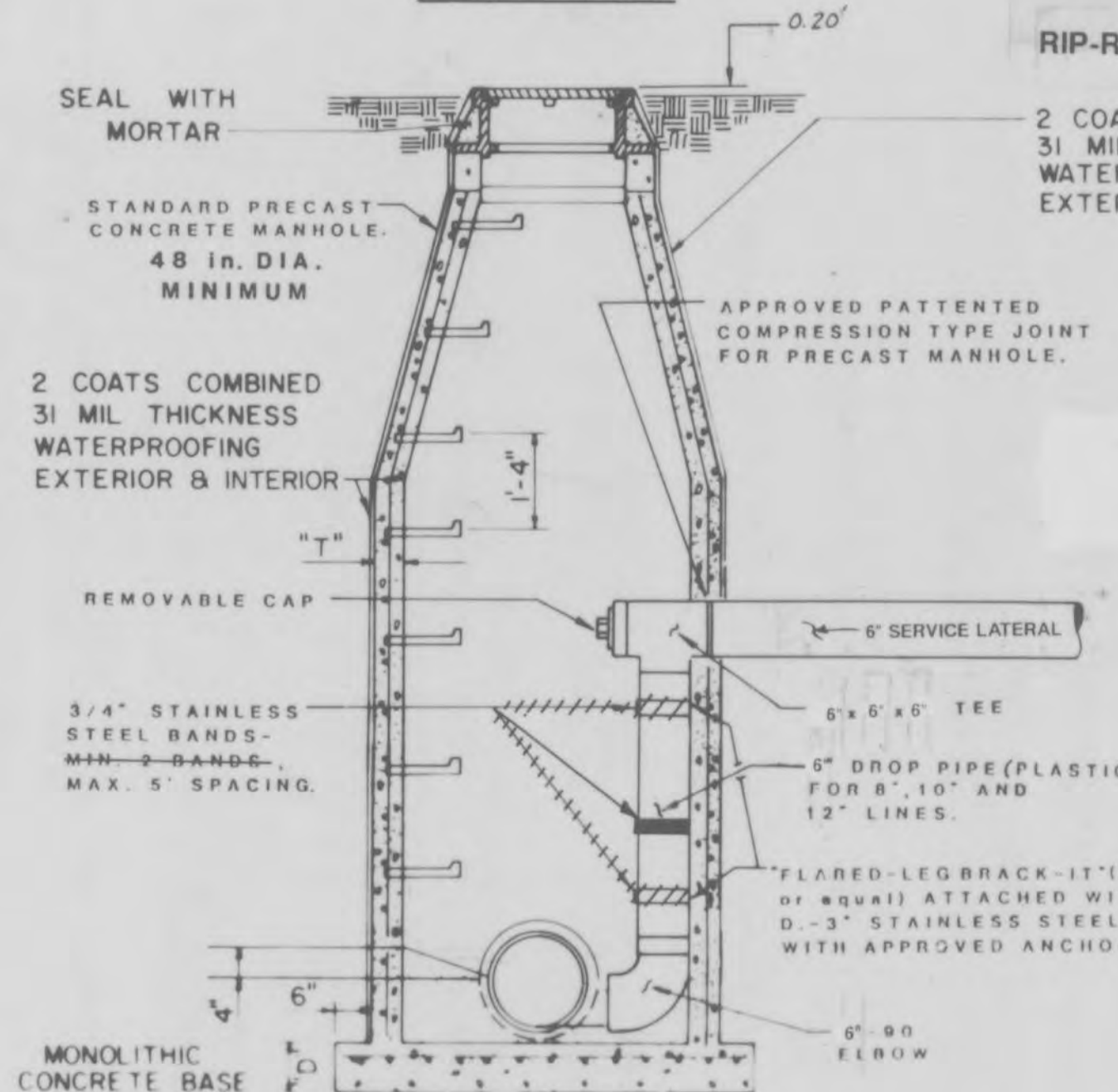
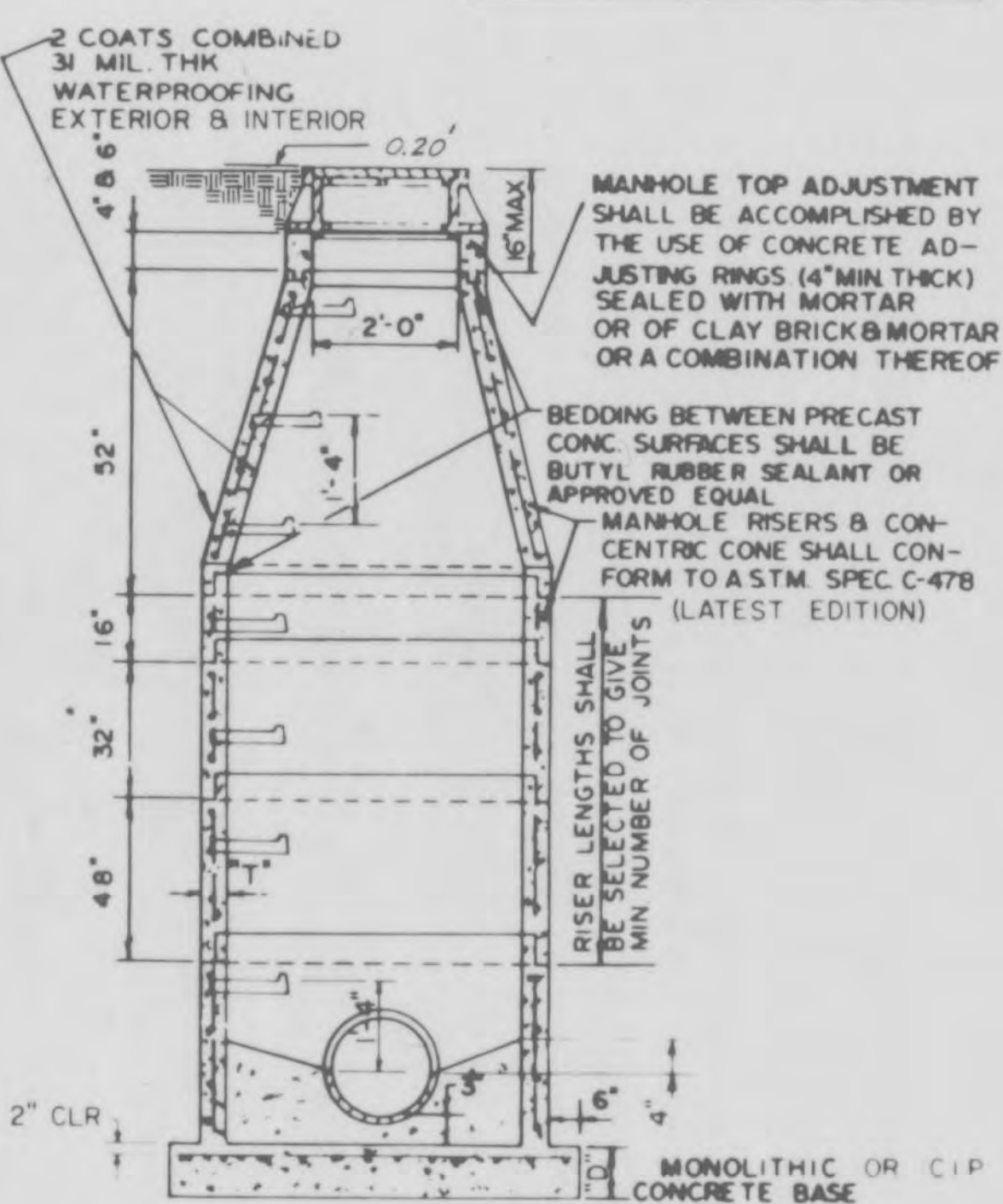
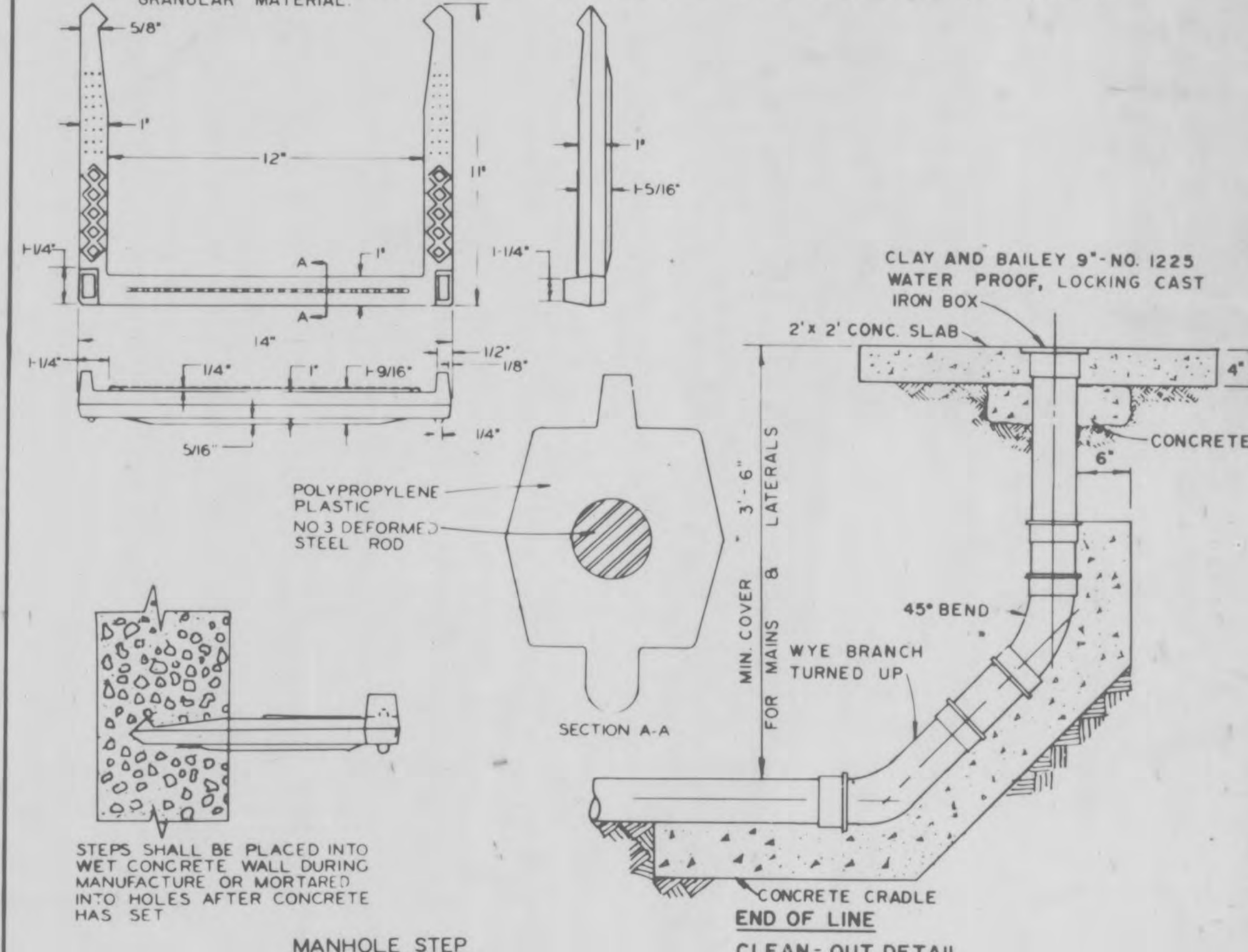
Bc OUTSIDE DIA OF PIPE
H BACKFILL COVER ABOVE TOP OF PIPE
D NOMINAL PIPE SIZE
A FILL BELOW PIPE (SEE TABLE B1 LOW)

GRANULAR FILL
CONCRETE

TABLE OF FILL BELOW PIPE

D	A MIN.
27" & SMALLER	3"
30" TO 60"	4"
66" & LARGER	6"

- NOTES
1. GRANULAR FILL TO BE CRUSHED STONE OR PEA GRAVEL WITH NOT LESS 95% PASSING 1/2" AND NOT LESS THAN 95% TO BE RETAINED ON A #4, TO BE PLACED IN NOT MORE THAN 6" LAYERS AND COMPACTED BY SLICING WITH A SHOVEL (1/2" & #4 REFERS TO SIEVE SIZE)
 2. ALL BEDDING DETAILS APPLY TO BUILDING SEWER SERVICE LINES AS WELL AS OTHER SEWERS.
 3. CONCRETE CRADLE SHALL BE USED WHEN TRENCH WIDTH EXCEEDS 24" PLUS THE PIPE DIAMETER.
 4. PVC PIPE SHALL BE BEDDED IN ACCORDANCE WITH ASTM D 2321 USING CLASS 1 (3/4" TO 1/4") GRANULAR MATERIAL.



- NOTES:
1. ANY MATERIAL EXCAVATED BENEATH PIPE ENTERING OR LEAVING MANHOLES SHALL BE REPLACED WITH CONCRETE.
 2. ALL MANHOLE RINGS AND ADJUSTING RINGS SHALL BE SET IN MORTAR.
 3. INSIDE DIAMETER OF MANHOLES TO BE 4'-0" FOR PIPE 21" & SMALLER, 5'-0" FOR PIPE 24" THRU 30", 6'-0" FOR PIPE OVER 30"
 4. PLASTERING OF INSIDE OF MANHOLES SHALL BE THE OPTION OF THE CONTRACTOR.
 5. ALL SEWERS EXTENDING FROM MANHOLES SHALL BE SUPPORTED WITH CONCRETE TO FIRST JOINT.
 6. CONTRACTOR SHALL BE PAID FOR 6" CONCRETE ENCASUREMENT AROUND PIPE AS SHOWN IN DETAIL.
 7. LAMP LINES BEFORE AND AFTER INSTALLATION OF CONCRETE ENCASUREMENT.
 8. PRECAST MANHOLE SHALL BE WATERPROOFED OUTSIDE.
 9. ALL CONC MANHOLES TO HAVE RUBBER GASKET ON ALL PIPE OPENINGS.
 10. ALL PVC PIPE TO BE SDR-35.

* INDICATES OPTIONAL BOLT DOWN LID

CLAY & BAILEY - NO 2008 (NO. 2014 OR) *
NEENAH - R-1736 (SPECIAL R-1736) *
DEETER - 1315 (NO. 1313 O-RING) OR EQUAL

GBA
GEORGE BUTLER ASSOCIATES
CONSULTING ENGINEERS ARCHITECTS
LANDSCAPE ARCHITECTS PLANNERS

OFFICES:
4210 JOHNSON DRIVE SHAWNEE MISSION, KANSAS 66201
1100 CITY CENTER SQUARE
1100 MAIN KANSAS CITY, MISSOURI 64105
5015 114 LARKSIDE PLAZA
6701 CORPORATE DRIVE KANSAS CITY, MISSOURI 64120

**SANITARY SEWER EXTENSIONS
BRINKER TRACTOR SALES
CONSTRUCTION DETAILS
FOR THE
CITY OF O'FALLON, MISSOURI**

DESIGNED BY *Std* DRAWN BY *Std* CHECKED BY *Std*

JOB NO. 5288
DATE *Sept. 1988*
SCALE *As Shown*
SHEET NO. **4** OF **4**

As Constructed 3-29-88