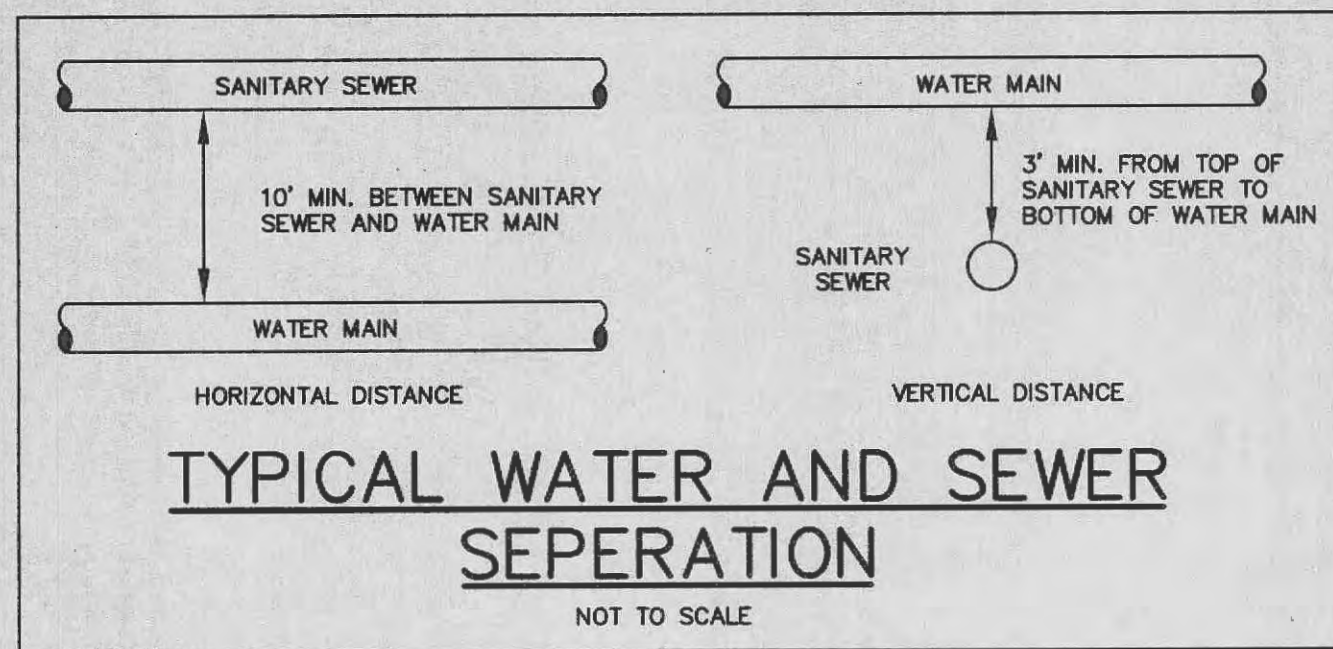


CONFIGURATION

	A	B	C
50' RIGHT-OF-WAY/26' PAVEMENT/WITHOUT SIDEWALK	4'	2'	N/A
50' RIGHT-OF-WAY/26' PAVEMENT/WITH SIDEWALK	4'	2'	1'

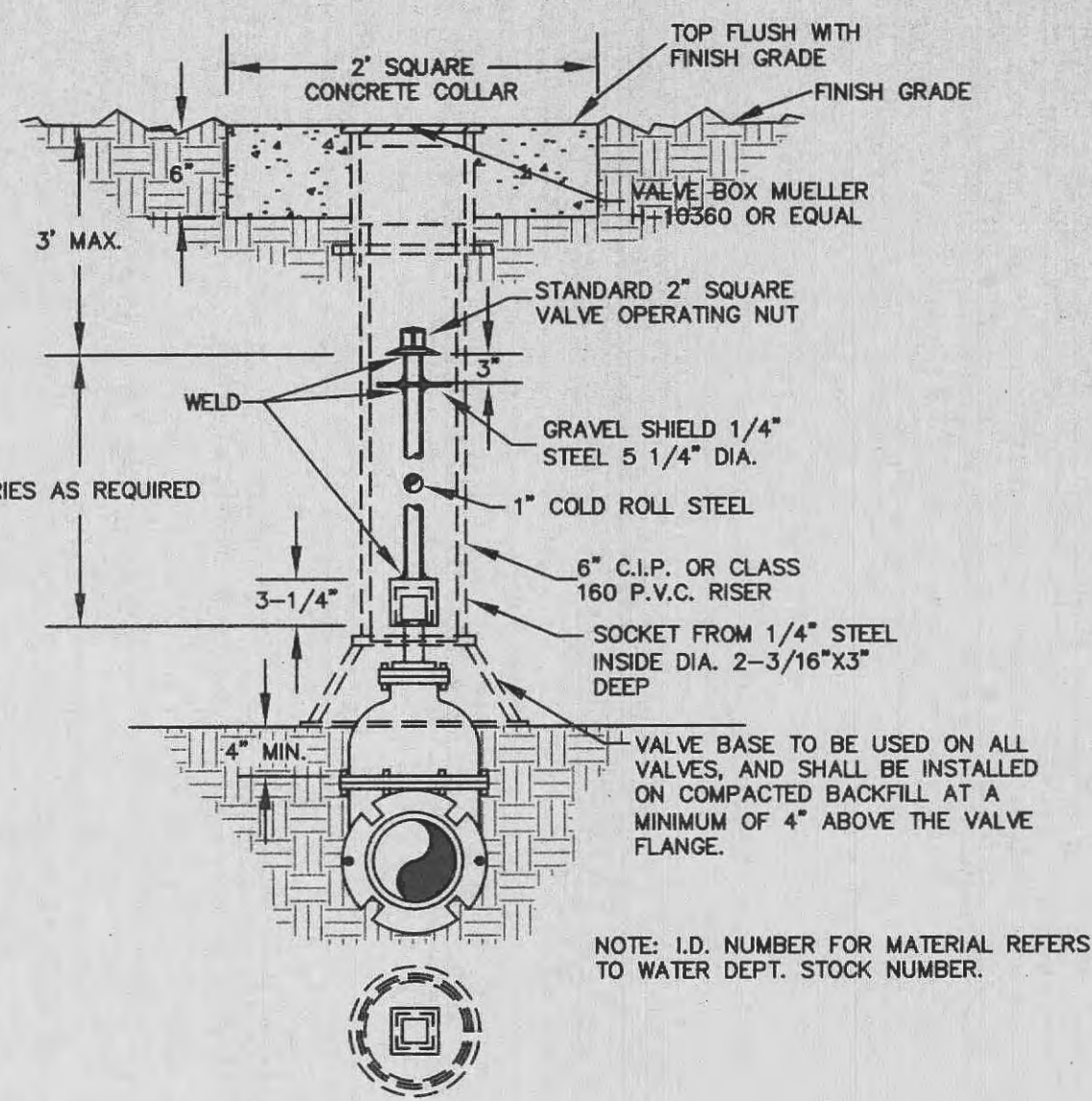
TYPICAL WATER MAIN AND FIRE HYDRANT LOCATIONS

NOT TO SCALE



TYPICAL WATER AND SEWER SEPERATION

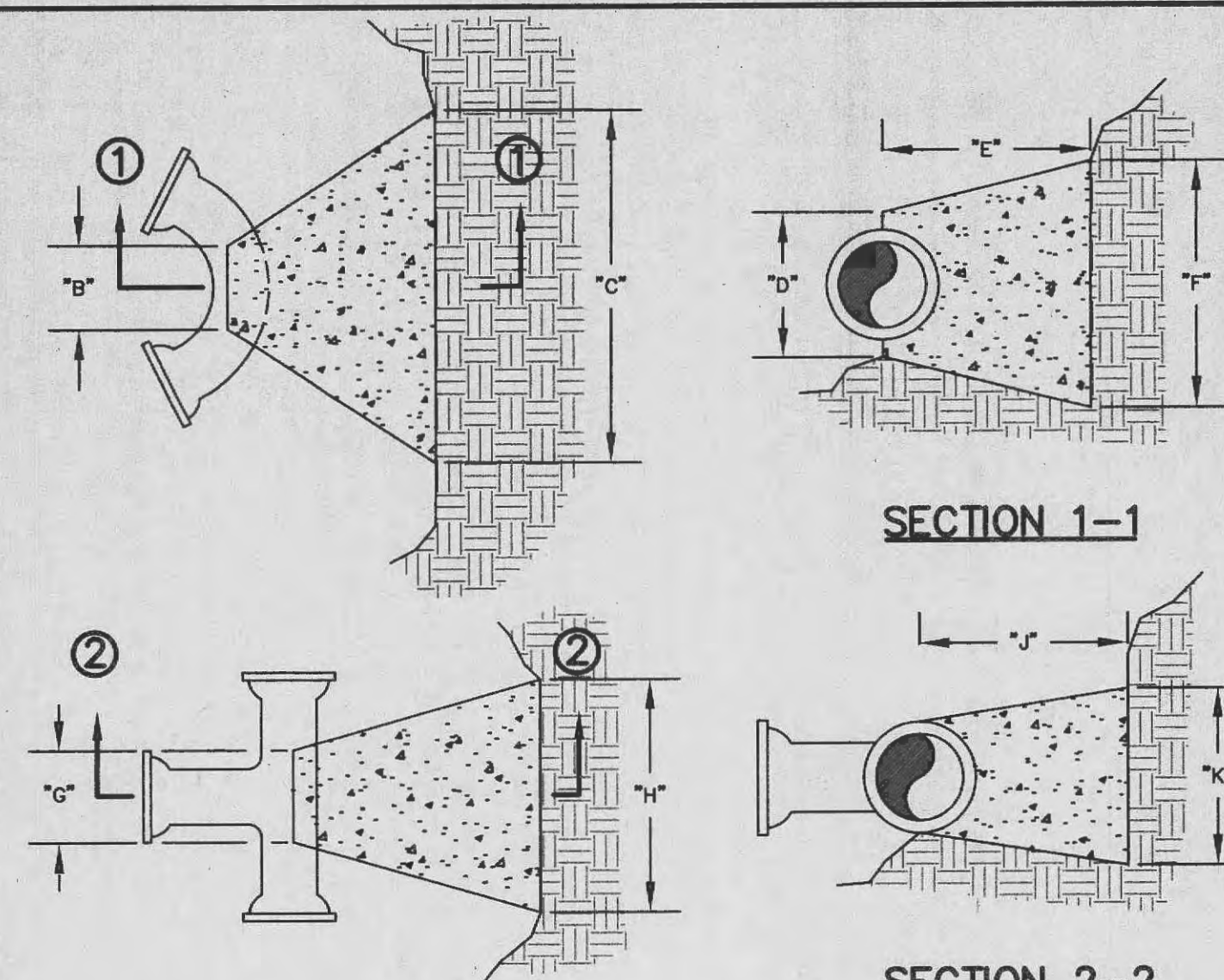
NOT TO SCALE



WATER VALVE DETAIL

NOT TO SCALE

NOTE: I.D. NUMBER FOR MATERIAL REFERS TO WATER DEPT. STOCK NUMBER.



BENDS	"B"	"C"	"D"	"E"	"F"
6"-11 1/4"	8"	15"	12"	24"	10"
6"-22 1/2"	8"	12"	24"	13"	13"
6"-45"	8"	30"	12"	24"	14"
6"-90"	8"	30"	12"	24"	27"
8"-11 1/4"	8"	20"	12"	24"	10"
8"-22 1/2"	8"	22"	12"	24"	17"
8"-45"	8"	30"	12"	24"	24"
8"-90"	8"	38"	12"	24"	36"

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

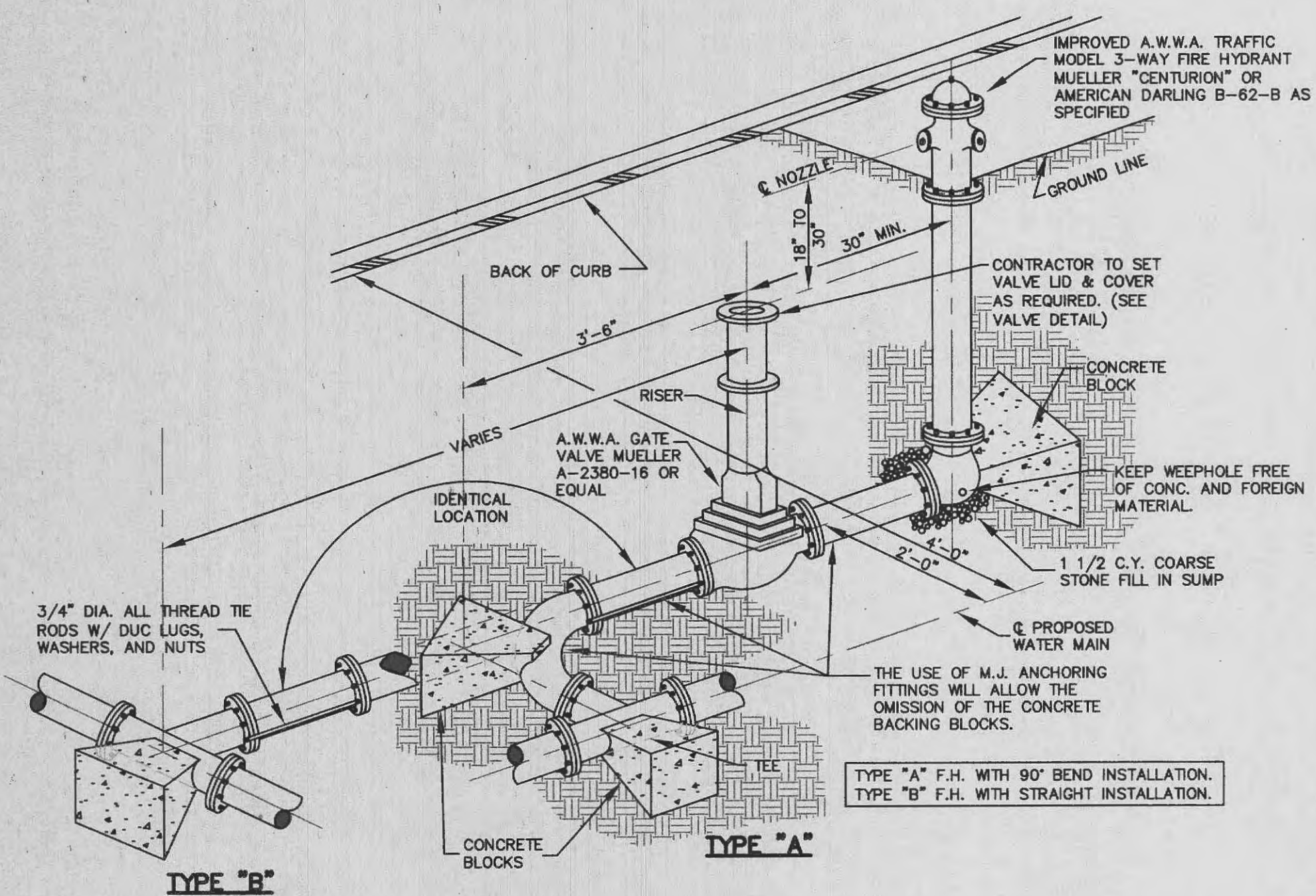
CUBIC FEET OF CONCRETE REQUIRED	BEND	11 1/4"	22 1/2"	45"	90"
6"	1.7	2.4	3.5	5.5	
8"	2.1	3.1	5.0	8.5	
12"	3.7	5.9	9.7	17.5	

TEE X	6"	8"	12"	PLUG
6"	40	~	~	4.0
8"	40	5.0	5.0	
12"	40	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.

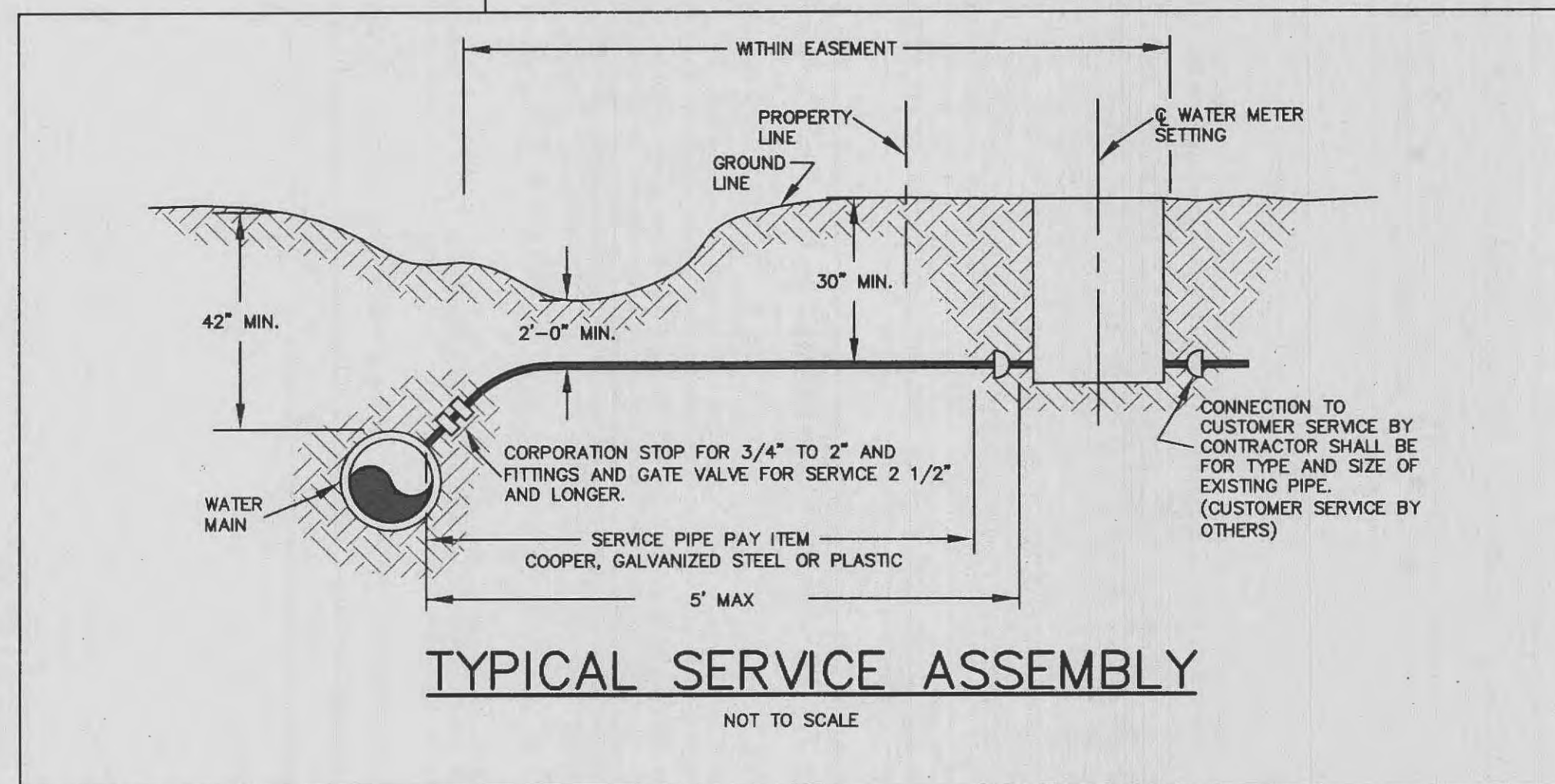
BACKING BLOCKS

NOT TO SCALE



FIRE HYDRANT DETAIL

NOT TO SCALE



TYPICAL SERVICE ASSEMBLY

NOT TO SCALE

INSTALLATION OF WATER MAINS

"ALWAYS KEEP THE WATER MAIN ON EASEMENT"

- Water main should be located 5' behind the curb, as not to interfere with other utility locations.
- All water mains should be 8 inches in diameter, the last 300' can be 6" diameter pipe. The pipe should have a Minimum Pressure Rating (PR) of 200 or SDR-21. All water mains of PVC materials shall be certified by NSF (National Sanitation Foundation) and listed in NSF Standard 61 (certified drinking water system components). Missouri DNR requires that any product which comes in contact with drinking water be listed in NSF Standard 61. If the pipe is NSF certified, it will have a stamp on the pipe that says "NSF-pw".
- Fire hydrants must be Mueller Steamer Centurion and painted yellow in color and all valves must be Mueller mechanical joint resilient wedge gate valve.
- All fire hydrants are to have valves flanged to the tee and (with a total length of 38" or less) hydrant swivel anchored to the valve. Clean 1" rock should be used to backfill above the weep holes of the fire hydrant.
- The contractor shall place all fire hydrants between 1.5 (1-1/2) feet and three feet (3') from the street curb (measured from the edge of the fire hydrant).
- These water bends (45 degree, 22-1/2 degree, 11-1/4 degree), are to be made with mechanical joint fittings using mega lugs. Ninety degree (90°) bends are not allowed. The first slip joint, up and down stream after fittings, should be restrained per pipe manufacturer specs.
- Tees, 4-ways, etc. shall have concrete blocking. Concrete not to be on nuts or bolts.
- Rocky soils shall require bedding 6" under and 6" over water pipe.
- Concrete encasement requires, to DNR Specification, when crossing storm or sanitary sewers. Sanitary: vertical is 18", horizontal is 10" - Storm: vertical is 12", horizontal is 3".
- Must use appropriate sized casings when crossing streets.
- Must attach coated solid core, 12 gauge tracer wire, taped to the top of the pipe. All wire must run up the outside of the valve box and come up inside the valve box under the water lid.
- Use 3M waterproof splice kits for all splicing of tracer wire.
- Any project with over 1500' of pipe should use the 2500' rule of tracer wire to eliminate splicing.
- A chlorine test is required. It must initially test at 25 PPM, or greater, and 24 hours later 10 PPM must be present. It must be tested by a City Inspector, and have 24 hours notice prior to that inspection. The main will be tested for O₂ every 1,200' of pipe.
- If chlorine test fails then main must be rechlorinated.
- The contractor will meter water and pay for it. Hydrant meters are at Public Works and require a \$1,600 deposit.
- Coliform samples should be collected every 1,200'.
- Final Pressure Test: The water main must be pumped up to 125 PSI and maintain this pressure for one hour without any drop in pressure.
- Gas, water, and other underground utilities shall not conflict with the depth or horizontal location of existing and proposed sanitary and storm sewers including house laterals.

- All waterline construction shall conform to current City of O'Fallon Standards and Specifications.
- The contractor shall place the "steamer" outlet of the fire hydrant toward the street.
- Backfill no debris larger than 6" in diameter.
- All creek crossings will require ductile iron pipe. If less than 3' of cover, concrete encasement with rip-rap required.
- Hydrant distances: 600'/300' - Residential/Commercial pending.
- Easements shall be provided for water mains, and all utilities on the record plat. See record plat for location size, and width of easements.
- The City of O'Fallon Water Department shall be notified at least 48 hours prior to construction of water mains for coordination and inspections.
- All open mains should be properly capped when the main is unattended for more than 4 hours. Duct tape the end closed so it is visually seen.
- All bore casings, except service lines, shall have a casing spacer every 10'.
- All service lines under the streets are to have a 2" PVC casing installed, at a minimum of 30" depth.

NOTE: 24 HOUR NOTICE REQUIRED ON ALL INSPECTIONS

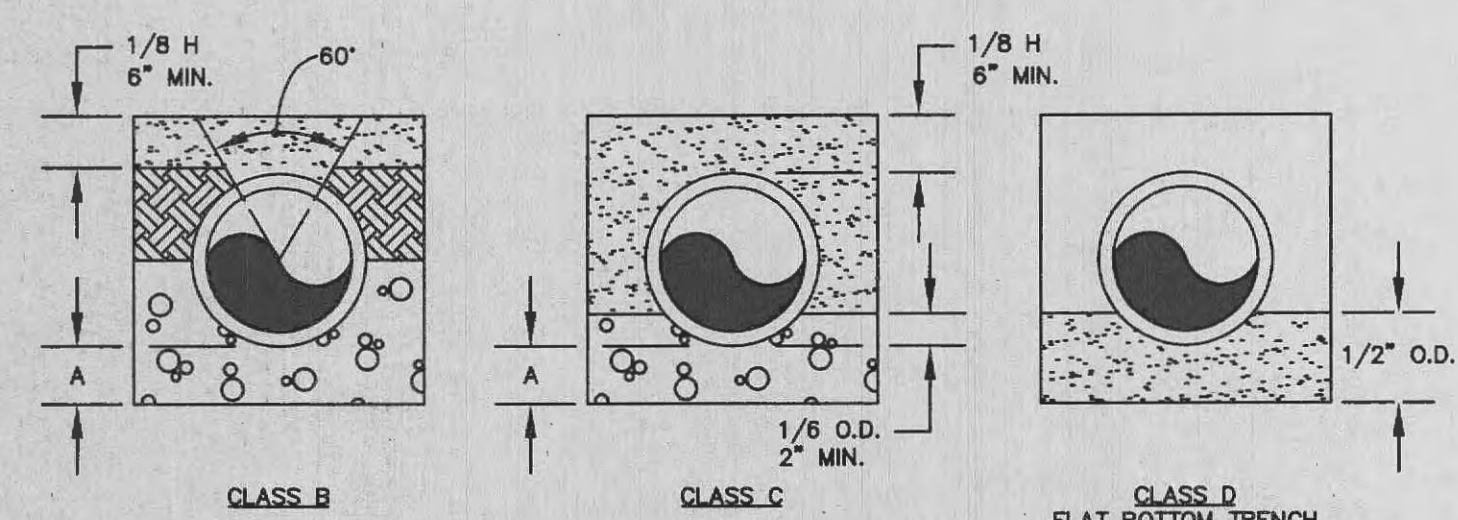


TABLE OF EMBEDMENT DEPTHS BELOW PIPE

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

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

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. D98B, 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.

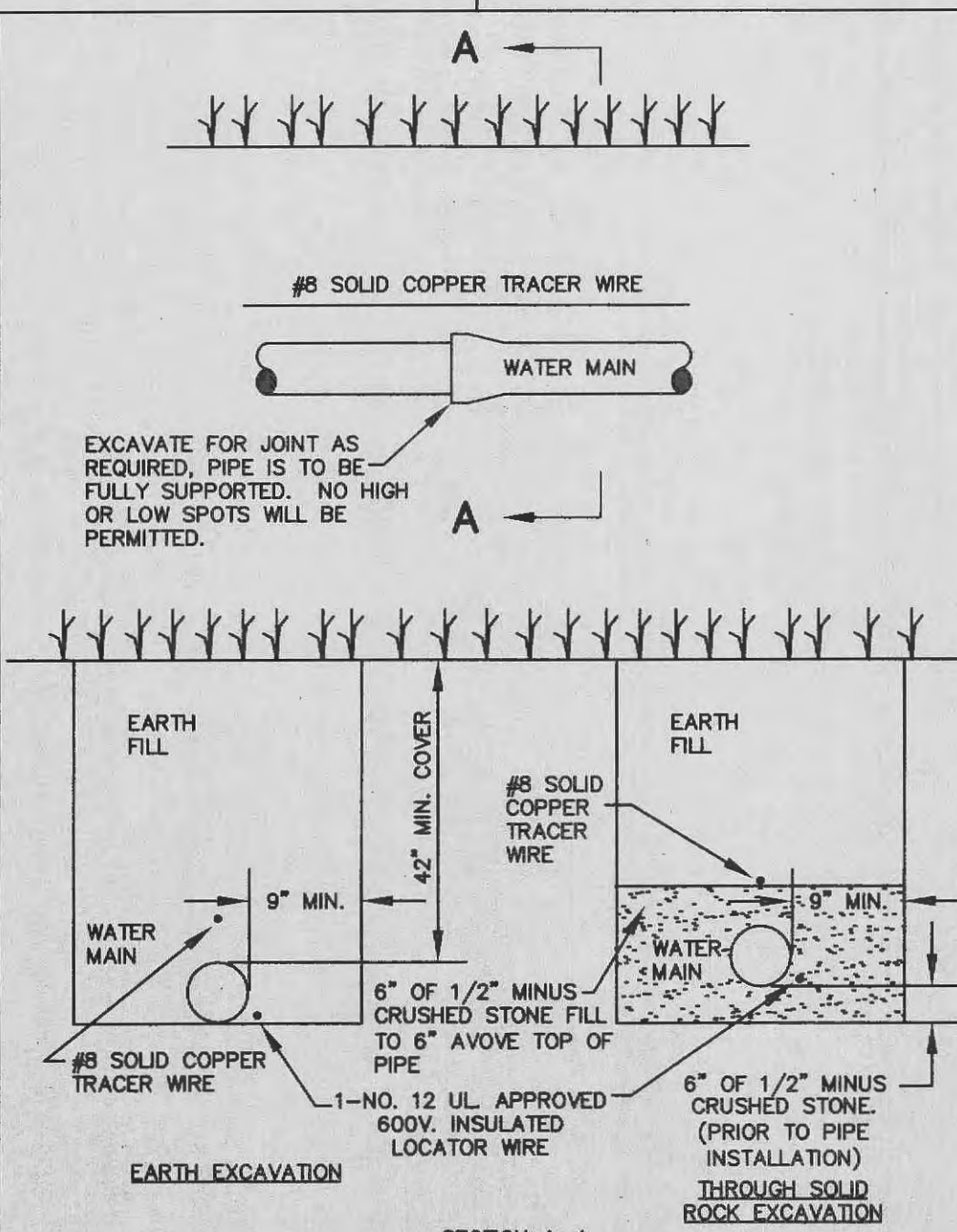
TRENCH BACKFILL SHALL BE AS REQUIRED IN THE "LAYING AND BACKFILL" SECTION OF THE DETAILED SPECIFICATIONS.

EMBEDMENT THE TYPE OF EMBEDMENT TO BE USED SHALL BE AS SPECIFIED IN THE PLAN AND SPECIFICATIONS.

TRACER WIRE REQUIRED ON ALL WATER MAINS

WATER MAIN EMBEDMENT

NOT TO SCALE



TYPICAL WATER MAIN INSTALLATION DETAILS

NOT TO SCALE

ISSUE/REMARKS/DATE

PREPARED BY:

DESIGNED:

CHECKED:

PROJECT:

NO.

SHEET

WD-1

N & K HIGHWAYS, L.L.C.

5091 NEW BAUMGARTNER ROAD
ST. LOUIS, MISSOURI 63129
(314) 487-6717

THE STERLING CO.

ENGINEERS & SURVEYORS

5055 NEW BAUMGARTNER ROAD
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(314) 487-0440 FAX 487-8944
E-Mail: Sterling@con-stl.net

PROJECT:

SHEET TITLE:

WATER DETAILS