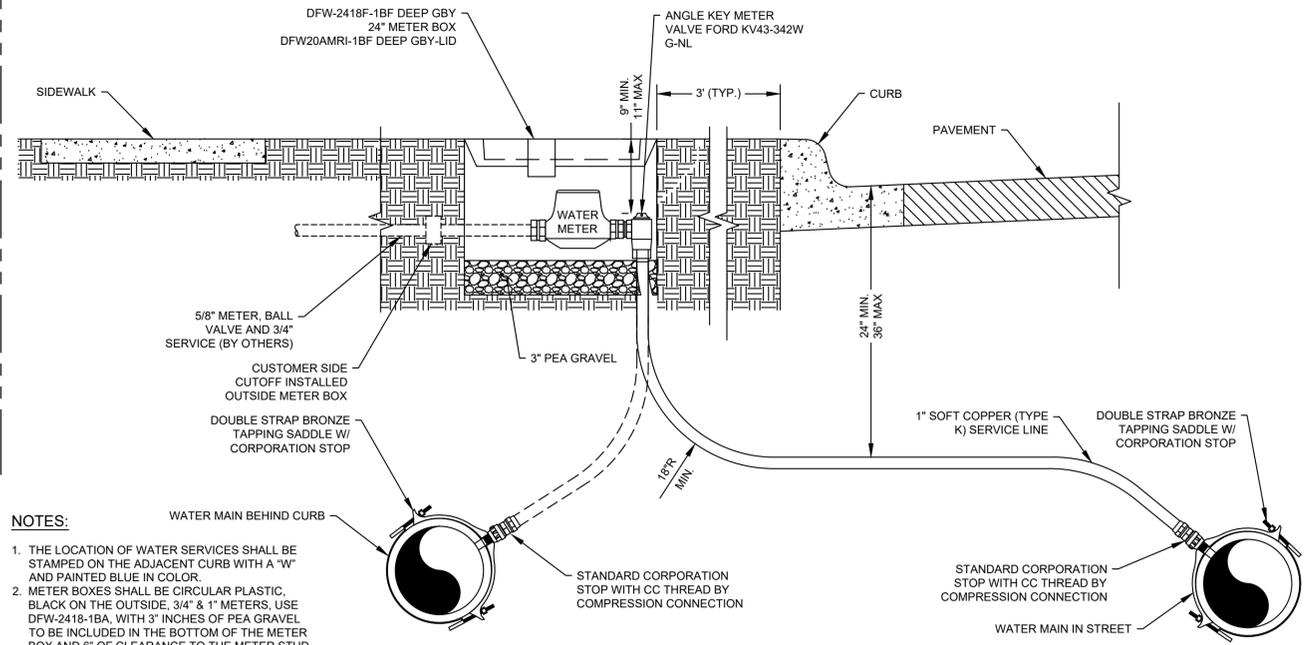
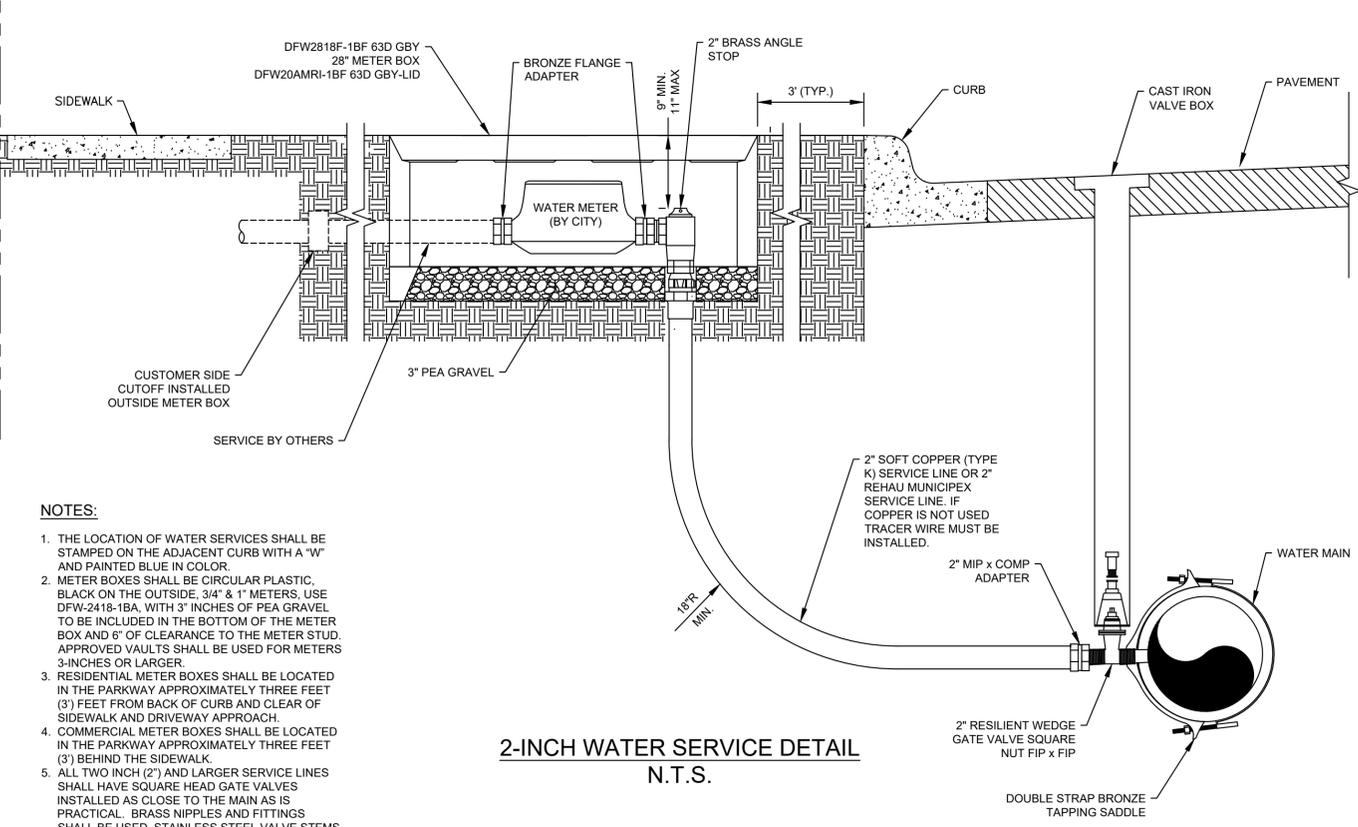


PROPERTY LINE



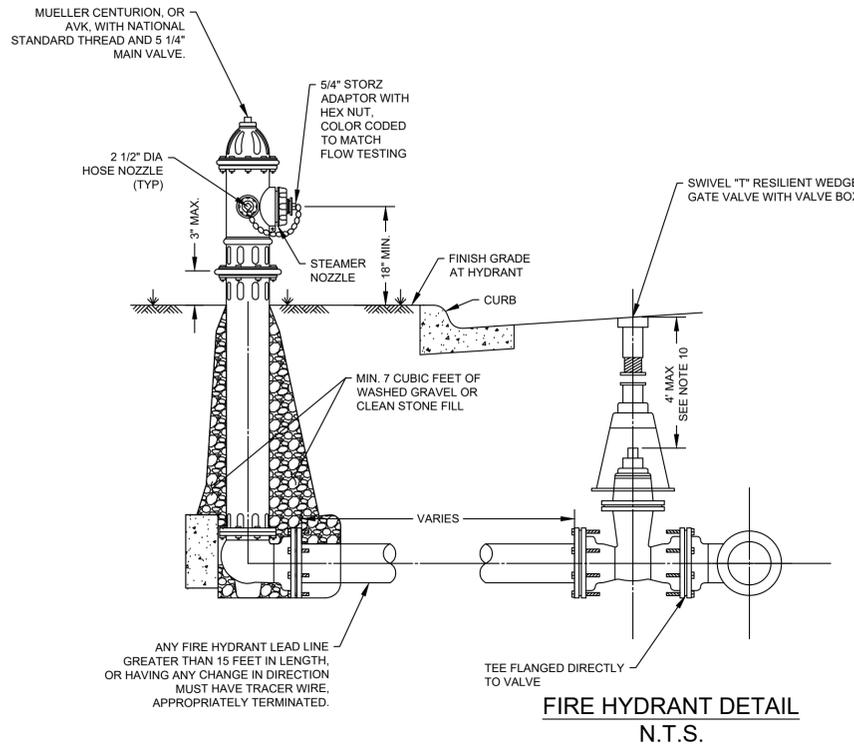
- NOTES:**
1. THE LOCATION OF WATER SERVICES SHALL BE STAMPED ON THE ADJACENT CURB WITH A "W" AND PAINTED BLUE IN COLOR.
 2. METER BOXES SHALL BE CIRCULAR PLASTIC, BLACK ON THE OUTSIDE, 3/4" & 1" METERS, USE DFW-2418-1BA, WITH 3" INCHES OF PEA GRAVEL TO BE INCLUDED IN THE BOTTOM OF THE METER BOX AND 6" OF CLEARANCE TO THE METER STUD. APPROVED VAULTS SHALL BE USED FOR METERS 3-INCHES OR LARGER.
 3. RESIDENTIAL METER BOXES SHALL BE LOCATED IN THE PARKWAY APPROXIMATELY THREE FEET (3') FEET FROM BACK OF CURB AND CLEAR OF SIDEWALK AND DRIVEWAY APPROACH.
 4. COMMERCIAL METER BOXES SHALL BE LOCATED IN THE PARKWAY APPROXIMATELY THREE FEET (3') BEHIND THE SIDEWALK.
 5. ALL TWO INCH (2") AND LARGER SERVICE LINES SHALL HAVE SQUARE HEAD GATE VALVES INSTALLED AS CLOSE TO THE MAIN AS IS PRACTICAL. BRASS NIPPLES AND FITTINGS SHALL BE USED.

1-INCH WATER SERVICE DETAIL
N.T.S.

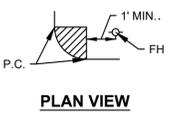


- NOTES:**
1. THE LOCATION OF WATER SERVICES SHALL BE STAMPED ON THE ADJACENT CURB WITH A "W" AND PAINTED BLUE IN COLOR.
 2. METER BOXES SHALL BE CIRCULAR PLASTIC, BLACK ON THE OUTSIDE, 3/4" & 1" METERS, USE DFW-2418-1BA, WITH 3" INCHES OF PEA GRAVEL TO BE INCLUDED IN THE BOTTOM OF THE METER BOX AND 6" OF CLEARANCE TO THE METER STUD. APPROVED VAULTS SHALL BE USED FOR METERS 3-INCHES OR LARGER.
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 4. COMMERCIAL METER BOXES SHALL BE LOCATED IN THE PARKWAY APPROXIMATELY THREE FEET (3') BEHIND THE SIDEWALK.
 5. ALL TWO INCH (2") AND LARGER SERVICE LINES SHALL HAVE SQUARE HEAD GATE VALVES INSTALLED AS CLOSE TO THE MAIN AS IS PRACTICAL. BRASS NIPPLES AND FITTINGS SHALL BE USED. STAINLESS STEEL VALVE STEMS SHALL BE USED.

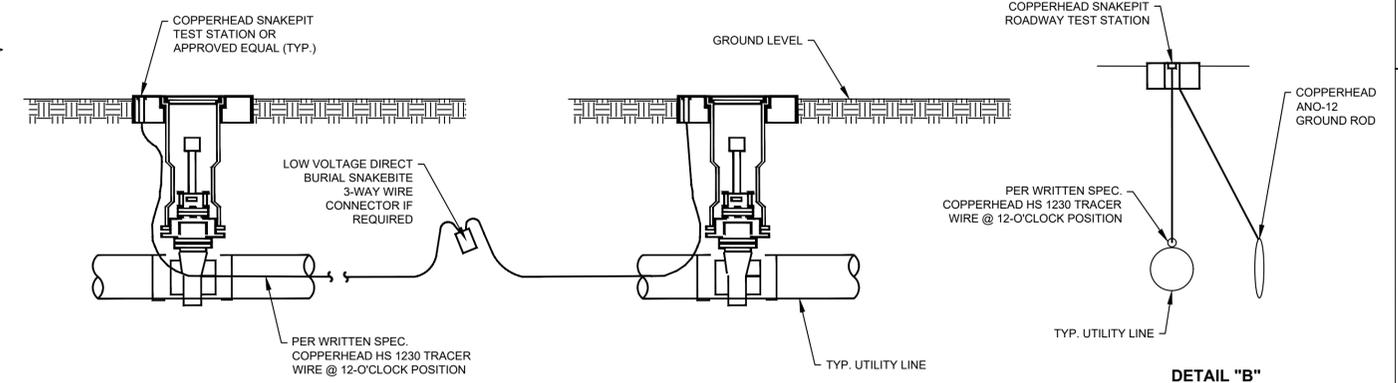
2-INCH WATER SERVICE DETAIL
N.T.S.



- NOTES:**
1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. FIRE HYDRANTS SHALL HAVE A 5 1/2" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANT SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
 2. ALL JOINTS SHALL BE MECHANICAL JOINTS.
 3. F.H. NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS.
 4. STANDARD BURY DEPTH 4 FEET.
 5. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.
 6. F.H. SHALL BE LOCATED A MINIMUM 1 FOOT OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. SEE PLAN VIEW.
 7. PLACEMENT OF F.H. SHALL BE WHERE PUMPER NOZZLE IS PERPENDICULAR TO AND FACING NEAREST CURB.
 8. FIRE HYDRANTS WILL BE PAINTED SILVER (RUSTOLEUM HIGH PERFORMANCE ENAMEL) AFTER PRESSURE AND FLOW TESTING BY THE CONTRACTOR. IN ADDITION, THE CONTRACTOR WILL PROVIDE (PRESSURE RATED) 5 1/4" QUICK DISCONNECT STORZ CAPS FOR EACH HYDRANT AND PAINT BONNET TO MATCH RESULT OF PITOT TEST.
 9. THE TOP OF THE FIRE HYDRANT GATE VALVE CAP SHALL BE PAINTED SILVER LIKE THE FIRE HYDRANTS.
 10. ALL VALVES MORE THAN FOUR FEET DEEP TO OPERATING NUT SHALL BE FURNISHED WITH AN EXTENSION, BRINGING THEM TO WITHIN 2 FEET OF FINISH GRADE.



FIRE HYDRANT DETAIL
N.T.S.



- NOTES:**
1. REFER TO TECHNICAL SPECIFICATION FOR TRACER WIRE INSTALLATION
 2. TRACER WIRE MUST BE INSTALLED PER DETAIL "B" AND SHALL BE TAPED TO THE PIPE AT 10' INTERVALS
 3. INSTALL ANODES AT MAXIMUM DISTANCE AS RECOMMENDED BY THE MANUFACTURER
 4. MAXIMUM DISTANCE BETWEEN TRACER WIRE BOXES IS 1000 FEET.

TRACER WIRE & TEST STATION DETAIL
N.T.S.

NO.	DATE	COMMENT

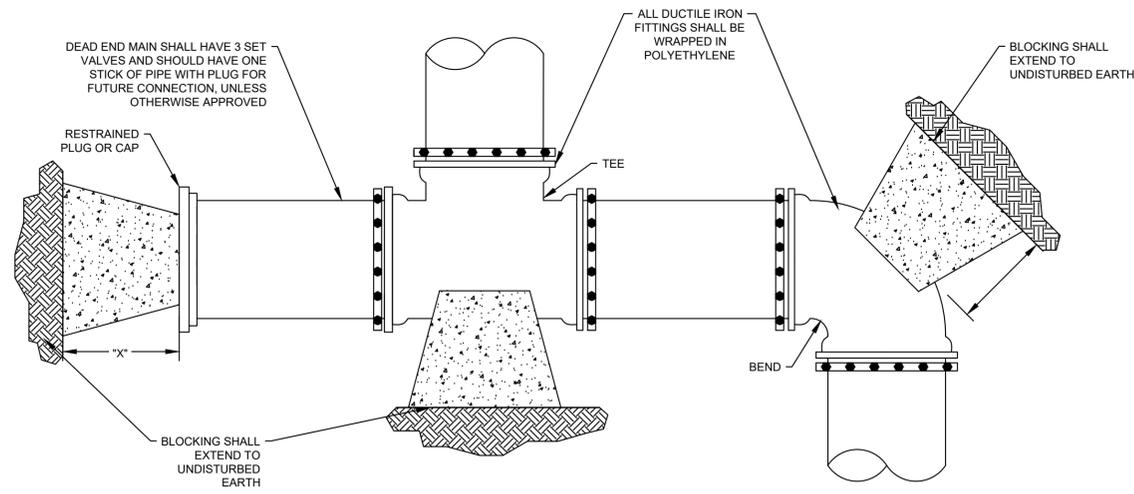
WATER DETAILS

CITY OF GRANBURY
PUBLIC WORKS
DEPARTMENT



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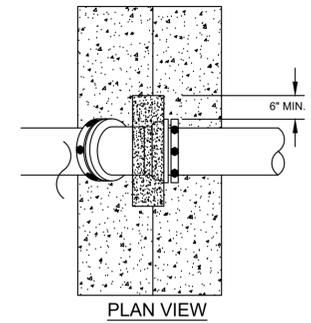


PIPE SIZE	"X" DIM.**	PLUGS, TEES, DEAD-ENDS		90° BENDS	45° BENDS	22.5° BENDS	11.25° BENDS
		MIN. AREA (SF)	MIN. AREA (SF)	MIN. AREA (SF)	MIN. AREA (SF)	MIN. AREA (SF)	
6"	1'-6"	4.00*	4.50	4.00*	4.00*	4.00*	4.00*
8"	1'-6"	5.65	8.00	4.33	4.00*	4.00*	4.00*
10"	1'-6"	8.84	12.50	6.76	4.00*	4.00*	4.00*
12"	1'-6"	12.72	17.99	9.74	4.96	4.00*	4.00*
16"	2'-0"	22.62	31.99	17.31	8.83	4.43	4.43
20"	2'-0"	35.34	49.98	27.05	13.79	6.93	6.93
24"	2'-0"	50.89	71.97	38.95	19.86	9.98	9.98

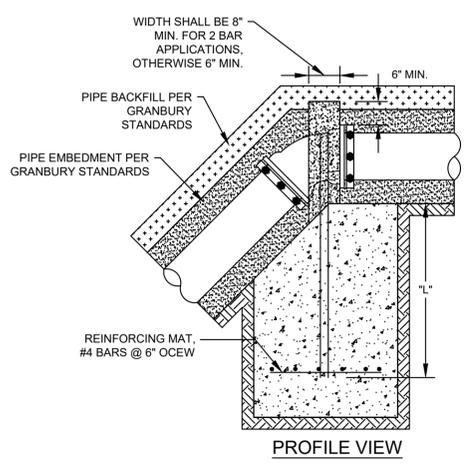
*MINIMUM THRUST BLOCKING SURFACE AREA SHALL BE 4 SQUARE FEET.
 **DIMENSION "X" TO BE A MINIMUM OF ONE FOOT AND SIX INCHES, BUT IS TO BE INCREASED WHERE NECESSARY TO PROVIDE BEARING AGAINST UNDISTURBED TRENCH WALL.

HORIZONTAL THRUST BLOCKING
N.T.S.

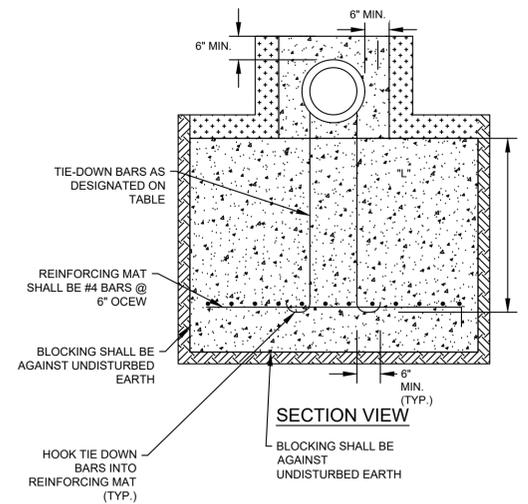
- NOTES:**
- THRUST BLOCKING AREAS SHOWN ARE BASED ON:
 - 225 PSI TEST PRESSURE
 - 3,000 PSF HORIZONTAL OR LATERAL BEARING PRESSURE FOR ACCEPTABLE SOILS
 - MINIMUM COVER OF 42"
 - A SAFETY FACTOR OF 1.5
 - THE ENGINEER SHALL PROVIDE A SEPARATE BLOCKING TABLE WHEN THE CONDITIONS DO NOT MEET THE ABOVE ASSUMPTIONS.
 - THE CONTRACTOR IS REQUIRED TO PROVIDE THRUST RESTRAINT BY MEANS OF THRUST BLOCKING FOR ALL PIPES. THIS ITEM SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS ITEMS BID.
 - ALL MJ FITTINGS SHALL BE ADDITIONALLY RESTRAINED WITH RETAINER GLANDS.
 - BLOCKING FOR WATER LINES LARGER THAN 24" SHALL BE DESIGNED FOR THE SPECIFIC LOCATION AND SHOWN ON THE DRAWINGS.
 - ALL DUCTILE IRON FITTINGS SHALL BE WRAPPED IN POLYETHYLENE ENCASUREMENT PRIOR TO PLACING OF BLOCKING.
 - CONCRETE MATERIAL SHALL BE CLASS "B".



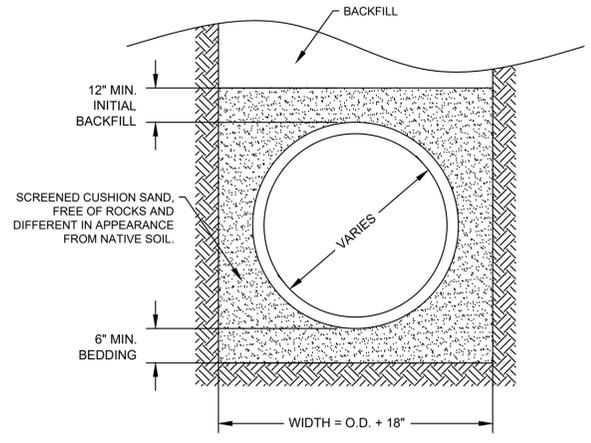
PIPE SIZE	90° BENDS	45° BENDS		22.5° BENDS		11.25° BENDS	
		MIN. VOLUME (CF)	MIN. #4 BARS	MIN. VOLUME (CF)	MIN. #4 BARS	MIN. VOLUME (CF)	MIN. #4 BARS
6"	ALL 90° BENDS SHALL BE RESTRAINED	48.69	1	24.82	1	12.47	1
8"		86.56	2	44.13	1	22.17	1
10"		135.25	3	68.95	2	34.64	1
12"		194.76	4	99.29	2	49.88	1



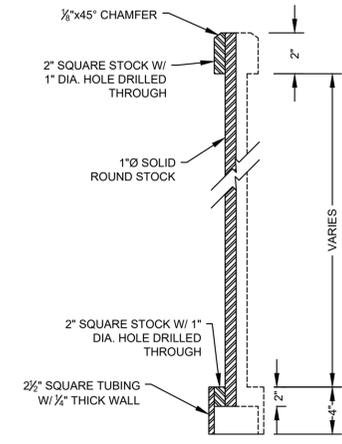
VERTICAL TIE-DOWN BLOCKING
N.T.S.



CONCRETE COLLAR
(ALL SURFACES)

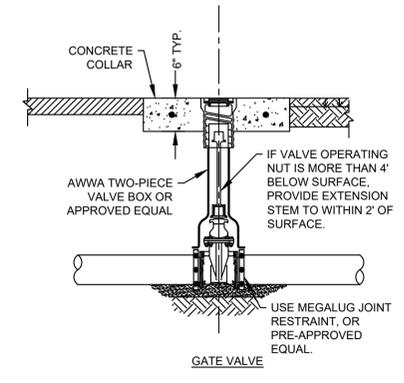


WATER MAIN EMBEDMENT DETAIL
N.T.S.



VALVE STEM EXTENSION

- NOTE:**
- 1" ROUND SOLID BAR & 2" SQUARE PER ASTM A-108-81. SAE 1020, COLD DRAWN OR BETTER.
 - 2-1/2" SQUARE TUBING PER ASTM A-512-79, SAE 1020, COLD DRAWN OR BETTER.
 - ALL WELDS SHALL COMPLY WITH A.W.S. CODE FOR PROCEDURE, APPEARANCE AND QUALITY OF WELDS.



GATE VALVE
N.T.S.

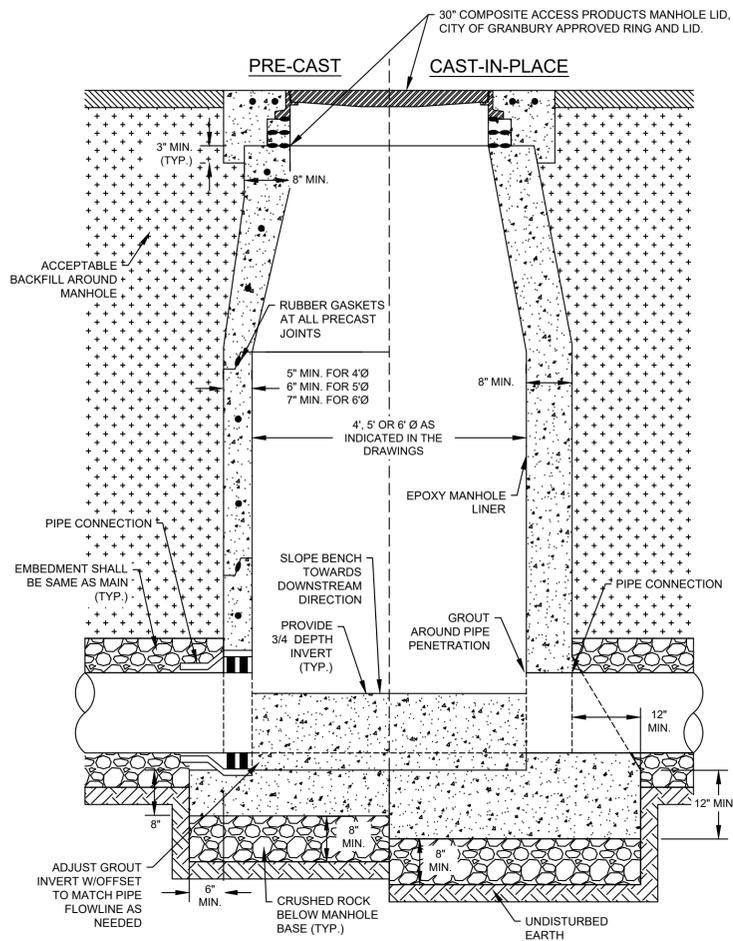
- NOTES:**
- GATE VALVES SHALL BE RESILIENT SEATED.
 - PROVIDE 3" MIN. OF COVER OVER REINFORCEMENT IN ALL DIRECTIONS.
 - COLLARS SHALL BE 4,000 PSI CONCRETE PER SECTION 03 30 00.

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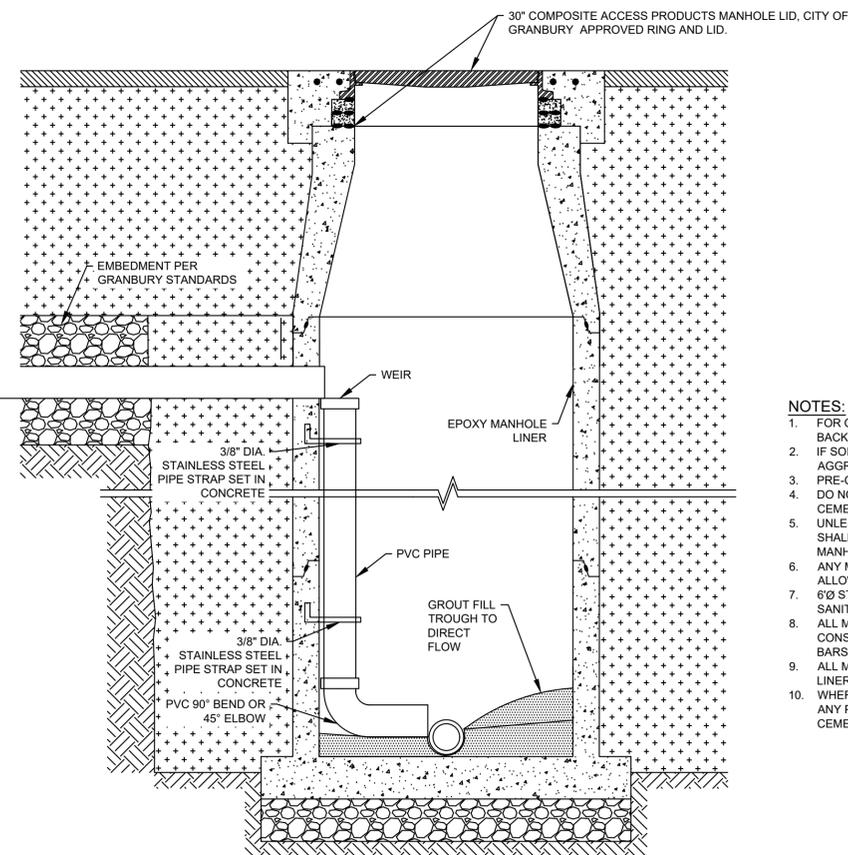
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NOTES:

- FOR CAST-IN-PLACE MANHOLES, CURE FOR THREE DAYS BEFORE BACKFILLING AROUND STRUCTURE
- IF SOIL CONDITIONS OR GROUND WATER PREVENT USE OF COARSE AGGREGATE BASE A 2-INCH MUD SLAB MAY BE SUBSTITUTED.
- PRE-CAST JOINTS SHALL CONFORM TO ASTM C478.
- DO NOT WIPE JOINTS OR GRADE RINGS WITH GROUT, MORTAR OR CEMENT.
- UNLESS OTHERWISE INDICATED IN THE DRAWINGS, 4"Ø MANHOLES SHALL BE USED FOR 21" AND SMALLER SANITARY SEWER LINES AND 5"Ø MANHOLES SHALL BE USED 24" UP TO 36" SANITARY SEWER LINES.
- ANY MANHOLE WITH A DEPTH GREATER THAN 8 FEET SHALL BE 5"Ø, TO ALLOW WORKABLE SPACE.
- 6"Ø STANDARD MANHOLES SHALL BE REQUIRED FOR 90° BENDS ON 36" SANITARY SEWER LINES.
- ALL MANHOLES SHALL HAVE A 60" X 60" X 6" CONCRETE PAD CONSTRUCTED AROUND IT. PADS SHALL BE REINFORCED WITH #3 BARS ON SIX INCH (6") CENTERS.
- ALL MANHOLES SHALL BE OUTFITTED WITH AN INFLOW PROTECTION LID LINER.
- WHERE PROPOSED MANHOLE IS WITHIN 9' HORIZONTAL DISTANCE TO ANY POTABLE WATERLINE, MANHOLE TO BE ENCASED IN 12" OF CEMENT STABILIZED SAND PER 30 TAC 217.53(7)(D)(i) & (ii).

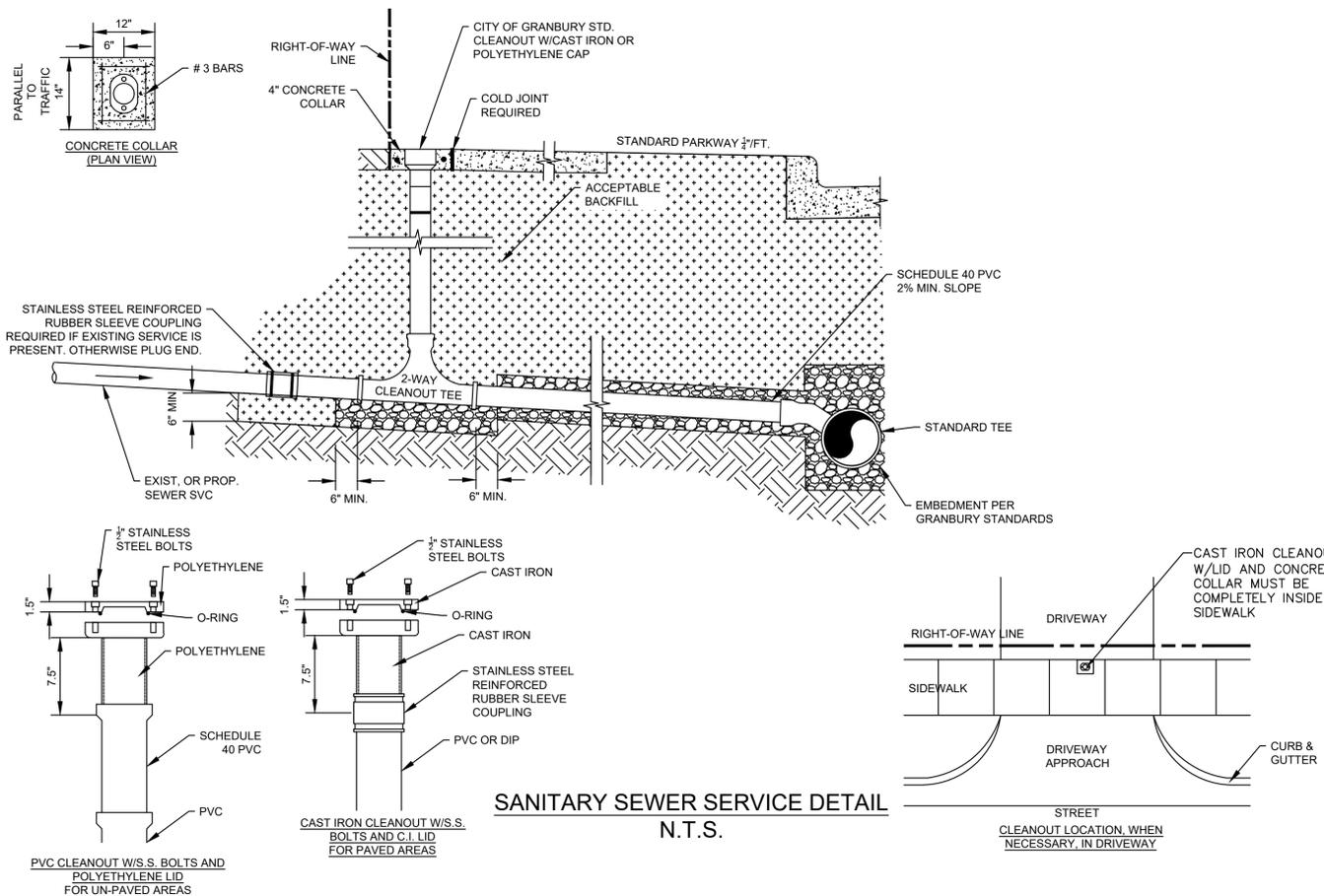
SANITARY SEWER MANHOLE DETAIL
N.T.S.



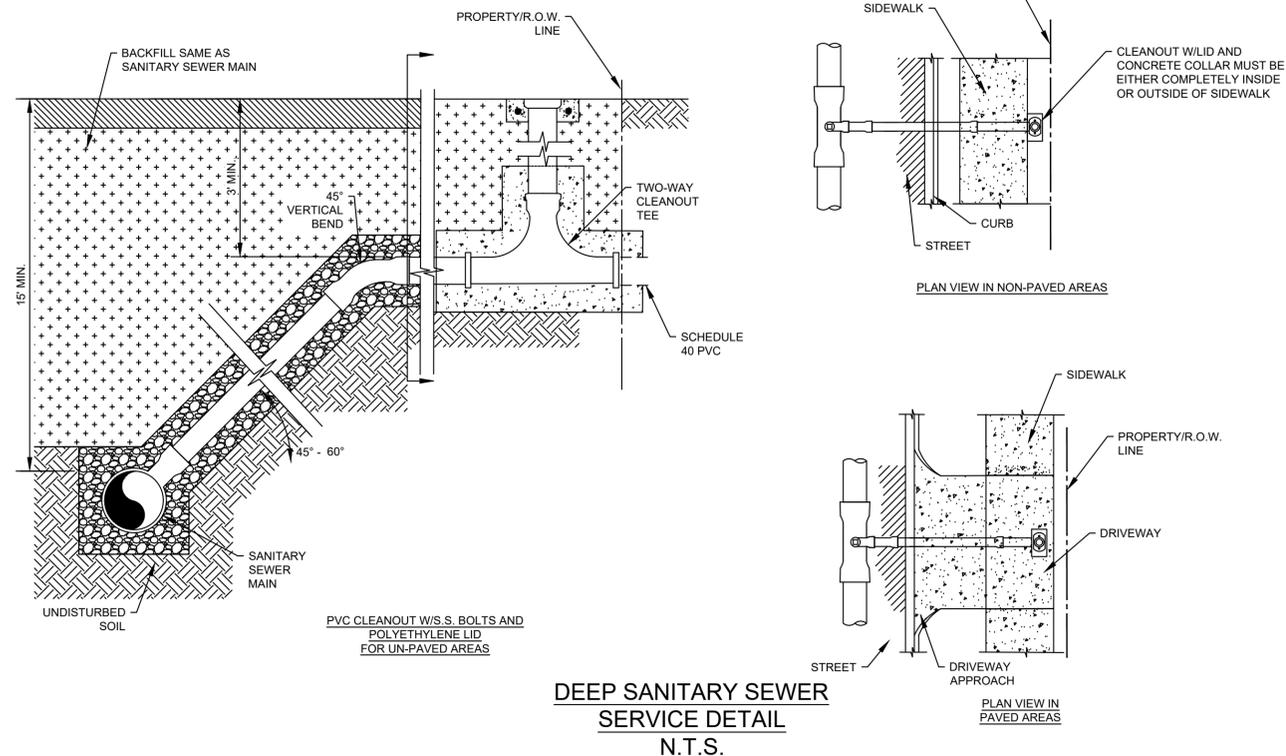
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SANITARY SEWER DROP MANHOLE DETAIL
N.T.S.



SANITARY SEWER SERVICE DETAIL
N.T.S.

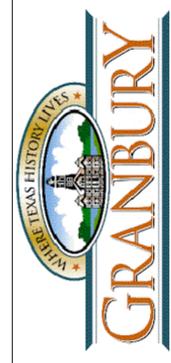


DEEP SANITARY SEWER SERVICE DETAIL
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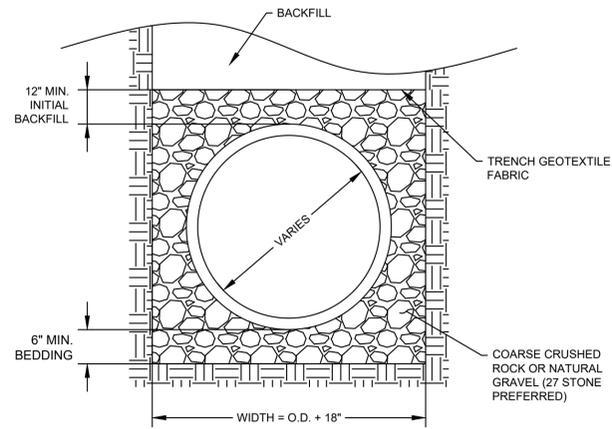
SEWER DETAILS

CITY OF GRANBURY PUBLIC WORKS DEPARTMENT

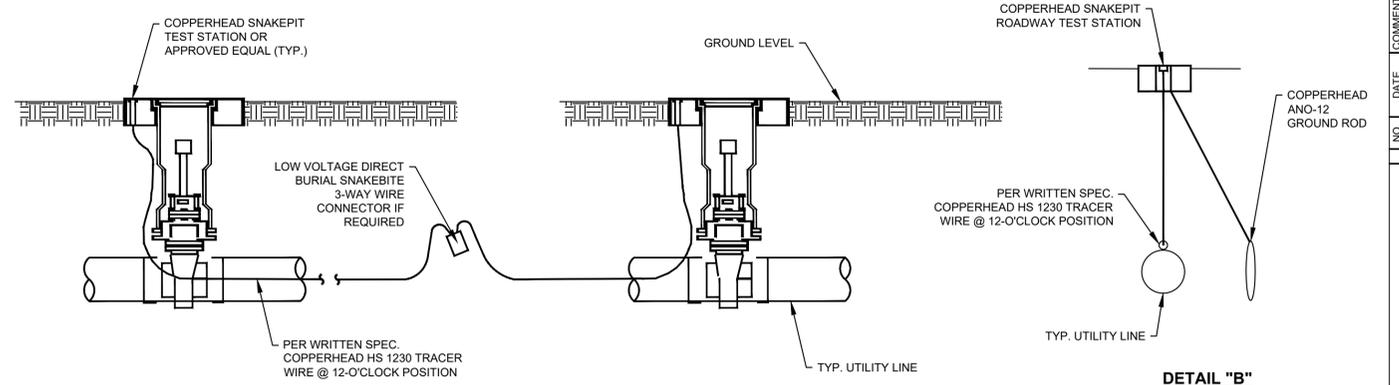


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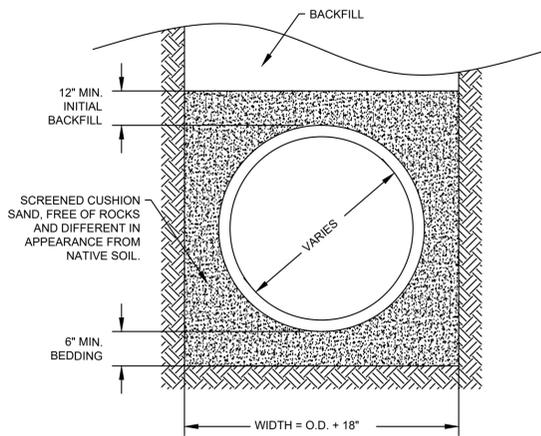
SANITARY SEWER EMBEDMENT DETAIL
N.T.S.



NOTES:

1. REFER TO TECHNICAL SPECIFICATION FOR TRACER WIRE INSTALLATION
2. TRACER WIRE MUST BE INSTALLED PER DETAIL "B" AND SHALL BE TAPED TO THE PIPE AT 10' INTERVALS
3. INSTALL ANODES AT MAXIMUM DISTANCE AS RECOMMENDED BY THE MANUFACTURER
4. MAXIMUM DISTANCE BETWEEN TRACER WIRE BOXES IS 1000 FEET.

TRACER WIRE & TEST STATION DETAIL
N.T.S.



SANITARY SEWER FORCE MAIN EMBEDMENT DETAIL
N.T.S.

NOTES:

1. FORCE MAINS MUST HAVE SEWER WARNING TAPE AND GREEN TRACER WIRE ABOVE THEM.
2. PIPE MATERIAL SHALL BE MINIMUM 150 PSI PRESSURE RATED AND COLORED GREEN UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS.
3. ALL PRESSURIZED SEWER LINES/ FORCE MAIN VALVES/ ARV'S SHALL FOLLOW CITY OF GRANBURY FORCE MAIN EMBEDMENT DETAIL TO INCLUDE VALVE BOX LIDS/ MANHOLE COVERS THAT SAY "SEWER" ON THEM.
4. ALL ARV'S SHALL BE SET IN A 5' MINIMUM DIAMETER MANHOLE.
5. ALL TAPS MADE FOR ARV'S SHALL BE 2" IN SIZE AT THE 12 O-CLOCK POSITION AND ALL FITTINGS/ BOLTS SHALL BE MADE OF STAINLESS STEEL (INCLUDING TAPPING SADDLE).
6. ARV OUTLETS SHOULD HAVE A CORROSION RESISTANT DISCHARGE THAT IS REMOVABLE FOR SERVICE INSIDE THE MANHOLE AND ALL STANDPIPES SHOULD BE THE TRADITIONAL "CANDY CANE" SHAPE WITH A FINE, CORROSION RESISTANT SCREEN MESH.
7. ALL ARV LIDS MUST STATE "SEWER".
8. VALVES SHALL USE THE H-TEC 989 VALVE.

NO.	DATE	COMMENT

SEWER DETAILS

**CITY OF GRANBURY
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DEPARTMENT**



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