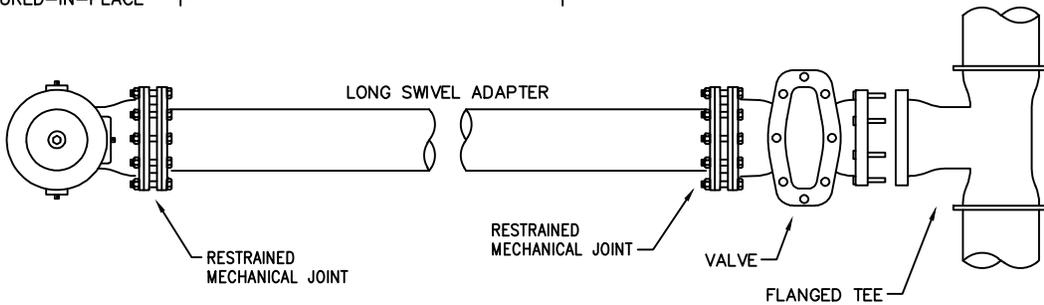
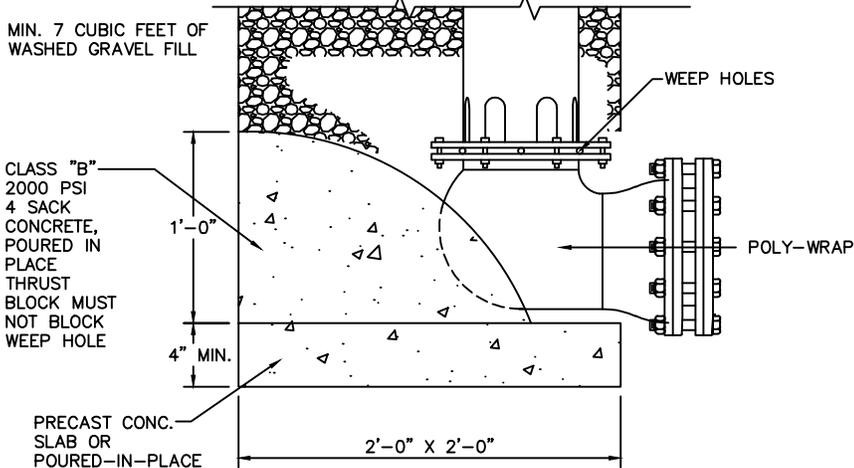
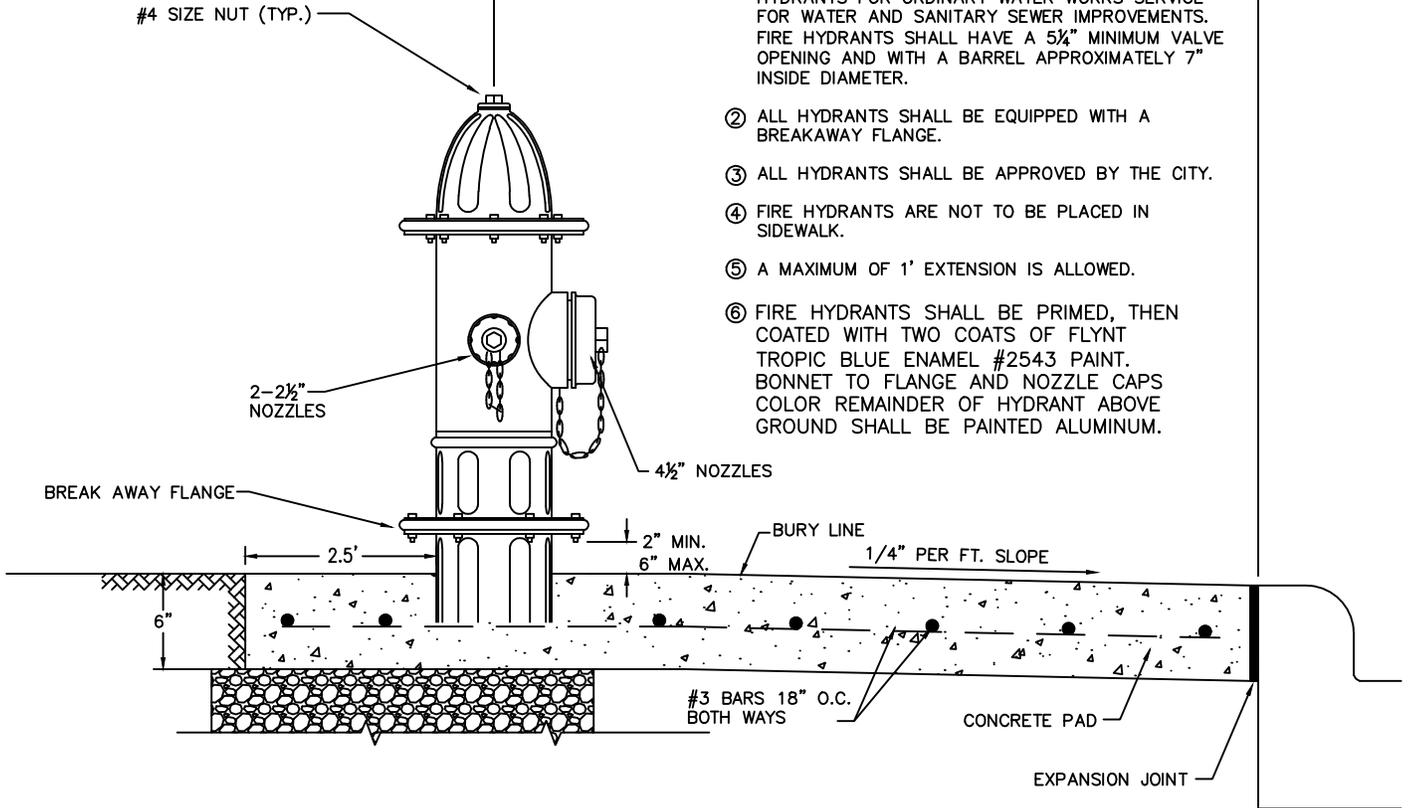
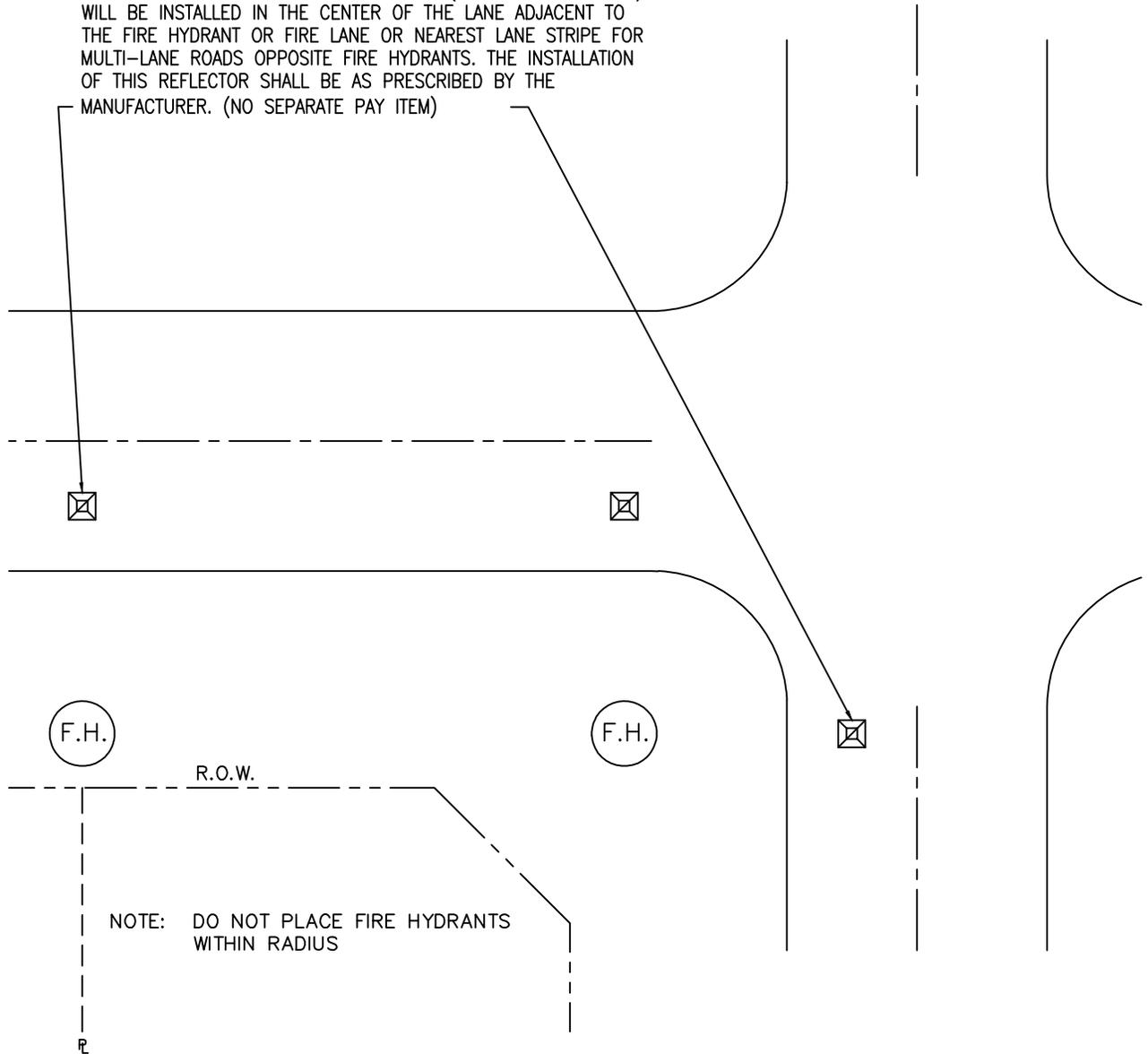


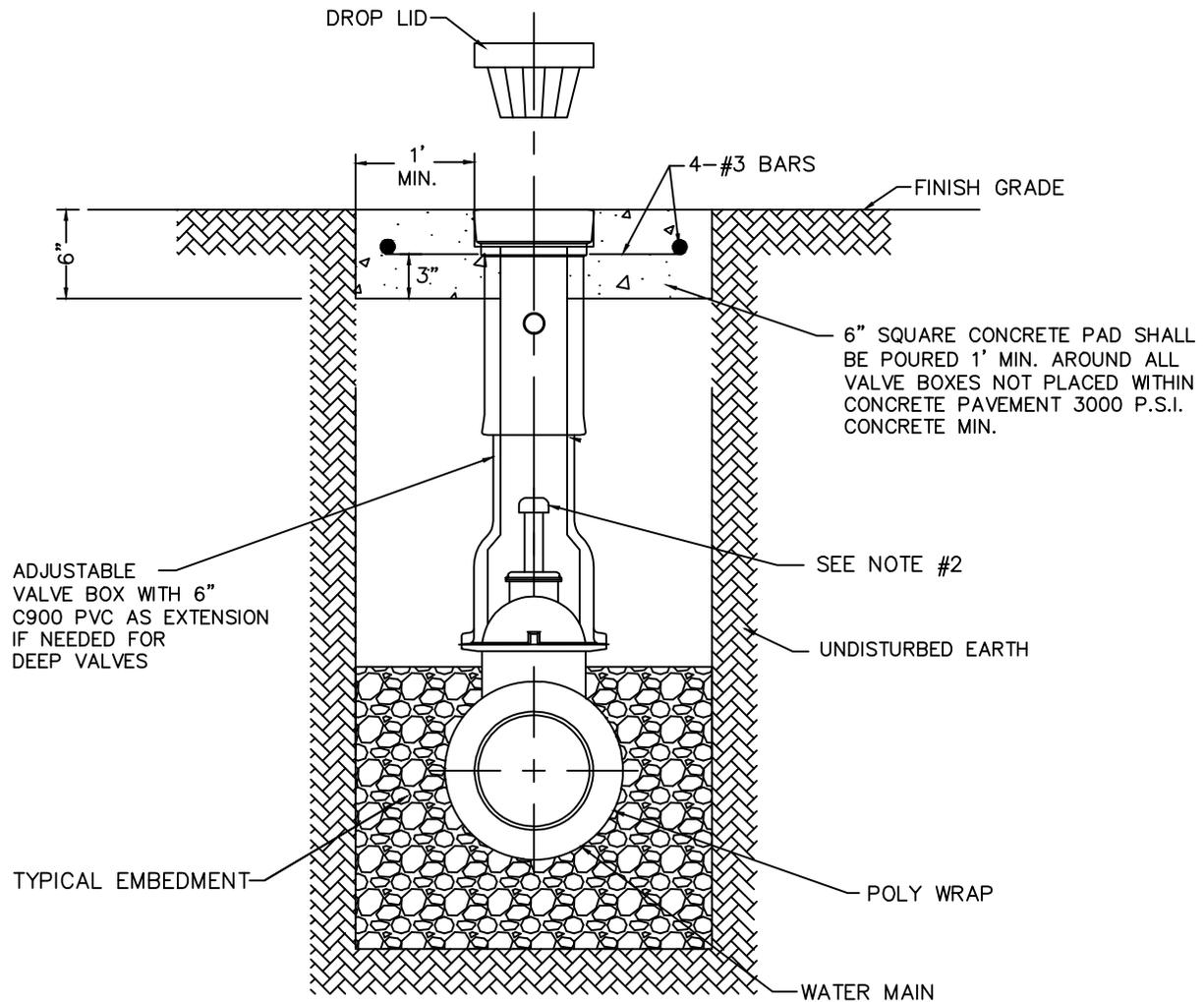
4'-0" TO 7'-0" TO BACK OF CURB OR EDGE OF PAVEMENT

- ① IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARDS SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE FOR WATER AND SANITARY SEWER IMPROVEMENTS. FIRE HYDRANTS SHALL HAVE A 5 1/4" MINIMUM VALVE OPENING AND WITH A BARREL APPROXIMATELY 7" INSIDE DIAMETER.
- ② ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
- ③ ALL HYDRANTS SHALL BE APPROVED BY THE CITY.
- ④ FIRE HYDRANTS ARE NOT TO BE PLACED IN SIDEWALK.
- ⑤ A MAXIMUM OF 1' EXTENSION IS ALLOWED.
- ⑥ FIRE HYDRANTS SHALL BE PRIMED, THEN COATED WITH TWO COATS OF FLYNT TROPIC BLUE ENAMEL #2543 PAINT. BONNET TO FLANGE AND NOZZLE CAPS COLOR REMAINDER OF HYDRANT ABOVE GROUND SHALL BE PAINTED ALUMINUM.



A BLUE STIMSONITE FIRE-LITE REFLECTOR (OR APPROVED EQUAL) WILL BE INSTALLED IN THE CENTER OF THE LANE ADJACENT TO THE FIRE HYDRANT OR FIRE LANE OR NEAREST LANE STRIPE FOR MULTI-LANE ROADS OPPOSITE FIRE HYDRANTS. THE INSTALLATION OF THIS REFLECTOR SHALL BE AS PRESCRIBED BY THE MANUFACTURER. (NO SEPARATE PAY ITEM)





NOTES:

1. 4"–12" RESILIENT SEAT GATE VALVES SHALL BE IN ACCORDANCE WITH AWWA STANDARD C-509.
2. A PERMANENTLY ATTACHED VALVE EXTENSION STEM (REFER TO APPROVED MATERIAL LIST) SHALL BE REQUIRED FOR ANY VALVE THAT'S OPERATING NUT IS LOCATED IN EXCESS OF 4 FEET BELOW THE TOP OF THE VALVE BOX. THIS EXTENSION SHALL BE OF SUFFICIENT LENGTH TO INSURE THAT ITS TOP IS WITHIN 4' OF VALVE BOX LID.
3. ALL WATER VALVES SHALL HAVE EAST JORDAN IRON WORKS 8550 SCREW TYPE 2 PIECE VALVE BOX SET MEETING ASTM A48 CLASS 35 SPECIFICATIONS SELECTED FOR APPROPRIATE DEPTH OF BURY OR APPROVED EQUAL.
4. PERMANENT CONCRETE PAINT BLUE DOT (3") AND "V" SHAPED SYMBOL CUT ON NEAREST CURB FACE WITH THE POINT OF THE "V" SYMBOL POINTING TOWARDS THE VALVE LOCATION. (REFER TO APPROVED LIST). PLACE ON TOP OF CURB IF FIRELANE MARKINGS ARE PRESENT.
5. TRACER WIRE SHALL TURN UP IN VALVE BOXES.
6. ALL VALVES SHALL BE RESTRAINED.

FOR 1" OR SMALLER METER

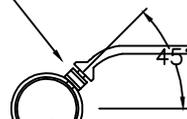
18" DEEP METER BOX SHALL BE BASS & HAYS RECTANGULAR PLASTIC BODY WITH CAST IRON LIDS EQUIPPED WITH AMR HOLE.

1. ALL TAPS SHALL BE MADE AT 45° ANGLE TO CENTERLINE OF PIPE. MINIMUM TAP SIZE TO BE 1 INCH PER 502.10.3.(1,2,3, and 7) OF THE NCTCOG STANDARD SPECIFICATIONS (5TH EDITION).
2. NO DIRECT TAPS. TAPS SHALL BE MADE USING SERVICE SADDLE. SEE CITY APPROVED MATERIALS LIST

FORD 1" MIN. CORPORATION STOP WITH COMPRESSION COUPLING NUT (CC THREAD)

SERVICE SADDLE (SEE APPROVED MATERIAL LIST)

SINGLE SERVICE



WATER MAIN

1" MIN. SDR-9 HDPE

24" MIN.

2" MIN
4" MAX

3/4" ROCK (NO. 57 STONE)

ANGLE STOP (SEE APPROVED MATERIAL LIST)

SEE NOTE 3 FOR CONNECTION TO EXISTING WATER SERVICES

VARIES

METER BOX 6"-12" TO CURB

CURB

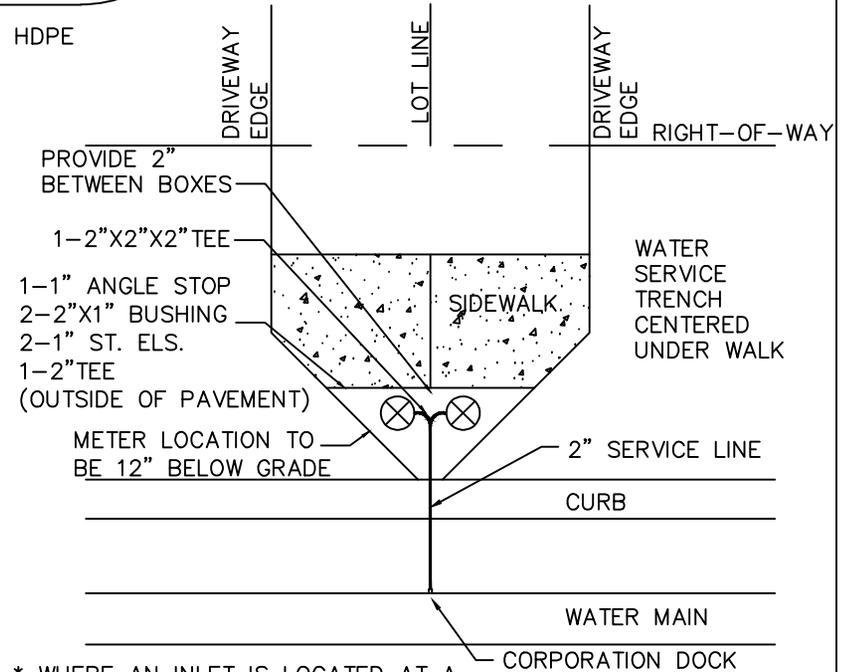
12" MAX

18"

GROUND LINE

NOTES:

1. DOMESTIC WATER SERVICES SHALL NOT BE CONNECTED TO FIRE HYDRANT LINES.
2. FOR WATERLINE REHABILITATION PROJECTS, THE PAY ITEM FOR NEW WATER SERVICES INCLUDES ADJUSTMENT TO 12" DEPTH AND CONNECTION TO THE PRIVATE SIDE OF THE WATER SERVICE BY A LICENSED PLUMBER.
3. ON A 2" COMPOUND METER, SET ANGLE STOP TO 12" DEEP.
4. ALL SERVICE LINES MUST BE ONE CONTINUOUS PIECE (NO SPLICED JOINTS) FROM CORPORATION STOP TO ANGLE STOP.
5. NO DIRECT TAPS. TAPS SHALL BE MADE USING SERVICE SADDLES. SEE APPROVED MATERIALS LIST.
6. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.



PROVIDE 2" BETWEEN BOXES

1-2"X2"X2" TEE

1-1" ANGLE STOP

2-2"X1" BUSHING

2-1" ST. ELS.

1-2" TEE (OUTSIDE OF PAVEMENT)

METER LOCATION TO BE 12" BELOW GRADE

2" SERVICE LINE

CURB

WATER MAIN

CORPORATION DOCK

* WHERE AN INLET IS LOCATED AT A WATER SERVICE LOCATION, 2 SINGLE 1" WATER SERVICES SHALL BE INSTALLED.

DOUBLE SERVICE

STANDARD CONSTRUCTION DETAIL

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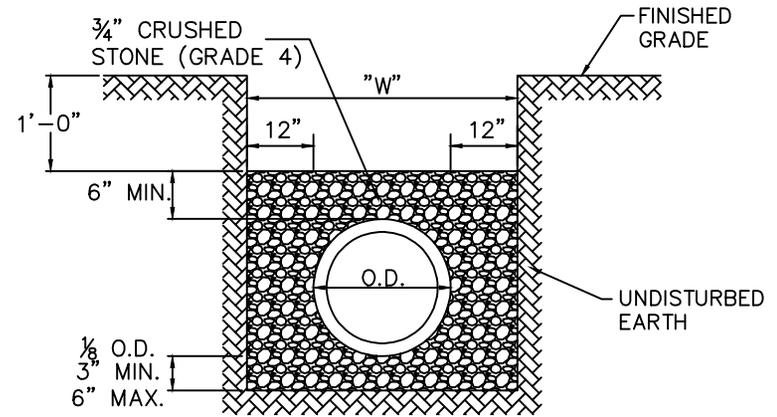


TYPICAL SERVICE CONNECTION WITH METER BOX

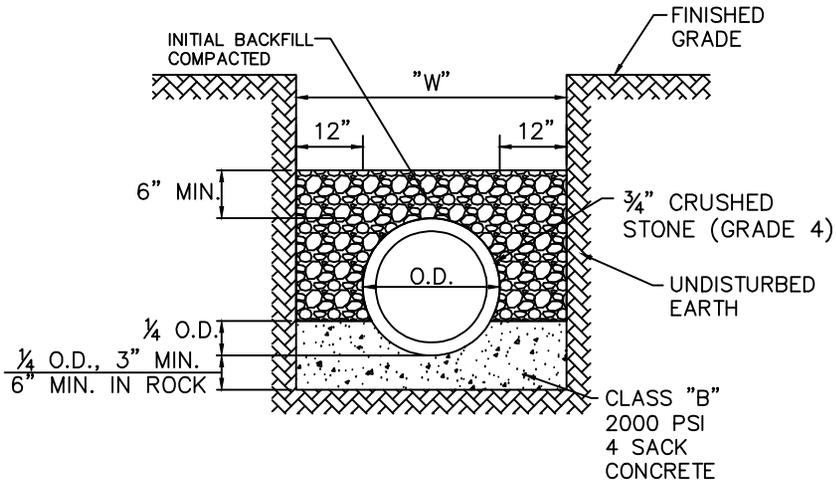
W04

NOTES:

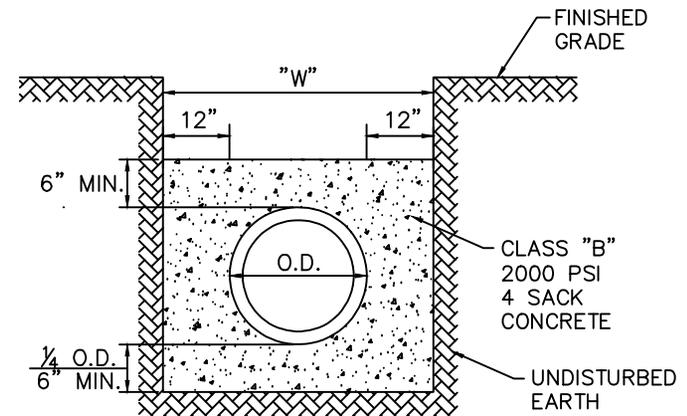
1. ALL COMPACTION SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND/OR SPECIAL PROVISIONS. ALL TRENCH LINES SHALL BE COMPACTED TO STANDARD DENSITY: 98% UNDER ALL PAVED AREAS AND 95% IN ALL OTHER AREAS.
2. CONCRETE ENCASEMENT SHALL BEGIN AND END 6 INCHES FROM THE END OF A JOINT.
3. $W = 24"$ PLUS PIPE O.D.
4. TRACER WIRE SHALL BE INSTALLED ABOVE ALL WATER LINES.
5. BLUE WATER TAPE SHALL BE LAID THE ENTIRE LENGTH OF THE TRENCH AND BURIED TO A DEPTH OF 18".
6. ALL MECHANICAL JOINT FITTINGS WILL BE REQUIRED TO BE INSTALLED WITH THE USE OF RESTRAINT GLANDS IN ACCORDANCE WITH THE APPROVED MATERIALS LIST. THE RESTRAINT GLANDS MUST BE EQUIPPED WITH ANCHOR LUGS FOR PERPENDICULAR CONTACT TO PVC PIPE.
7. ALL WATER MAINS SHALL HAVE THE FOLLOWING MINIMUM COVER MEASURED FROM THE BOTTOM OF PAVING:
 - 6" AND SMALLER - 54" COVER
 - 8" - 60" COVER
 - 10" AND LARGER - 72" COVER
8. BLEEDER LINES MUST BE REMOVED UPON COMPLETION OF WATER LINE TESTING BY REMOVING THE CORPORATION AND REPLACING IT WITH A BRASS PLUG.
9. ALL WATER MAINS SHALL BE SWAPPED BY THE "POLY-PIG METHOD". POLYPIG SHALL BE PULLED THROUGH WATER LINES BEFORE LINES ARE ACCEPTED BY THE CITY.
10. ALL VALVES AND FITTINGS SHALL BE POLY WRAPPED.
11. ON WATER LINE STUBOUTS, VALVES ARE TO BE ANCHORED TO THE MAIN USING A MJ ANCHOR COUPLING, AT LEAST ONE FULL JOINT OF PIPE SHALL BE EXTENDED BEYOND THE VALVE.
12. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.
13. BACKFILL TYPE "B" (TYPE "A" OR ALTERNATE ALLOWABLE TYPE "A" ARE ACCEPTABLE) FLOWABLE OR STABILIZED, MODIFIED FLOWABLE, OR FAST SET FLOWABLE ALSO ACCEPTABLE.



STANDARD EMBEDMENT
CLASS "H"



CONCRETE CRADLE EMBEDMENT



CONCRETE ENCASEMENT
CLASS "G"

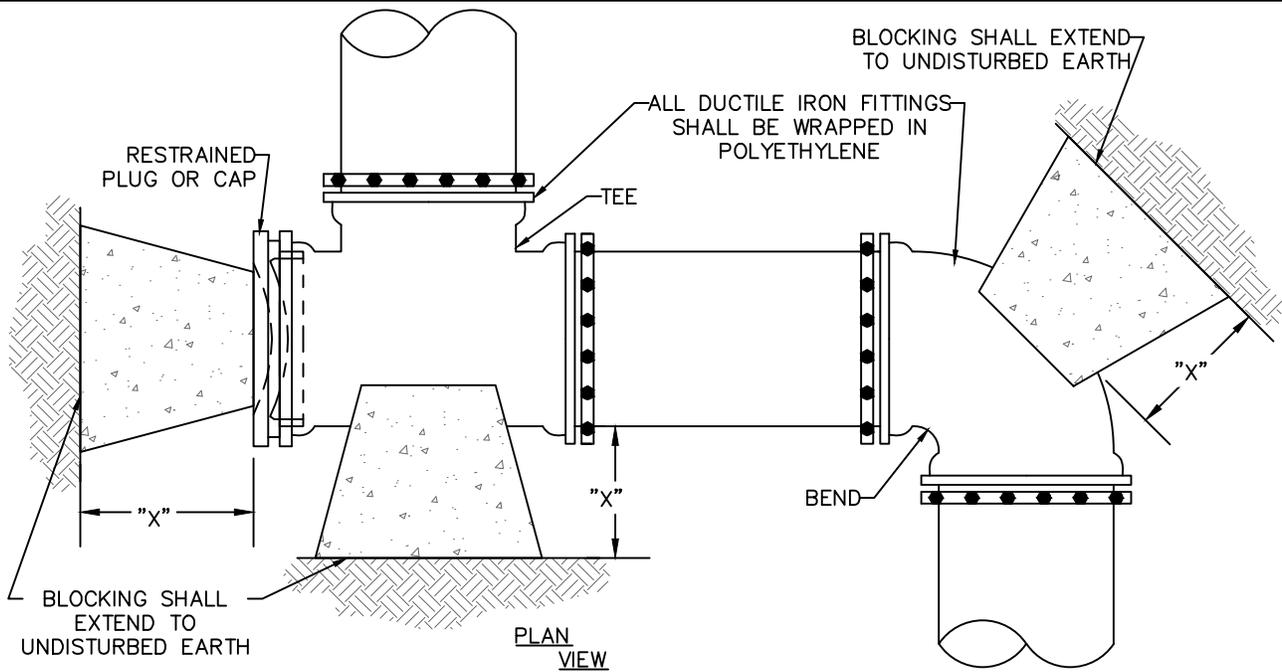
STANDARD CONSTRUCTION DETAIL

PIPE EMBEDMENT DETAILS (WATER)

REVISED: AUG 2023



W05



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*
8"	1'-6"	5.65	8.00	4.33	4.00*	4.00*
10"	1'-6"	8.84	12.50	6.76	4.00*	4.00*
12"	1'-6"	12.72	17.99	9.74	4.96	4.00*
16"	2'-0"	22.62	31.99	17.31	8.83	4.43
20"	2'-0"	35.34	49.98	27.05	13.79	6.93

*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.

MINIMUM RESTRAINED LENGTH FOR PVC PIPE IN POORLY GRADED SOIL - 4' DEPTH IN STANDARD EMBEDMENT WITH SAFETY FACTOR OF 1.5 WITH TEST PRESSURE OF 250 PSI						
PIPE SIZE	11.25°	22.5°	45°	90°	HORZ. BEND ANGLE	
6"	3'	5'	10'	22'	MIN. RESTRAINED LENGTH EACH LEG	
8"	3'	6'	12'	29'	MIN. RESTRAINED LENGTH EACH LEG	
10"	4'	7'	15'	35'	MIN. RESTRAINED LENGTH EACH LEG	
12"	4'	9'	17'	41'	MIN. RESTRAINED LENGTH EACH LEG	
14"	5'	10'	20'	48'	MIN. RESTRAINED LENGTH EACH LEG	
16"	6'	11'	22'	52'	MIN. RESTRAINED LENGTH EACH LEG	
20"	7'	13'	26'	63'	MIN. RESTRAINED LENGTH EACH LEG	

TEES	MAIN RESTRAINED LENGTH (EACH SIDE OF TEE)	BRANCH RESTRAINED LENGTH
6"x6"	10'	6'
8"x6"	10'	1'
8"x8"	12'	14'
10"x6"	6'	6'
10"x8"	10'	10'
10"x10"	15'	13'
12"x6"	5'	6'
12"x8"	8'	13'
12"x10"	12'	16'
12"x12"	16'	25'
14"x8"	7'	12'
14"x10"	10'	19'
14"x12"	15'	17'
14"x14"	20'	20'
16"x8"	7'	1'
16"x10"	9'	14'
16"x12"	13'	14'
16"x14"	18'	12'
16"x16"	20'	34'

*ALL JOINTS WITHIN THE CALCULATED LENGTH MUST BE RESTRAINED.

DEAD END PIPE SIZE	RESTRAINED LENGTH
6"	67'
8"	88'
10"	106'
12"	126'
14"	147'
16"	162'
20"	198'

NOTES:

- THRUST BLOCKING AREAS SHOWN ARE BASED ON:
 - 225 PSI TEST PRESSURE
 - 3,000 P.S.F. HORIZONTAL OR LATERAL BEARING PRESSURE FOR ACCEPTABLE SOILS. IN SOILS OF LESSER CAPACITY, INCREASE SIZE AND BEARING AREA PROPORTIONATELY
 - MINIMUM COVER OF 48"
 - A SAFETY FACTOR OF 1.5.
- 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.
- ALL DUCTILE IRON FITTINGS SHALL BE WRAPPED IN POLYETHYLENE ENCASUREMENT PRIOR TO PLACING OF BLOCKING.
- CONCRETE FOR BLOCKING SHALL BE A MINIMUM 2000 P.S.I. CONCRETE (CLASS "B").
- DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS BUT SHALL NOT BE LESS THAN THE DIMENSIONS SHOWN.
- ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.

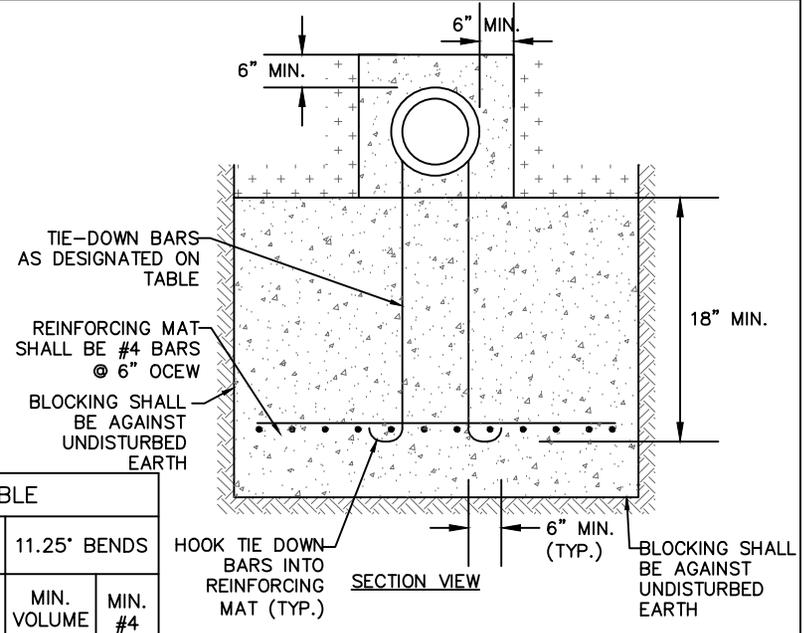
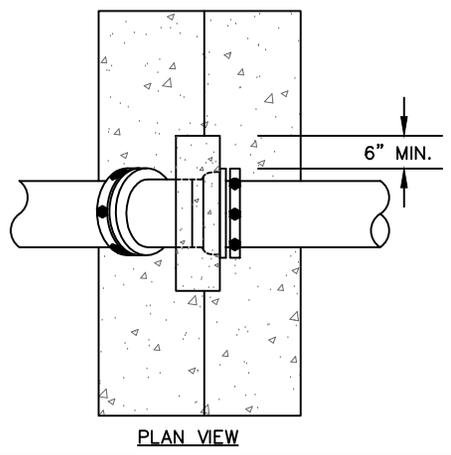
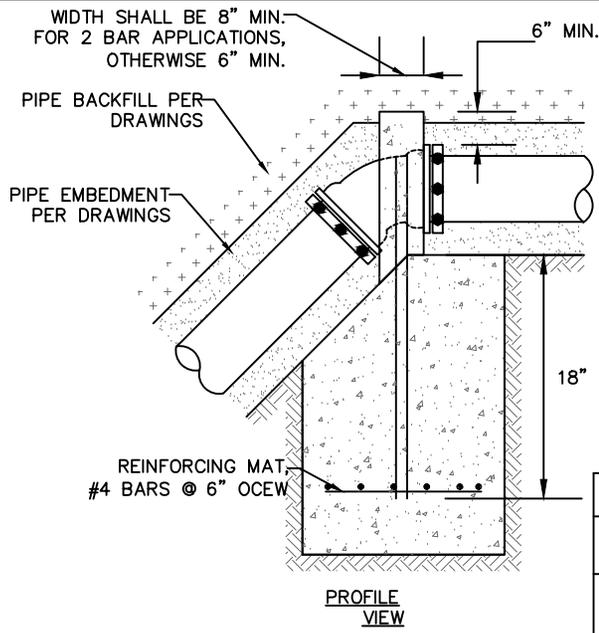


STANDARD CONSTRUCTION DETAIL

HORIZONTAL THRUST BLOCKING

REVISED: AUG 2023

W06



VERTICAL TIE-DOWN BLOCKING TABLE								
PIPE SIZE	90° BENDS		45° BENDS		22.5° BENDS		11.25° BENDS	
	MIN. VOLUME (CF)	MIN. BARS	MIN. VOLUME (CF)	MIN. #4 BARS	MIN. VOLUME (CF)	MIN. #4 BARS	MIN. VOLUME (CF)	MIN. #4 BARS
6"	90	2-#4	48.69	1	24.82	1	12.47	1
8"	160	4-#4	86.56	2	44.13	1	22.17	1
10"	250	4-#5	135.25	3	68.95	2	34.64	1
12"	360	4-#6	194.76	4	99.29	2	49.88	1

NOTES:

- VERTICAL TIE-DOWN BLOCKING VOLUMES SHOWN ARE BASED ON:
 - 225 PSI TEST PRESSURE
 - 150 PCF CONCRETE DENSITY
 - A SAFETY FACTOR OF 1.5
- BAR QUANTITIES ARE BASED ON:
 - GRADE 60 STEEL REINFORCEMENT BAR
 - A FACTOR OF SAFETY OF 2.
- THE CONTRACTOR IS REQUIRED TO PROVIDE THRUST RESTRAINT BY MEANS OF VERTICAL TIE-DOWN 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.
- WIDTHS, LENGTHS AND DEPTHS MAY VARY BUT SATISFACTION OF ABOVE MINIMUM VOLUMES MUST BE DEMONSTRATED.
- KEEP CONCRETE CLEAR OF PIPE JOINTS AND BOLTS.
- ALL DUCTILE IRON FITTINGS SHALL BE WRAPPED IN POLYETHYLENE ENCASUREMENT PRIOR TO PLACING OF BLOCKING.
- CONCRETE FOR BLOCKING SHALL BE MINIMUM 2000 P.S.I. CONCRETE (CLASS "B").
- ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.

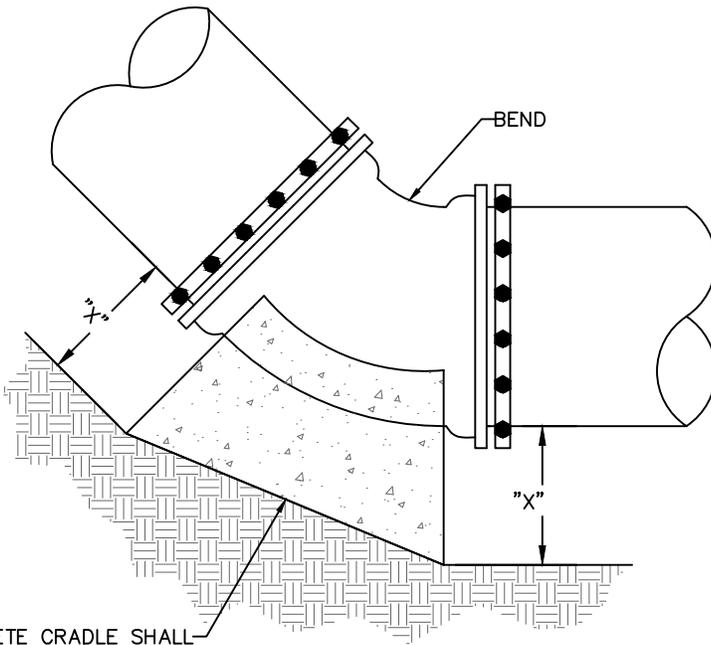
MINIMUM RESTRAINED LENGTH (VERTICAL OFFSET TOP) FOR PVC IN PIPE IN POORLY GRADED SOIL – 4' BURY DEPTH IN STANDARD EMBEDMENT WITH SAFETY FACTOR OF 1.5 AND TEST PRESSURE OF 250 PSI				
PIPE SIZE	11.25°	22.5°	45°	VERTICAL BEND ANGLE
6"	10'	19'	38'	MIN. RESTRAINED LENGTH (EACH LEG)
8"	12'	25'	51'	MIN. RESTRAINED LENGTH (EACH LEG)
10"	15'	30'	61'	MIN. RESTRAINED LENGTH (EACH LEG)
12"	18'	35'	72'	MIN. RESTRAINED LENGTH (EACH LEG)
14"	21'	41'	85'	MIN. RESTRAINED LENGTH (EACH LEG)
16"	23'	45'	94'	MIN. RESTRAINED LENGTH (EACH LEG)
20"	28'	56'	115'	MIN. RESTRAINED LENGTH (EACH LEG)



STANDARD CONSTRUCTION DETAIL
VERTICAL TIE-DOWN BLOCKING

REVISED: AUG 2023

W07



PIPE SIZE	"X" DIM.**	90° BENDS	45° BENDS	22.5° BENDS	11.25° BENDS
		MIN. AREA (SF)	MIN. AREA (SF)	MIN. AREA (SF)	MIN. AREA (SF)
6"	1'-6"	4.50	4.00*	4.00*	4.00*
8"	1'-6"	8.00	4.33	4.00*	4.00*
10"	1'-6"	12.50	6.76	4.00*	4.00*
12"	1'-6"	17.99	9.74	4.96	4.00*
16"	2'-0"	31.99	17.31	8.83	4.43
20"	2'-0"	49.98	27.05	13.79	6.93

*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 BOTTOM.

CONCRETE CRADLE SHALL EXTEND TO UNDISTURBED EARTH

PROFILE VIEW

MINIMUM RESTRAINED LENGTH FOR PVC PIPE IN POORLY GRADED SOIL – 4' DEPTH IN STANDARD EMBEDMENT WITH SAFETY FACTOR OF 1.5 WITH TEST PRESSURE OF 250 PSI					
PIPE SIZE	BEND ANGLE				
	11.25°	22.5°	45°	90°	MIN. RESTRAINED LENGTH EACH LEG
6"	3'	5'	10'	22'	MIN. RESTRAINED LENGTH EACH LEG
8"	3'	6'	12'	29'	MIN. RESTRAINED LENGTH EACH LEG
10"	4'	7'	15'	35'	MIN. RESTRAINED LENGTH EACH LEG
12"	4'	9'	17'	41'	MIN. RESTRAINED LENGTH EACH LEG
14"	5'	10'	20'	48'	MIN. RESTRAINED LENGTH EACH LEG
16"	6'	11'	22'	52'	MIN. RESTRAINED LENGTH EACH LEG
20"	7'	13'	26'	63'	MIN. RESTRAINED LENGTH EACH LEG

*ALL JOINTS WITHIN THE CALCULATED LENGTH MUST BE RESTRAINED.

NOTES:

- THRUST BLOCKING AREAS SHOWN ARE BASED ON:
 - 225 PSI TEST PRESSURE
 - 3,000 PSF HORIZONTAL OR LATERAL BEARING PRESSURE FOR ACCEPTABLE SOILS. IN SOILS OF LESSER CAPACITY, INCREASE SIZE AND BEARING AREA PROPORTIONATELY.
 - MINIMUM COVER OF 48"
 - A SAFETY FACTOR OF 1.5
- 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.
- ALL DUCTILE IRON FITTINGS SHALL BE WRAPPED IN POLYETHYLENE ENCASUREMENT PRIOR TO PLACING OF BLOCKING.
- CONCRETE FOR BLOCKING SHALL BE MINIMUM 2000 P.S.I. CONCRETE (CLASS "B").
- DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD CONDITIONS BUT SHALL NOT BE LESS THAN THE DIMENSIONS SHOWN.
- ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.

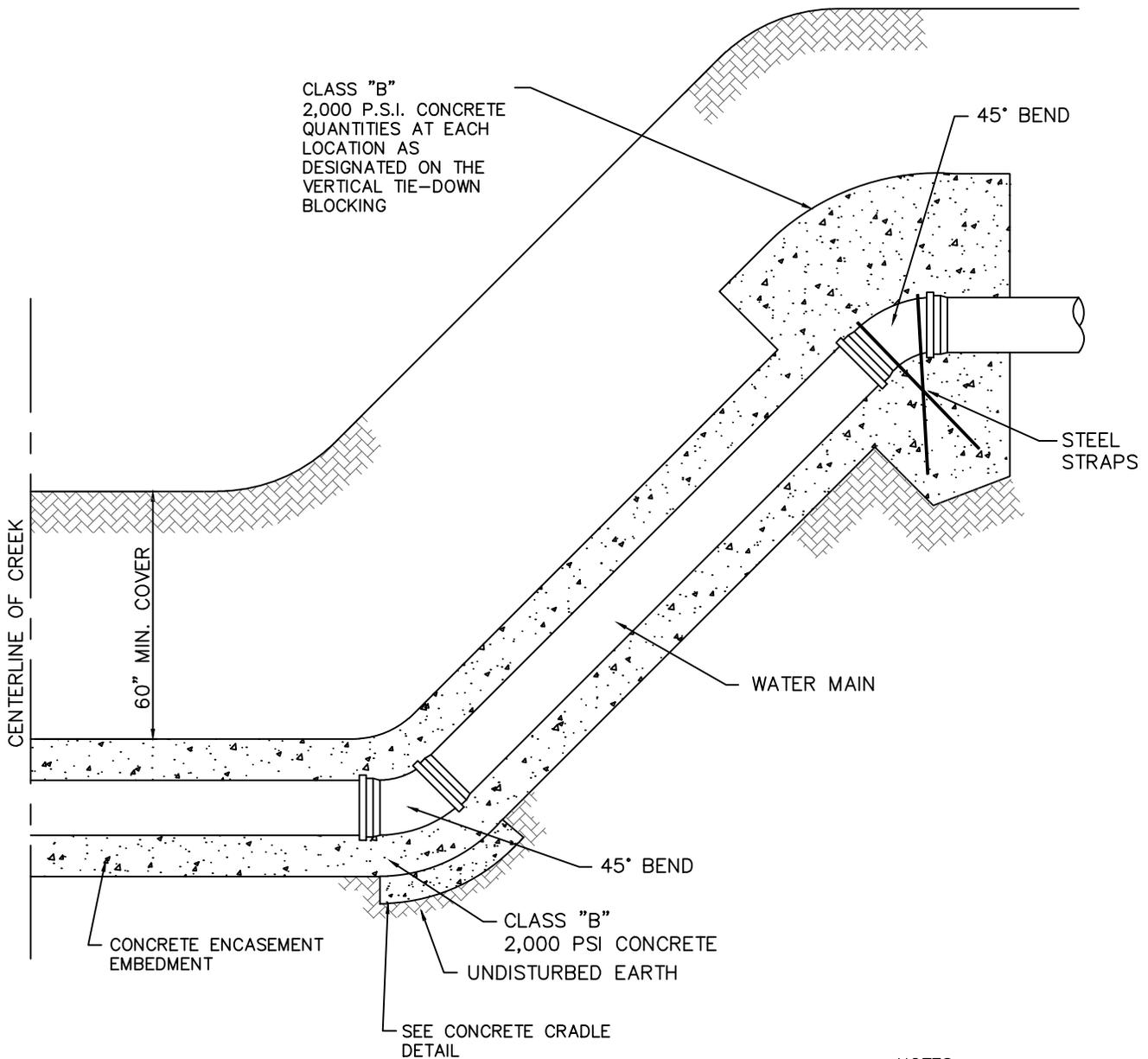


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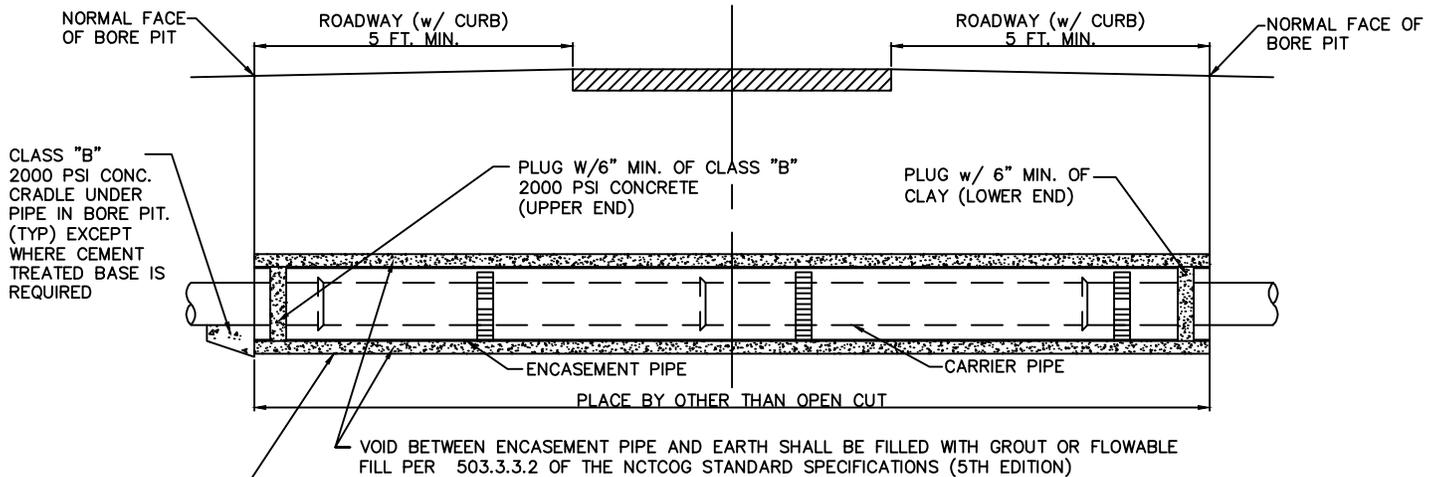
CONCRETE CRADLE

REVISED: AUG 2023

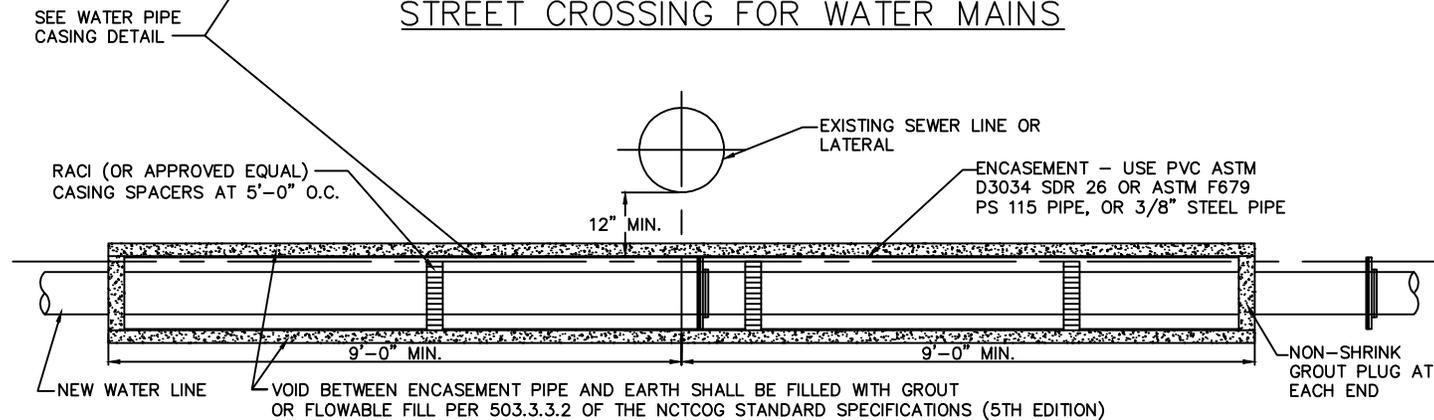
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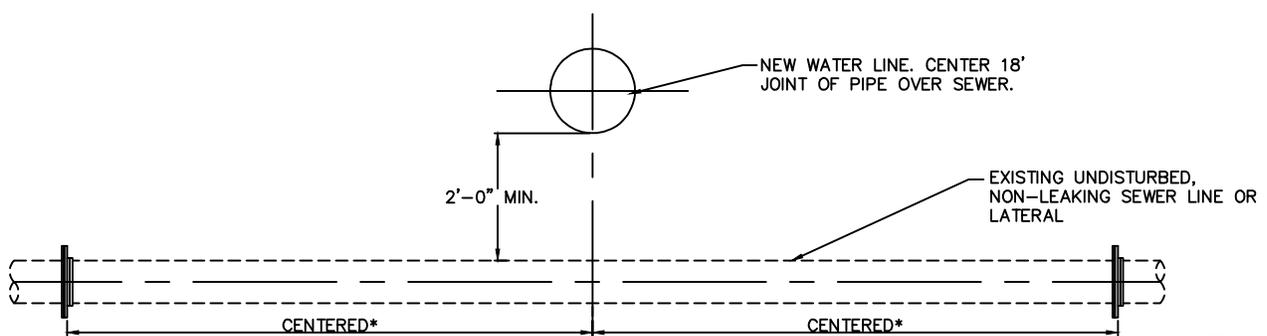
- NOTES:
1. ALL FITTINGS RESTRAINED WITH RETAINER GLANDS AND WRAPPED IN POLYETHYLENE.
 2. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.



STREET CROSSING FOR WATER MAINS



NEW WATER LINE UNDER EXISTING SEWER LINE



NEW WATER LINE OVER EXISTING SEWER LINE

GENERAL NOTES:

1. ENCASEMENT PIPE: NEW, SMOOTH STEEL PIPE WITH WALL THICKNESS=OD/120, 3/8" MIN., BITUMINOUS COATING, 35,000 P.S.I. MIN. YIELD STRENGTH.
2. CARRIER PIPE SHALL BE MADE-UP OUTSIDE THE ENCASEMENT PIPE & PUSHED THROUGH THE BORE. INSTALL RACI (OR APPROVED EQUAL) OR SMITH-BLAIR CASING SPACERS ACCORDING TO MFR. RECOMMENDATIONS. MAINTAIN 1" MAX. CLEARANCE BETWEEN CASING SPACERS & ENCASEMENT PIPE.
3. MEET ALL CITY PERMIT REQUIREMENTS & DIRECTIONS OF THE CITY ENGINEER.
4. IF SEPARATION IS WIDER THAN REQUIRED SAFETY DISTANCES, AND IF SIDE SLOPES WILL ALLOW, INSPECTION OF BORE PITS MAY BE ALLOWED WITH ACCESS TO PITS BY MEANS OTHER THAN MAIN TRAFFIC LANES.
5. CONCRETE TO BE 4 SACK 2000 PSI (CLASS "B").
6. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.

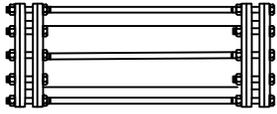


STANDARD CONSTRUCTION DETAIL

WATER MAIN CROSSING

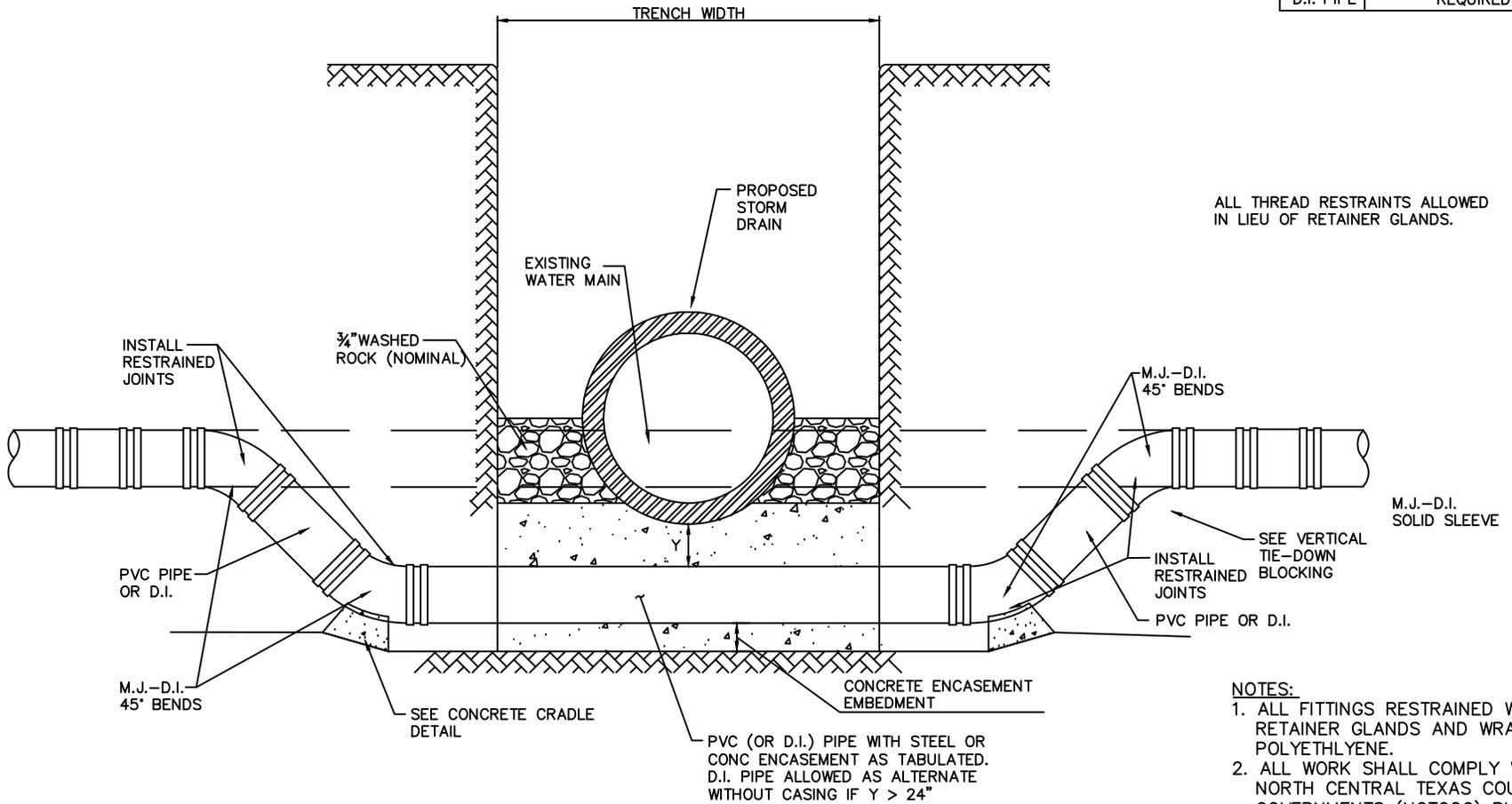
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W10



RESTRAINT DETAIL

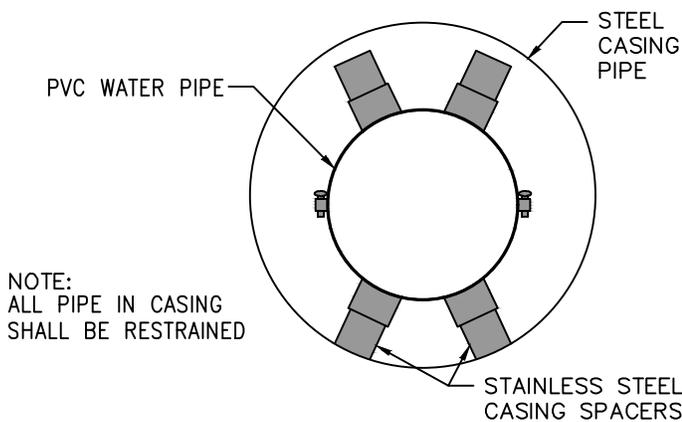
ENCASEMENT REQUIRED FOR STORM DRAIN CROSSING	
6" <math><Y \leq 12"</math>	STEEL CASING ON WATER LINE
12" <math><Y \leq 24"</math>	CONCRETE OR STEEL ENCASEMENT
Y > 24" PVC PIPE	CONCRETE OR STEEL ENCASEMENT
Y > 24" D.I. PIPE	NO ENCASEMENT REQUIRED



- NOTES:**
1. ALL FITTINGS RESTRAINED WITH RETAINER GLANDS AND WRAPPED IN POLYETHYLENE.
 2. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.

STANDARD CONSTRUCTION DETAIL
WATER MAIN LOWERING

REVISED: AUG 2023

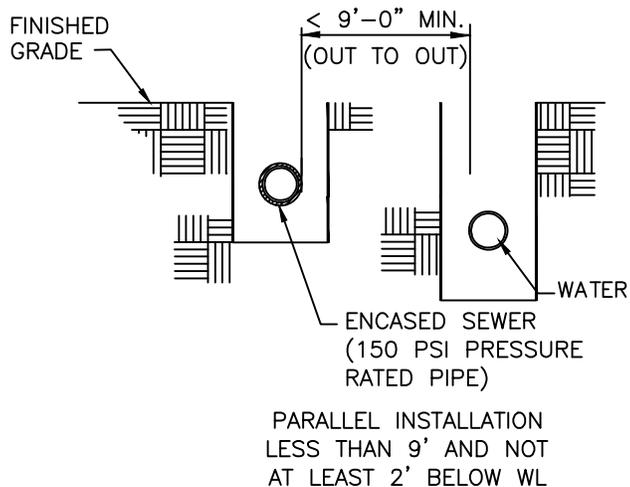
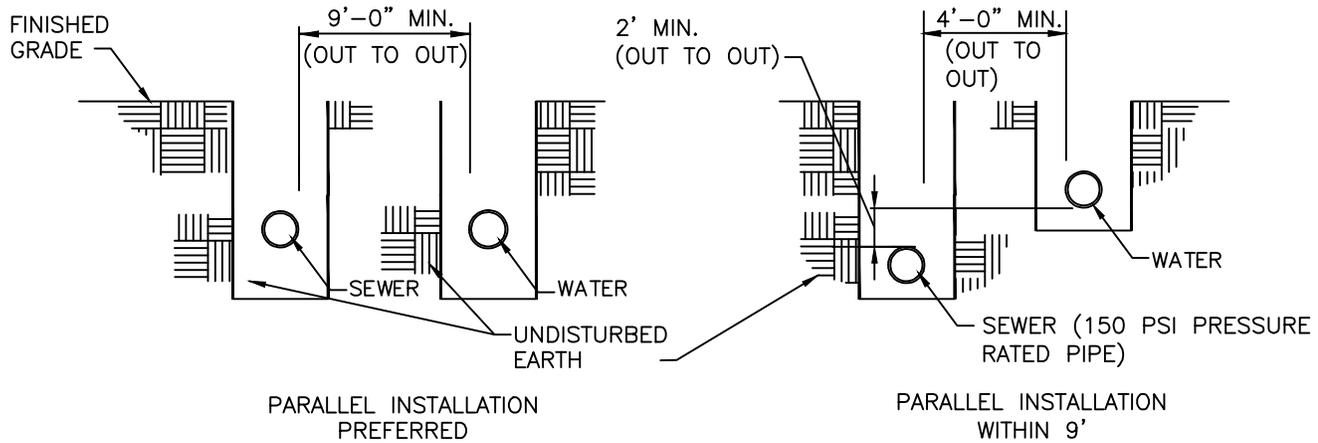


CASING PIPE SCHEDULE	
NOMINAL CARRIER PIPE SIZE	MINIMUM CASING STEEL ID
6"	12"
8"	16"
10"	18"
12"	20"
14"	24"
16"	24"
18"	30"
20"	30"

PVC PIPE WITH STEEL CASING

NOTES:

1. CASING DIAMETERS SHOWN ARE TO MEET MINIMUM INSTALLATION REQUIREMENTS. LARGER CASING SIZES AS INDICATED IN THE DRAWING SHALL GOVERN. CASING SIZES MAY BE INCREASED TO ALLOW FOR CASING INSTALLATION TOLERANCE VARIABILITY.
2. CASING THICKNESS WILL BE PER PLANS WITH A MINIMUM THICKNESS REQUIREMENT OF 3/8".

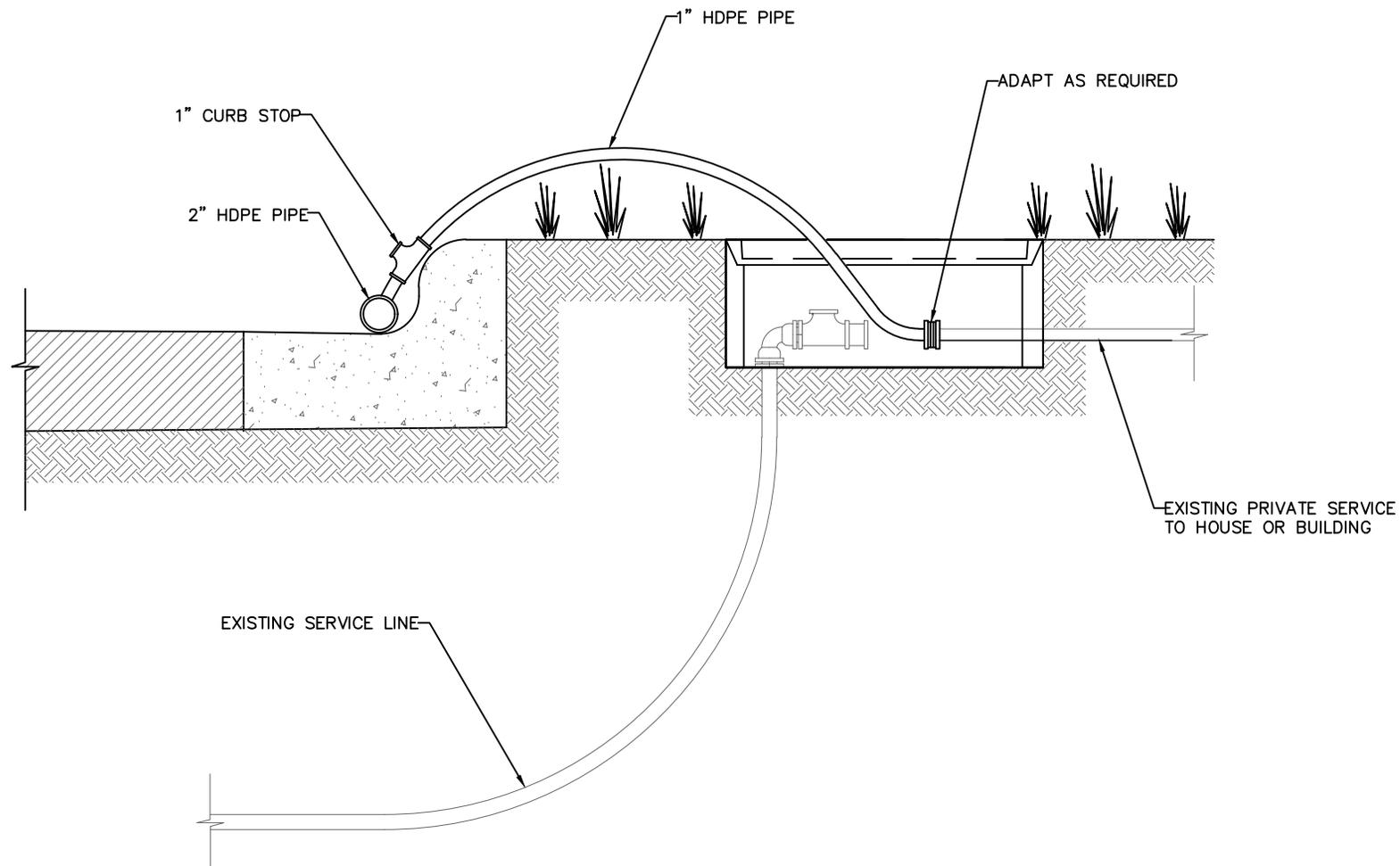


NOTE:

THE SEPARATION OF WATER MAINS AND SEWER MAINS SHALL COMPLY WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY MINIMUM STANDARDS FOR PUBLIC WATER SYSTEMS.

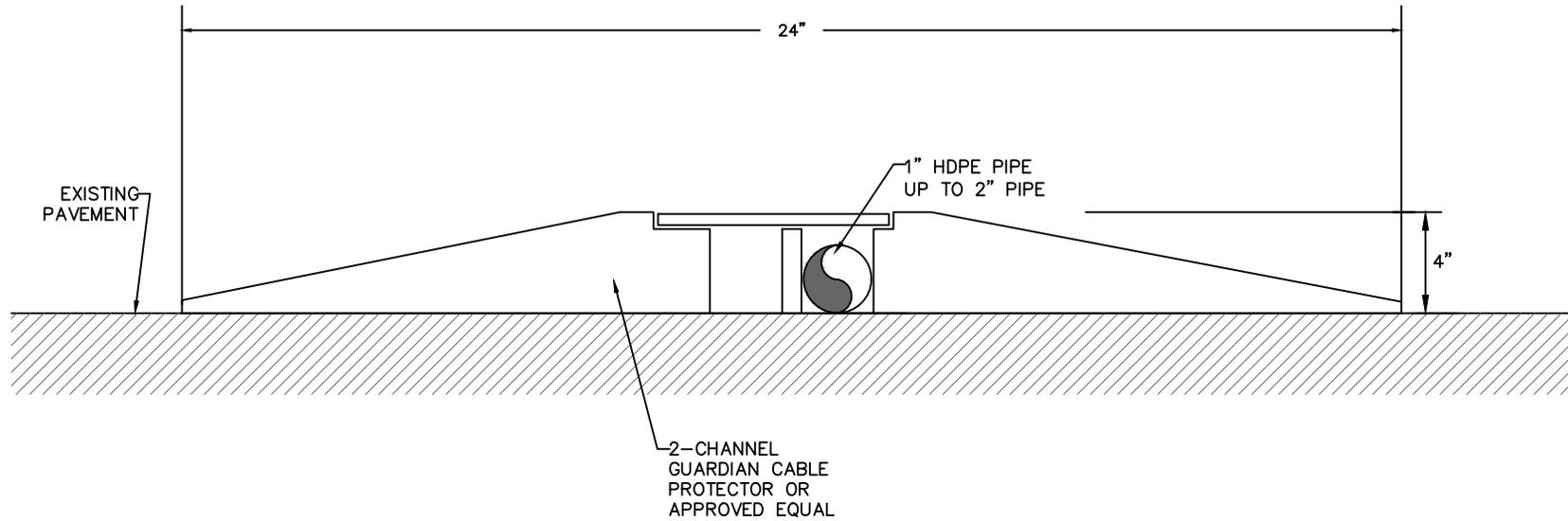
PARALLEL INSTALLATION:

1. WHEN NEW SANITARY SEWERS ARE INSTALLED, THEY SHALL BE INSTALLED NO CLOSER TO WATERLINES THAN NINE FEET IN ALL DIRECTIONS.
2. SEWERS THAT PARALLEL WATERLINES MUST BE INSTALLED IN SEPARATE TRENCHES.
3. WHERE THE NINE-FOOT SEPARATION DISTANCE CANNOT BE ACHIEVED, THE FOLLOWING APPLIES.
 - A. THE SEWER SHALL BE CONSTRUCTED OF 150 PSI PRESSURE RATED PIPE.
 - B. THE VERTICAL SEPARATION SHALL BE A MINIMUM OF TWO FEET BETWEEN OUTSIDE DIAMETERS AND THE HORIZONTAL SEPARATION SHALL BE A MINIMUM OF FOUR FEET BETWEEN OUTSIDE DIAMETERS.
 - C. THE SEWER SHALL BE LOCATED BELOW THE WATERLINE.
4. IF SANITARY SEWER WITHIN 9' OF WATERLINE AND NOT AT LEAST 2' BELOW (THIS INCLUDES BEING ABOVE WATERLINE) THEN ENCASE SEWER LINE. A CASING PIPE FOR A COLLECTION SYSTEM PIPE THAT RUNS PARALLEL TO A WATER SUPPLY PIPE MUST BE CONSTRUCTED OF AT LEAST 150 PSI PRESSURE CLASS PIPE THAT:
 - A. IS SEALED AT BOTH ENDS WITH CEMENT GROUT OR A MANUFACTURED SEAL.
 - B. IS AT LEAST TWO NOMINAL SIZES LARGER THAN THE WASTEWATER COLLECTION PIPE.
 - C. IS SUPPORTED BY SPACERS BETWEEN THE COLLECTION SYSTEM PIPE AND THE ENCASING PIPE AT A MAXIMUM OF FIVE-FOOT INTERVALS.



NOTES:

1. CONTRACTOR SHALL BE REQUIRED TO COVER METER VAULT WITH PROTECTIVE GUARD.
2. METER SHALL BE REMOVED BY THE CONTRACTOR. CONNECTION FROM BY-PASS TO PRIVATE SERVICE SHALL BE MADE BY CONTRACTOR.
3. ALL FITTINGS TO BE BRASS.
4. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.



NOTES:

1. ALL WORK SHALL COMPLY WITH THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS (NCTCOG) PUBLIC WORKS CONSTRUCTION STANDARDS, CURRENT EDITION.