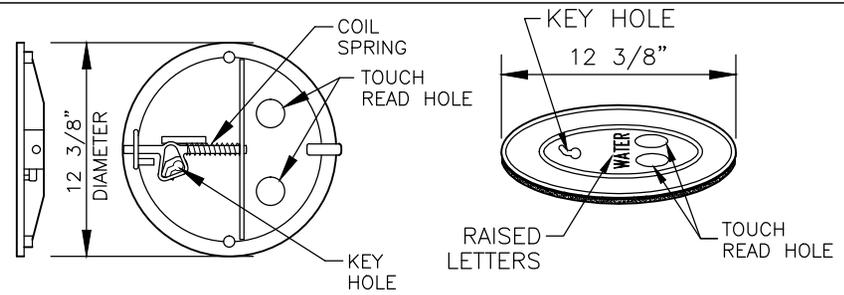
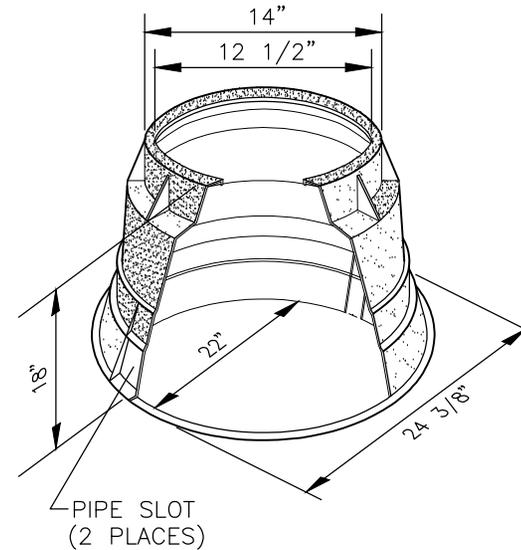


TYPICAL 1" METER BOX DETAIL  
(SINGLE ONLY)



METER BOX LOCKING LID  
CAST IRON MATERIAL



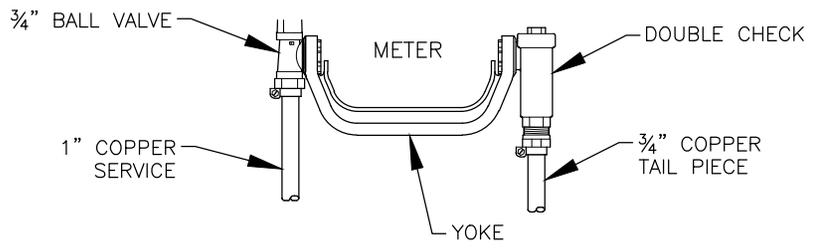
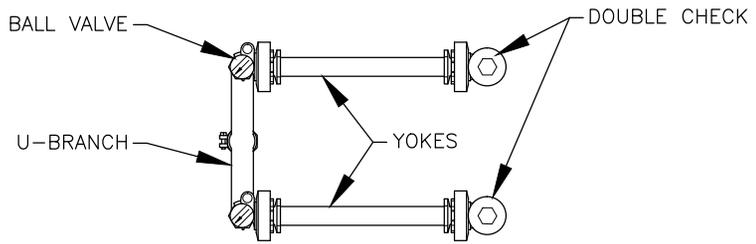
TYPICAL 5/8" METER BOX DETAIL  
(SINGLE & DOUBLE)

NOTES:

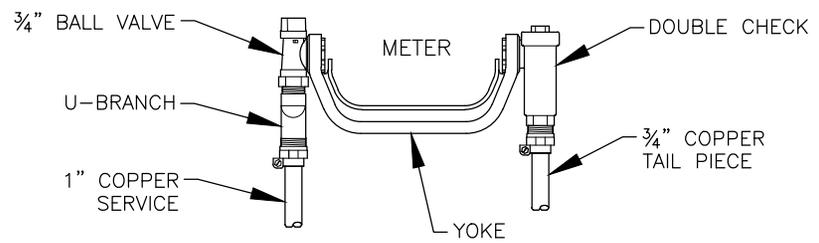
1. INSTALL IN UNPAVED AREAS ONLY.
2. FOR TOUCH READ METERS, TWO-1 3/4" DIAMETER HOLES ARE REQUIRED FOR DOUBLE METER SERVICE LID, ONE-1 3/4" DIAMETER DIAMETER HOLE IS REQUIRED FOR SINGLE METER SERVICE LID.

# 5/8" & 1" METER BOX DETAILS

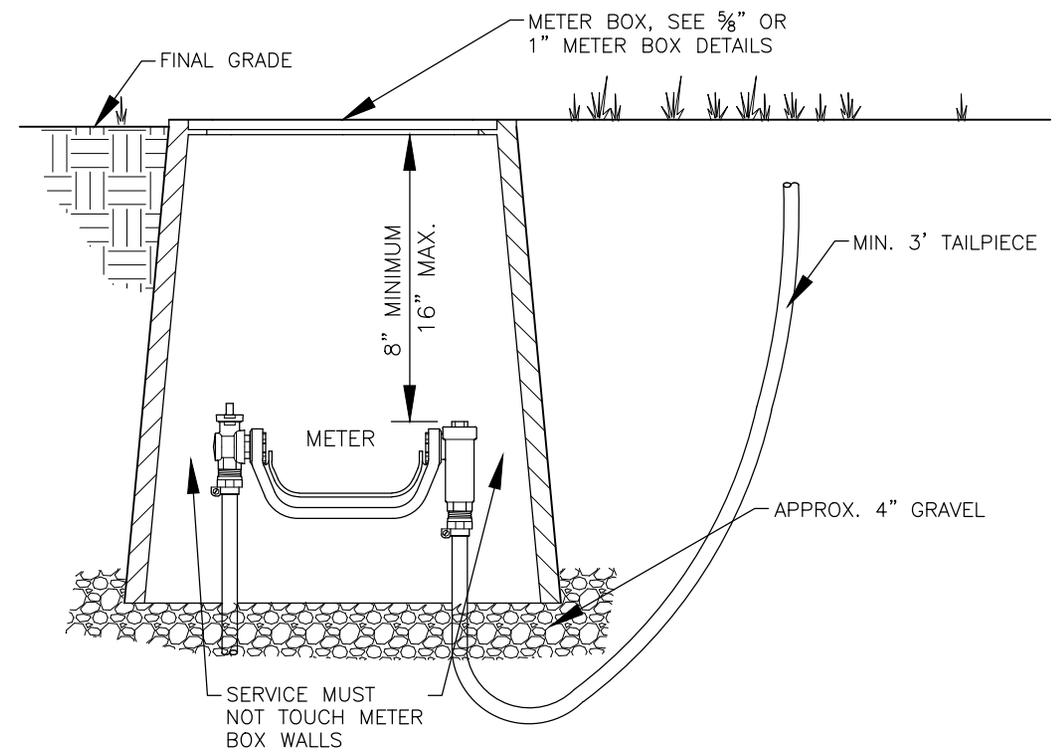
N.T.S.



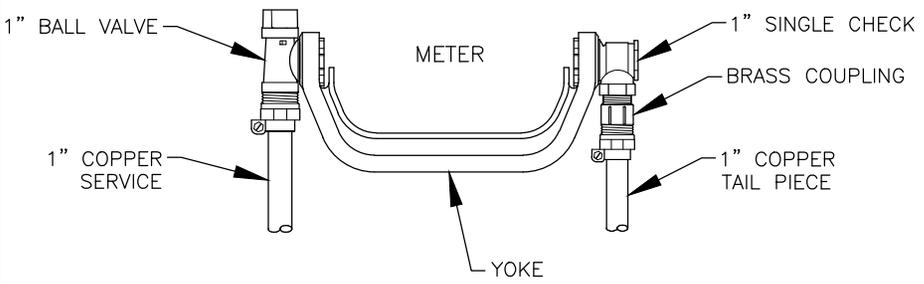
NOTE: 1. ALL SERVICES MUST TERMINATE WITH 3' COPPER TAIL PIECE.



SINGLE 5/8" SERVICE



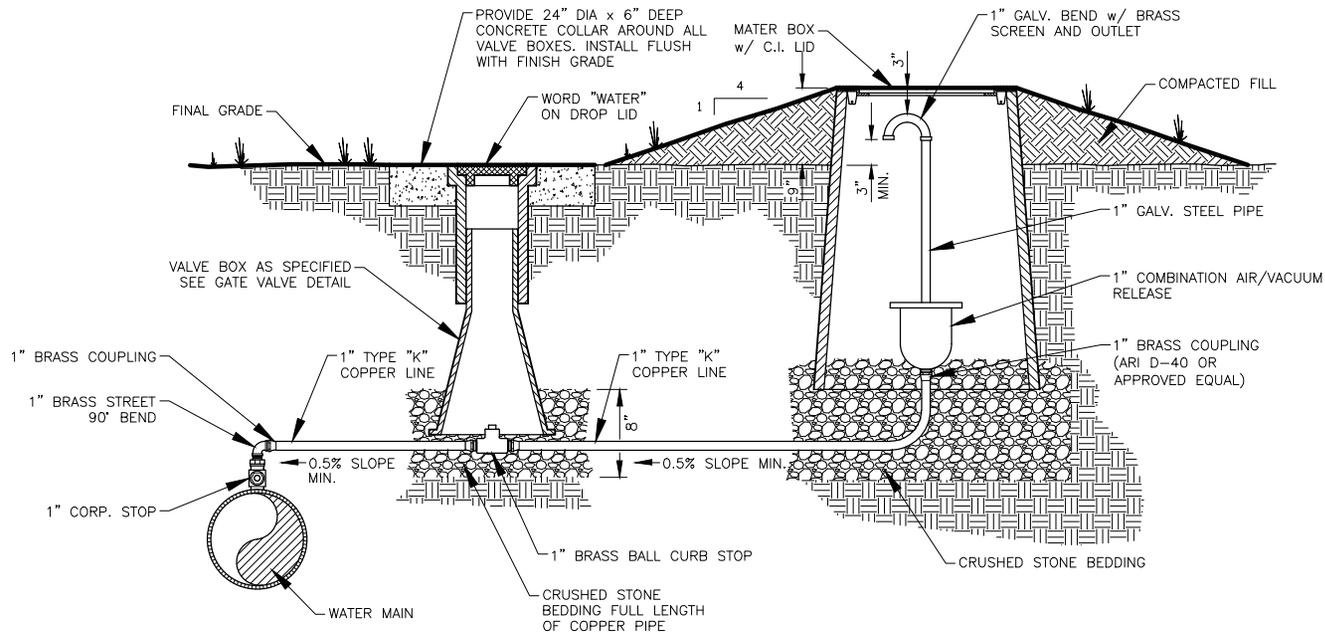
DOUBLE 5/8" SERVICE



SINGLE 1" SERVICE

STANDARD 5/8" & 1" WATER SERVICE DETAILS

N.T.S.

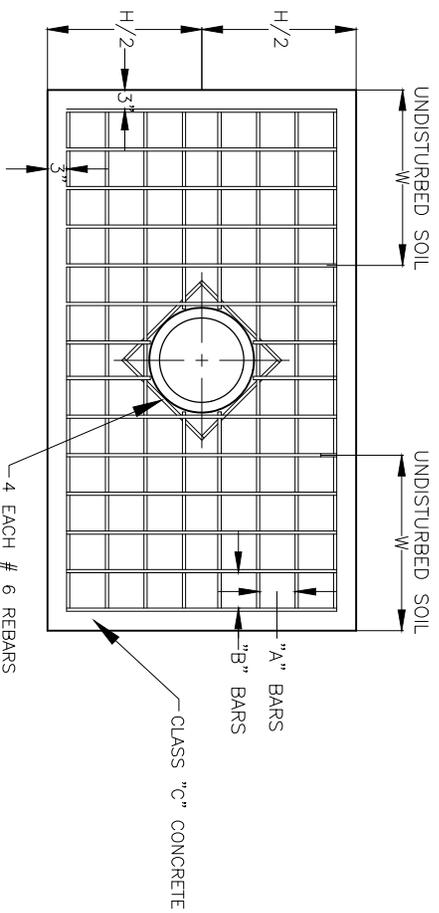


- NOTES:
1. COPPER LINE SHALL BE CONTINUOUS UPHILL GRADE FROM WATER MAIN TO AIR & VAC. RELEASE VALVE.
  2. AIR & VAC. RELEASE VALVE ASSEMBLY MAY BE INSTALLED ABOVE AND PARALLEL TO WATER MAIN (COMMON TRENCH) IF NOTED ON PLANS AND NOT SUBJECT TO VEHICLE TRAFFIC.

## AIR RELEASE VALVE

N.T.S.

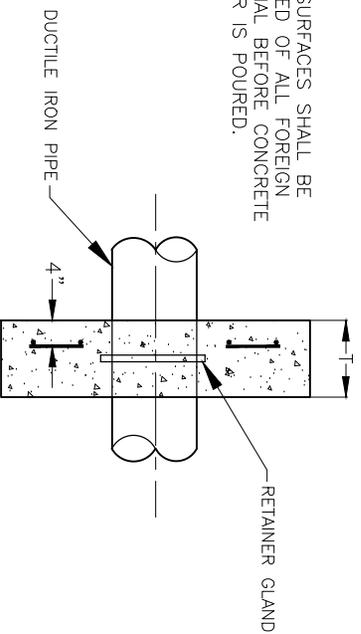
ANCHOR COLLAR SCHEDULE					
PIPE SIZE	DIMENSIONS			REINFORCING BARS	
	W	H	T	M	
6"	1.5'	2.0'	1.0'	M.J. RETAINER GLAND	"A" BARS "B" BARS #6@6" #6@6"
8"	1.5'	2.5'	1.0'	M.J. RETAINER GLAND	#6@6" #6@6"
12"	2.0'	4.0'	1.5'	M.J. RETAINER GLAND	#6@6" #6@6"
18"	3.0'	5.0'	2.0'	M.J. RETAINER GLAND	#6@6" #6@6"
24"	3.5'	5.5'	2.0'	M.J. RETAINER GLAND	#7@6" #6@10"



## ANCHOR COLLAR ELEVATION

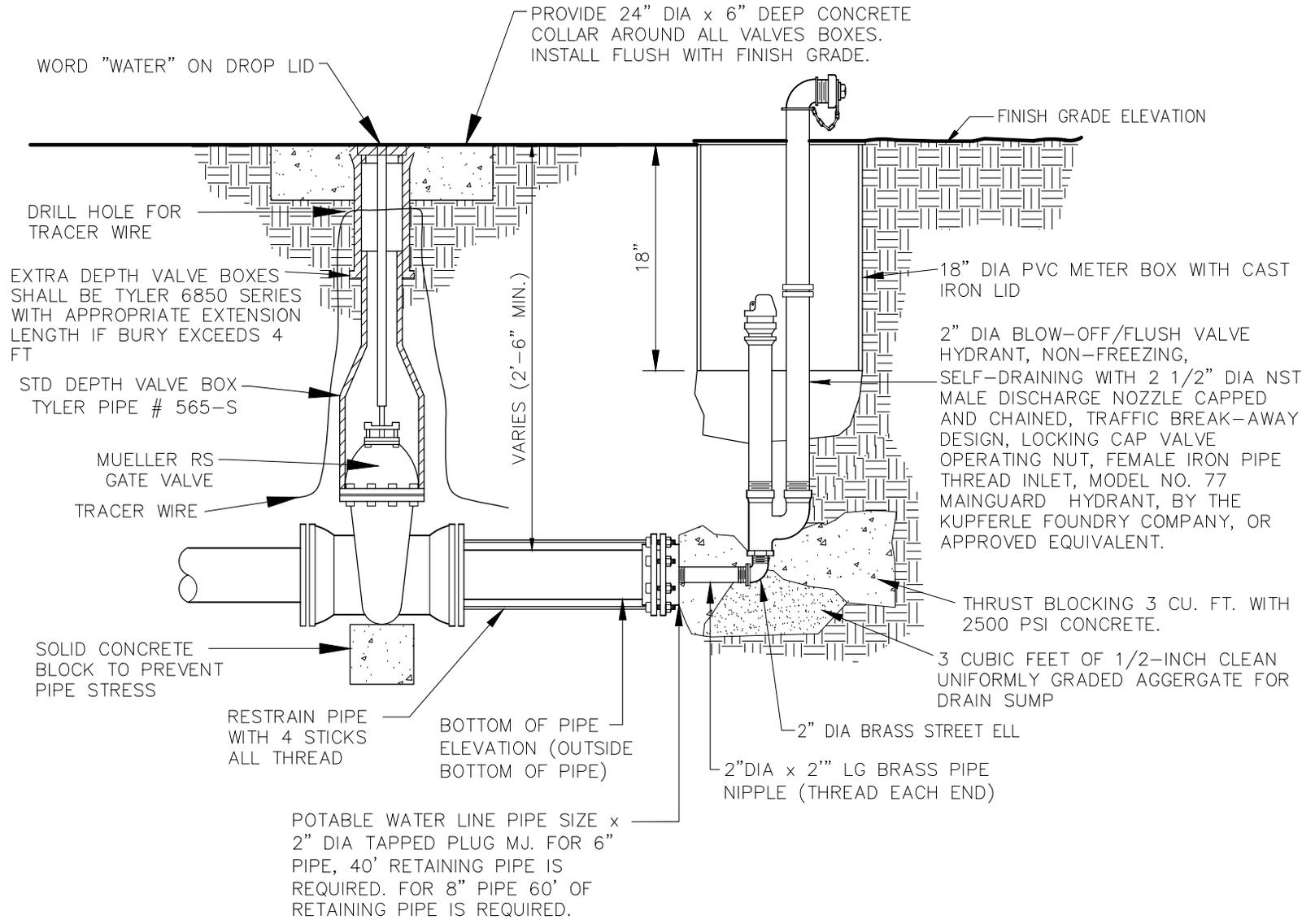
N.T.S.

NOTE:  
PIPE SURFACES SHALL BE CLEANED OF ALL FOREIGN MATERIAL BEFORE CONCRETE COLLAR IS POURED.



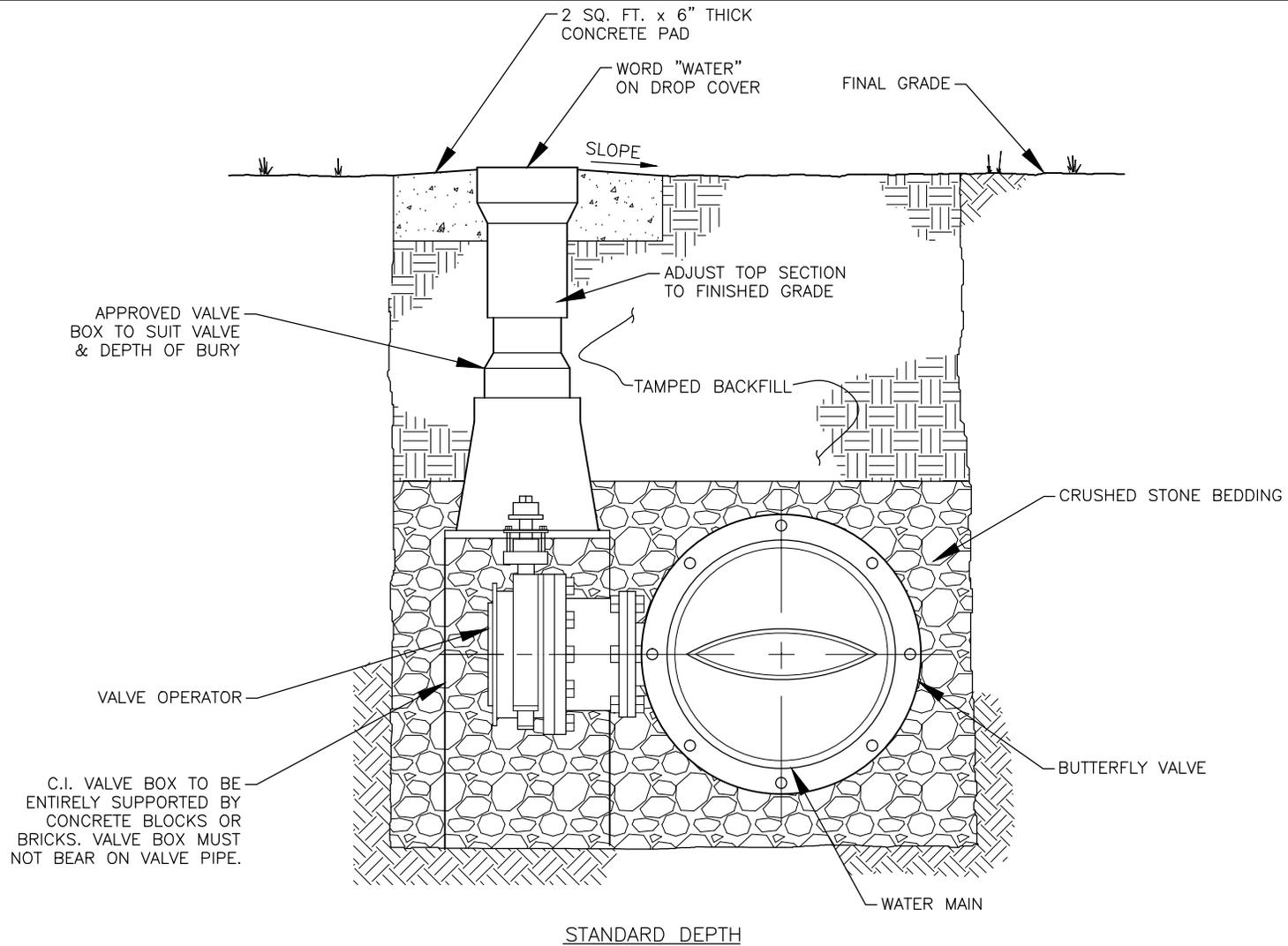
## ANCHOR COLLAR SECTION

N.T.S.



# BLOW-OFF/LINE FLUSH VALVE WITH GATE VALVE

N.T.S.

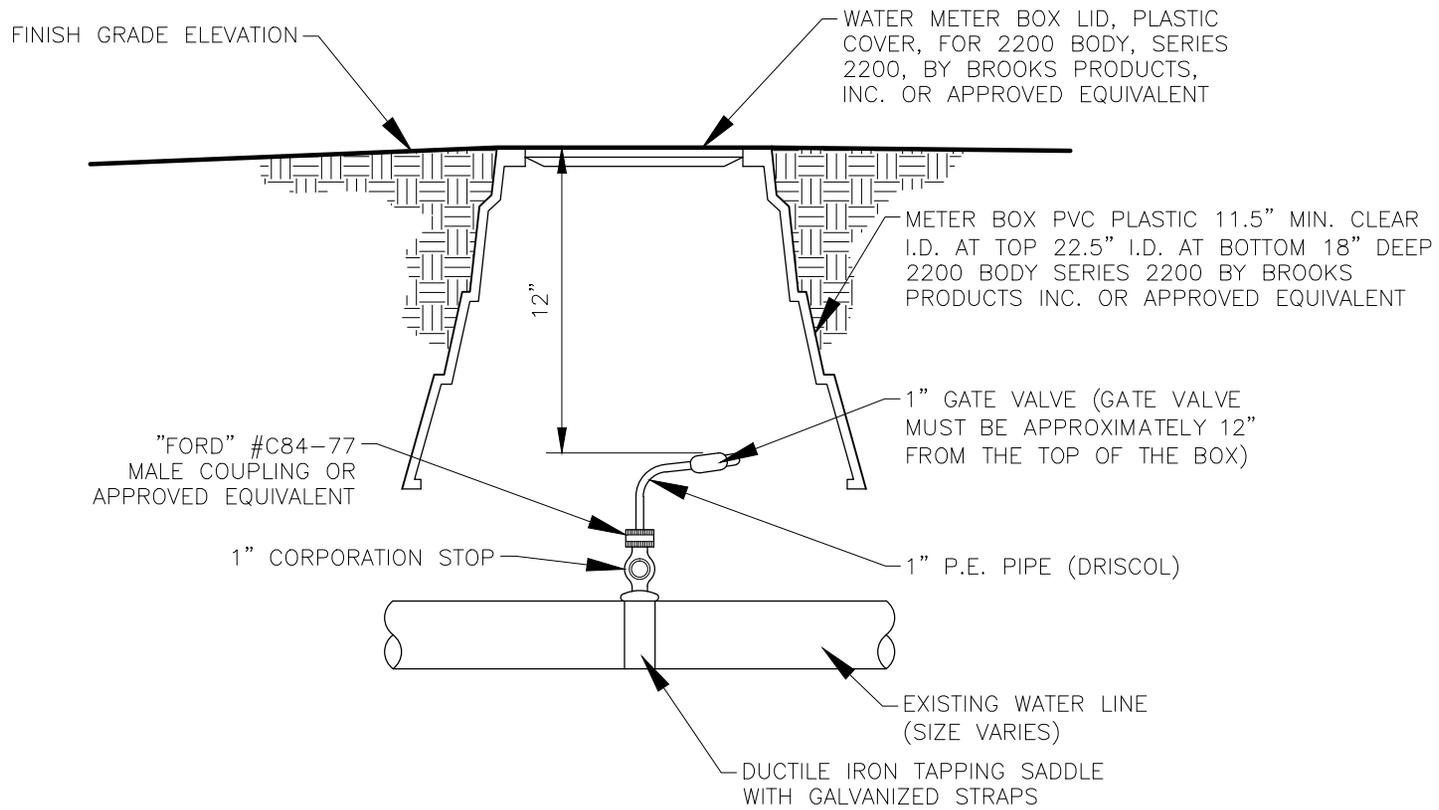


**NOTE:**

1. IF DEPTH OF BURY EXCEEDS 4 FT., A SELF-LOCKING VALVE EXTENSION STEM SHALL BE REQUIRED. THE VALVE EXTENSION STEM SHALL EXTEND TO 2 FEET BELOW FINISHED GRADE SURFACE.

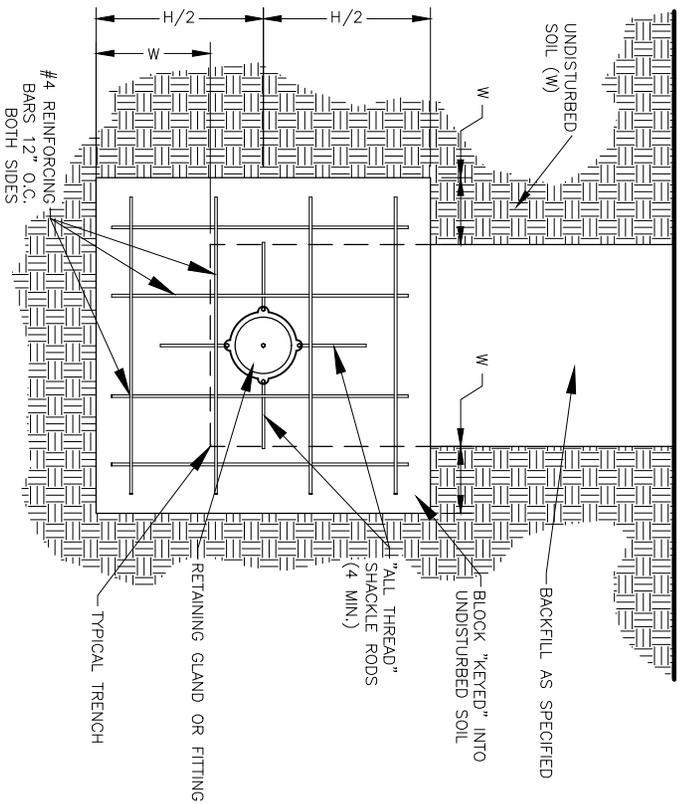
# BUTTERFLY VALVE DETAIL 12 INCH WATER MAINS & LARGER

N.T.S.



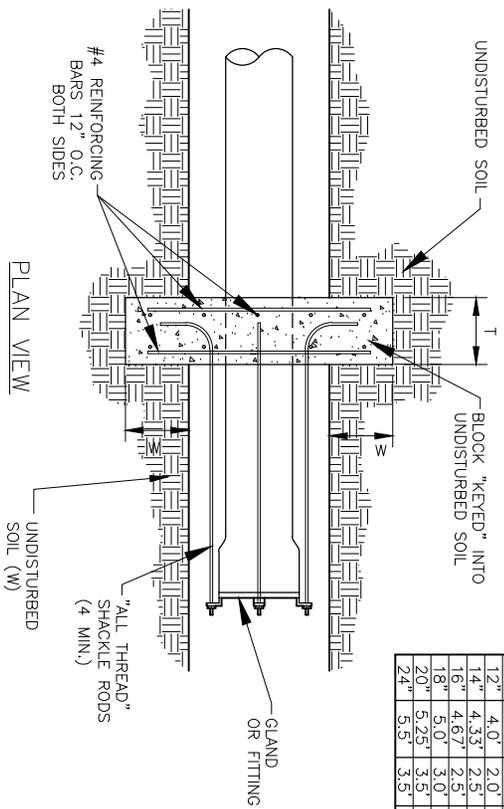
# CHLORINATING ASSEMBLY

N.T.S.



END VIEW

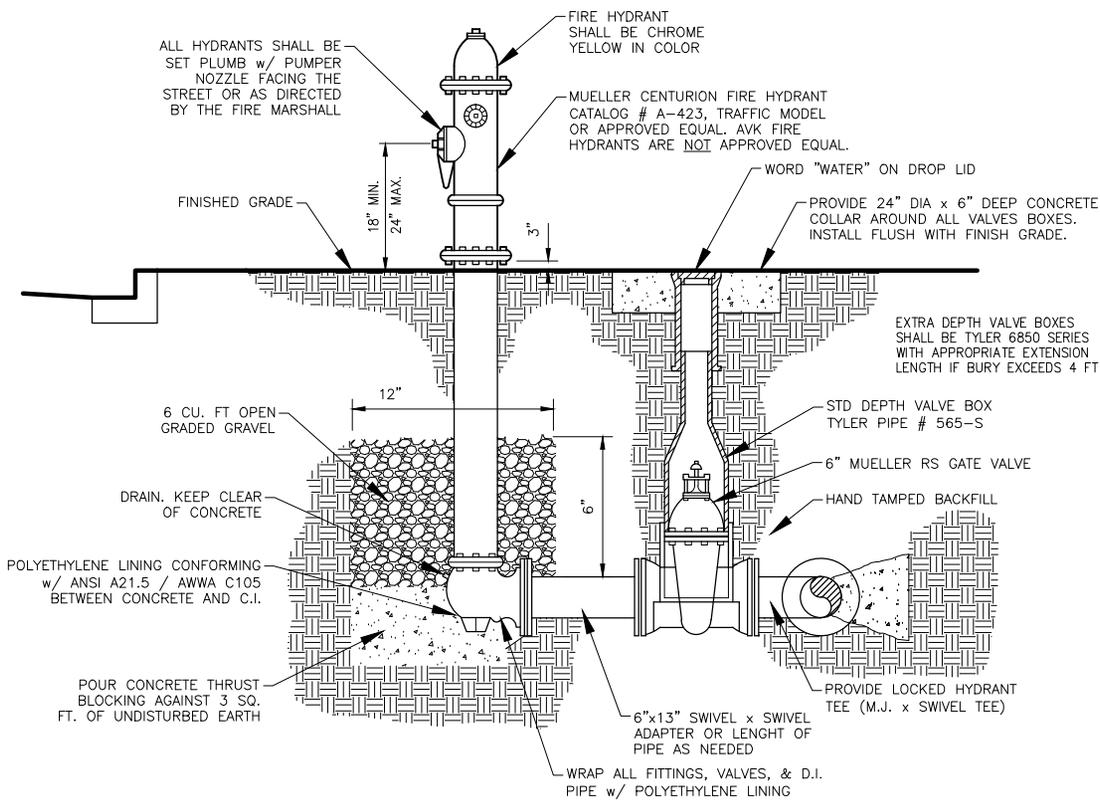
PIPE SIZE	H	W	T
4"	2.0'	1.5'	1.0'
6"	2.0'	1.5'	1.0'
8"	2.5'	1.5'	1.0'
10"	3.25'	2.0'	1.0'
12"	4.0'	2.0'	1.5'
14"	4.53'	2.5'	1.5'
16"	4.67'	2.5'	1.5'
18"	5.0'	3.0'	2.0'
20"	5.25'	3.5'	2.0'
24"	5.5'	3.5'	2.0'



PLAN VIEW

# DEADMAN THRUST BLOCKING

N.T.S.

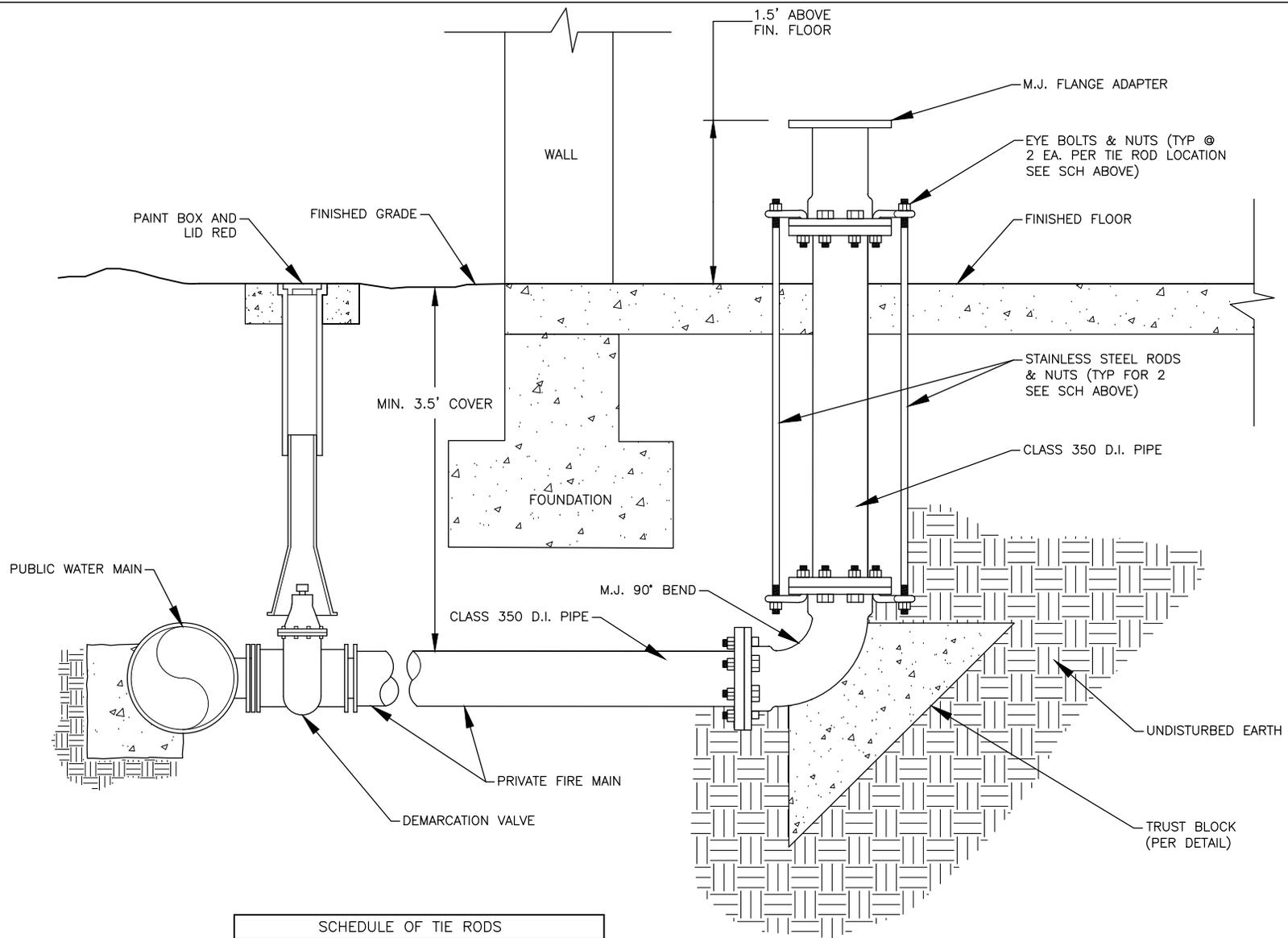


**\*IMPORTANT\***  
 FIRE HYDRANT SHALL BE BAGGED OUT OF SERVICE UNTIL APPROVED FOR SERVICE BY THE CITY'S PUBLIC WORKS DEPT, ENGINEERING DEPT, AND FIRE MARSHALL.

- NOTE:
1. POLYVINYL CHLORIDE PIPE 6"-12" SHALL CONFORM TO AWWA C-900, DR-18 (150 PSI WORKING PRESSURE WITH 35 PSI SURGE ALLOWANCE).
  2. DUCTILE IRON PIPE (6"-36") SHALL CONFORM TO ANSI A 21.51 / AWWA C151 (CLASS 50) PUSH ON JOINT DESIGN.
  3. IRON FITTINGS SHALL BE DUCTILE IRON AND SHALL CONFORM TO ANSI A21.10 / AWWA C110. JOINTS SHALL BE MECHANICAL JOINTS THAT CONFORM TO ANSI 21.11 / AWWA C111. ALL FITTINGS SHALL BE EPOXY COATED.

## FIRE HYDRANT ASSEMBLY

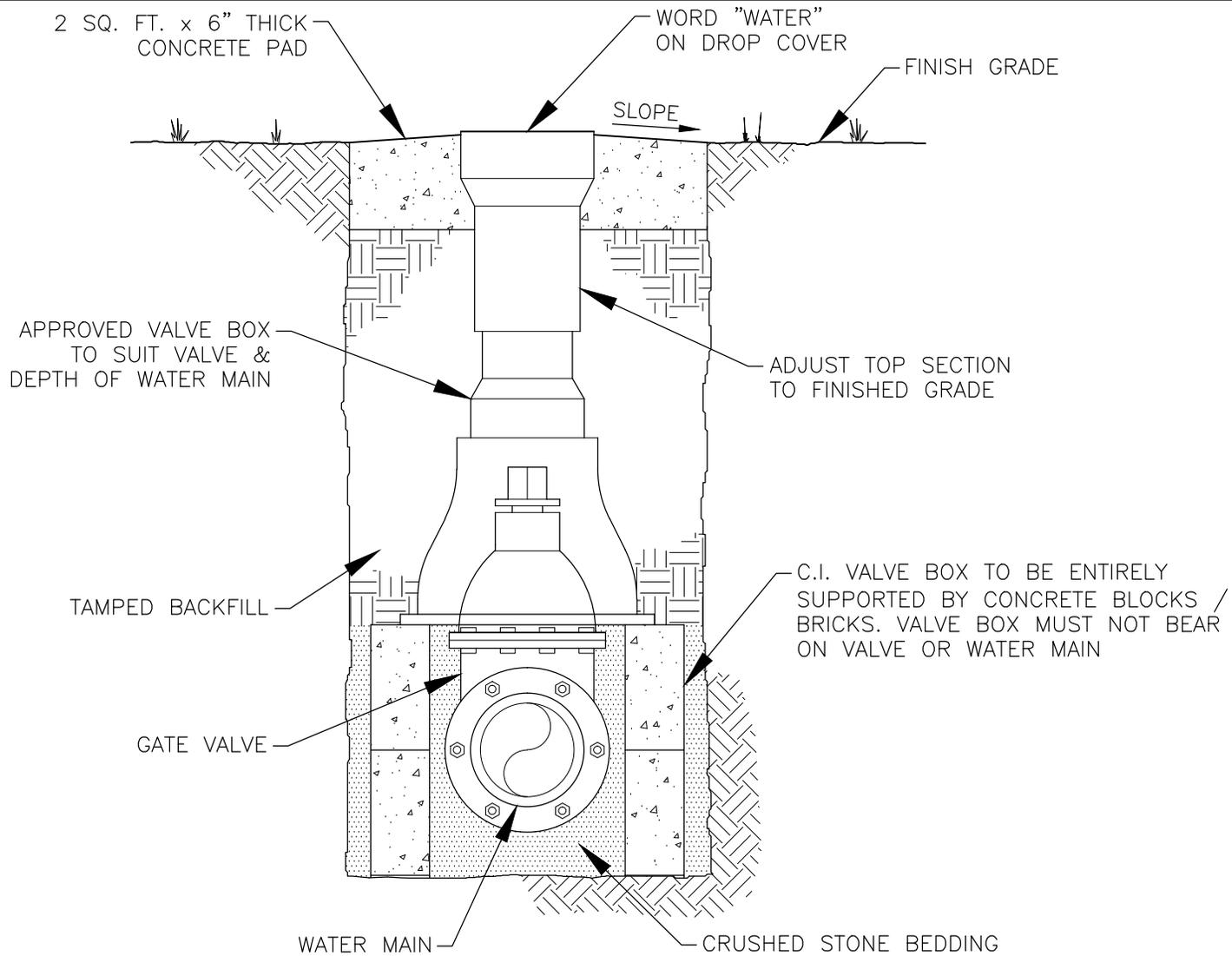
N.T.S.



SCHEDULE OF TIE RODS		
SIZE	NUMBER OF RODS PER FITTING	DIAMETER OF S.S. RODS
4"-8"	2	3/4"
12"	4	3/4"

# FIRE SERVICE RISER LEAD-IN

N.T.S.

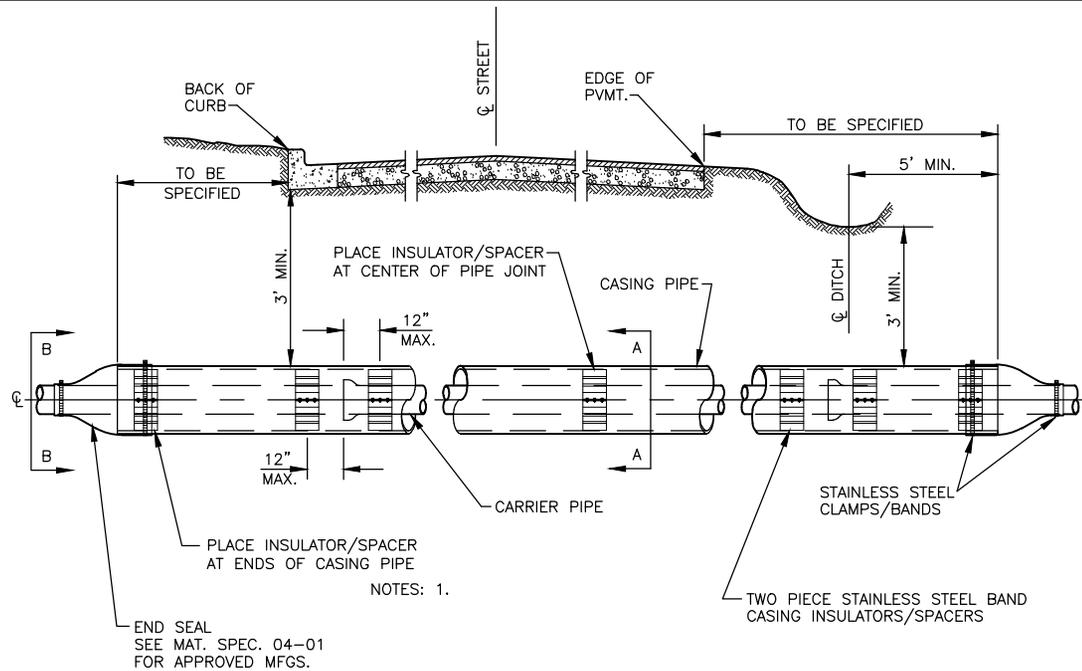


NOTES:

IF DEPTH OF BURY EXCEEDS 4 FT., A SELF-LOCKING VALVE EXTENSION STEM SHALL BE REQUIRED. THE VALVE EXTENSION STEM SHALL EXTEND TO 2 FEET BELOW FINISHED GRADE SURFACE. SEE MAT. SPEC. 02-09 FOR APPROVED MFGS.

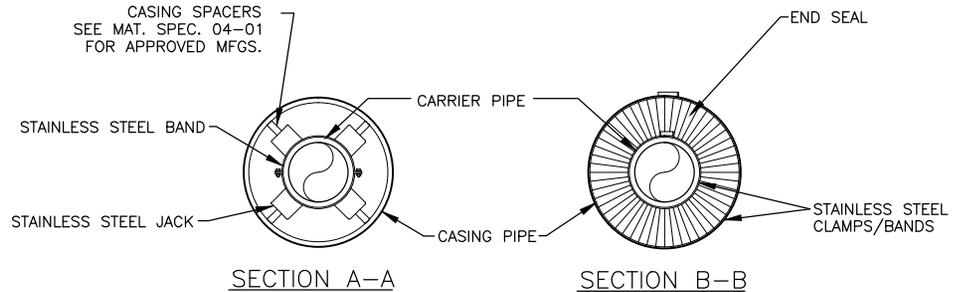
# GATE VALVE

N.T.S.



END SEAL  
SEE MAT. SPEC. 04-01  
FOR APPROVED MFGS.

NOTES: 1.



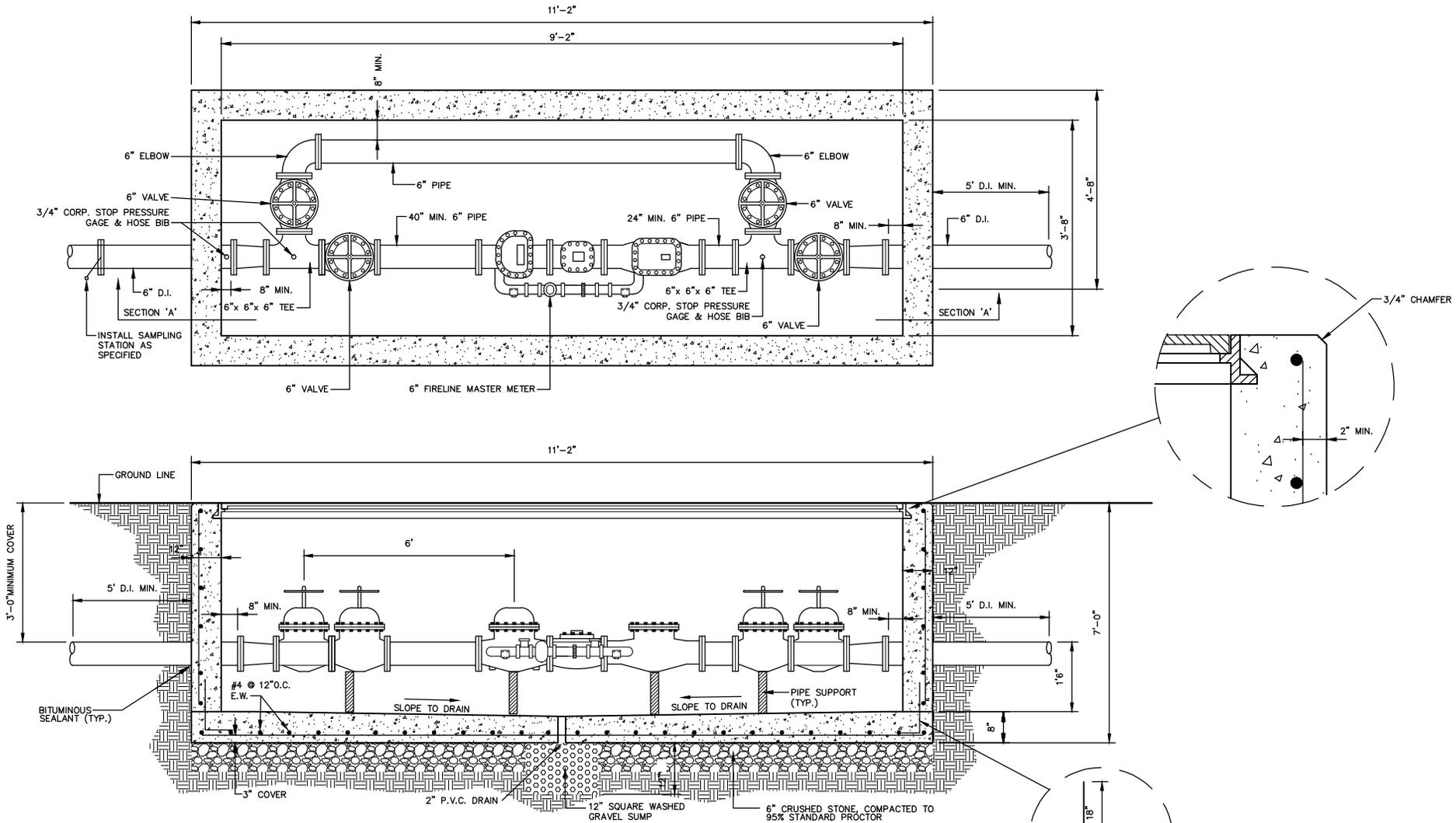
SEE MATERIAL SPECIFICATION 04-02

CARRIER & CASING SIZES						
CARRIER	6"	8"	12"	18"	24"	30"
CASING	16"	16"	24"	30"	36"	48"
CASING/WALL THICKNESS	.250	.250	.375	.500	.500	.625

NOTES:  
1. A MIN. OF THREE SPACERS IS REQUIRED PER JOINT; SPIGOT, MIDDLE & BELL (MAX. OF 2 FT. SEPARATION OF SPACERS AT JOINT). MAX. ALLOWABLE CLEARANCE BETWEEN I.D. OF CASING PIPE & TOP RUNNER OF SPACER IS 1".  
2. ALL D.I. PIPE JOINTS WITHIN CASING SHALL HAVE 'FIELD LOK' GASKET. SEE MAT. SPEC. 02-08 FOR APPROVED MFGS. EACH RESTRAINED JOINT SHALL BE IDENTIFIED BY A MARK ON THE PIPE BELL.

# JACK & BORE UNDER ROADWAY DETAIL

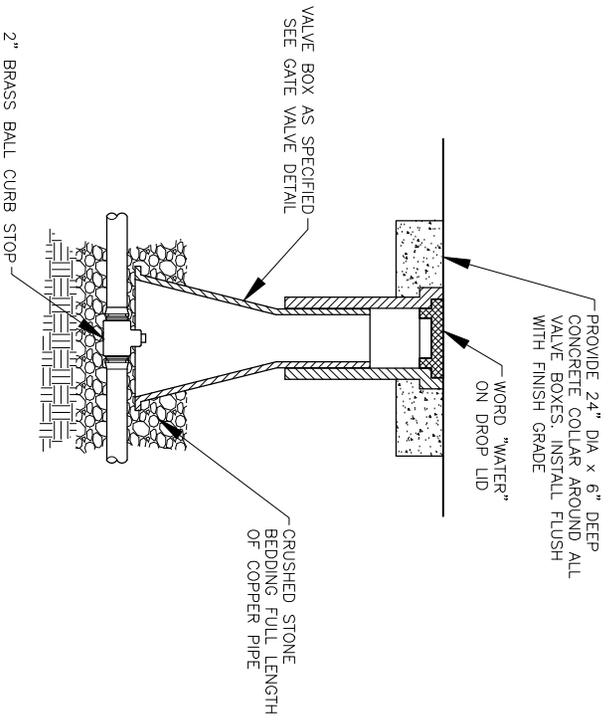
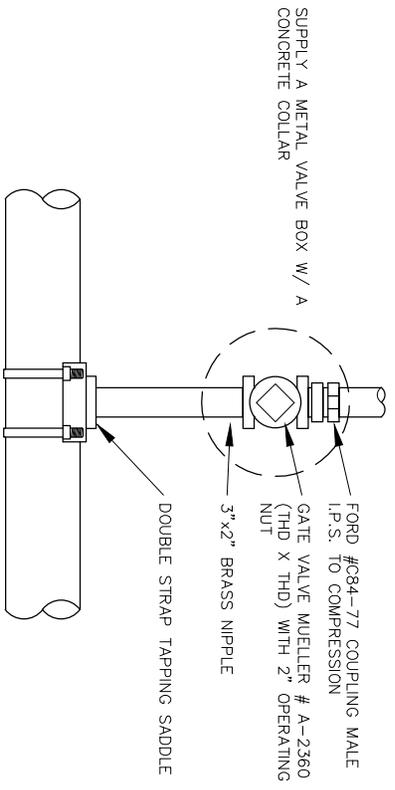
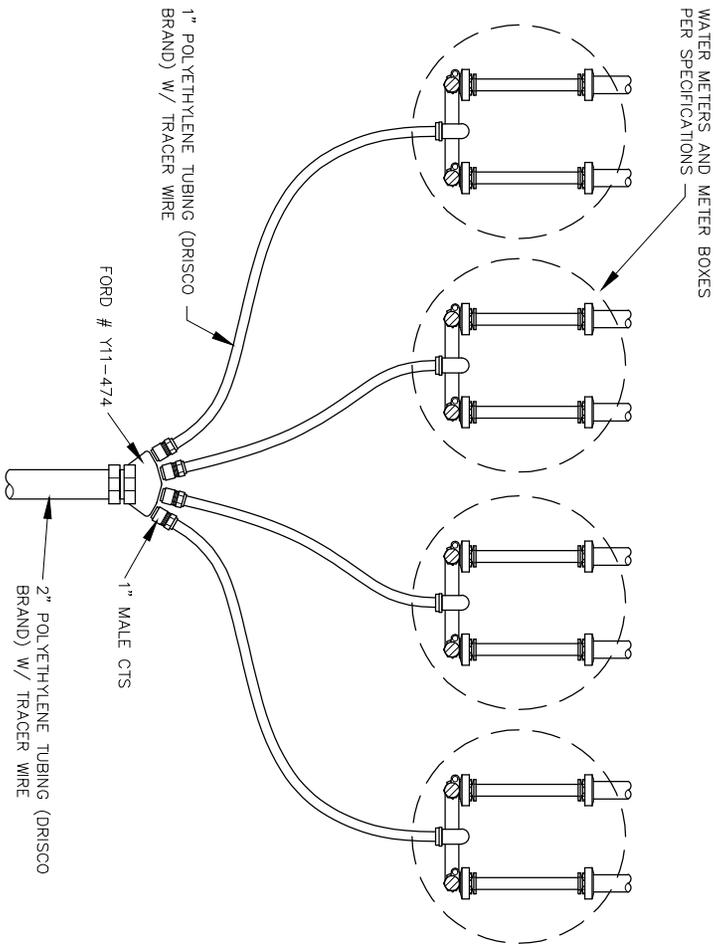
N.T.S.



GENERAL NOTES:  
 1. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER  
 2. ALL REINFORCING BARS TO BE GRADE 60.

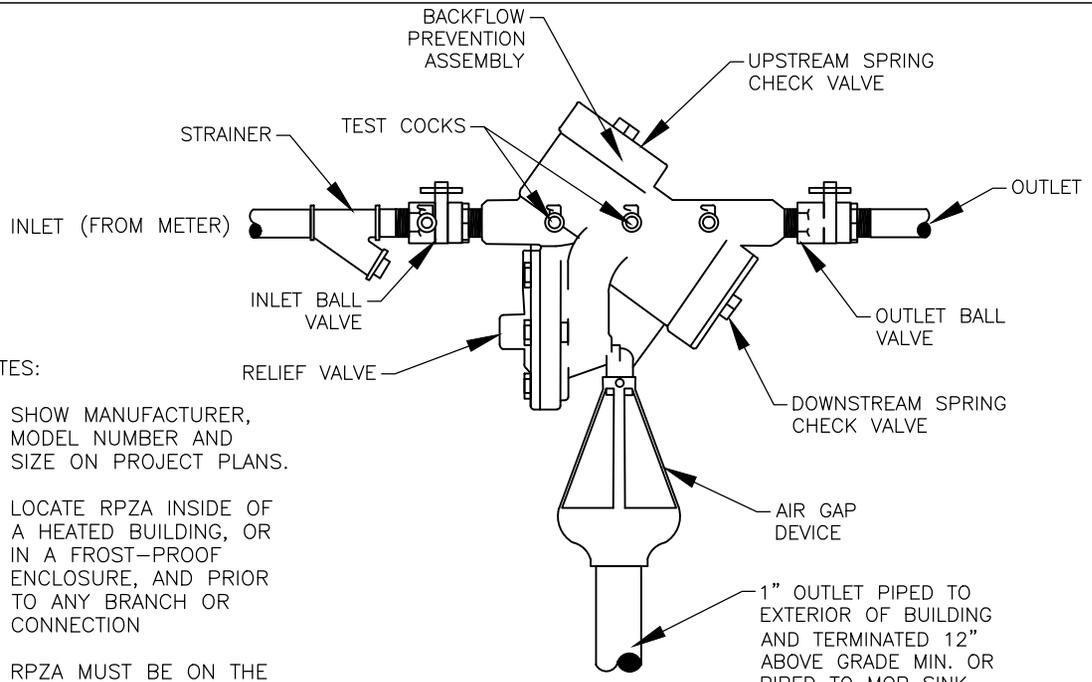
SECTION 'A'

MASTER METER  
 N.T.S.



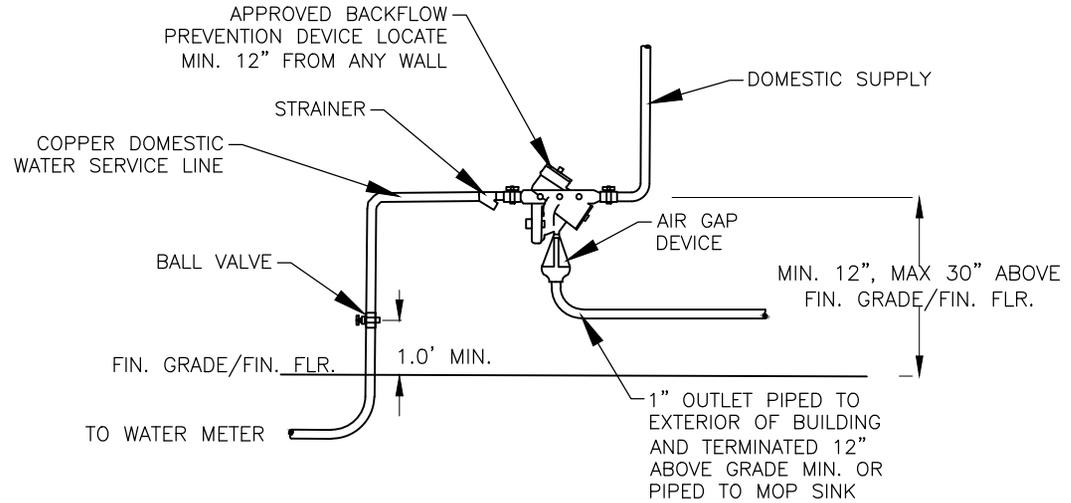
# MULTIPLE METER SET

N.T.S.



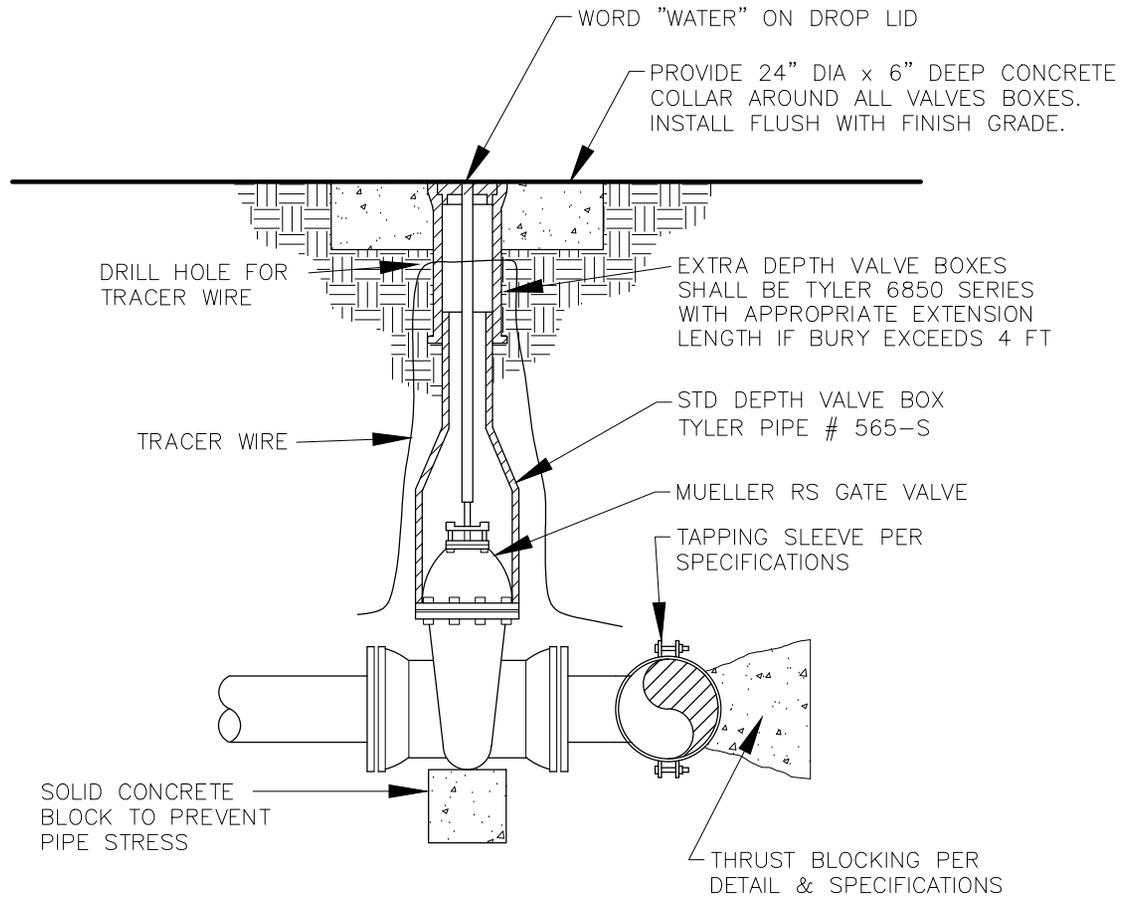
NOTES:

1. SHOW MANUFACTURER, MODEL NUMBER AND SIZE ON PROJECT PLANS.
2. LOCATE RPZA INSIDE OF A HEATED BUILDING, OR IN A FROST-PROOF ENCLOSURE, AND PRIOR TO ANY BRANCH OR CONNECTION
3. RPZA MUST BE ON THE CURRENT LIST APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS CONNECTION CONTROL



**REDUCED PRESSURE ZONE  
ASSEMBLY (RPZA)**

N.T.S.

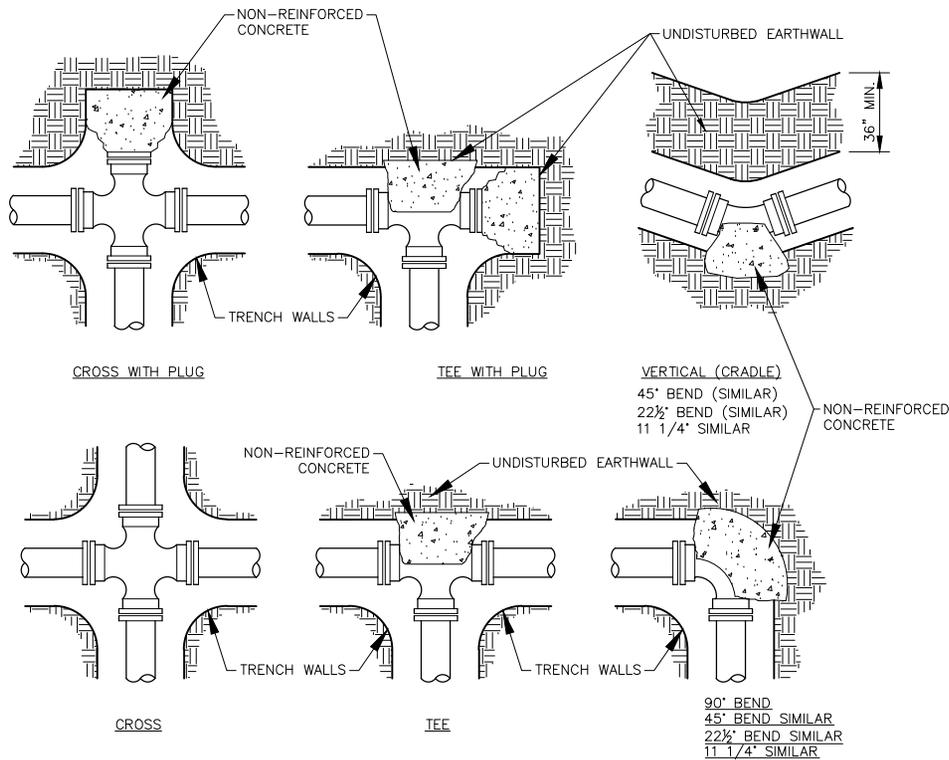


NOTE:

1. INSTALL 24" DIA. ROUND BEVELED PRECAST CONCRETE VALVE PAD OR APPROVED EQUAL FLUSH WITH TOP OF VALVE BOX.
2. TAPPING SLEEVES SHALL BE DESIGNED FOR 200 PSI AND SHALL BE SMITH BLAIR 662 SERIES OR EQUAL.

# TAPPING SLEEVE AND VALVE

N.T.S.



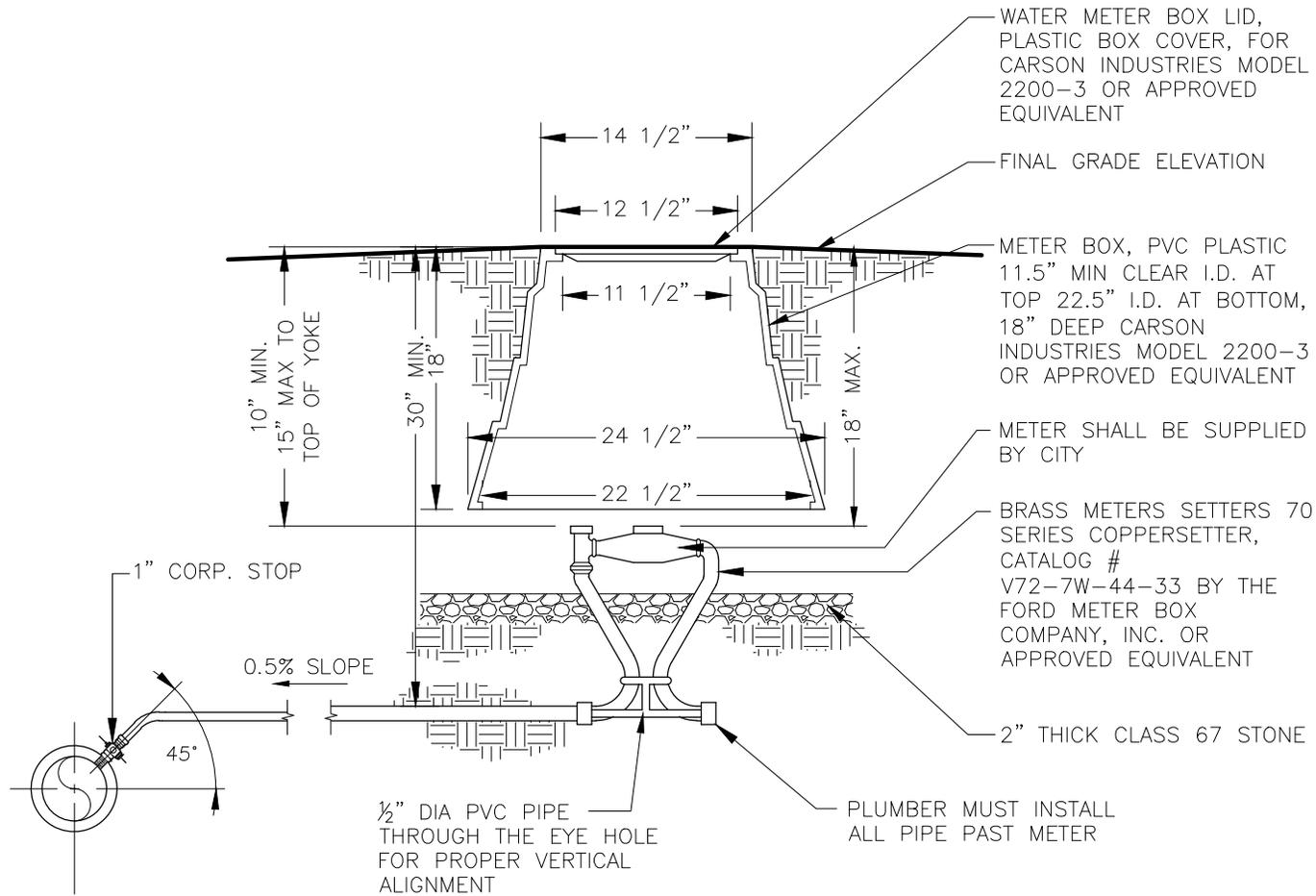
REACTION BACKING TABLE				
SIZE	REQUIRED SQ. FT. OF UNDISTURBED EARTH WALL FOR REACTION BACKING			
	TYPE OF FITTINGS			
	TEE/90° PLUG CAP	45°	22 1/2°	11 1/4°
4"	2	1	1	1
6"	3	2	1	1
8"	5	3	2	1
10"	7	4	2	1
12"	10	6	3	2
14"	14	8	4	2
16"	18	10	5	3
18"	22	12	6	3
20"	27	15	8	4
24"	39	21	11	6

NOTES:

1. ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINTS.
2. DO NOT COVER BELLS OR FLANGES WITH CONCRETE.
3. WRAP ALL FITTINGS WITH POLYETHYLENE.
4. BACK ALL TEES ACCORDING TO SIZE OF BRANCH.
5. BACKING FUTURE LINE EXTENSIONS SHALL BE SUCH THAT LATER REMOVAL IS POSSIBLE.
6. ALL BENDS WHERE FITTINGS ARE USED, BOTH HORIZONTAL OR VERTICAL, SHALL BE BACKED.
7. REACTION BACKING TABLE IS BASED ON 150 PSI AND SOIL BEARING PRESSURE OF 2,500 LB./SQ. FT. ADDITIONAL BACKING MAY BE REQUIRED IN SOME AREAS AS DIRECTED BY THE ENGINEER.

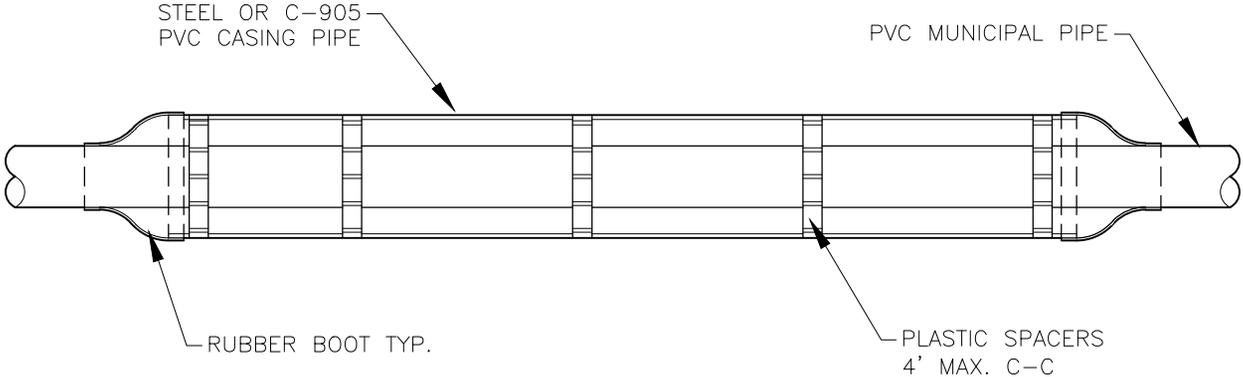
## THRUST BLOCKING

N.T.S.



TYPICAL 3/4" x 5/8"  
 METER CONNECTION  
 AND WATER SERVICE LINE TAP  
 N.T.S.

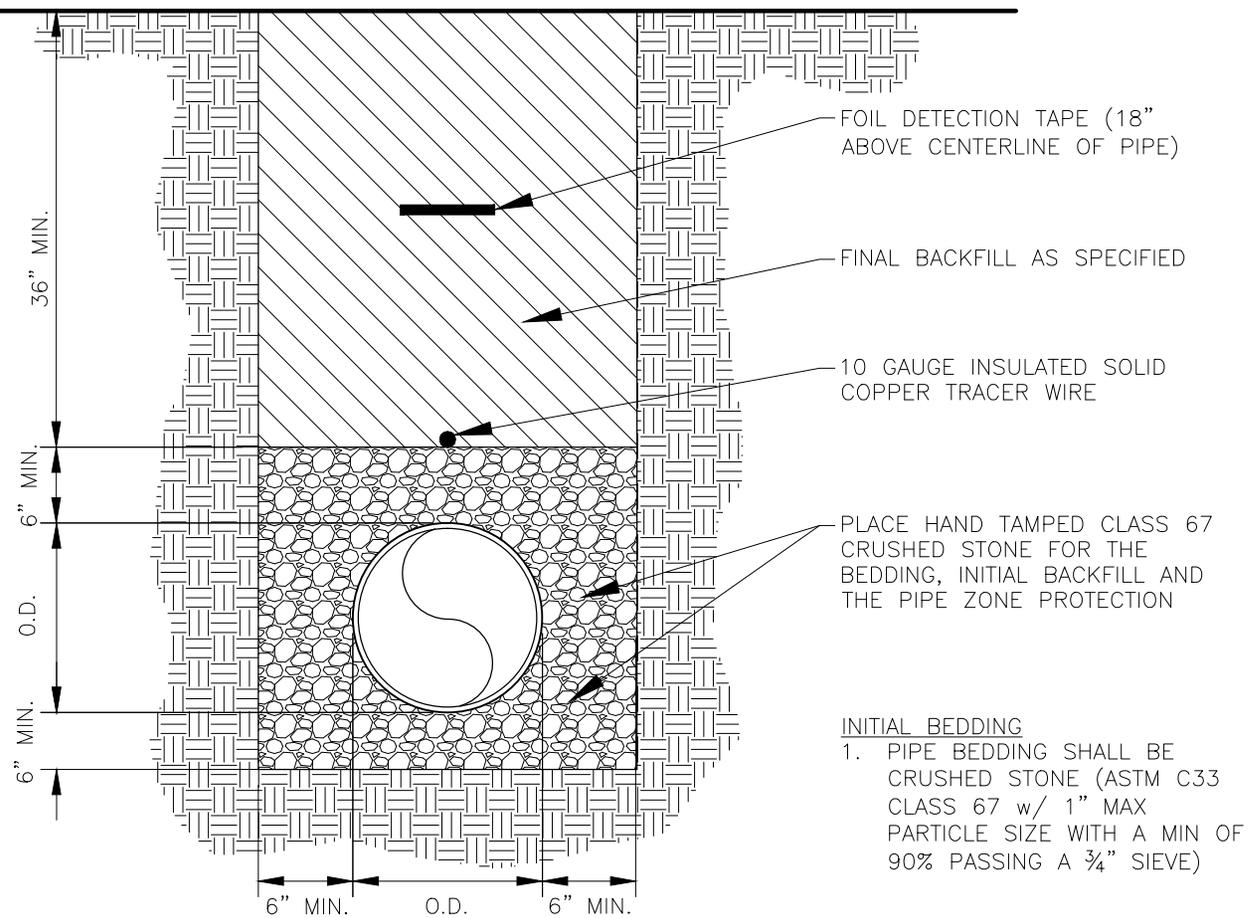
NOTE:  
ALL JOINTS SHALL BE  
MECHANICALLY RESTRAINED



CASING SIZE TABLE	
PIPE	CASING
4"	8"
6"	12"
8"	16"
10"	20"
12"	24"

# TYPICAL PIPE ENCASEMENT

N.T.S.



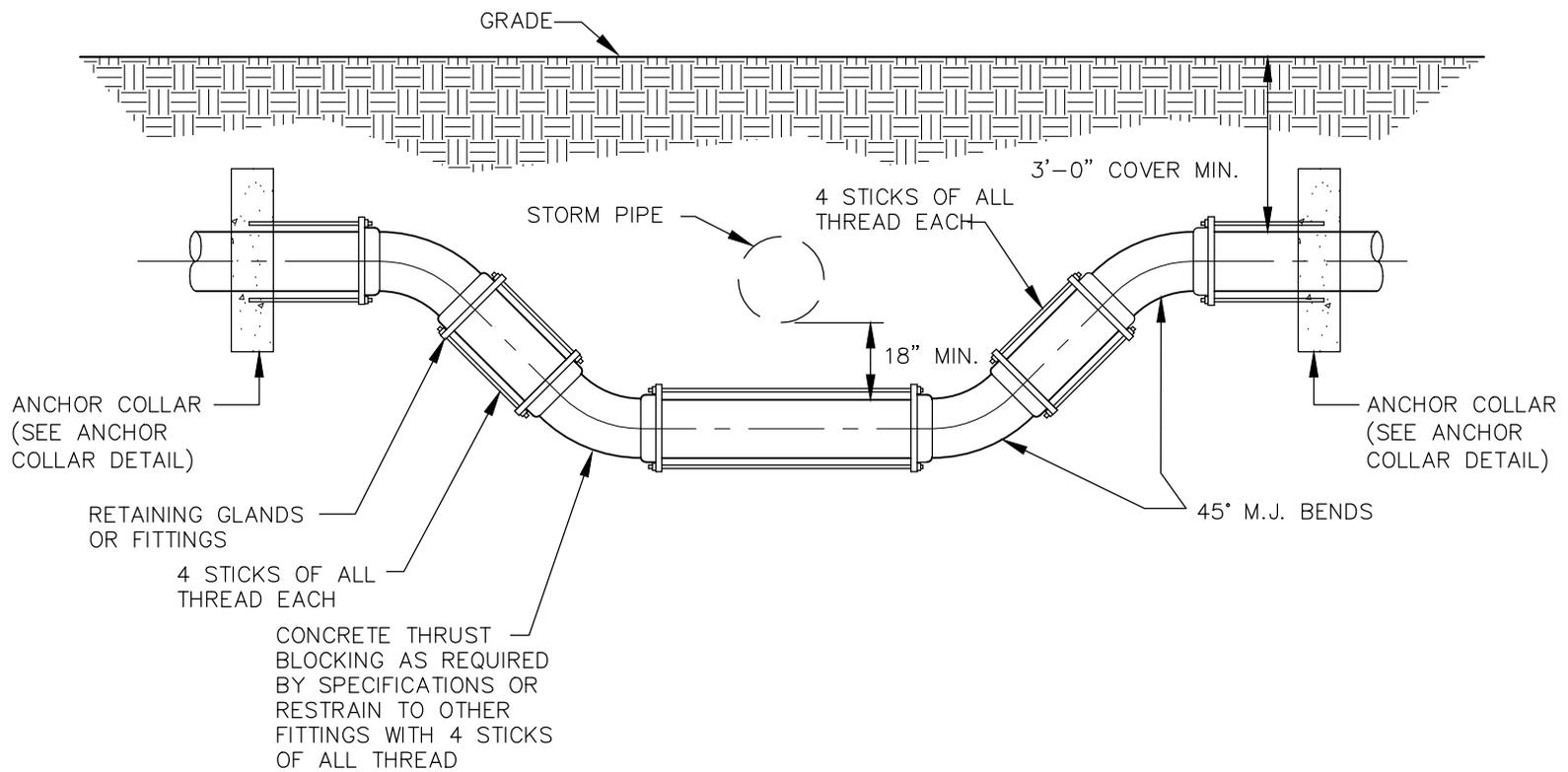
- INITIAL BEDDING
1. PIPE BEDDING SHALL BE CRUSHED STONE (ASTM C33 CLASS 67 w/ 1" MAX PARTICLE SIZE WITH A MIN OF 90% PASSING A 3/4" SIEVE)

FINAL BACKFILL

1. ALL TRENCH BACKFILL SHALL BE COMPACTED TO A MINIMUM DENSITY OF 85% OF THAT OF THE ADJACENT UNDISTURBED SOIL AND SHALL CONSIST OF NO MATERIAL LARGER THAN 8" IN DIAMETER.
2. WHERE TRENCHES ARE UNDER EXISTING OR PROPOSED PAVED AREAS, THE ENTIRE TRENCH ABOVE THE PIPE EMBEDMENT, UP TO A POINT 2' BELOW EXISTING OR PROPOSED SUBGRADE, SHALL BE BACKFILLED WITH AHTD CLASS 7 BASE AND BE COMPACTED TO 90% MODIFIED PROCTOR DENSITY. THE REMAINING 2' SHALL BE BACKFILLED WITH AHTD CLASS 7 BASE IN 6" LIFTS AND COMPACTED TO 95% MODIFIED PROCTOR DENSITY.
3. WHERE TRENCHES ARE UNDER EXISTING OR PROPOSED PUBLIC STREETS OF THE CITY, THE ENTIRE TRENCH ABOVE THE EMBEDMENT SHALL BE BACKFILLED UP TO SUBGRADE WITH AHTD CLASS 7 BASE PLACED IN 4-6" LIFTS AND COMPACTED TO 95% MODIFIED PROCTOR DENSITY.

# TYPICAL PVC PRESSURE PIPE TRENCH

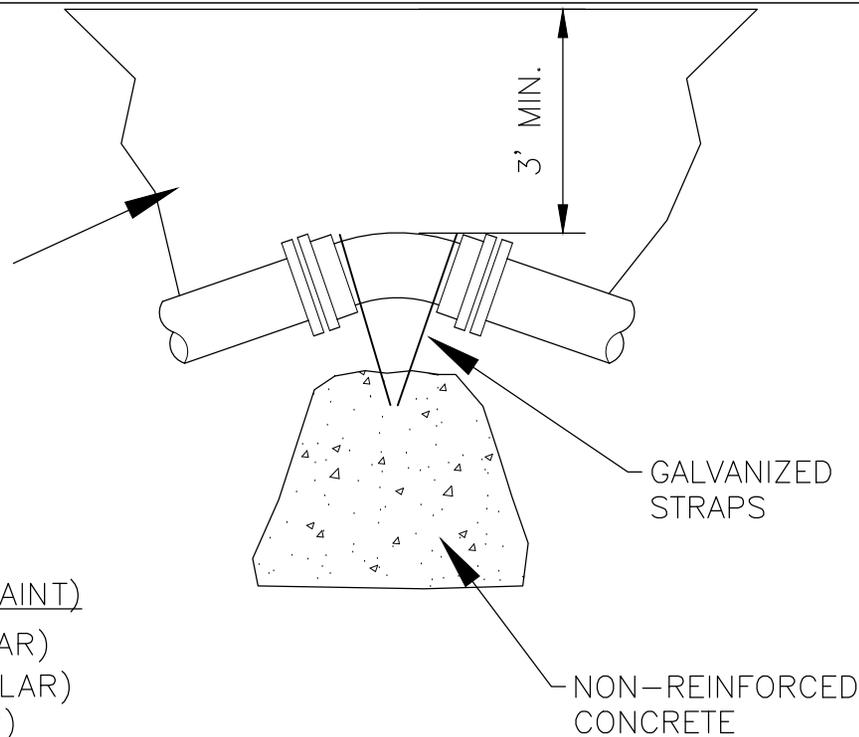
N.T.S.



# UTILITY CROSSING WATER MAIN LOWERING

N.T.S.

BACKFILL PER ENGINEERING SPECIFICATIONS



VERTICAL (RESTRAINT)

45° BEND (SIMILAR)

22½° BEND (SIMILAR)

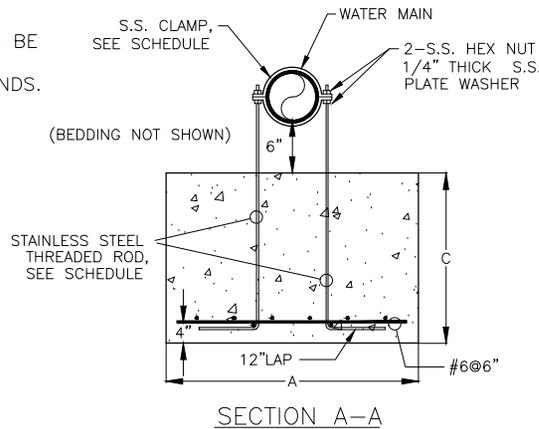
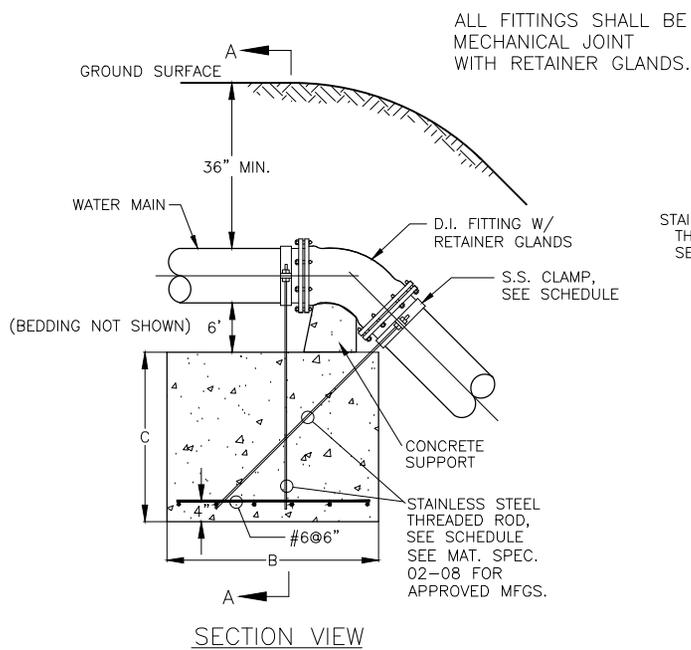
11 1/4° (SIMILAR)

NOTES:

1. ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINTS.
2. DO NOT COVER BELLS OR FLANGES WITH CONCRETE.
3. WRAP ALL FITTINGS WITH POLYETHYLENE.
4. BACKING FUTURE LINE EXTENSIONS SHALL BE SUCH THAT LATER REMOVAL IS POSSIBLE.
5. REACTION BACKING TABLE IS BASED ON 150 PSI AND SOIL BEARING PRESSURE OF 2,500 LB./SQ. FT. ADDITIONAL BACKING MAY BE REQUIRED IN SOME AREAS AS DIRECTED BY THE ENGINEER.

VERTICAL PIPE  
RESTRAINT

N.T.S.



- NOTES:
1. ALL FITTINGS SHALL BE MECHANICAL JOINT 1. WITH RETAINER GLANDS.
  2. DO NOT COVER BELLS OR FLANGES WITH CONCRETE. WRAP ALL FITTINGS WITH VISQUEEN.
  3. GULF STATE HANGER'S 2-BOLT S.S. PIPE CLAMP.
  4. MEDIUM-FIG. 80 OR APPROVED EQUAL.

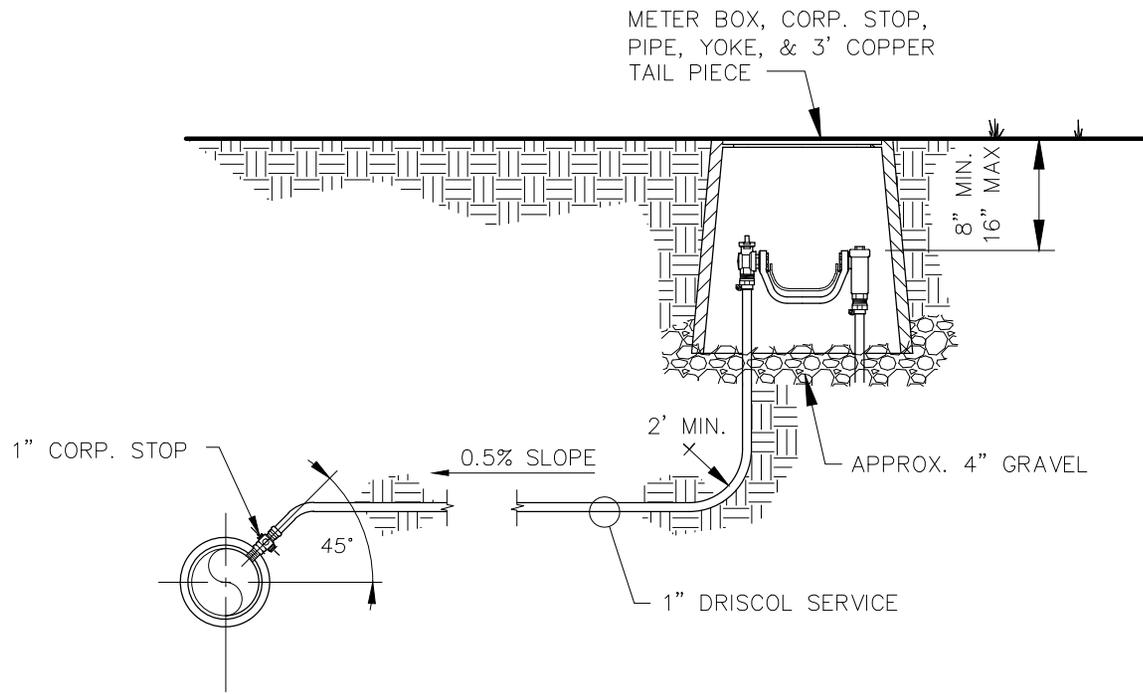
		BLOCKING SCHEDULE			
PIPE SIZE*	BENDS	BENDS			ROD DIA.
		45'	22 1/2'	11 1/4'	
6"	VOLUME REQ'D (CU.FT.)	25	12	6	3/4 IN.
	A (FT.)	3.0	3	3	
	B (FT.)	2.5	2.0	1.5	
	C (FT.)	3.0	3.0	1.5	
	CLAMP (2 EA.)	3/8 IN. X 1 1/4 IN.			
8"	VOLUME REQ'D (CU.FT.)	42.9	21.9	11.0	3/4 IN.
	A (FT.)	4.0	4.0	4.0	
	B (FT.)	2.75	2.0	1.5	
	C (FT.)	4.0	3.0	2.0	
	CLAMP (2 EA.)	3/8 IN. X 1 1/4 IN.			
12"	VOLUME REQ'D (CU.FT.)	94.1	48.0	24.1	7/8 IN.
	A (FT.)	5.0	5.0	5.0	
	B (FT.)	4.75	2.4	1.6	
	C (FT.)	4.0	4.0	3.0	
	CLAMP (2 EA.)	1/2 IN. X 2 IN.			
18"	VOLUME REQ'D (CU.FT.)	210	107	54	1 IN.
	A (FT.)	6.0	6.0	6.0	
	B (FT.)	4.5	3.6	2.25	
	C (FT.)	8.0	5.0	4.0	
	CLAMP (2 EA.)	5/8 IN. X 2 1/2 IN.			
24"	VOLUME REQ'D (CU.FT.)	374	191	96	1 1/4 IN.
	A (FT.)	6.0	6.0	6.0	
	B (FT.)	7.8	4.6	3.2	
	C (FT.)	8.0	7.0	5.0	
	CLAMP (2 EA.)	5/8 IN. X 3 IN.			

VOLUME CALCULATED ON THE BASIS OF CONCRETE REACTING THRUST ON THE RESPECTIVE BENDS UNDER AN INTERNAL PRESSURE OF 150 PSI AND THE WEIGHT OF CONCRETE IS 150 POUNDS PER CU. FT.

\*CONSULT CITY ENGINEER FOR OTHER PIPE SIZES

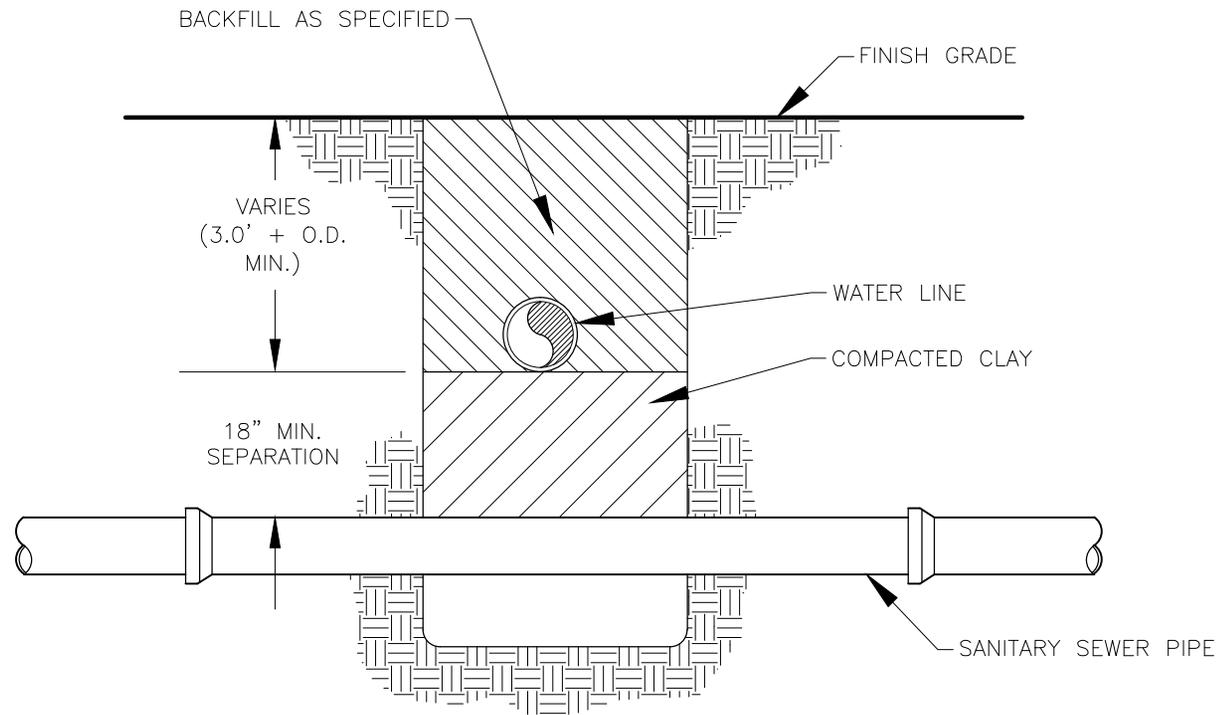
## VERTICAL PIPE RESTRAINT

N.T.S.



# WATER SERVICE LINE TAP

N.T.S.



NOTE:

1. IF THE WATERLINE IS ABOVE THE SEWERLINE AND HAS 18" OF SEPARATION USE DETAIL ABOVE
2. IF THE WATERLINE IS ABOVE THE SEWERLINE AND IT IS NOT POSSIBLE TO MAINTAIN 18" OF CLEARANCE BETWEEN THE WATERLINE AND THE SEWERLINE, THE SEWERLINE SHALL BE ENCASED A MINIMUM OF 10', HORIZONTALLY, PERPENDICULAR TO THE WATERLINE IN BOTH DIRECTIONS PER THE ENCASEMENT DETAIL.
3. IF THE WATERLINE IS BELOW THE SEWERLINE, THERE SHALL BE 18" OF CLEARANCE AND THE SEWERLINE SHALL BE ENCASED AS DESCRIBED ABOVE.

## WATER & SEWER CROSSING

N.T.S.