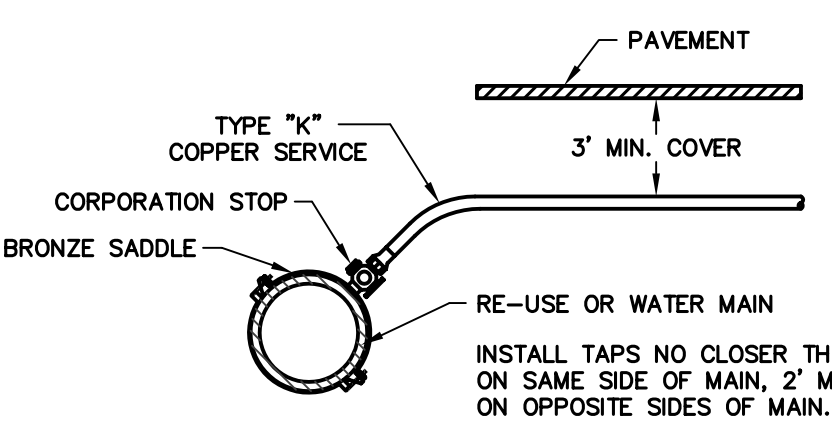


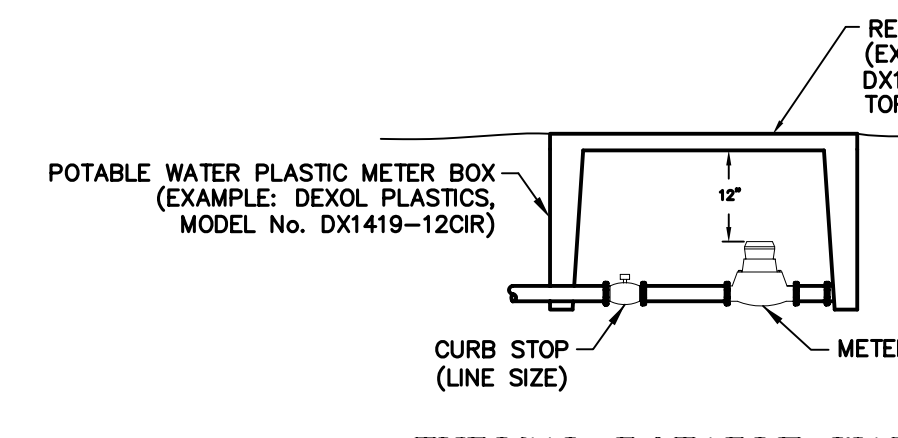
**VERTICAL CLEARANCE**  
**HORIZONTAL CLEARANCE**

\*AT UTILITY CROSSINGS, ONE FULL LENGTH TO WATER MAIN PIPE SHALL BE CENTERED AT THE CROSSING.  
 \*\*PREFERRED LOCATION OF WATER MAIN IS ABOVE SANITARY HAZARD.

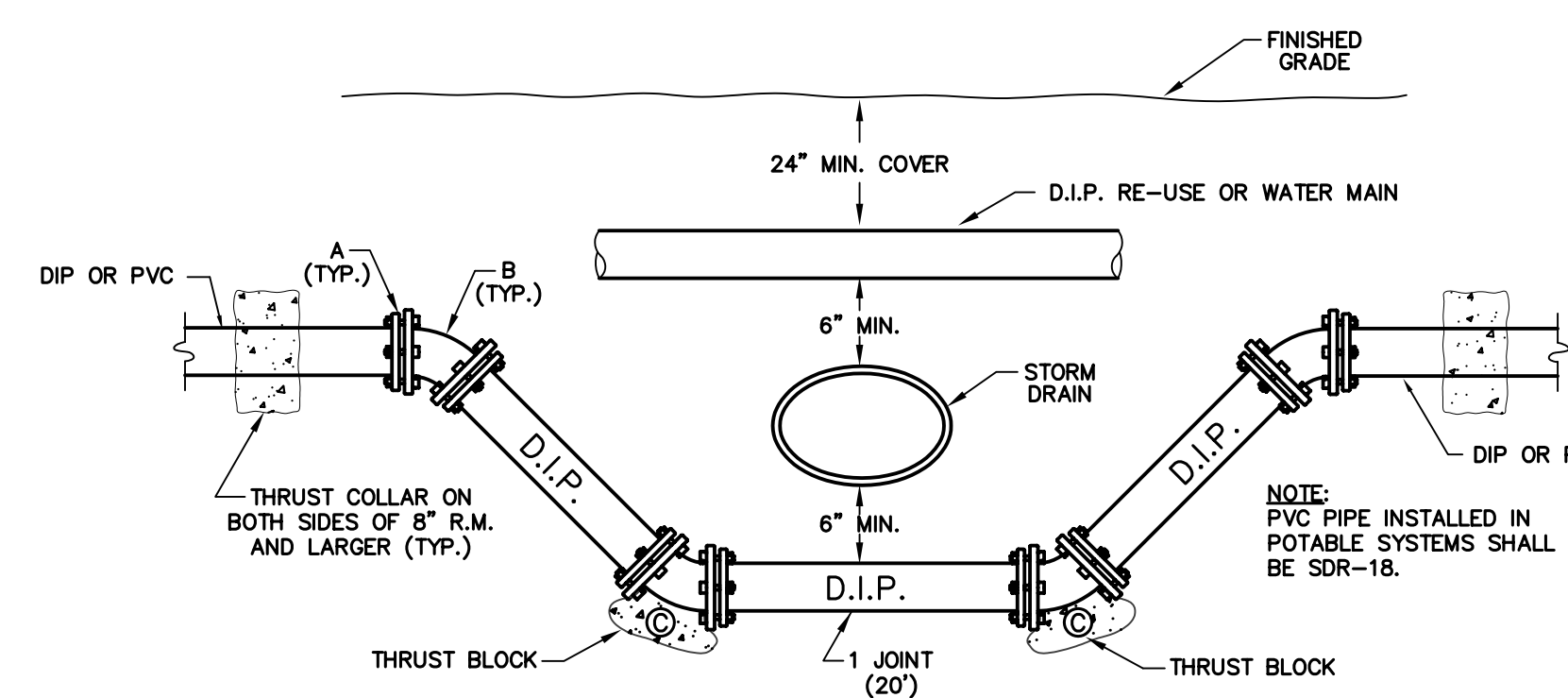
**TYPICAL REQUIRED SEPARATION FROM SANITARY HAZARDS**



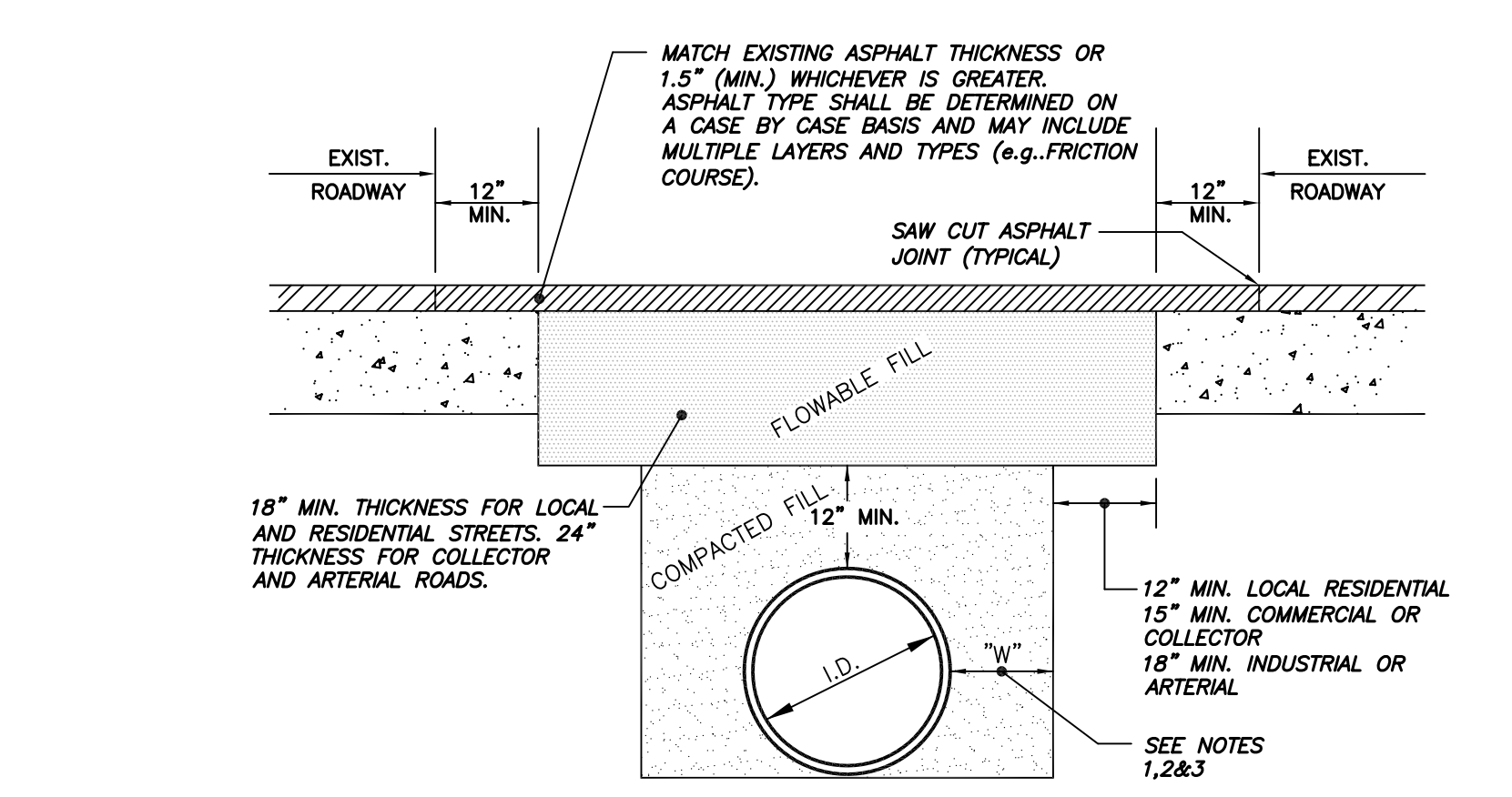
**TYPICAL SERVICE LINE**



**TYPICAL POTABLE WATER WATER SERVICE CONNECTION**

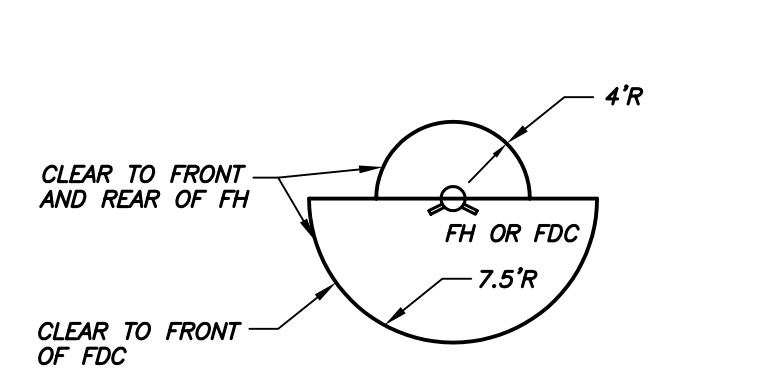


**STORM DRAIN CROSSING**

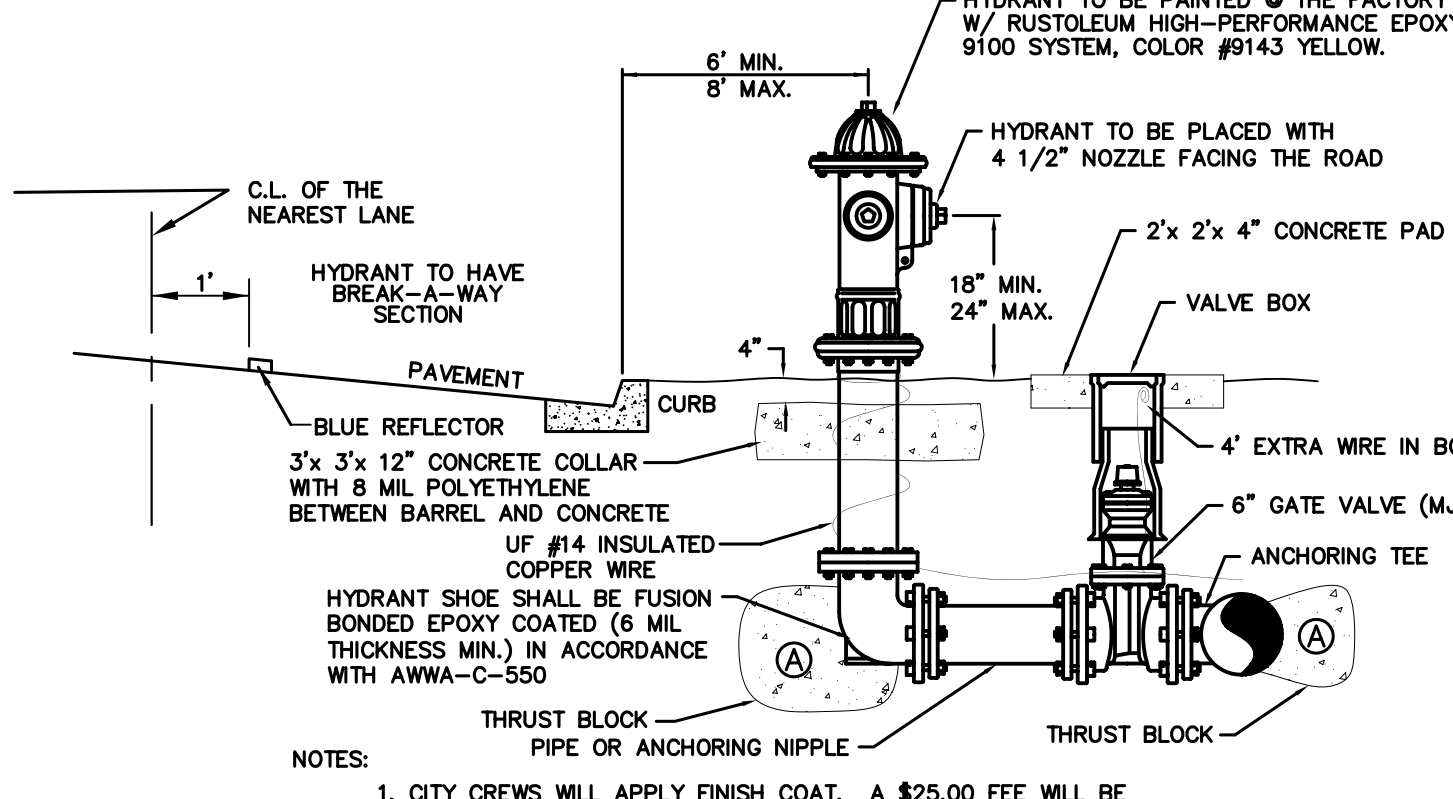


- NOTES:**
- "W" SHALL BE A MINIMUM OF 6" WIDE AND OF SUFFICIENT WIDTH TO ACCOMMODATE NECESSARY COMPACTION EFFORTS. IN THE EVENT THE REQUIRED MINIMUM DENSITY IS NOT ACHIEVED, LOOSE MATERIAL SHALL BE REMOVED, REPLACED AND COMPACTION TO THE REQUIRED DENSITY, OR REPLACED WITH FULL DEPTH FLOWABLE FILL. DENSITY TESTS BELOW THE SPRING LINE OF THE PIPE ARE REQUIRED IN ADDITION TO OTHER TESTING REQUIREMENTS (IN THE EVENT FULL DEPTH FLOWABLE FILL IS USED AS BACKFILL, DENSITY REQUIREMENTS ARE WAIVED).
  - MINIMUM ALLOWABLE BACKFILL DENSITY SHALL BE 100% OF THE MAXIMUM DENSITY AT OPTIMUM MOISTURE PER AASHTO T-99.
  - FLOWABLE FILL SHALL COMPLY WITH FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 121, 2000 EDITION.
  - THESE ARE MINIMUM REQUIREMENTS. ADDITIONAL RESTRICTIONS MAY BE NECESSARY ON A CASE BY CASE BASIS, AS APPROVED BY THE ROADWAY AUTHORITY.
  - CONTRACTOR SHALL EXCAVATE BOTTOM OF TRENCH TO ALLOW FOR BELL SECTION OF PIPE.

**OPEN CUT DETAIL (BREVARD COUNTY R/W)**



**AREA CLEAR OF LANDSCAPING**



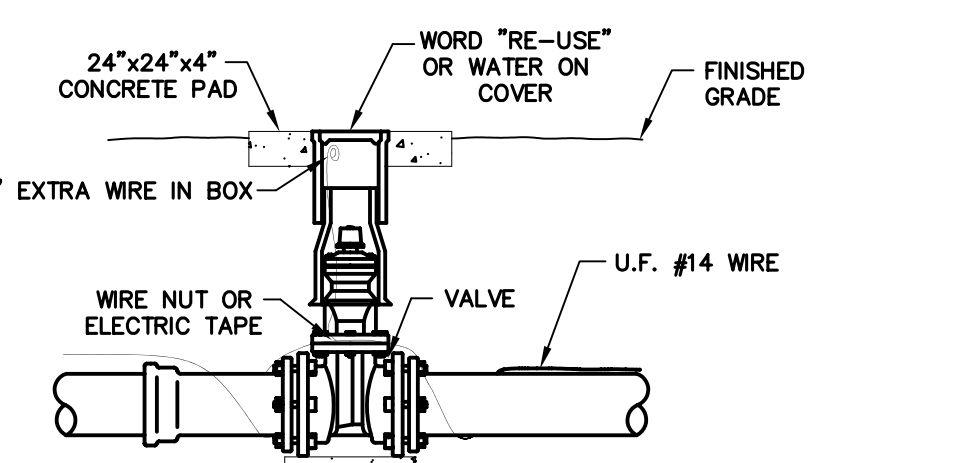
**FIRE HYDRANT DETAIL**

- NOTES:**
- CITY CREWS WILL APPLY FINISH COAT. A \$25.00 FEE WILL BE CHARGED PER HYDRANT, PAYABLE PRIOR TO FINAL INSPECTION.
  - HYDRANT RISERS WILL NOT BE PERMITTED.
  - INSTALL BLUE REFLECTOR 1' OFF OF STREET, OPPOSITE AND FACING THE HYDRANT.

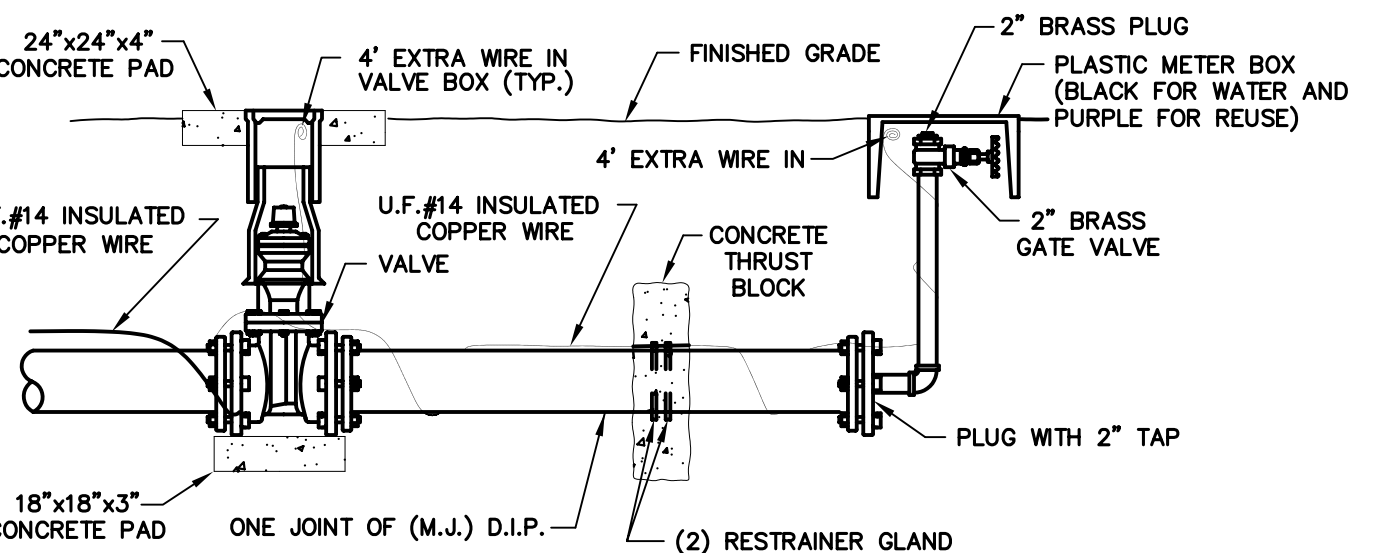
- THRUST BLOCK NOTES**
- WRAP ALL FITTINGS WITH POLYETHYLENE FILM BEFORE POURING THRUST BLOCK, MAKING CERTAIN TO KEEP CONCRETE AWAY FROM ALL BOLTS, GLANDS, AND FLANGES.
  - THRUST BLOCKS TO BE POURED AGAINST UNDISTURBED EARTH.
  - REQUIRED VOLUMES OF BEARING AREAS TO BE AS SHOWN IN CHART. ADJUSTMENTS, IF NEEDED, WILL BE ALLOWED TO CONFORM TO TEST PRESSURE AND ALLOWABLE SOIL BEARING STRESS AS SHOWN IN SPECIFICATIONS.
  - BEARING AREA FOR TRANSIT BLOCKS ON HORIZONTAL BENDS IS BASED ON A TEST PRESSURE OF 150 P.S.I. AND SOIL BEARING STRESS OF 2,000 P.S.F. THE DEPTH TO THE THRUST BLOCK BASE TO BE EQUAL TO OR GREATER THAN TWICE THE HEIGHT. (EXAMPLE: IF BLOCK IS 2" THICK, THE BASE IS TO BE NO GREATER THAN 4" BELOW GRADE.)
  - VERTICAL BEND THRUST BLOCKS TO BE THE SAME AS HORIZONTAL BENDS.
  - BEARING AREA OF THRUST BLOCK TO BE NOT LESS THAN ONE SQUARE FOOT.

**MINIMUM BEARING AREA (SQ. FT.)**

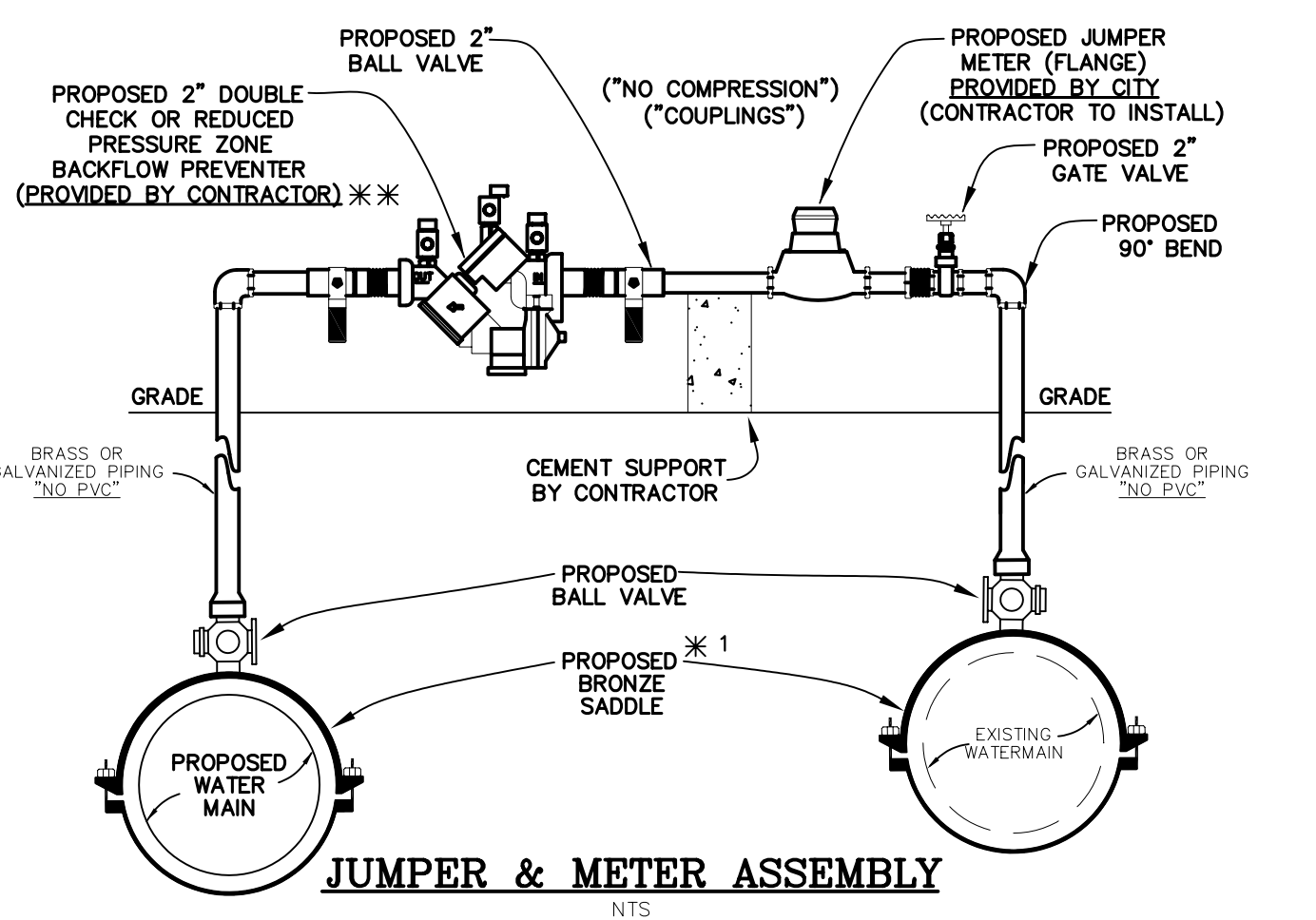
LETTER	4"	6"	8"	10"	12"	16"	20"
A	1-1/2	2-3/4	5	7-1/4	10-1/4	18	27-1/2
B(22-1/2)	3/4	1	2	3	4	7	11
B(45)	1	2-1/4	3-3/4	5-1/2	8	13-3/4	21
C	2	4	7	11-1/4	14-1/2	25-1/4	39



**BUTTERFLY OR GATE VALVE AND VALVE BOX DETAIL**

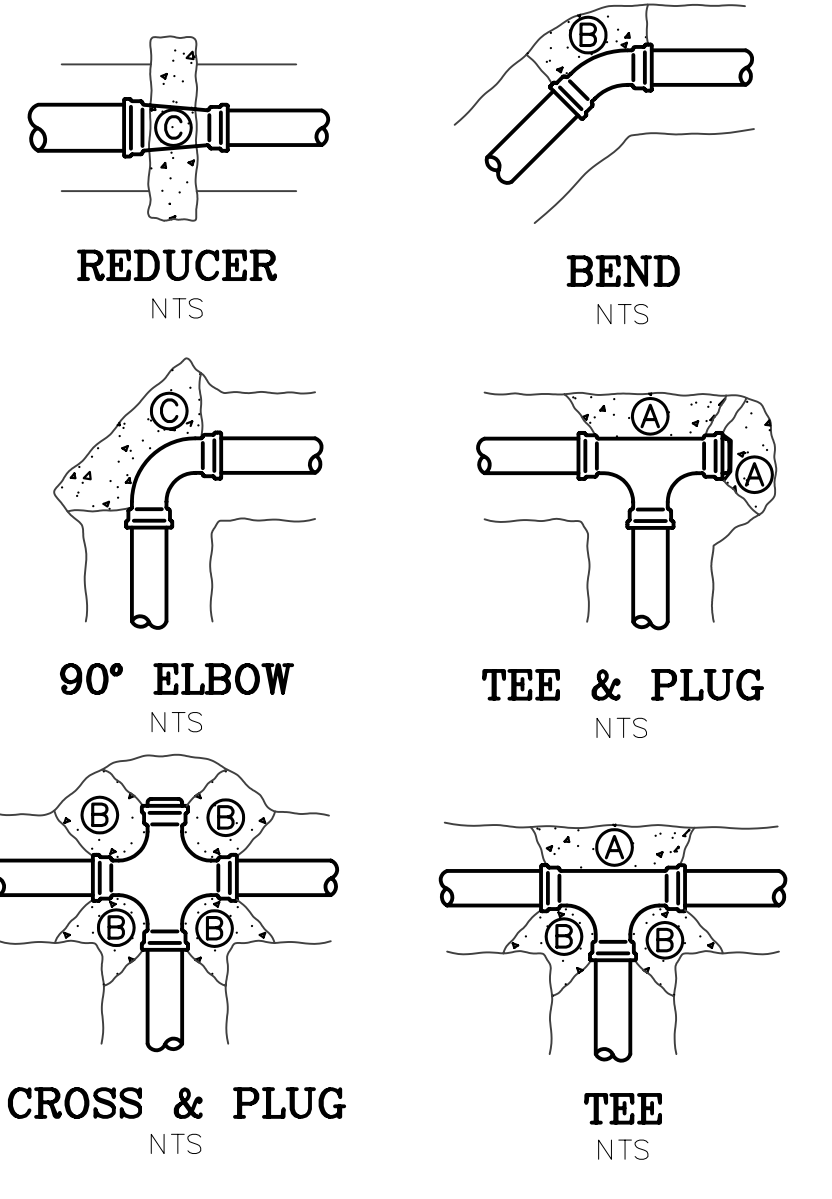


**2" TEMPORARY BLOW-OFF DETAIL**



**JUMPER & METER ASSEMBLY**

- NOTES:**
- \*\* BACKFLOW PREVENTER TO BE TESTED AFTER INSTALLATION. CONTRACTOR TO PROVIDE TEST RESULTS TO INSPECTORS.
  - \* INLET: AWWA TAPER ("CC")
  - \* 1 THREAD OUTLET: F.I.P. THREAD



**MINIMUM LENGTH (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S)**

FITTINGS	PIPE SIZE							
	6"	8"	10"	12"	16"	20"	24"	36"
90 BEND	44(51)	57(66)	68(78)	78(92)	99(116)	118(137)	137(158)	161(185)
45 BEND	18(21)	24(29)	29(33)	33(38)	42(48)	50(57)	57(66)	66(77)
22.5 BEND	9(11)	12(14)	14(17)	17(18)	21(24)	24(29)	27(32)	33(38)
11.25 BEND	5(6)	6(8)	8(9)	9(9)	11(12)	12(14)	14(17)	18(21)
BRANCH OF TEE	42(50)	69(99)	92(131)	116(165)	161(230)	204(291)	245(348)	300(428)
DEAD END	92(131)	120(171)	143(204)	168(239)	213(305)	257(366)	299(425)	354(507)

- NOTES:**
- ALL FITTINGS SHALL BE RESTRAINED JOINT TYPE UNLESS OTHERWISE INDICATED.
  - INSTALL FULL LENGTH JOINTS WITH TOTAL LENGTH EQUAL TO, OR GREATER THAN THE LENGTH SHOWN IN THE TABLE.
  - WHERE TWO OR MORE FITTINGS ARE TOGETHER, USE FITTING WHICH YIELDS. GREATEST LENGTH OF RESTRAINED PIPE.
  - IN-LINE VALVES OUTSIDE THE LIMITS OF RESTRAINED JOINTS FROM OTHER FITTINGS. NEED NOT BE RESTRAINED UNLESS OTHERWISE INDICATED.
  - LENGTH OF RESTRAINED JOINT PIPING FOR REDUCERS, REDUCING TEES, AND VERTICAL POSITION FITTINGS SHALL BE DESIGNED ON AN INDIVIDUAL BASIS, WITH DESIGN CALCULATIONS FOR EACH BEING SUBMITTED FOR REVIEW.
  - LENGTHS SHOWN IN THE TABLE HAVE BEEN CALCULATED IN ACCORDANCE WITH THE PROCEDURE OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AS PUBLISHED BY DIPRA, WITH THE FOLLOWING ASSUMPTIONS:  
 WORKING PRESSURE: 70 P.S.I.  
 DESIGN PRESSURE: 150 P.S.I.  
 SOIL DESIGNATION: SAND-SILT  
 LAYING CONDITION: TYPE 2
  - FOR PIPE ENCASED IN POLYETHYLENE, USE VALUES GIVEN IN PARENTHESES, OR INCREASE THE GIVEN VALUE BY A FACTOR OF 1.2.

**RESTRAINED PIPE TABLE**

REPRODUCTION IN PART OR WHOLE IS PROHIBITED WITHOUT THE EXPLICIT WRITTEN PERMISSION FROM ALLEN ENGINEERING, INC.

NO.	DATE	REVISIONS
1	3-2-06	REVISED FH DETAIL PER COCOA STANDARDS

<b>HARBOR HOMES, LLC</b>		DATE	6-10-05
<b>COCONUT COVE CONDOMINIUMS</b>		SCALE	NTS
<b>BREVARD COUNTY, FLORIDA</b>		JOB NO.	040035
<b>WATER DETAILS</b>		DRAWN	DP
<b>ALLEN ENGINEERING, INC.</b>		SHT. NO.	C-10
FLORIDA CERTIFICATE OF AUTHORIZATION No. LB 266			
P.O. BOX 321321 COCOA BEACH, FLORIDA 32932-1321			
TELEPHONE: (321)783-7443 FAX: (321)783-5902 E-MAIL: info@alleneng.net			
JOHN M. ALLEN, P.E. 9423 DONALD P. ROBERTS, P.E. 9131			
MICHAEL S. ALLEN, P.E. 45788 JOHN H. WILT, P.E. 53233			