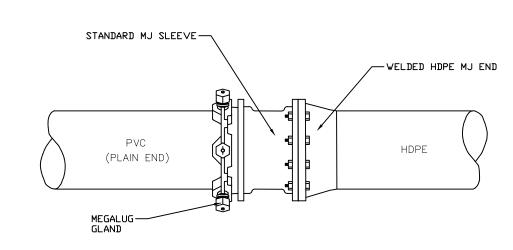


JOINT RESTRAINT SYSTEM "EBBA IRON" SERIES 1500, UNI-FLANGE SERIES 1350 OR

TYPICAL RESTRAINED

P.V.C. JOINT

UNSHEETED TRENCH



NOTE: Joint restraint required on 3 PVC Joints before transition connection

TYPICAL RESTRAINED

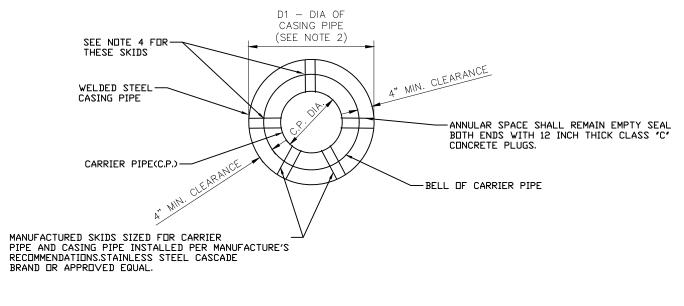
CAST IRON/DUCTILE IRON TO P.V.C. JOINT

STANDARD MJ SLEEVE-

PVC

(PLAIN END)







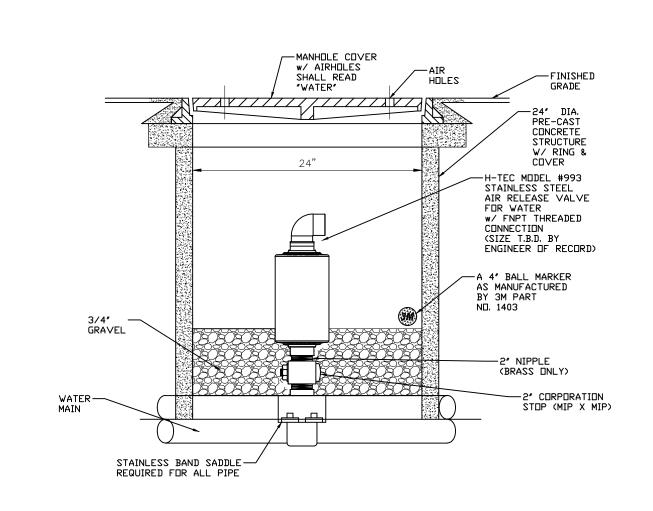
CASING PIPE SIZES (MIN.)												
CARRIER PIPE NOM. DIA. (D2)	4"	6"	8"	10"	12"	14"	16"	18"	22"	24"	30"	36"
CASING PIPE NOM. DIA. (D1)	8"	12"	16"	22"	24"	30"	30"	30"	36"	36"	48"	60"
HWY X-ING WALL THKINCHES	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.188	0.250	0.375	0.500

NOTES:

1. MIN. COVER TO TOP OF CASING SHALL BE 36". 2. THE INSIDE DIAMETER OF THE CASING PIPE SHALL BE 4" GREATER THAN THAN THE OUTSIDE DIAMETER OF THE CARRIER PIPE BELL OR COUPLING. 3. ALL JACK AND BORE CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION UTILITY ACCOMMODATION MANUAL,

4. SKIDS SHALL BE SECURED TO THE CARRIER PIPE AS PER MANUFACTURERS RECOMMENDATIONS. (MINIMUM OF 3 SKIDS PER PIPE JOINT.) 5. ROTATION OF CARRIER PIPE INSIDE THE CASING PIPE WILL NOT BE PERMITTED. ALL JOINTS WITHIN THE CASING SHALL HAVE JOINT RESTRAINTS INSTALLED. 6. THE CONTRACTOR SHALL SUBMIT SHOP DRAWING OF CASING AND CARRIER PIPE INSTALLATION FOR APPROVAL PRIOR TO PURCHASING MATERIALS. 7. CASING SHALL EXTEND A MINIMUM OF 8 FEET PAST EDGE OF PAVEMENT.

WATER MAIN CROSSING FOR ROADWAYS



H-TEC 2-INCH **AUTOMATIC AIR** RELEASE VALVE MODEL #993 STAINLESS STEEL N.T.S.

WATER VALVE -BOX AND COVER

-PRECAST CONCRETE COLLAR OR 18"×18" SQ. CONC. COLLAR WHEN IN CONCRETE

-FINISHED GRADE

-6" PVC PIPE

A 4" BALL MARKER AS MANUFACTURED BY 3M PART NO.1403

ALL BELOW GROUND VALVES REQUIRE VALVE BOX.

VALVE AND BOX DETAIL

SHALL BE PLACED NEXT TO ALL VALVES AT A DEPTH OF 36" MAX.

-ADJUSTABLE DUCTILE IRON

TOP OF PIPE
(PIPE SHALL BE PLACED AT BOTTOM OF VALVE
BOX WITH 3" MIN. CLEARANCE FROM HUB)

ER AL BL AR

DRAWN BY: | CHECKED BY RAD RTPROJECT NO.: $000\!-\!000$ WORK ORDER: 00.000 DRAWING SCALE: 1"=XX'

PLOT DATE: SHEET NO. f X OF f XX

—EXISTING GRADE O.D. + 18" MAX. 0.D. + 12" MIN. __EXISTING GRADE -SEE BEDDING DETAIL -SEE BEDDING DETAIL SEE BEDDING DETAIL -COMPACTED BACKFILL (SEE SECTION 3.0 OF REGIONAL UTILITIES STANDARD CONSTRUCTION SPECIFICATIONS) COMPACTED GRANULAR MATERIAL — (SEE SECTION 3.0 DF REGIONAL UTILITIES STANDARD CONSTRUCTION SPECIFICATIONS) UNDISTURBED SOIL HALF SECTION HALF SECTION HALF SECTION UNSHEETED TRENCH

TYPICAL BEDDING DETAIL

SHEETED TRENCH

JOINT RESTRAINT SYSTEM

"UNI-FLANGE" OR EQUAL.

- AS MANUFACTURED BY

TYPICAL RESTRAINED

D.I. TO D.I. JOINT

SHEETED TRENCH

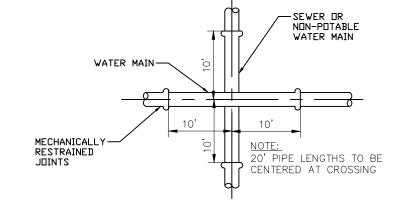
SHAPED BOTTOM W/ TAMPED BACKFILL

BEDDING DETAIL NOTES: 1.0 THE BACKFILL TO A POINT TWELVE (12) INCHES SHALL BE CAREFULLY SELECTED MATERIAL FREE FROM ROCKS, BOULDERS, CLODS, ORGANIC MATERIAL, OTHER DEBRIS AND LIGHTLY COMPACTED PRIOR PLACING REMAINING BACKFILL. THE BALANCE OF THE BACKFILL MAY BE PLACED IN THE DITCH BY HAND OR BY MECHANICAL EQUIPMENT. NO BACKFILL SHALL BE DROPPED DIRECTLY ONTO EXPOSED PIPE.

2.0 CONTRACTOR SHALL EMPLOY AN EXCAVATOR—MOUNTED TRENCH ROLLER OR OTHER MECHANICAL COMPACTION EQUIPMENT TO PROVIDE BACKFILL DENSITIES OF 95% OR GREATER AT ±2% OPTIMUM MOISTURE CONTENT. SURFACE FLOODING AND WATER JETTING OF BACKFILL SHALL NOT BE PERMITTED FOR BACKFILL

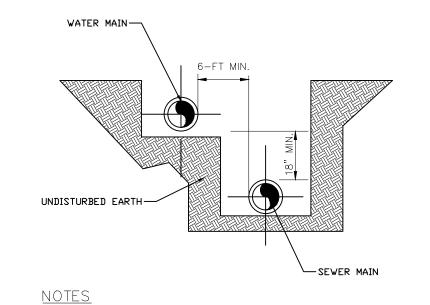
3.0 ALL BACKFILL SHALL BE IN ACCORDANCE WITH SECTION 3.0 OF REGIONAL UTILITIES CONSTRUCTION

4.0 PIPE COVER SHALL NOT BE LESS THAN 36 INCHES, NOR GREATER THAN 48 INCHES EXCEPT WHERE SPECIFICALLY SHOWN ON THE CONSTRUCTION DRAWINGS AND APPROVED BY REGIONAL UTILITIES.



1. WHERE A 18 INCH VERTICAL SEPARATION DISTANCE CANNOT BE MAINTAINED BETWEEN A WATER MAIN AND A SEWER MAIN OR NON-POTABLE WATER MAIN CROSSING THEN THE WATER MAIN SHALL PASS OVER THE SEWER MAIN OR NON-POTABLE WATER MAIN WITH A MINIMUM VERTICAL CLEARANCE OF 12 INCHES. THE SEWER OR NON-POTABLE WATER MAIN SHALL BE 20 FEET OF 6" CONCRETE ENCASEMENT CENTERED ON THE POINT OF CROSSING AND THE WATER MAIN SHALL BE 20 FEET OF 6" CONCRETE ENCASEMENT CENTERED ON THE POINT OF CROSSING. CONCRETE ENCASEMENT SHALL BE POURED SEPARATELY FOR EACH PIPE.

2. ANYTHING LESS THAN SHOWN MUST BE APPROVED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION.



1. WHERE A 10 FOOT PARALLEL SEPARATION CANNOT BE MAINTAINED BETWEEN A WATER MAIN AND A SEWER MAIN OR NON-POTABLE WATER MAIN, THEN THE WATER MAIN SHALL BE LAID IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER MAIN OR NON-POTABLE WATER MAIN AND 6 FEET HORIZONTALLY FROM THE EDGE OF THE SEWER MAIN OR NOT-POTABLE

2. ANYTHING LESS THAN SHOWN MUST BE APPROVED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION.

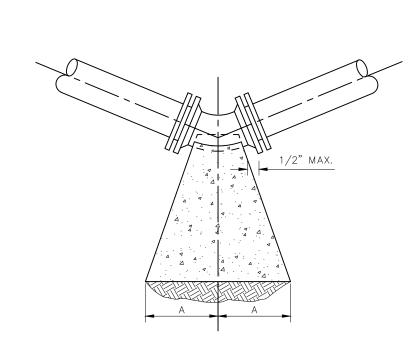
WATER/SEWER CROSSING AND SEPARATION DETAIL



4 4 4 12" & LARGER PIPE 10" & SMALLER PIPE 24" MIN. 18″ MIN.

COMPACTED GRANULAR BEDDING

SIZE	TEE		CU. FT.		6.75	PLUG		CU.
	А	В	CONC.	N□TES: 1. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED SOIL. 2. THESE TABLES SHOW MINIMUM SIZE THRUST BLOCKS FOR GOOD SOIL. (A-1 THROUGH A-3, CLEAN SAND AND GRAVEL) 3. POOR SOIL (A-4 THROUGH A-8, SILTY SOILS, CLAYS, MUCK AND PEAT) WILL REQUIRE LARGER THRUST BLOCKS.	SIZE	С	D	C
6"	10"	12"	3.5		6"	10"	21"	
8"	13"	16"	5.4		8"	12"	29"	4
10"	16"	20"	9.4		10"	14"	36"	(
12"	18"	24"	16.6		12"	16"	41"	9
14"	22"	" 27" 23.2	23.2		14"	18"	48"	1
16"	24"	30"	28.6		16"	20"	54"	1
18"	26"	32"	36.2		18"	22"	60"	1



1. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED SOIL. 2. THESE TABLES SHOW MINIMUM SIZE THRUST BLOCKS FOR GOOD SOIL.

(A-1 THROUGH A-3, CLEAN SAND AND GRAVEL)3. POOR SOIL (A-4 THROUGH A-8, SILKY SOILS, CLAYS, MUCK AND PE WILL REQUIRE LARGER THRUST BLOCKS.

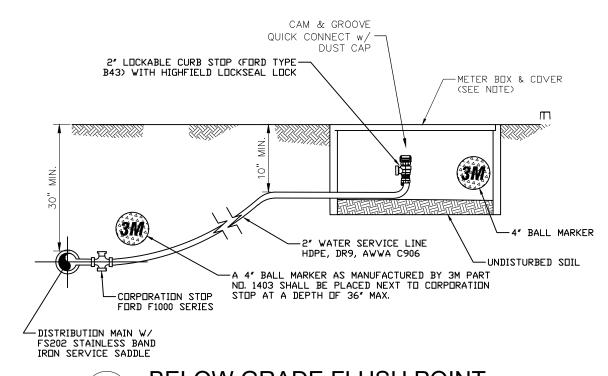
	SIZE	1/4 E	BENDS	CU. FT.	1/8 E	BENDS	CU. FT.	1/16 BENDS		CU. FT.	
	SIZL		В	CONC.	А	В	CONC.	А	В	CONC.	
	6"	16"	10"	3.2	9"	10"	3.0	6"	8"	1.3	
	8"	22"	13"	7.2	12"	13"	3.7	8"	10"	2.1	
	10"	26"	17"	11.5	14"	17"	5.9	10"	13"	3.6	
IL.	12"	29"	21"	21.1	16"	21"	8.6	11"	16"	6.6	
	14"	35"	24"	29.8	19"	24"	14.9	12"	20"	8.9	
PEAT)	16"	38"	27"	37.8	21"	27"	19.1	12"	24"	11.2	
	18"	42"	29"	47.8	22"	29"	24.2	13"	26"	14.2	

24″ MIN.

18″ MIN.

12" & LARGER PIPE
10" & SMALLER PIPE

THRUST BLOCK DETAIL



BELOW GRADE FLUSH POINT

1. FLUSH POINTS SHALL BE INSTALLED BETWEEN BACK OF CURB AND FACE OF SIDEWALK WITHIN R/W EXCEPT WHERE CONDITIONS AND OR REGULATION PROHIBIT. FLUSH POINTS SHALL BE LOCATED WITHIN RIGHTS OF WAY OR UTILITY EASEMENTS. 2. METER BOX AND COVER SHALL BE TRAFFIC RATED. SEE DETAIL #7 ON SHEET W-2.