



## **SPECIFICATION 331002: WATER EXHIBITS**

**WATER EXHIBITS**

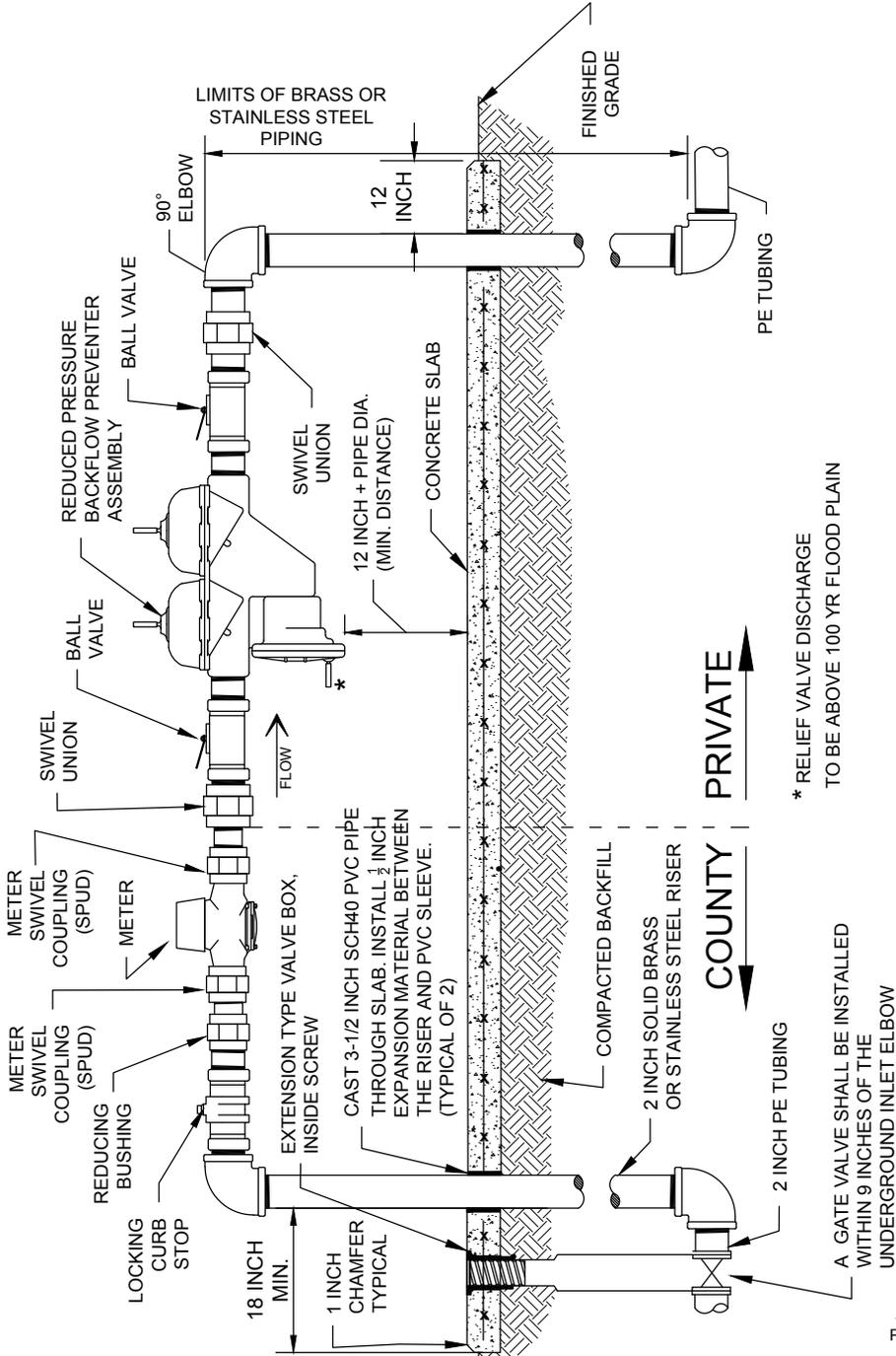
- W-1A WATER METER ASSEMBLY - COMMERCIAL METERS LESS THAN 1-1/2 INCH
- W-1B WATER METER ASSEMBLY - COMMERCIAL 1-1/2 INCH & 2 INCH METERS
- W-1C MASTER WATER METER ASSEMBLY SITE DEVELOPMENT - 3 INCH METER & LARGER (PROFILE VIEW)
- W-1D MASTER WATER METER ASSEMBLY SITE DEVELOPMENT - 3 INCH METER & LARGER (PLAN VIEW)
- W-1E MASTER WATER METER ASSEMBLY SITE DEVELOPMENT W/ FIRE FLOW
- W-1F TEMPORARY CONSTRUCTION WATER METER ASSEMBLY FOR RESIDENTIAL OR COMMERCIAL DEVELOPMENT 6 INCH AND LARGER
- W-1G NOTES WATER METER ASSEMBLIES
  
- W-2 BACKFLOW PREVENTION DEVICE RPDA (FIRE SERVICE ONLY)
  
- W-3A RESIDENTIAL SERVICE LAYOUT
- W-3B RESIDENTIAL SINGLE METER SERVICE
- W-3C RESIDENTIAL DUAL METER SINGLE LOT SERVICE
- W-3D RESIDENTIAL METER SERVICE INSTALLATION (METER OVER MAIN)
- W-3E RESIDENTIAL METER SERVICE INSTALLATION (NEAR SIDE)
- W-3F RESIDENTIAL METER SERVICE INSTALLATION (FAR SIDE)
- W-3G RESIDENTIAL DUAL LOT METERED SERVICE (FAR SIDE)
  
- W-4 POTABLE WATER METER BOX
  
- W-5A FIRE HYDRANT (RESTRAINED)
- W-5B FIRE HYDRANT FOR LIMITED SPACE (RESTRAINED)
- W-5C WATER MAIN EXTENSION WITH HYDRANT DETAIL
- W-5D FAR SIDE HYDRANT DETAIL
  
- W-6A BLOW-OFF ASSEMBLY
- W-6B BLOW-OFF ASSEMBLY AND FIRE HYDRANT AT CUL-DE-SAC ROAD UP TO 150 FEET
- W-6C BLOW-OFF ASSEMBLY AND FIRE HYDRANT AT CUL-DE-SAC ROAD GREATER THAN 150 FEET
  
- W-7A RESTRAINED JOINT-STANDARD
- W-7B RESTRAINED JOINT FOR PVC C-900 PIPE (4 INCH TO 12 INCH)
  
- W-8A AUTOMATIC AIR RELIEF VALVE ASSEMBLY-STANDARD
- W-8B AUTOMATIC AIR RELIEF VALVE ASSEMBLY-OFFSET
- W-8C AIR RELIEF VALVE-MANUAL
- W-8D AUTOMATIC AIR RELIEF VALVE ASSEMBLY - OFFSET  
NEW CONSTRUCTION (LINE OUT OF SERVICE)
  
- W-9A VALVE BOX AND MARKER INSTALLATION FOR PAVED AREAS
- W-9B CONCRETE VALVE PAD (FOR UNPAVED AREAS)
  
- W-10 CASING DETAILS - JACK AND BORE
  
- W-11 DITCH BOTTOM CLEARANCE AND CONCRETE PROTECTIVE SLAB
  
- W-12A VALVE AND TRACER WIRE (FOR PAVED AND NON-PAVED AREAS)
- W-12B VALVE EXTENSION FOR GATE VALVES
  
- W-13 BORING FOR UTILITIES
- W-14 TRENCH DETAILS - BACKFILL & COMPACTION

**LISTING OF WATER EXHIBITS**

**10/2015**

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**

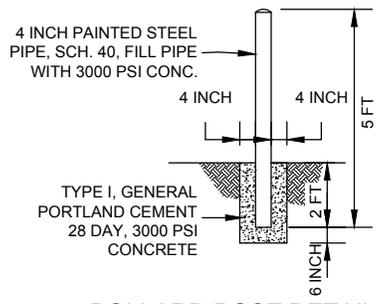


\* RELIEF VALVE DISCHARGE  
TO BE ABOVE 100 YR FLOOD PLAIN

A GATE VALVE SHALL BE INSTALLED  
WITHIN 9 INCHES OF THE  
UNDERGROUND INLET ELBOW

**NOTES:**

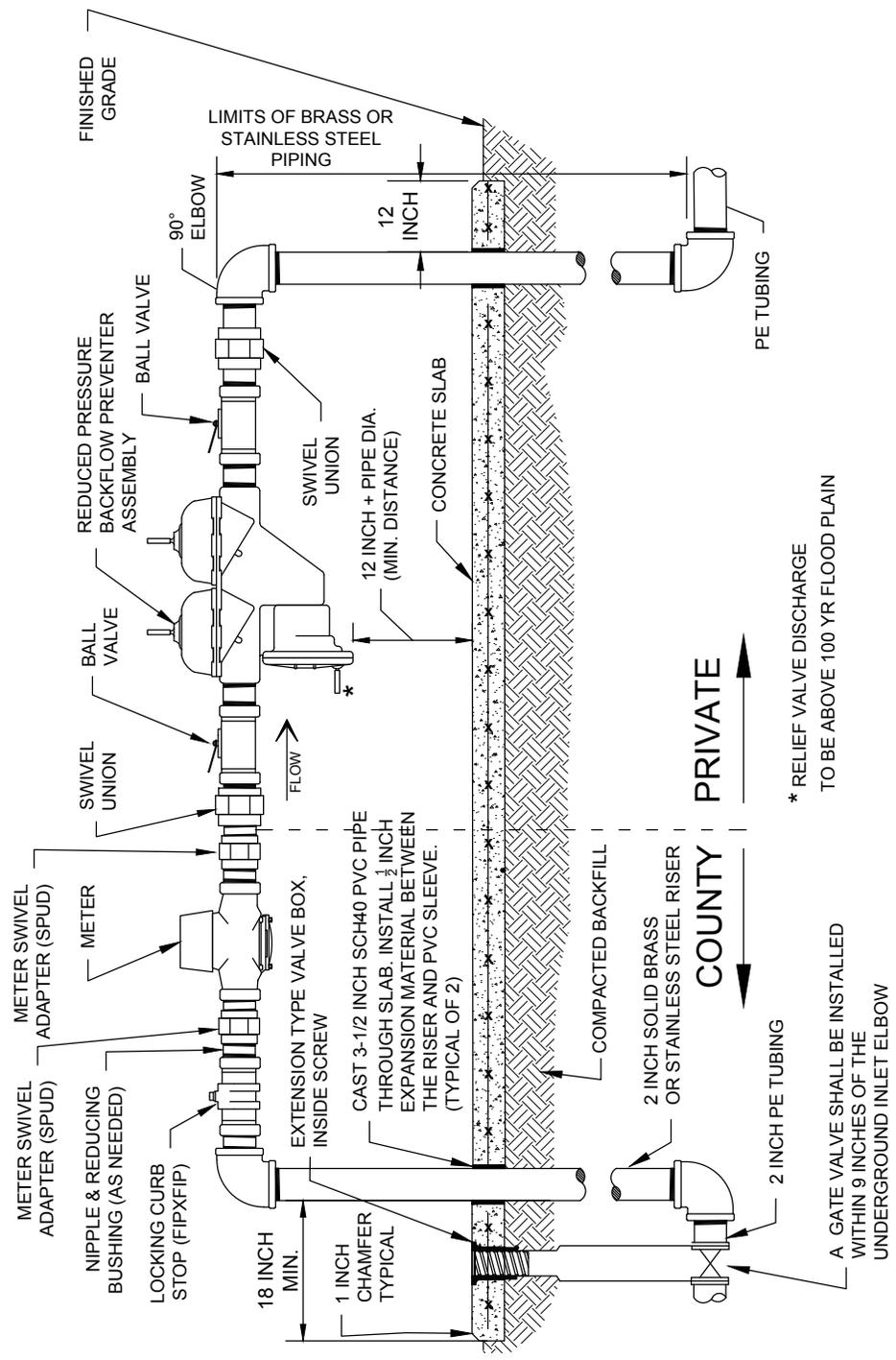
1. ALL PIPING TO BE A MINIMUM OF 2-INCHES UP THROUGH THE LOCKING CURB STOP.
2. 2 INCH COMMERCIAL SERVICE LINES SHALL USE A 2 INCH SLEEVE & TAPPING VALVE INSTEAD OF A CORPORATION STOP AT THE WATER MAIN CONNECTION. WHEN THE TAPPING VALVE IS LOCATED WITHIN 10 FEET OF THE METER ASSEMBLY RISER, AND IT MEETS PUD SAFETY CRITERIA, THE 2" GATE VALVE MAY BE ELIMINATED BY SPECIAL REQUEST TO DSD.
3. SEE EXHIBIT W-1D FOR BOLLARD LAYOUT. (TYPICAL)
4. SEE EXHIBIT W-1G FOR A LISTING OF GENERAL NOTES.



**BOLLARD POST DETAIL**  
N.T.S.

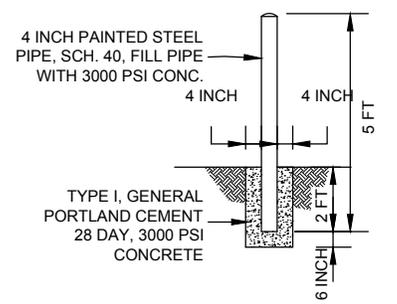
**WATER METER ASSEMBLY**  
**COMMERCIAL - METERS LESS THAN 1-1/2 INCH**  
**HILLSBOROUGH COUNTY, FLORIDA**

**10/2015**  
**SCALE: N.T.S.**



NOTES:

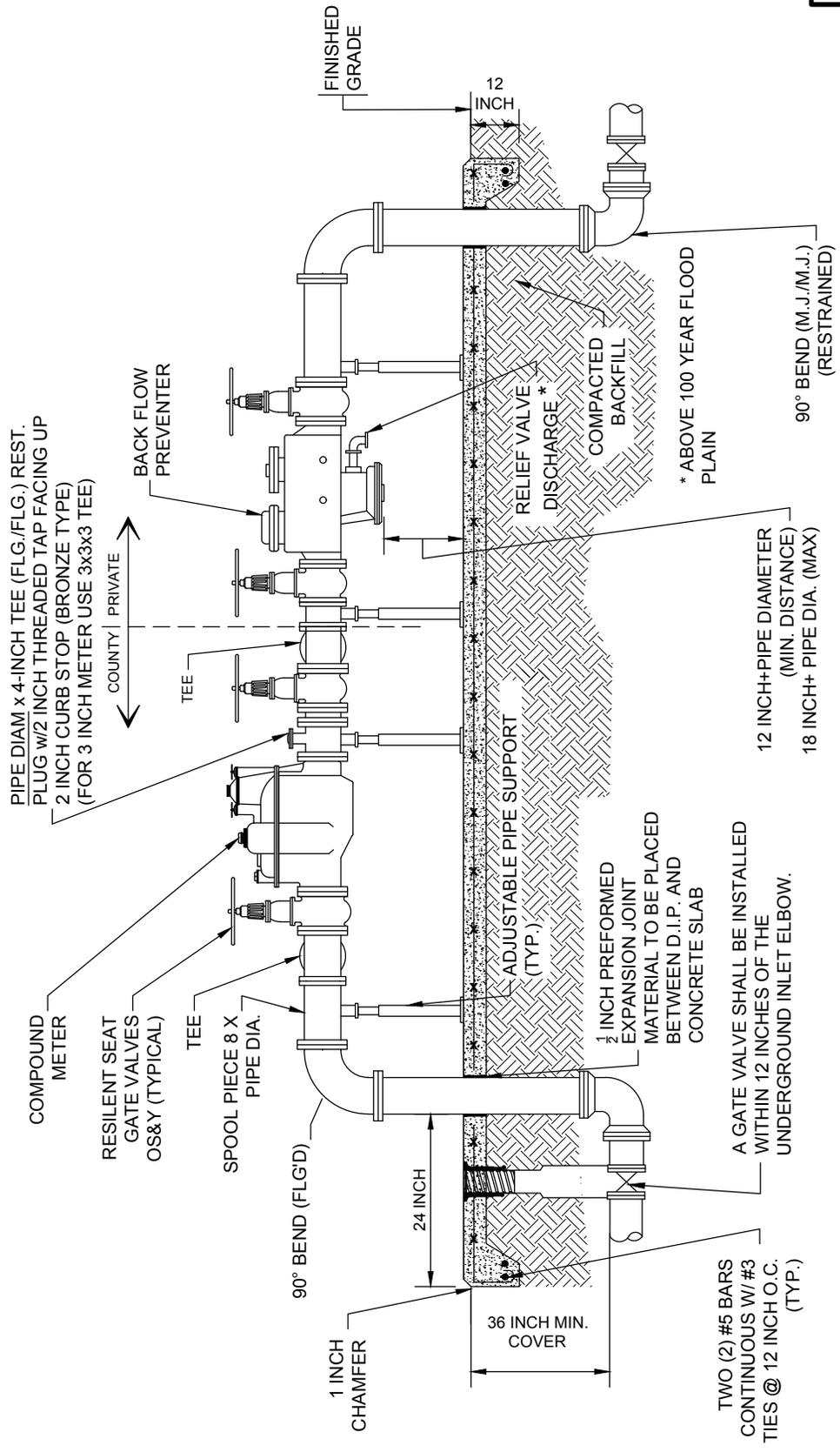
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3. SEE EXHIBIT W-1D FOR BOLLARD LAYOUT. (TYPICAL)
4. SEE EXHIBIT W-1G FOR A LISTING OF GENERAL NOTES.



BOLLARD POST DETAIL  
N.T.S.

WATER METER ASSEMBLY  
COMMERCIAL - 1-1/2 INCH & 2 INCH METERS  
HILLSBOROUGH COUNTY, FLORIDA

10/2015  
SCALE: N.T.S.

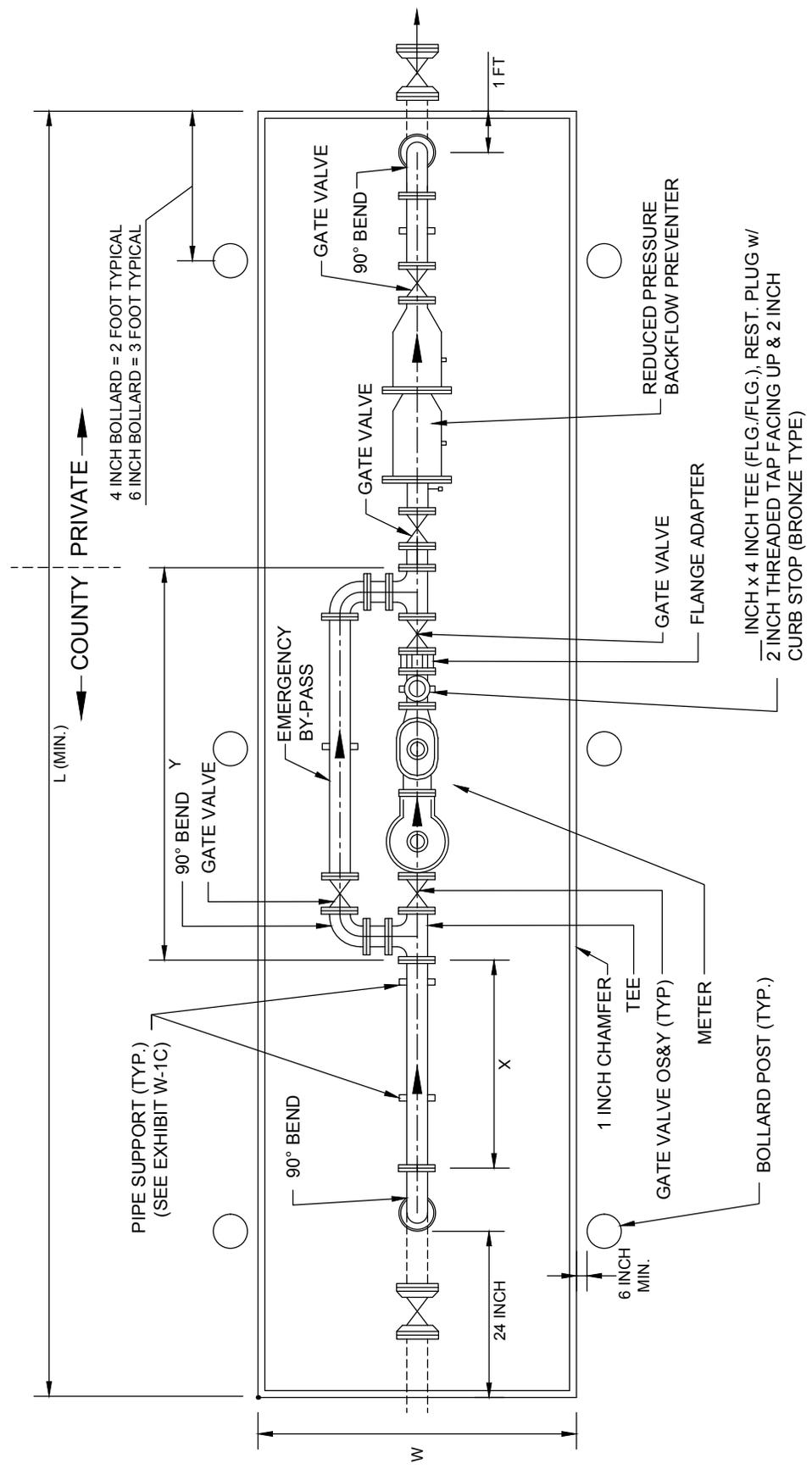


NOTES:

1. SEE EXHIBIT W-1G FOR GENERAL NOTES
2. SEE EXHIBIT W-1D FOR BOLLARD LAYOUT

MASTER WATER METER ASSEMBLY  
 SITE DEVELOPMENT- 3" METER & LARGER (PROFILE)  
 HILLSBOROUGH COUNTY, FLORIDA

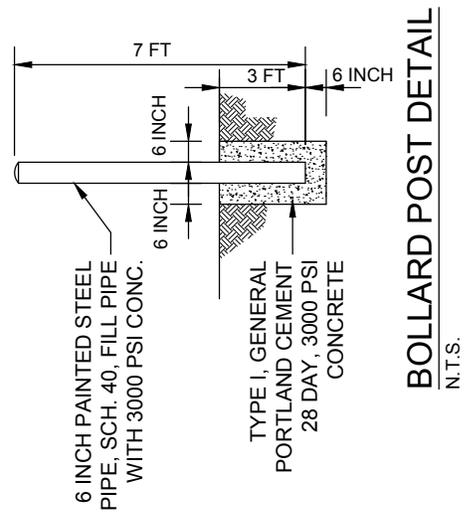
10/2015  
 SCALE: N.T.S.



**NOTE: ALL ABOVE GRADE VALVES TO BE OS&Y**

METER SIZE	L (MIN)	X	Y	W
8"	24'-6"	64"	112"	9'
6"	23'-6"	48"	98"	9'
4"	22'-8"	32"	73"	7'
3"	21'-6"	24"	62"	7'

**NOTES:**  
1. SEE EXHIBIT W-1G FOR GENERAL NOTES

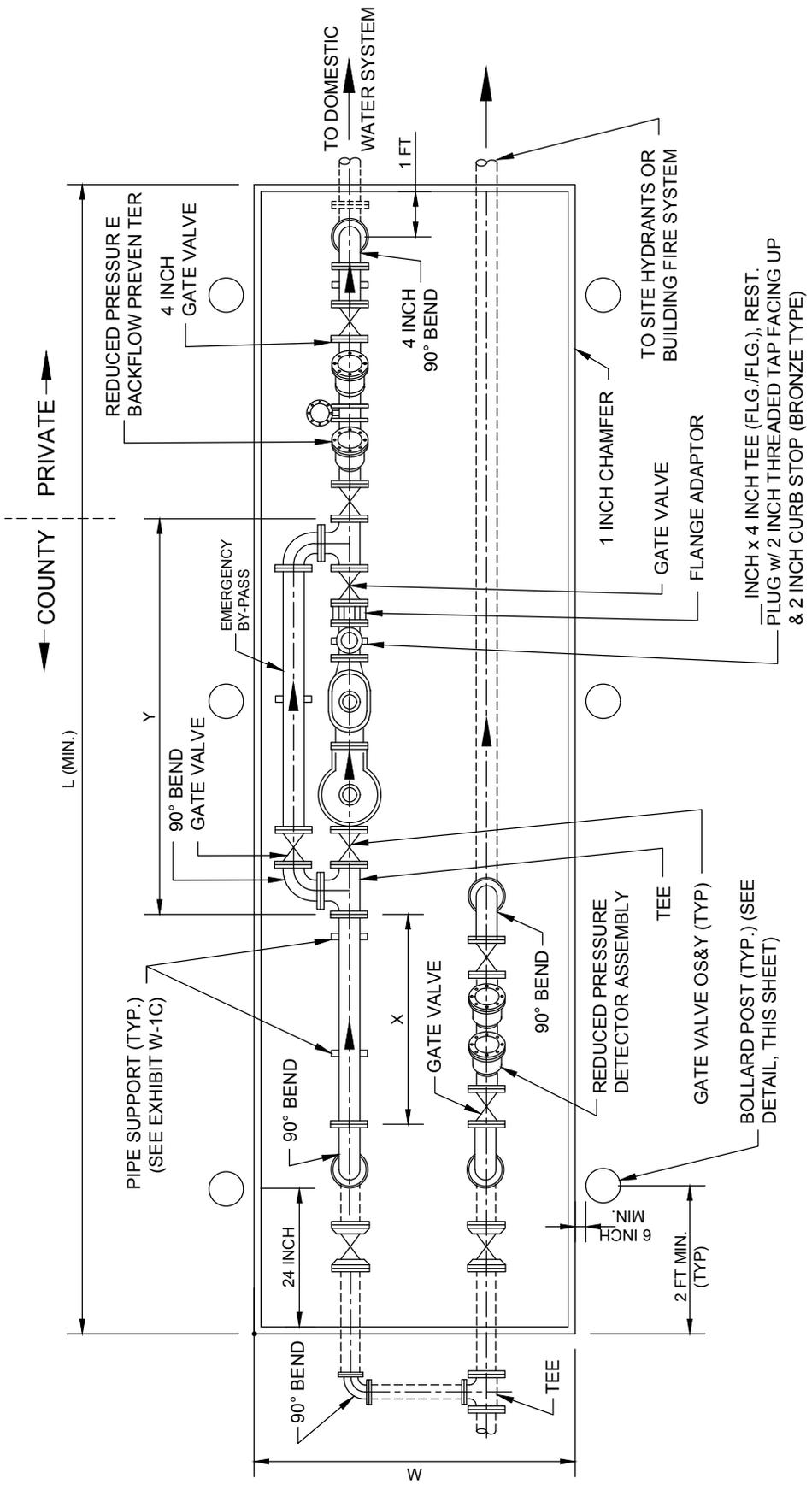


**BOLLARD POST DETAIL**  
N.T.S.

**MASTER WATER METER ASSEMBLY FOR  
SITE DEVELOPMENT-3 INCH & LARGER (PLAN)  
HILLSBOROUGH COUNTY, FLORIDA**

10/2015

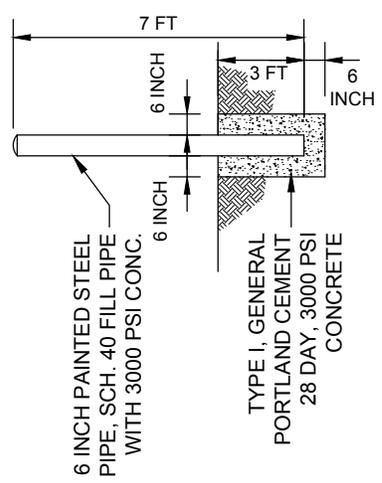
SCALE: N.T.S.



**NOTE: ALL ABOVE GRADE VALVES TO BE OS&Y**

**NOTES:**

1. SEE EXHIBIT W-1G FOR GENERAL NOTES
2. SEE EXHIBIT W-1D FOR SLAB DIMENSIONS

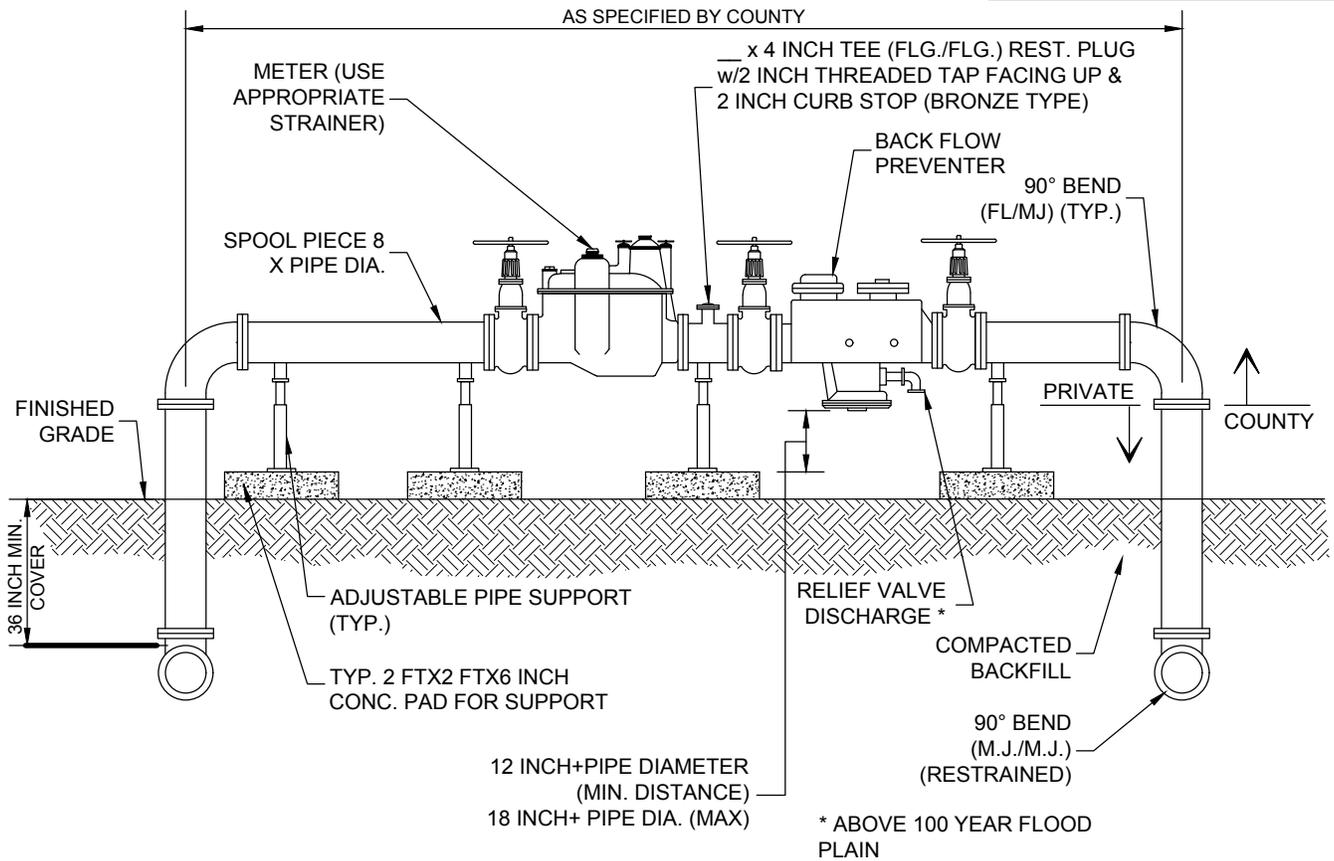


**BOLLARD POST DETAIL**  
N.T.S.

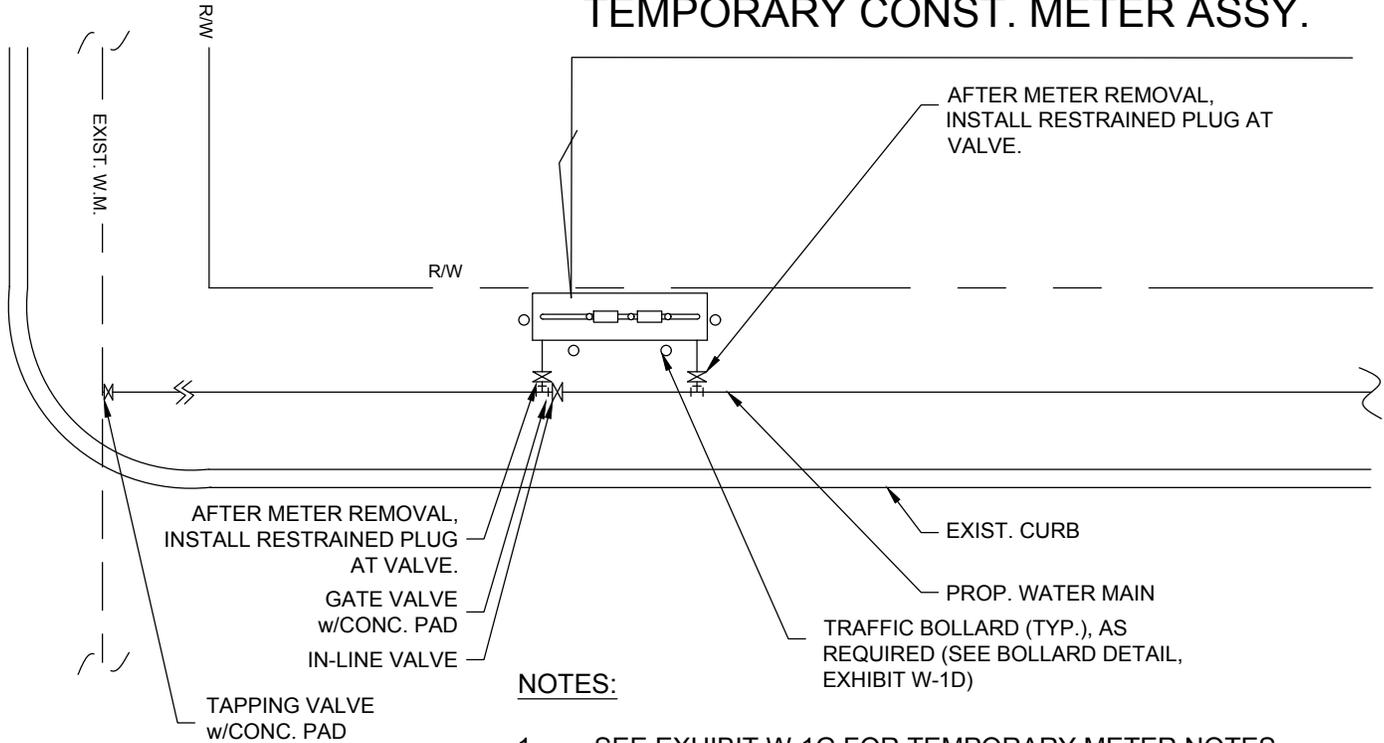
**MASTER WATER METER ASSEMBLY FOR  
SITE DEVELOPMENT W/ FIRE FLOW  
HILLSBOROUGH COUNTY, FLORIDA**

10/2015

SCALE: N.T.S.



**TEMPORARY CONST. METER ASSY.**



TEMPORARY CONSTRUCTION WATER METER ASSEMBLY FOR RESIDENTIAL OR COMMERCIAL DEVELOPMENT 6" AND LARGER

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**

GENERAL NOTES:

1. A MASTER METER ASSEMBLY SHALL BE DIRECTLY ACCESSIBLE BY BOOM TRUCK OFF A COUNTY ROW, OR BY AN INTERIOR ROAD THAT IS NOT BLOCKED BY A WALL OR GATE. THE ACCESS ROAD SHALL BE 12 FT WIDE (MIN.) AND PAVED (CONCRETE OR ASPHALT)
2. ALL ABOVE GROUND PIPES AND FITTINGS SHALL BE CLASS 53 D.I.P. FOR 4 INCH AND LARGER PIPE.
3. CERTIFICATION OF PROPER INSTALLATION AND OPERATION WILL BE REQUIRED FROM A CERTIFIED BACKFLOW PREVENTION TECHNICIAN PRIOR TO THE WATER MAIN ACCEPTANCE BY THE HILLSBOROUGH COUNTY PUBLIC UTILITIES DEPARTMENT.
4. ALL BACKFLOW ASSEMBLIES OR DEVICES MUST HAVE ASSE APPROVAL. IN ADDITION THE BACKFLOW PREVENTION DEVICE ASSEMBLY SHALL BE A REDUCED PRESSURE DEVICE AS LISTED ON THE APPROVED LIST OF THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.
5. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE PROPER OPERATION, MAINTENANCE, AND TESTING OF THE BACKFLOW PREVENTION DEVICE ASSEMBLY.
6. THE 6 INCH CONCRETE SLAB SHALL BE REINFORCED WITH 6x6-W1.4xW1.4 WELDED WIRE FABRIC AND SHALL BE TYPE I, PORTLAND CEMENT WITH A MINIMUM 28-DAY STRENGTH OF 3000psi.
7. SLAB WIDTH AND LENGTH SHALL VARY WITH ASSEMBLY. THE TOP OF SLAB SHALL BE 2 INCHES ABOVE FINISHED GRADE.
8. THE METER ASSEMBLY & BOLLARDS SHALL BE PAINTED IN ACCORDANCE WITH SPECIFICATION 331001, PART 2.6.E & F.
9. IF THE METER ASSEMBLY IS LOCATED WITHIN A TRAFFIC/VEHICLE AREA (PARKING LOT, DRIVEWAY, OR WITHIN 15 FT OF EDGE OF PAVEMENT/BACK OF CURB), METERS UP TO 2 INCHES SHALL HAVE A MINIMUM OF 4 TRAFFIC BOLLARD PROTECTION POSTS, AND FOR METERS 3 INCHES & LARGER A MINIMUM OF 6 TRAFFIC BOLLARDS ARE REQUIRED.

TEMPORARY METER NOTES:

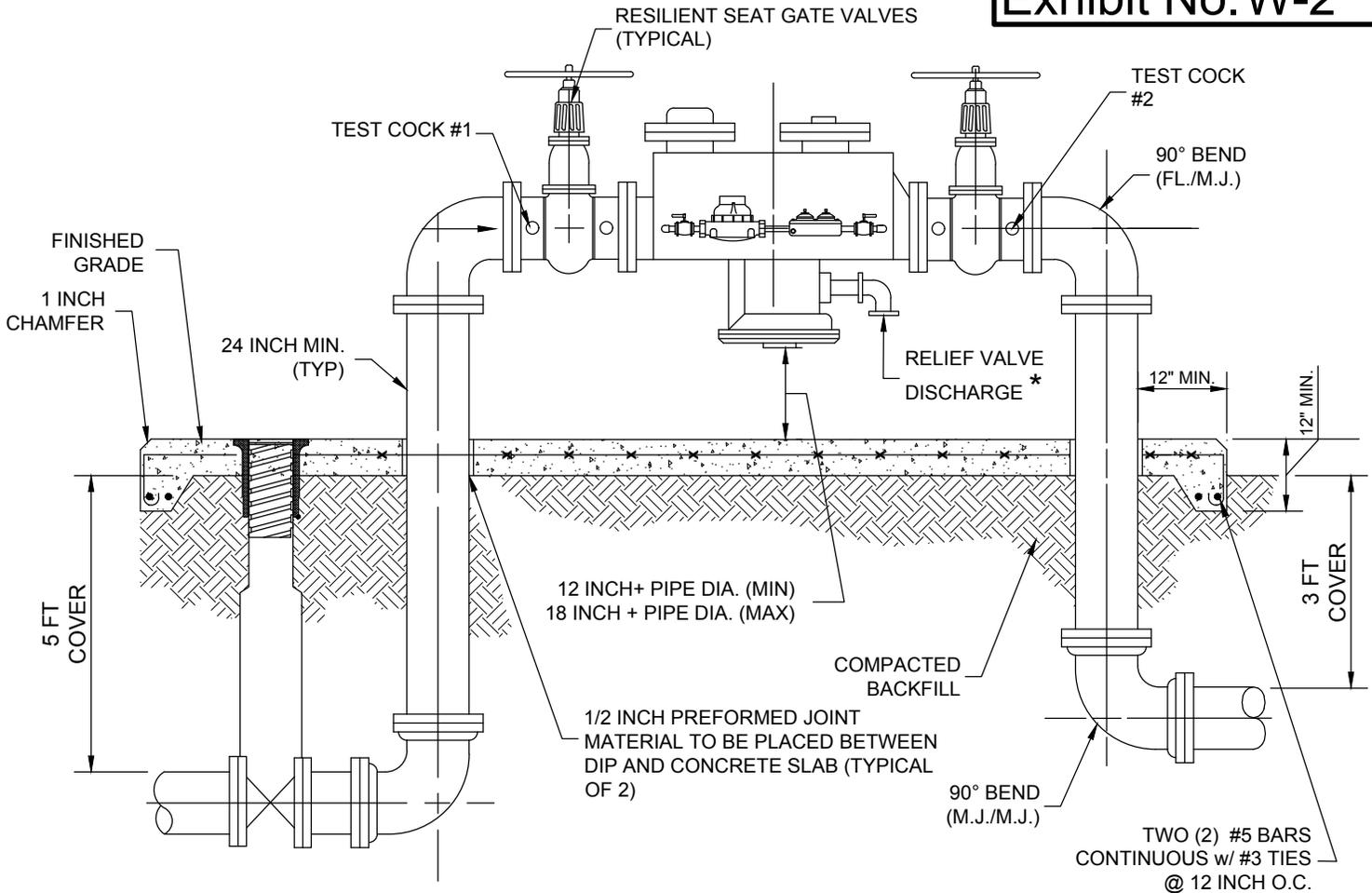
1. THE IN-LINE VALVE IS TO REMAIN CLOSED UNTIL AFTER THE CONSTRUCTION AND ACCEPTANCE OF THE DEVELOPMENT WATER DISTRIBUTION SYSTEM.
2. THE METER ASSEMBLY IS TO BE REMOVED AFTER FINAL ACCEPTANCE OF THE WATER DISTRIBUTION SYSTEM BY THE HILLSBOROUGH COUNTY HEALTH DEPARTMENT AND THE HILLSBOROUGH COUNTY DEVELOPMENT SERVICES DEPARTMENT AND GROWTH MANAGEMENT DEPARTMENT.
3. ALL CONSTRUCTION MUST MEET APPLICABLE STATE AND/OR LOCAL ROADWAY/ROADSIDE DESIGN STANDARDS INCLUDING, BUT NOT LIMITED TO, CLEAR ZONE REQUIREMENTS.

**NOTES WATER METER ASSEMBLIES**

**10/2015**

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**



**ALL ABOVE GRADE VALVES TO BE OS&Y**

\* DISCHARGE ABOVE 100 YR FLOOD PLAIN

**NOTES:**

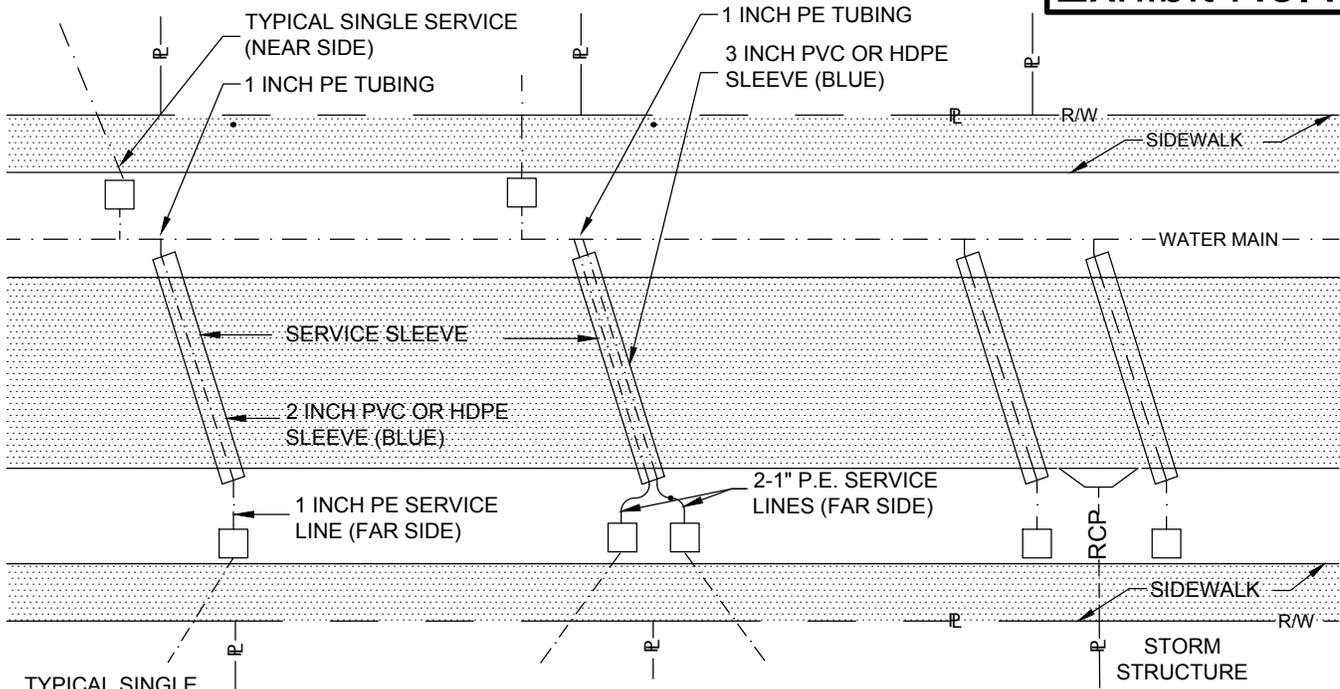
1. ALL PIPE AND FITTINGS SHALL BE DUCTILE IRON, CLASS 53, CEMENT LINED INTERIOR WITH FLANGE FITTINGS FOR ABOVE GROUND USE. MANUFACTURERS RESTRAINED JOINTS SHALL BE USED FOR UNDERGROUND PIPING.
2. CERTIFICATION OF PROPER INSTALLATION AND OPERATION WILL BE REQUIRED FROM A CERTIFIED BACKFLOW PREVENTION TECHNICIAN PRIOR TO WATER MAIN ACCEPTANCE BY THE HILLSBOROUGH COUNTY PUBLIC UTILITIES DEPT.
3. ALL BACKFLOW ASSEMBLIES OR DEVICES MUST HAVE ASSE APPROVAL. THE BACKFLOW PREVENTION DEVICE ASSEMBLY SHALL BE A REDUCED PRESSURE DEVICE AS LISTED ON THE APPROVED LIST OF THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS CONNECTION AND HYDRAULIC RESEARCH.
4. THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE PROPER OPERATION, MAINTENANCE AND TESTING OF THE BACKFLOW PREVENTION DEVICE ASSEMBLY.
5. THE 6 INCH CONCRETE SLAB SHALL BE REINFORCED WITH 6x6-W1.4xW1.4 WELDED WIRE FABRIC AND SHALL BE TYPE I, PORTLAND CEMENT WITH A MINIMUM 28-DAY STRENGTH OF 3000psi.
6. SLAB WIDTH SHALL BE 5 FT TYPICAL AND LENGTH SHALL VARY WITH ASSEMBLY.
7. WHEN ASSEMBLY IS LOCATED WITHIN A TRAFFIC/VEHICLE AREA SEE W-1D FOR BOLLARD LAYOUT. A MINIMUM OF (4) FOUR 6 INCH BOLLARDS ARE REQUIRED.

**BACKFLOW PREVENTION DEVICE RPDA  
(FOR FIRE SERVICE ONLY)**

**10/2015**

**HILLSBOROUGH COUNTY, FLORIDA**

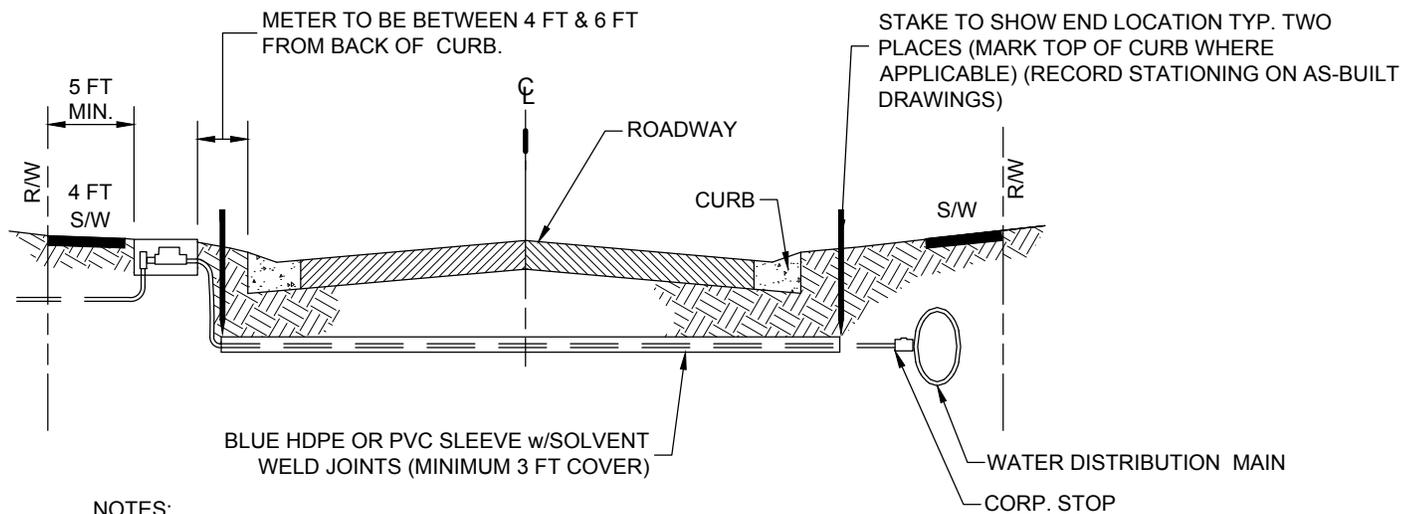
**SCALE: N.T.S.**



TYPICAL SINGLE SERVICE (FAR SIDE)

TYPICAL DUAL SERVICE. SHALL BE CONFIGURED AS 2 INDIV SERVICES IN SEPARATE SLEEVES.

USE TWO (2) SINGLE SERVICES WHEN SEPARATED BY STORM STRUCTURES



**NOTES:**

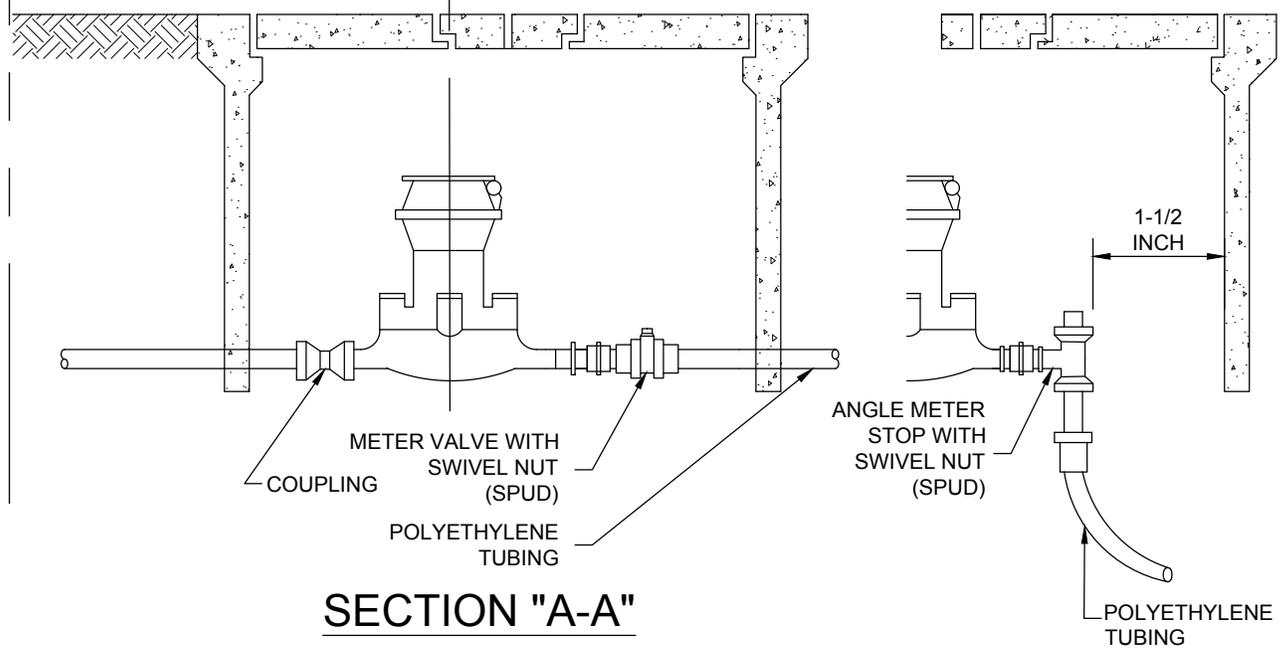
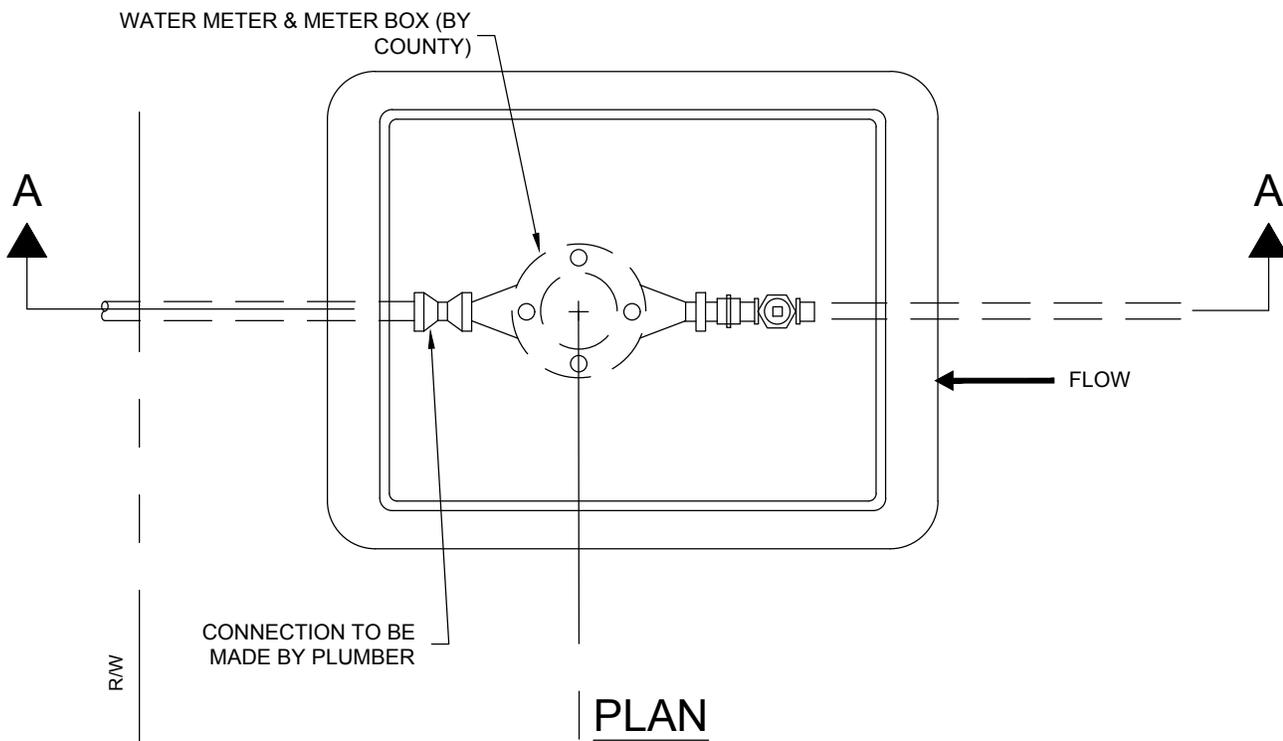
1. SLEEVE SHALL BE EXTENDED 24 INCH PAST ANY PAVED SURFACE WITHIN DEDICATED R/W.
2. EACH SERVICE SHALL TERMINATE AT A CURB STOP(S) WHICH SHALL BE BURIED APPROXIMATELY 6 INCHES BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2 INCH x 2 INCH x 18 INCH STAKE WITH THE TOP PAINTED BLUE AND MARKED WITH THE LOT(S) NUMBER SERVED.
3. STATIONING NOT REQUIRED IF SERVICE IS LOCATED ON LOT LINE.
4. 18 INCH MIN. SPACING BETWEEN SERVICE TAPS ON WATER MAIN SHALL BE MAINTAINED.
5. A NEAR SIDE DUAL SERVICE CONNECTION SERVICING MORE THAN ONE RESIDENCE IS ONLY ALLOWED WHERE RECLAIMED WATER SERVICE IS AVAILABLE.

**RESIDENTIAL SERVICE LAYOUT**

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**



**NOTES:**

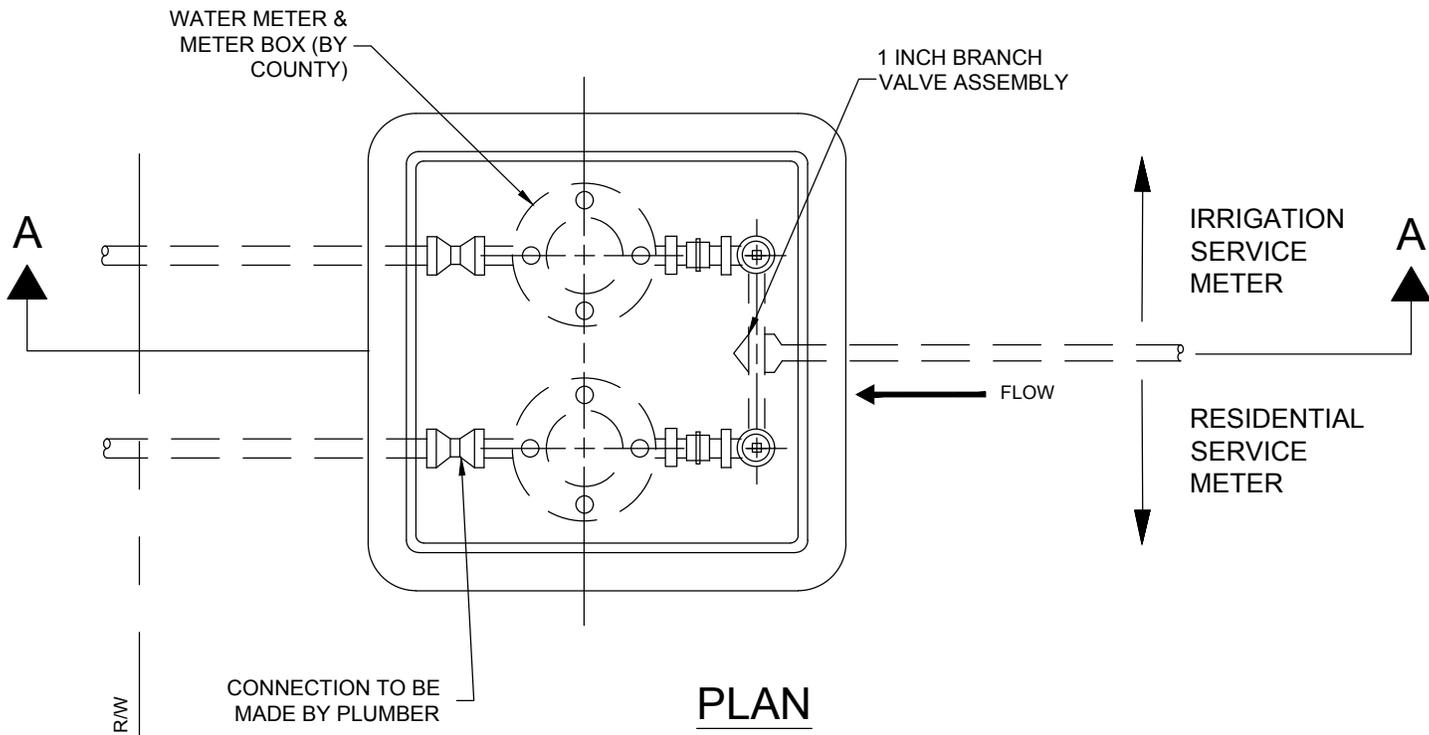
1. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
2. TEMPORARY IDENTIFICATION: EACH SERVICE SHALL TERMINATE AT A METER VALVE WHICH SHALL BE BURIED APPROXIMATELY 6 INCHES BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2 INCH x 2 INCH x 18 INCH STAKE WITH THE TOP PAINTED BLUE AND MARKED WITH THE LOT NUMBER SERVED.

**RESIDENTIAL SINGLE METER SERVICE  
(NEAR SIDE & FAR SIDE)**

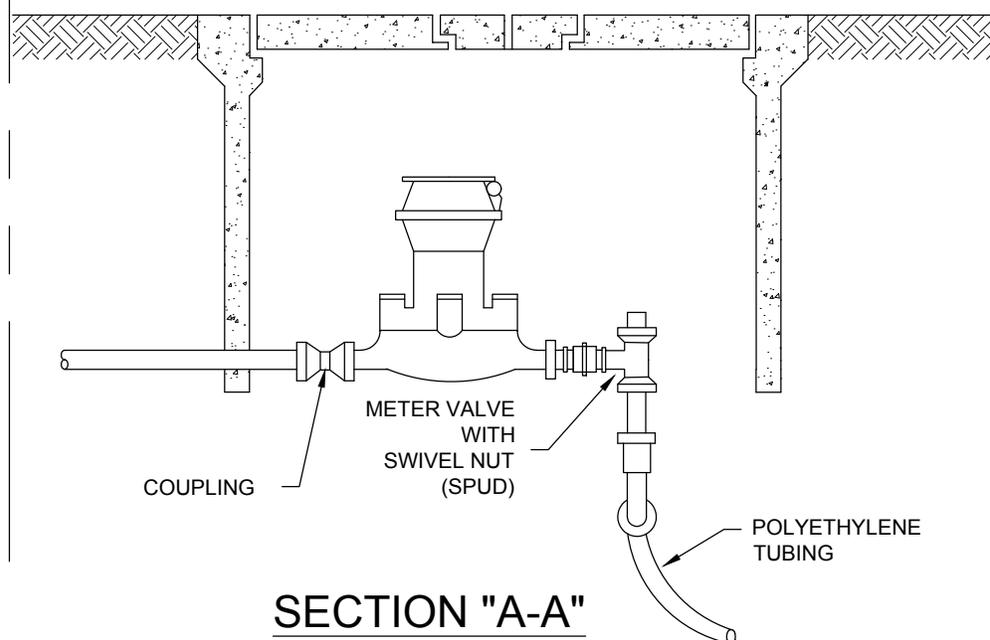
10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**



**PLAN**

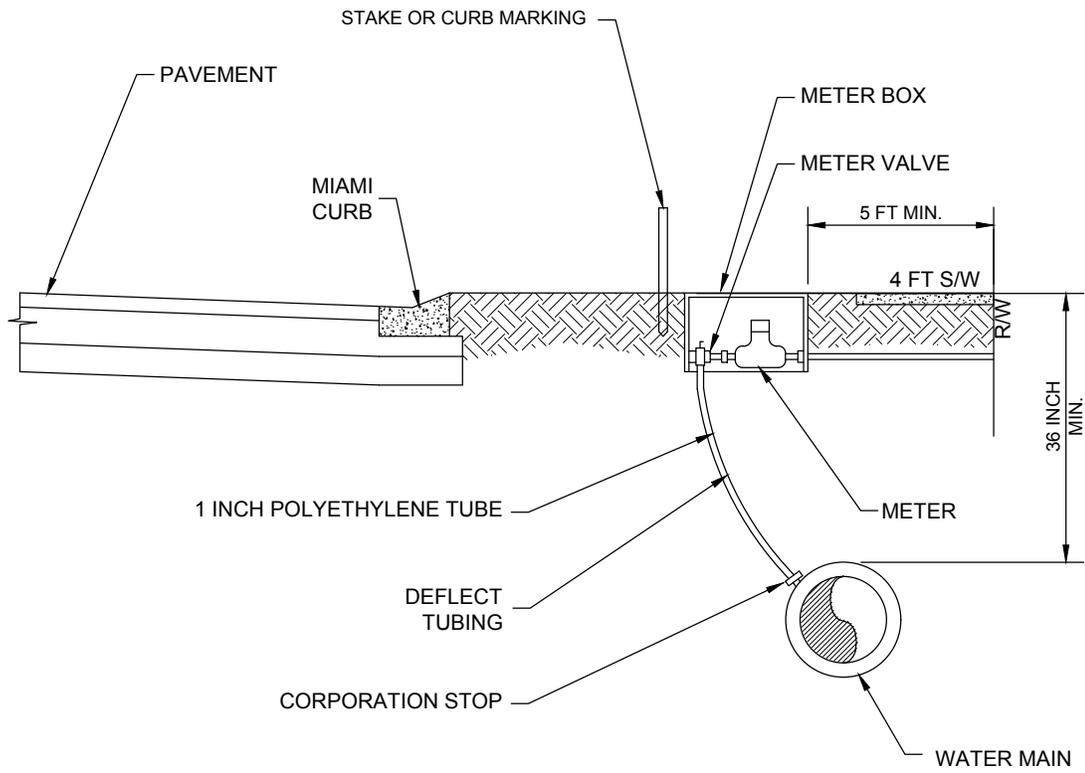


**SECTION "A-A"**

**NOTES:**

1. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
2. TEMPORARY IDENTIFICATION: EACH SERVICE SHALL TERMINATE AT A METER VALVE WHICH SHALL BE BURIED APPROXIMATELY 6 INCHES BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2 INCH x 2 INCH x 18 INCH STAKE WITH THE TOP PAINTED BLUE AND MARKED WITH THE LOT NUMBER SERVED.

<b>RESIDENTIAL DUAL METER SINGLE LOT SERVICE</b>	<b>10/2015</b>
<b>HILLSBOROUGH COUNTY, FLORIDA</b>	<b>SCALE: N.T.S.</b>



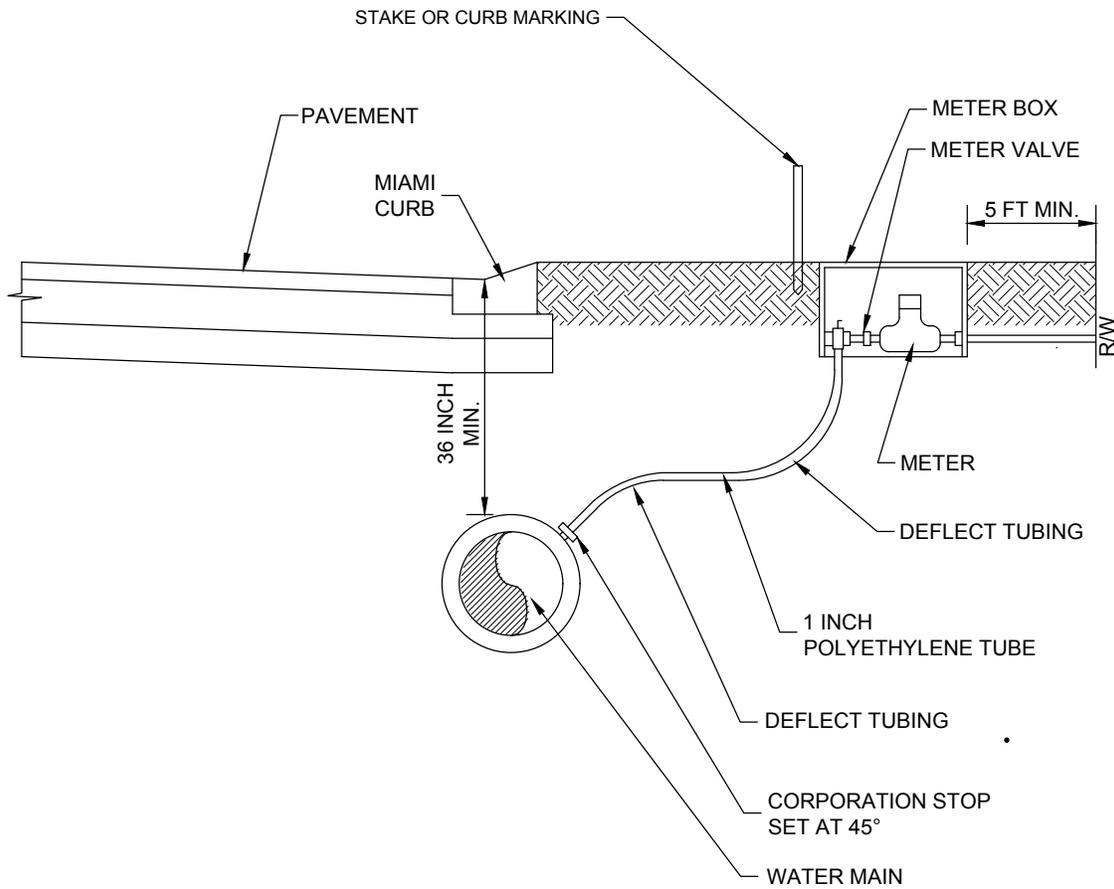
NOTE:

1. CAST BRONZE COMPRESSION FITTING CONNECTIONS SHALL BE USED & INSTALLED IN ACCORDANCE WITH COUNTY SPECIFICATIONS.
2. METER AND METER BOX SUPPLIED BY HILLSBOROUGH COUNTY.
3. USE 1 INCH DIAMETER HDPE FOR SINGLE SERVICE.
4. REDUCE HDPE AT THE METER WITH A BRASS REDUCER.
5. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
6. EACH SERVICE SHALL TERMINATE AT A METER VALVE WHICH SHALL BE BURIED APPROXIMATELY 6 INCHES BELOW FINAL GRADE AND SHALL BE CLEARLY MARKED WITH A 2 INCH x 2 INCH x 18 INCH STAKE WITH THE TOP PAINTED BLUE AND MARKED WITH THE LOT NUMBER SERVED.

**RESIDENTIAL METER SERVICE  
INSTALLATION (METER OVER MAIN)  
HILLSBOROUGH COUNTY, FLORIDA**

10/2015

SCALE: N.T.S.



NOTE:

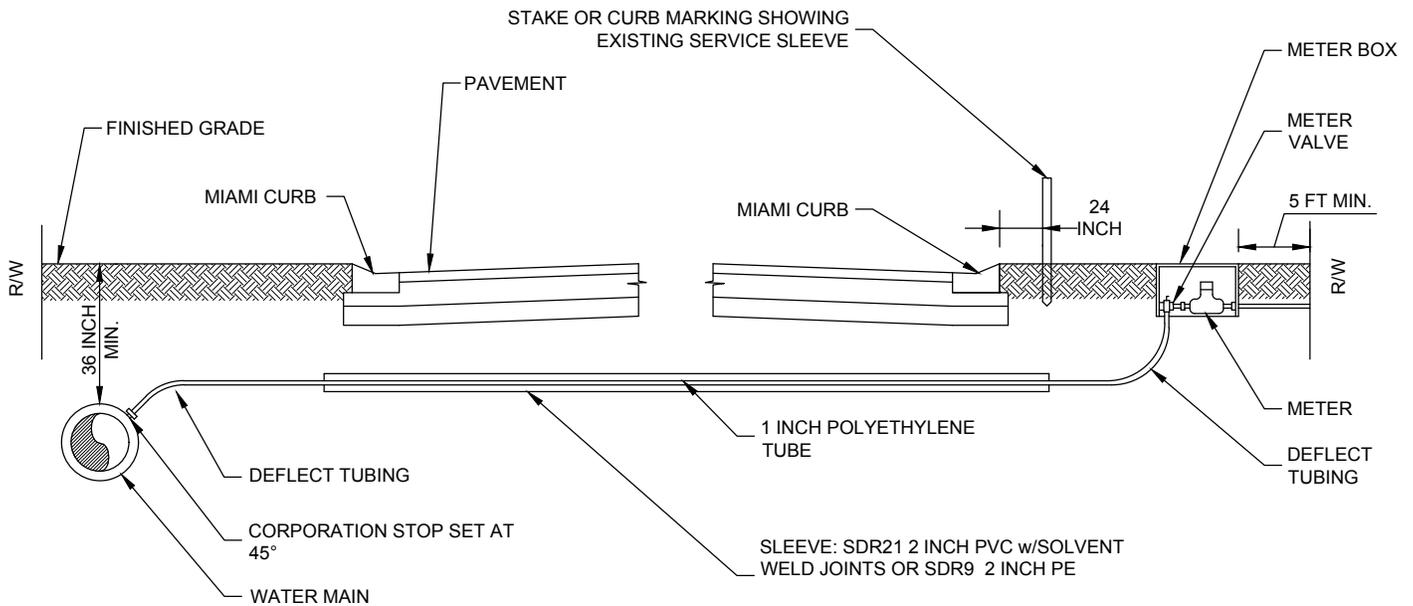
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**RESIDENTIAL METER SERVICE  
INSTALLATION (NEAR SIDE)**

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**



**NOTE:**

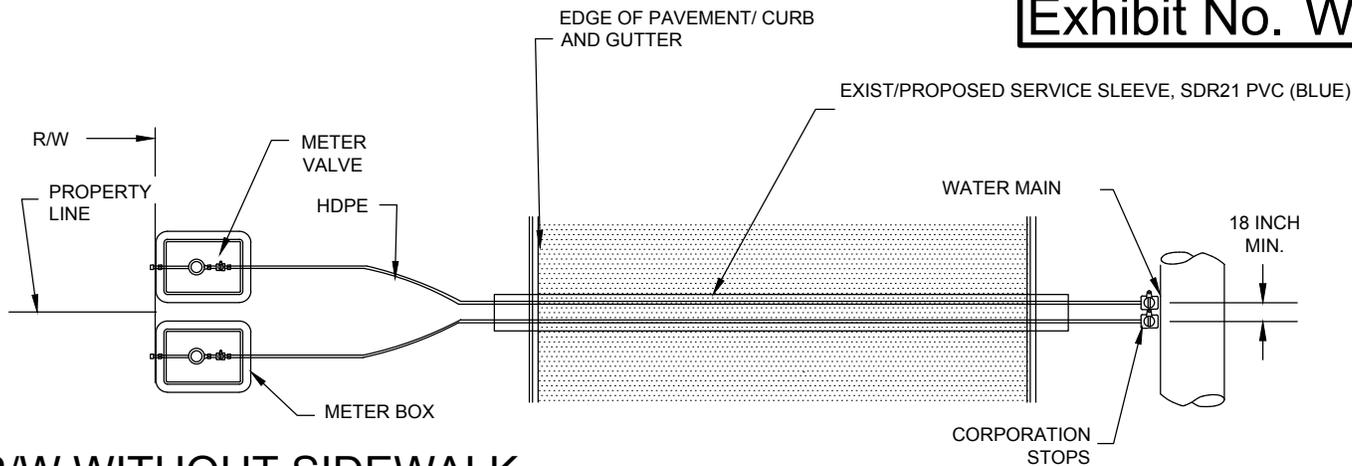
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3. USE 1 INCH DIAMETER HDPE FOR SINGLE SERVICE.
4. REDUCE HDPE AT THE METER WITH A BRASS REDUCER.
5. NO SERVICE LINE SHALL TERMINATE UNDER A DRIVEWAY.
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**RESIDENTIAL METER SERVICE  
INSTALLATION (FAR SIDE)**

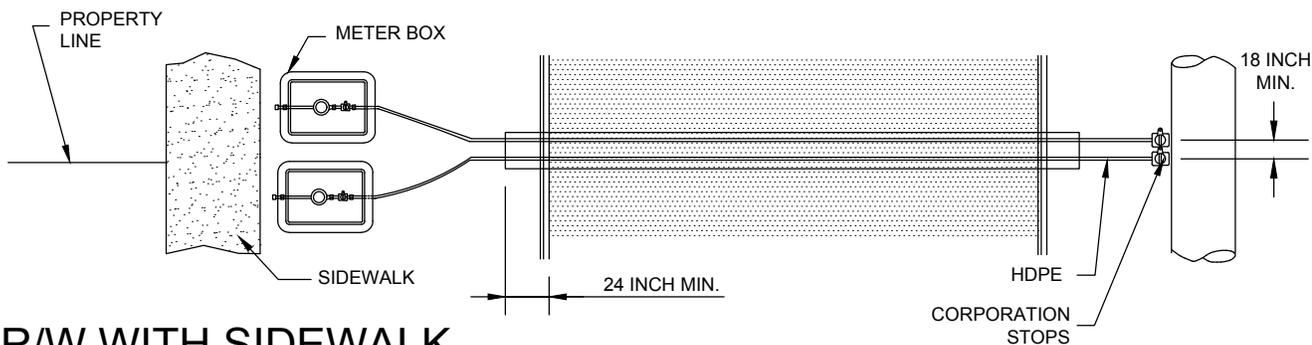
**HILLSBOROUGH COUNTY, FLORIDA**

**10/2015**

**SCALE: N.T.S.**

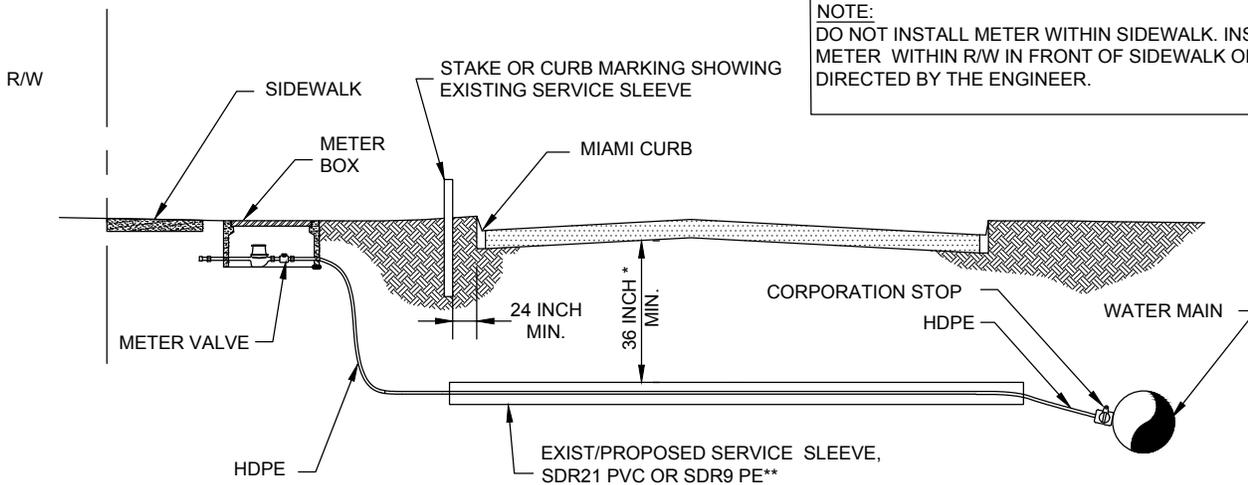


**R/W WITHOUT SIDEWALK**



**R/W WITH SIDEWALK**

**PLAN**



**NOTE:**  
DO NOT INSTALL METER WITHIN SIDEWALK. INSTALL METER WITHIN R/W IN FRONT OF SIDEWALK OR AS DIRECTED BY THE ENGINEER.

**PROFILE**

\* 36 INCH MIN. OR GREATER IF REQUIRED BY APPROPRIATE PERMITTING AGENCY

METER SIZE	SERVICE LINE SIZE (inches)	CASING SIZE (inches)
3/4 & 1 Inch Dual Service	1	3 **

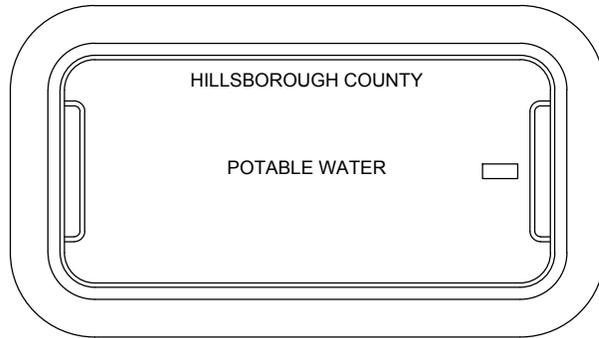
\*\* FOR SERVICES > 50 FT (E.G., CUL DE SAC CROSSINGS), A 4 INCH DIAMETER CASING IS REQUIRED

**RESIDENTIAL DUAL LOT  
METERED SERVICE (FAR SIDE)**

**10/2015**

**HILLSBOROUGH COUNTY, FLORIDA**

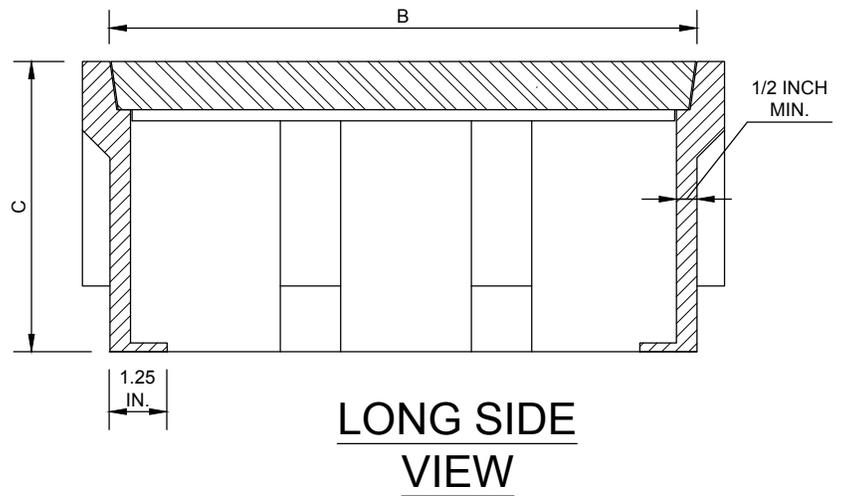
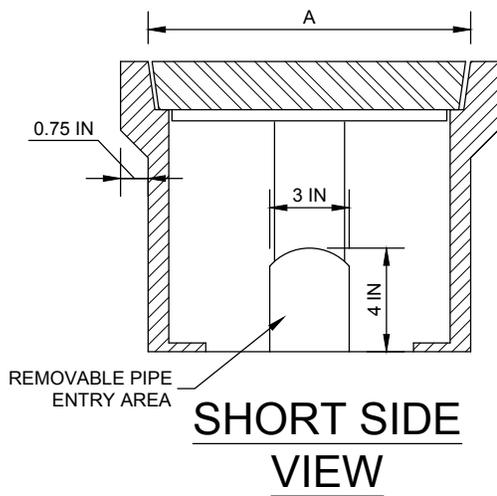
**SCALE: N.T.S.**



**PLAN VIEW**

NOTE:

1. ALL LETTERING SHALL BE CAPITALIZED AND AT LEAST ONE INCH IN HEIGHT.
2. REMAINDER OF OPEN SURFACE SHALL BE CROSS HATCHED TO REDUCE SLIPPING ACCIDENTS.
3. COLOR OF BOX AND LID SHALL BE BLACK.
4. A METAL REINFORCED PICK HOLE SHALL BE CENTERED ON THE LIFTING SIDE OF THE LID.
5. THE OPTION OF HAVING LOCKING TABS TO PREVENT "FLOATING" SHALL BE BY REQUEST ONLY.
6. METER BOXES ARE TRAFFIC RATED (H-20).
7. LID THICKNESS TO BE 1.5 INCH MIN.



DIMENSION *	SINGLE	DUAL
A	11-1/8 INCHES	14-5/8 INCHES
B	18 INCHES	16-5/8 INCHES
C	12 INCHES	12 INCHES

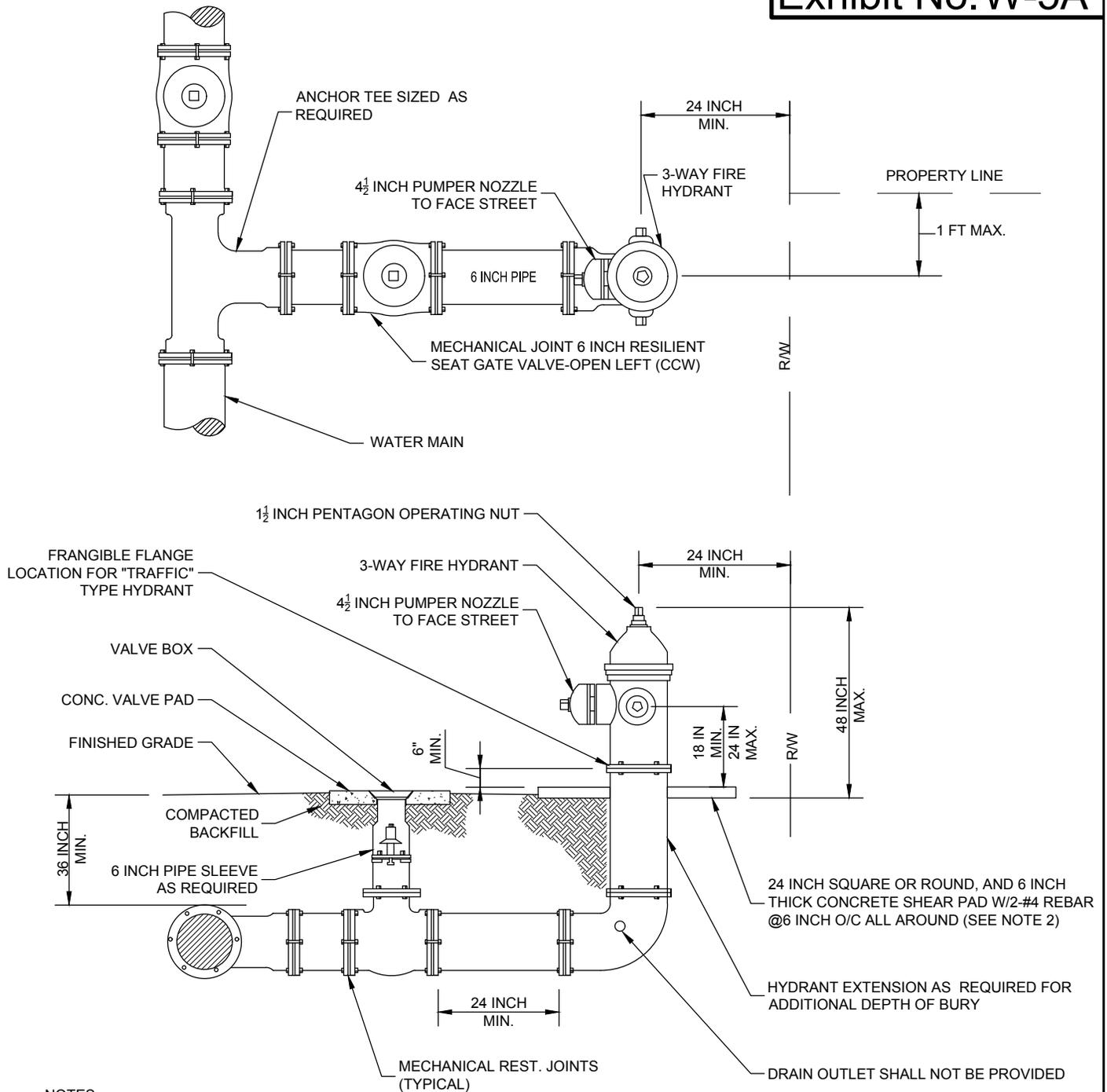
\* ALL DIMENSIONS ± 1/8 INCH

POTABLE WATER METER BOX

10/2015

HILLSBOROUGH COUNTY, FLORIDA

SCALE: N.T.S.



**NOTES:**

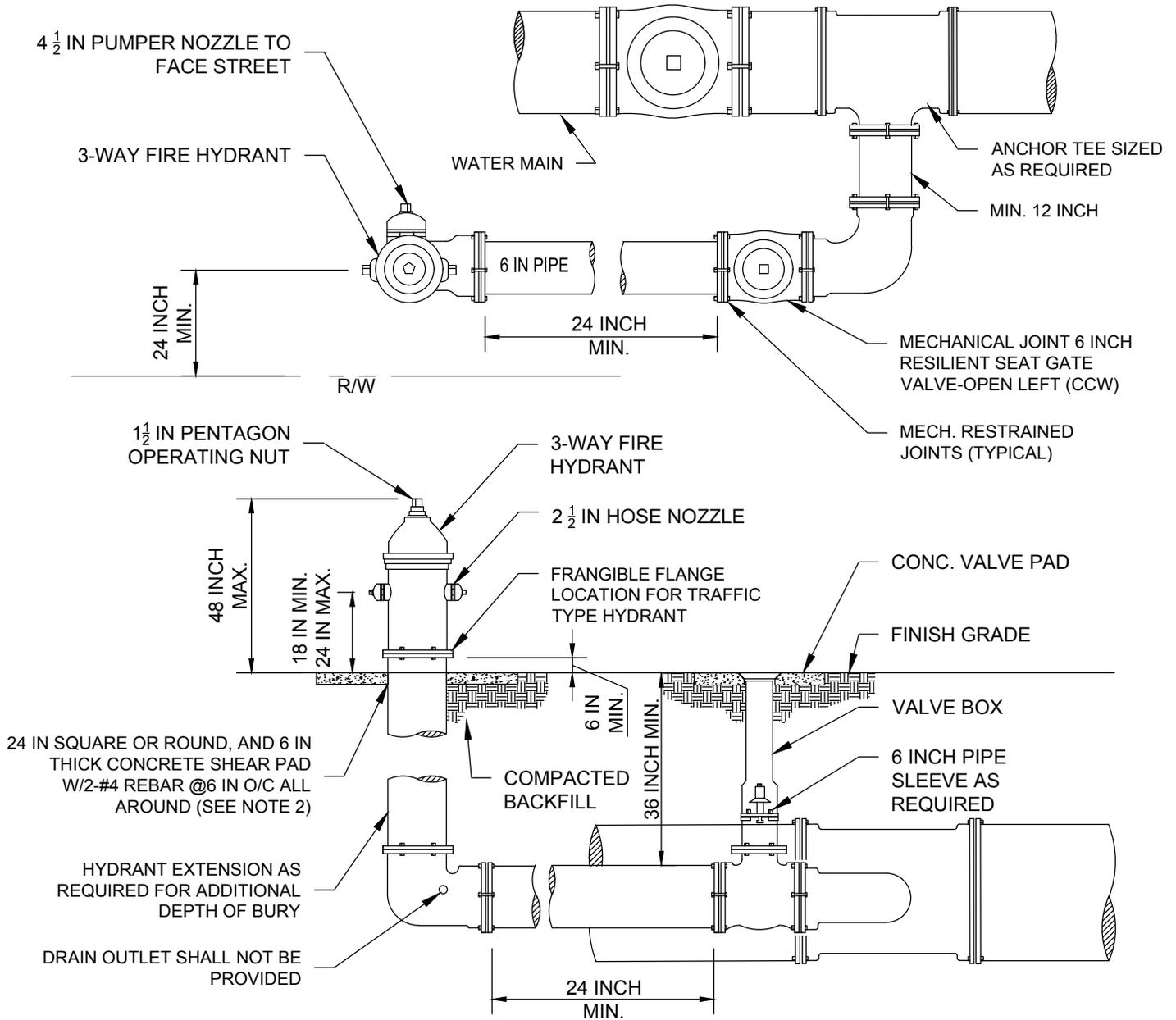
1. SHEAR PAD REQUIRED FOR ALL HYDRANTS ALONG ARTERIAL AND COLLECTOR ROADWAYS . 18 INCH MIN CLEARANCE TO BE MAINTAINED BETWEEN PAD AND HYDRANT NOZZLES.
2. CLEARANCE BETWEEN BOTTOM OF FLANGE AND TOP OF SHEAR PAD SHALL BE 6 INCH ± 0 INCH TOLERANCE.
3. FIRE HYDRANTS SHALL BE INSTALLED BETWEEN BACK OF CURB AND FACE OF SIDEWALK EXCEPT WHERE CONDITIONS AND/OR REGULATIONS PROHIBIT.
4. PUMPER NOZZLE TO FACE STREET.
5. PER NFPA 1, CLEARANCES OF SEVEN AND ONE HALF FEET IN FRONT OF AND TO THE SIDES OF THE FIRE HYDRANT, AND FOUR FEET TO THE REAR OF THE HYDRANT MUST BE MAINTAINED.

**FIRE HYDRANT  
(RESTRAINED)**

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**



**NOTES:**

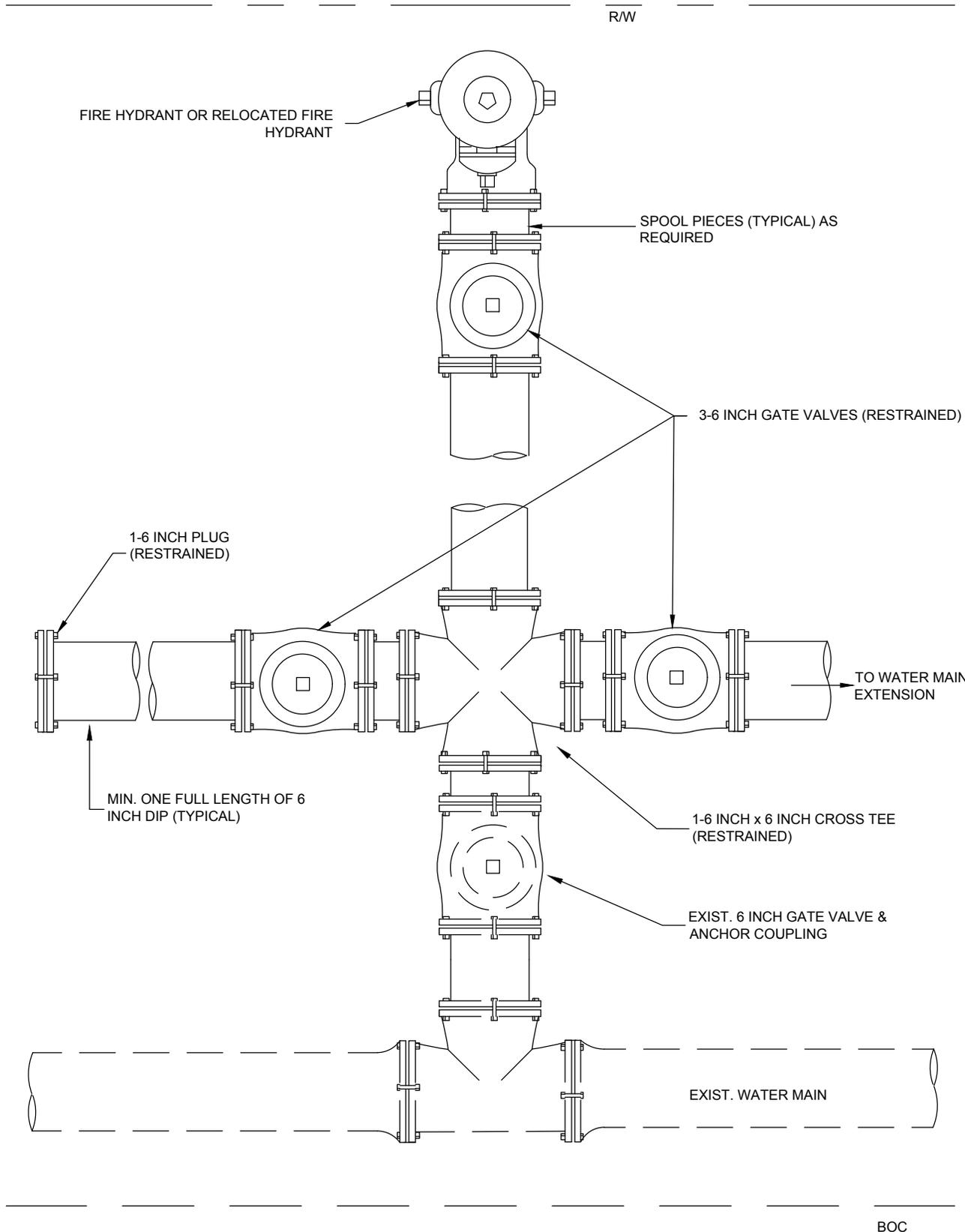
1. SHEAR PAD REQUIRED FOR ALL HYDRANTS ALONG ARTERIAL AND COLLECTOR ROADWAYS. 18 INCH MIN CLEARANCE TO BE MAINTAINED BETWEEN PAD AND HYDRANT NOZZLES.
2. CLEARANCE BETWEEN BOTTOM OF FLANGE AND TOP OF SHEAR PAD SHALL BE 6 INCH ± 0 INCH TOLERANCE.
3. FIRE HYDRANTS SHALL BE INSTALLED BETWEEN BACK OF CURB AND FACE OF SIDEWALK EXCEPT WHERE CONDITIONS AND/OR REGULATIONS PROHIBIT.
4. PUMPER NOZZLE TO FACE STREET.
5. PER NFPA 1, CLEARANCES OF SEVEN AND ONE HALF FEET IN FRONT OF AND TO THE SIDES OF THE FIRE HYDRANT, AND FOUR FEET TO THE REAR OF THE HYDRANT MUST BE MAINTAINED.

**FIRE HYDRANT FOR LIMITED SPACE  
(RESTRAINED)**

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**

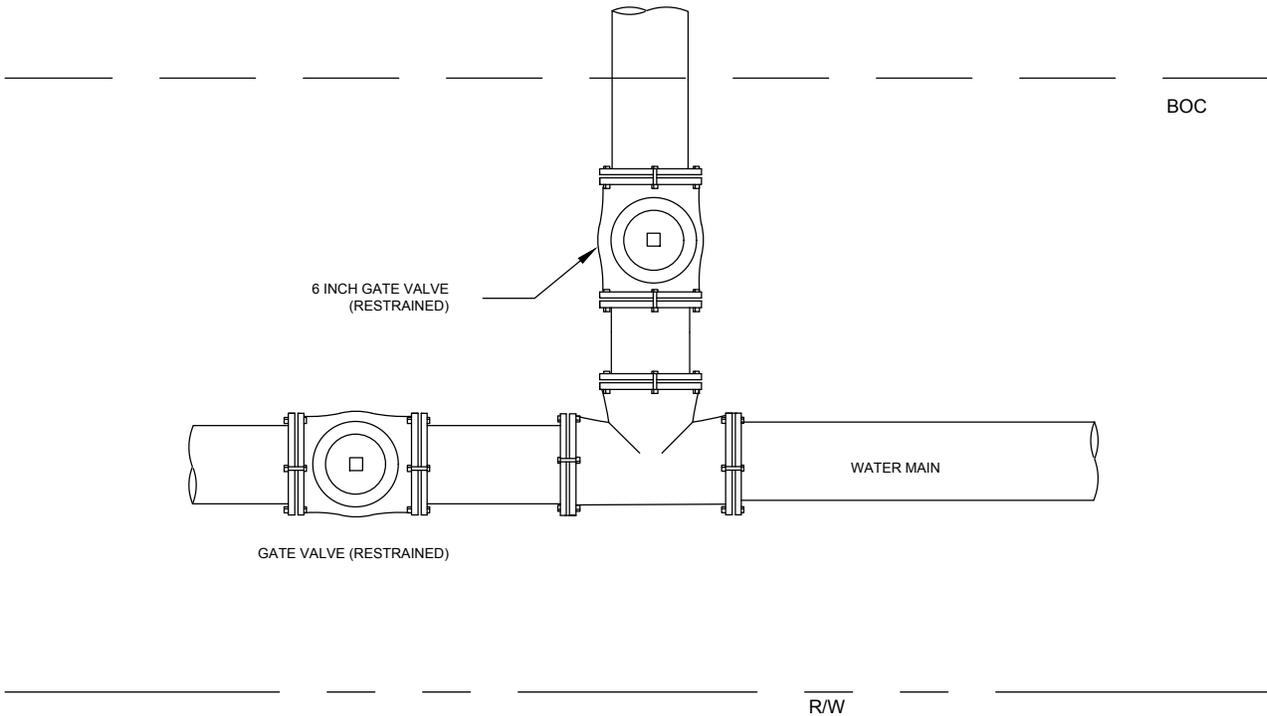
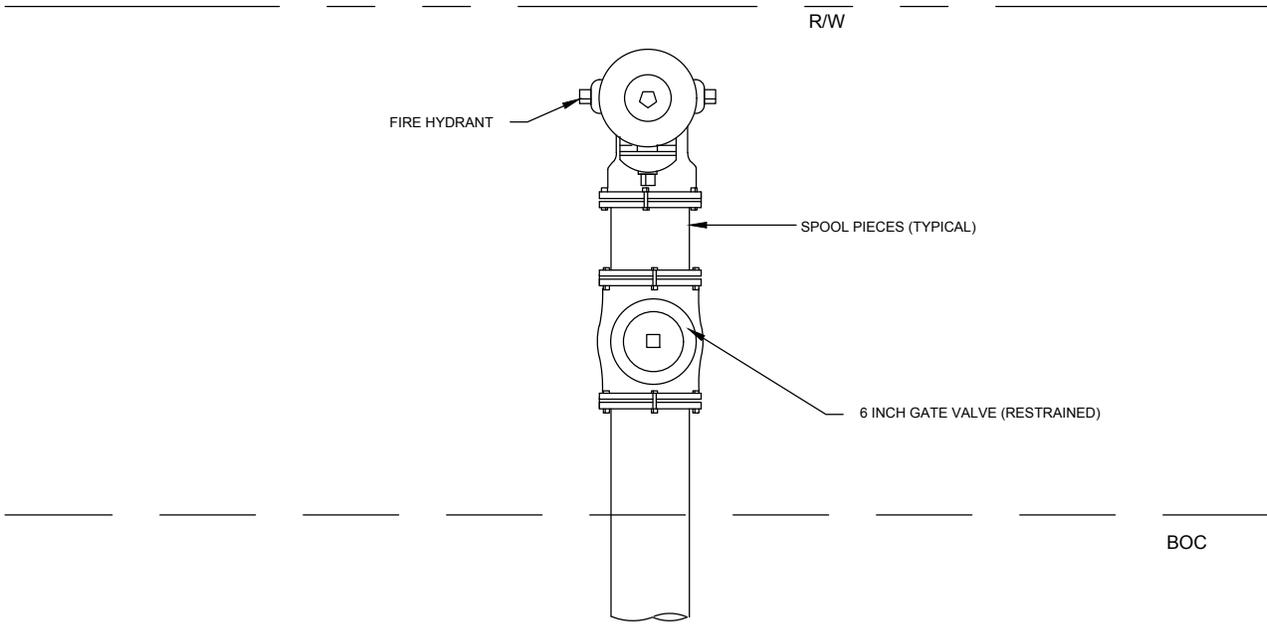


WATER MAIN EXTENSION  
WITH HYDRANT DETAIL

10/2015

HILLSBOROUGH COUNTY, FLORIDA

SCALE: N.T.S.

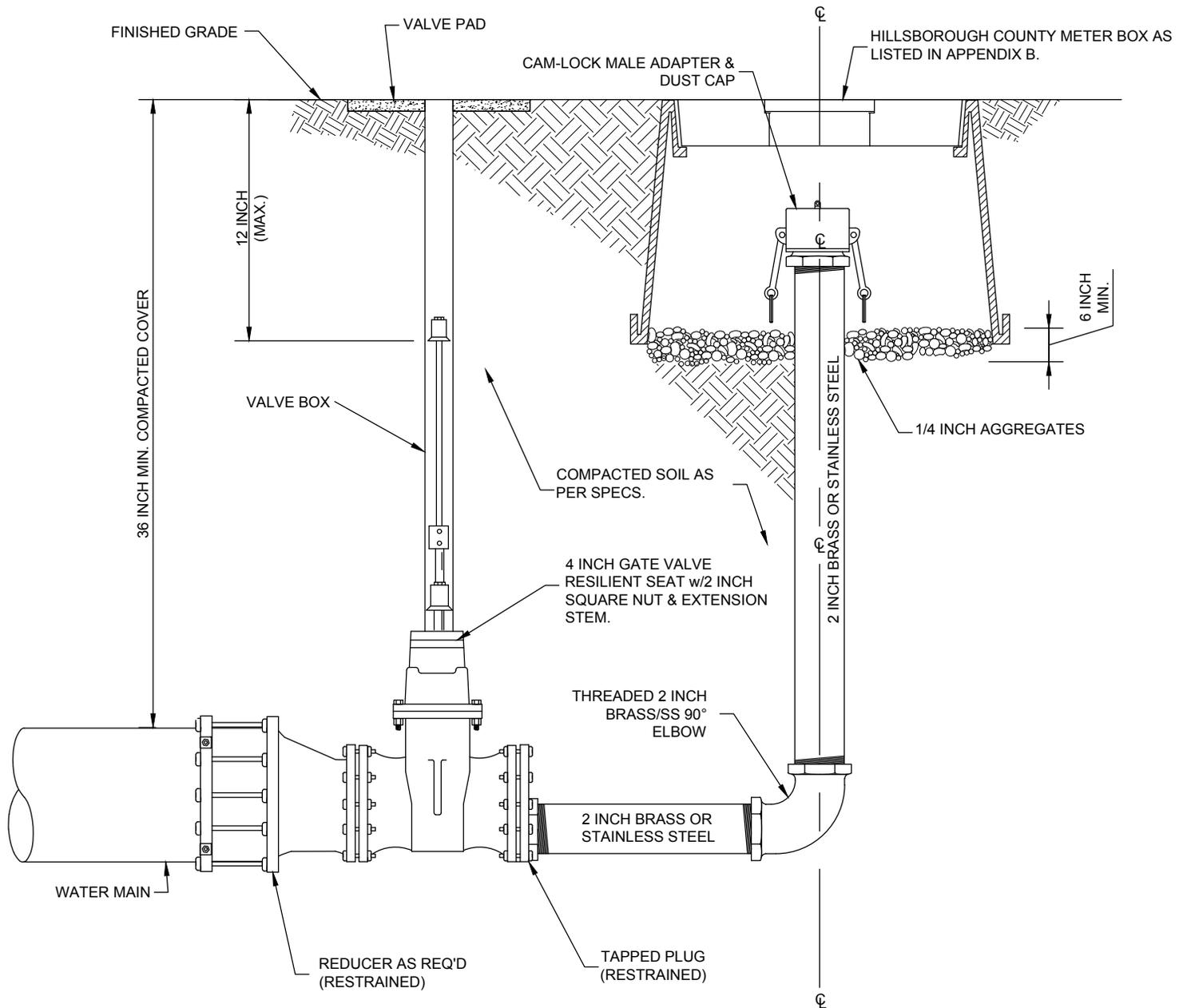


FAR SIDE HYDRANT DETAIL

10/2015

HILLSBOROUGH COUNTY, FLORIDA

SCALE: N.T.S.



**NOTES:**

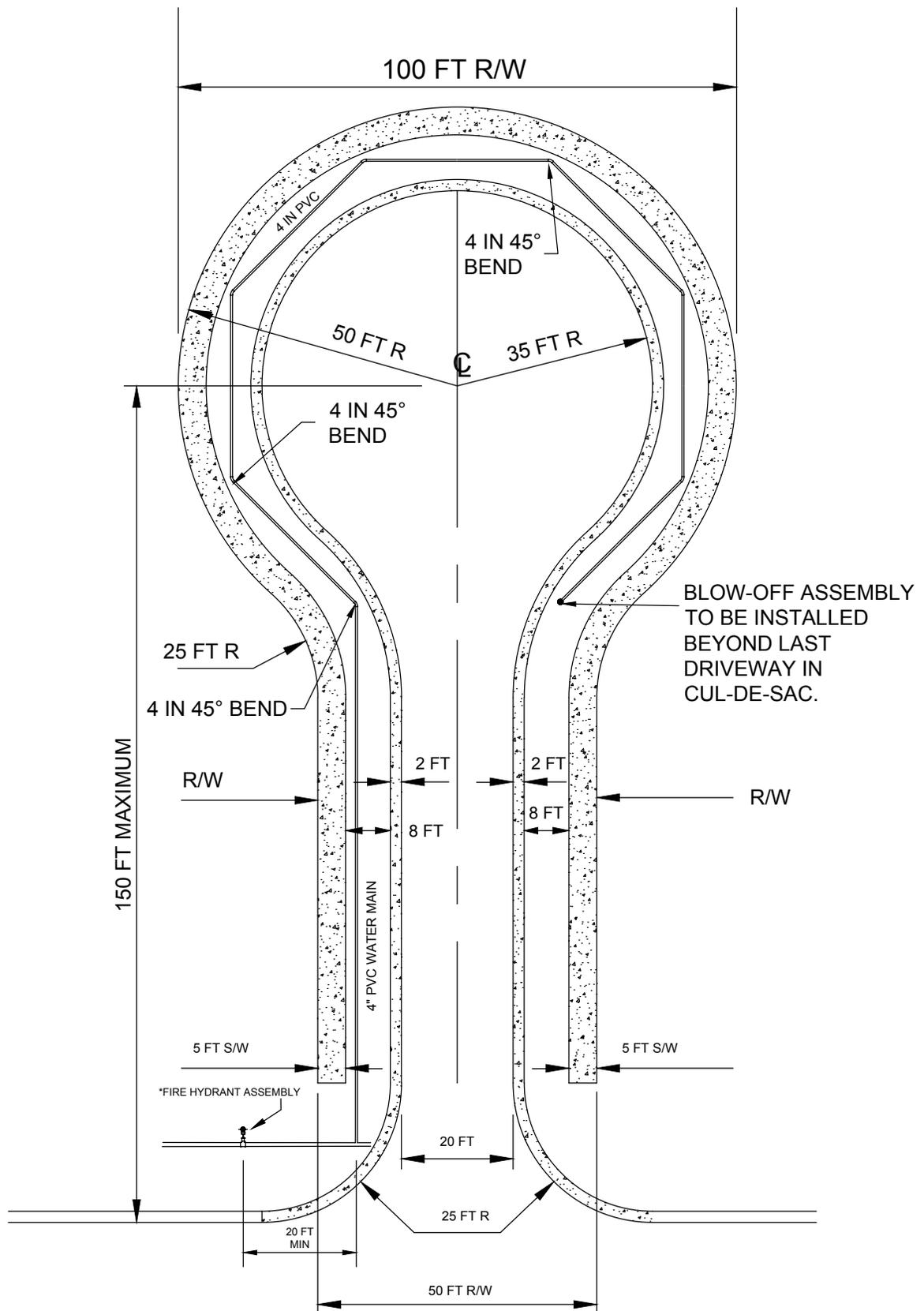
1. ALL BRASS/STAINLESS PIPE AND FITTINGS SHALL BE THREADED SCH. 40.
2. CAM-LOCK MALE ADAPTER & DUST CAP SHALL BE STAINLESS STEEL/THREADED.
3. ACTUAL LENGTH OF BRASS/STAINLESS PIPELINE TO BE DETERMINED IN THE FIELD.
4. DEFLECT OR INSTALL FITTINGS AS REQUIRED TO MAINTAIN COVER AND TO SET BLOW-OFF ASSEMBLY PLUMB.
5. EXTENSION OF VALVE BOX SHALL BE SET SO AS TO RESERVE 1/2 OF THE ADJUSTMENT LENGTH FOR FUTURE USE.

**BLOWOFF ASSEMBLY**

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

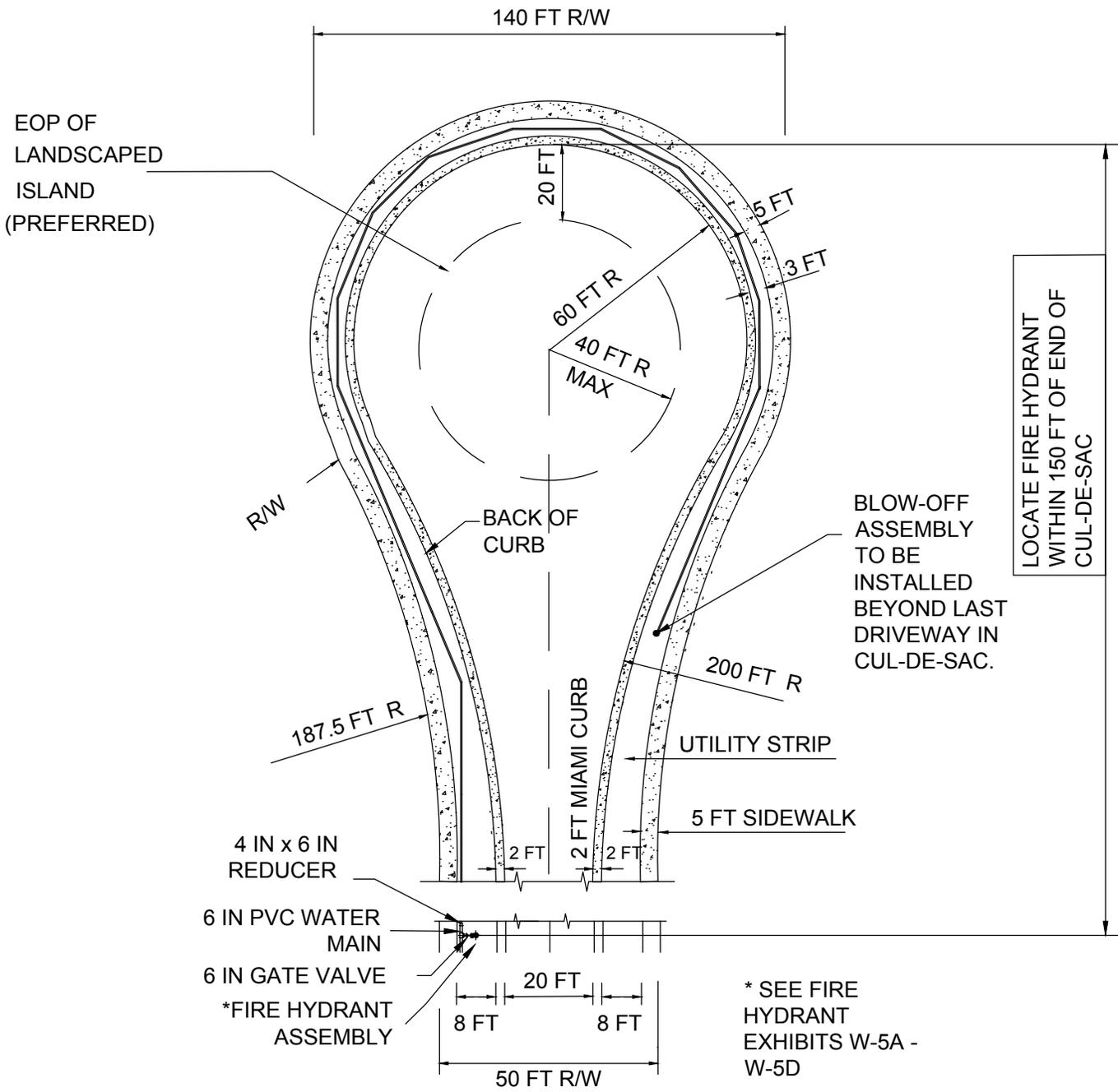
**SCALE: N.T.S.**



BLOW-OFF ASSEMBLY AND FIRE HYDRANT  
 @ CUL-DE-SAC ROAD UP TO 150 FT IN LENGTH  
 HILLSBOROUGH COUNTY, FLORIDA

10/2015

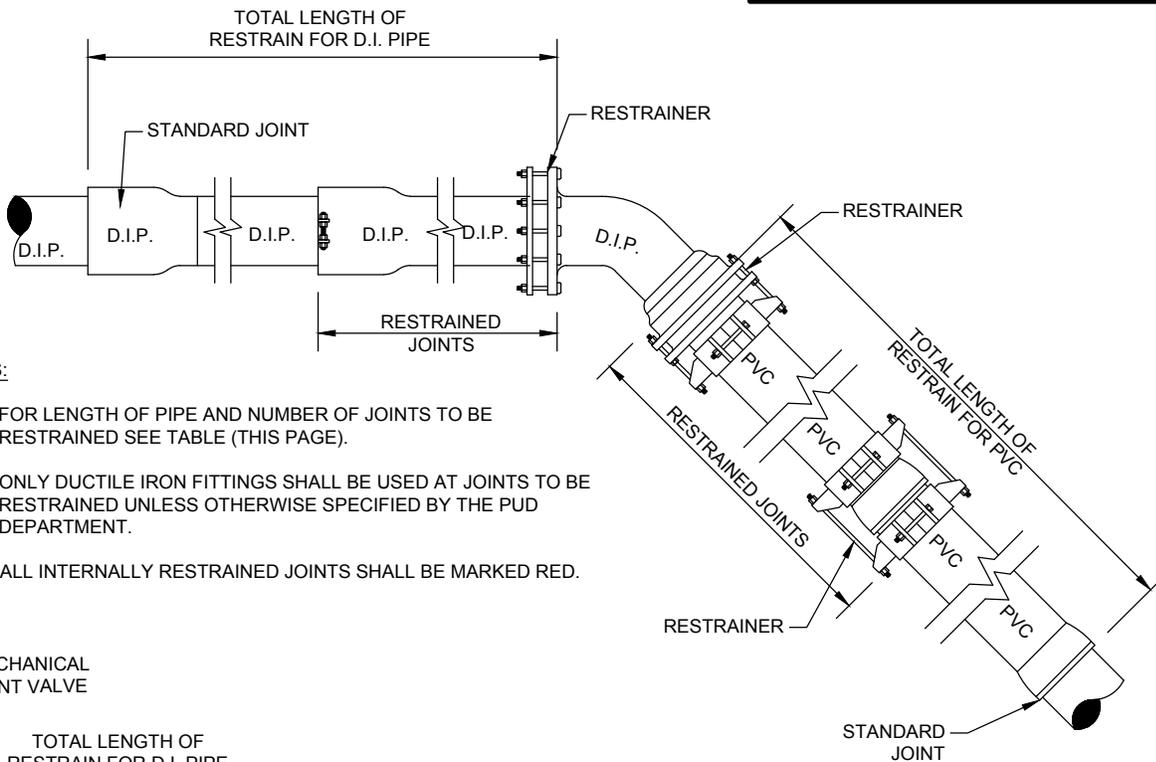
SCALE: N.T.S.



BLOW-OFF ASSEMBLY AND FIRE HYDRANT  
 @ CUL-DE-SAC GREATER THAN 150 FT IN LENGTH  
 HILLSBOROUGH COUNTY, FLORIDA

10/2015

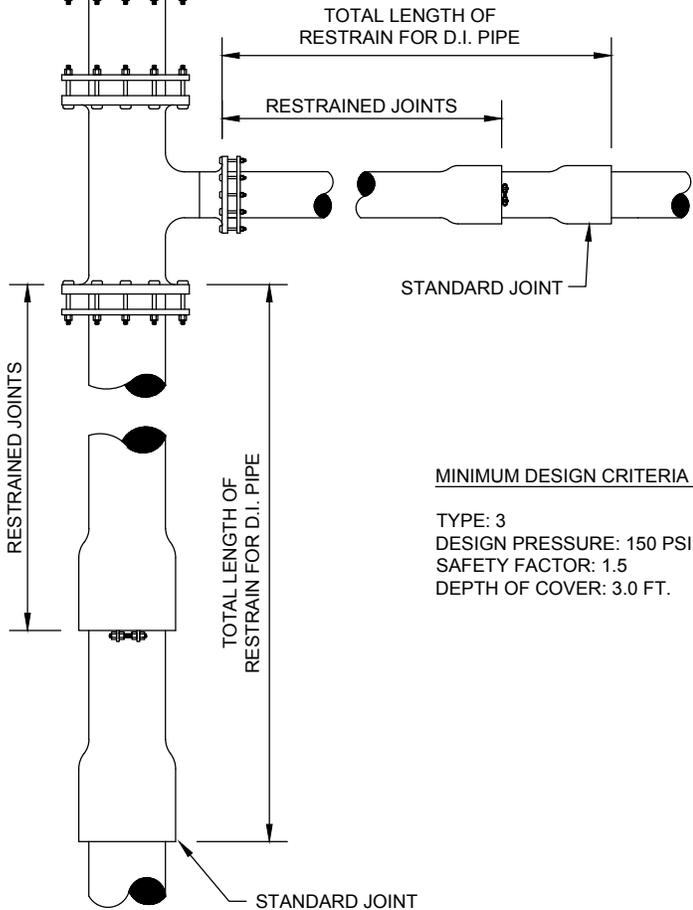
SCALE: N.T.S.



**NOTES:**

1. FOR LENGTH OF PIPE AND NUMBER OF JOINTS TO BE RESTRAINED SEE TABLE (THIS PAGE).
2. ONLY DUCTILE IRON FITTINGS SHALL BE USED AT JOINTS TO BE RESTRAINED UNLESS OTHERWISE SPECIFIED BY THE PUD DEPARTMENT.
3. ALL INTERNALLY RESTRAINED JOINTS SHALL BE MARKED RED.

DESIGN ENGINEER SHALL CALCULATE PROPER VALUES AND FILL IN TABLE PRIOR TO SUBMITTAL.



**MINIMUM DESIGN CRITERIA BEDDING**

TYPE: 3  
 DESIGN PRESSURE: 150 PSI.  
 SAFETY FACTOR: 1.5  
 DEPTH OF COVER: 3.0 FT.

**MINIMUM FOOTAGE OF PIPE RESTRAINT**

		PIPE SIZE (INCHES)				
		12"	14"	16"	18"	20"
11-1/4°	H-B					
	VU-B					
	VD-B					
22-1/2°	H-B					
	VU-B					
	VD-B					
45°	H-B					
	VU-B					
	VD-B					
90°	H-B					
	VU-B					
	VD-B					
TEE						
DEAD END PLUG						
REDUCER						

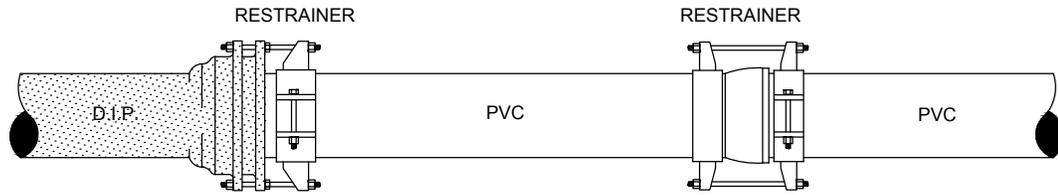
H-B: HORIZONTAL BEND  
 VU-B: VERTICAL-UP BEND  
 VD-B: VERTICAL-DOWN BEND

**RESTRAINED JOINT-STANDARD**

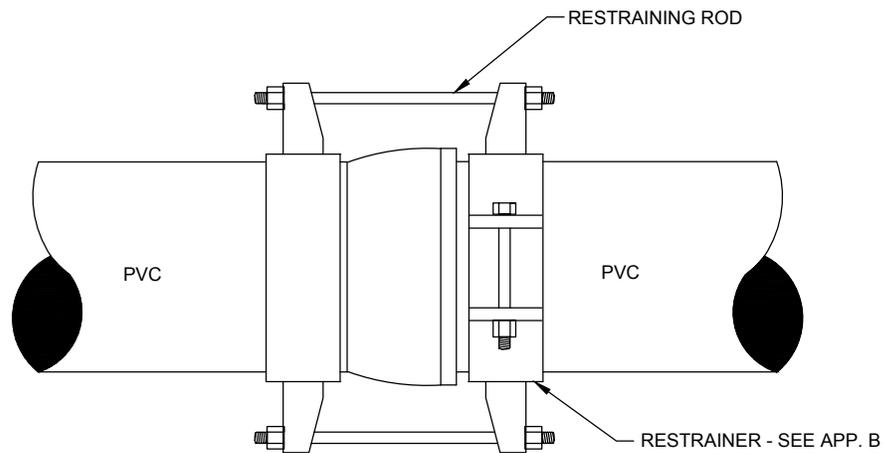
**10/2015**

**HILLSBOROUGH COUNTY, FLORIDA**

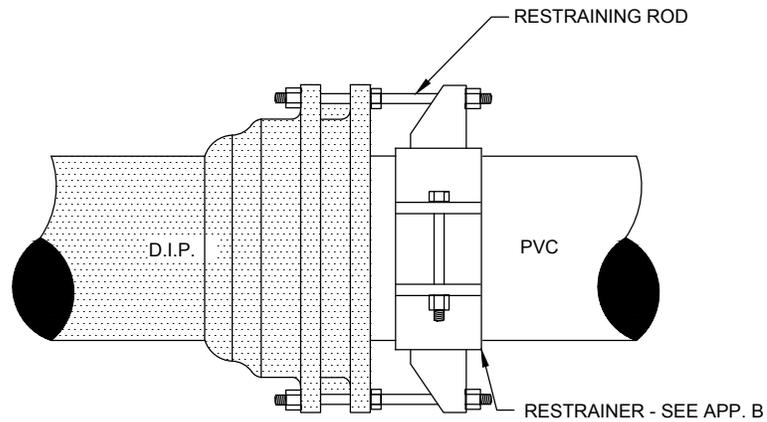
**SCALE: N.T.S.**



METHOD OF RESTRAINING PUSH-ON JOINT PIPE



DETAIL PUSH-ON JOINT

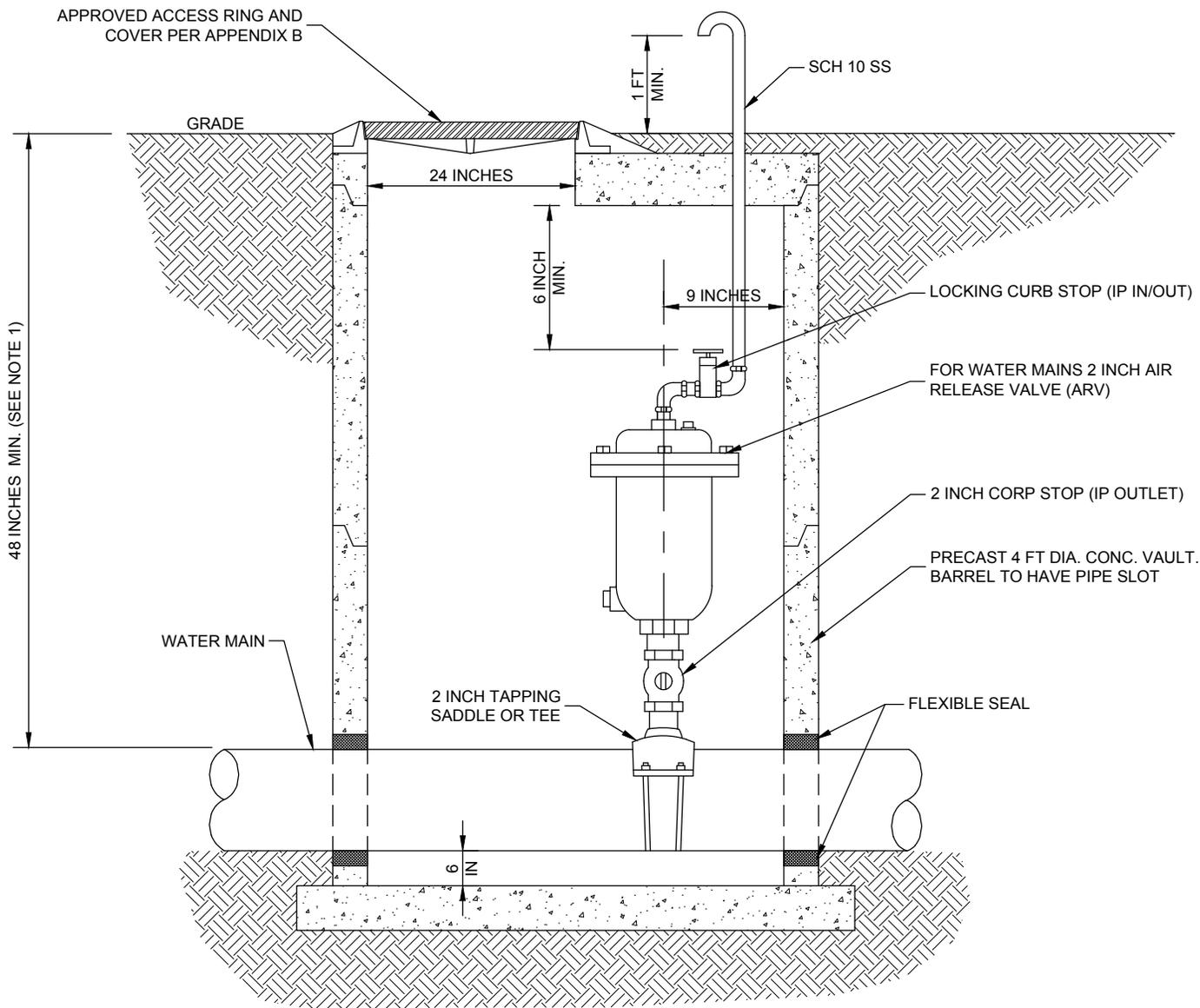


DETAIL M.J. JOINT

RESTRAINED JOINT  
FOR PVC C-900 PIPE (4 IN TO 12 IN)  
HILLSBOROUGH COUNTY, FLORIDA

10/2015

SCALE: N.T.S.



**NOTES:**

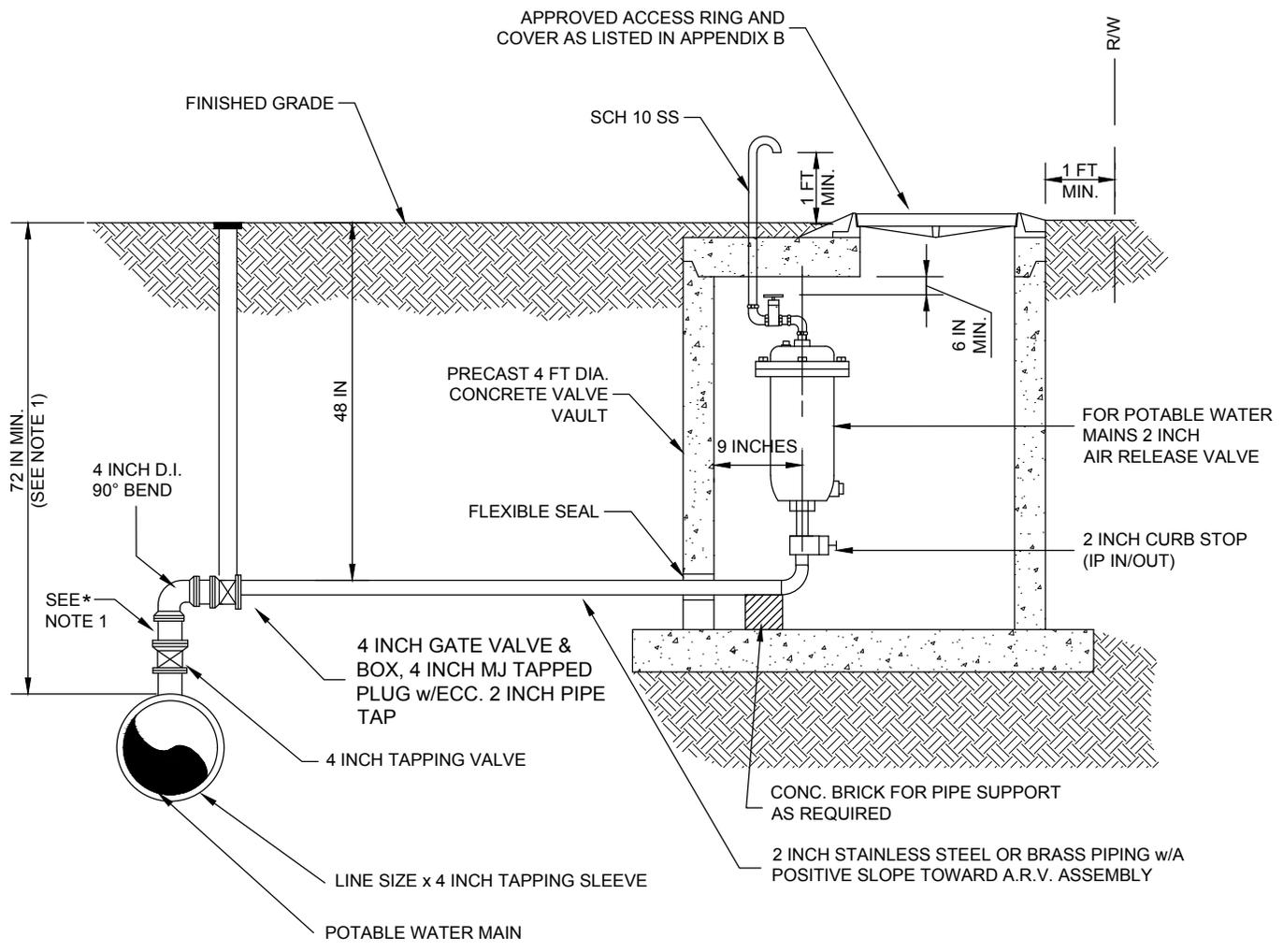
1. THE MINIMUM DEPTH OF THE ENTIRE PROPOSED WATER MAIN SHALL BE INCREASED AS SHOWN TO ENSURE THE VALVE VAULT FOR AN AUTOMATIC ARV CAN BE INSTALLED FLUSH WITH THE PROPOSED GRADE.
2. ENGINEER SHALL SUBMIT A FLOTATION CALCULATION TO THE COUNTY. VAULT SHALL BE TRAFFIC BEARING (H-20).
3. THE OPEN END OF THE AIR RELIEF PIPE WILL BE PROVIDED WITH A SCREENED, DOWNWARD-FACING ELBOW.
4. SEE APPENDIX B FOR APPROVED PRODUCTS.

**AUTOMATIC AIR RELIEF VALVE  
ASSEMBLY-STANDARD**

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**



**NOTE:**

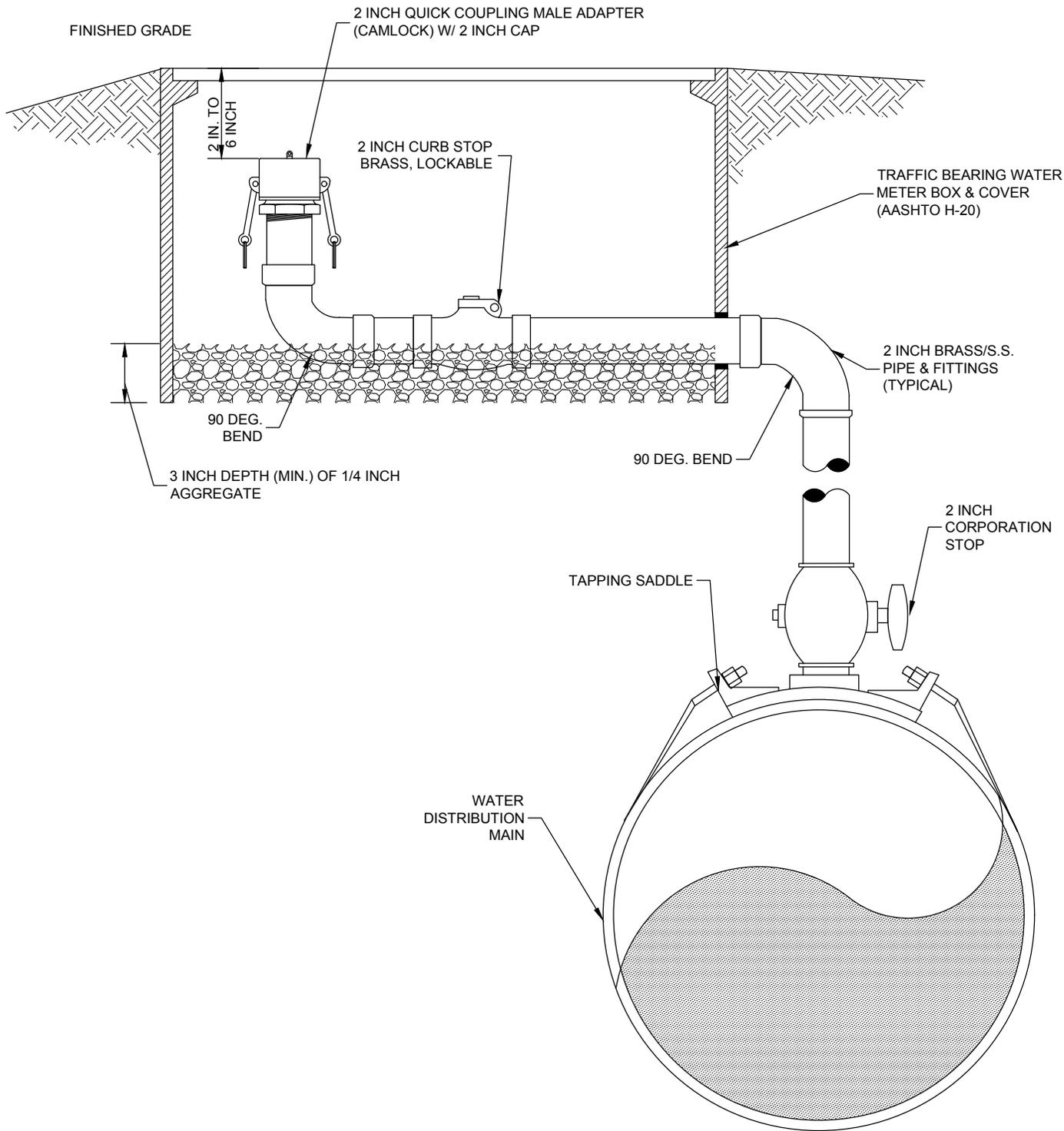
1. THE MINIMUM DEPTH OF THE ENTIRE PROPOSED WATER MAIN SHALL BE INCREASED AS SHOWN TO ENSURE THE VALVE VAULT FOR AN AUTOMATIC ARV CAN BE INSTALLED FLUSH WITH THE PROPOSED GRADE. \* IF A FOSTER ADAPTER IS USED THE DEPTH OF BURY CAN BE REDUCED 10 INCHES
2. ENGINEER SHALL SUBMIT A FLOTATION CALCULATION TO THE COUNTY. VAULT SHALL BE TRAFFIC BEARING (H-20).
3. THE OPEN END OF THE AIR RELIEF PIPE WILL BE PROVIDED WITH A SCREENED, DOWNWARD-FACING ELBOW.
4. SEE APPENDIX B FOR APPROVED PRODUCTS.

**AUTOMATIC AIR RELIEF VALVE  
ASSEMBLY-OFFSET**

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**

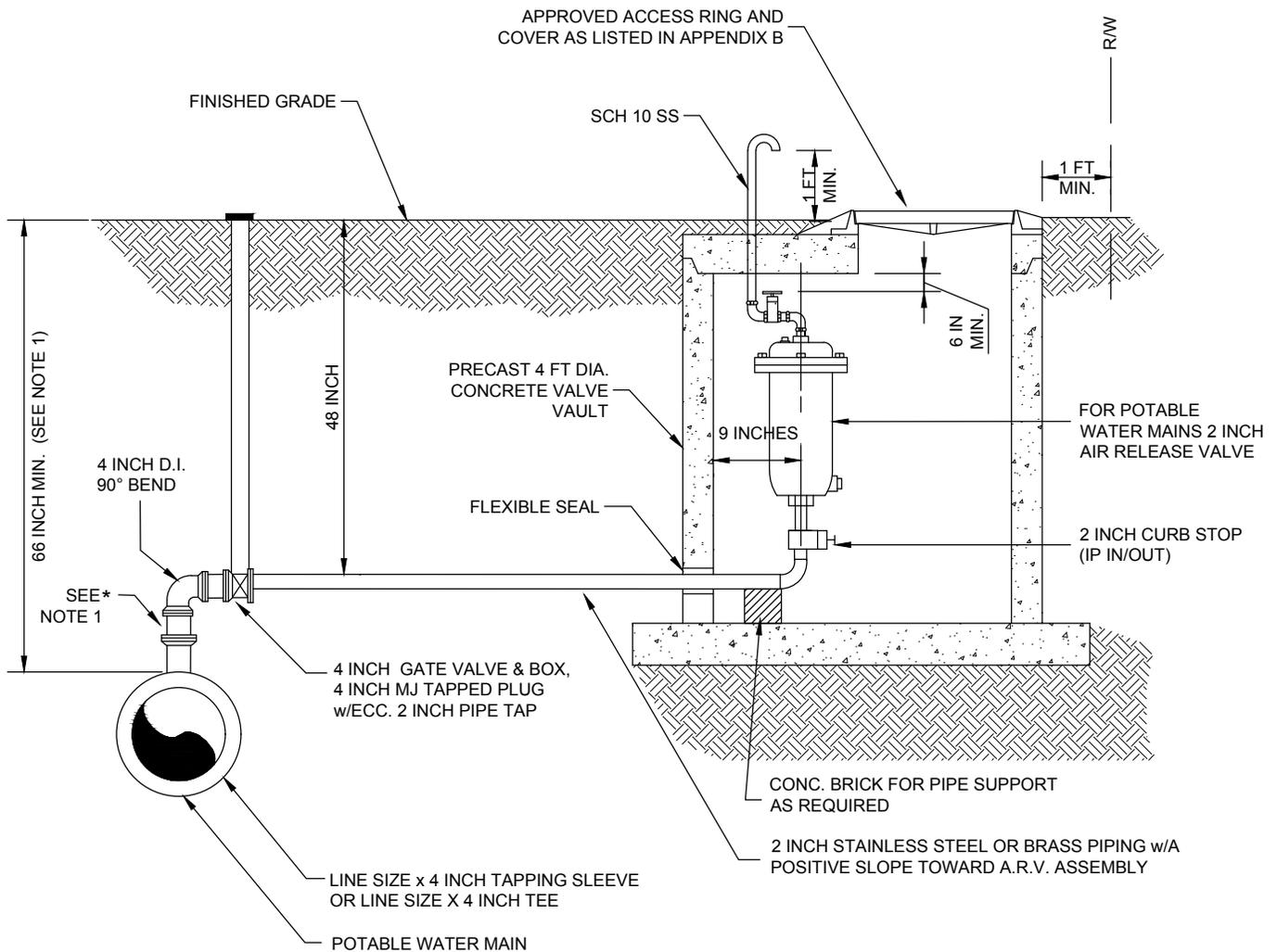


AIR RELIEF VALVE - MANUAL

10/2015

HILLSBOROUGH COUNTY, FLORIDA

SCALE: N.T.S.



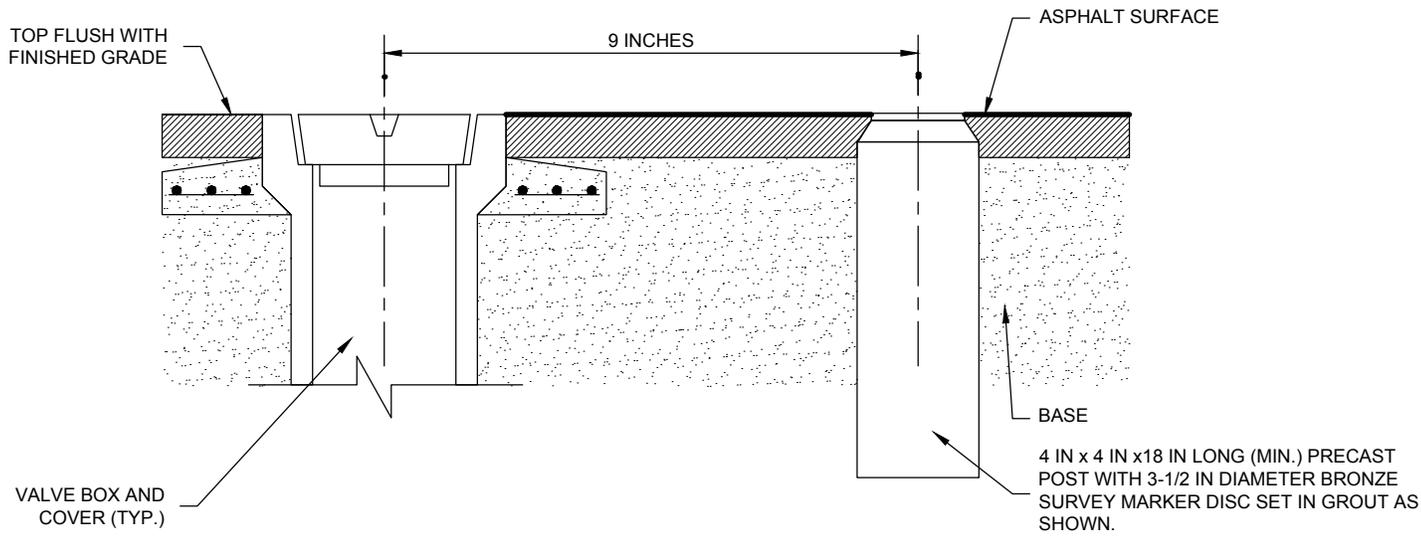
**NOTE:**

1. THE MINIMUM DEPTH OF THE ENTIRE PROPOSED WATER MAIN SHALL BE INCREASED AS SHOWN TO ENSURE THE VALVE VAULT FOR AN AUTOMATIC ARV CAN BE INSTALLED FLUSH WITH THE PROPOSED GRADE. \*IF A FOSTER ADAPTER IS USED THE DEPTH OF BURY CAN BE DECREASED 10 INCHES.
2. ENGINEER SHALL SUBMIT A FLOTATION CALCULATION TO THE COUNTY. VAULT SHALL BE TRAFFIC BEARING (H-20).
3. THE OPEN END OF THE AIR RELIEF PIPE WILL BE PROVIDED WITH A SCREENED, DOWNWARD-FACING ELBOW.
4. SEE APPENDIX B FOR APPROVED PRODUCTS.

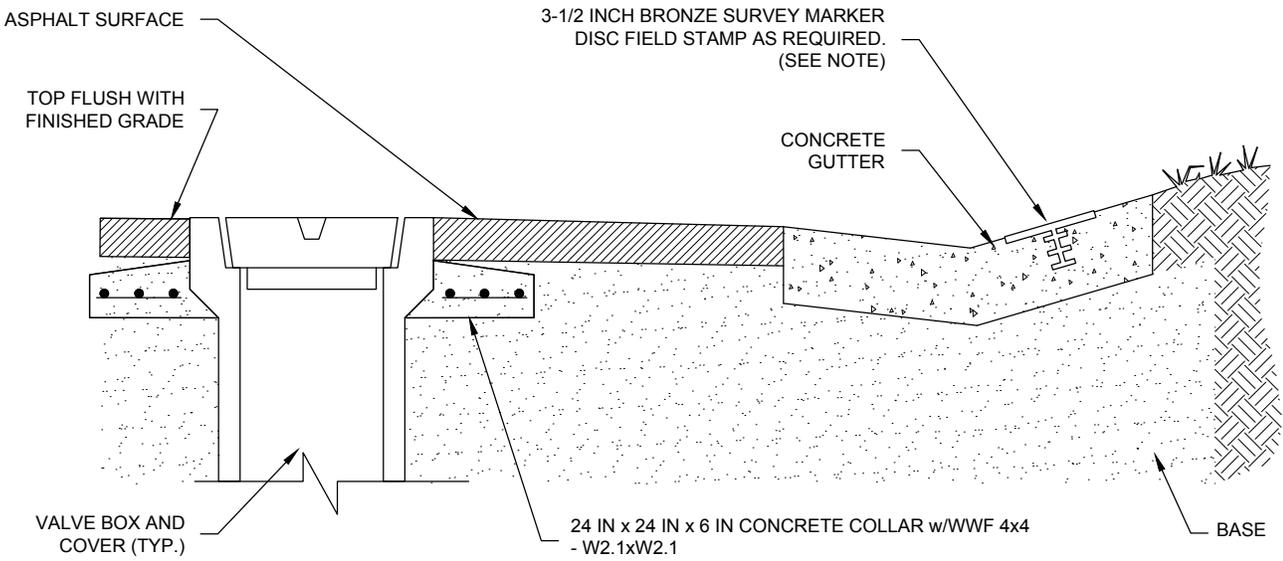
NEW CONSTRUCTION (NOT IN SERVICE)  
 AIR RELIEF VALVE ASSEMBLY - OFFSET  
 HILLSBOROUGH COUNTY, FLORIDA

10/2015

SCALE: N.T.S.

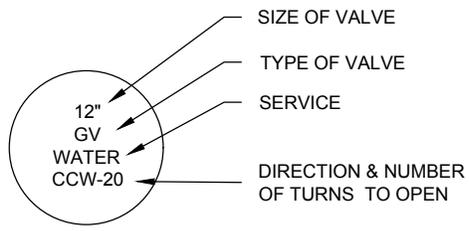


**EXAMPLE "A"**



**EXAMPLE "B"**

NOTE:  
BRONZE IDENTIFICATION DISC SHALL BE REQUIRED FOR ALL VALVES.



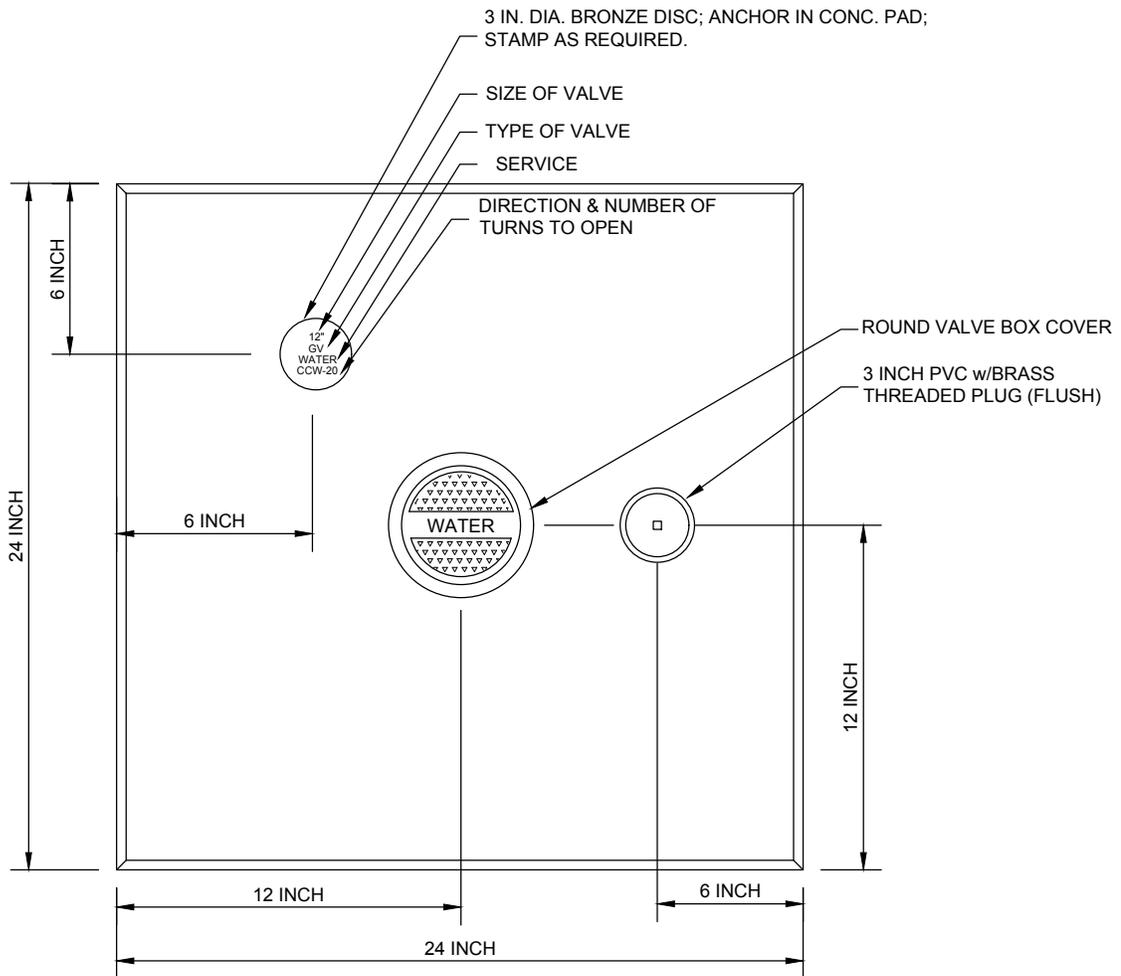
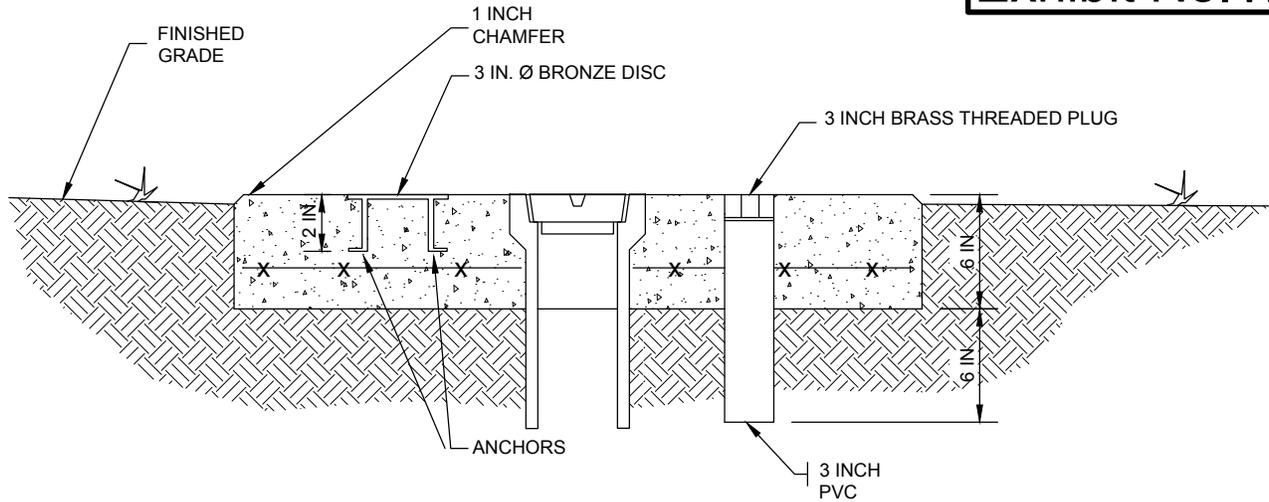
**MARKER DISC DETAIL**

VALVE BOX & MARKER INSTALLATION  
FOR PAVED AREAS

10/2015

HILLSBOROUGH COUNTY, FLORIDA

SCALE: N.T.S.



NOTES:

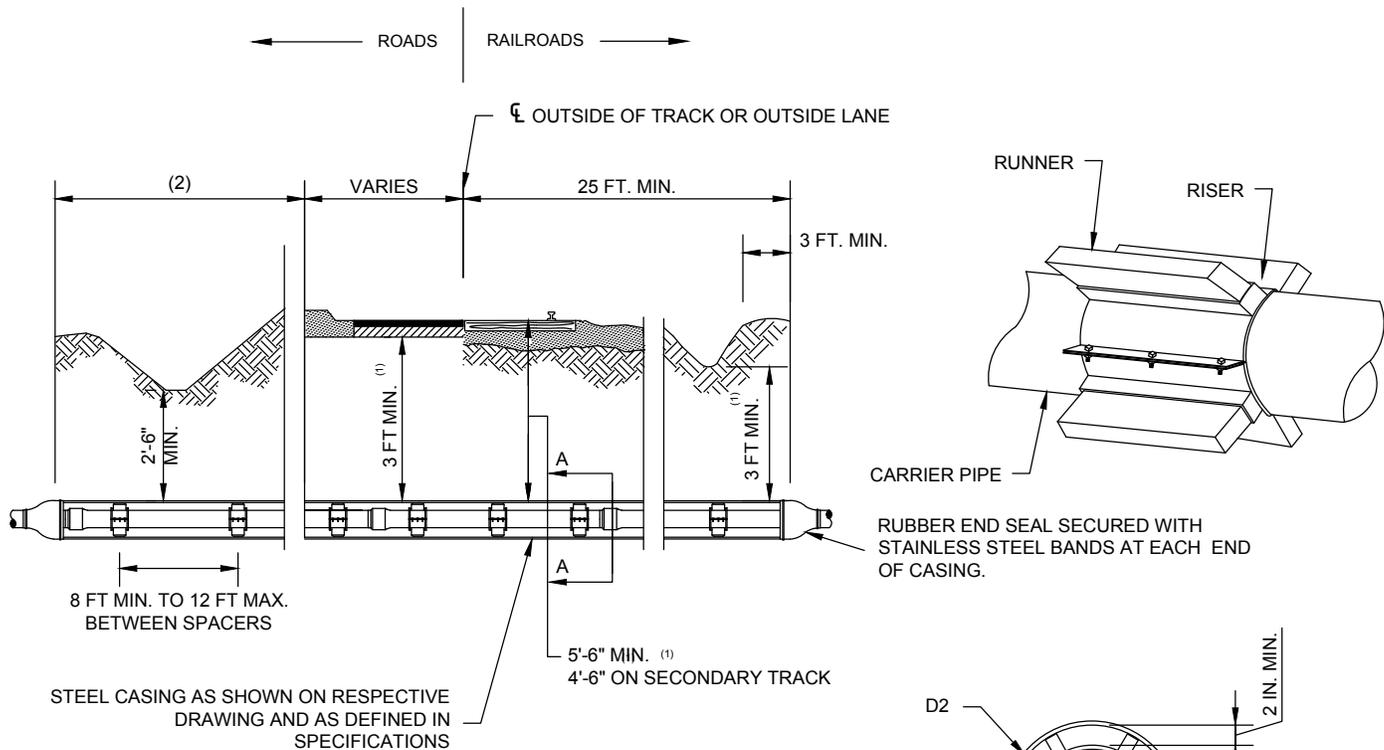
1. CONCRETE TO BE TYPE I GENERAL PORTLAND CEMENT WITH 3/4 IN. TOP SIZE AGGREGATE AND SHALL DEVELOP A 28-DAY STRENGTH OF 3000 psi
2. REINFORCING STEEL SHALL BE WELDED WIRE FABRIC 6x6 - W1.4 x W1.4
3. CONCRETE VALVE PAD SHALL BE POURED IN PLACE AND SHALL BE SET 1/2 IN. ABOVE FINISHED GRADE

**CONCRETE VALVE PAD  
(FOR UNPAVED AREAS)**

**HILLSBOROUGH COUNTY, FLORIDA**

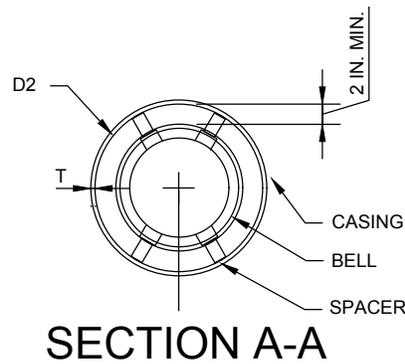
10/2015

SCALE: N.T.S.



**NOTES:**

1. VERTICAL DIMENSIONS TYPICAL FOR CASINGS
2. WITH CURB: 6 FT STATE & 2 FT COUNTY ROADS MINIMUM  
WITHOUT CURB: 8 FT STATE & 4 FT COUNTY ROADS MINIMUM
3. STEEL CASING PIPE SHALL CONFORM TO THE REQUIREMENTS OF AWWA C-200 AND ASTM A-139, GRADE B.
4. WHEN CASING IS INSTALLED WITHOUT BENEFIT OF A PROTECTIVE COATING, AND SAID CASING IS NOT CATHODICALLY PROTECTED, THE WALL THICKNESS SHOWN SHALL BE INCREASED TO THE NEAREST STANDARD SIZE WHICH IS A MINIMUM OF 0.063" GREATER THAN THE THICKNESS SHOWN EXCEPT FOR DIAMETERS LESS THAN 12.75 IN.
5. FOR REFERENCE ONLY.



PRESSURE MAIN TO BE RESTRAINED WITH MANUFACTURERS RESTRAINED JOINTS THROUGH CASING. USE (3) SS CASING SPACER CENTERED ON EACH PIPE LENGTH.

MINIMUM CASING SIZE AND THICKNESS (INCHES)

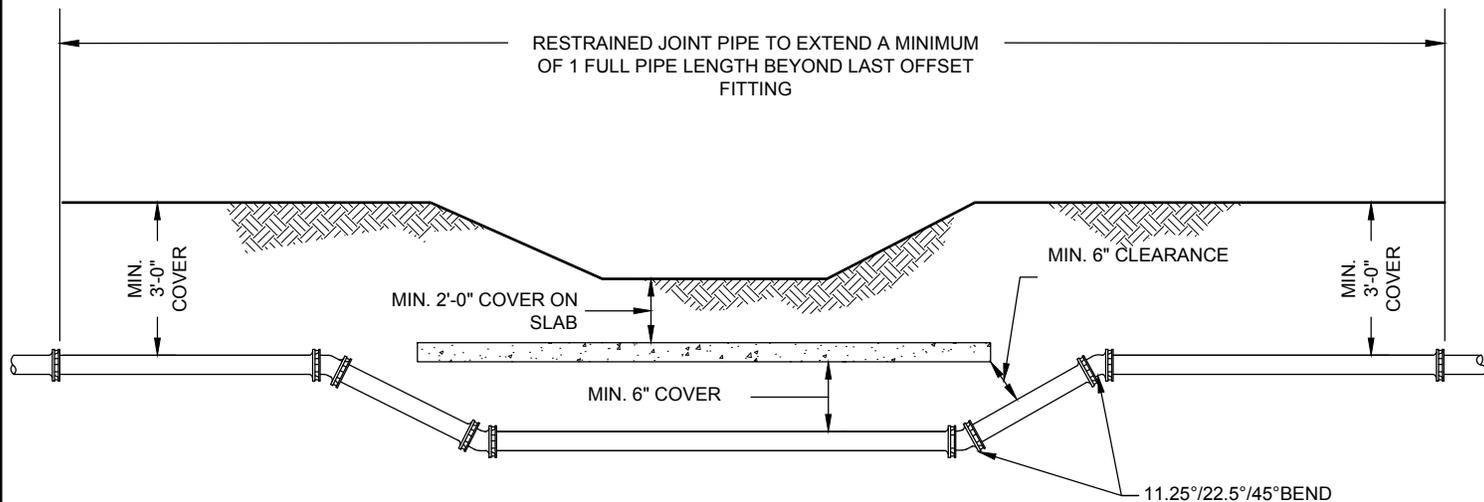
	4	6	8	10	12	14	16	18	20	24	30	36	42	48				
D.I.P.-M.J.	—	—	4	6	—	8	10	12	14	16	18	20	—	24	30	36	42	48
D.I.P.-P.O.	—	4	—	6	8	10	12	—	14	16	18	20	24	—	30	36	42	48
PVC	—	4	6	—	8	10	12	—	—	—	—	—	—	—	—	—	—	—
PVC FUSIBLE	4	6	8	10	12	—	—	—	—	—	—	—	—	—	—	—	—	—
(3) STEEL CASING PIPE (D2)	10 <sup>(5)</sup>	12	14	16	18	20	24	24	30	30	30	36	36	42	48	54	60	66
WALL THICKNESS (T) ROADS	.188	.188	.25	.25	.25	.25	.25	.25	.312	.312	.312	.375	.375	.5	.5	.5	.5	.5
(4) WALL THICKNESS (T) R.R.	.188	.188	.188	.219	.25	.281	.312	.312	.406	.406	.406	.469	.469	.562	.625	.719	.781	.875

CASING DETAILS  
JACK & BORE

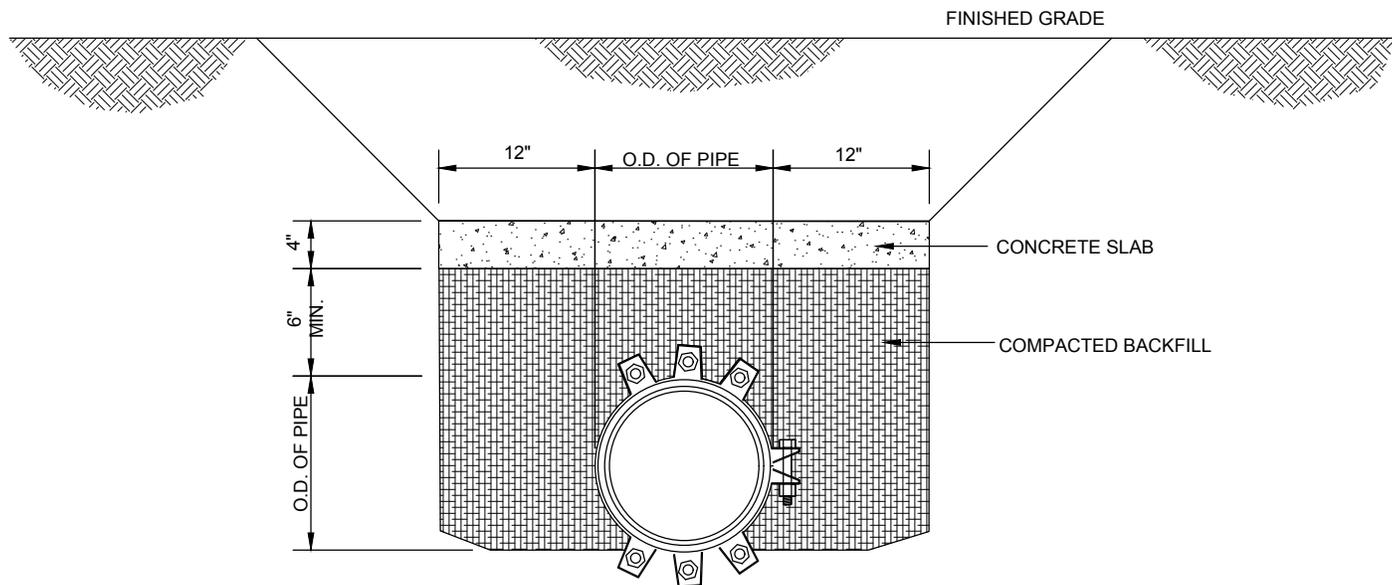
10/2015

HILLSBOROUGH COUNTY, FLORIDA

SCALE: N.T.S.



DITCH BOTTOM CLEARANCE DETAIL



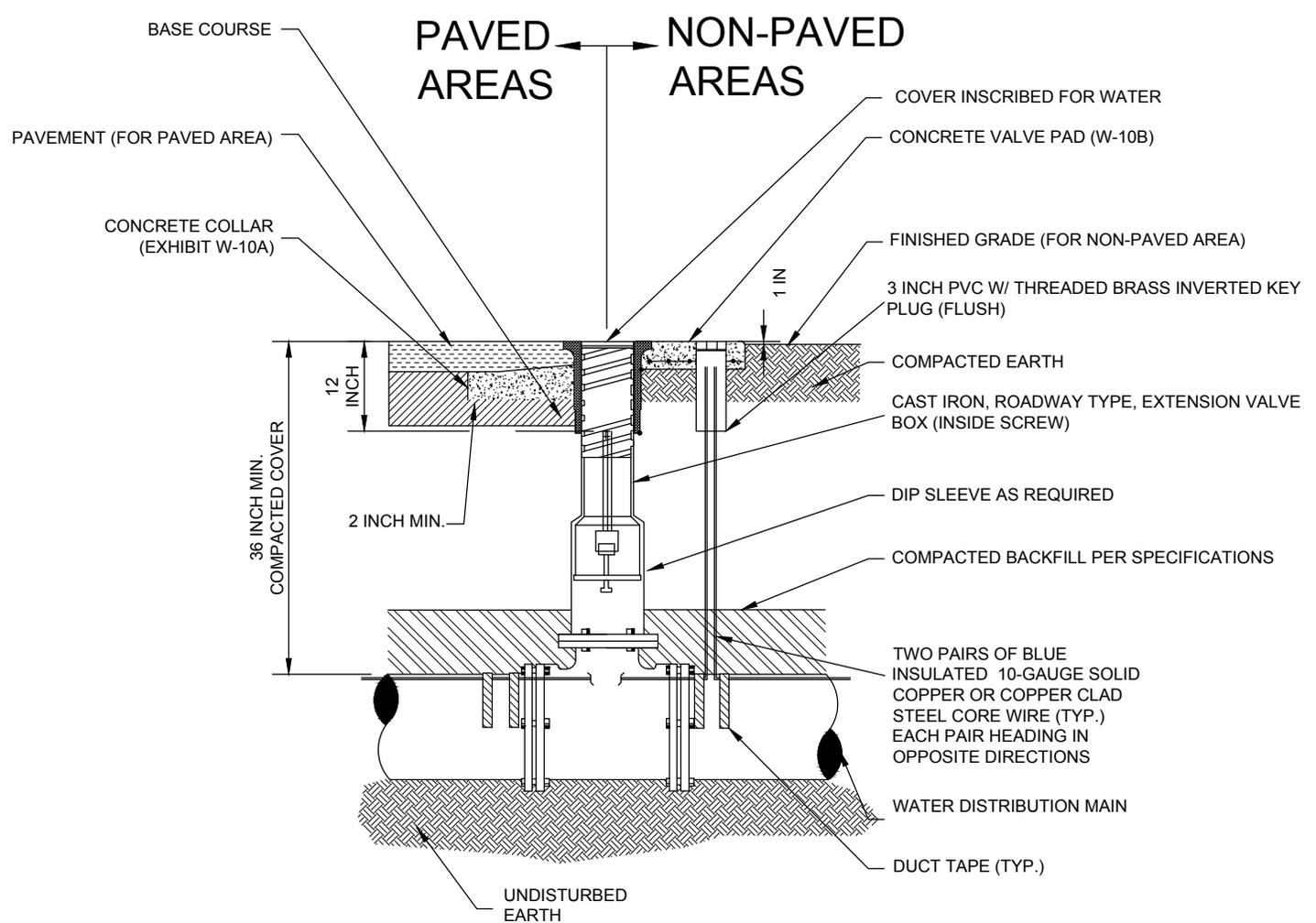
CONCRETE SLAB

NOTE: SLAB CONCRETE SHALL HAVE A MINIMUM OF 28 DAY COMPRESSIVE STRENGTH OF 3000 psi (min).

DITCH BOTTOM CLEARANCE  
AND CONCRETE PROTECTIVE SLAB  
HILLSBOROUGH COUNTY, FLORIDA

10/2015

SCALE: N.T.S.



NOTES:

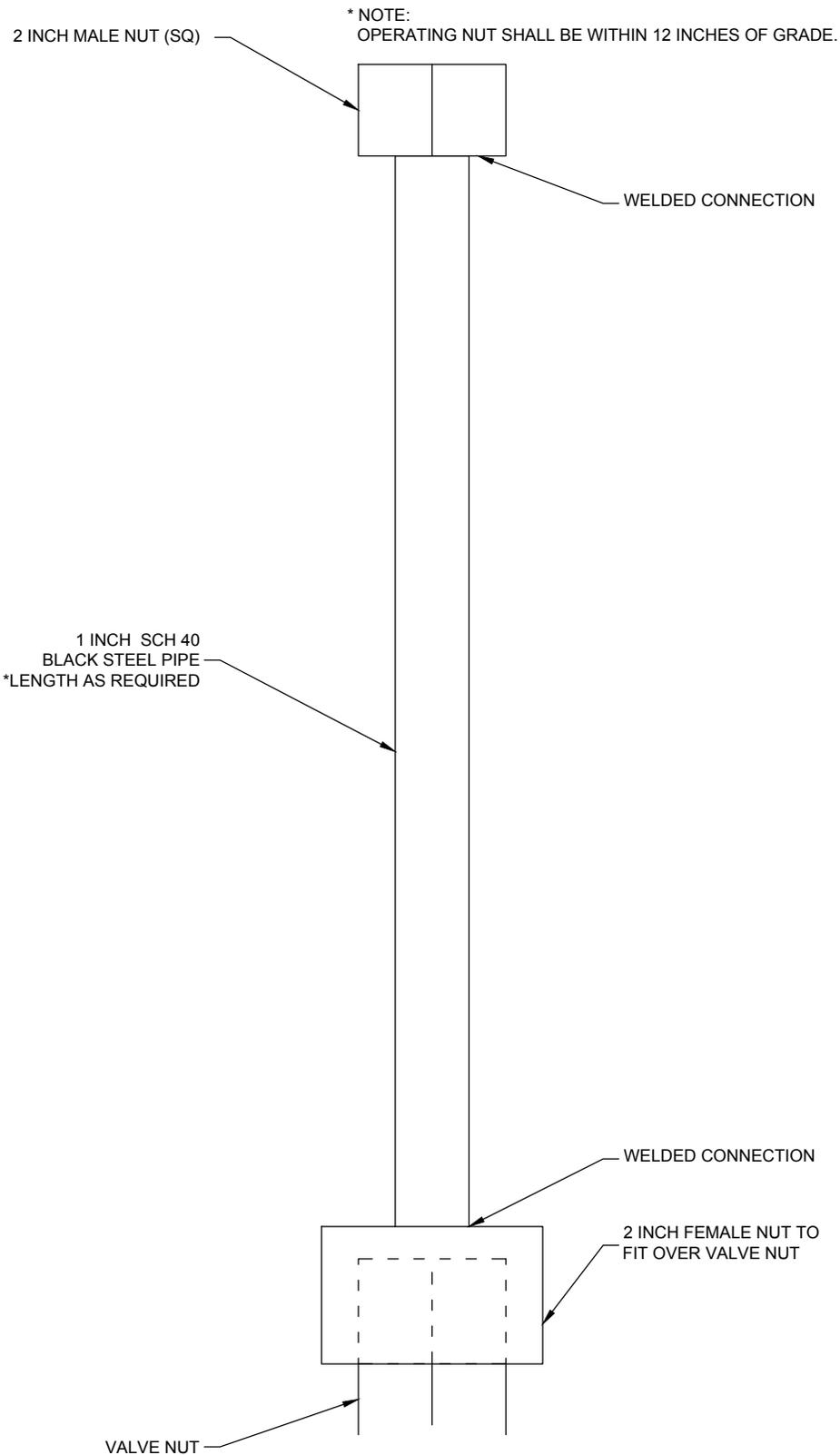
1. EXTENSION ON VALVE BOX SHALL BE SET SO AS TO RESERVE 1/2 OF THE ADJUSTMENT LENGTH FOR FUTURE USE.
2. OPERATING NUT SHALL BE SO AS TO BE WITHIN 12 INCHES OF GRADE. EXTENSION TO BE PROVIDED AS REQUIRED.
3. ALL NON-METALIC PIPE SHALL REQUIRE TWO INSULATED 10 GAUGE SOLID COPPER OR COPPER CLAD STEEL CORE LOCATING WIRES TAPED WITH 2 INCH WIDE DUCT TAPE AT THE 10:00 AND 2:00 POSITION ON THE PIPE AT EVERY JOINT AND 4 TO 5 FEET SPACING. WIRE FOR DIRECTIONAL DRILL APPLICATIONS SHALL BE COPPER CLAD "HARD DRAWN" STEEL CORE WITH A MINIMUM BREAKING STRENGTH OF 1000 PSI.
4. LOCATING WIRES TO TERMINATE 4 INCHES ABOVE CONCRETE VALVE PAD AND FOLDED BACK INSIDE 3 INCH PVC ACCESS PIPE AND PLUGGED.
5. LOCATING WIRES SHALL BE CAPABLE OF DETECTION BY A CABLE LOCATOR AND PASS A FIELD CONDUCTIVITY TEST THAT IS WITNESSED BY THE COUNTY FROM END TO END OF WIRES.
6. SPLICES SHALL BE CAPABLE OF COMPLETE SUBMERSION.
7. NO MORE THAN ONE SPLICE BETWEEN VALVES IS ALLOWED.

VALVE AND TRACER WIRE  
PAVED OR NON-PAVED AREAS

10/2015

HILLSBOROUGH COUNTY, FLORIDA

SCALE: N.T.S.



VALVE EXTENSION FOR GATE VALVES

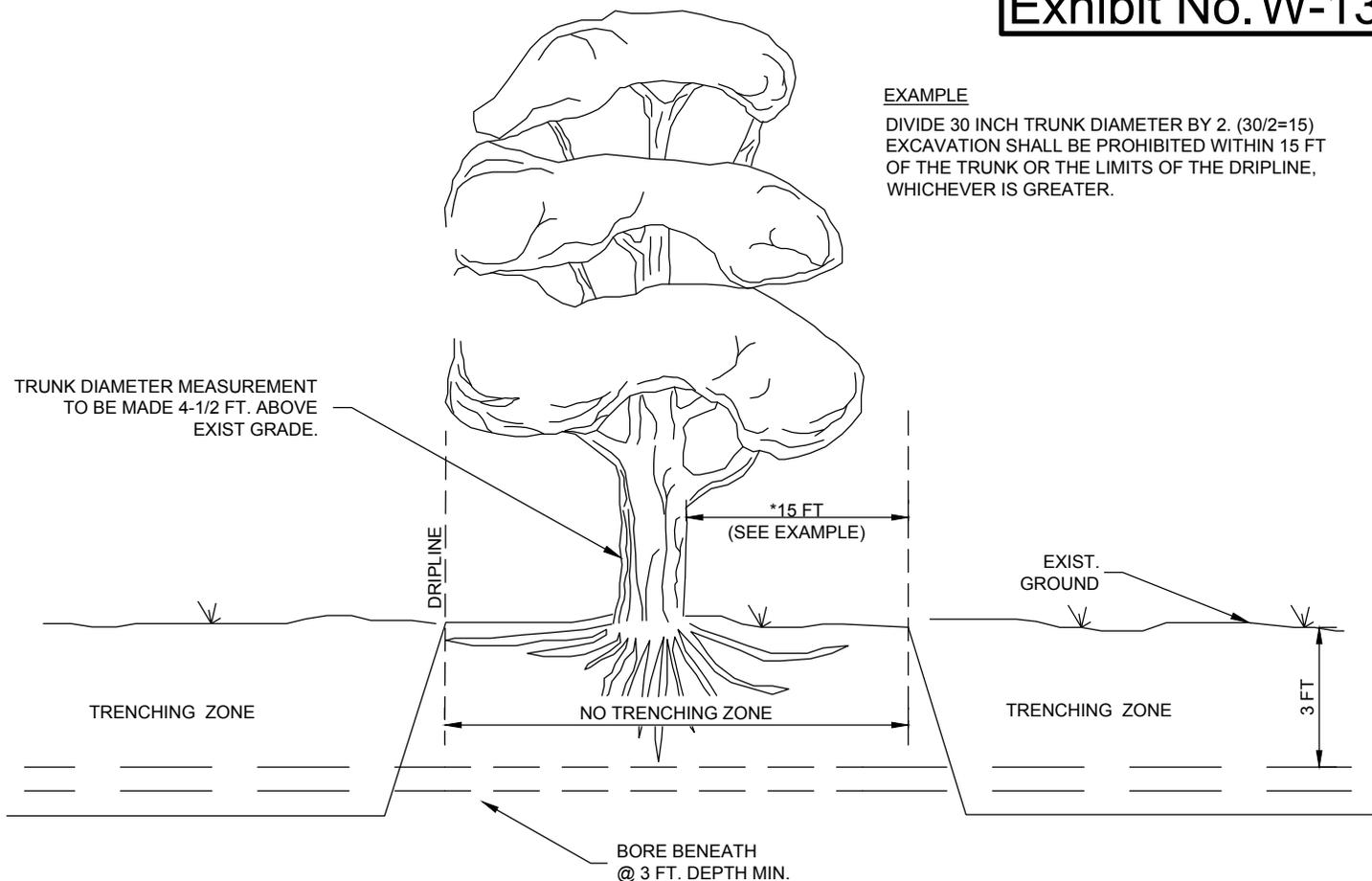
10/2015

HILLSBOROUGH COUNTY, FLORIDA

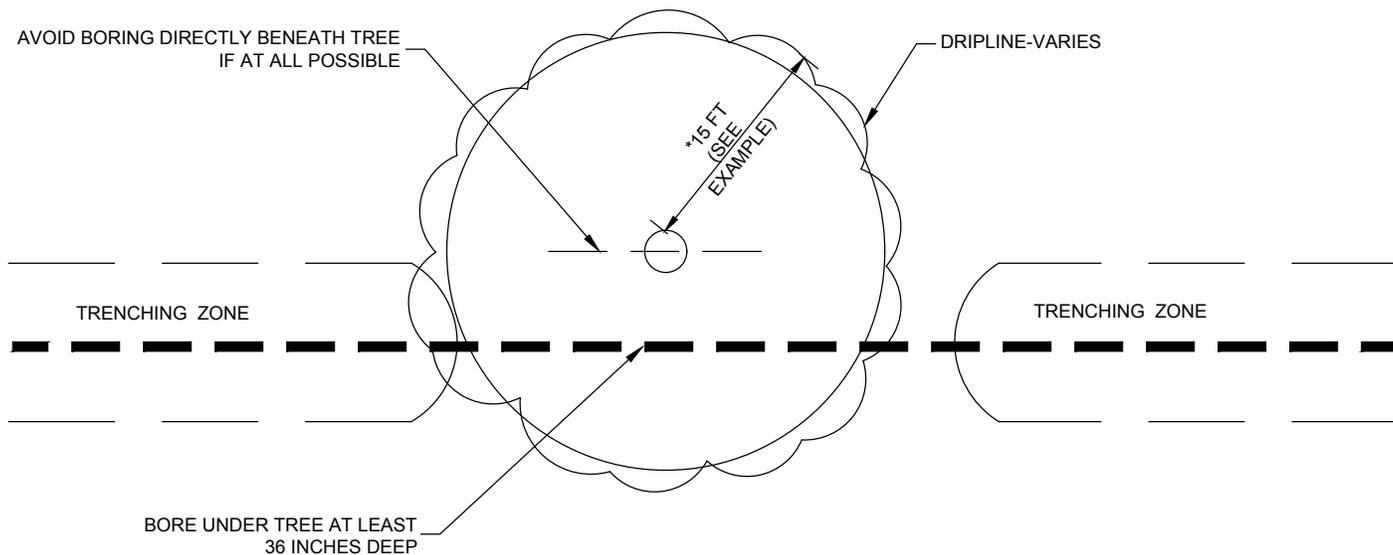
SCALE: N.T.S.

**EXAMPLE**

DIVIDE 30 INCH TRUNK DIAMETER BY 2. ( $30/2=15$ )  
 EXCAVATION SHALL BE PROHIBITED WITHIN 15 FT  
 OF THE TRUNK OR THE LIMITS OF THE DRIPLINE,  
 WHICHEVER IS GREATER.



**PROFILE VIEW**



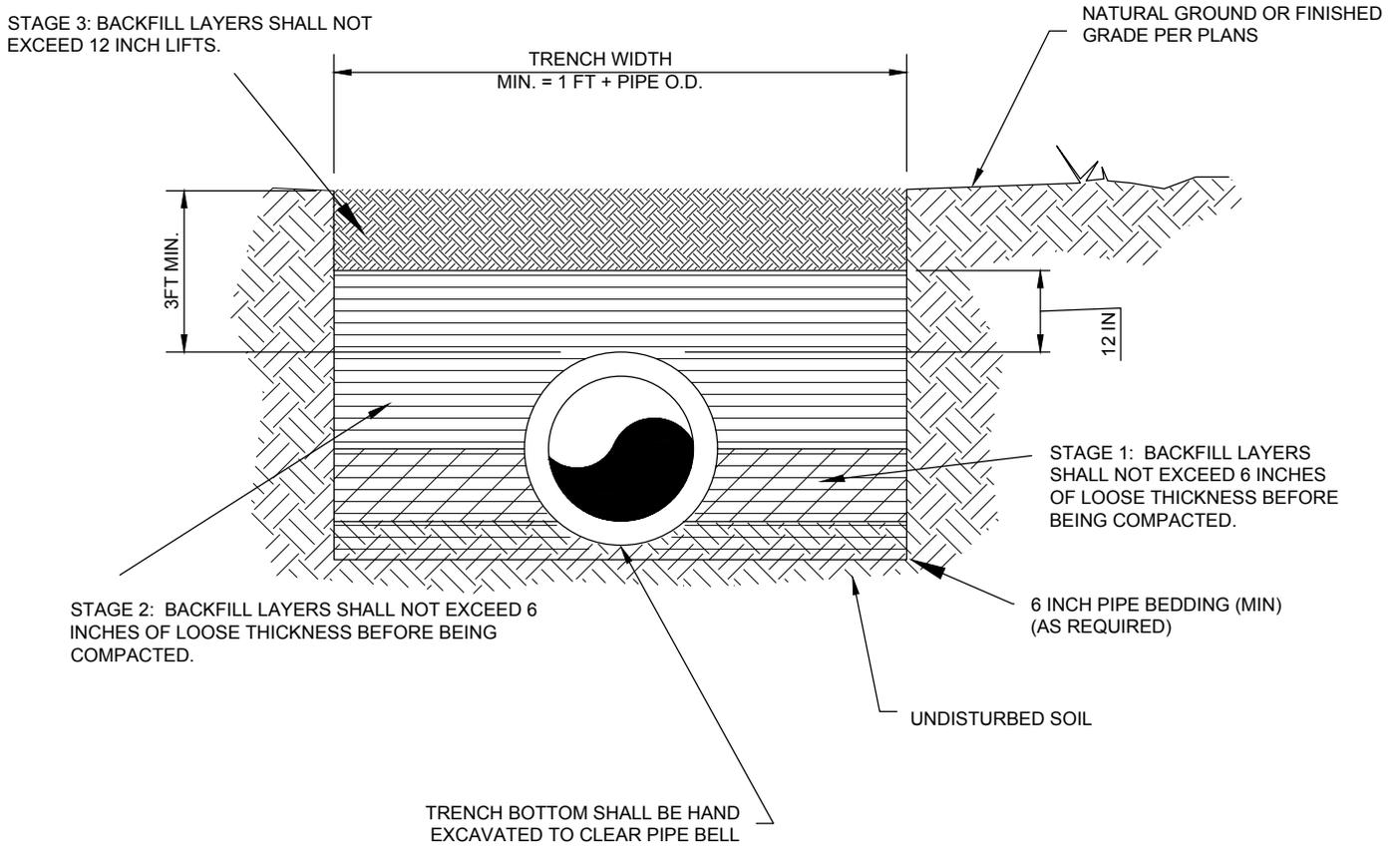
**PLAN VIEW**

**BORING FOR UTILITIES**

10/2015

**HILLSBOROUGH COUNTY, FLORIDA**

**SCALE: N.T.S.**



NOTES:

1. TESTING: SEE SPECIFICATION 331001, PART 4.12 FOR TESTING REQUIREMENTS.
2. BEDDING: 6 INCHES BEDDING (MIN) AS REQUIRED. IN THE EVENT UNSUITABLE OR UNSTABLE SOIL IS ENCOUNTERED, REMOVE IT AND REPLACE WITH MATERIAL MEETING AASHTO SOIL CLASSIFICATION A-1, A-2, OR A-3. SEE SPECIFICATION 331001 PART 4.4.
3. STAGE 1: ADEQUATE COMPACTED FILL SHALL BE PLACED ABOVE THE BEDDING MATERIAL AND BENEATH THE HAUNCHES OF THE PIPE. BACKFILL LAYERS SHALL NOT EXCEED 6 INCHES OF LOOSE THICKNESS BEFORE BEING COMPACTED.
4. STAGE 2: BACKFILL LAYERS SHALL NOT EXCEED 6 INCHES OF LOOSE THICKNESS BEFORE BEING COMPACTED. COMPACTION SHALL BE 98% OF THE MAXIMUM DENSITY (AASHTO T-180/ASTM D1557) TO A POINT 1 FT ABOVE THE PIPE (OR AS STATED IN THE SPECIFICATION).
5. STAGE 3: BACKFILL LAYERS SHALL NOT EXCEED 12-INCH LIFTS. COMPACTION SHALL BE 98% OF THE MAXIMUM DENSITY (AASHTO T-180/ASTM D1557) OR AS STATED IN THE SPECIFICATION

TRENCH DETAIL  
BACKFILL & COMPACTION

HILLSBOROUGH COUNTY, FLORIDA

10/2015

SCALE: N.T.S.