

CITY OF CALLAWAY



MANUAL OF
STANDARDS & SPECIFICATIONS
FOR
WATER & WASTEWATER CONSTRUCTION

CALLAWAY, FLORIDA

JUNE 2021
RESOLUTION No. 21-19

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UTILITY STANDARDS FOR THE CITY OF CALLAWAY

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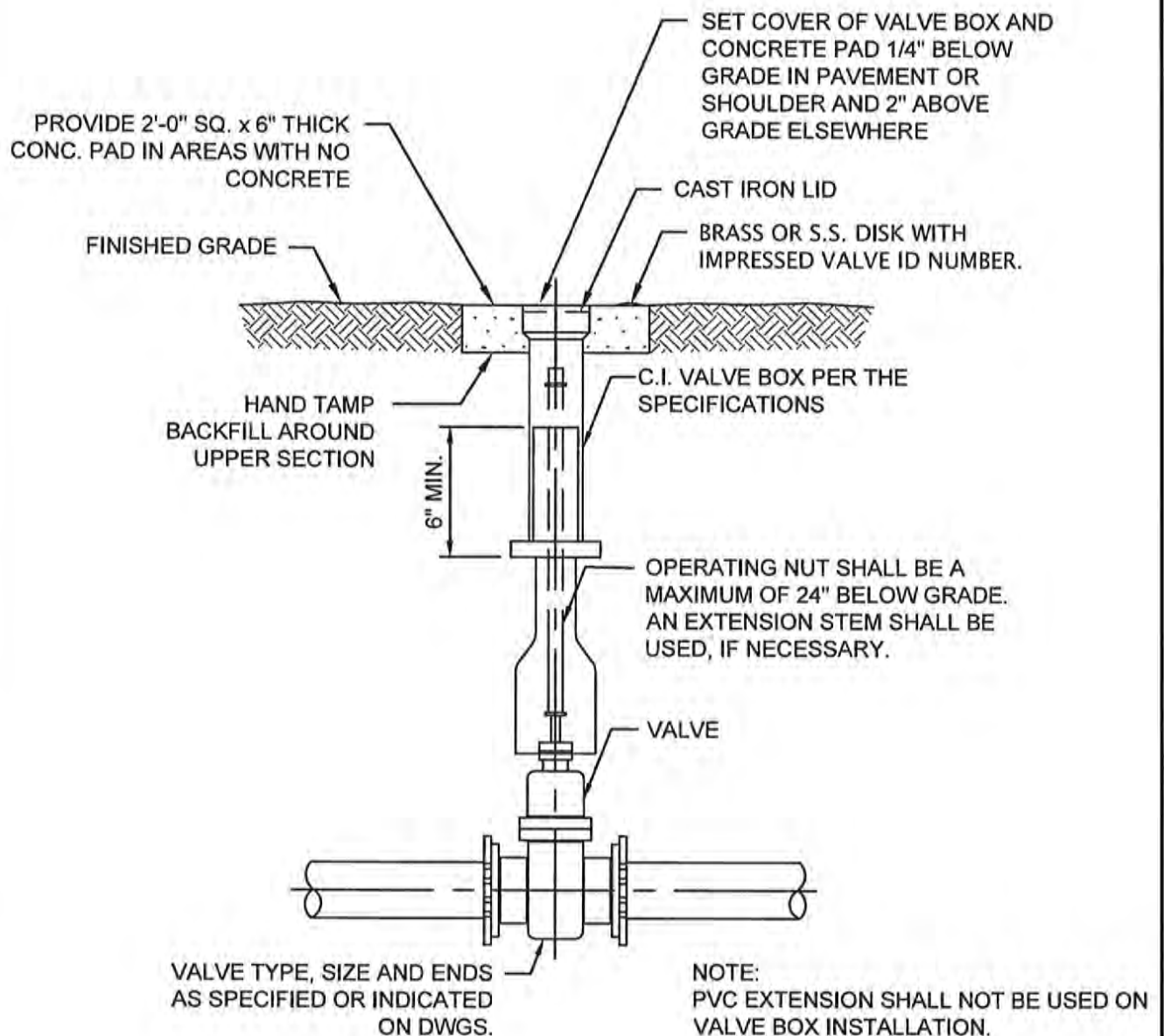
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FOR MORE INFORMATION, CONTACT US AT 800-368-2267



WATER VALVE AND BOX

N.T.S.

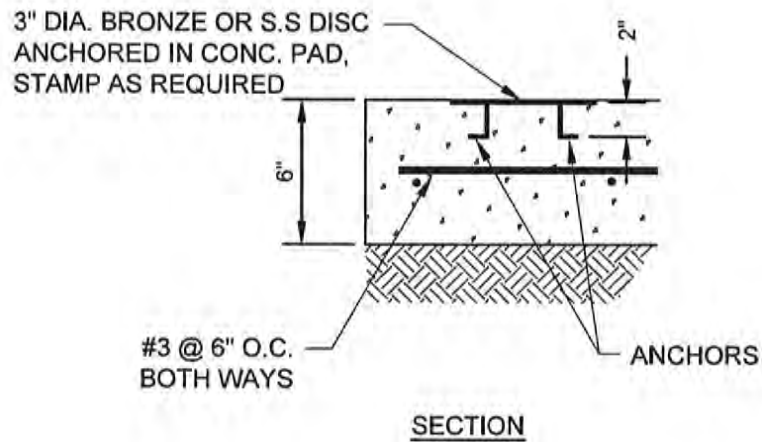
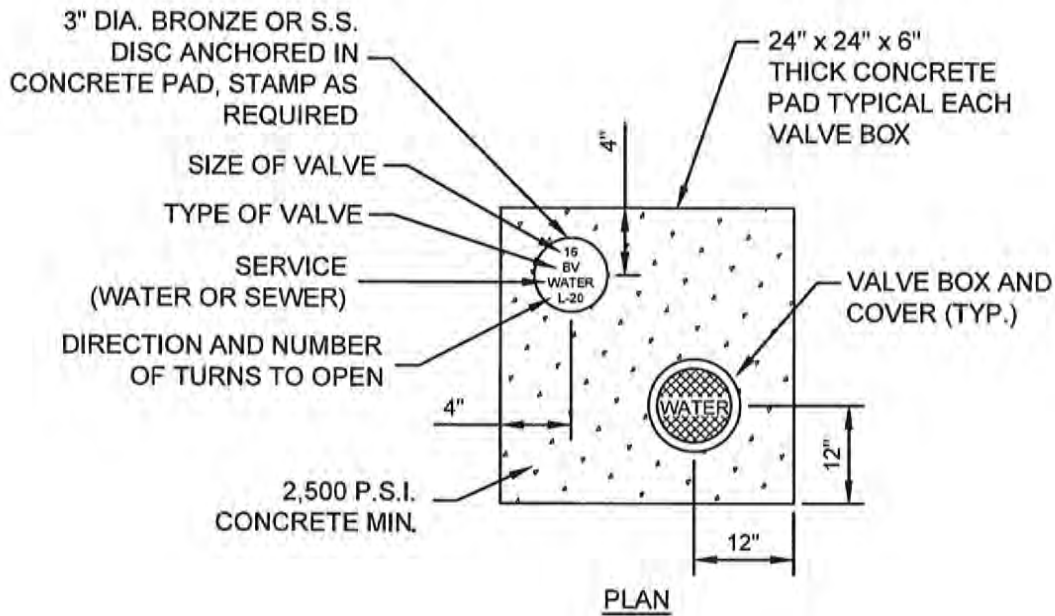


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WATER VALVE AND BOX

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FIGURE : PW-1



WATER VALVE COLLAR

N.T.S.

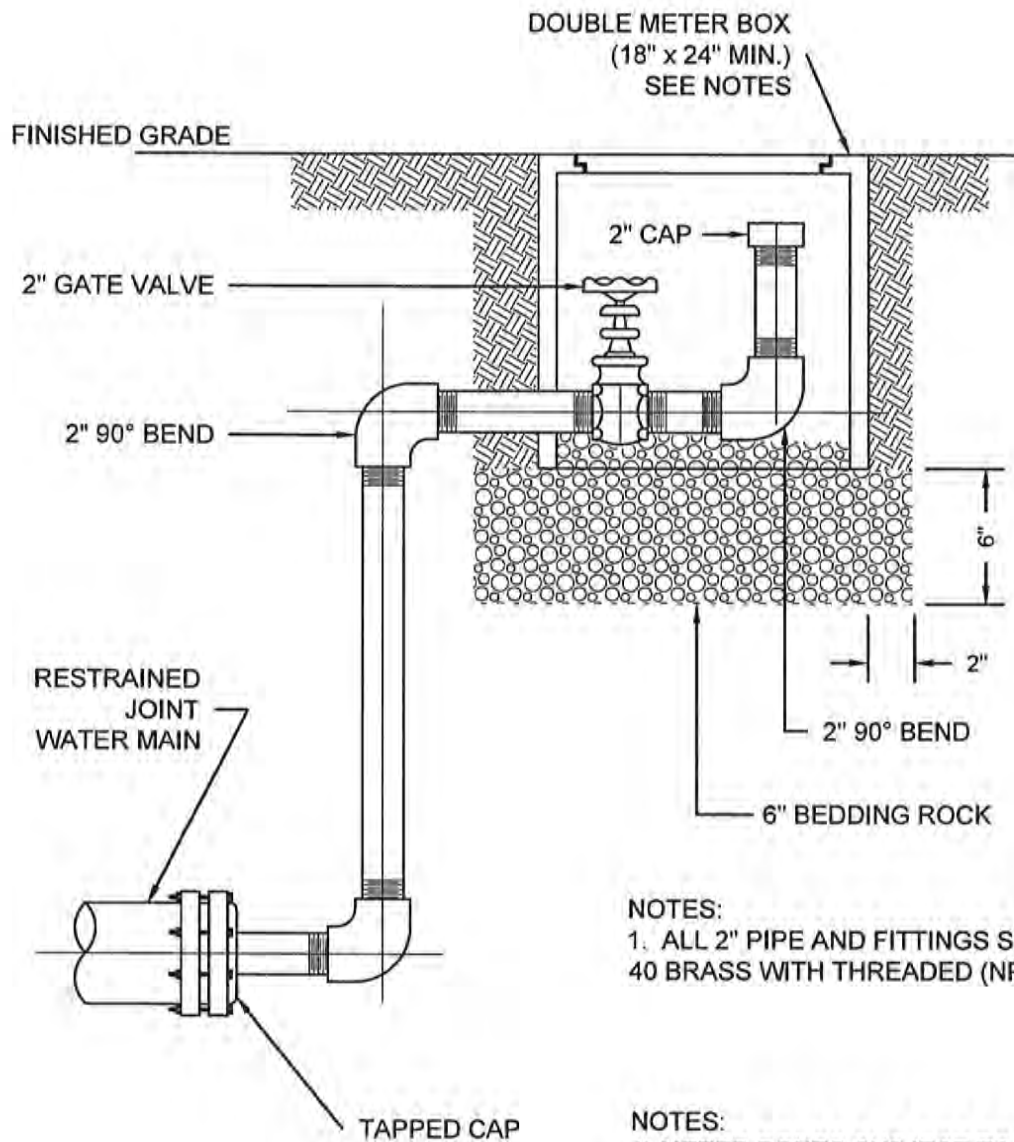


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WATER VALVE COLLAR

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FIGURE : PW-2



NOTES:

1. ALL 2" PIPE AND FITTINGS SHALL BE SCHEDULE 40 BRASS WITH THREADED (NPT) JOINTS.

NOTES:

- 1) METER BOXES SUBJECT TO VEHICLE TRAFFIC SHALL BE H20 TRAFFIC RATED
- 2) METER BOXES SHALL BE SOUTHERN METER BOX TH 1-1/2-B WITH C.I. LID W/ 2" HOLE OR CITY APPROVED EQUAL

BLOW OFF VALVE

N.T.S.

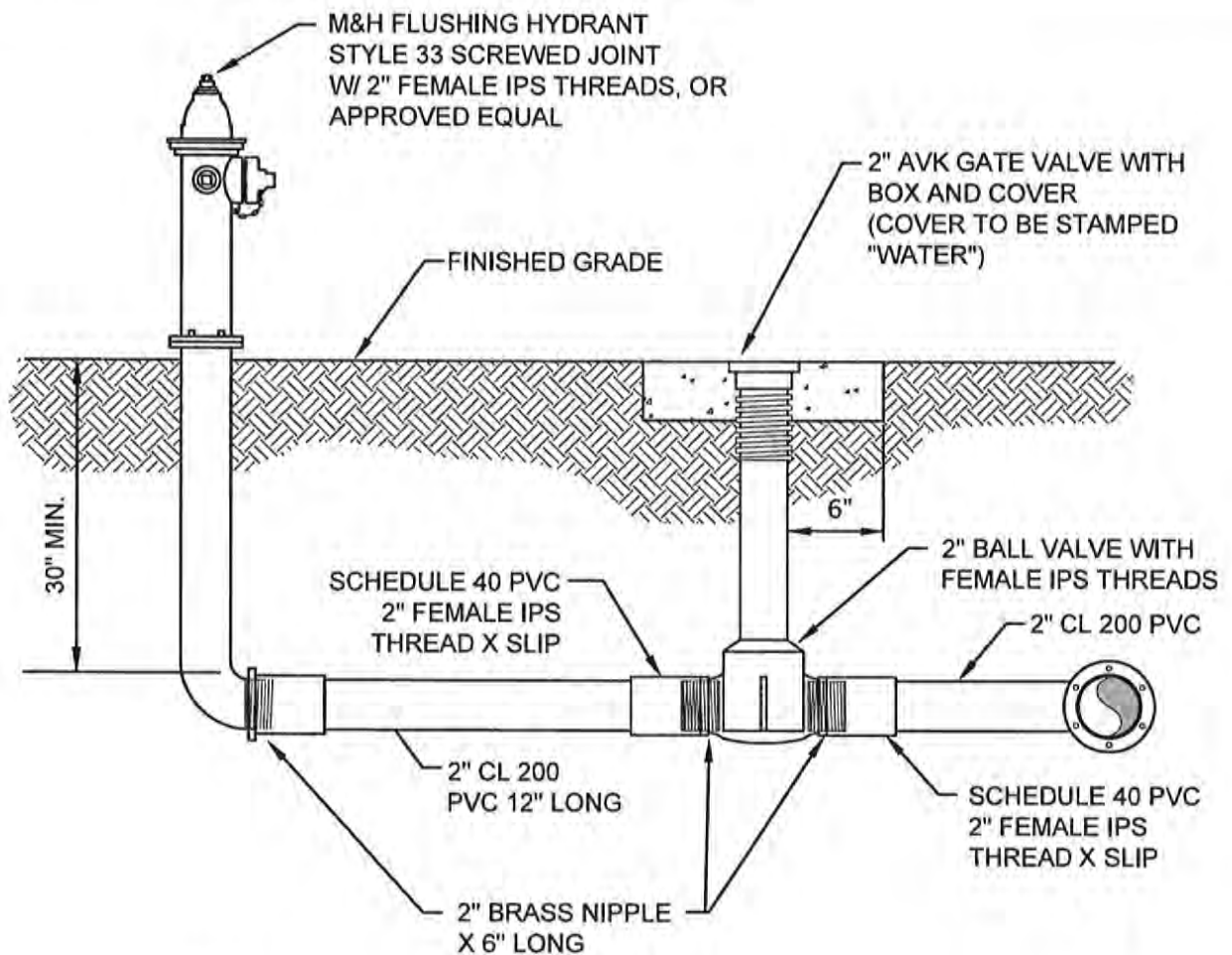


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BLOW OFF VALVE

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FIGURE : PW-3



NOTES:

1. THIS DETAIL IS FOR 2" FLUSH HYDRANTS. LARGER INSTALLATIONS WILL BE AS SPECIFIED BY THE CONTRACT DOCUMENTS.
2. FLUSH HYDRANTS SHALL BE INSTALLED BETWEEN BACK OF CURB AND FACE OF SIDEWALK WITHIN R/W EXCEPT WHERE CONDITIONS AND / OR REGULATIONS PROHIBIT. FLUSH HYDRANTS SHALL BE LOCATED WITHIN RIGHTS OF WAY OR UTILITY EASEMENTS.
3. ALL RODS AND ASSOCIATED HARDWARE SHALL BE STAINLESS STEEL.
4. VALVE BOXES SHALL BE PER THE SPECIFICATIONS.
5. SADDLES SHALL BE PER THE SPECIFICATIONS.

ABOVE GRADE FLUSHING HYDRANT

N.T.S.



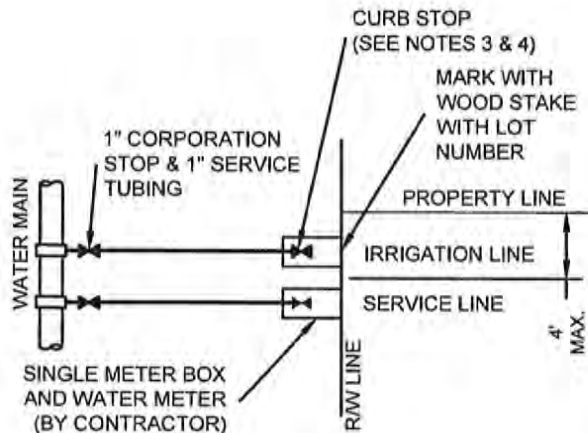
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ABOVE GRADE FLUSHING HYDRANT

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FIGURE : PW-4

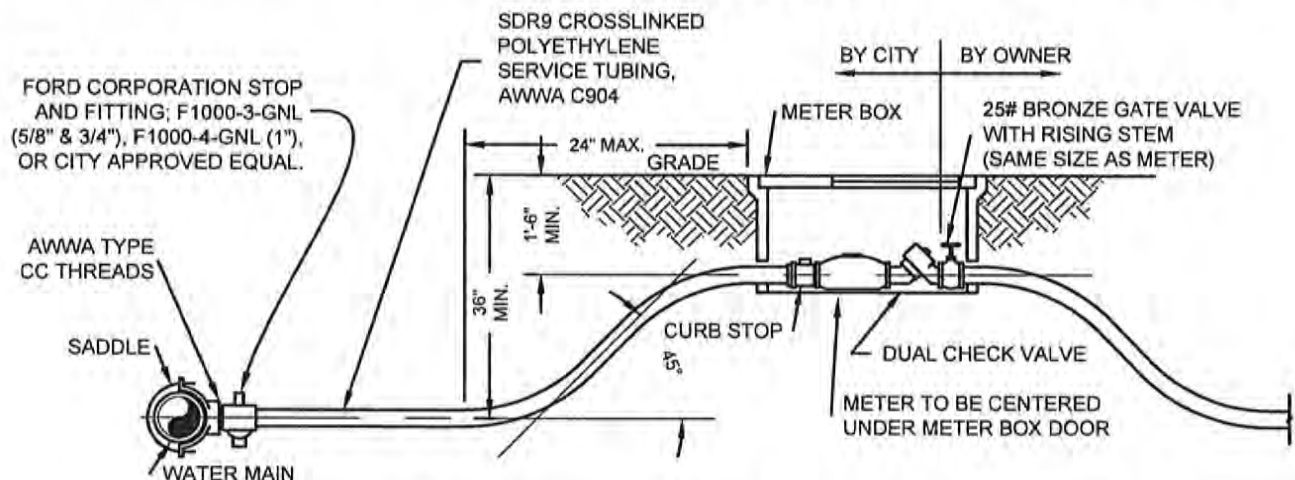




TYPICAL CITY SERVICE (PER. LOT)

NOTES:

1. ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
2. NO SERVICE LINE SHALL BE CONSTRUCTED BENEATH OR TERMINATE UNDER A DRIVEWAY.
3. AT THE CITY'S DISCRETION EACH SERVICE SHALL TERMINATE AT A CURB STOP WHICH SHALL BE FASTENED TO A 1"x4"x30" STAKE PAINTED WHITE AND MARKED WITH THE NUMBER OF THE LOT TO BE SERVED, OR IN A STANDARD CITY METER BOX (BY CONTRACTOR).
4. CURB STOP SHALL BE A FORD BALL METER VALVE BXX-XXXWNL OR CITY APPROVED EQUAL.
5. ALL SERVICE TAPS TO BE LOCATED IN THE FIELD. TAPS WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.
6. METER, METER BOX, AND THE RESIDENTIAL BACKFLOW PREVENTER SHALL BE PROVIDED BY THE CONTRACTOR.
7. SERVICES UNDER THE ROADWAY SHALL BE PLACED IN SLEEVES. THE SLEEVE SHALL BE 1.5X THE DIAMETER OF THE SERVICE TUBING.



WATER SERVICE (3/4" AND 1")
N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

WATER SERVICE (3/4" AND 1")

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FIGURE : PW-6



CALLAWAY, FLORIDA
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WATER SERVICE (1½" AND 2")

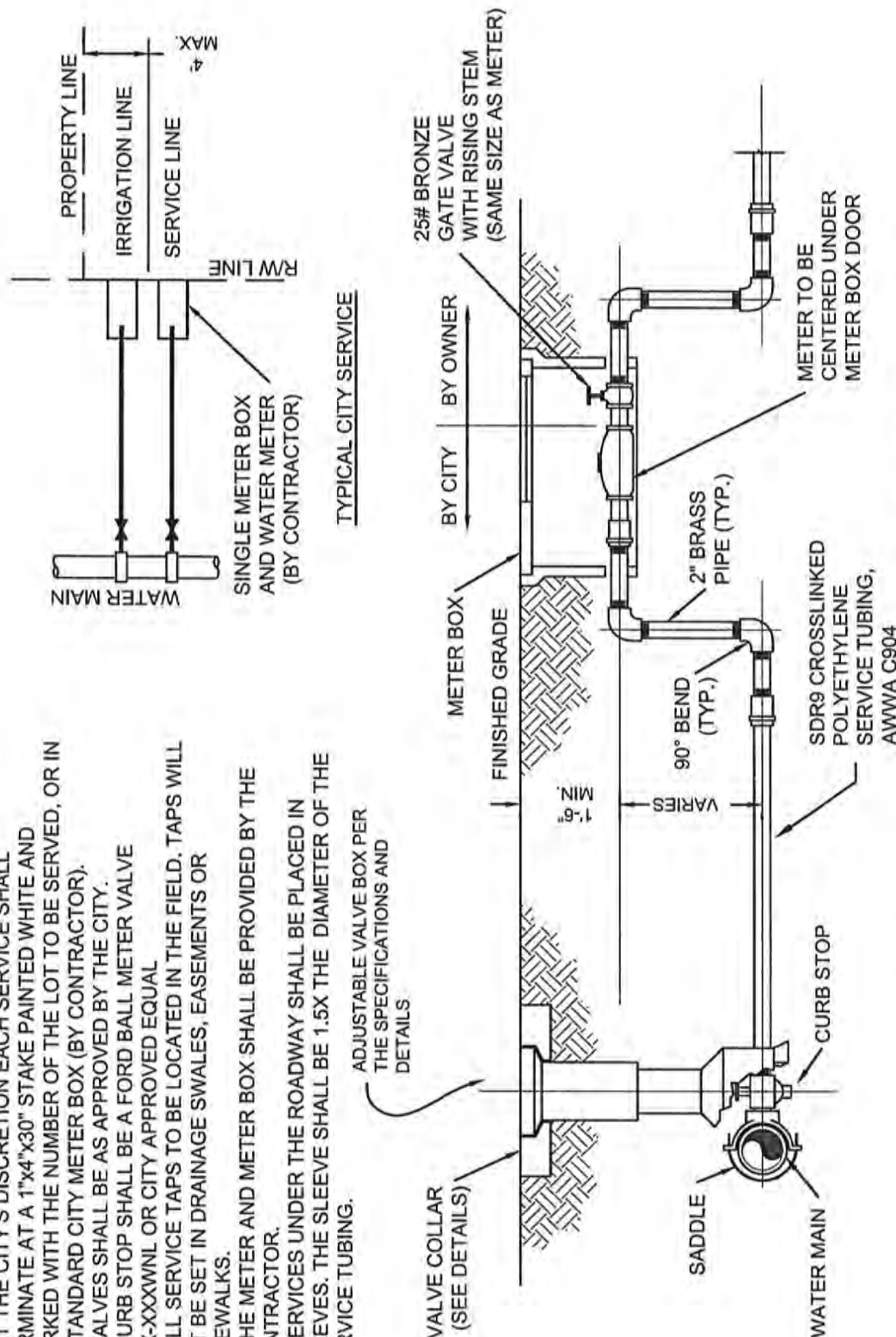
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FIGURE : PW-7

NOTES:

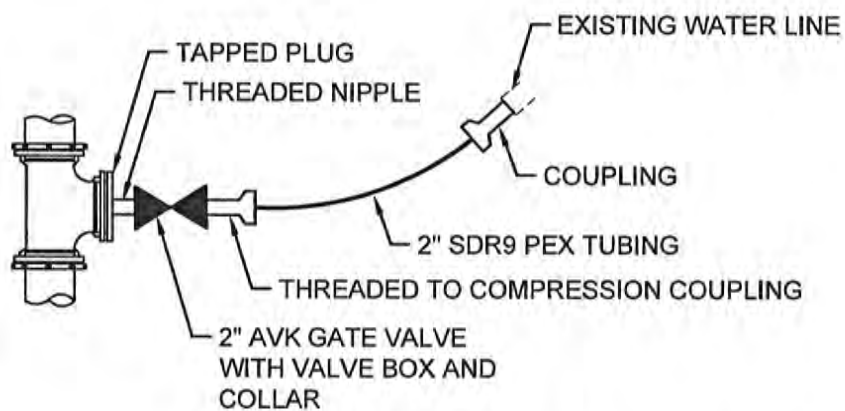
1. ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT TYPE CONNECTIONS.
2. NO SERVICE LINE SHALL BE CONSTRUCTED BENEATH OR TERMINATE UNDER A DRIVEWAY.
3. AT THE CITY'S DISCRETION EACH SERVICE SHALL TERMINATE AT A 1"x4"x30" STAKE PAINTED WHITE AND MARKED WITH THE NUMBER OF THE LOT TO BE SERVED, OR IN A STANDARD CITY METER BOX (BY CONTRACTOR).
4. VALVES SHALL BE AS APPROVED BY THE CITY.
5. CURB STOP SHALL BE A FORD BALL METER VALVE BXX-XXXWNL OR CITY APPROVED EQUAL
6. ALL SERVICE TAPS TO BE LOCATED IN THE FIELD. TAPS WILL NOT BE SET IN DRAINAGE SWALES, EASEMENTS OR SIDEWALKS.
7. THE METER AND METER BOX SHALL BE PROVIDED BY THE CONTRACTOR.
8. SERVICES UNDER THE ROADWAY SHALL BE PLACED IN SLEEVES. THE SLEEVE SHALL BE 1.5X THE DIAMETER OF THE SERVICE TUBING.

ADJUSTABLE VALVE BOX PER
THE SPECIFICATIONS AND
DETAILS



1 1/2" & 2" WATER METER INSTALLATION

N.T.S.



2" CONNECTION ASSEMBLY
N.T.S.

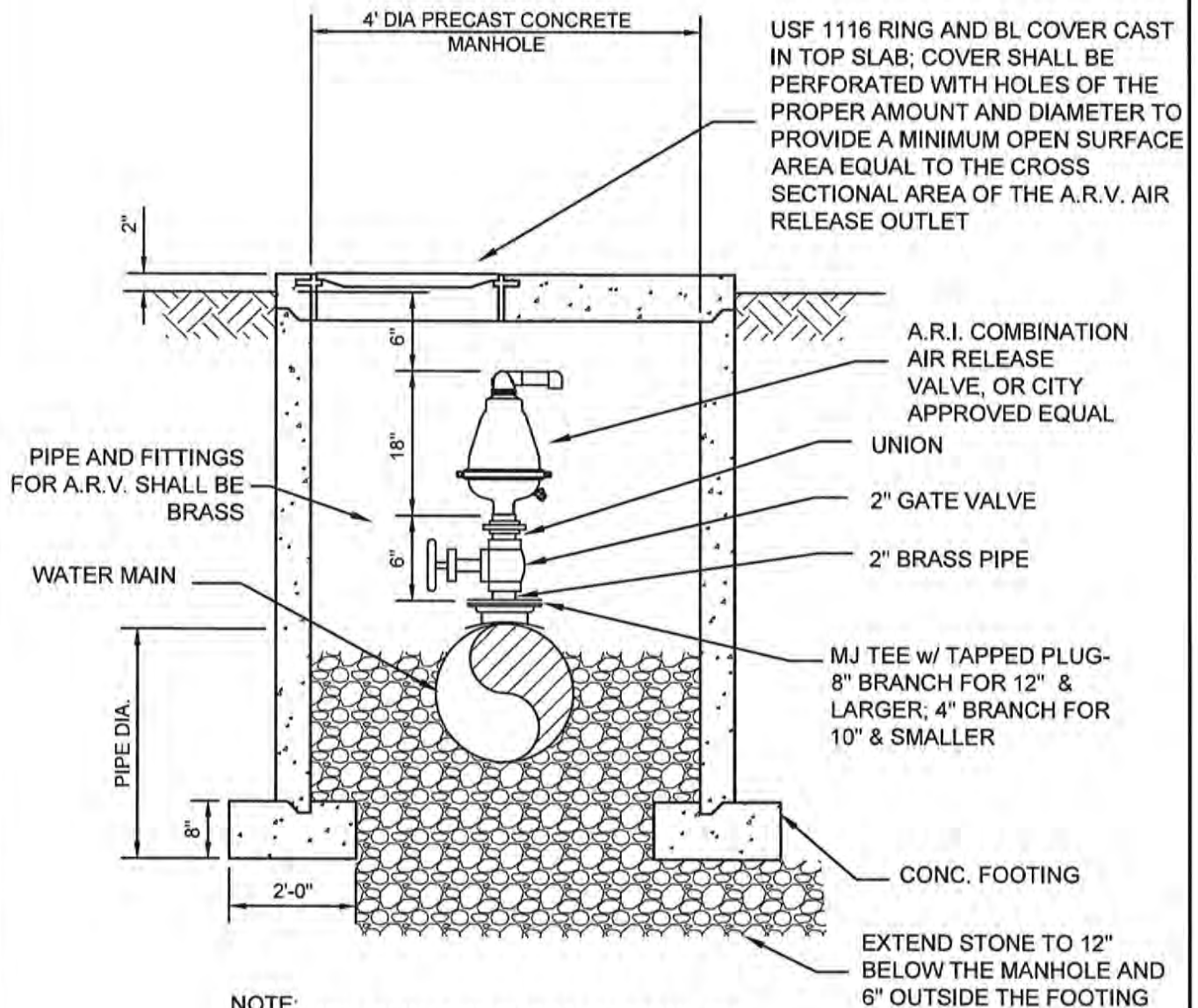


CALLAWAY, FLORIDA
STANDARD DETAILS

2" CONNECTION ASSEMBLY

DATE : MARCH 2021
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FIGURE : PW-8



NOTE:
ALTHOUGH 2" VALVE IS SHOWN IN DETAIL, THE PROJECT ENGINEER SHALL BE RESPONSIBLE FOR SIZING OF ALL COMBINATION AIR VALVES AND COMPONENTS USED ON THE PROJECT.

COMBINATION AIR VALVE

N.T.S

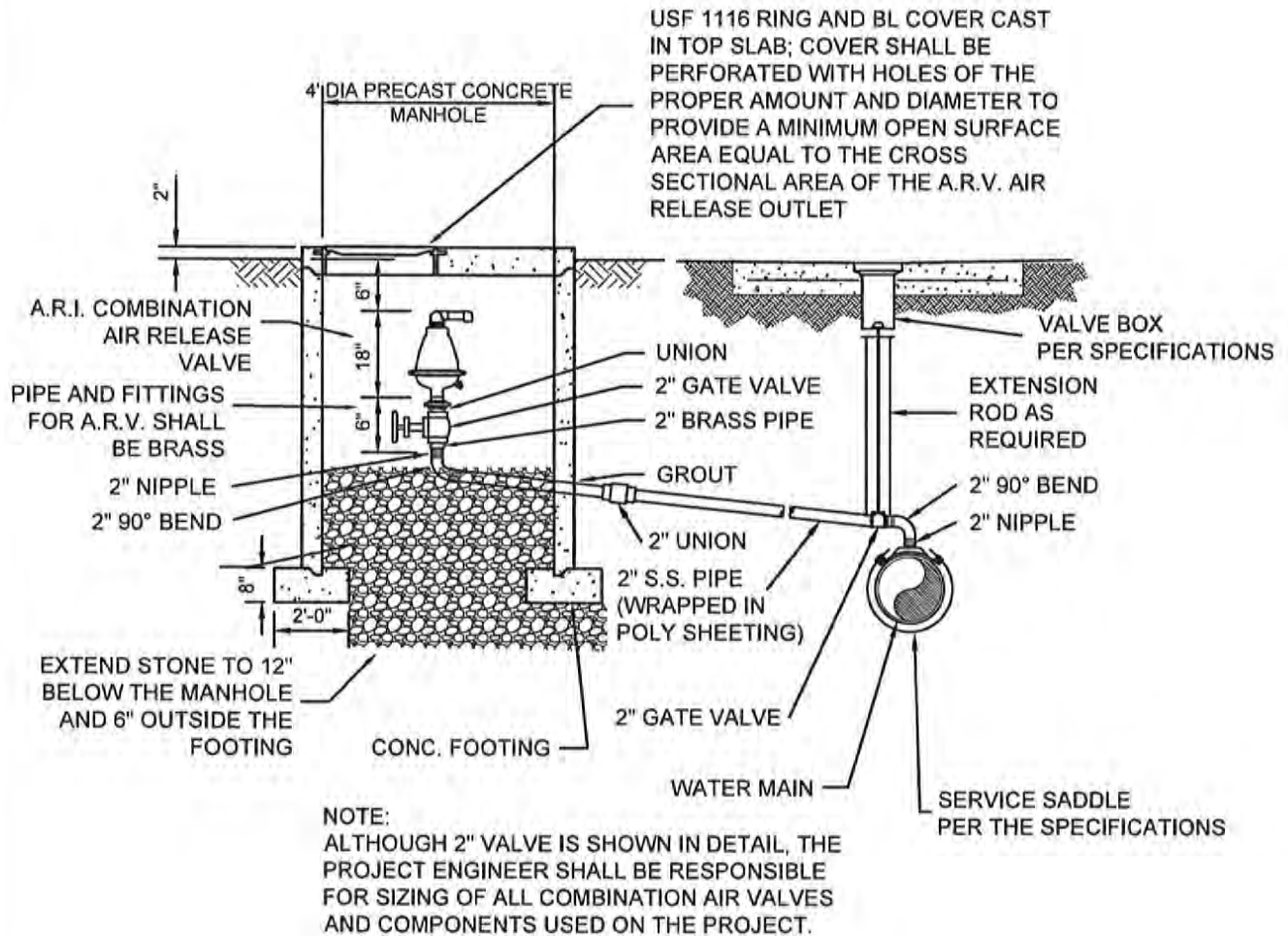


CALLAWAY, FLORIDA
STANDARD DETAILS

COMBINATION AIR VALVE

DATE : MARCH 2021
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FIGURE : PW-9



OFFSET COMBINATION AIR VALVE

N.T.S.

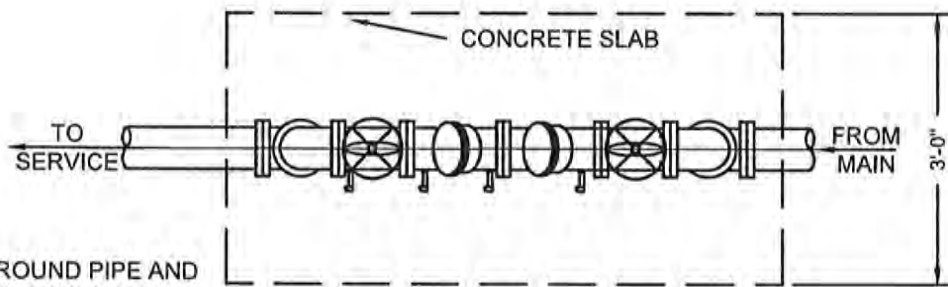


CALLAWAY, FLORIDA
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OFFSET COMBINATION AIR VALVE

DATE : MARCH 2021
SCALE : NTS

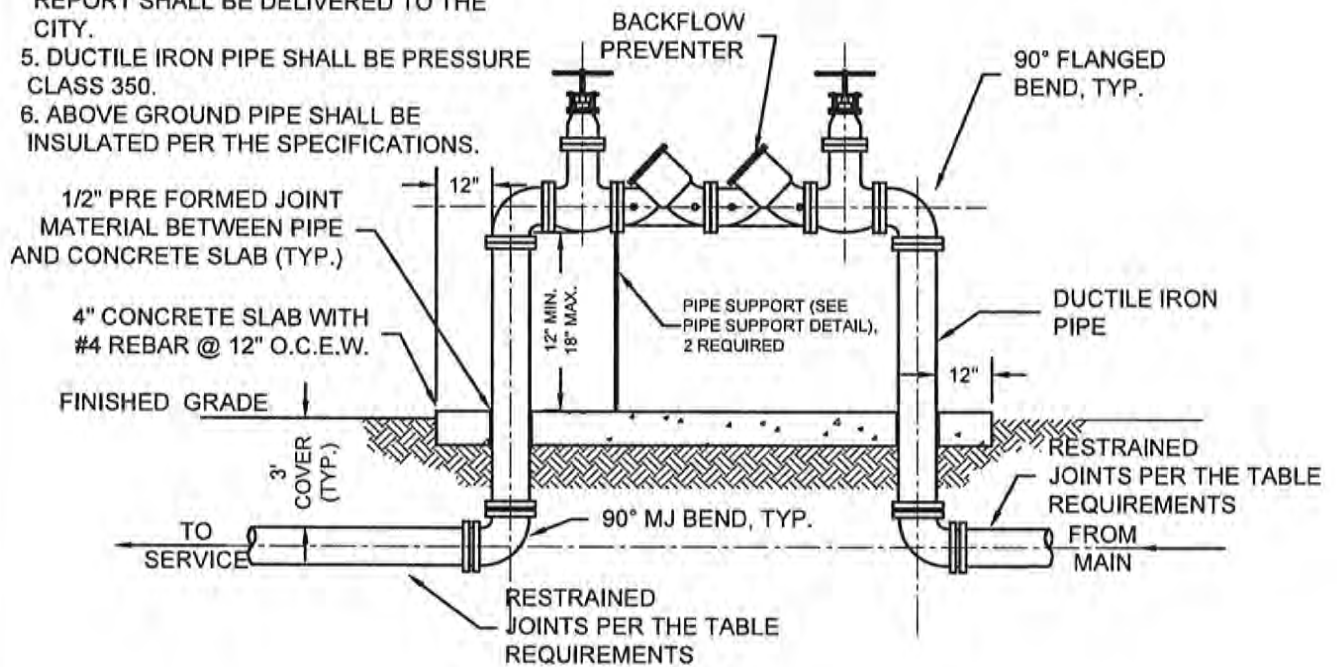
FIGURE : PW-10



PLAN VIEW

NOTES:

1. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
2. ALL VALVES SHALL HAVE HANDWHEELS.
3. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
4. BACKFLOW PREVENTER SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
5. DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
6. ABOVE GROUND PIPE SHALL BE INSULATED PER THE SPECIFICATIONS.



SECTION

BACKFLOW PREVENTER - 4" AND LARGER

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

BACKFLOW PREVENTER - 4" AND LARGER

DATE : MARCH 2021
SCALE : NTS

FIGURE : PW-13



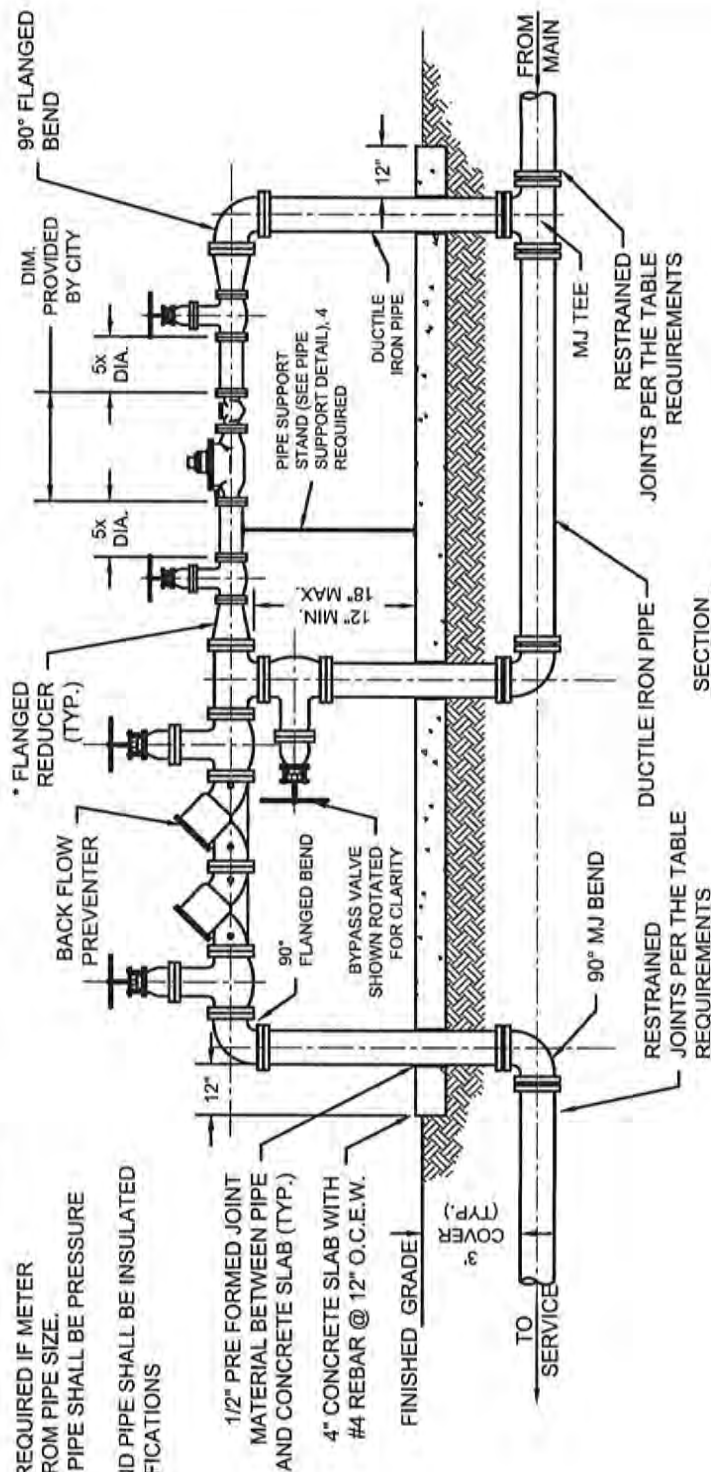
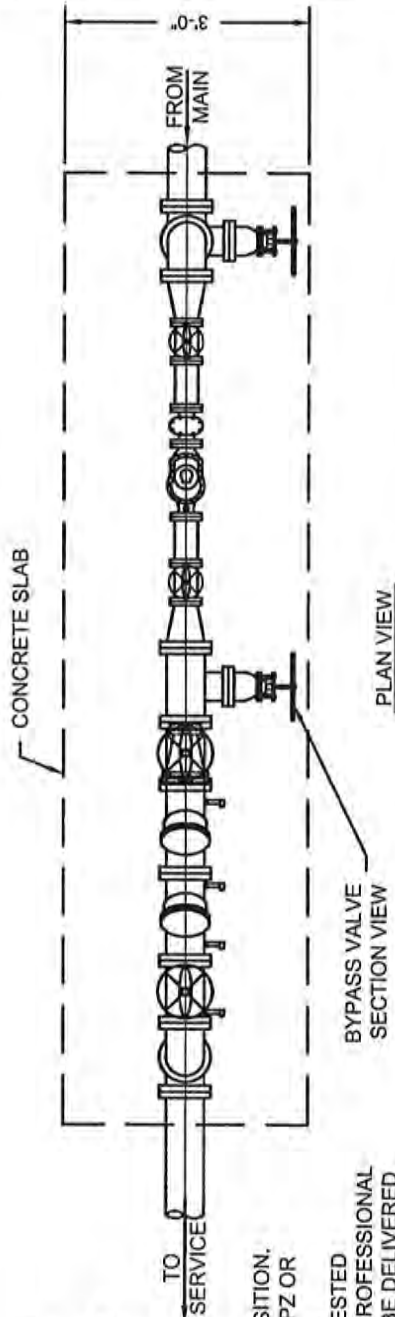
**CALLAWAY, FLORIDA
 STANDARD DETAILS**

DATE : MARCH 2021
 SCALE : NTS

FIGURE : PW-14

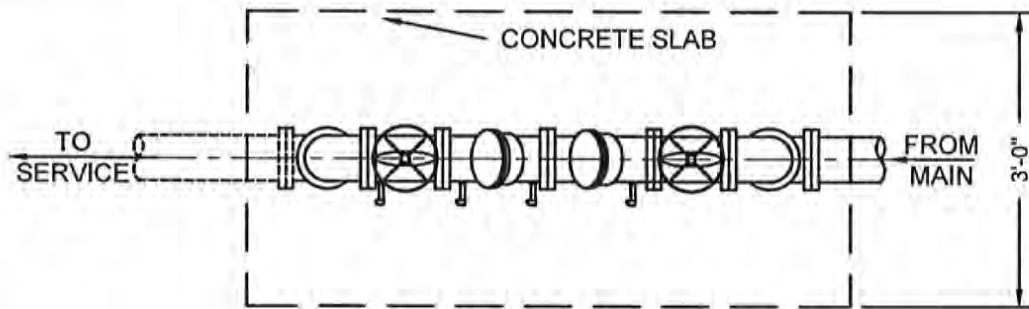
NOTES:

1. METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
2. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
3. ALL VALVES SHALL HAVE HANDWHEELS.
4. VALVE(S) SHALL BE CHAINED AND PADLOCKED IN OPENED POSITION.
5. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
6. BACKFLOW DEVICE SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
- * 7. REDUCER AS REQUIRED IF METER SIZE DIFFERS FROM PIPE SIZE.
8. DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
9. ABOVE GROUND PIPE SHALL BE INSULATED PER THE SPECIFICATIONS



FIRE LINE METER & BACKFLOW WITH BYPASS

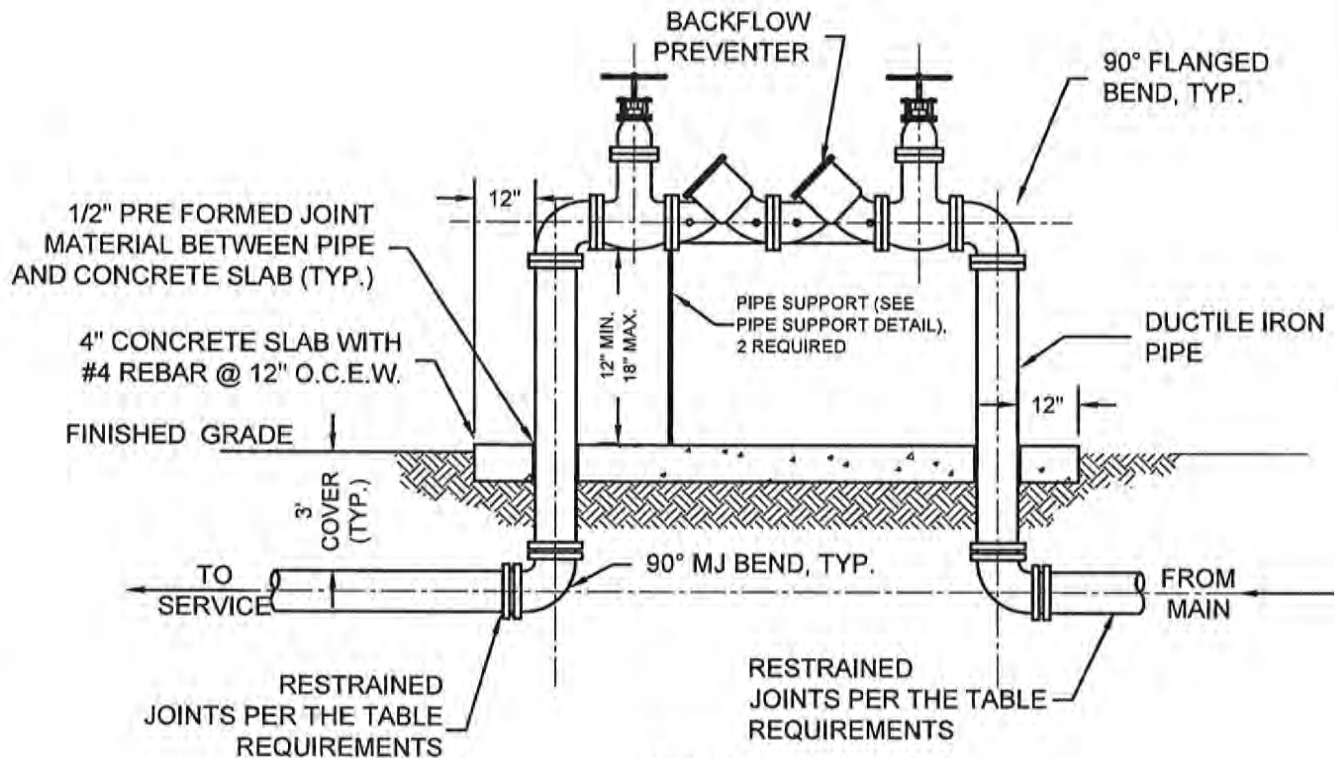
N.T.S.



PLAN VIEW

NOTES:

1. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
2. ALL VALVES SHALL HAVE HANDWHEELS.
3. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
4. VALVE(S) SHALL BE CHAINED AND PADLOCKED IN OPENED POSITION.
5. BACKFLOW DEVICE SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
6. DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
7. ABOVE GROUND PIPE SHALL BE INSULATED PER THE SPECIFICATIONS.
8. A $\frac{3}{4}$ " METER SHALL BE PROVIDED ON THIS LINE, PER THE CITY'S REQUEST, AT NO COST TO THE CITY.



SECTION

FIRE LINE BACKFLOW PREVENTER

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

FIRE LINE BACKFLOW PREVENTER

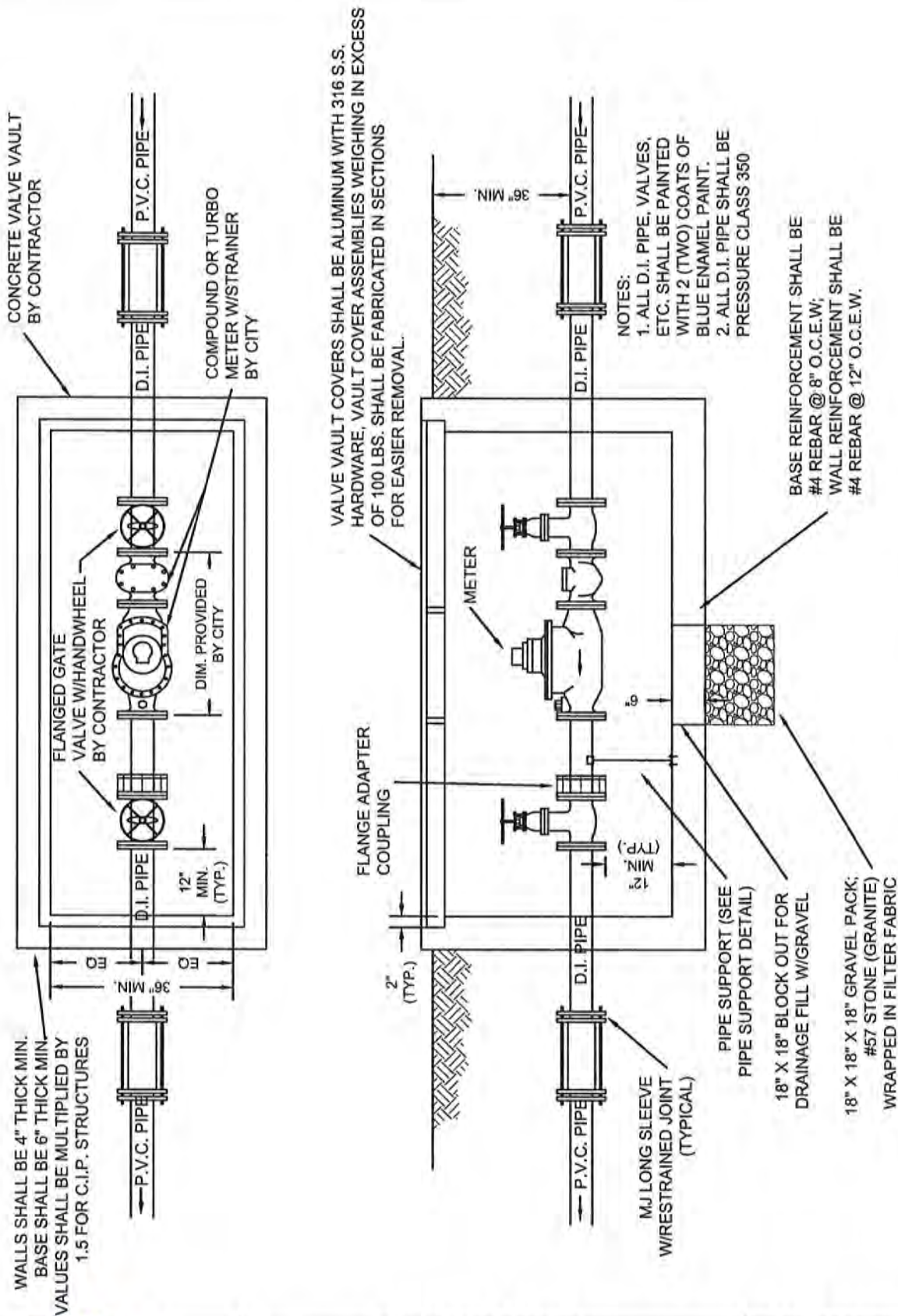
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FIGURE : PW-15



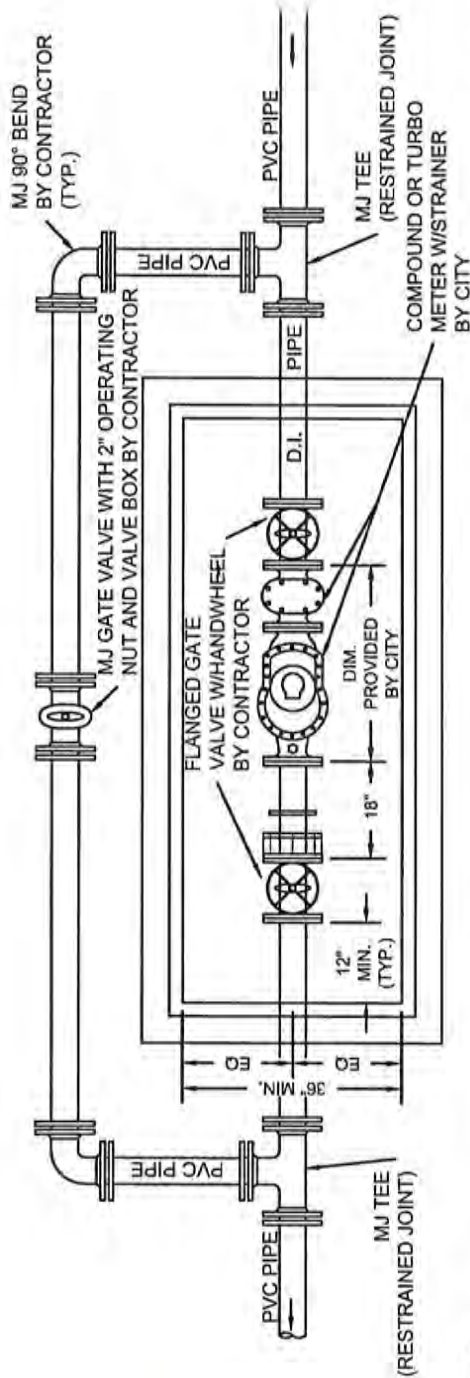
3" WATER METER INSTALLATION

FIGURE : PW-16



3" WATER METER INSTALLATION

N.T.S.

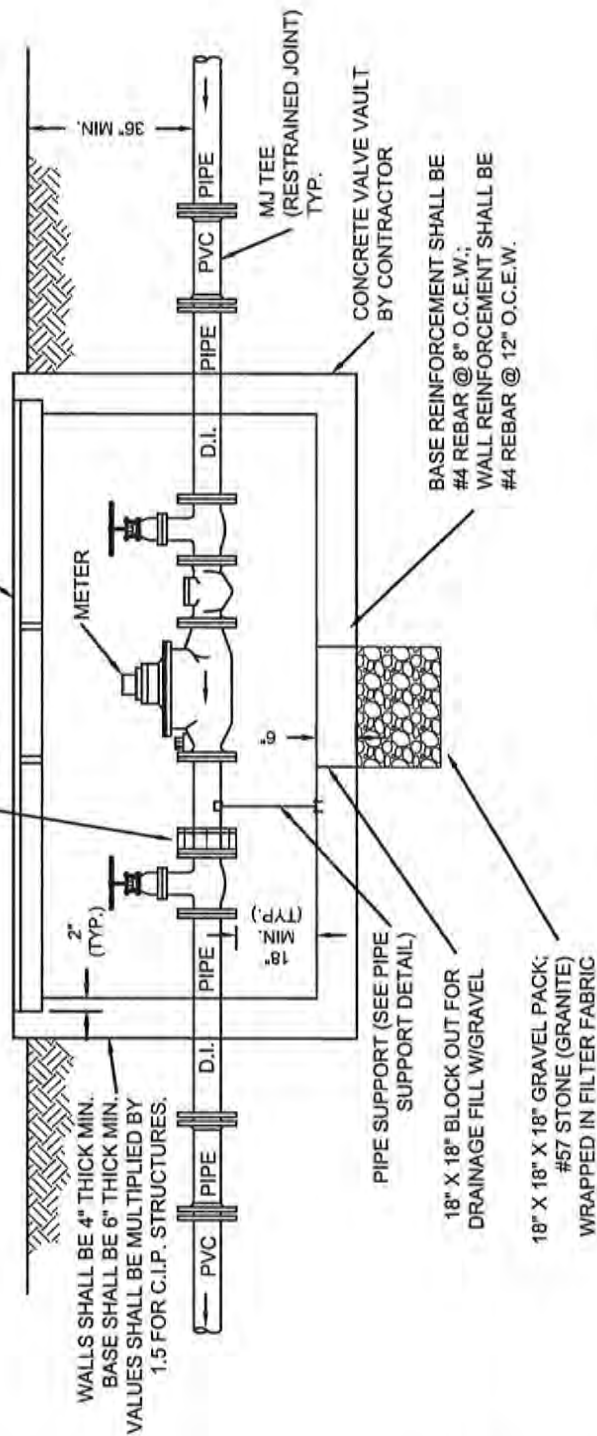


NOTES:

1. ALL D.I. PIPE, VALVES, ETC. SHALL BE PAINTED WITH 2 (TWO) COATS OF BLUE ENAMEL PAINT.
2. ALL D.I. PIPE SHALL BE PRESSURE CLASS 350

VALVE VAULT COVERS SHALL BE ALUMINUM WITH 316 S.S. HARDWARE, VAULT COVER ASSEMBLIES WEIGHING IN EXCESS OF 100 LBS. SHALL BE FABRICATED IN SECTIONS FOR EASIER REMOVAL.

FLANGE ADAPTER COUPLING



4" - 6" WATER METER INSTALLATION

N.T.S.

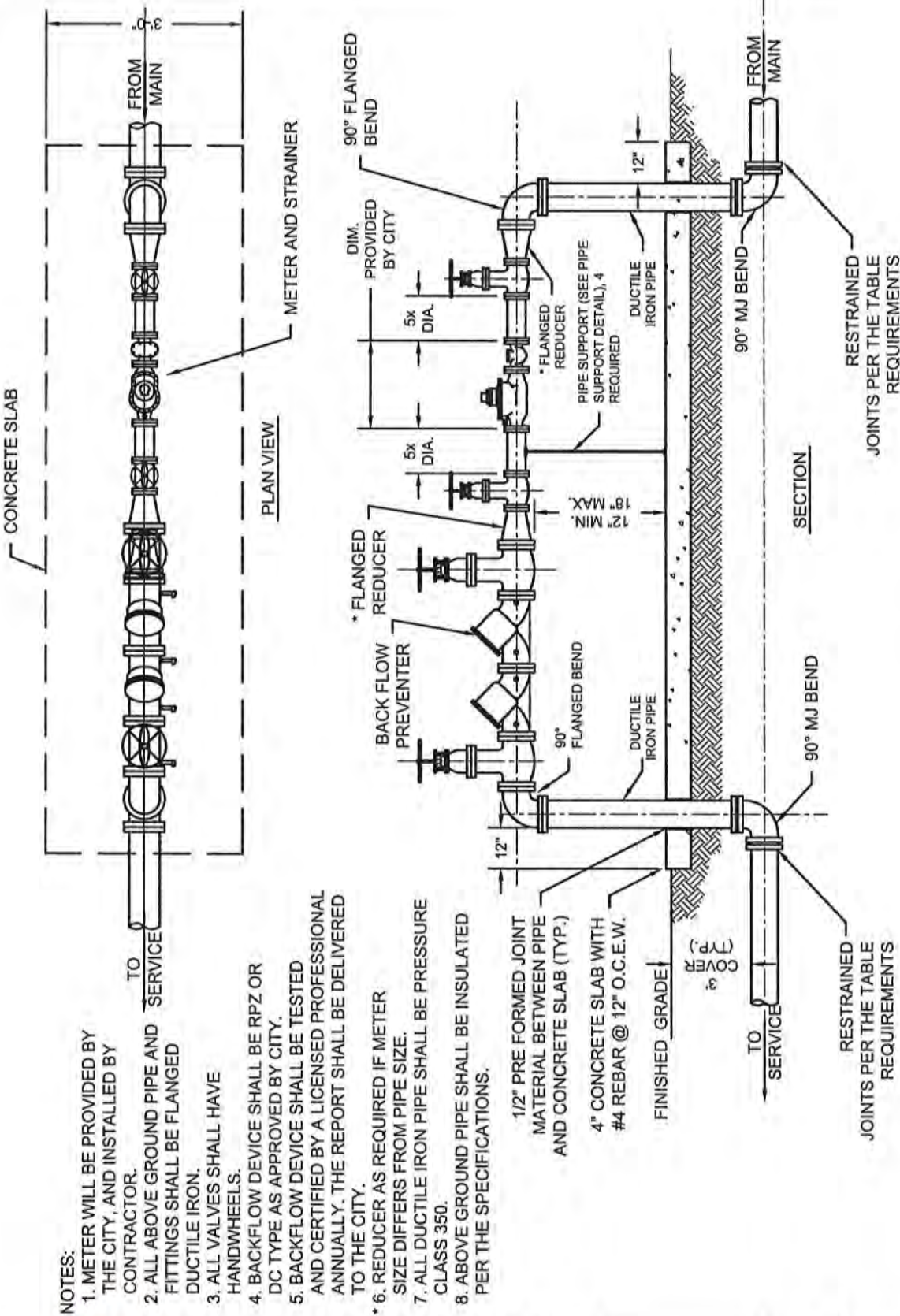


CALLAWAY, FLORIDA
STANDARD DETAILS

4" - 6" WATER METER INSTALLATION

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SCALE : NTS

FIGURE : PW-17



NOTES:

1. METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
2. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
3. ALL VALVES SHALL HAVE HANDWHEELS.
4. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
5. BACKFLOW DEVICE SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
- * 6. REDUCER AS REQUIRED IF METER SIZE DIFFERS FROM PIPE SIZE.
7. ALL DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
8. ABOVE GROUND PIPE SHALL BE INSULATED PER THE SPECIFICATIONS.



CALLAWAY, FLORIDA
STANDARD DETAILS

4" & LARGER WATER METER & BACKFLOW
PREVENTER

DATE : MARCH 2021
SCALE : NTS

FIGURE : PW-18

4" & LARGER - METER & BACKFLOW

N.T.S.



4" AND LARGER - METER AND BACKFLOW PREVENTER WITH BYPASS

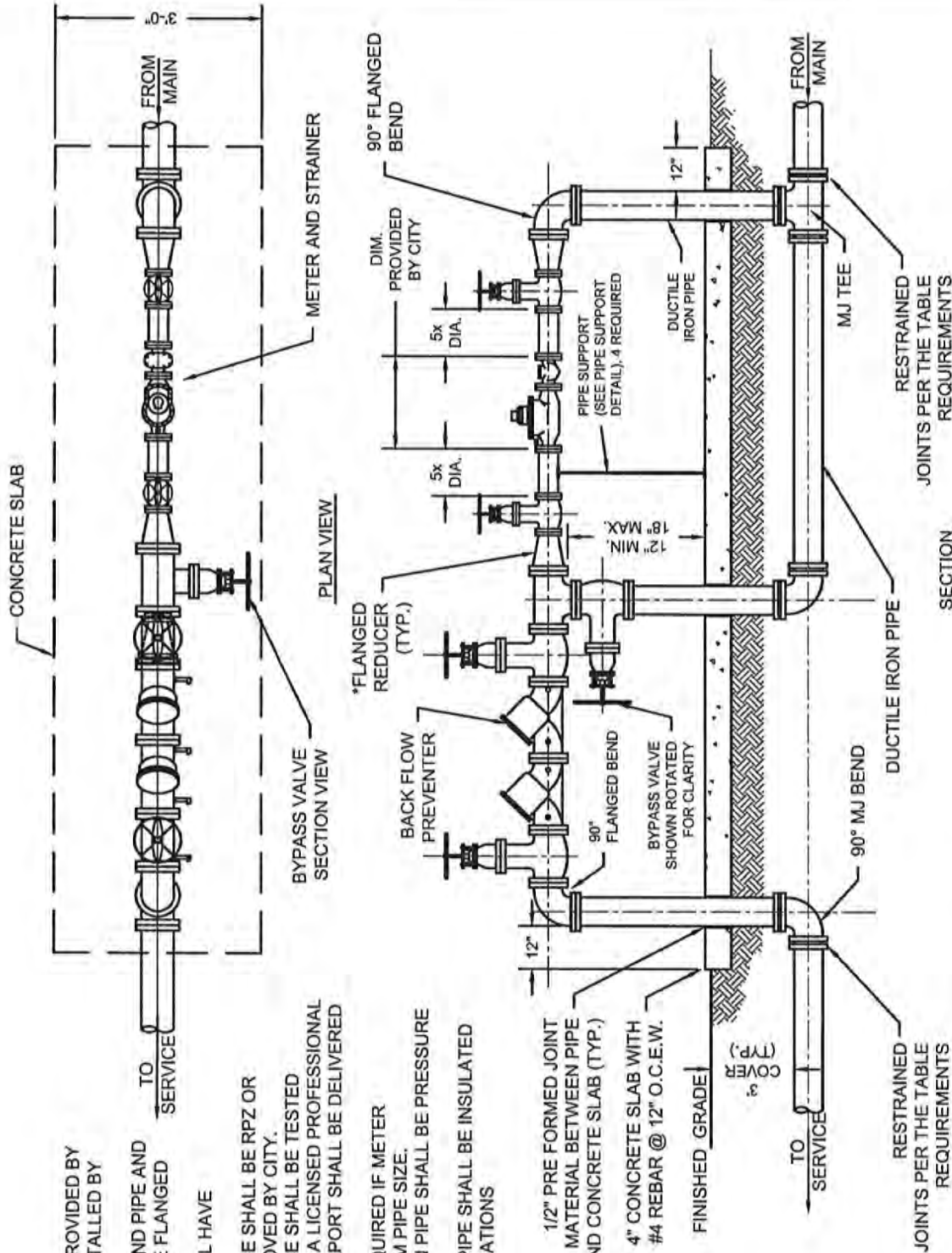
CALLAWAY, FLORIDA
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DATE : MARCH 2021
SCALE : NTS

FIGURE : PW-19

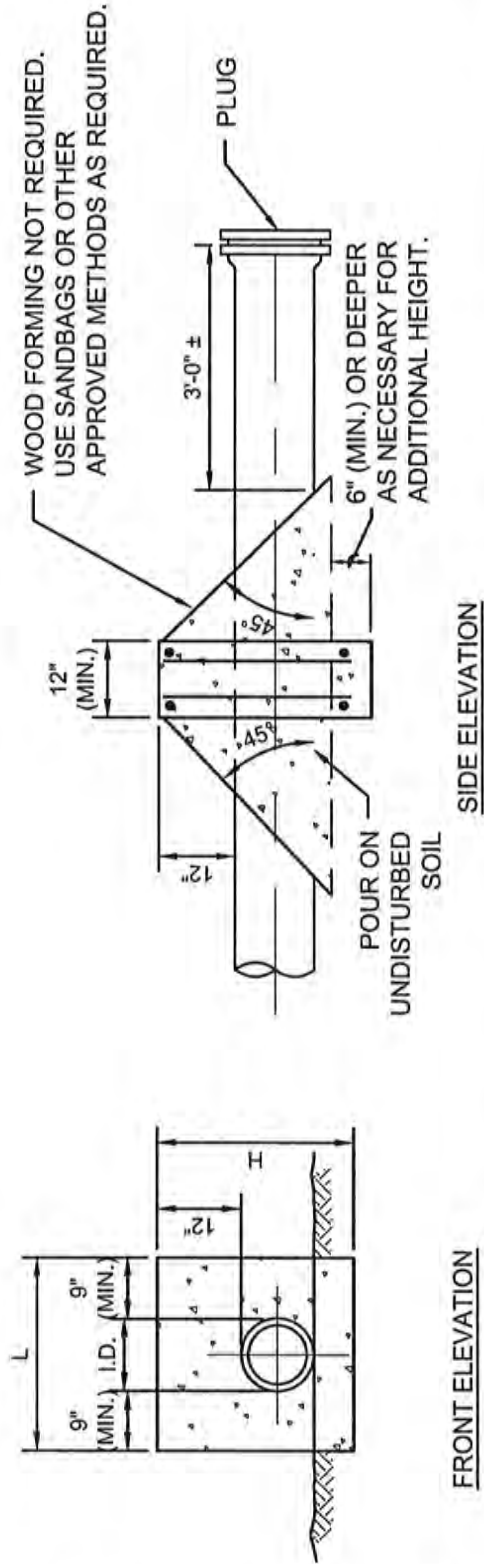
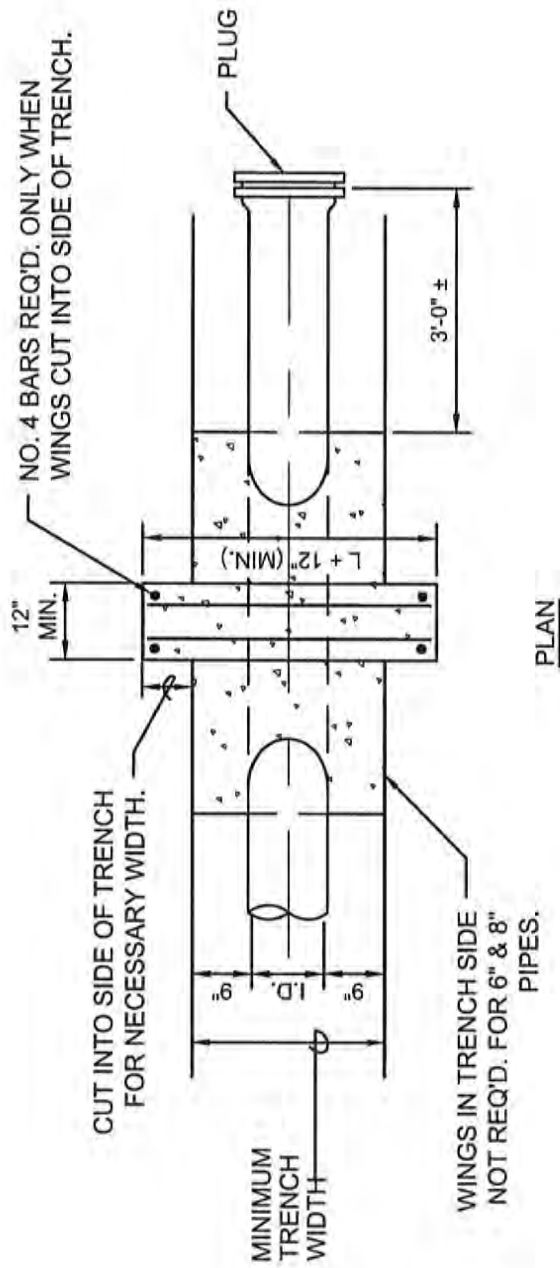
NOTES:

1. METER WILL BE PROVIDED BY THE CITY, AND INSTALLED BY CONTRACTOR.
2. ALL ABOVE GROUND PIPE AND FITTINGS SHALL BE FLANGED DUCTILE IRON.
3. ALL VALVES SHALL HAVE HANDWHEELS.
4. BACKFLOW DEVICE SHALL BE RPZ OR DC TYPE AS APPROVED BY CITY.
5. BACKFLOW DEVICE SHALL BE TESTED AND CERTIFIED BY A LICENSED PROFESSIONAL ANNUALLY. THE REPORT SHALL BE DELIVERED TO THE CITY.
- * 6. REDUCER AS REQUIRED IF METER SIZE DIFFERS FROM PIPE SIZE.
7. ALL DUCTILE IRON PIPE SHALL BE PRESSURE CLASS 350.
8. ABOVE GROUND PIPE SHALL BE INSULATED PER THE SPECIFICATIONS



4" & LARGER - METER & BACKFLOW WITH BYPASS

N.T.S.



DEAD END ANCHOR BLOCK DETAILS - 6" PIPE AND SMALLER

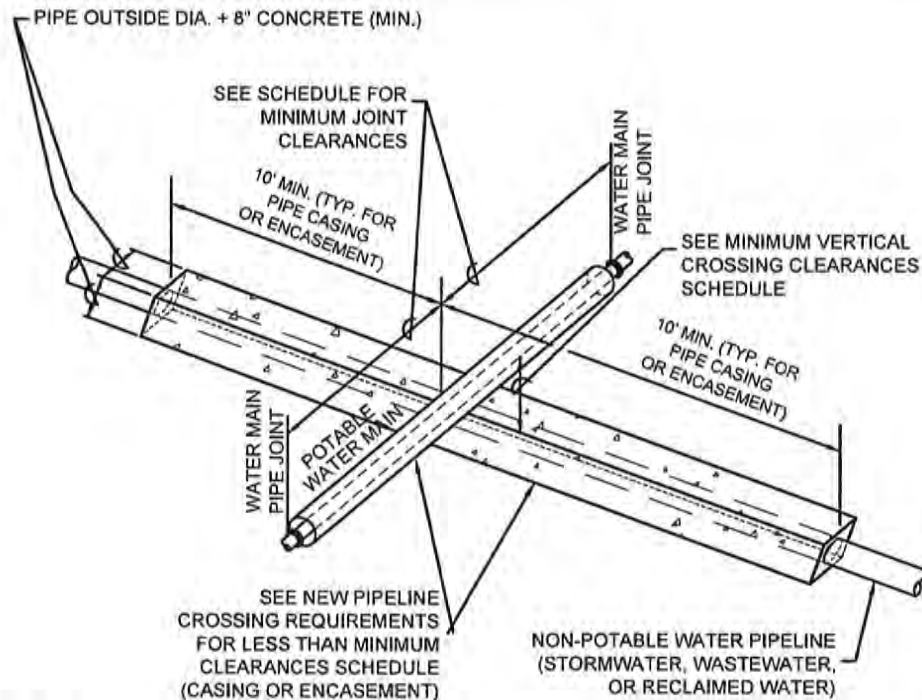


CALLAWAY, FLORIDA
STANDARD DETAILS

WATER MAIN DEAD END ANCHOR BLOCK - 6"
AND SMALLER PIPE

DATE : MARCH 2021
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FIGURE : PW-20

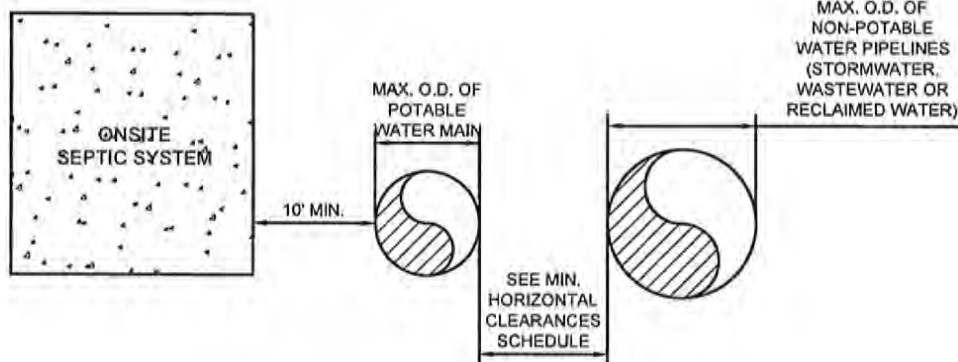


MINIMUM VERTICAL CROSSING CLEARANCES

1. WATER MAIN ABOVE STORMWATER (GRAVITY) OR WASTEWATER (GRAVITY & VACUUM): 6" (MIN.) 12"+ (PREFERRED)
2. WATER MAIN BELOW STORMWATER (GRAVITY) OR WASTEWATER (GRAVITY & VACUUM): 12" (MIN.)
3. WATER MAIN ABOVE OR BELOW STORMWATER, WASTEWATER & RECLAIMED WATER (PRESSURE): 12" (MIN.)

MINIMUM WATER MAIN JOINT SPACING

1. STORMWATER (GRAVITY & PRESSURE), WASTEWATER (VACUUM) OR RECLAIMED WATER (PRESSURE): 3' O.C.
2. WASTEWATER (GRAVITY & PRESSURE): 6' O.C.



MINIMUM HORIZONTAL CLEARANCES

1. STORMWATER (GRAVITY & PRESSURE): 3' (MIN.)
2. VACUUM WASTEWATER: 3' (MIN.) - 10'+ (PREFERRED)
3. WASTEWATER (GRAVITY & PRESSURE): 6' (MIN.) - 10'+ (PREFERRED)
4. WASTEWATER (GRAVITY): 3' (MIN.) WHERE BOTTOM OF WATER MAIN IS 6"+ ABOVE TOP OF WASTEWATER PIPE

WATER MAIN SEPARATION REQUIREMENTS

N.T.S.

(SEE F.D.E.P. RULE 62-555.314)



CALLAWAY, FLORIDA
STANDARD DETAILS

WATER MAIN SEPARATION REQUIREMENTS (1)

DATE : MARCH 2021
SCALE : NTS

FIGURE : PW-21

62-555.314 (5)

(A) WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THE REQUIRED MINIMUM HORIZONTAL DISTANCE FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND JOINTS IN THE WATER MAIN ARE BEING LOCATED LESS THAN THE REQUIRED MINIMUM DISTANCE FROM JOINTS IN THE OTHER PIPELINE.

1. USE OF PRESSURE-RATED PIPE CONFORMING TO THE AMERICAN WATER WORKS ASSOCIATION STANDARDS INCORPORATED INTO RULE 62-555.330, F.A.C., FOR THE OTHER PIPELINE IF IT IS A GRAVITY - OR VACUUM - TYPE PIPELINE;
2. USE OF WELDED, FUSED, OR OTHERWISE RESTRAINED JOINTS FOR EITHER THE WATER MAIN OR THE OTHER PIPELINE; OR
3. USE OF WATERTIGHT CASING PIPE OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR EITHER THE WATER MAIN OR THE OTHER PIPELINE.

(B) WHERE AN UNDERGROUND WATER MAIN IS BEING LAID LESS THAN THREE FEET HORIZONTALLY FROM ANOTHER PIPELINE AND WHERE AN UNDERGROUND WATER MAIN IS CROSSING ANOTHER PIPELINE AND IS BEING LAID LESS THAN THE REQUIRED MINIMUM VERTICAL DISTANCE FROM THE OTHER PIPELINE:

1. USE OF PIPE, OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25-INCH-THICK DUCTILE IRON PIPE) OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR THE WATER MAIN; AND
2. USE OF PIPE, OR CASING PIPE, HAVING HIGH IMPACT STRENGTH (I.E., HAVING AN IMPACT STRENGTH AT LEAST EQUAL TO THAT OF 0.25-INCH-THICK DUCTILE IRON PIPE) OR CONCRETE ENCASEMENT AT LEAST FOUR INCHES THICK FOR THE OTHER PIPELINE IF IT IS NEW AND IS CONVEYING WASTEWATER OR RECLAIMED WATER.

F.A.C. 62-555.314 EXCEPTIONS



CALLAWAY, FLORIDA
STANDARD DETAILS

WATER MAIN SEPARATION REQUIREMENTS (2)

DATE : MARCH 2021
SCALE : NTS

FIGURE : PW-22

6 WIRE SENSOR & HOUSING

12" (MIN.) (TYPICAL)

5" (TYP.)

FLOW

O.S. AND Y. VALVES (FL/FL) (2 REQ'D)

FLOW

PLAN

1/2" PREFORMED JOINT MATERIAL TO BE PLACED BETWEEN D.I.P. AND CONCRETE SLAB

4" CONCRETE SLAB WITH #4 REBAR @ 12" O.C.E.W.

3' COVER (TYP.)

90° MJ BEND (2 REQUIRED)

RESTRAINED JOINTS PER THE TABLE REQUIREMENTS (TYP.)

PIPE SUPPORTS (SEE PIPE SUPPORT DETAIL), MIN 2 REQ'D & AS NECESSARY)

90° BEND

FLANGED JOINT

12"

ALL VALVES SHALL HAVE HANDWHEELS

PROFILE

NOTES:
1. ALL ABOVE GROUND PIPE SHALL BE DUCTILE IRON w/ FLANGED

DOUBLE DETECTOR CHECK VALVE ASSEMBLY

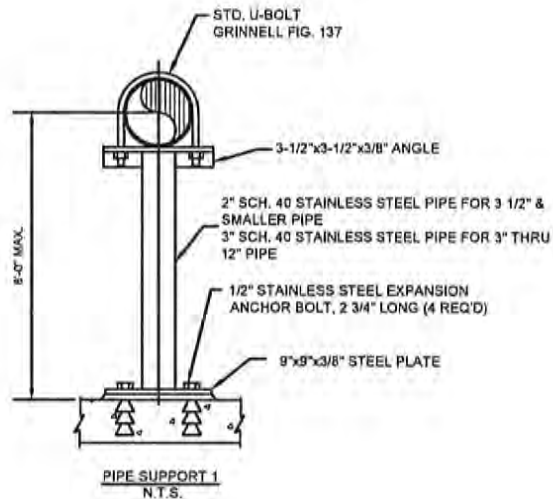
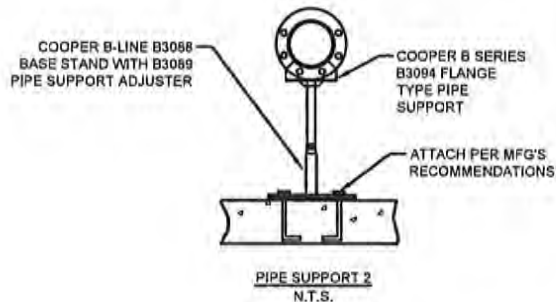
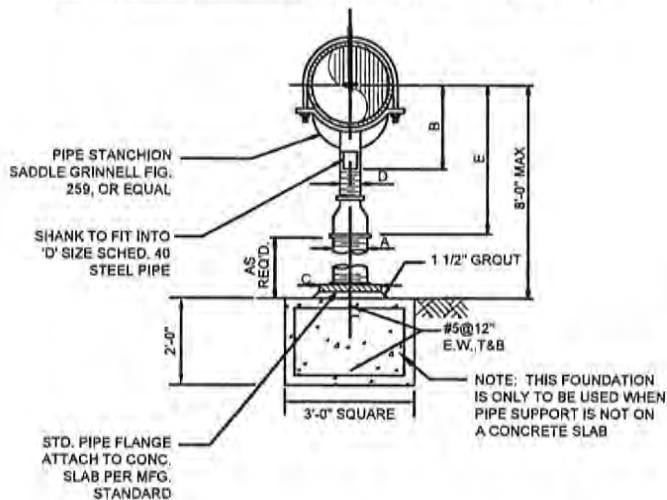
FIGURE : PW-23

NOTE:

CARBON STEEL COMPONENTS SHALL BE COATED AS FOLLOWS:

- PRIMER - TNEPEC SERIES 91 H2O HYDRO-ZINC, 2.5-3.5 MILS;
- INTERMEDIATE COAT - TNEPEC SERIES 66 EPOXOLINE, 3.0-5.0 MILS;
- TOP COAT - SERIES 1074U OR 1075U ENDURA-SHIELD II, 2.0-3.0 MILS;
- TOTAL MINIMUM DFT = 7.5 MILS;
- TOTAL COATS = 3.

PIPE SIZE	A	B	C	D	E	
					MIN.	MAX.
2 1/2"	2 1/2"	3 1/2"	9"	1 1/2"	8"	13"
3"	2 1/2"	3 3/4"	9"	1 1/2"	8 1/4"	13 1/4"
3 1/2"	2 1/2"	4"	9"	1 1/2"	8 1/2"	13 1/2"
4"	3"	4 1/4"	9"	2 1/2"	9 1/4"	14"
5"	3"	4 7/8"	9"	2 1/2"	10"	14 3/4"
6"	3"	5 1/2"	9"	2 1/2"	10 1/2"	15 1/4"
8"	3"	6 7/8"	9"	2 1/2"	11 3/4"	16 1/2"
10"	3"	8 1/2"	9"	2 1/2"	13 1/2"	18 1/4"
12"	3"	9 15/16"	9"	2 1/2"	15"	19 3/4"
14"	4"	10 15/16"	11"	3"	16 1/4"	20 3/4"
16"	4"	12 3/8"	11"	3"	17 3/4"	22 1/4"
18"	5"	13 7/8"	13 1/2"	3 1/2"	19 1/2"	24"
20"	5"	15 3/8"	13 1/2"	3 1/2"	21"	25 1/2"
24"	6"	17 15/16"	13 1/2"	4"	23 3/4"	28 1/4"
30"	6"	21 5/16"	13 1/2"	4"	27"	31 1/2"
32"	6"	22 1/2"	13 1/2"	4"	28 1/4"	32 3/4"
36"	6"	24 1/2"	13 1/2"	4"	30 1/4"	34 3/4"



PIPE SUPPORTS

N.T.S.

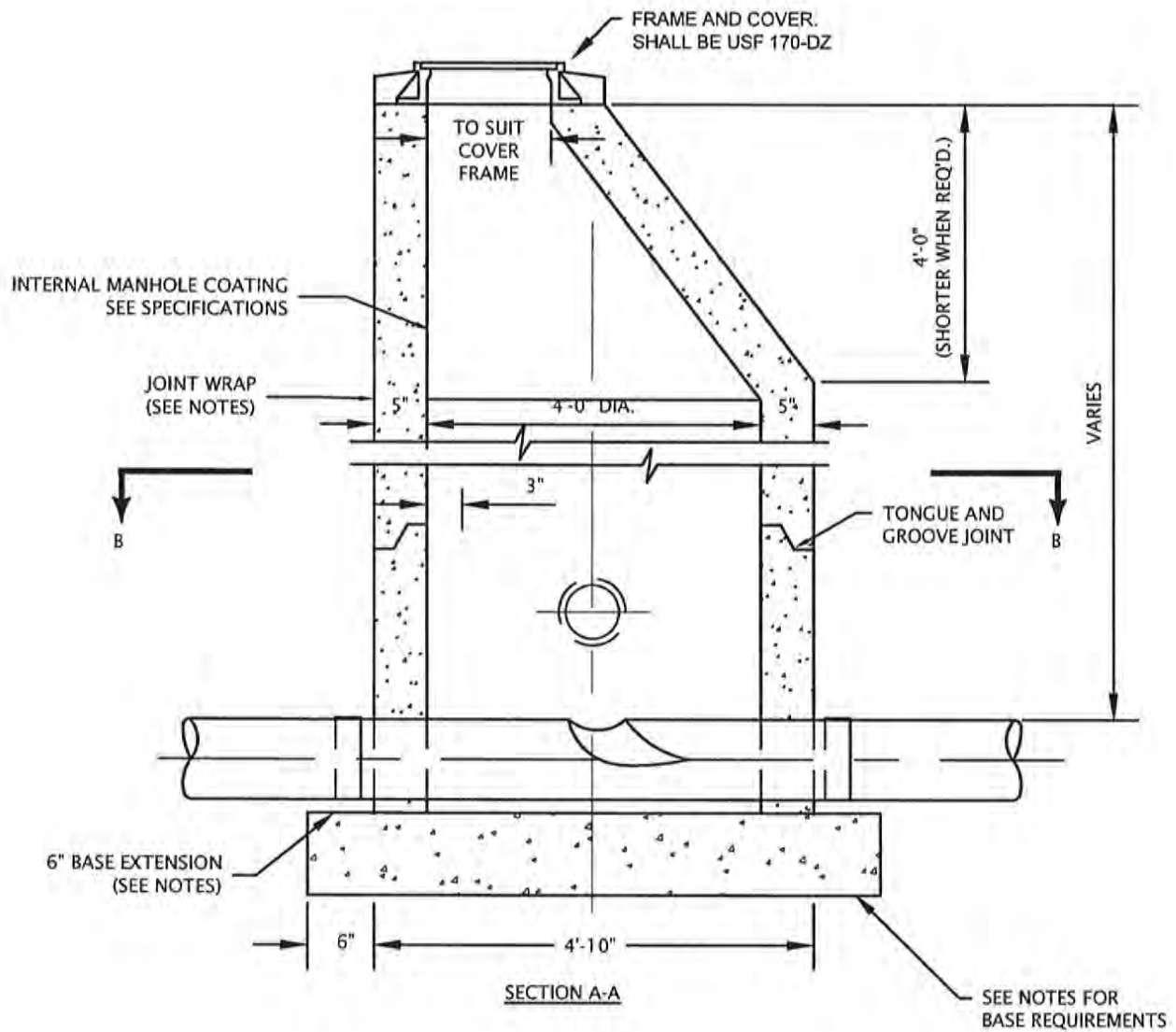


CALLAWAY, FLORIDA
STANDARD DETAILS

PIPE SUPPORTS

DATE : MARCH 2021
SCALE : NTS

FIGURE : PW-24



NOTES:

1. MANHOLE SHALL CONFORM TO A.S.T.M. C 478 SECIFICATIONS.
2. JOINTING COMPOUND SHALL BE RAM NECK, TYPE 1, ROPE FROM PLASTIC GASKET OR EQUAL.
3. ALL PATCHING TO BE DONE WITH HYDRAULIC CEMENT. NO MORTAR REPAIRS PERMITTED.
4. MANHOLE PIPE CONNECTION SHALL BE A WATERTIGHT CONNECTION USING TRELLEBORG "KOR-N-SEAL" OR EQUAL.
5. NEW MANHOLES SHALL BE PROVIDED WITH A 6" FLOTATION RING.
6. NEW MANHOLES ARE TO RECEIVE A 12" THICK #57 LIMESTONE FOUNDATION.
7. XYPEX CONCRETE ADMIXTURE SHALL BE USED IN ALL NEW MANHOLES. XYPEX ADMIXTURE SHALL BE C-1000R (RED): 3.5% BY WEIGHT OF PORTLAND CEMENT CONTENT.
8. NEW MANHOLE JOINTS SHALL BE WRAPPED WITH A 9" WIDE BUTYL RUBBER WRAP AS MANUFACTURED BY PRESS-SEAL CORPORATION, SEALING SYSTEMS INC., OR APPROVED EQUAL.
9. EXISTING PIPE EXTENSIONS TO NEW MANHOLES SHALL BE MADE USING A COUPLING MANUFACTURED BY INDIANA SEAL WITH "SHEAR GUARD" OR APPROVED EQUAL.
10. FIELD CORES FOR CONNECTIONS TO EXISTING OR NEW MANHOLES SHALL BE CUT USING A ROTARY CORE DRILL AND SHALL INCLUDE A "KOR-N-SEAL" FLEXIBLE CONNECTION AS MANUFACTURED BY TRELLEBORG OR APPROVED EQUAL.

SANITARY SEWER MANHOLE

N.T.S.

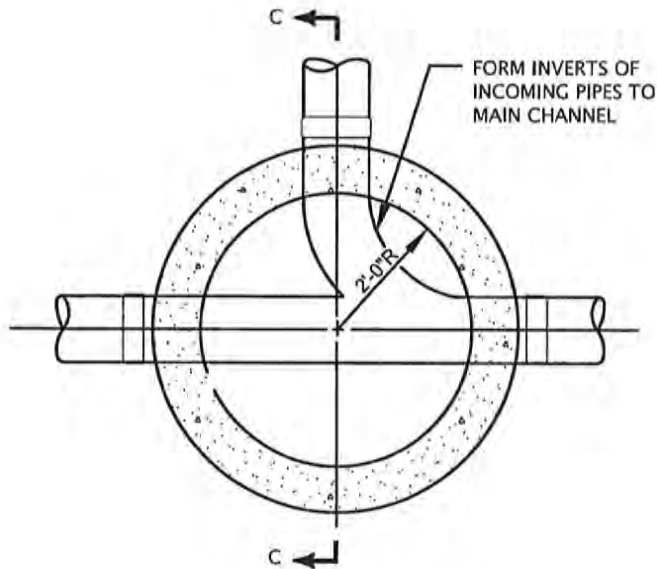


CALLAWAY, FLORIDA
STANDARD DETAILS

SANITARY SEWER MANHOLE

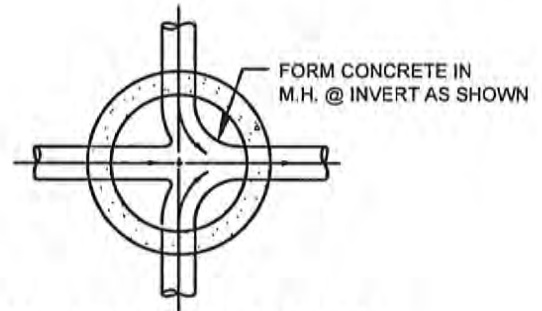
DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-1



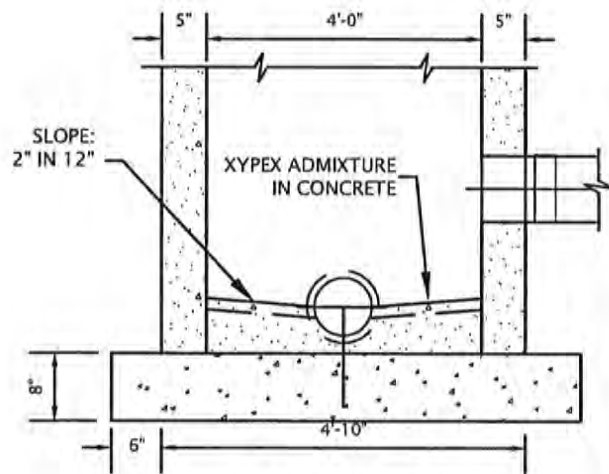
SECTION B-B

N.T.S.



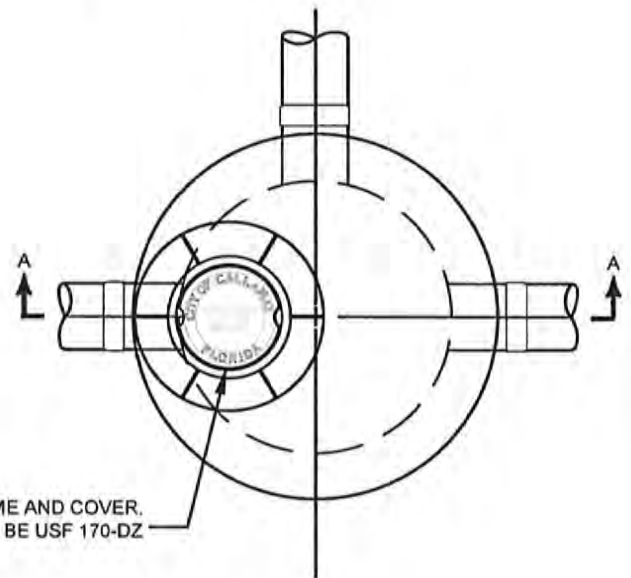
**MANHOLE WITH THREE OR
MORE PIPES AT INVERT**

N.T.S.



SECTION C-C

N.T.S.



PLAN

N.T.S.

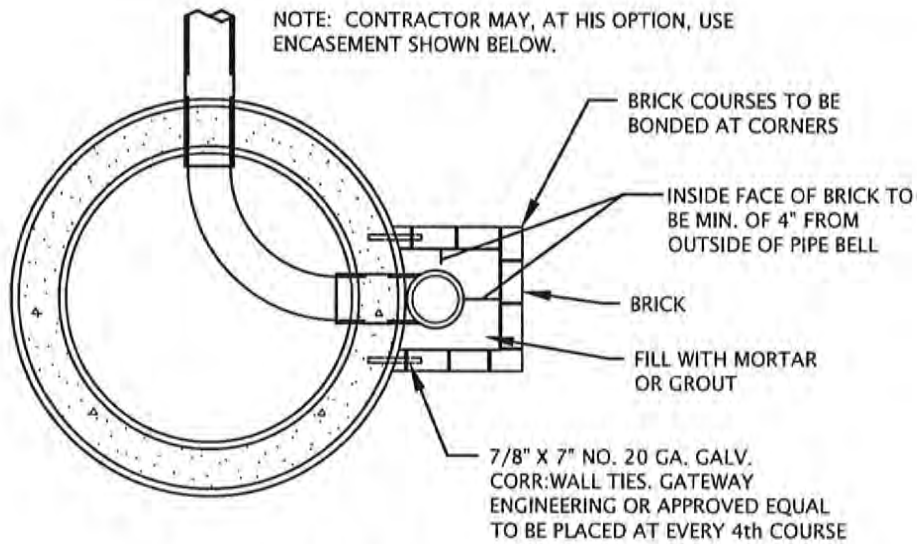


CALLAWAY, FLORIDA
STANDARD DETAILS

MANHOLE PLAN AND SECTION VIEWS

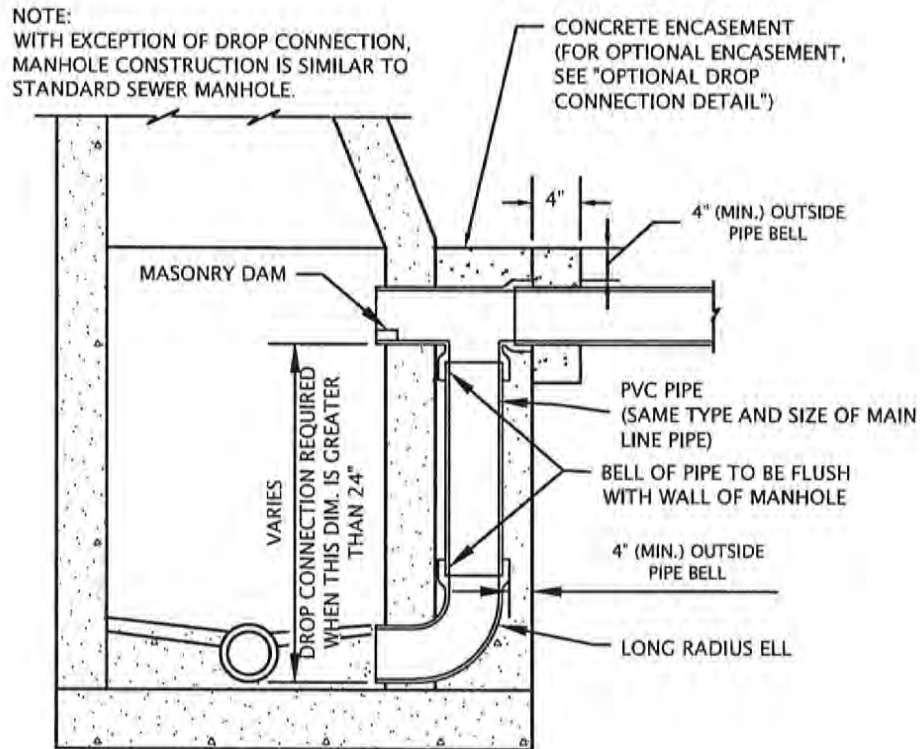
DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-2



OPTIONAL DROP CONNECTION DETAIL

N.T.S.



DROP CONNECTION AT MANHOLE

N.T.S.

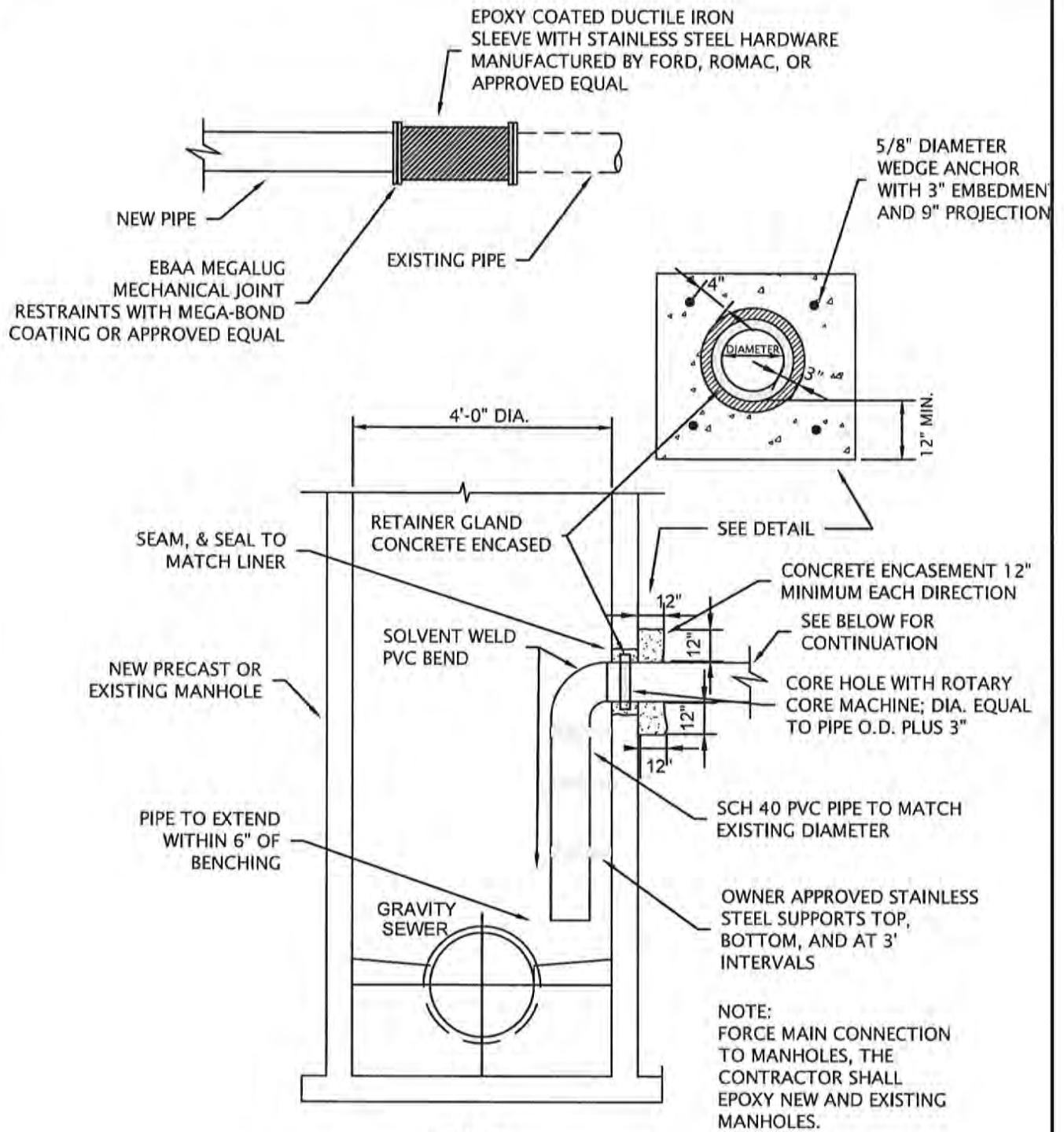


CALLAWAY, FLORIDA
STANDARD DETAILS

MANHOLE OUTSIDE DROP CONNECTION

DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-3



SECTION

FORCE MAIN CONNECTION TO MANHOLE

N.T.S.

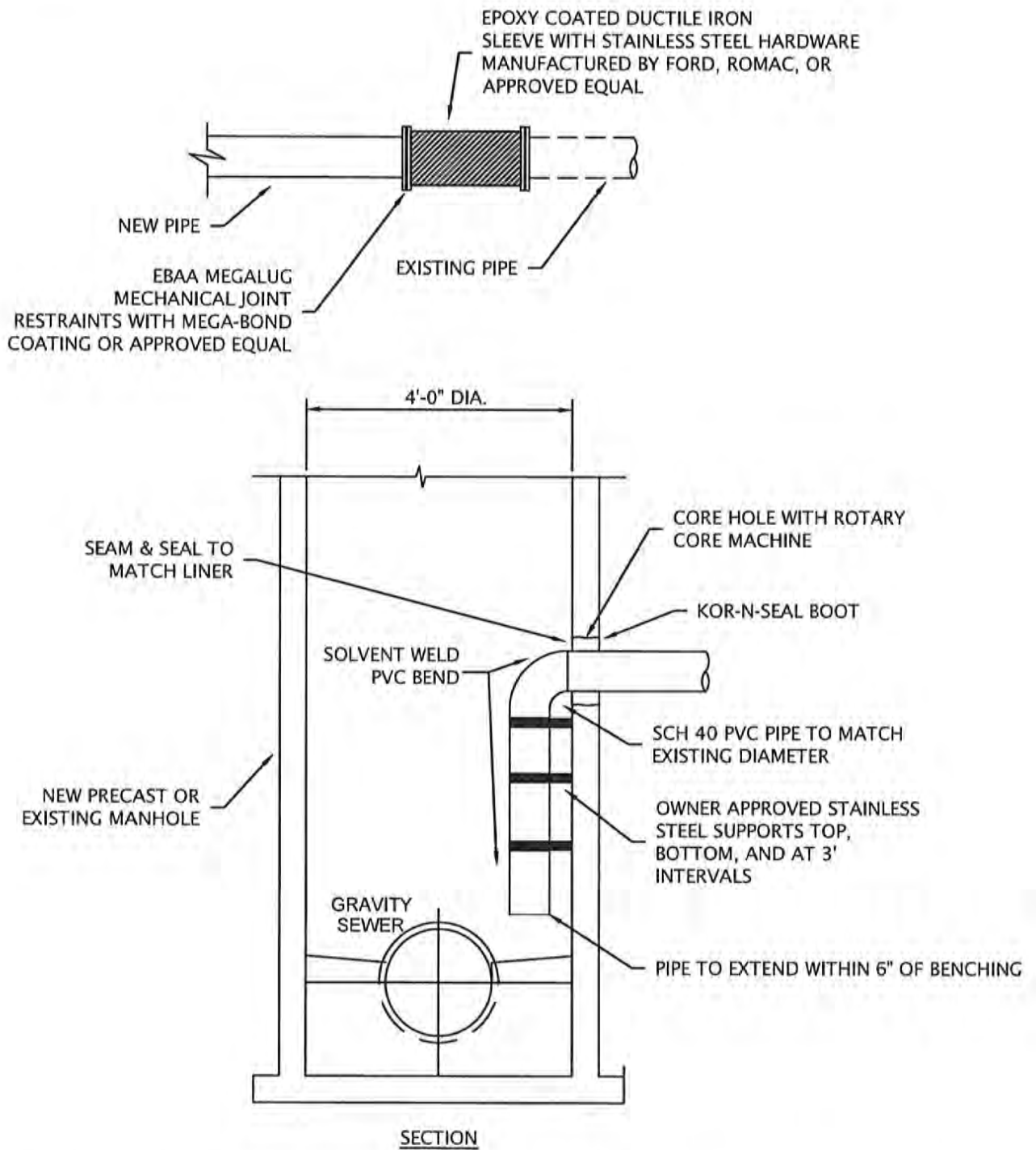


CALLAWAY, FLORIDA
STANDARD DETAILS

FORCE MAIN CONNECTION TO MANHOLE

DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-4



ALTERNATE FORCE MAIN CONNECTION TO MANHOLE

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

ALTERNATE FORCE MAIN CONNECTION TO
MANHOLE

DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-5

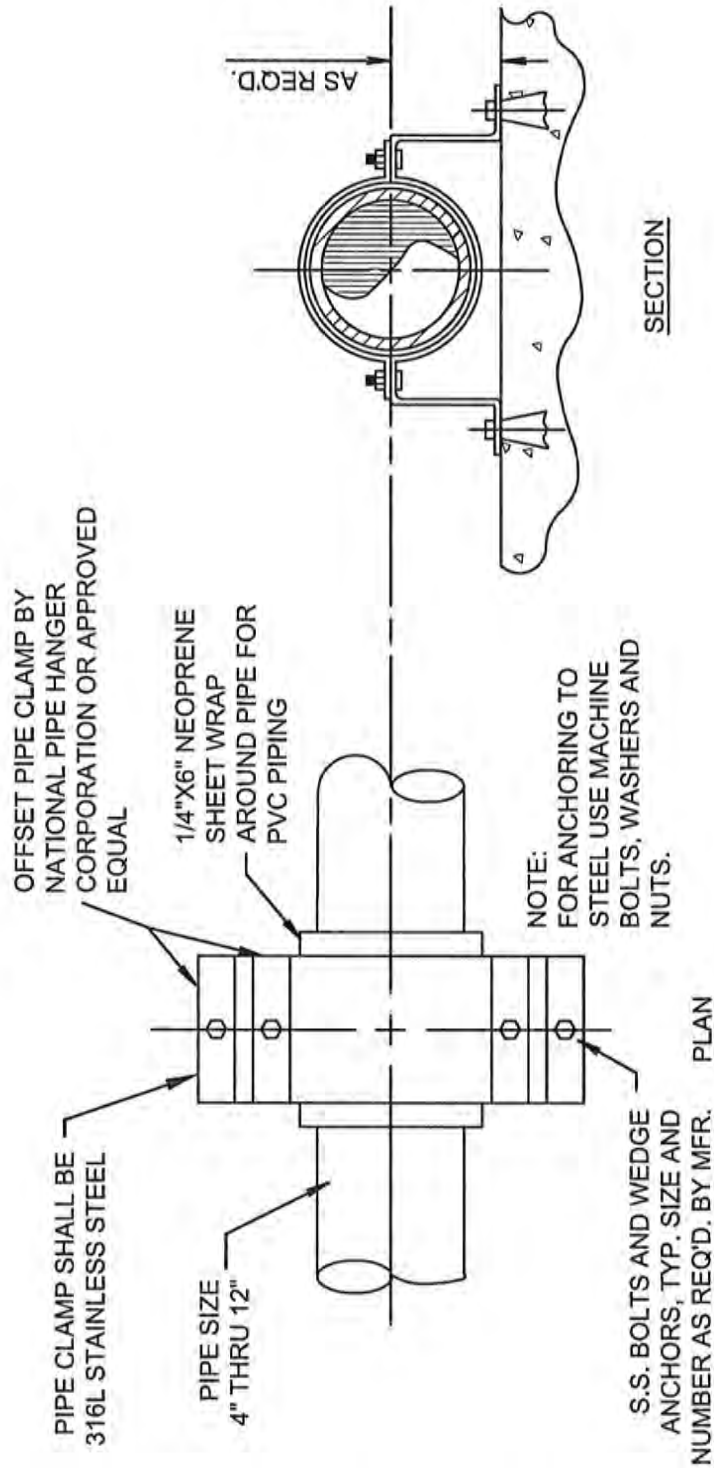


CALLAWAY, FLORIDA
STANDARD DETAILS

PIPE CLAMP

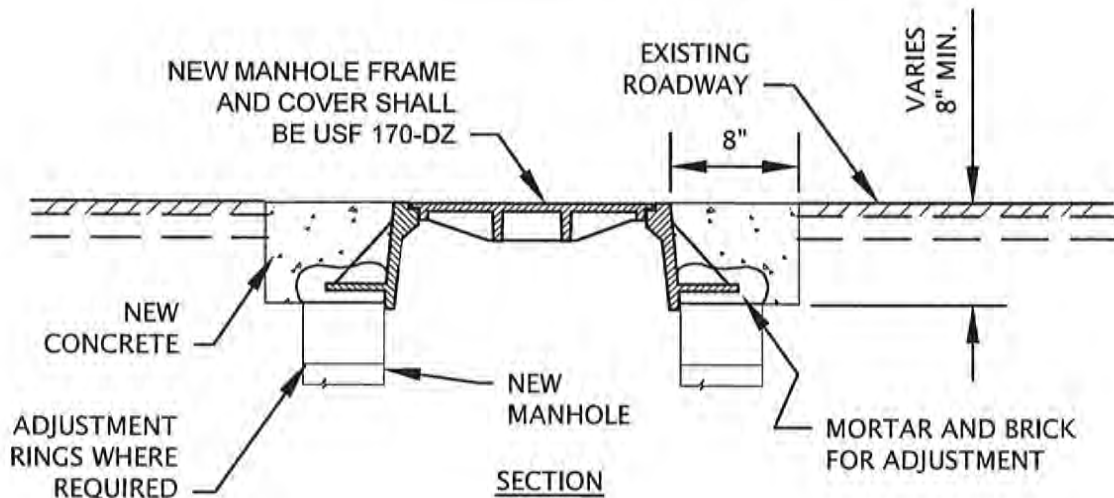
DATE : MARCH 2021
SCALE : NTS

FIGURE : WV-6



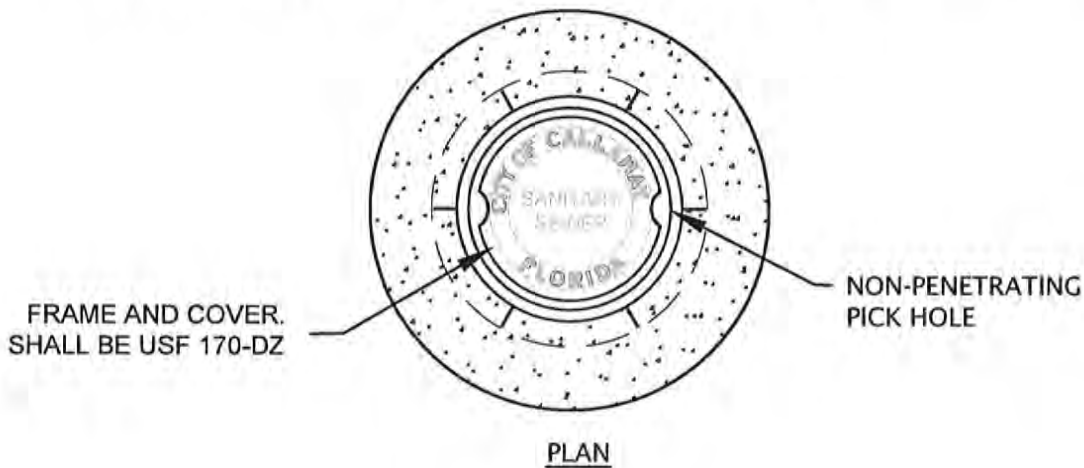
PIPE CLAMP

N.T.S.



NOTES:

1. THE PORTION OF THE FRAME AND COVER WHICH FORMS THE COVER SEAT SHALL BE MACHINED SO THAT NO ROCKING IS POSSIBLE.
2. MANHOLES INSTALLED IN NON-PAVED AREAS SHALL BE SET SUCH THAT THE COVER IS 3" MIN. ABOVE GRADE UNLESS NOTED OTHERWISE OR DIRECTED IN THE FIELD BY THE ENGINEER.
3. MANHOLES IN PAVED AREAS SHALL BE BROUGHT TO PROPER GRADE AFTER THE PAVING HAS BEEN REPLACED. NEW PAVING SHALL BE CUT AS REQUIRED TO BRING MANHOLE TO GRADE WITH CONCRETE COLLAR TO THE DIMENSIONS SHOWN AND BE ROUND.
4. ALL MANHOLE FRAMES AND COVERS SHALL BE SET TO GRADE AND IN THE SAME PLANE OF THE PAVED SURFACE (NOT NECESSARILY LEVEL).
5. ALL MANHOLES WITHIN THE PROJECT SCOPE WILL RECEIVE A HDPE MANHOLE INSERT AS MANUFACTURED BY "NO FLOW IN FLOW" OR APPROVED EQUAL.



MANHOLE FRAME & COVER
N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

MANHOLE FRAME AND COVER

DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-7



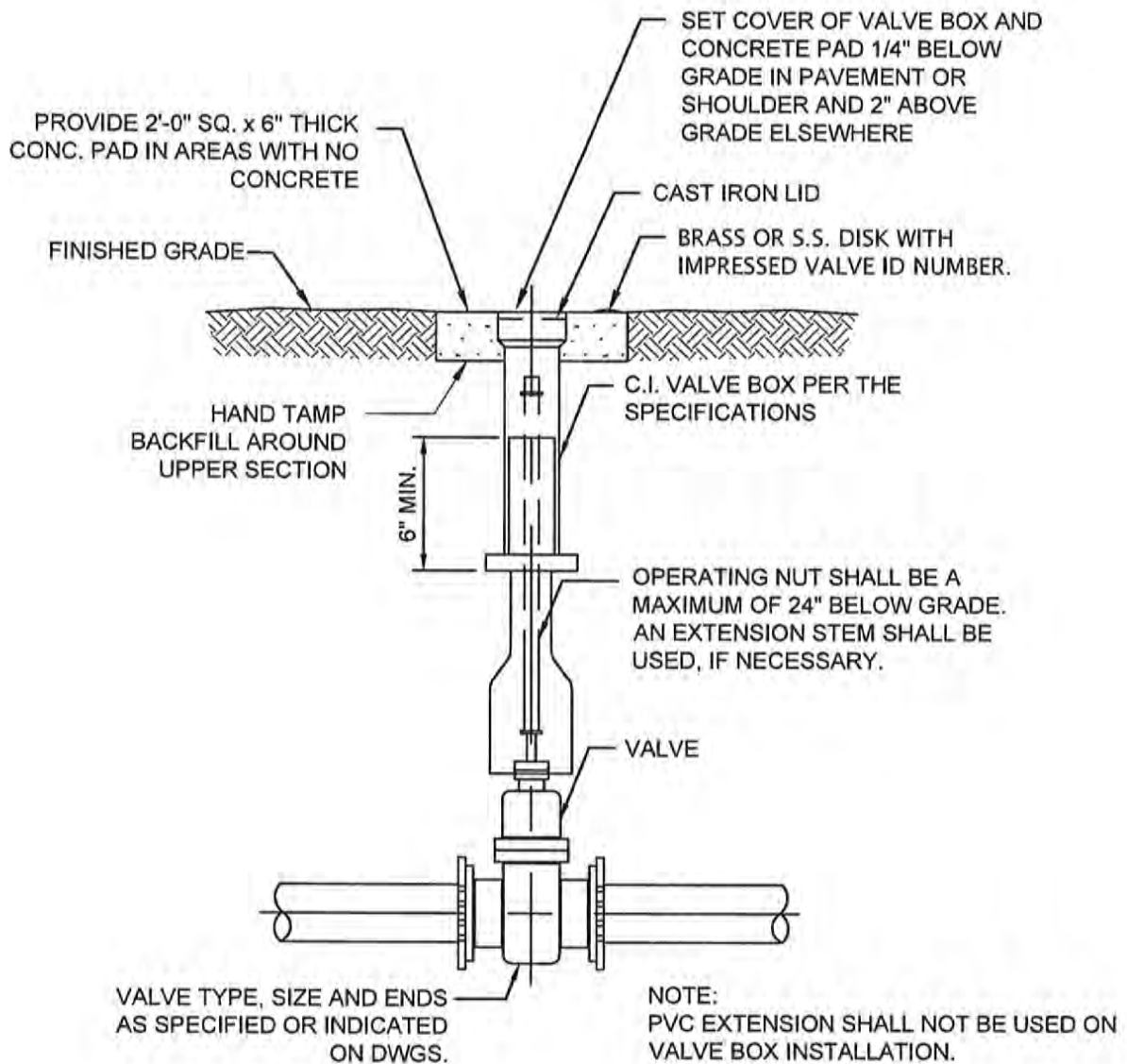
- ## TYPICAL WYE & LATERAL INSTALLATION

N.T.S.



SEWER SERVICE

FIGURE : WW-8



BURIED VALVE AND BOX

N.T.S.

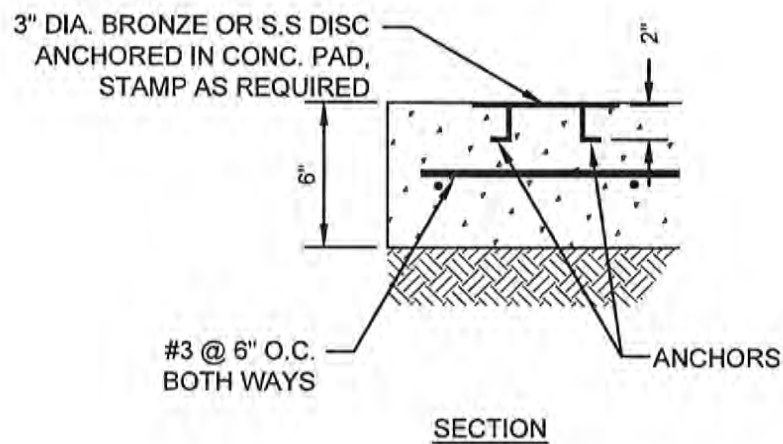
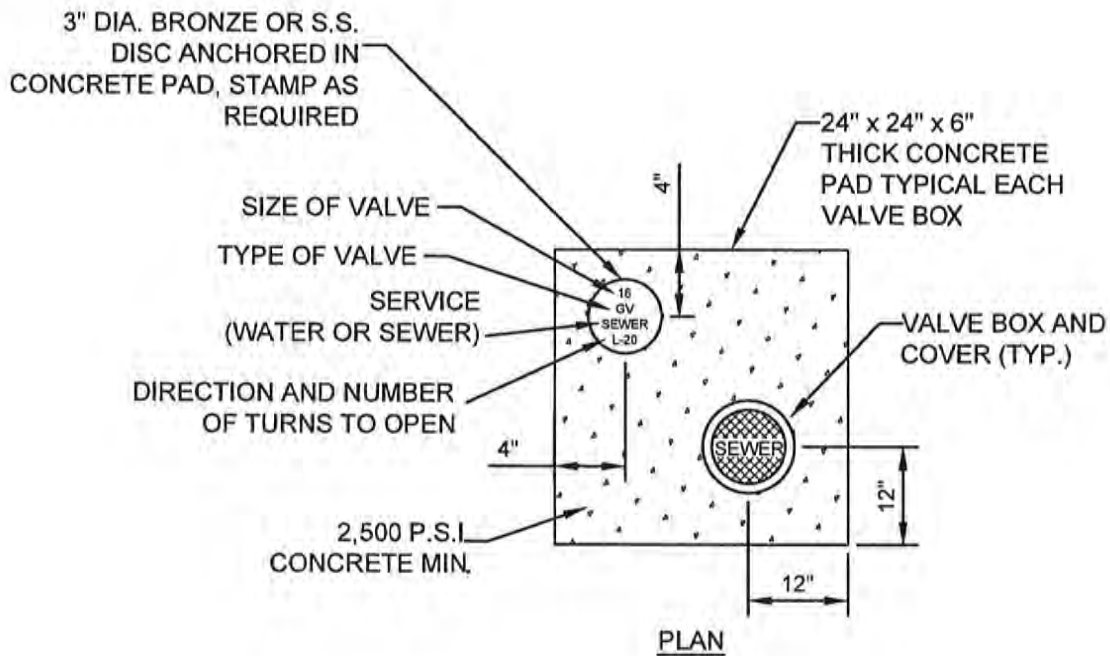


CALLAWAY, FLORIDA
STANDARD DETAILS

WASTEWATER VALVE AND BOX

DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-9



WASTEWATER VALVE COLLAR N.T.S.



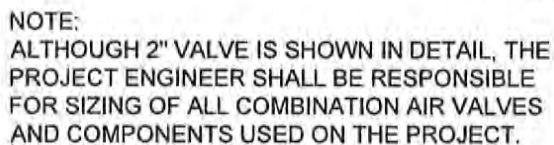
CALLAWAY, FLORIDA
STANDARD DETAILS

WASTEWATER VALVE COLLAR

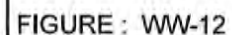
DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-10

May 13, 2021 1:11 PM
C:\Users\jstewart\OneDrive\Documents\Callaway Standard Details\WW-10.dwg



N.T.S.



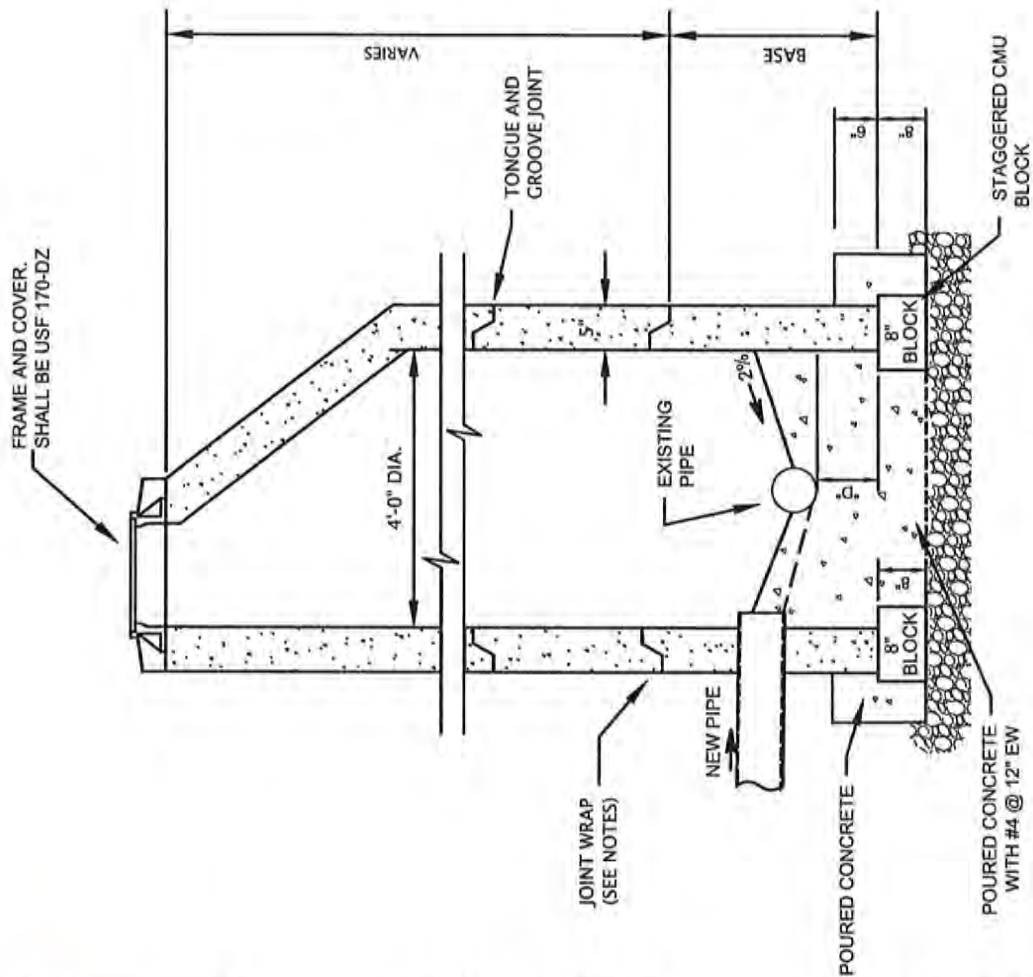


DOGHOUSE MANHOLE DETAIL

CALLAWAY, FLORIDA
STANDARD DETAILS

DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-13

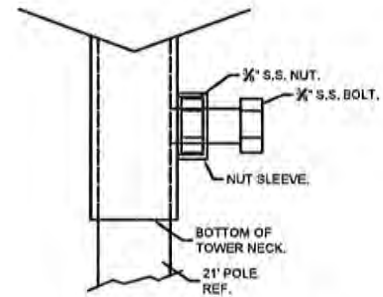
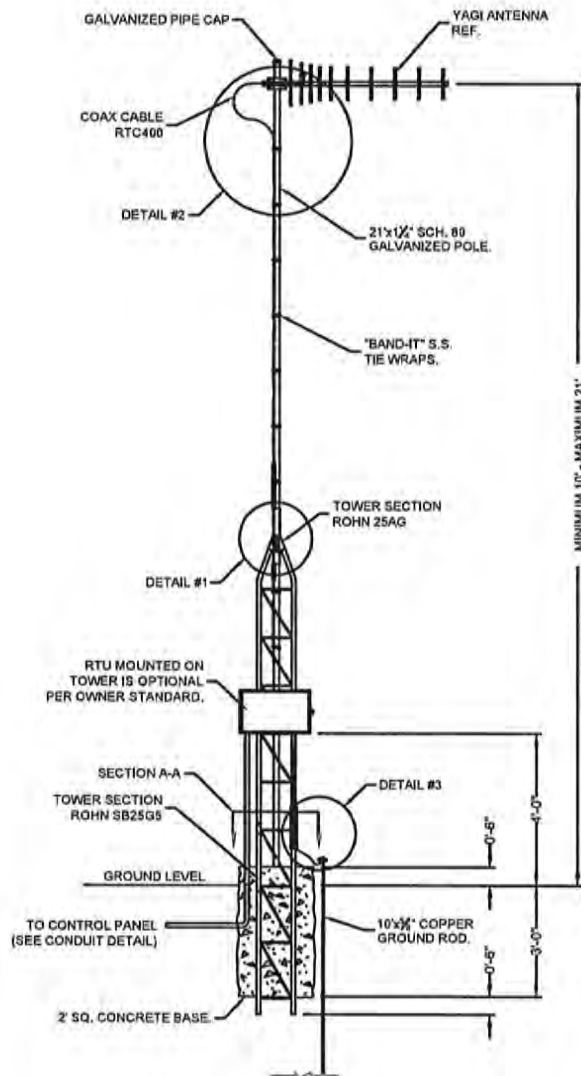


NOTES:

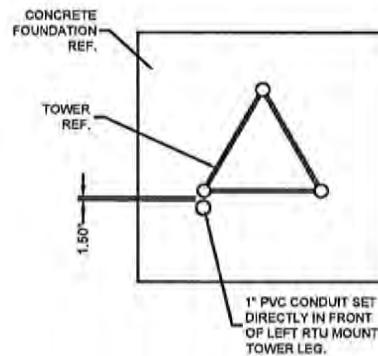
1. D = 0 WHEN A NEW PIPE ENTERS THE MANHOLE AT AN ELEVATION HIGHER THAN THE EXISTING PIPE.
2. D = 6" WHEN A NEW PIPE ENTERS THE MANHOLE AT THE SAME ELEVATION AS THE EXISTING PIPE.
3. D > 6" WHEN THE STRUCTURE WILL BE USED FOR PURPOSES OTHER THAN SANITARY SEWER.
4. MANHOLE SHALL CONFORM TO A.S.T.M. C 478 SPECIFICATIONS.
5. JOINTING COMPOUND SHALL BE RAM NECK, TYPE 1, ROPE FROM PLASTIC GASKET OR EQUAL.
6. ALL PATCHING TO BE DONE WITH HYDRAULIC CEMENT. NO MORTAR REPAIRS PERMITTED.
7. MANHOLE PIPE CONNECTIONS SHALL BE A WATERTIGHT CONNECTION USING TRELLEBORG "KOR-N-SEAL" OR EQUAL.
8. THE MANHOLE IS TO RECEIVE A 12" THICK, #57 STONE FOUNDATION.
9. XYPEX CONCRETE ADMIXTURE SHALL BE USED IN ALL NEW MANHOLES. XYPEX ADMIXTURE SHALL BE C-1000R (RED): 3.5% BY WEIGHT OF PORTLAND CEMENT CONTENT.
10. NEW MANHOLE JOINTS SHALL BE WRAPPED WITH A 9" WIDE BUTYL RUBBER WRAP AS MANUFACTURED BY PRESS-SEAL CORPORATION, SEALING SYSTEMS INC., OR APPROVED EQUAL.
11. FIELD CORES FOR CONNECTIONS TO EXISTING OR NEW MANHOLES SHALL BE CUT USING A ROTARY CORE DRILL AND SHALL INCLUDE A "KOR-N-SEAL" FLEXIBLE CONNECTION AS MANUFACTURED BY TRELLEBORG OR APPROVED EQUAL.

DOGHOUSE MANHOLE DETAIL

N.T.S.



DETAIL #1
POLE SWIVEL BOLT SIDE VIEW
N.T.S



CONDUIT DETAIL
TOP VIEW
N.T.S

STRUCTURAL DESIGN CODES:

1. ASCE 7-05;
2. ANSI / TIA / F / A-222-G-2005 WITH ADDENDUM 1;
3. FLORIDA BUILDING CODE 2007 WITH 2009 SUPPLIMENTS;
4. EXPOSURE C,

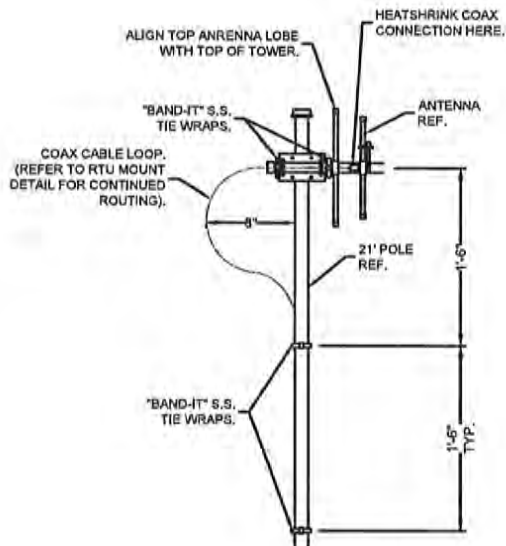


CALLAWAY, FLORIDA
STANDARD DETAILS

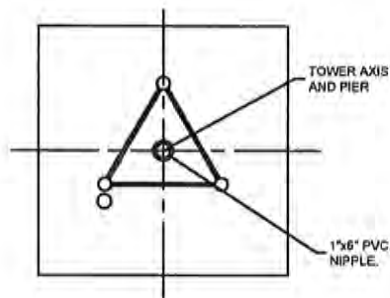
TELEMETRY ANTENNA MOUNT DETAIL

DATE : MARCH 2021
SCALE : NTS

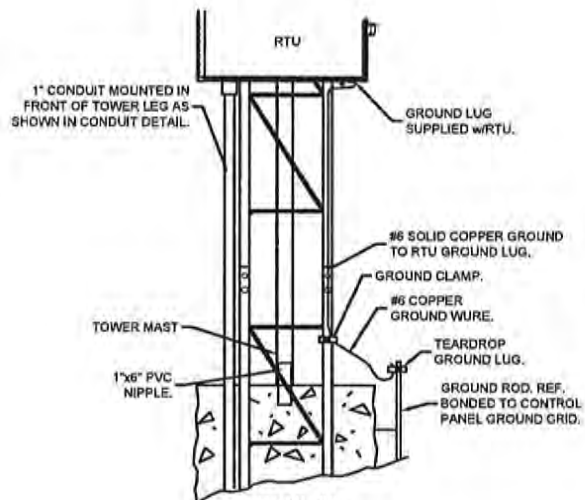
FIGURE : WW-14.1



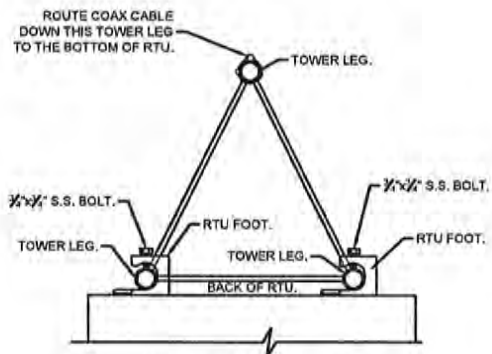
DETAIL #2
COAX MOUNTING & ROUTING
N.T.S.



SECTION A-A
N.T.S.



DETAIL #3
GROUNDING DETAIL
N.T.S.



RTU MOUNTING DETAIL
TOP VIEW
N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

TELEMETRY ANTENNA MOUNT DETAIL

DATE : MARCH 2021
SCALE : NTS

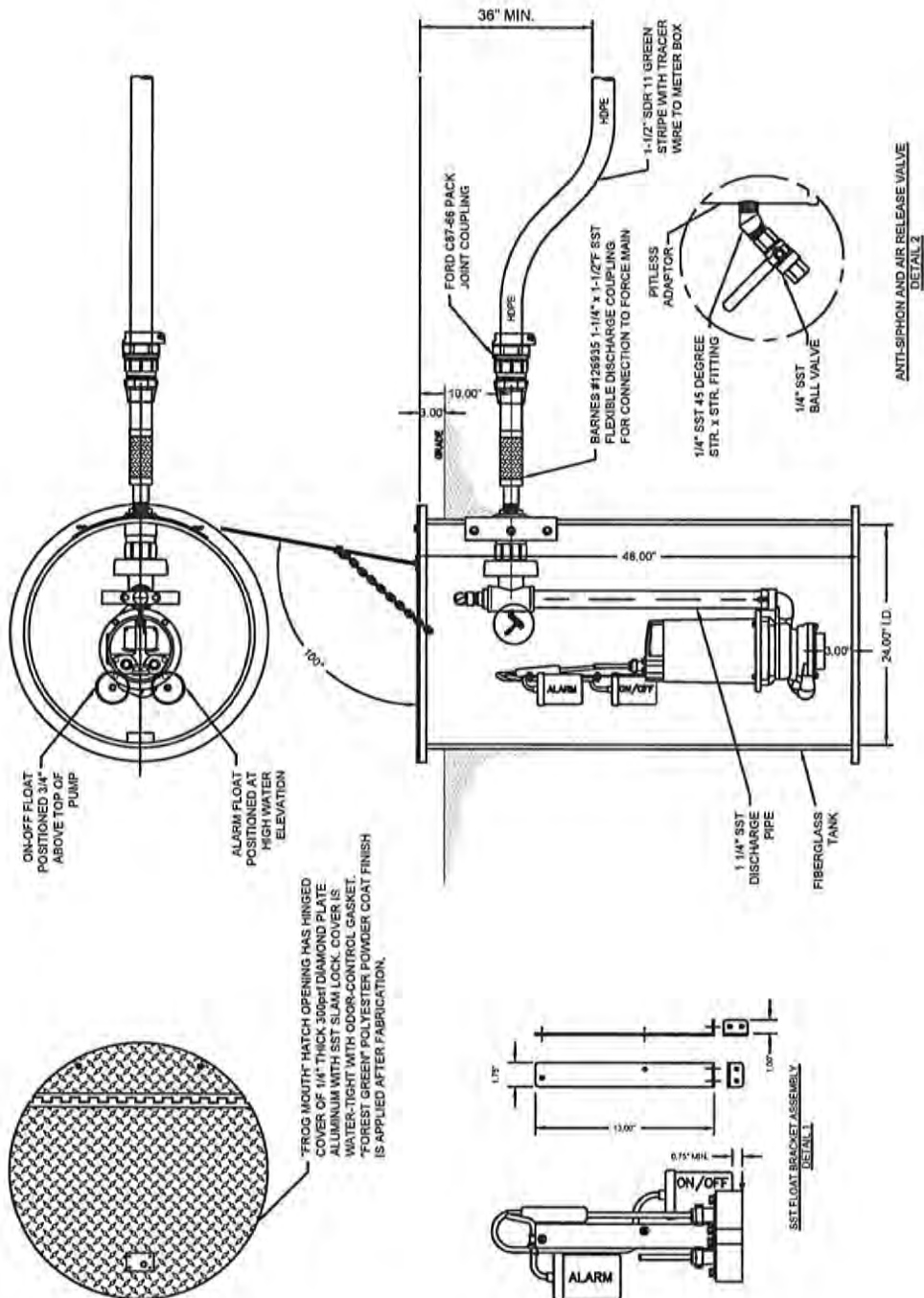
FIGURE : WW-14.2



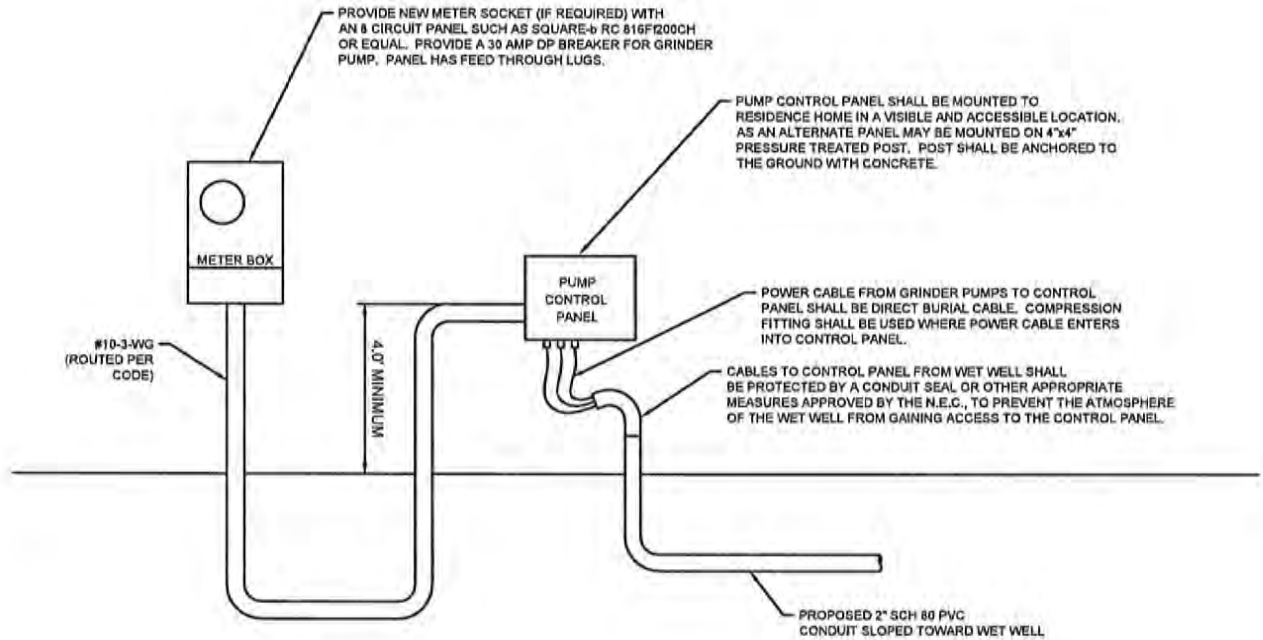
CALLAWAY, FLORIDA
 STANDARD DETAILS
 PRESSURE SEWER GRINDER PUMP STATION

DATE : MARCH 2021
 SCALE : NTS

FIGURE : WW-16



NOTE:
 GRINDER PUMP STATION SHOULD BE OBTAINED FROM THE CITY CALLAWAY



CALLAWAY, FLORIDA
STANDARD DETAILS

GRINDER STATION ELECTRICAL
CONNECTION

DATE : MARCH 2021
SCALE : NTS

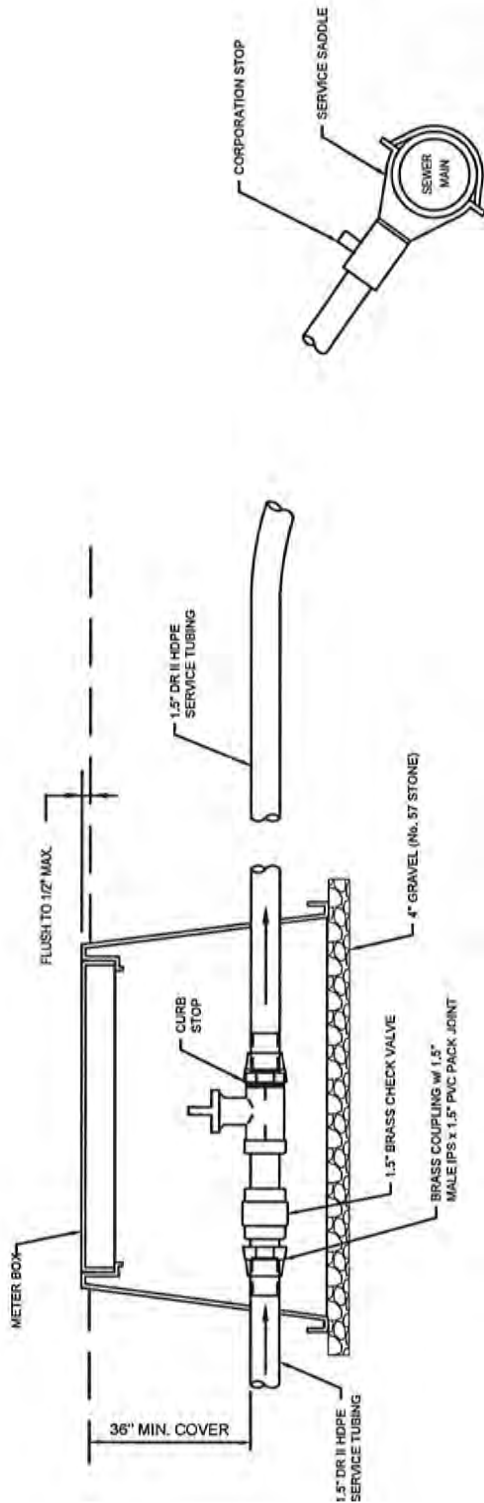
FIGURE : WW-17



CALLAWAY, FLORIDA STANDARD DETAILS

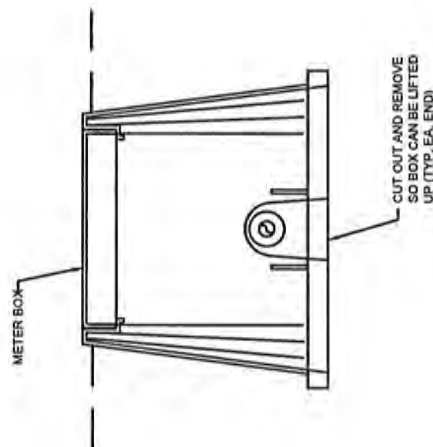
DATE : MARCH 2021
SCALE : NTS

FIGURE : WW-18



ITEM #	DESCRIPTION	MANUFACTURER
1	SERVICE SADDLE	1.5\"/>
2	CORPORATION STOP	1.5\"/>
3	SERVICE TUBING	1.5\"/>
4	CURB STOP	1.5\"/>
5	METER BOX	STANDARD 12\"/>

NOTE:
1. ALL SERVICE TUBING SHALL BE GREEN OR GREEN STRIPED.
2. ALL PAVEMENT CROSSINGS SHALL BE DIRECTIONAL-BORED.
NO OPEN CUTS WILL BE ALLOWED.



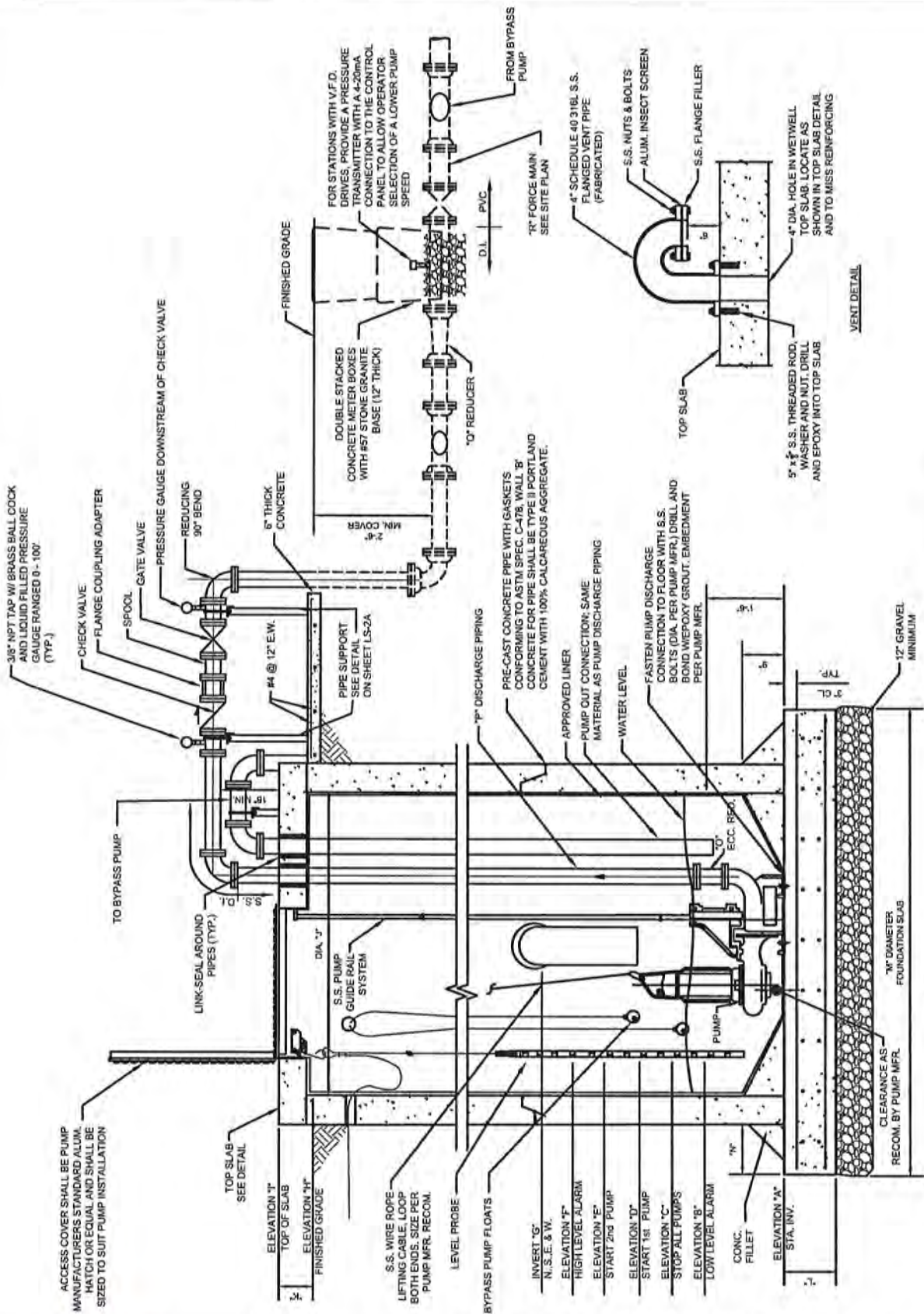


CALLAWAY, FLORIDA
STANDARD DETAILS

PUMP STATION SECTION VIEW

DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-1.1



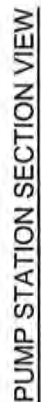
PUMP STATION SECTION VIEW

N.T.S.

SECTION A-A
N.T.S.

PUMP STATION SECTION VIEW

FIGURE : LS-1.2

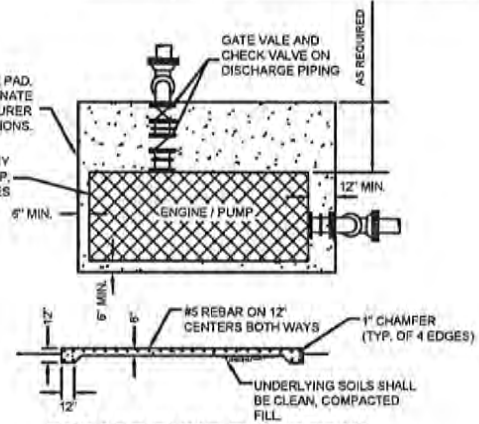


STANDBY BYPASS PUMP NOTES:

1. A STATIONARY BYPASS PUMP, SIZED TO ACCOMMODATE THE PEAK FLOW COMING INTO THE PUMP STATION, SHALL BE INCLUDED FOR ALL NEW PUMP STATIONS UNLESS OTHERWISE NOTED.
2. THE BYPASS PUMP SHALL BE MANUFACTURED BY GODWIN, OR EQUAL.
3. THE BYPASS PUMP SHALL HAVE AN INTEGRAL FUEL TANK WITH A CAPACITY TO PROVIDE 48 HOURS OF UNINTERRUPTED SERVICE.
4. A SOUND DEADENING ENCLOSURE SHALL BE PROVIDED FOR THE PUMP.
5. AN ELECTRONIC CONTROLLER, FLOATS, AND A SCADA CONNECTION SHALL BE PROVIDED WITH THE BYPASS PUMPING SYSTEM.
6. BYPASS PUMP PIPING SHALL INCLUDE MERCER SERIES 450 EXPANSION JOINTS WITH TIE RODS OUTSIDE THE PUMP ON BOTH THE INTAKE AND DISCHARGE LINES.
7. INCLUDE A GATE VALVE AND A CHECK VALVE ON THE DISCHARGE PIPING AT THE BYPASS PUMP.

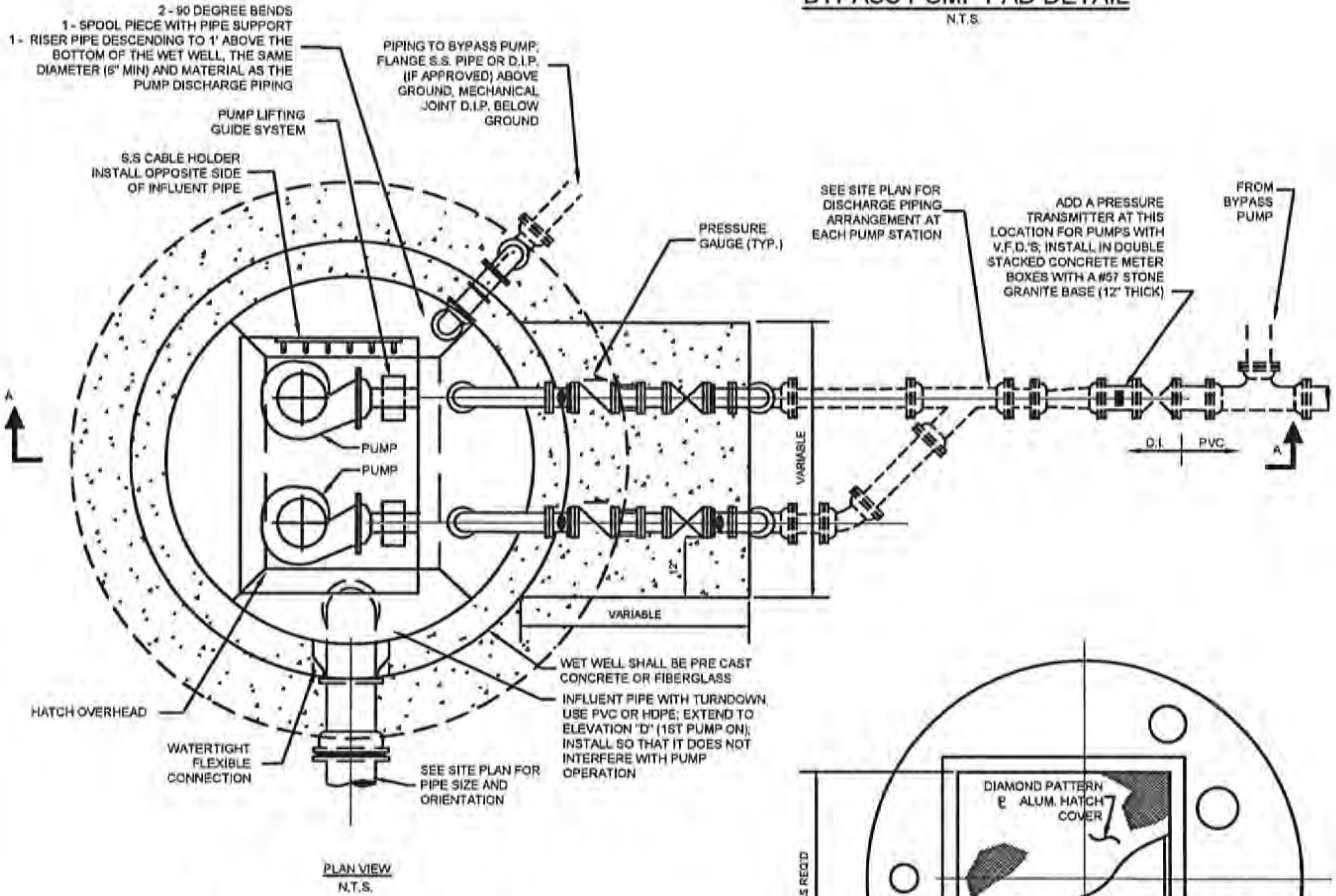
3000 PSI CONCRETE PAD. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER FOR CONCRETE PAD DIMENSIONS.

STATIONARY BYPASS PUMP. SEE NOTES.



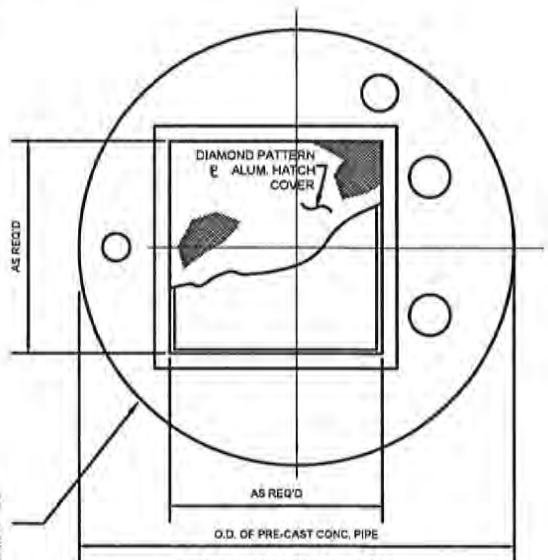
BYPASS PUMP PAD DETAIL

N.T.S.



PUMP STATION PLAN VIEW

N.T.S.



TOP SLAB DETAIL

N.T.S.

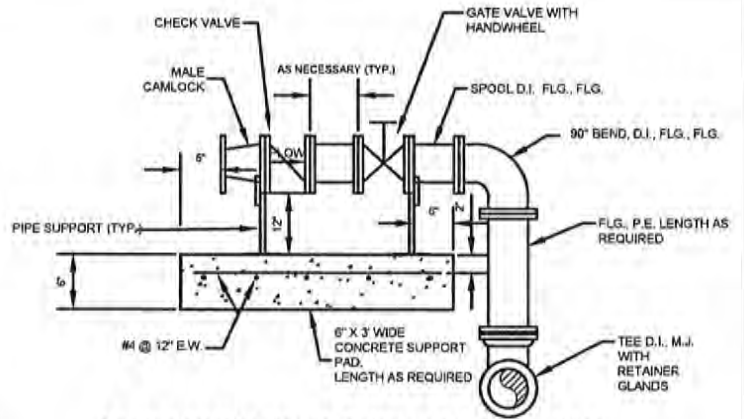


**CALLAWAY, FLORIDA
STANDARD DETAILS**

PUMP STATION PLAN VIEW

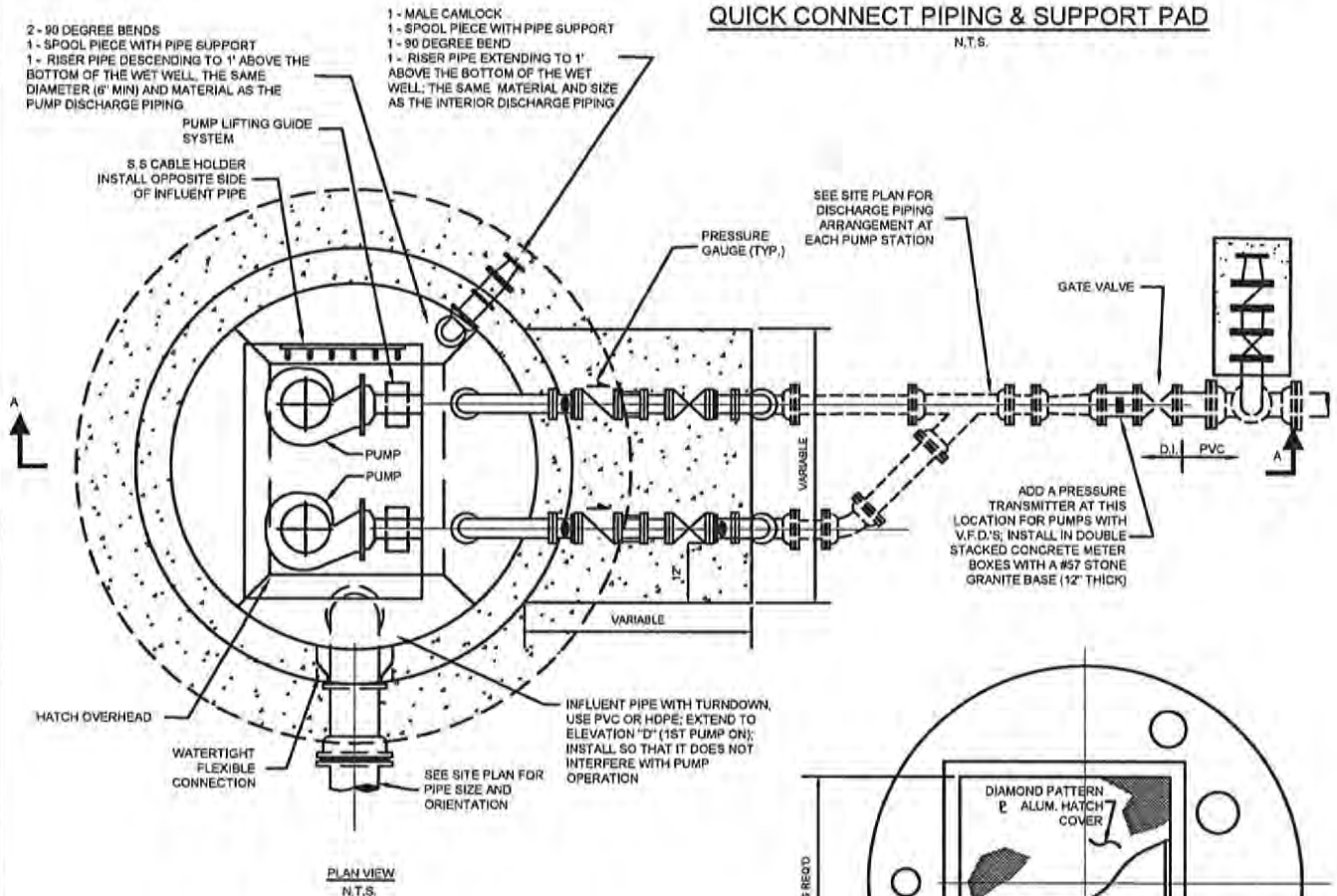
**DATE : MARCH 2021
SCALE : NTS**

FIGURE : LS-2.1



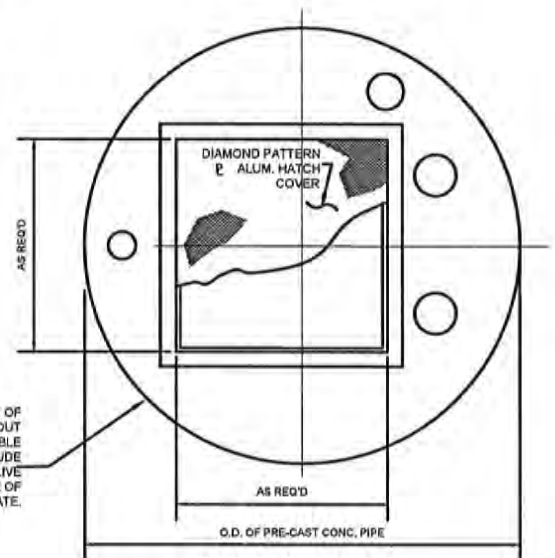
QUICK CONNECT PIPING & SUPPORT PAD

N.T.S.



PUMP STATION PLAN VIEW

N.T.S.



TOP SLAB DETAIL

N.T.S.

DESIGN TOP SLAB TO WITHSTAND THE WEIGHT OF PUMPS AND APPURTENANCES WITHOUT EXCEEDING THE APPLICABLE ALLOWABLE DEFLECTION. TOP SLAB DESIGN SHALL INCLUDE ALL APPLICABLE DEAD LOADS PLUS 200 PSF LIVE LOAD TO ACCOUNT FOR MAINTENANCE OF EQUIPMENT AT A LATER DATE.



**CALLAWAY, FLORIDA
STANDARD DETAILS**

PUMP STATION PLAN VIEW

**DATE : MARCH 2021
SCALE : NTS**

FIGURE : LS-2.2

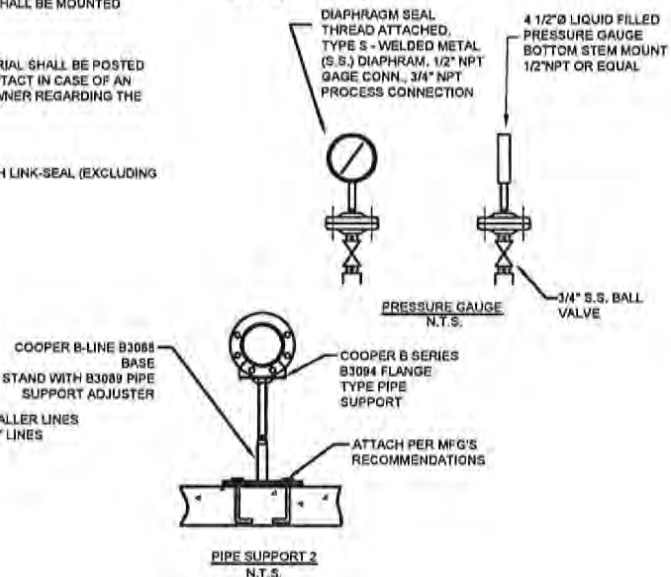
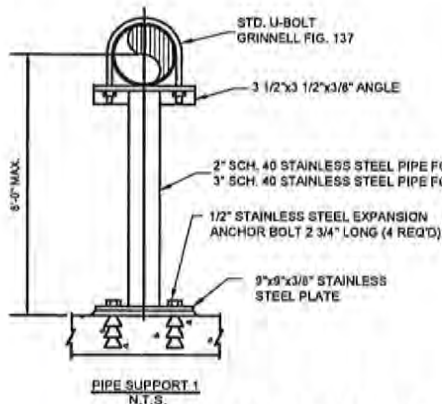
P.S. NO.	DESIGN CONDITION	"A"	"B"	"C"	"D"	"E"	"F"	"G"				"H"	"I"	"J"	"K"	"L"	"M"	"N"	"O"	"P"	"Q"	"R"
								"N"	"S"	"E"	"V"											
		STATION INVERT	LOW LEVEL ALARM	STOP PUMPS (L.W.L.)	START 1st PUMP	START 2nd PUMP	HIGH LEVEL ALARM	INFL. INVERT	INFL. INVERT	INFL. INVERT	INFL. INVERT	FIN. GRADE	TOP OF STATION	STATION DIAMETER	TOP SLAB THICKNESS	FOUND. SLAB THICKNESS	FOUND. SLAB DIAMETER	FOUND. SLAB FLANGE	REDUCER (IF APPL.)	DISCHARGE PIPE SIZE	REDUCER (IF APPL.)	FORCE MAIN SIZE
L.S. #	#gpm @ TDH	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#	#

GENERAL NOTES

- ALL INTERIOR WET WELL PIPING SHALL BE SCHEDULE 40 316L STAINLESS STEEL WITH WELDED FLANGES ABOVE GRADE EXTERIOR PIPING SHALL BE FLANGED DUCTILE IRON PIPING. DUCTILE IRON PIPE SHALL BE LINED WITH PROTECTO 401 EPOXY, PERMASHIELD SERIES 431, OR PERMOX CTF. PIPE LINER SHALL BE APPLIED TO A DRY FILM THICKNESS OF 40 MILS.
- EXPOSED DUCTILE IRON PIPE SHALL BE COATED AS FOLLOWS:
 - SHOP PRIMER - SERIES N140-1211 POTA-POX PLUS (NSF APPROVED POLYAMIDOAMINE EPOXY), 6.0 - 8.0 MILS.
 - FIELD PRIMER - SERIES N140-1211 POTA-POX PLUS (NSF APPROVED POLYAMIDOAMINE EPOXY), 6.0 - 8.0 MILS.
 - INTERMEDIATE - SERIES 66 EPOXOLINE, 3.0 - 5.0 MILS.
 - FINISH - SERIES 1074U ENDURA-SHIELD II, 2.0 - 3.0 MILS.
 - TOTAL DRY FILM THICKNESS: 11.0 TO 16.0 MILS (EXCLUDING SHOP PRIMER).
 - TOTAL COATS: THREE (3).
 COLOR SHALL BE GRAY (TNEC 34GR)
- ALL BURIED DUCTILE IRON PIPING SHALL BE MECHANICAL JOINT. DUCTILE IRON PIPE SHALL BE LINED WITH PROTECTO 401 EPOXY, PERMASHIELD SERIES 431, OR PERMOX CTF. PIPE LINER SHALL BE APPLIED TO A DRY FILM THICKNESS OF 40 MILS. ALL MECHANICAL JOINTS SHALL HAVE SET-SCREW TYPE RETAINER GLANDS.
- ALL BOLTS FOR FITTINGS SHALL BE STAINLESS STEEL. THE THREADS SHALL BE COATED WITH ANTI-SEIZE COMPOUND.
- PUMP ALIGNMENT IN SUMP MAY BE VARIED TO SUIT INSTALLATION AND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
- LEVEL SENSOR SHALL BE MPE INC. LEVEL PROBE AND / OR ROTO-FLOAT. SEE THE PLANS AND SPECIFICATIONS FOR PROJECT REQUIREMENTS.
- ALL ALUMINUM IN CONTACT WITH CONCRETE SHALL BE PROTECTED WITH A COATING OF BITUMINOUS PAINT, ZINC CHROMATE, OR A SEPARATING LAYER OF AN APPROVED MATERIAL.
- VALVE SIZES SHALL BE THE SAME AS DISCHARGE PIPING.
- ALL MISCELLANEOUS METAL IN WET WELL SHALL BE TYPE 6063-T6 ALUMINUM OR 316L S.S.
- ALUMINUM ACCESS COVERS SHALL BE EQUIPPED WITH AN EXTERNALLY OPERATED LOCKING DEVICE TO PREVENT OPENING OF COVER BY UNAUTHORIZED PERSON. IF LOCKING DEVICE IS KEYED ALL STATIONS SHALL BE KEYED ALIKE. COVER SHALL BE MINIMUM 1/2" THICK DIAMOND PATTERN ALUMINUM REINFORCED TO SUPPORT A LIVE LOAD OF 300 PSF. MINIMUM. HINGES, BOLTS, AND FASTENERS SHALL BE 316L STAINLESS STEEL. THE ACCESS COVER SHALL HAVE A POSITIVE LOCKING ARM TO HOLD THE COVER IN AN OPEN POSITION WHEN NECESSARY.
- GUIDE RAIL FOR FLOAT SWITCH (SEPARATE FROM PUMP GUIDE RAIL), IF REQUIRED, SHALL BE MOUNTED SUCH THAT IT SHALL NOT INTERFERE WITH OR NEED TO BE REMOVED FOR PUMP REMOVAL.
- EMERGENCY CONTACT SIGN: A SIGN MADE OF DURABLE WEATHER RESISTANT MATERIAL SHALL BE POSTED AT A LOCATION VISIBLE TO THE PUBLIC WITH A TELEPHONE NUMBER FOR A POINT OF CONTACT IN CASE OF AN EMERGENCY. THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATION WITH THE OWNER REGARDING THE PHONE NUMBER TO BE USED.
- PIPE SUPPORT COMPONENTS SHALL BE SCHEDULE 40 316L STAINLESS STEEL
- PIPE PENETRATIONS THROUGH THE WET WELL AND TOP SLAB SHALL BE SEALED WITH LINK-SEAL (EXCLUDING CONDUIT). CONDUIT SHALL BE SEALED WITH NON-SHRINK GROUT.

PUMP STATION NOTES

- THE CONTRACTOR SHALL WARRANT THAT THE COMPONENTS AND INSTALLATION THEREOF IS IN FULL COMPLIANCE WITH THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (F.D.E.P.) REQUIREMENTS FOR SUCH INSTALLATIONS. AS SUCH, THE STATION MUST BE IN FULL COMPLIANCE WITH THE ITEMS LISTED BELOW WHICH SHOULD NOT BE CONSIDERED TO INCLUDE ALL OF THE F.D.E.P. REQUIREMENTS.
 - ELECTRICAL SYSTEMS AND COMPONENTS (E.G.: MOTORS, LIGHTS, CABLES, CONDUITS, SWITCH BOXES, CONTROL CIRCUITS, ETC.) IN RAW WASTEWATER WET WELLS, OR IN ENCLOSED OR PARTIALLY ENCLOSED SPACES WHERE HAZARDOUS CONCENTRATIONS OF FLAMMABLE GASES OR VAPORS MAY BE PRESENT, SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE REQUIREMENTS FOR CLASS I GROUP D, DIVISION 1 LOCATIONS.
 - ELECTRICAL EQUIPMENT LOCATED IN WET WELLS SHALL BE SUITABLE FOR USE UNDER CORROSIVE CONDITIONS.
 - EACH FLEXIBLE CABLE SHALL BE PROVIDED WITH A WATERTIGHT SEAL AND SEPARATE STRAIN RELIEF.
 - A FUSED DISCONNECT OR MAIN BREAKER SWITCH LOCATED ABOVE GROUND SHALL BE PROVIDED FOR THE MAIN POWER FEED FOR ALL PUMP STATIONS.
 - ELECTRICAL EQUIPMENT EXPOSED TO WEATHER SHALL MEET THE REQUIREMENTS OF WEATHERPROOF EQUIPMENT NEMA 4X.
 - A 110 VOLT POWER RECEPTACLE TO FACILITATE MAINTENANCE SHALL BE PROVIDED INSIDE THE CONTROL PANEL FOR PUMP STATIONS THAT HAVE CONTROL PANELS OUTDOORS AND GROUND FAULT INTERRUPTION PROTECTION SHALL BE PROVIDED FOR ALL OUTDOOR OUTLETS.
 - PUMP STATIONS SHALL BE PROTECTED FROM LIGHTNING AND TRANSIENT VOLTAGE SURGES.
 - PUMP STATIONS SHALL BE EQUIPPED WITH LIGHTNING ARRESTORS, SURGE CAPACITORS, OR OTHER SIMILAR PROTECTION DEVICES AND PHASE PROTECTION.
- ALARM HORN AND LIGHT SHALL BE PROVIDED WITH BATTERY BACK-UP, TO INCLUDE A RECHARGEABLE BATTERY CAPABLE OF SUPPLYING POWER TO THE LIGHT AND HORN FOR A MINIMUM OF 2 HOURS. THE CONTRACTOR SHALL PROVIDE A SYSTEM THAT WILL RECHARGE THE BATTERY ONCE MAIN POWER IS RESTORED. FULL CHARGE OF BATTERY SHALL TAKE NO MORE THAN 24 HOURS. ALARM SHALL ACTIVATE UNDER HIGH LIQUID LEVEL CONDITION OR LOSS OF POWER, PROVIDE PUSH TO SILENCE AND RESET BUTTON FOR ALARM.
- EACH CABLE ENTERING THE WET WELL SHALL HAVE ITS OWN CONDUIT AT 20% FILL



PUMP STATION TABLE, NOTES, AND MISCELLANEOUS DETAILS
N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

PUMP STATION TABLE, NOTES,
& MISCELLANEOUS DETAILS

DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-3

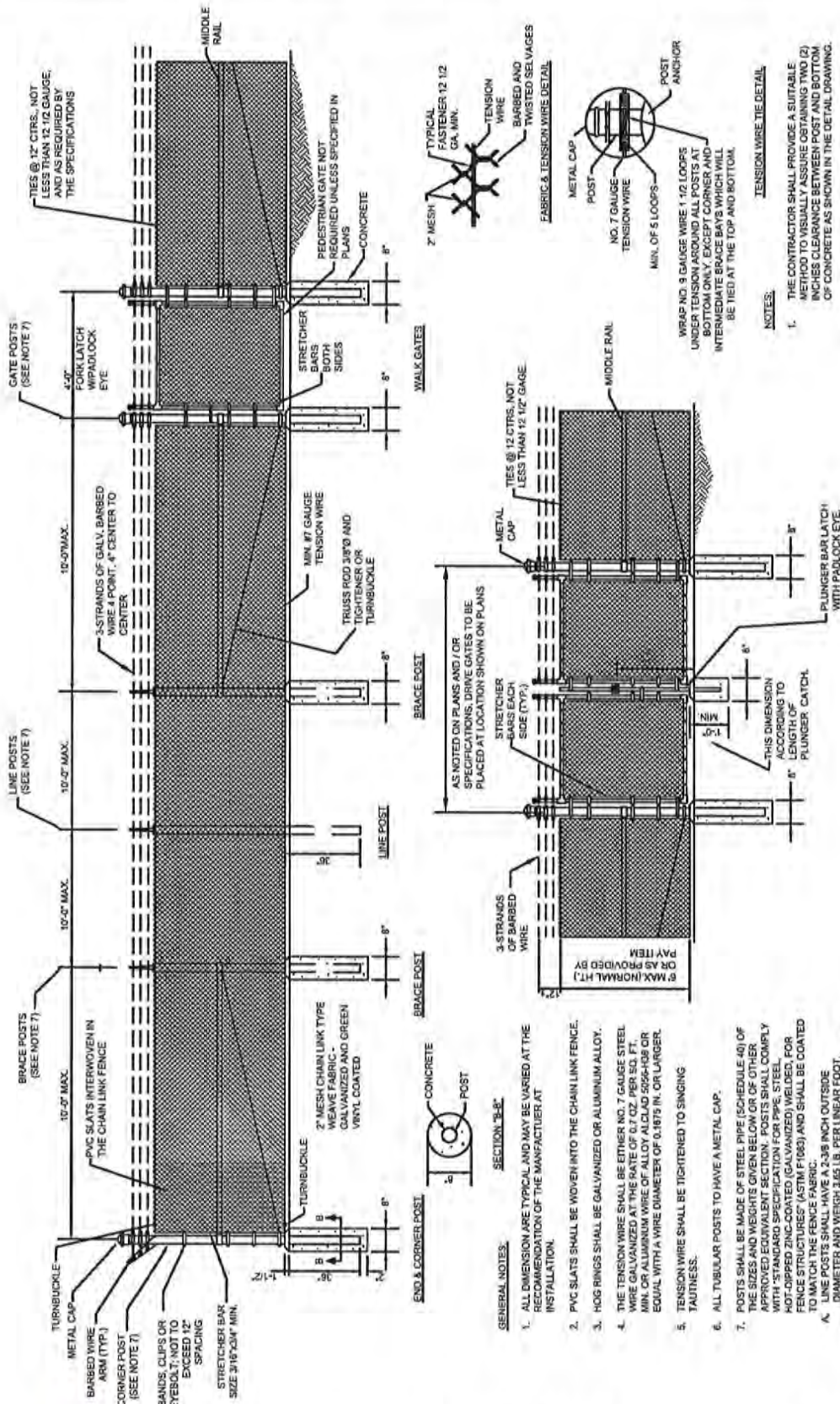


CALLAWAY, FLORIDA STANDARD DETAILS

CHAIN LINK FENCE

DATE : MARCH 2021
SCALE : NTS

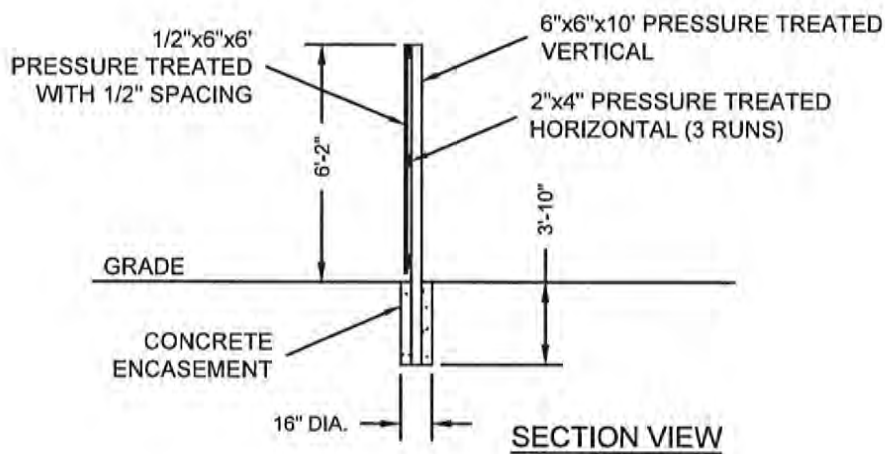
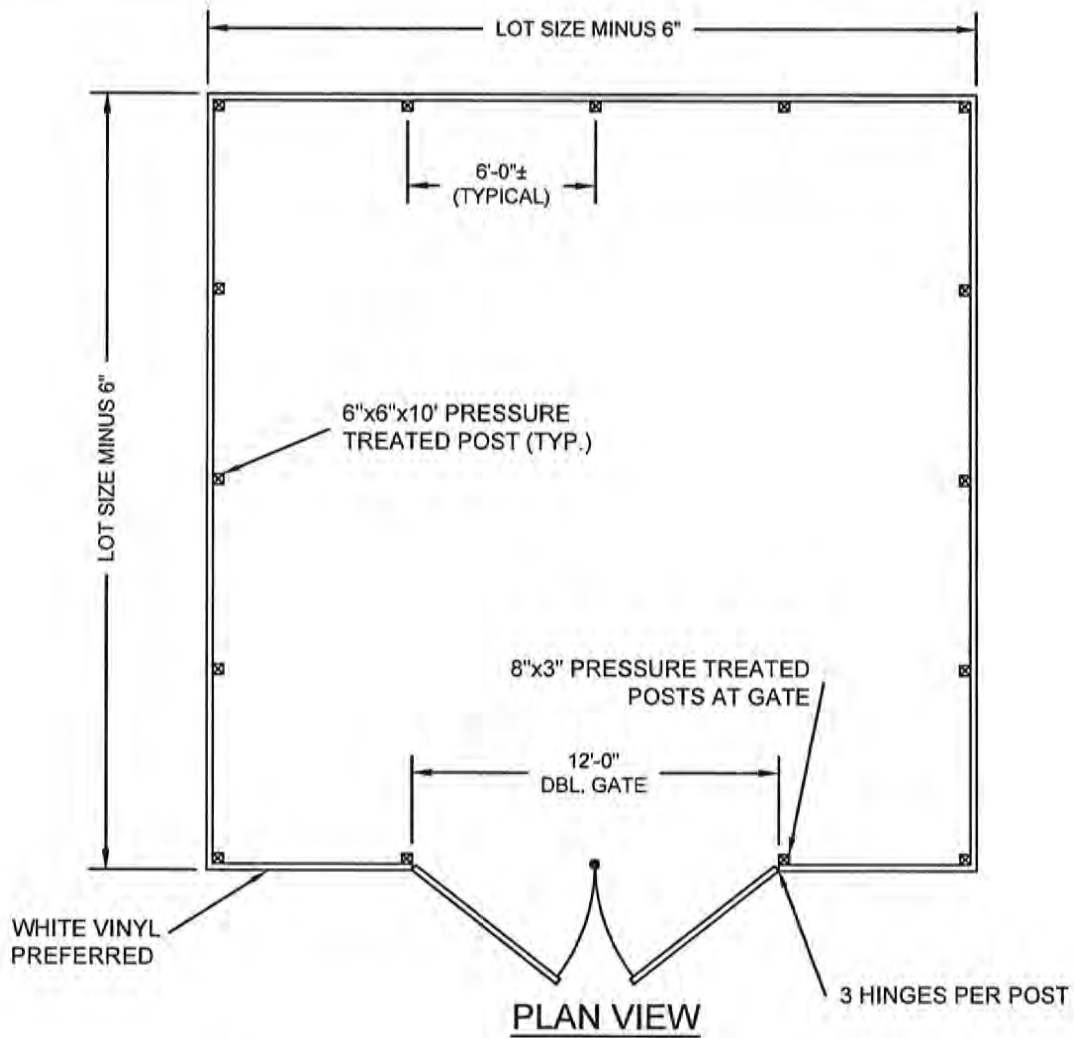
FIGURE : LS-4



CHAIN LINK FENCE N.T.S.

TENSION WIRE TIE DETAIL

- NOTES:
- THE CONTRACTOR SHALL PROVIDE A SUITABLE METHOD TO VISUALLY ASSURE OBTAINING TWO (2) INCHES CLEARANCE BETWEEN POST AND BOTTOM OF CONCRETE AS SHOWN IN THE DETAIL DRAWING.
 - STRETCHER BARS FOR GATES ARE REQUIRED ON BOTH SIDES OF EACH GATE. STRETCHER BARS (SIZE 3/16"x3/4") MINIMUM ANCHOR WITH BANDS NOT EXCEEDING 12" SPACING OR OTHER APPROVED ANCHOR.
 - FENCE FABRIC SHALL BE WOVEN IN A MESH FROM NO. 8 GAGE STEEL CONFORMING TO THE "STANDARD SPECIFICATION FOR ZINC-COATED STEEL CHAIN-LINK FENCE FABRIC" (ASTM A332) AND SHALL BE GREEN VINYL COATED. SLATS SHALL BE WOVEN INTO THE FENCE FABRIC AFTER ERECTION. SLATS SHALL BE BY PRIVACY LINKS AND SHALL BE BOTTOM LOOKING. SLATS SHALL BE FOREST GREEN IN COLOR.



PRIVACY FENCE

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

WOOD FENCE

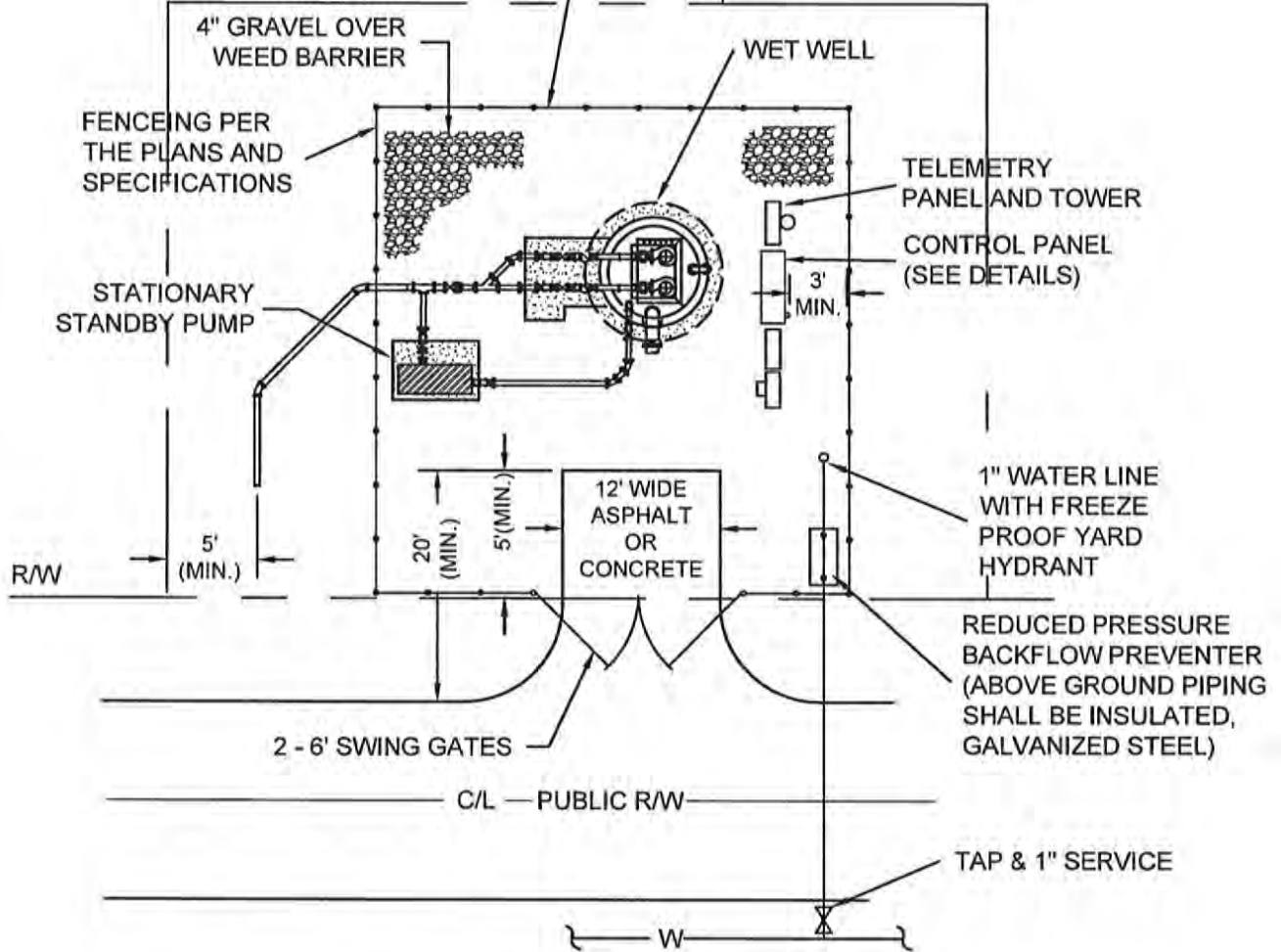
DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-5

*BYPASS PUMP: GODWIN OR APPROVED EQUAL

LIMITS OF SITE TO BE DEDICATED TO CITY
(25'x25' MIN. FOR 6' MAX. DIA. WETWELL)
(30'x30' MIN. FOR 8' DIA. WETWELL)

LIMITS OF UTILITY EASEMENT



ENGINEER SHALL PROVIDE A SCALED SITE SPECIFIC DETAIL

IF LIFT STATION SITE IS NOT CONTIGUOUS TO PUBLIC R/W, A 15' MINIMUM WIDTH EASEMENT APPROVED BY THE CITY MUST BE PROVIDED TO R/W.

PUMP STATION SITE PLAN

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

PUMP STATION SITE PLAN

DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-6



CALLAWAY, FLORIDA
STANDARD DETAILS

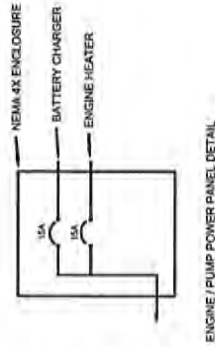
ELECTRICAL RISER DIAGRAM

DATE : MARCH 2021
SCALE : NTS

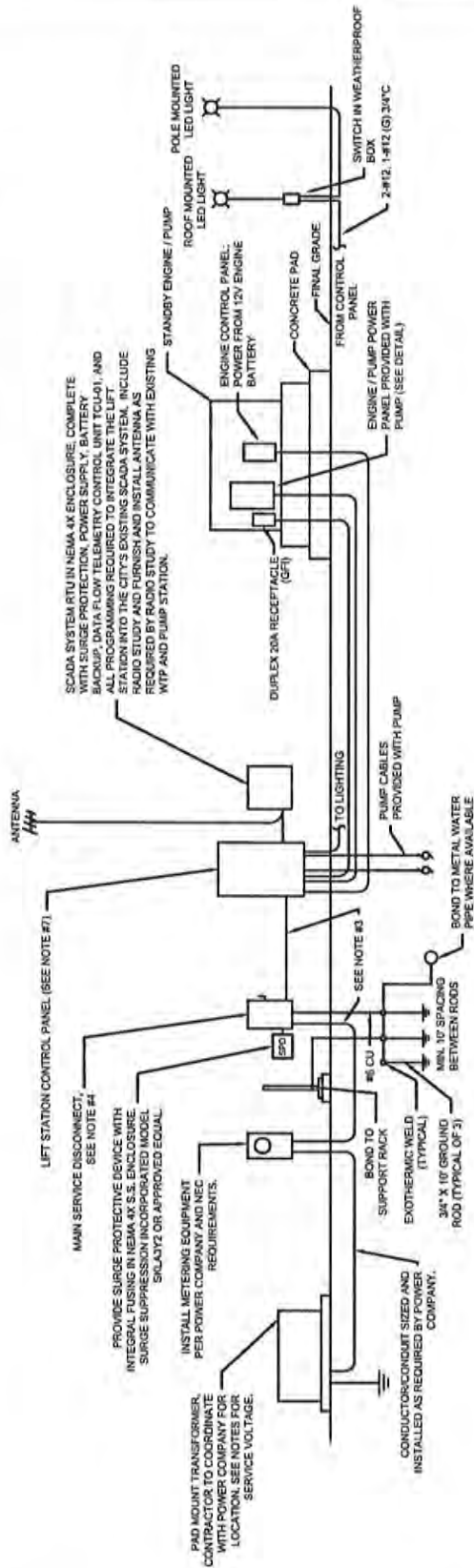
FIGURE : LS-7

NOTES:

1. CONTRACTOR SHALL COORDINATE AND INSTALL THE ELECTRICAL SERVICE IN ACCORDANCE WITH THE SERVING UTILITY REQUIREMENTS, LOCAL ORDINANCES, AND THE NATIONAL ELECTRICAL CODE (NEC).
2. SERVICE VOLTAGE RATINGS SHALL BE 480V/277VAC, 3-PHASE, 4-WIRE, SOLIDLY GROUND, EXCEPT FOR MOTOR LOADS LESS THAN 7.5HP. SINGLE-PHASE, 240V/120VAC, 3-PHASE, 4-WIRE, MULTITAP WITH HIGHER LEGS MAY BE ALLOWED, OR AS DETERMINED BY THE STATION DESIGN AND UTILITY REQUIREMENTS (NO SINGLE-PHASE SERVICE IS ALLOWED).
3. ELECTRICAL SERVICE CONDUCTOR AMPLACITY SHALL BE SIZED SUITABLE FOR THE TOTAL LOAD REQUIREMENTS WITH A MINIMUM OF 125% OF THE MAIN SERVICE DISCONNECT RATING PLUS ANY INCREASE DUE TO VOLTAGE DROP ISSUES. CONDUIT SHALL BE SIZED FOR THE CONDUCTORS PER NEC, 300-B(1) AND 300-B(2) MINIMUM.
4. THE MAIN SERVICE DISCONNECT RATING SHALL BE SIZED TO PROTECT THE SERVICE CONDUCTORS WITH A MINIMUM OF 100% OF THE PUMP CONTROL PANEL MAIN BREAKER AND ANY OTHER LOADS. THE AMPERE INTERRUPTING CURRENT RATING SHALL BE GREATER THAN THE AVAILABLE FAULT CURRENT.
5. THE PUMP CONTROL PANEL MAIN BREAKER AMPERE RATING SHALL BE SIZED PER THE LOAD AS FOLLOWS:
THE LARGEST PUMP BREAKER AMPS + ALL OTHER PUMP FULL LOAD AMPS + 10 AMPS FOR CONTROL + ALL OTHER LOADS SUCH AS LIGHTING, RECEPTACLES AND LOADS ASSOCIATED WITH GENERATORS OR ENGINE DRIVEN PUMPS.
THE PANEL MAIN BREAKER RATING SHALL BE 100A MINIMUM, WHERE THE PANEL LOAD EXCEEDS 100A. THE RATING SHALL BE 200A, 400A OR LARGER, AS DETERMINED BY THE PANEL ELECTRICAL DESIGN ENGINEER.
6. THE SHORT CIRCUIT RATING OF THE PANEL SHALL BE LABELED WITH A RATING THAT EXCEEDS THE AVAILABLE SHORT CIRCUIT CURRENT.
7. THE EMERGENCY GENERATOR BREAKER RATING AND THE GENERATOR RECEPTACLE RATING SHALL MATCH THE RATING OF THE PANEL MAIN BREAKER. THE STATION CONTROL PANEL SHALL INCLUDE COMPLETE MOTOR STARTERS, SOFT STARTERS OR VFDs, INTEGRAL OVERCURRENT PROTECTION, SURGE PROTECTION, BATTERY BACKUP, CHARGER, ETC.. COMPLETE SPECIFICATION Q257A. THE STATION CONTROL PANEL SHALL BE POWDER COATED WHITE.
8. THE TRANSFORMER SHALL BE OVERHEAD OR PAD MOUNT DEPENDING ON THE UTILITY PROVIDER. PAD MOUNT IS THE PREFERRED OPTION IF AVAILABLE.



ENGINE / PUMP POWER PANEL DETAIL



ELECTRICAL RISER DIAGRAM
N.T.S.



CONTROL PANEL DETAIL

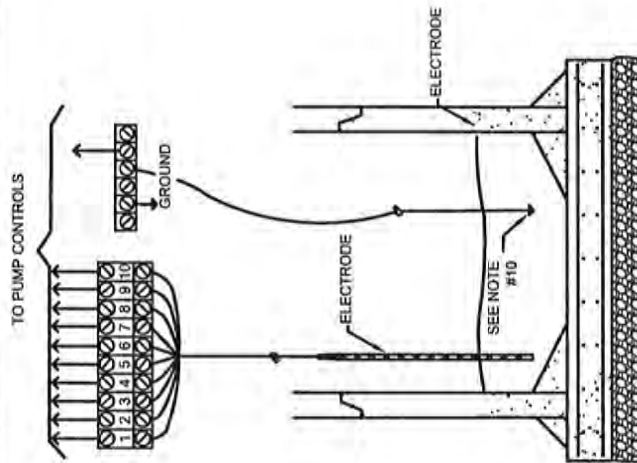
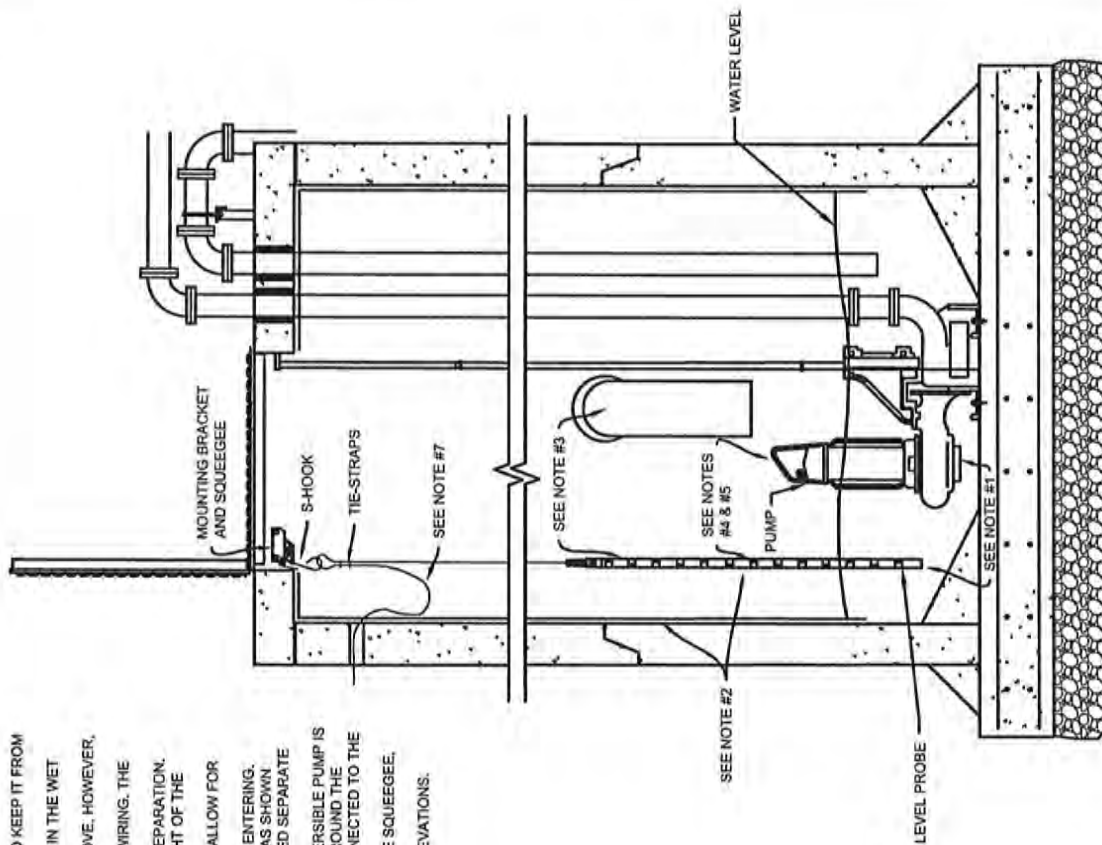
DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-8

NOTES (FROM MPE INC. LEVEL PROBE INSTALLATION INSTRUCTIONS)

- 1) THE LEVEL PROBE MUST BE PLACED ABOVE THE LEVEL OF THE PUMP INLET AND FAR ENOUGH AWAY TO KEEP IT FROM BEING SUCKED TOWARDS THE PUMP(S).
- 2) THE LEVEL PROBE MUST BE PLACED SO THAT IT IS AT LEAST 1 FOOT AWAY FROM TOUCHING ANYTHING IN THE WET WELL.
- 3) THE LEVEL PROBE MUST NOT BE PLACED SO THAT THE INFLOW POURS DIRECTLY ONTO THE LEVEL PROBE. HOWEVER, TO AID IN KEEPING IT CLEAN, THE INFLOW MAY BE ALLOWED TO SPLASH LIQUID UP ONTO THE PROBE.
- 4) DO NOT RUN THE LEVEL PROBE'S CABLE IN A CONDUIT WITH PUMP POWER CABLES OR FLOAT SWITCH WIRING. THE LEVEL PROBE'S CABLE MUST BE RUN IN A SEPARATE CONDUIT AWAY FROM ALL A/C WIRES OR CABLES.
- 5) DO NOT PLACE THE LEVEL PROBE'S CABLE NEAR THE PUMP POWER CABLES. LEAVE AT LEAST 1 FOOT SEPARATION.
- 6) THE MOUNTING BRACKET AND SQUEEGEE SHOULD BE MOUNTED AS SHOWN BELOW. ADJUST THE HEIGHT OF THE LEVEL PROBE AND SECURE THE CABLE TO THE S-HOOK WITH TWO TIE STRAPS.
- 7) LEAVE ENOUGH SLACK IN THE CABLE BETWEEN THE S-HOOK AND THE ENTRANCE TO THE CONDUIT, TO ALLOW FOR THE RAISING OF THE LEVEL PROBE DURING ROUTINE CLEANING.
- 8) SEAL THE CONDUIT AT THE CONTROL PANEL OR JUNCTION BOX TO PREVENT CORROSIVE GASES FROM ENTERING.
- 9) CONNECT THE LEVEL PROBE WIRES TO A TERMINAL BLOCK IN THE CONTROL PANEL OR JUNCTION BOX AS SHOWN BELOW. THE WIRING FROM THE TERMINAL BLOCK TO THE PUMP CONTROL DEVICE(S) SHOULD BE ROUTED SEPARATE FROM ALL A/C WIRING.
- 10) THE LIQUID IN THE WET WELL MUST BE GROUNDED TO THE CONTROL PANEL GROUND. WHERE A SUBMERSIBLE PUMP IS PRESENT, THE GROUNDED HOUSING OF THE PUMP IS SUFFICIENT. IF THERE IS NO OTHER MEANS TO GROUND THE LIQUID, A SINGLE POINT LEVEL PROBE MAY BE PLACED NEAR THE BOTTOM OF THE WET WELL AND CONNECTED TO THE CONTROL PANEL GROUND.
- 11) PERIODIC CLEANING OF THE LEVEL PROBE SHOULD BE DONE BY PULLING OR PUSHING IT THROUGH THE SQUEEGEE.

- THE PROBE LENGTH SHALL BE DETERMINED BASED ON THE WET WELL INVERT AND PUMP CONTROL ELEVATIONS.



*DATA FLOW DFS
RPT001 MODEL

LEVEL PROBE INSTALLATION DETAILS

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

LEVEL PROBE INSTALLATION DETAILS

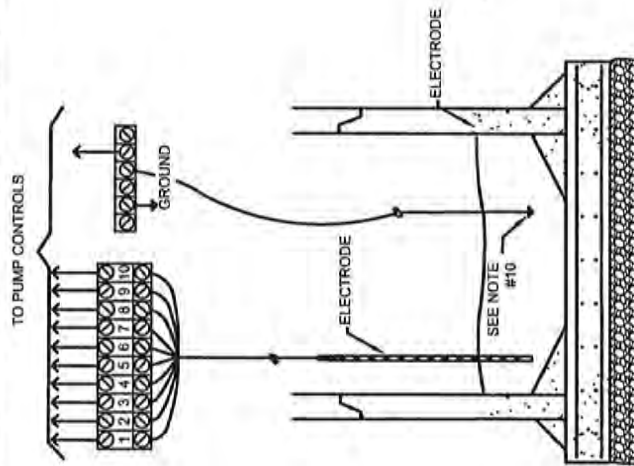
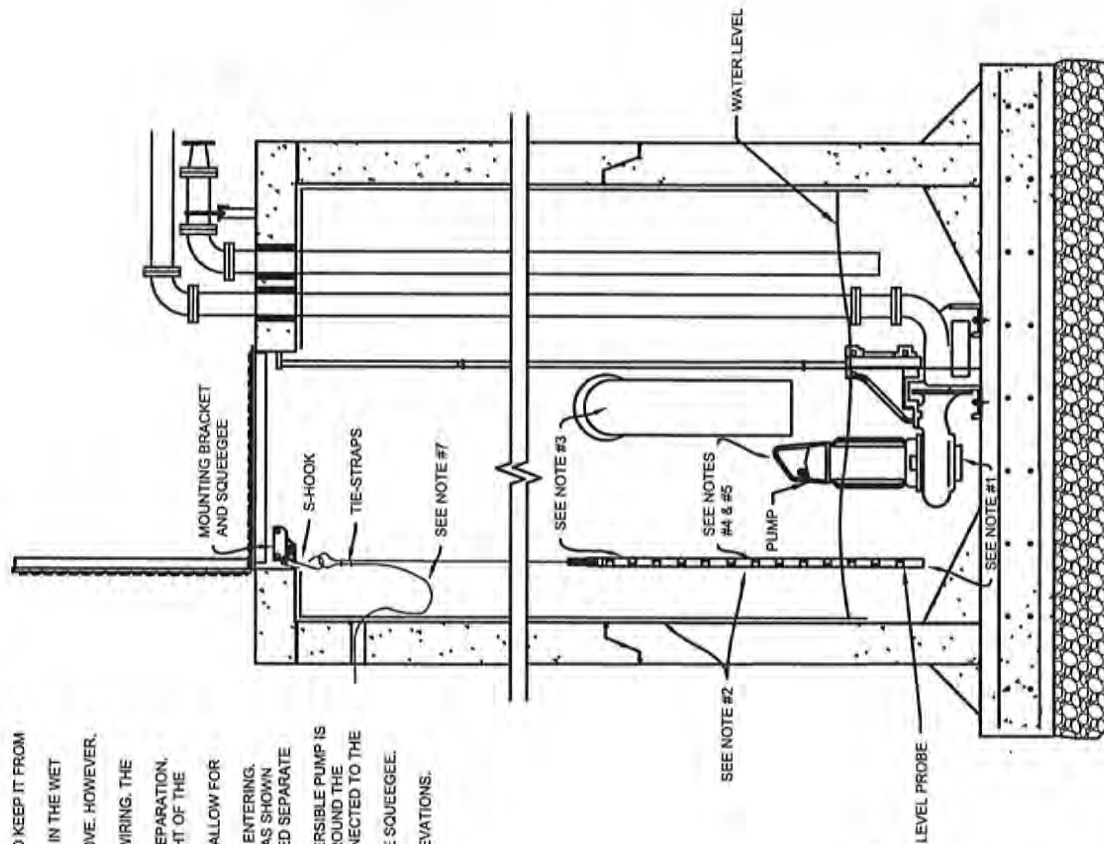
DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-10.1

NOTES (FROM MPE INC. LEVEL PROBE INSTALLATION INSTRUCTIONS)

- 1) THE LEVEL PROBE MUST BE PLACED ABOVE THE LEVEL OF THE PUMP INLET AND FAR ENOUGH AWAY TO KEEP IT FROM BEING SUCKED TOWARDS THE PUMP(S).
- 2) THE LEVEL PROBE MUST BE PLACED SO THAT IT IS AT LEAST 1 FOOT AWAY FROM TOUCHING ANYTHING IN THE WET WELL.
- 3) THE LEVEL PROBE MUST NOT BE PLACED SO THAT THE INFLOW POURS DIRECTLY ONTO THE LEVEL PROBE. HOWEVER, TO AID IN KEEPING IT CLEAN, THE INFLOW MAY BE ALLOWED TO SPLASH LIQUID UP ONTO THE PROBE.
- 4) DO NOT RUN THE LEVEL PROBE'S CABLE IN A CONDUIT WITH PUMP POWER CABLES OR FLOAT SWITCH WIRING. THE LEVEL PROBE'S CABLE MUST BE RUN IN A SEPARATE CONDUIT AWAY FROM ALL A/C WIRES OR CABLES.
- 5) DO NOT PLACE THE LEVEL PROBE'S CABLE NEAR THE PUMP POWER CABLES. LEAVE AT LEAST 1 FOOT SEPARATION.
- 6) THE MOUNTING BRACKET AND SQUEEGEE SHOULD BE MOUNTED AS SHOWN BELOW. ADJUST THE HEIGHT OF THE LEVEL PROBE AND SECURE THE CABLE TO THE S-HOOK WITH TWO TIE STRAPS.
- 7) LEAVE ENOUGH SLACK IN THE CABLE BETWEEN THE S-HOOK AND THE ENTRANCE TO THE CONDUIT, TO ALLOW FOR THE RAISING OF THE LEVEL PROBE DURING ROUTINE CLEANING.
- 8) SEAL THE CONDUIT AT THE CONTROL PANEL OR JUNCTION BOX TO PREVENT CORROSIVE GASES FROM ENTERING.
- 9) CONNECT THE LEVEL PROBE WIRES TO A TERMINAL BLOCK IN THE CONTROL PANEL OR JUNCTION BOX AS SHOWN BELOW. THE WIRING FROM THE TERMINAL BLOCK TO THE PUMP CONTROL DEVICE(S) SHOULD BE ROUTED SEPARATE FROM ALL A/C WIRING.
- 10) THE LIQUID IN THE WET WELL MUST BE GROUNDED TO THE CONTROL PANEL GROUND. WHERE A SUBMERSIBLE PUMP IS PRESENT, THE GROUNDED HOUSING OF THE PUMP IS SUFFICIENT. IF THERE IS NO OTHER MEANS TO GROUND THE LIQUID, A SINGLE POINT LEVEL PROBE MAY BE PLACED NEAR THE BOTTOM OF THE WET WELL AND CONNECTED TO THE CONTROL PANEL GROUND.
- 11) PERIODIC CLEANING OF THE LEVEL PROBE SHOULD BE DONE BY PULLING OR PUSHING IT THROUGH THE SQUEEGEE.

• THE PROBE LENGTH SHALL BE DETERMINED BASED ON THE WET WELL INVERT AND PUMP CONTROL ELEVATIONS.



LEVEL PROBE INSTALLATION DETAILS

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

LEVEL PROBE INSTALLATION DETAILS

DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-10.2



CALLAWAY, FLORIDA
STANDARD DETAILS

ISB WIRING

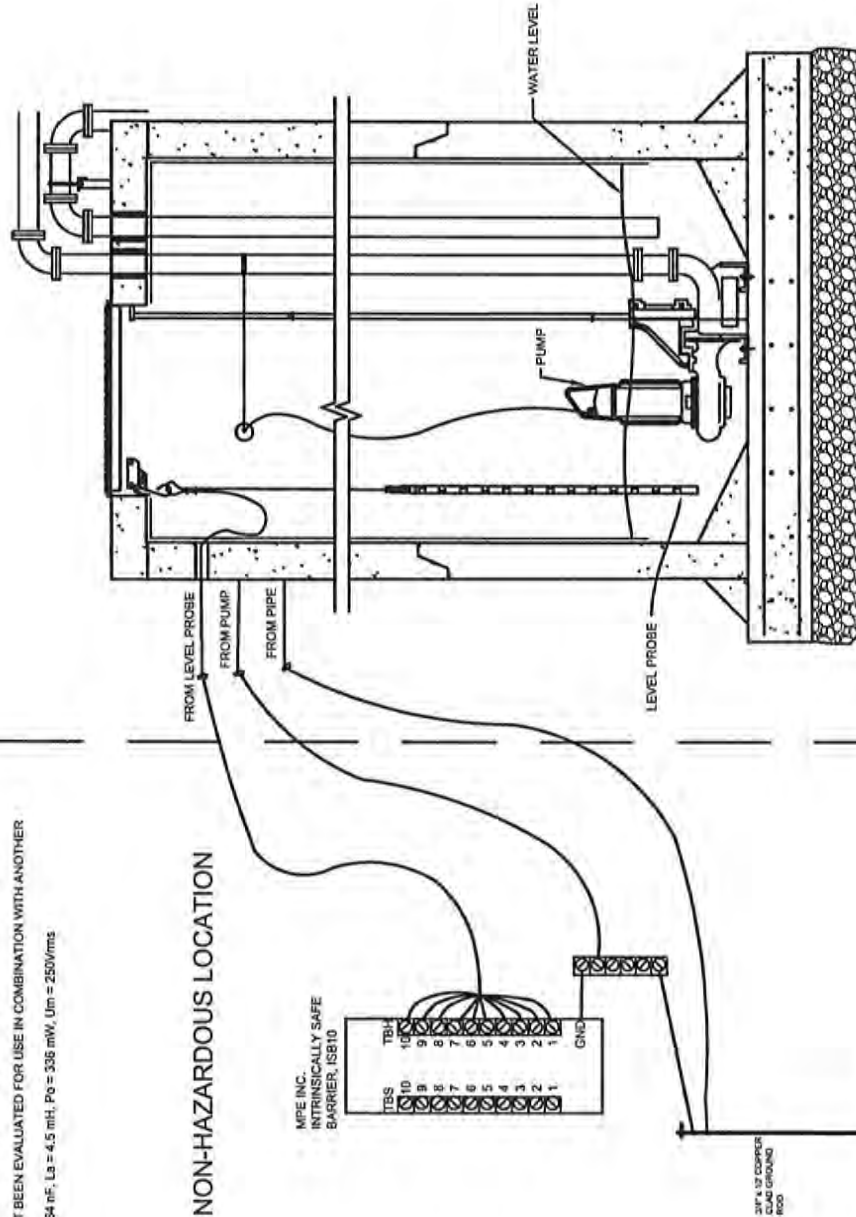
DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-11

NOTES (FROM MPE INC. CONTROL DRAWING 0303)

- 1) ALL INTRINSICALLY SAFE WIRING SHALL BE SEPARATED FROM NON-INTRINSICALLY SAFE WIRING. REFER TO ARTICLE 504.2 OF THE NATIONAL ELECTRIC CODE (ANSI/NFPA 70) OR OTHER LOCAL CODES, AS APPLICABLE.
- 2) MAXIMUM DISTANCE BETWEEN BARRIER AND PROBE IS 100 FEET.
- 3) THE PROBE'S CABLE CAPACITANCE PLUS THE BARRIER'S INTRINSICALLY SAFE EQUIPMENT CAPACITANCE (C) MUST BE LESS THAN THE MARKED CAPACITANCE OF THE BARRIER (Ca). ALSO, THE PROBE'S CABLE INDUCTANCE PLUS PROBE'S INTRINSICALLY SAFE EQUIPMENT INDUCTANCE (L) MUST BE LESS THAN THE MARKED INDUCTANCE (La) SHOWN ON BARRIER. IF THE ELECTRICAL PARAMETERS OF THE CABLE ARE UNKNOWN, THEN A CAPACITANCE VALUE OF 60 pF/ft. AND AN INDUCTANCE OF 0.20 µH/ft. ARE TO BE USED. CABLE CAPACITANCE AND CABLE INDUCTANCE ARE CALCULATED AS FOLLOWS: $60 \text{ pF/ft} \times 100 \text{ ft} = 6 \text{ nF}$ $0.2 \text{ µH/ft} \times 100 \text{ ft} = 20 \text{ µH}$
- 4) THE BARRIER MUST BE INSTALLED IN AN ENCLOSURE SUITABLE FOR THE APPLICATION IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (ANSI/NFPA 70) OR OTHER LOCAL CODES, AS APPLICABLE.
- 5) THE HAZARDOUS LOCATION GROUND AND THE BARRIER GROUND MUST BE CONNECTED TO THE GROUND BUS IN THE POWER DISTRIBUTION PANEL. THE GROUND BUS MUST BE CONNECTED TO A SUITABLE GROUND ELECTRODE PER THE NATIONAL ELECTRIC CODE (ANSI/NFPA 70) OR OTHER LOCAL CODES, AS APPLICABLE. THE RESISTANCE OF THE GROUND PATH FROM THE BARRIER TO THE GROUND ELECTRODE MUST BE LESS THAN 1 OHM.
- 6) THE BARRIER MUST NOT BE CONNECTED TO DEVICES THAT USE OR GENERATE MORE THAN 250 Vrms OR DC WITH RESPECT TO THE EARTH.
- 7) THIS ASSOCIATED APPARATUS (BARRIER) HAS NOT BEEN EVALUATED FOR USE IN COMBINATION WITH ANOTHER ASSOCIATED APPARATUS.
- 8) ENTITY PARAMETERS: $V_i = 30.3\text{V}$, $I_i = 88.6 \text{ mA}$, $C_a = 64 \text{ nF}$, $L_a = 4.5 \text{ mH}$, $P_o = 336 \text{ mW}$, $U_m = 250\text{Vrms}$

HAZARDOUS LOCATION



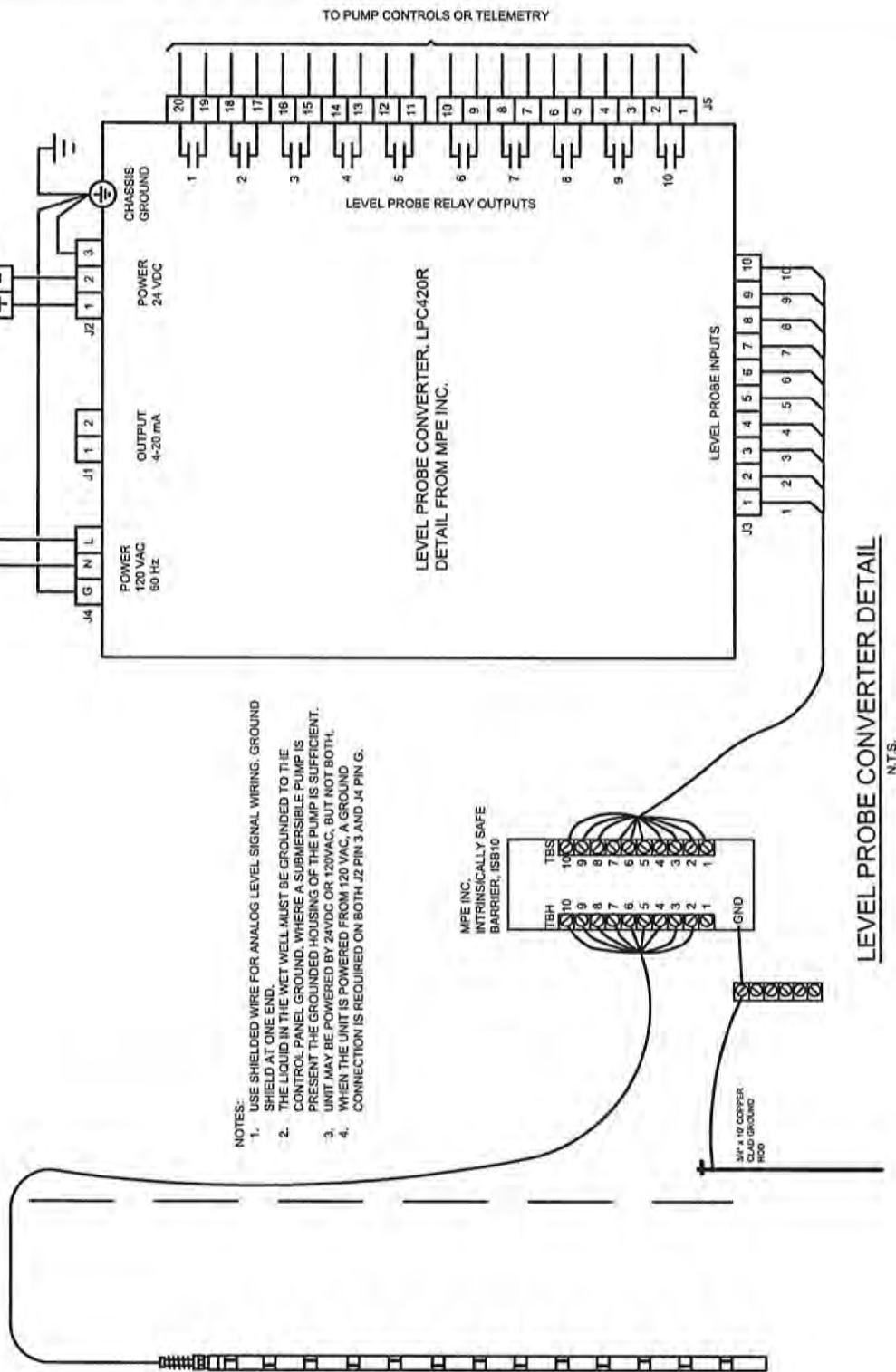
INTRINSICALLY SAFE BARRIER WIRING

N.T.S.



HAZARDOUS LOCATION

NON-HAZARDOUS LOCATION



- NOTES:
1. USE SHIELDED WIRE FOR ANALOG LEVEL SIGNAL WIRING. GROUND SHIELD AT ONE END.
 2. THE LIQUID IN THE WET WELL MUST BE GROUNDED TO THE CONTROL PANEL GROUND. WHERE A SUBMERSIBLE PUMP IS PRESENT THE GROUNDED HOUSING OF THE PUMP IS SUFFICIENT.
 3. UNIT MAY BE POWERED BY 24VDC OR 120VAC, BUT NOT BOTH.
 4. WHEN THE UNIT IS POWERED FROM 120 VAC, A GROUND CONNECTION IS REQUIRED ON BOTH J2 PIN 3 AND J4 PIN G.

LEVEL PROBE CONVERTER DETAIL

NTS.

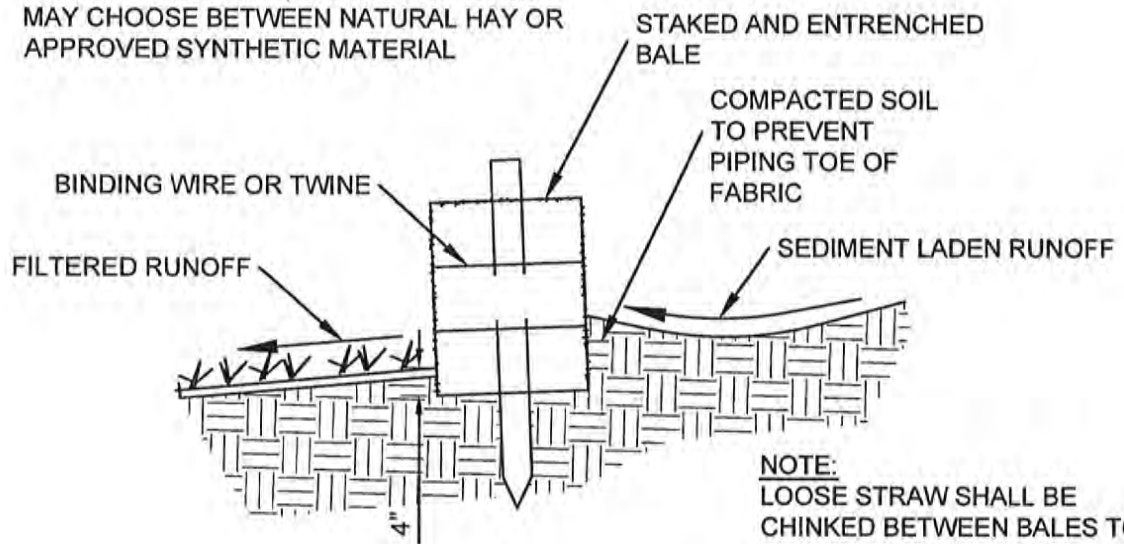
CALLAWAY, FLORIDA
STANDARD DETAILS

LEVEL PROBE CONVERTER DETAIL

DATE : MARCH 2021
SCALE : NTS

FIGURE : LS-12

NOTE:
UNLESS OTHERWISE NOTED IN THE PLANS
OR SPECIFICATIONS, THE CONTRACTOR
MAY CHOOSE BETWEEN NATURAL HAY OR
APPROVED SYNTHETIC MATERIAL



NOTE:
LOOSE STRAW SHALL BE
CHINKED BETWEEN BALES TO
PROVIDE A TIGHT JOINT.

STAKED BALE

N.T.S

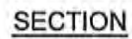


CALLAWAY, FLORIDA
STANDARD DETAILS

STAKED HAY BALE

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-1



ELEVATION

Diagram showing the elevation view of a trench. The trench is 6' MAX. wide. The filter fabric is 15"-18" high and 8" thick. The trench is 3' MIN. deep. The filter fabric is 12" MIN. from the bottom. The filter fabric is in conformance with SEC. 985 FDOT SPEC.)

TYPE III SILT FENCE

N.T.S



TYPE III SILT FENCE

FIGURE : G-2

Diagram illustrating a cross-section of a silt trap structure. The structure is inclined at a 20° angle relative to the vertical. The vertical reference line is labeled "VERTICAL". The inclined structure is labeled "POULTRY MESH OR TYPE A FENCE FABRIC". The filter fabric is labeled "FILTER FABRIC". The flow of silt is indicated by a wavy arrow labeled "SILT FLOW". The diagram is labeled "SECTION" at the bottom.

Diagram illustrating the ELEVATION view of a rectangular structure, likely a filter fabric enclosure, with dimensions and material specifications:

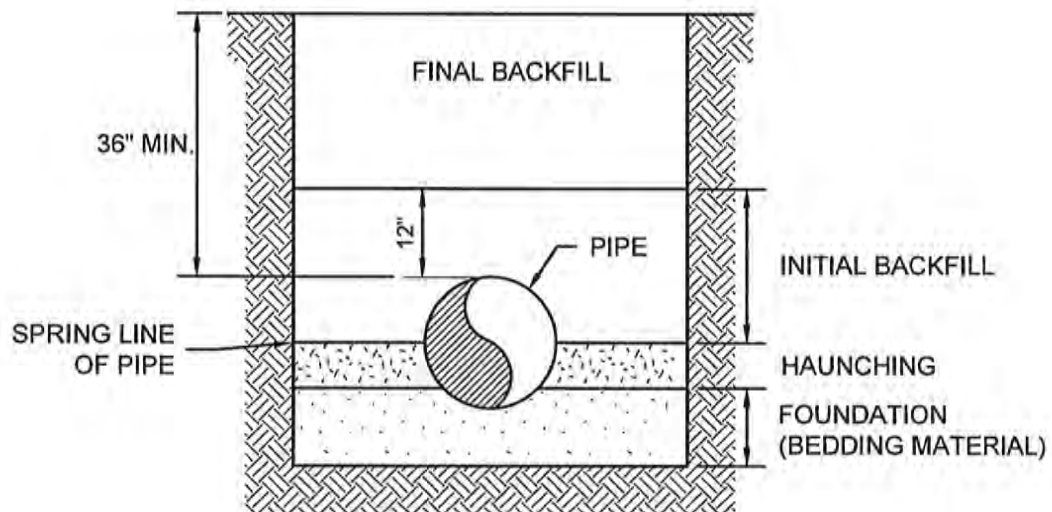
- Dimensions:**
 - Overall height: 5' OR MORE
 - Top section height: 33"
 - Bottom section height: 18" MIN.
 - Bottom section width: 8"
 - Overall width: 10' MAX.
- Materials:**
 - POULTRY MESH (20 GA. MIN.) OR TYPE A FENCE FABRIC (INDEX NO. 801 & SEC. 550 FDOT SPEC.)
 - FILTER FABRIC (IN CONFORMANCE WITH SEC. 985 FDOT SPEC.)

N.T.S



FIGURE : G-3

NOTE:
SEE SPECIFICATIONS FOR
BACKFILL AND COMPACTION
REQUIREMENTS



TRENCH TERMINOLOGY

N.T.S



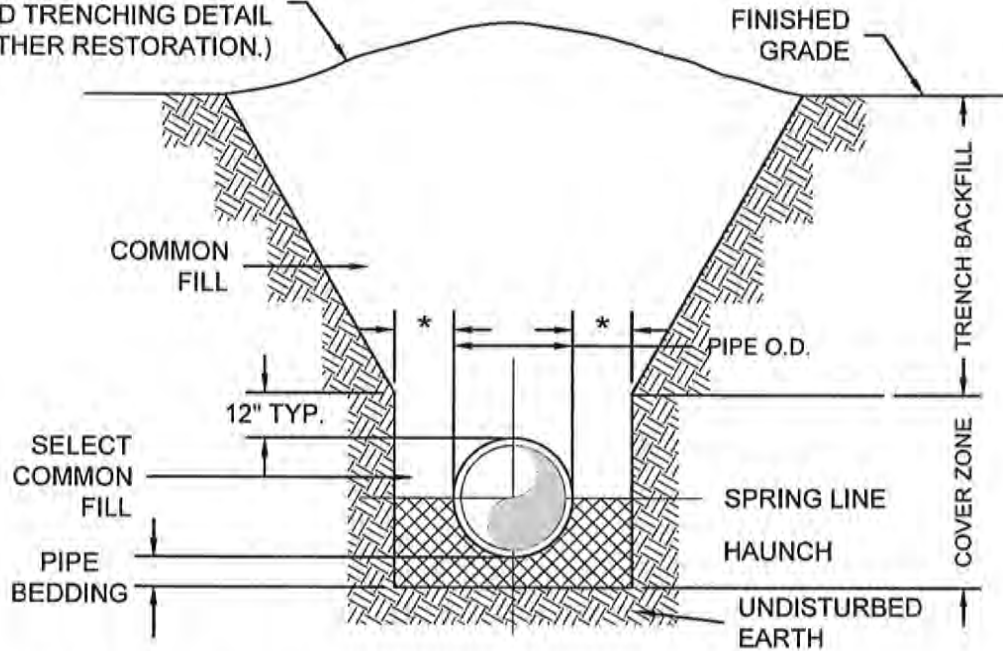
CALLAWAY, FLORIDA
STANDARD DETAILS

TRENCH TERMINOLOGY

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-4

CROWN TRENCH IN UNIMPROVED
AREAS (3" MIN.) (SEE TYPE B
BEDDING AND TRENCHING DETAIL
FOR OTHER RESTORATION.)



NOTES:

1. SHEETING AND BRACING IN EXCAVATED TRENCHES TO COMPLY WITH THE MANUFACTURER SPECIFICATIONS, AND MUST MEET THE STATE "TRENCH SAFETY ACT".
2. ALL PIPE TO BE INSTALLED AS PER THE LINES, GRADES, AND SLOPES CALLED FOR IN THE PLANS, AND AT A MINIMUM OF 36 INCHES BELOW THE TOP OF THE FINISH GRADE.
3. (*)THE WIDTH OF THE TRENCH IS TO BE 24 INCHES WIDER THAN THE OUTSIDE DIAMETER OF PIPE.
4. IF THE TRENCH IS UNDERCUT OR UNSUITABLE MATERIAL IS ENCOUNTERED, BEDDING MATERIAL (SELECT COMMON FILL OR BEDDING ROCK) IS TO BE UTILIZED AND LEFT IN A LOOSE CONDITION BELOW THE MIDDLE THIRD OF THE OUTSIDE DIAMETER OF THE PIPE. THE REMAINDER OF THE TRENCH BOTTOM IS TO BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D1557.
5. WHEN BEDDING MATERIAL IS TO BE UTILIZED, IT IS TO BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES BELOW THE BOTTOM OF THE PIPE.
6. IF THE TRENCH IS NOT UNDERCUT, EXCAVATE FOR THE PIPE BELLS BEFORE LAYING THE PIPE.
7. THE PIPES ARE TO BE INSTALLED SO THAT THE BELL OF THE PIPE IS FACING UPSTREAM TO THE DIRECTION OF FLOW.
8. HAND TAMP THE FILL MATERIAL IN THE HAUNCH AREA THAT CANNOT BE REACHED BY MECHANICAL TAMPERS.
9. FOR CONCRETE PIPE, COMPACT THE BACKFILL IN 6 INCH LAYERS (UP TO A MAXIMUM OF 12 INCHES ABOVE THE TOP OF THE PIPE) TO A DENSITY OF AT LEAST 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D1557. FOR METAL AND PLASTIC PIPE, COMPACT THE BACKFILL IN 6 INCH LAYERS (UP TO A MAXIMUM OF 12 INCHES ABOVE THE TOP OF THE PIPE) TO A DENSITY OF AT LEAST 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D1557.
10. COMPACT AND STABILIZE THE REMAINING BACKFILL, IN LAYERS OF APPROVED THICKNESS, TO THE DENSITIES SPECIFIED IN THE PLANS AND SPECIFICATIONS
11. CONTRACTOR TO PLACE A WOVEN OR NON-WOVEN FILTER FABRIC (TYPE D-3) AROUND THE HUBBED JOINT OF ALL CONCRETE PIPE TO PREVENT POTENTIAL SOIL INFILTRATION.
12. WATER WILL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION. DEWATER AS NECESSARY DURING PLACEMENT.

TRENCH TYPE "A"

N.T.S.

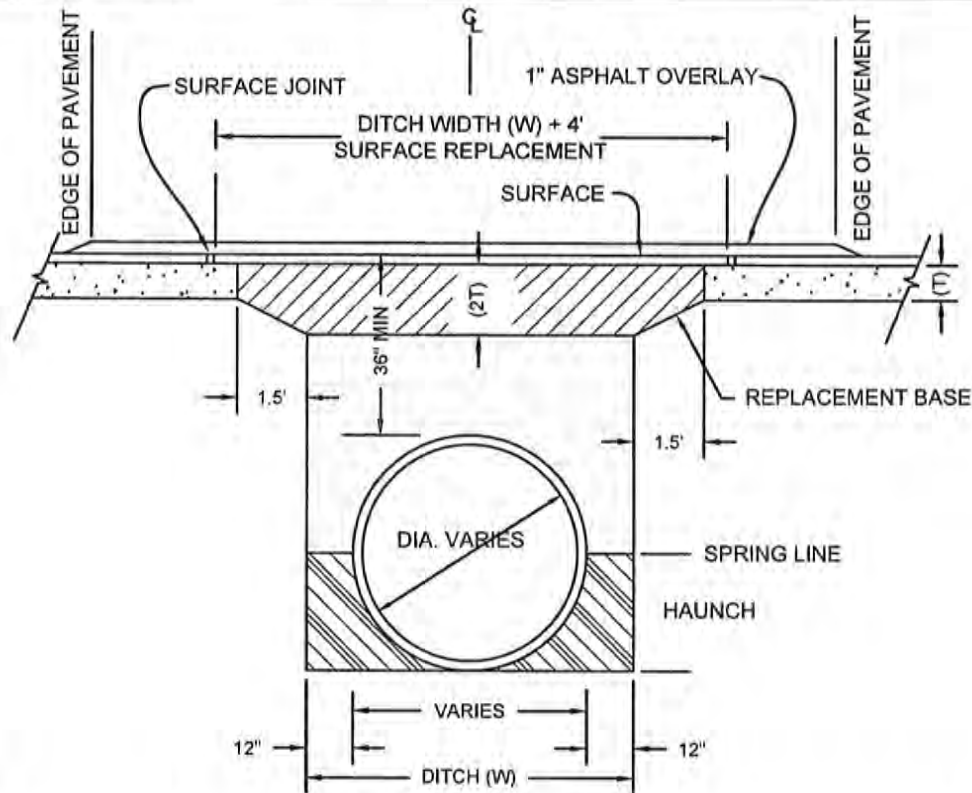


CALLAWAY, FLORIDA
STANDARD DETAILS

TRENCH TYPE "A"

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-5



1. SHEETING AND BRACING IN EXCAVATED TRENCHES TO COMPLY WITH THE MANUFACTURER SPECIFICATIONS, AND MUST MEET THE STATE "TRENCH SAFETY ACT".
2. ALL PIPE TO BE INSTALLED AS PER THE LINES, GRADES, AND SLOPES CALLED FOR IN THE PLANS, AND AT A MINIMUM OF 36 INCHES BELOW THE TOP OF PAVEMENT.
3. HAND TAMP THE FILL MATERIAL IN THE HAUNCH AREA THAT CANNOT BE REACHED BY MECHANICAL TAMPERS.
4. FOR CONCRETE PIPE, COMPACT THE BACKFILL IN 6 INCH LAYERS (UP TO A MAXIMUM OF 12 INCHES ABOVE THE TOP OF THE PIPE) TO A DENSITY OF AT LEAST 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D1557. FOR METAL AND PLASTIC PIPE, COMPACT THE BACKFILL IN 6 INCH LAYERS (UP TO A MAXIMUM OF 12 INCHES ABOVE THE TOP OF THE PIPE) TO A DENSITY OF AT LEAST 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D1557.
5. COMPACT AND STABILIZE THE REMAINING BACKFILL IN LAYERS OF AN APPROVED THICKNESS, TO A DENSITY AS SPECIFIED BY THE PLANS AND SPECIFICATIONS.
6. THE EXISTING ASPHALT IS TO BE SAWED MECHANICALLY AND REMOVED TO LEAVE NEAT LINES A MINIMUM OF 1.5 FEET WIDER ON EACH SIDE OF THE TRENCH CUT.
7. IF THE EXISTING BASE IS NOT AN ASPHALTIC BASE, IT IS TO BE REPLACED WITH THE SAME MATERIAL AT TWICE THE THICKNESS OF THE EXISTING BASE, IN 6 INCH LAYERS, AND COMPACTED TO A DENSITY OF AT LEAST 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D1557.
8. IF THE EXISTING BASE IS AN ASPHALTIC BASE, IT IS TO BE REPLACED WITH A MINIMUM OF 5 INCHES OF AN APPROVED ASPHALT BASE COURSE AND MEET THE REQUIREMENTS OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
9. THE SURFACE COURSE IS TO BE REPLACED CONSISTENT WITH THE EXISTING SURFACE COURSE. THE LENGTH OF THE TRENCH CUT IS TO BE OVERLAYED WITH 1 INCH TYPE S-3 ASPHALT (OR AN APPROPRIATE, APPROVED SUPERPAVE MIX) THE WIDTH OF THE EXISTING PAVEMENT AND FEATHERED AT THE SIDES AND THE ENDS.
10. CONTRACTOR SHALL PLACE A WOVEN OR NON-WOVEN FILTER FABRIC (TYPE D-3) AROUND THE HUBBED JOINT OF ALL CONCRETE PIPE TO PREVENT POTENTIAL SOIL INFILTRATION.
11. WATER WILL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION. DEWATER AS NECESSARY DURING PLACEMENT.

TRENCH TYPE "B"

N.T.S.

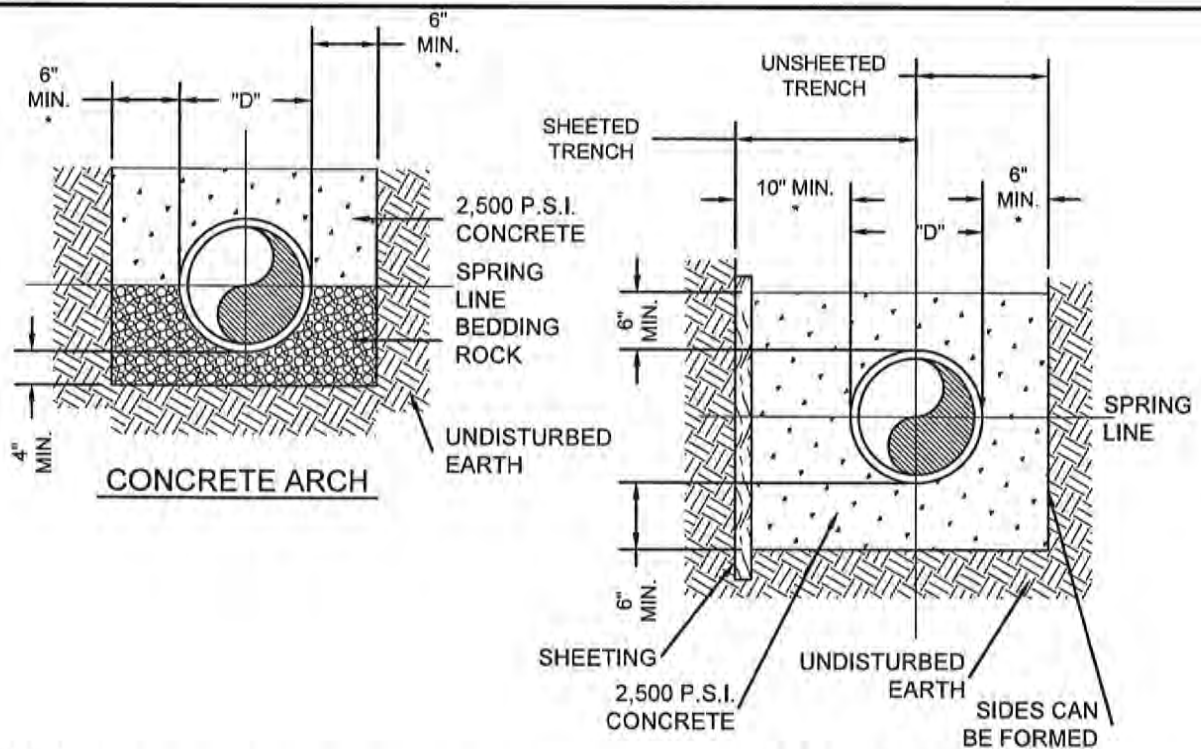


CALLAWAY, FLORIDA
STANDARD DETAILS

TRENCH TYPE "B"

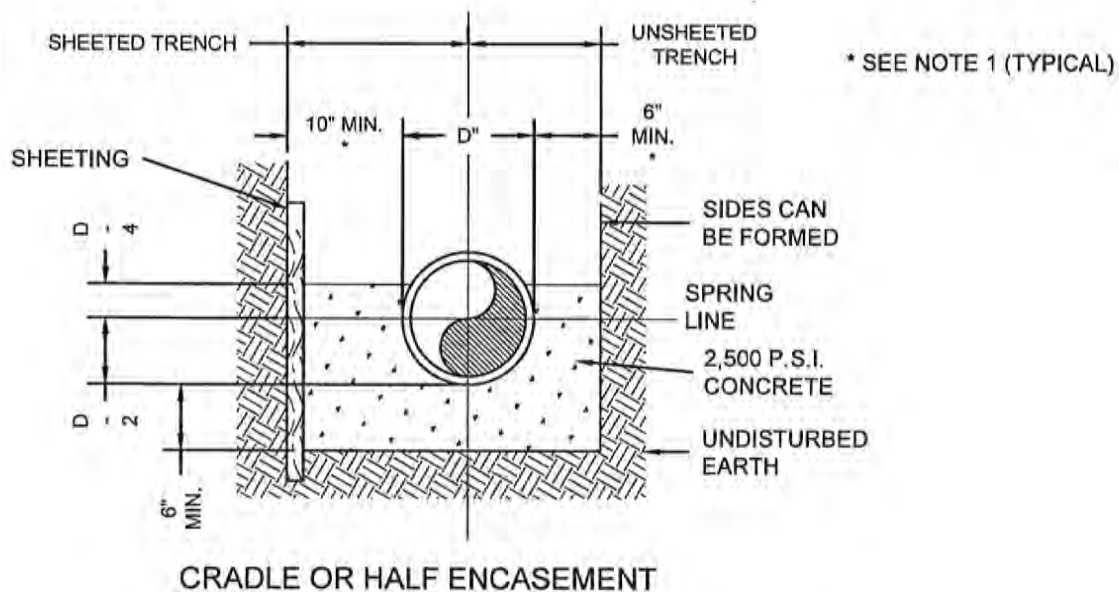
DATE : MARCH 2021
SCALE : NTS

FIGURE : G-6



NOTES:

1. (*): 12" MAX.
2. "D" REFERS TO THE DIAMETER OF THE PIPE.
3. USE OF CONCRETE ARCH, HALF ENCASEMENT, OR FULL ENCASEMENT TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE CITY.



CONCRETE ARCH & ENCASEMENT

N.T.S.

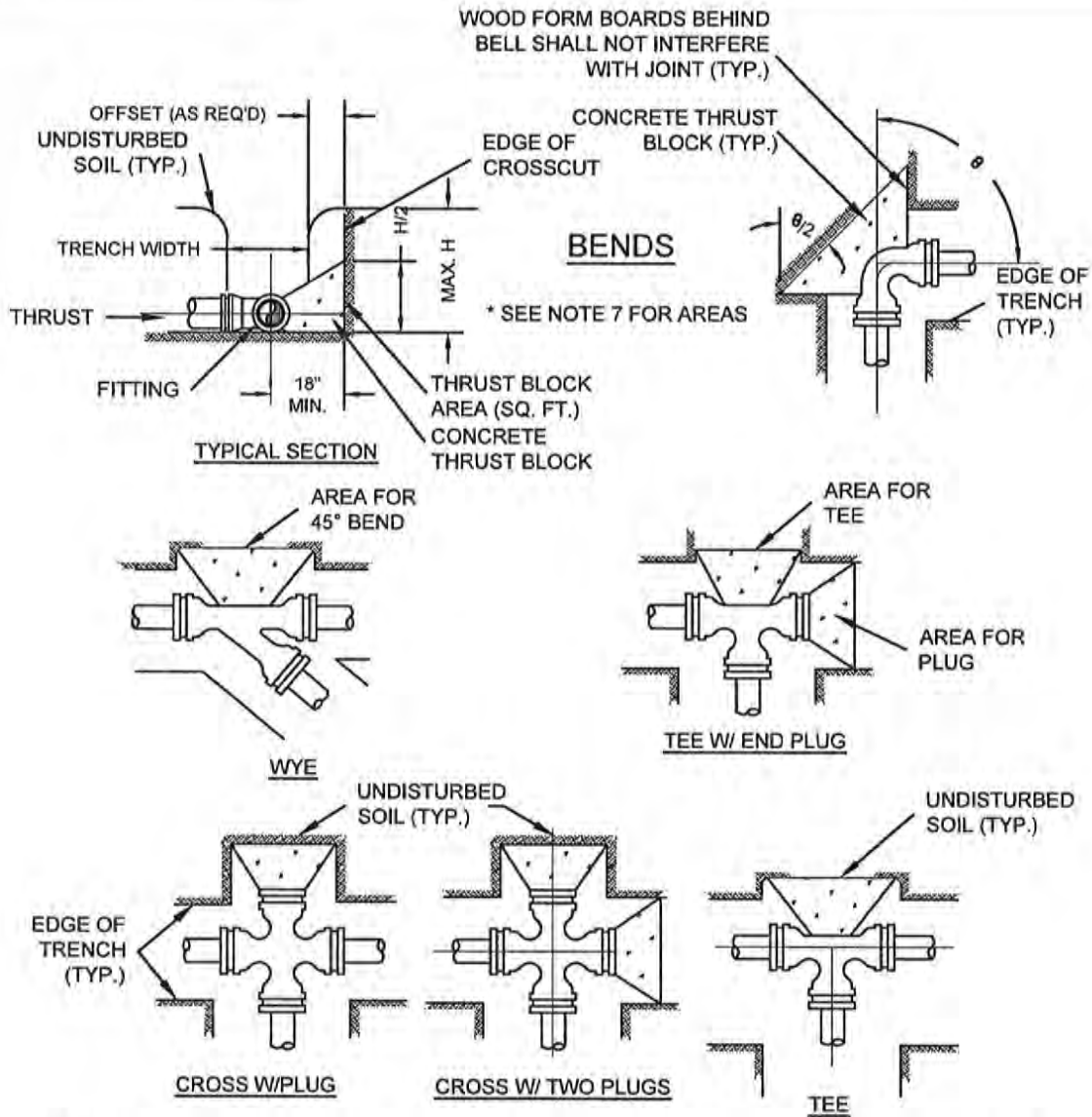


CALLAWAY, FLORIDA
STANDARD DETAILS

CONCRETE ARCH & ENCASEMENT

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-7



NOTES:

1. THRUST BLOCK BEARING AREAS SHALL BE POURED AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE ALL LOOSE MATERIAL AND EXTEND TO UNDISTURBED MATERIAL.
2. EXTEND THRUST BLOCK THE FULL LENGTH OF FITTINGS. JOINTS SHALL NOT BE COVERED BY THRUST BLOCKS. FITTINGS SHALL BE PROTECTED BY POLYETHYLENE FILM (24 MIL.) PRIOR TO PLACING CONCRETE THRUST BLOCK.
3. ROUGH BLOCKING FORMS SHALL BE USED ALONG SIDES OF THRUST BLOCKS, AS REQUIRED.
4. THRUST BLOCKS SHALL BE USED IN COMBINATION, AS REQUIRED, TO SUIT THE SPECIFIC FITTING ARRANGEMENT.
5. ALTERNATE DESIGNED RESTRAINING SYSTEMS SHALL BE PROVIDED WHERE STANDARD THRUST BLOCKING IS NOT SUITABLE AND/OR SOIL RESISTANCE BEARING IS LESS THAN 1,500 psf.
6. ALL WOOD BLOCKING SHALL BE PRESSURE TREATED WITH PRESERVATIVE.
7. FOR THRUST BLOCK AREAS, SEE PLANS

THRUST BLOCKS

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

THRUST BLOCKS

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-8

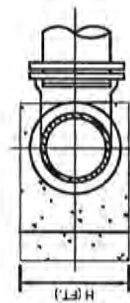
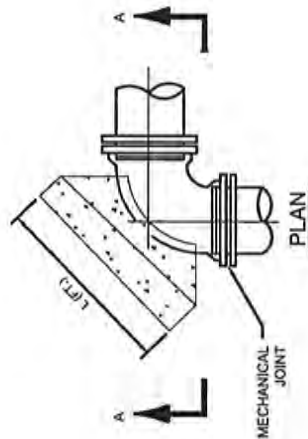


CALLAWAY, FLORIDA
 STANDARD DETAILS

THRUST BLOCKS (2)

DATE : MARCH 2021
 SCALE : NTS

FIGURE : G-9

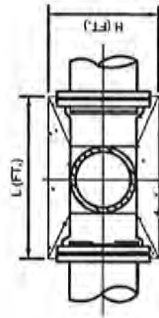
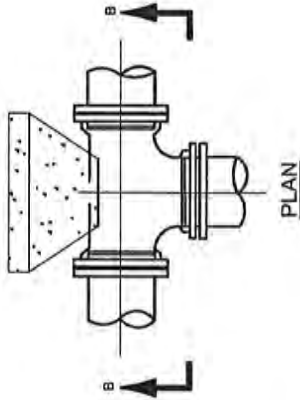


SECTION A-A

TYPICAL THRUST BLOCK DETAIL FOR BENDS

- NOTES:
1. LOCATION OF THRUST BLOCK INSTALLATION SHALL BE DETERMINED IN THE FIELD
 2. THRUST BLOCK SHALL BEAR AGAINST UNDISTURBED SOIL
 3. CONCRETE THRUST BLOCK SIZE TO SUIT ACTUAL SOIL CONDITIONS IN THE FIELD. SEE TABLE FOR MINIMUM THRUST BLOCK AREA

TYPICAL THRUST BLOCK AREA @ 150 PSI SOIL BEARING PRESSURE OF 1500 PSF, F.S. = 1.5				
INSIDE DIA PIPELINE IN INCHES	90° BENDS	TEES, DEAD ENDS, OR 45° BENDS	22½° BENDS	
4"	2.7	2.0	.75	
6"	6.0	4.2	1.7	
8"	10.7	7.5	3.0	
10"	16.7	11.9	4.7	
12"	24.0	17.0	6.6	
16"	42.6	30.2	11.7	
18"	54.0	38.1	14.9	
20"	66.6	47.1	18.5	
24"	96.0	67.8	26.6	
30"	150	106	41.4	



SECTION B-B

TYPICAL THRUST BLOCK DETAIL FOR TEES

THRUST BLOCKS (2)
 N.T.S.

SCHEDULE FOR THRUST BLOCK AREAS *								
PIPE SIZE (INCHES)	90 BEND (SQ FT)	45 BEND (SQ FT)	22-1/2 BEND (SQ FT)	11-1/4 BEND (SQ FT)	TEE & PLUG (SQ FT)	CROSS (SQ FT)	WYE (SQ FT)	DESIGN PRESS (PSI)
4								
6								
8								
10								
12								
16								
18								
NOTE: THRUST BLOCK AREAS TO BE COMPUTED ON BASIS OF LBS. PER SQ. FT. SOIL RESTRAINT BEARING. (1,500 MIN) SEE NOTE 4 * TO BE COMPLETED BY ENGINEER.								

MINIMUM LENGTH (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S). *									
	PIPE SIZE								
	6"	8"	10"	12"	16"	20"	24"	30"	36"
90° BEND									
45° BEND									
22-1/2° BEND									
11-1/4° BEND									
PLUG OR BRANCH OF TEE									

NOTES:

1. FITTINGS SHALL BE RESTRAINED JOINTS UNLESS OTHERWISE INDICATED.
2. INSTALL FULL LENGTH JOINTS WITH TOTAL LENGTH EQUAL TO OR GREATER THAN SHOWN IN THE TABLE.
3. 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: _____ P.S.I.*
 SOIL DESIGNATION: _____*
 LAYING CONDITIONS: _____*

4. FOR PIPE ENCASED IN POLYETHYLENE, USE VALUES GIVEN IN PARENTHESES OR INCREASE THE GIVEN VALUE BY A FACTOR OF 1.5.

* TO BE COMPLETED BY THE ENGINEER.



CALLAWAY, FLORIDA
STANDARD DETAILS

THRUST RESTRAINT INSTRUCTIONS

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-10

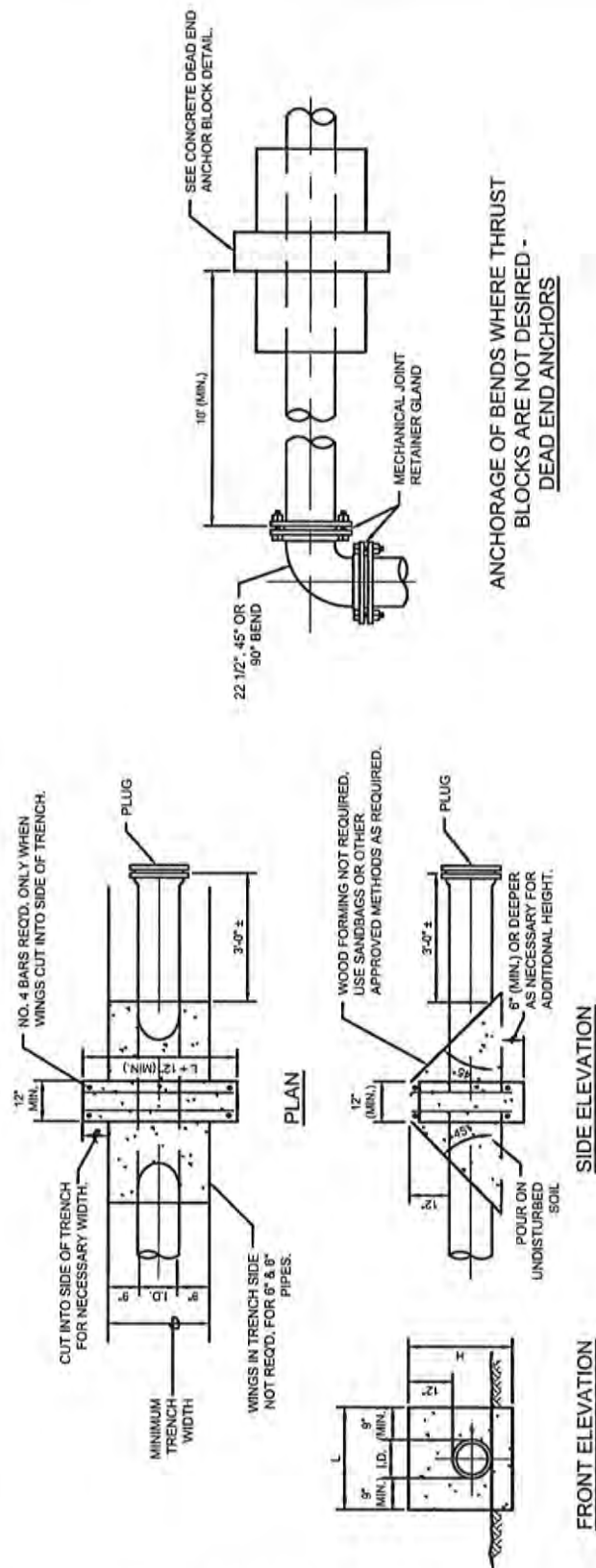


CALLAWAY, FLORIDA
 STANDARD DETAILS

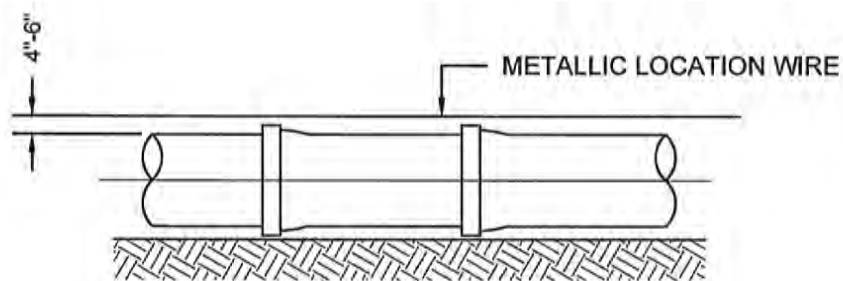
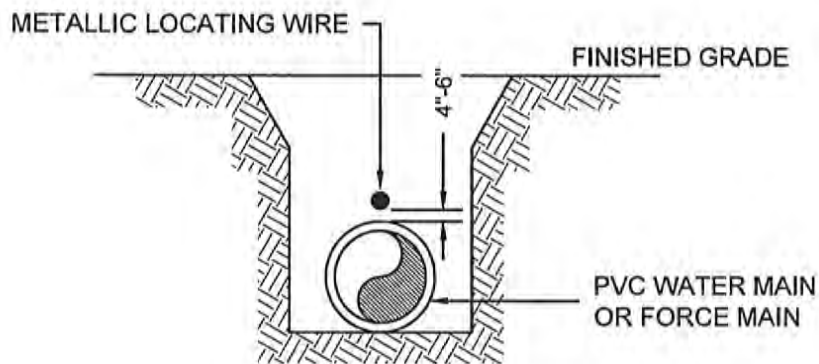
DEAD END ANCHOR BLOCK - 6" PIPE AND
 SMALLER

DATE : MARCH 2021
 SCALE : NTS

FIGURE : G-12



DEAD END ANCHOR BLOCK - 6" PIPE AND SMALLER



NOTES:

1. PVC PIPE SHALL REQUIRE INSULATED METALLIC LOCATING WIRE (10 GAUGE COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE BURIED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE.
2. LOCATING WIRE SHALL TERMINATE AT THE TOP OF EACH VALVE BOX AND BE CAPABLE OF EXTENDING 24" ABOVE TOP OF BOX IN SUCH A MANNER SO AS NOT TO INTERFERE WITH VALVE OPERATION.
3. ALL SPLICES SHALL BE MADE USING A WATER-TIGHT SEALING METHOD APPROVED BY THE CITY.

LOCATING WIRE

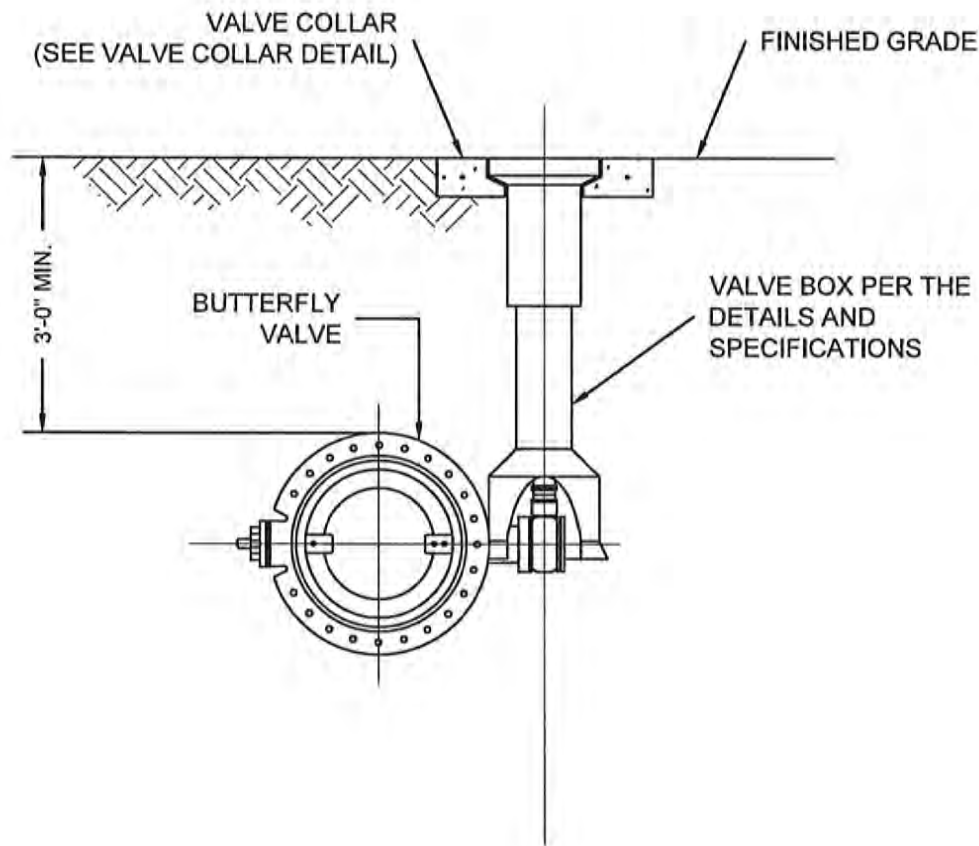


CALLAWAY, FLORIDA
STANDARD DETAILS

LOCATING WIRE

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-13



NOTES:

1. PVC EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION.
2. ALL WATER SHUT-OFF VALVES SIXTEEN (16) INCHES AND LARGER SHALL BE BUTTERFLY VALVES.
3. THE ACTUATING NUT SHALL BE EXTENDED TO COME UP TO 24" BELOW FINISHED GRADE.

BUTTERFLY VALVE AND BOX

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

BUTTERFLY VALVE AND BOX

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-14

TYPICAL UTILITY LOCATIONS 60' ROW

DATE : MARCH 2021
SCALE : NTS

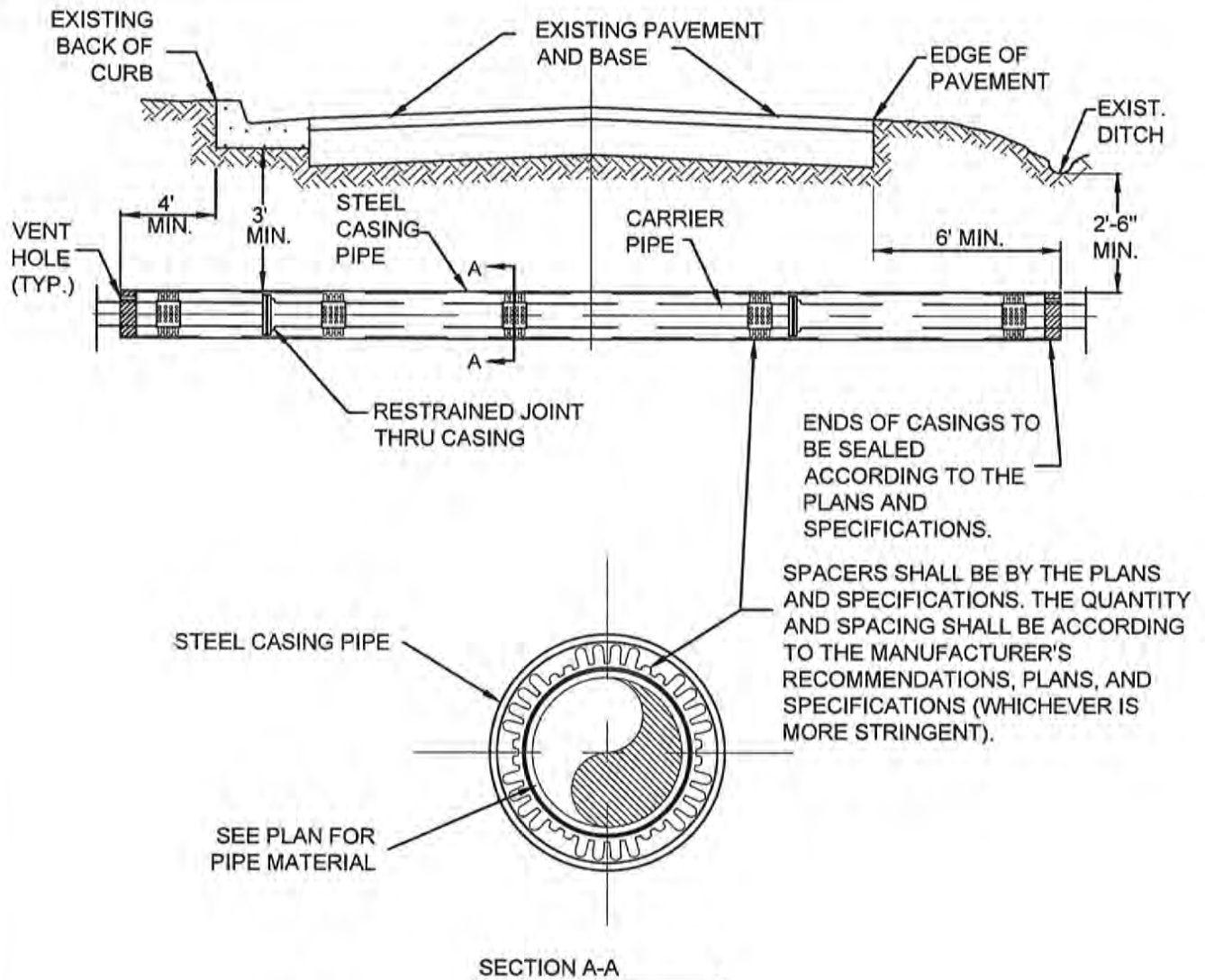
FIGURE : G-15

TYPICAL UTILITY LOCATIONS 60' ROW

N.T.S.

- FM - FORCE MAIN
WM - WATER MAIN
SM - SEWER MAIN
GP - GULF POWER
PH - PHONE
GA - GAS
CA - CABLE

NOTE: ALL UTILITIES TO HAVE
30" MINIMUM COVER.



NOTES:

1. WHEN CONSTRUCTION IS WITHIN FDOT JURISDICTION, ADDITIONAL REQUIREMENTS OF THE UTILITY ACCOMMODATION GUIDE SHALL BE MET.
2. WHERE PRACTICAL, CASING SHALL EXTEND 10' BEYOND EDGE OF PAVEMENT AND SHALL NOT BE LESS THAN 6' BEYOND EDGE OF PAVEMENT IN ANY CASE. THE CITY MAY REQUIRE LONGER CASING FOR DEEPER BORES.
3. CASING PIPE JOINTS SHALL BE MADE BY USING A FULL CIRCUMFERENCE COMPLETE PENETRATION GROOVE WELD.
4. LARGER CASINGS, WITH THE OWNER'S APPROVAL, MAY BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER, FOR REASONS SUCH AS AVAILABILITY, LINE AND GRADE TOLERANCES, SOIL CONDITIONS, ETC.

CARRIER & CASING SIZE										
CARRIER	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
CASING	12"	14"	16"	18"	20"	24"	30"	30"	30"	36"
CASING / WALL THICKNESS	0.250"	0.250"	0.250"	0.250"	0.250"	0.250"	0.312"	0.312"	0.312"	0.375"

JACK AND BORE

N.T.S.

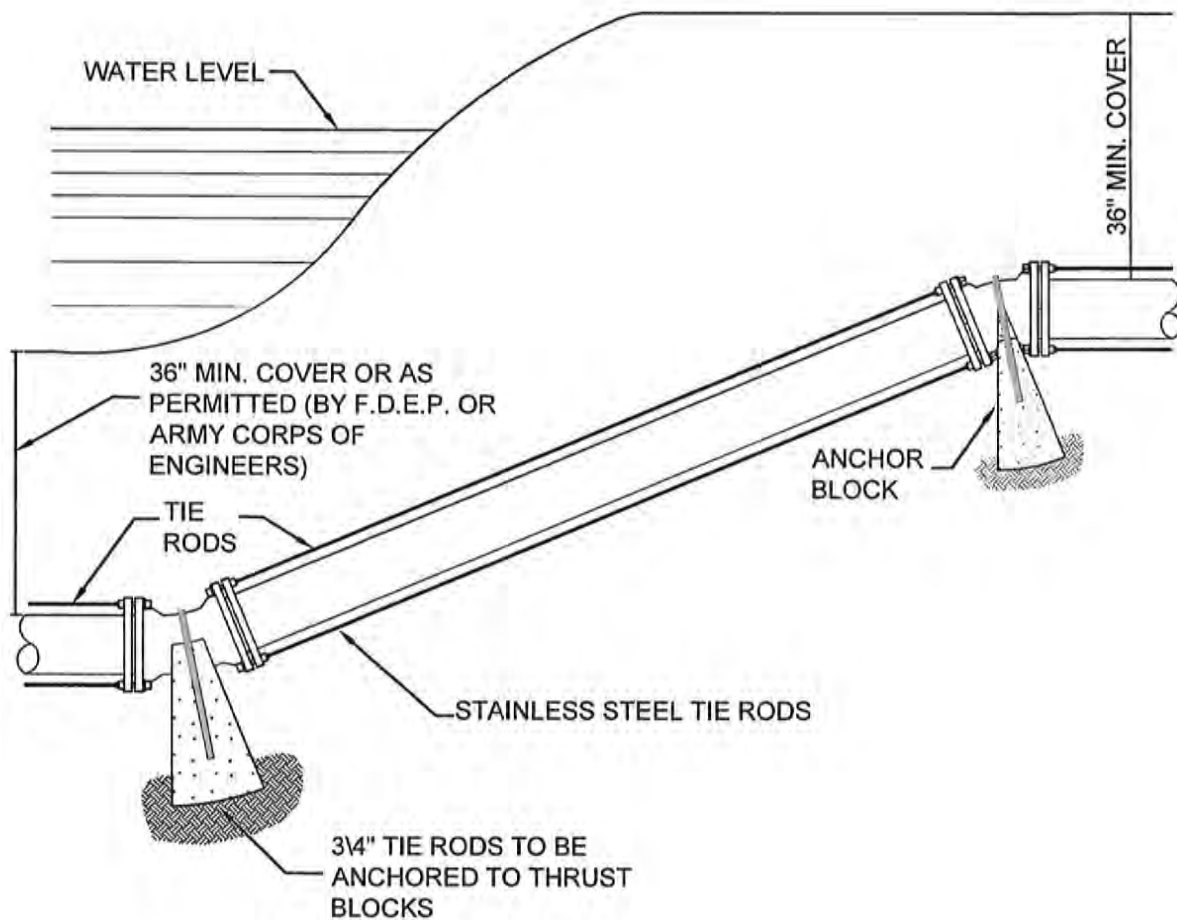


CALLAWAY, FLORIDA
STANDARD DETAILS

JACK AND BORE UNDER PAVED ROADS

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-16



NOTE:

1. RESTRAINED JOINT PIPE & FITTINGS MAY BE USED IN LIEU OF TIE-RODS & BLOCKS. SUBMIT DETAILS TO THE CITY OF PANAMA CITY ENGINEERING DEPARTMENT FOR APPROVAL.
2. SEE DETAILS FOR THRUST BLOCK REQUIREMENTS.
3. ENGINEER TO DETERMINE REQUIRED LENGTH OF RESTRAINT EACH SIDE OF BEND.

TYPICAL CANAL CROSSING



CALLAWAY, FLORIDA
STANDARD DETAILS

TYPICAL CANAL CROSSING

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-17

PIPE JOINT RESTRAINT TABULATION - WATER MAIN
(ALL RESTRAINT JOINT LENGTHS SHOWN ARE IN FEET)
SOURCE: EBAA RESTRAINT JOINT CALCULATOR v7.1.2

HORIZONTAL BENDS											
EVERY JOINT WITHIN THE LENGTH SPECIFIED BELOW (IN FEET) SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING											
PIPE SIZE AND TYPE	90 Deg.	45 Deg.	22.5 Deg.	11.25 Deg.	DEAD ENDS						
3" PVC	17	7	4	2	36						
4" PVC	18	8	4	2	39						
6" PVC	25	11	5	3	55						
8" PVC	33	14	7	4	72						
10" PVC	39	16	8	4	87						
12" PVC	45	19	9	5	102						
14" PVC	52	22	11	6	119						
16" PVC	57	24	12	6	131						
18" PVC	63	26	13	7	145						
20" PVC	68	29	14	7	159						
24" PVC	79	33	16	8	185						

SMALLER PIPE SIZE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
REDUCER (LARGER PIPE RESTRAINT)	3"	-	-	-	-	-	-	-	-	-
	4"	13	-	-	-	-	-	-	-	-
	6"	37	29	-	-	-	-	-	-	-
	8"	59	52	31	-	-	-	-	-	-
	10"	76	71	53	29	-	-	-	-	-
	12"	93	89	74	54	30	-	-	-	-
	14"	111	107	95	78	57	31	-	-	-
	16"	124	121	111	96	78	56	30	-	-
	18"	139	136	127	114	98	79	56	30	-
	20"	154	151	143	131	117	100	79	56	30

BRANCH SIZE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
TEE (BRANCH RESTRAINT)	3"	18	-	-	-	-	-	-	-	-
	4"	12	21	-	-	-	-	-	-	-
	6"	1	12	37	-	-	-	-	-	-
	8"	1	3	31	54	-	-	-	-	-
	10"	1	1	24	49	68	-	-	-	-
	12"	1	1	18	44	64	83	-	-	-
	14"	1	1	11	39	60	80	100	-	-
	16"	1	1	3	33	55	76	96	112	-
	18"	1	1	1	27	50	72	93	109	125
	20"	1	1	1	21	45	68	89	106	122

- NOTES :
1. TEST PRESSURE=150 PSI, SOIL GROUP=SM, TRENCH TYPE=3, DEPTH=3, SAFETY FACTOR=1.5; ACTUAL FIELD CONDITIONS MAY VARY
 2. RESTRAINED LENGTHS FOR VERTICAL OFFSETS MUST BE INDIVIDUALLY CALCULATED.
 3. MINIMUM PIPE LENGTH ALONG TEE RUN=5FEET OR LARGER.
 4. ALWAYS ROUND UP PARTIAL LENGTHS TO THE NEXT PIPE JOINT.
 5. ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
 6. ALL VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 150 PSI TEST PRESSURE IN EITHER DIRECTION.
 7. IF THE TEE BRANCH DIAMETER IS LARGER THAN THE RUN DIAMETER, THE ENGINEER OF RECORD MUST SPECIFY THE RESTRAINT LENGTHS.

REQUIRED LENGTH OF RESTRAINED JOINT PVC PIPE



CALLAWAY, FLORIDA
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PVC THRUST RESTRAINT DETAILS

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-18

PIPE JOINT RESTRAINT TABULATION - WATER MAIN
(ALL RESTRAINT JOINT LENGTHS SHOWN ARE IN FEET)
SOURCE: EBAA RESTRAINT JOINT CALCULATOR v7.1.2

HORIZONTAL BENDS										
EVERY JOINT WITHIN THE LENGTH SPECIFIED BELOW (IN FEET) SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING										
PIPE SIZE AND TYPE	90 Deg.	45 Deg.	22.5 Deg.	11.25 Deg.	DEAD ENDS					
3" PVC	12	5	3	2	21					
4" PVC	15	6	3	2	25					
6" PVC	20	9	4	2	36					
8" PVC	26	11	6	3	46					
10" PVC	31	13	7	4	56					
12" PVC	36	15	8	4	65					
14" PVC	41	17	9	4	74					
16" PVC	46	19	10	5	84					
18" PVC	50	21	10	5	92					
20" PVC	55	23	11	6	101					
24" PVC	63	27	13	7	116					

SMALLER PIPE SIZE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
REDUCER (LARGER PIPE RESTRAINT)	3"	-	-	-	-	-	-	-	-	-
	4"	8	-	-	-	-	-	-	-	-
	6"	24	19	-	-	-	-	-	-	-
	8"	38	34	20	-	-	-	-	-	-
	10"	49	45	34	19	-	-	-	-	-
	12"	60	57	48	35	20	-	-	-	-
	14"	69	67	59	48	35	19	-	-	-
	16"	79	77	71	61	50	36	19	-	-
	18"	89	87	81	73	63	50	36	19	-
	20"	98	96	91	84	75	64	51	36	19

BRANCH SIZE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
TEE (BRANCH RESTRAINT)	3"	10	-	-	-	-	-	-	-	-
	4"	7	14	-	-	-	-	-	-	-
	6"	1	8	24	-	-	-	-	-	-
	8"	1	2	20	35	-	-	-	-	-
	10"	1	1	16	31	43	-	-	-	-
	12"	1	1	11	28	41	53	-	-	-
	14"	1	1	7	25	38	51	62	-	-
	16"	1	1	2	21	35	48	60	71	-
	18"	1	1	1	17	32	46	58	69	80
	20"	1	1	1	13	29	43	56	67	78

NOTES :

1. TEST PRESSURE=150 PSI, SOIL GROUP=SM, TRENCH TYPE=3, DEPTH=3, SAFETY FACTOR = 1.5; ACTUAL FIELD CONDITIONS MAY VARY
2. RESTRAINED LENGTHS FOR VERTICAL OFFSETS MUST BE INDIVIDUALLY CALCULATED.
3. MINIMUM PIPE LENGTH ALONG TEE RUN=5FEET OR LARGER.
4. ALWAYS ROUND UP PARTIAL LENGTHS TO THE NEXT PIPE JOINT.
5. ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
6. ALL VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 150 PSI TEST PRESSURE IN EITHER DIRECTION.
7. IF THE TEE BRANCH DIAMETER IS LARGER THAN THE RUN DIAMETER, THE ENGINEER OF RECORD MUST SPECIFY THE RESTRAINT LENGTHS.

REQUIRED LENGTH OF RESTRAINED JOINT DUCTILE IRON PIPE



CALLAWAY, FLORIDA
STANDARD DETAILS

DIP THRUST RESTRAINT DETAILS

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-19

PIPE JOINT RESTRAINT TABULATION - WATER MAIN
(ALL RESTRAINT JOINT LENGTHS SHOWN ARE IN FEET)
SOURCE: EBAA RESTRAINT JOINT CALCULATOR v7.1.2

HORIZONTAL BENDS										
EVERY JOINT WITHIN THE LENGTH SPECIFIED BELOW (IN FEET) SHALL BE RESTRAINED ON BOTH SIDES OF THE FITTING										
PIPE SIZE AND TYPE	90 Deg.	45 Deg.	22.5 Deg.	11.25 Deg.	DEAD ENDS					
3" PVC	18	8	4	2	48					
4" PVC	21	9	5	3	58					
6" PVC	29	12	6	3	82					
8" PVC	38	16	8	4	107					
10" PVC	45	19	9	5	128					
12" PVC	53	22	11	6	151					
14" PVC	59	25	12	6	171					
16" PVC	66	28	14	7	193					
18" PVC	73	30	15	8	213					
20" PVC	79	33	16	8	234					
24" PVC	91	38	18	9	272					

SMALLER PIPE SIZE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
REDUCER (LARGER PIPE RESTRAINT)	3"	-	-	-	-	-	-	-	-	-
	4"	19	-	-	-	-	-	-	-	-
	6"	55	42	-	-	-	-	-	-	-
	8"	87	77	45	-	-	-	-	-	-
	10"	112	104	79	43	-	-	-	-	-
	12"	137	131	110	80	45	-	-	-	-
	14"	160	155	137	112	81	44	-	-	-
	16"	183	178	163	141	115	82	44	-	-
	18"	204	200	186	167	144	116	82	44	-
	20"	226	222	210	193	172	147	117	82	44

BRANCH SIZE	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"
TEE (BRANCH RESTRAINT)	3"	22	-	-	-	-	-	-	-	-
	4"	16	31	-	-	-	-	-	-	-
	6"	1	18	54	-	-	-	-	-	-
	8"	1	5	45	79	-	-	-	-	-
	10"	1	1	36	72	100	-	-	-	-
	12"	1	1	26	64	94	122	-	-	-
	14"	1	1	15	56	87	117	143	-	-
	16"	1	1	4	48	81	112	138	164	-
	18"	1	1	1	39	74	106	133	160	184
	20"	1	1	1	30	67	100	128	155	180

NOTES :

1. TEST PRESSURE=150 PSI, SOIL GROUP=SM, TRENCH TYPE=3, DEPTH=3, SAFETY FACTOR=1.5
2. RESTRAINED LENGTHS FOR VERTICAL OFFSETS MUST BE INDIVIDUALLY CALCULATED.
3. MINIMUM PIPE LENGTH ALONG TEE RUN=5FEET OR LARGER.
4. ALWAYS ROUND UP PARTIAL LENGTHS TO THE NEXT PIPE JOINT.
5. ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
6. ALL VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 150 PSI TEST PRESSURE IN EITHER DIRECTION.
7. IF THE TEE BRANCH DIAMETER IS LARGER THAN THE RUN DIAMETER, THE ENGINEER OF RECORD MUST SPECIFY THE RESTRAINT LENGTHS.

REQUIRED LENGTH OF RESTRAINED JOINT DUCTILE IRON PIPE (POLY-WRAPPED)



CALLAWAY, FLORIDA
STANDARD DETAILS

POLY-WRAPPED DIP THRUST RESTRAINT DETAILS

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-20

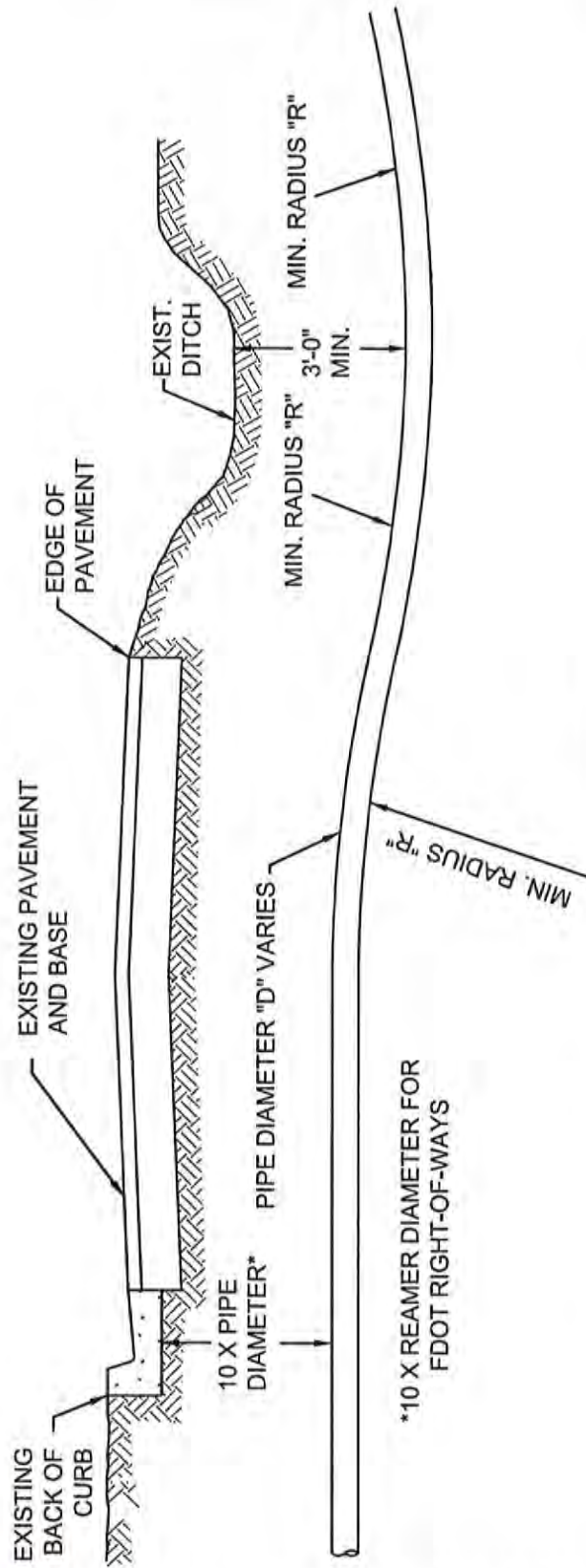


DIRECTIONAL BORE ROADWAY CROSSING

CALLAWAY, FLORIDA
 STANDARD DETAILS

DATE : MARCH 2021
 SCALE : NTS

FIGURE : G-21



NOTES:

ALL POLYETHYLENE PIPING SHALL MEET CITY OF PANAMA CITY STANDARDS AND SPECIFICATIONS SDR-9, CLASS 200 FOR POTABLE WATER & RECLAIMED WATER SDR-11, CLASS 160 FOR SANITARY FORCE MAINS COLOR CODED BLUE FOR POTABLE WATER COLOR CODED PURPLE FOR RECLAIMED WATER COLOR CODED GREEN FOR SANITARY FORCE MAIN

MIN. RADIUS FOR PE PIPE IN FEET	
MIN. RADIUS "R" FOR SDR-11	MIN. RADIUS "R" FOR SDR-9
25 x PIPE O.D.*	20 x PIPE O.D.*

*BASED ON INFORMATION FROM THE PLASTIC PIPE INSTITUTE; USE THE PIPE MANUFACTURER'S MINIMUM RADIUS IF IT IS MORE STRINGENT.

DIRECTIONAL BORE ROADWAY CROSSING

N.T.S.

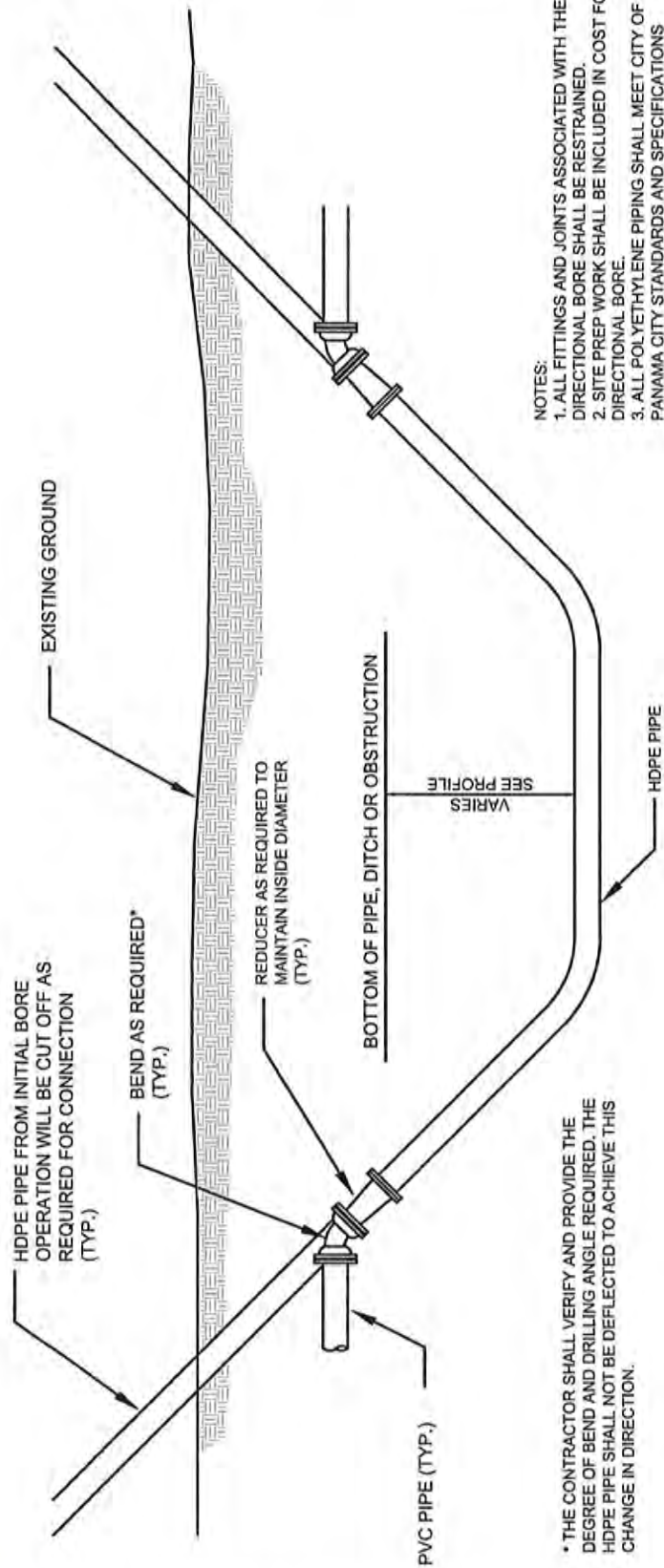


CALLAWAY, FLORIDA
 STANDARD DETAILS

TYPICAL DIRECTIONAL BORE

DATE : MARCH 2021
 SCALE : NTS

FIGURE : G-22



- NOTES:
1. ALL FITTINGS AND JOINTS ASSOCIATED WITH THE DIRECTIONAL BORE SHALL BE RESTRAINED.
 2. SITE PREP WORK SHALL BE INCLUDED IN COST FOR DIRECTIONAL BORE.
 3. ALL POLYETHYLENE PIPING SHALL MEET CITY OF PANAMA CITY STANDARDS AND SPECIFICATIONS

TYPICAL DIRECTIONAL BORE

NTS

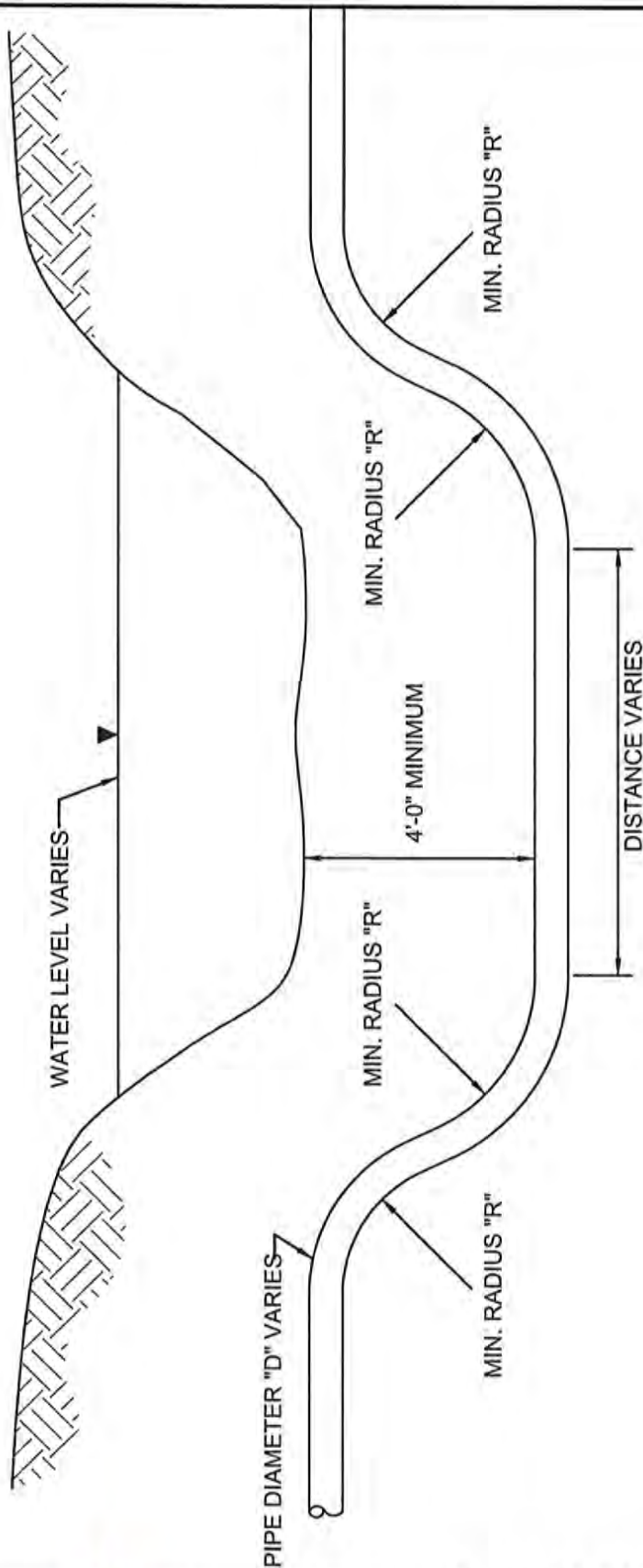


CALLAWAY, FLORIDA
 STANDARD DETAILS

DIRECTIONAL BORE CANAL CROSSING

DATE : MARCH 2021
 SCALE : NTS

FIGURE : G-23



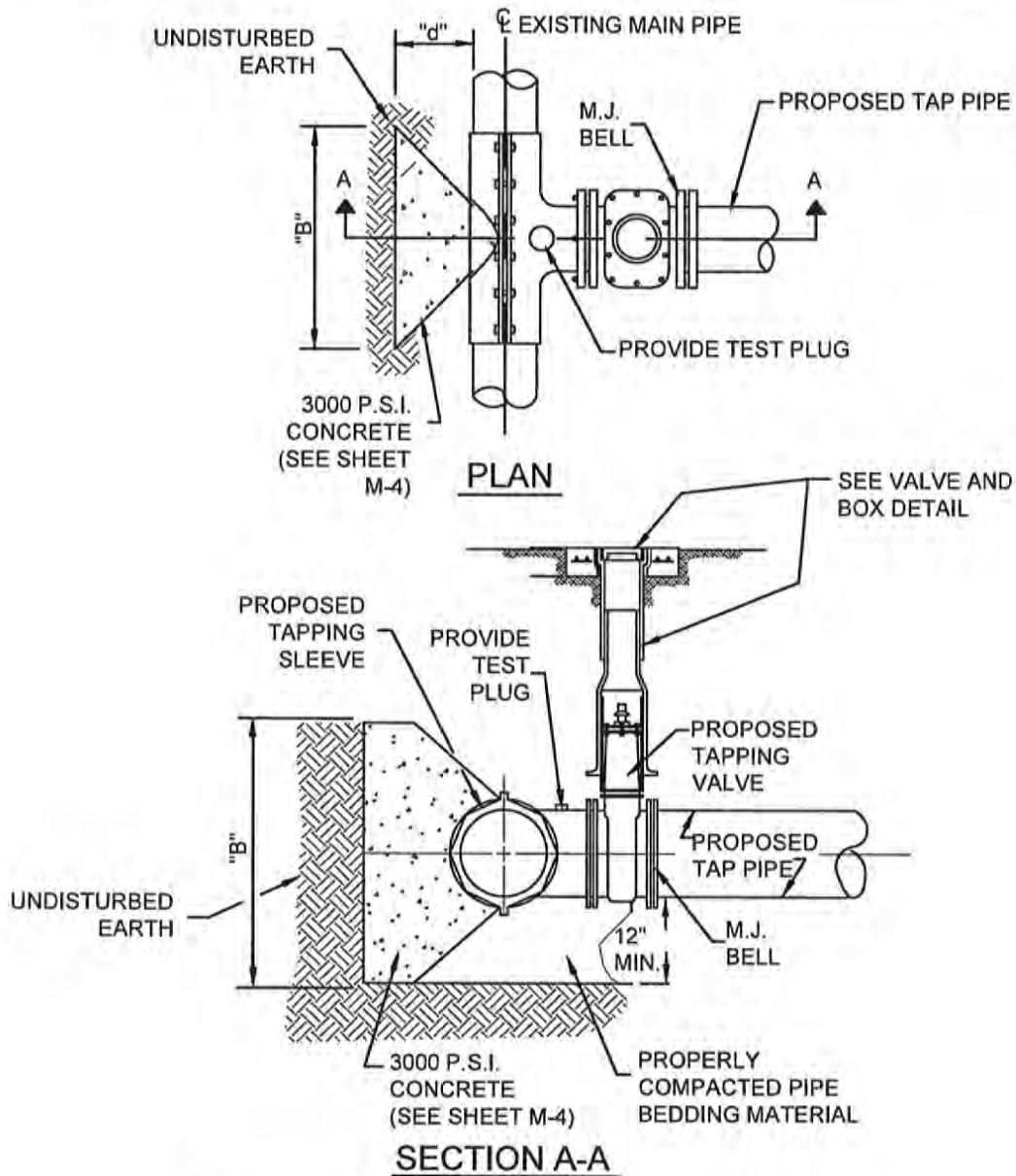
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DIRECTIONAL BORE CANAL CROSSING

N.T.S.



FOR DIMENSIONS "B" AND "d" SEE
THRUST BLOCK REQUIREMENTS

NOTES:

1.) NO CUTS SHALL BE MADE BEFORE:

(A) A TEST ON THE SLEEVE AT 150 P.S.I. FOR 30 MINUTES IS MADE.

(B) ALL FITTINGS TO BE WRAPPED WITH 24 MIL POLYETHYLENE AT THE THRUST BLOCK

(C) ALL TAPS ARE TO BE MADE BY THE CITY OF PANAMA CITY UTILITIES DEPT. UNLESS OTHER ARRANGEMENTS ARE MADE. THE MATERIAL IS TO BE FURNISHED BY THE INFRASTRUCTURE CONTRACTOR.

2.) ALL TAPS MUST BE OF A SMALLER SIZE THAN THE MAIN BEING TAPPED & PLACED NO CLOSER THAN 30" OR A DISTANCE EQUAL TO ONE (1) MAIN PIPE DIAMETER PLUS TWO (2) TAP PIPE DIAMETERS (WHICHEVER IS LARGER) FROM A JOINT OR FITTING.

3.) CONTRACTOR TO SUPPLY A DRY HOLE FOR TAPPING CREW TO WORK AND A BACK-HOE TO LOWER MACHINE INTO HOLE.

TAPPING SLEEVE AND VALVE BLOCKING

N.T.S.



CALLAWAY, FLORIDA
STANDARD DETAILS

TAPPING SLEEVE AND VALVE BLOCKING

DATE : MARCH 2021
SCALE : NTS

FIGURE : G-24



- ## TYPICAL VALVE MARKER

FIGURE : G-25