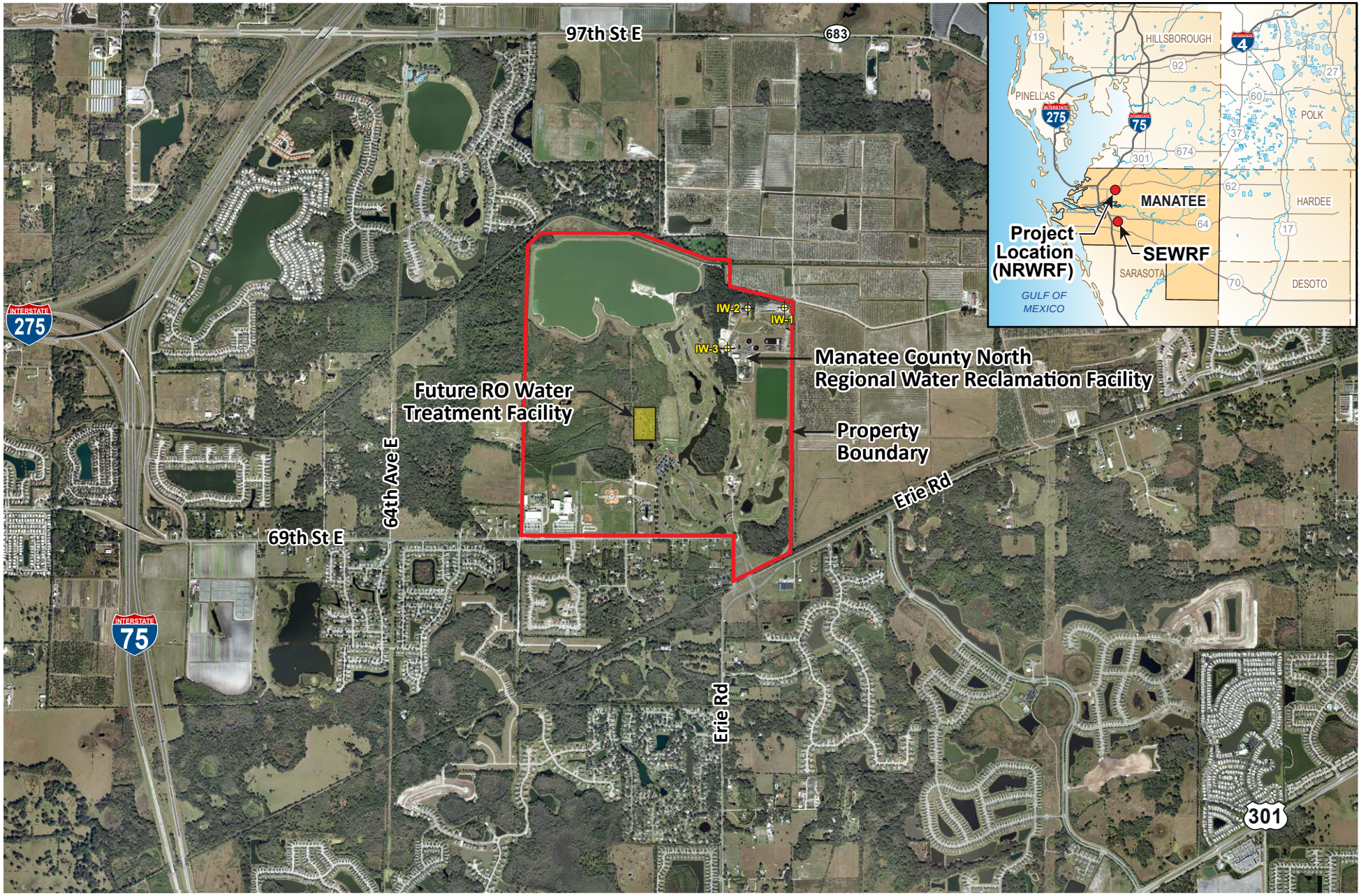
DRAWINGS



2014 Aerial Source:
FDEP Land Boundary Information System (LABINS)
http://www.labins.org

North

0 1/4 1/2 1

Scale in Miles

DRAWING 1

Location Map

Manatee County Master Reuse Wet Weather Management Well System – Bid Documents

D1-Manatee N WRF Location Map.ai 9/1/16

2014 Aerial Source:
FDEP Land Boundary Information System (LABINS)
http://www.labins.org

North

0 100 200 300 400 500

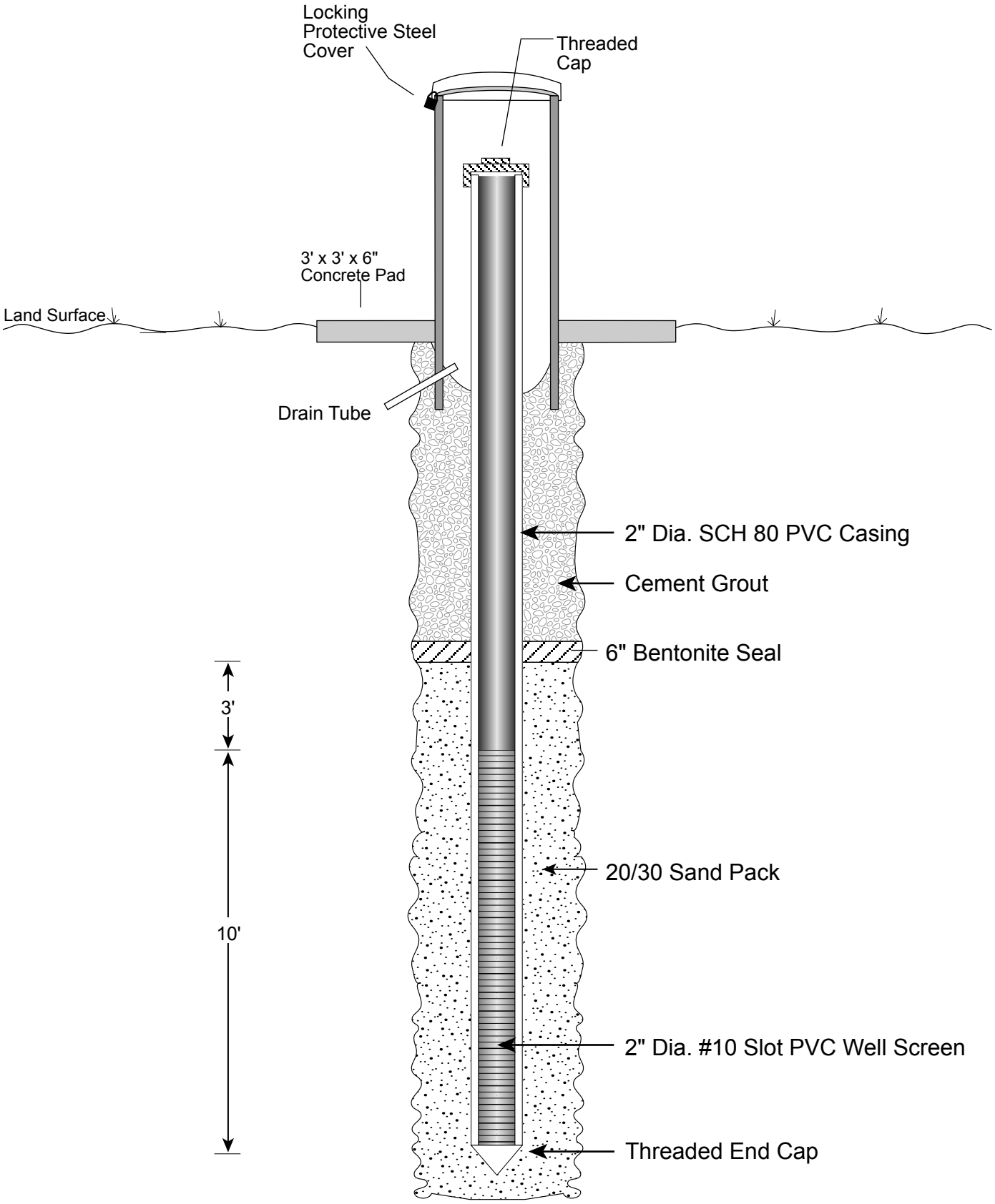
Scale in Feet

DRAWING 2

Site Map - NRWRF

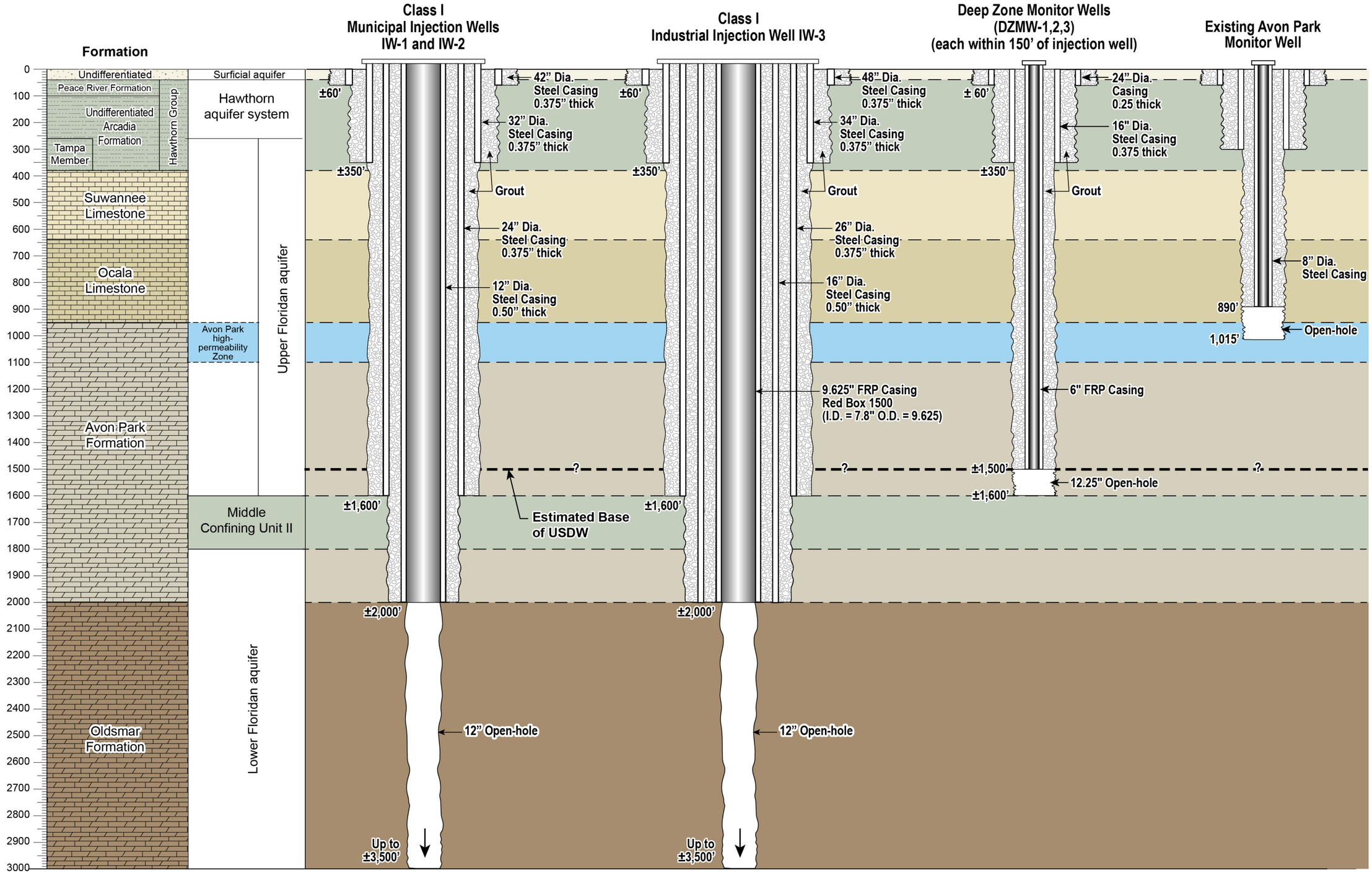
Manatee County Master Reuse Wet Weather Management Well System – Bid Documents

D2-Manatee N WRF Site Map-v5.ai 10/11/16



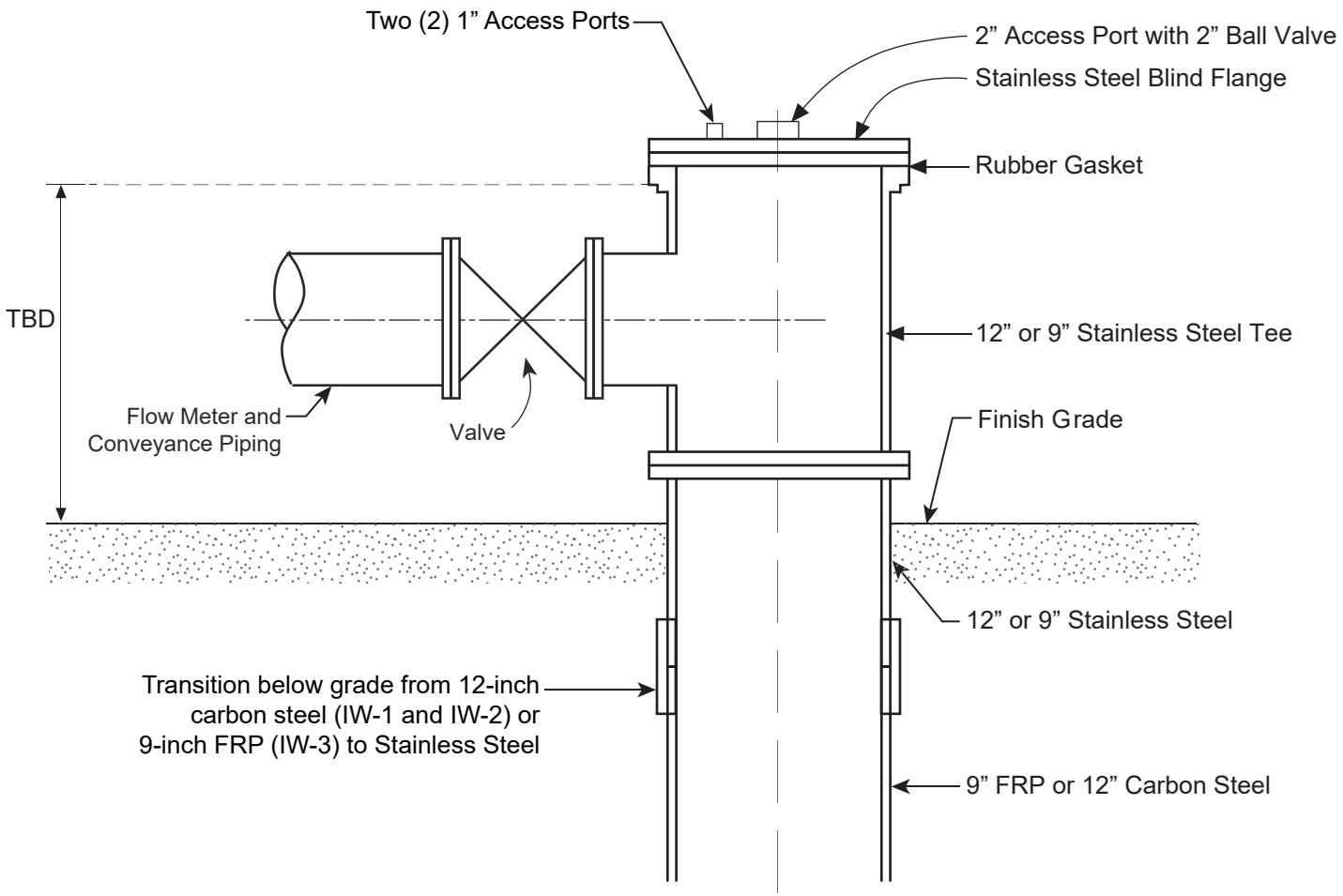
Not to Scale

DRAWING 3
Typical Pad Monitor Well
Construction Diagram



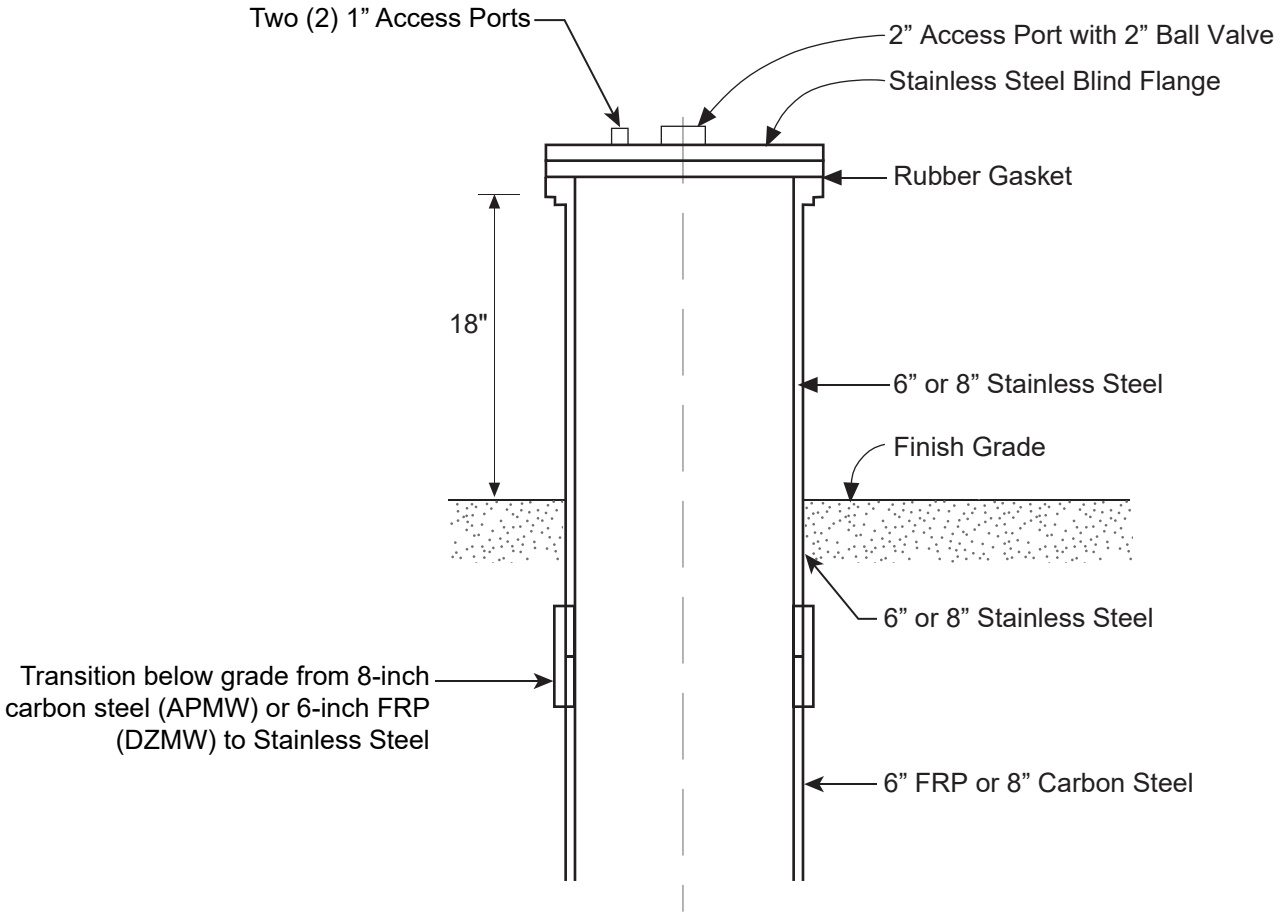
DRAWING 4
Conceptual Class I Injection Well System Construction Details
Manatee County Master Reuse Wet Weather Management Well System – Bid Documents

D4-Conceptual Class I Wells_v3.ai 9/1/16



NOTE: Surface and Intermediate casings will be finished two-feet below grade.

DRAWING 5
IW Well Temporary Wellhead Completion
Manatee County Master Reuse Wet Weather Management Well System – Bid Documents

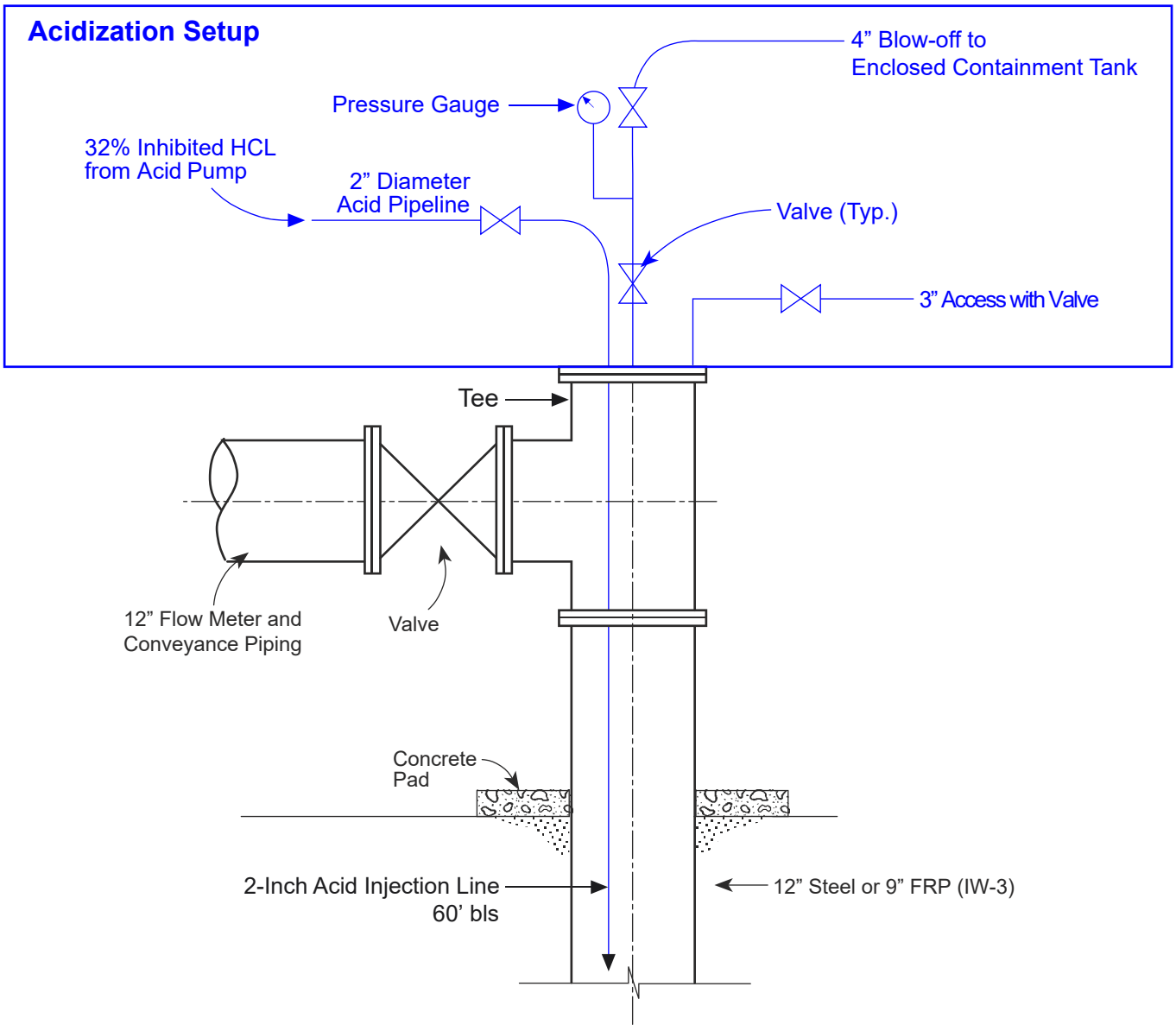


NOTE: Surface and Intermediate casings will be finished two-feet below grade.

DRAWING 6

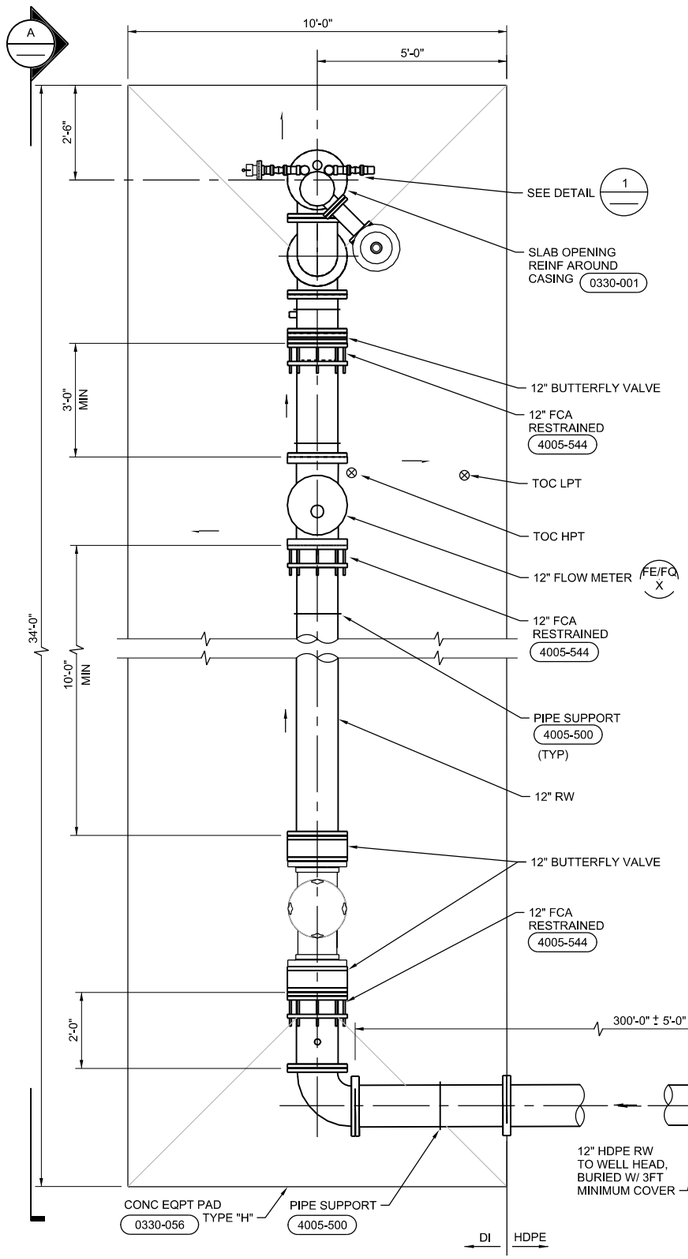
DZMW and APMW Well Temporary Wellhead Completion

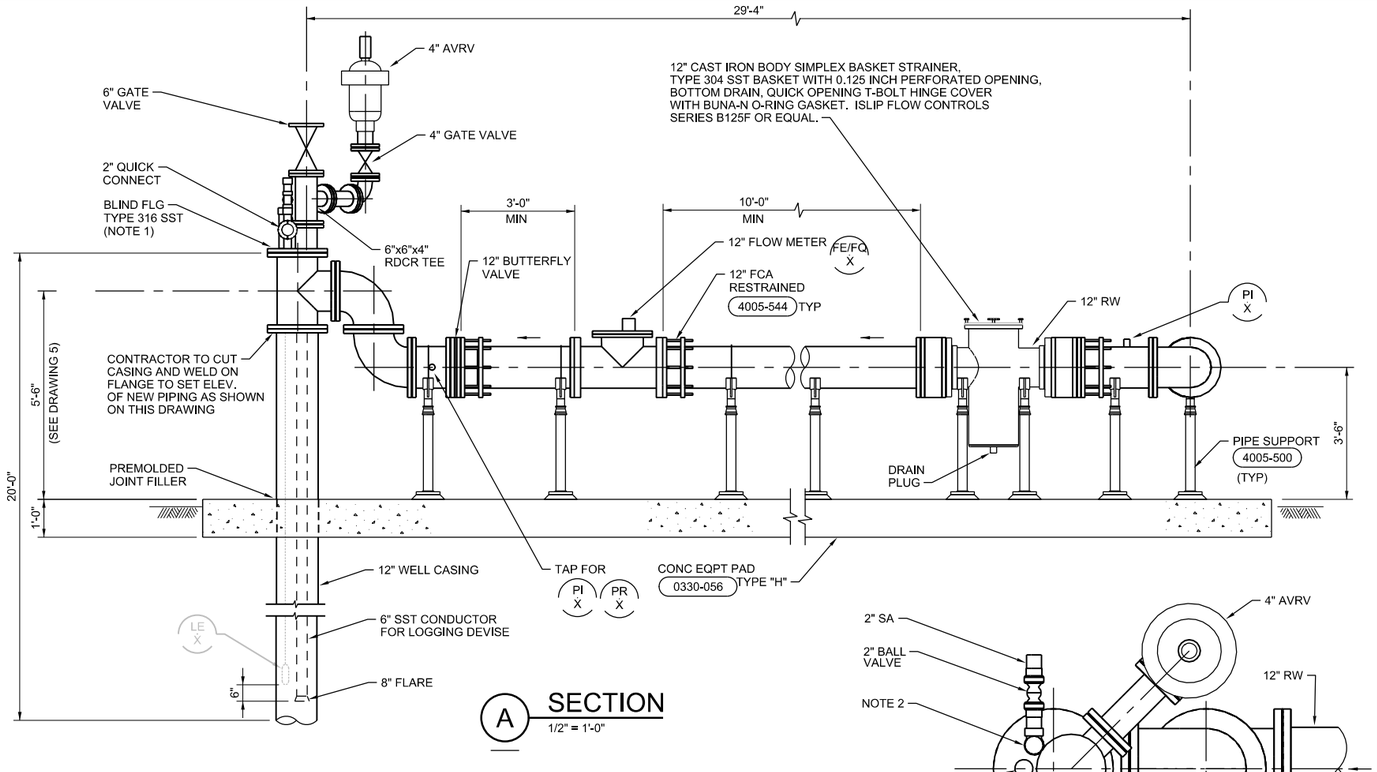
Manatee County Master Reuse Wet Weather Management Well System – Bid Documents



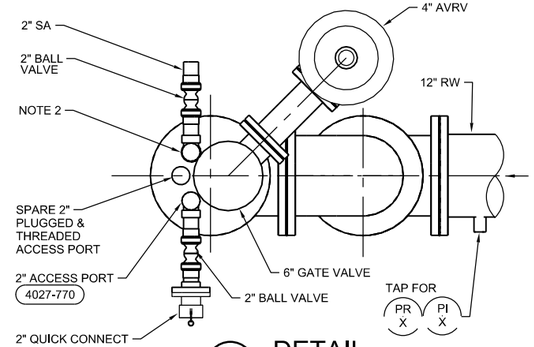
IW-1, 2, 3 Wellhead

bls = below land surface



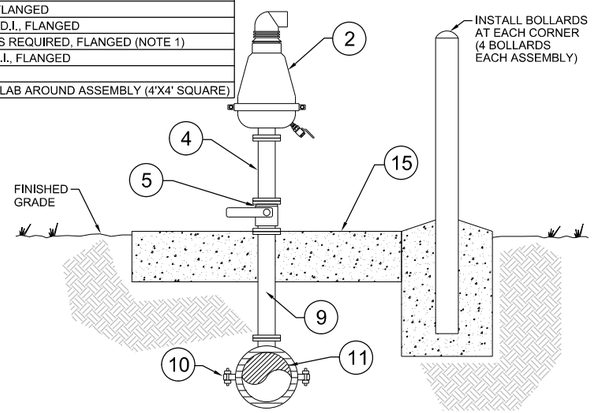


A SECTION
1/2" = 1'-0"



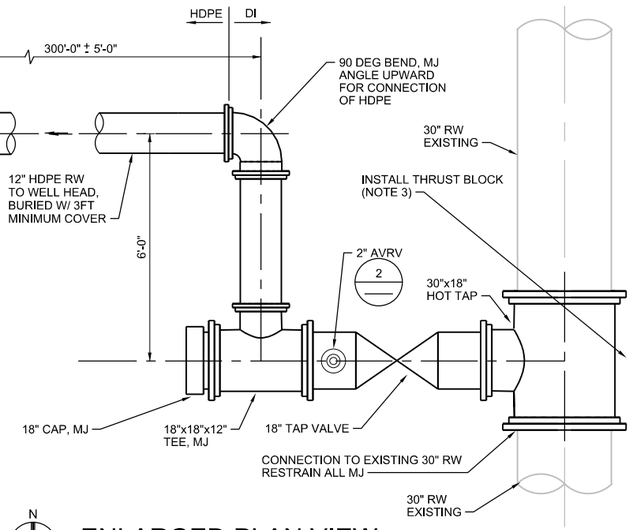
1 DETAIL
1" = 1'-0"

MATERIALS		
ITEM	QUANT.	DESCRIPTION
2	1	RECLAIMED WATER AIR/VACUUM RELEASE VALVE V750
4	1	4" PIPE, D.I., 1' LONG, FLANGED
5	1	4" BUTTERFLY VALVE, D.I., FLANGED
9	1	4" PIPE, D.I. LENGTH AS REQUIRED, FLANGED (NOTE 1)
10	1	4" TAPPING SLEEVE, D.I., FLANGED
11	1	18" PIPE, D.I.
15	1	4" THICK CONCRETE SLAB AROUND ASSEMBLY (4'X4' SQUARE)



NOTE:
1. PROVIDE OFFSET IN THE 4" PIPE IF NESSARY TO LOCATE THE ABOVE GROUND VALVE A MIN OF 3' OFF ROAD. MAINTAIN MIN 2% SLOPE DRAIN TO THE PIPE.

2 ABOVE GROUND AIR/VACUUM RELEASE VALVE
NTS



N
ENLARGED PLAN VIEW
1/2" = 1'-0"

GENERAL NOTES:

1. SEE P&ID DRAWINGS FOR INSTRUMENT AND CONTROL INSTALLATION DETAILS.
2. ALL BURIED PIPES SHALL BE RESTRAINED.

NOTES:

1. WELL HEAD BLIND FLANGE SHALL BE TYPE 316 SST. WELD 6" SCHEDULE 10 TYPE 316 SST PIPE TO BLIND FLANGE FOR LOGGING.
2. FOR WELL HEAD CONNECTION OF LEVEL TRANSMITTER. 4091-277BG
3. CONTRACTOR TO DESIGN AND INSTALL THRUST BLOCK. SUBMIT CALCULATION SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN FLORIDA FOR APPROVAL.

NO.	DATE	DSGN	DR	CHK	APVD	BY	APVD
		T FU	AL PASTRANA	CHECKED-BY	APVD	REVISION	SEALNAME

3011 S.W. WILLISTON ROAD
GAINESVILLE, FLORIDA 32608
EB0000072 · AAC001992
CUSTOM1

WET WEATHER MANAGEMENT
WELL SYSTEM
MANATEE COUNTY
MANATEE COUNTY, FLORIDA

ch2m:

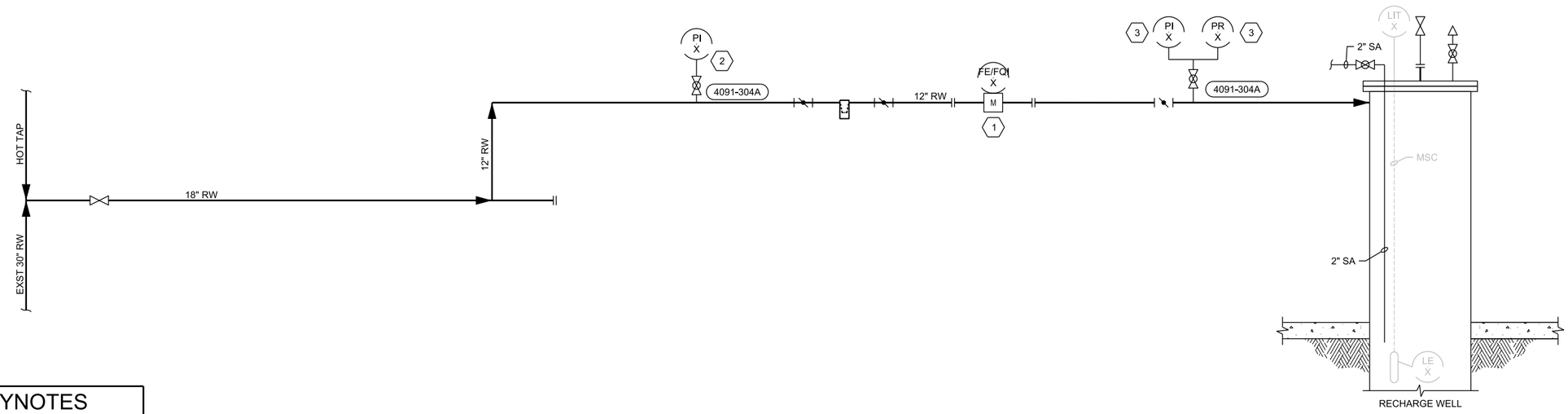
YARD PIPING

INJECTION WELL # 1
ENLARGED PLAN
TEMPORARY PIPING

PRELIMINARY DESIGN

AS NOTED	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	OCTOBER 2016
PROJ	674077
DWG	005-Y-2001
SHEET	ShtNum of ShtTot

FILENAME: 005-Y-2001_674077.dgn PLOT DATE: 2016\11\07 PLOT TIME: 1:09:54 PM



SHEET KEYNOTES

1. MODEL MT112-111 FLOW TUBE WITH FM1041211200 PROPELLER METER AND FT194-11 DISPLAY/TOTALIZER MANUFACTURED BY SPARLING INSTRUMENTS, INC. (EL MONTE, CA).
2. TYPE 1259 (MODEL 45-1259-S-L-NH-200) PRESSURE GAUGE MANUFACTURED BY ASHCROFT, INC. (STRATFORD, CT).
3. MODEL LPR-31; -200 PRESSURE RECORDER MANUFACTURED BY TELOG INSTRUMENTS, INC. (VICTOR, NY).

NO.	DSGN	DATE	REVISION	BY	APVD
	D EIKE		DR AL PASTRANA CHK	CHECKED-BY	APVD

SEALNAME

3011 S.W. WILLISTON ROAD
GAINESVILLE, FLORIDA 32608
EB0000072 AAC001992

WET WEATHER MANAGEMENT
WELL SYSTEM
MANATEE COUNTY
MANATEE COUNTY, FLORIDA

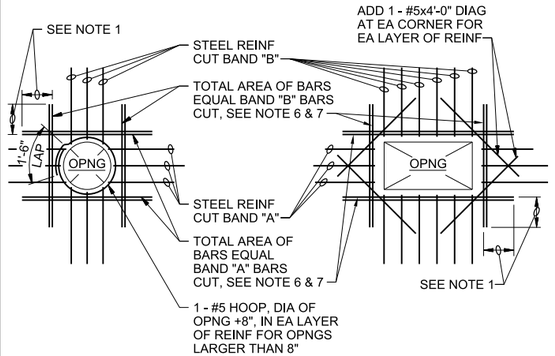
INSTRUMENTATION AND CONTROL

P&ID
INJECTION WELL # 1
TEMPORARY PIPE

PRELIMINARY DESIGN

NTS	
VERIFY SCALE	
BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"	
DATE	OCTOBER 2016
PROJ	674077
DWG	D008-N-6001
SHEET	ShtNum of ShtTot

FILENAME: 008-N-6001_674077.dgn PLOT DATE: 11/3/2016 PLOT TIME: 6:08:11 AM



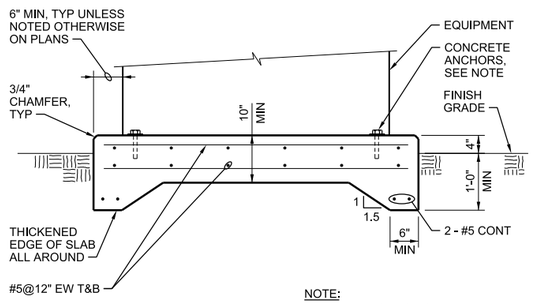
NOTES:

1. PROVIDE MINIMUM LAP, SEE GENERAL STRUCTURAL NOTES.
2. TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS OF BELOW GRADE AND HYDRAULIC STRUCTURES AND ALL STRUCTURAL CONCRETE SLABS UNLESS INDICATED OTHERWISE ON PLANS.
3. DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.
4. PROVIDE A MINIMUM OF 2 "A" BARS AND 2 "B" BARS EACH SIDE OF OPENING (1 EACH FACE), INCLUDING DOWELS AND CORNER BARS, TYPICAL.
5. FOR OPENINGS LARGER THAN 8'-0", REINFORCE SAME AS FOR 8'-0" OPENINGS.
6. SPACE AT 3 BAR DIAMETERS (OR 3" MINIMUM) ON CENTER. LOCATE HALF OF TOTAL AREA ON EACH SIDE OF OPENING.
7. AT OPENINGS WITHIN 12" OF AN INTERSECTING WALL OR SLAB, PROVIDE ONLY THE EXTRA REINFORCEMENT WHICH WILL FIT, AT THE BAR SPACING IN NOTE 6.

OPENING REINFORCING

NTS

0330-001



NOTE:
WHEN ANCHORAGE OF EQUIPMENT TO PAD IS REQUIRED, USE CONCRETE ANCHORS SPECIFIED.

TYPE H

NOTES:

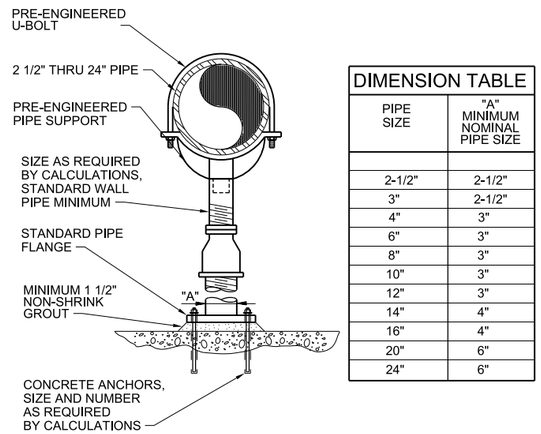
1. PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS OR AS INDICATED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER AND AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE OR OTHER ACCEPTABLE MEANS, MATCHING THE BASE PLATE, WHILE PAD IS BEING PLACED.
3. ANCHOR BOLT SLEEVES SHALL BE USED TO PROVIDE MINIMUM ANCHOR BOLT MOVEMENT OF 1/2" IN ALL HORIZONTAL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER.
4. ANCHOR BOLT SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT AFTER BOLTS ARE ALIGNED.
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS INDICATED OTHERWISE.
6. WEDGES, SHIMS, OR LEVELING NUTS SHALL BE USED TO SUPPORT THE BASE WHILE THE GROUT IS PLACED. WEDGES OR SHIMS SHALL BE REMOVED AFTER GROUT IS SET AND PACK VOID WITH GROUT.
7. HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT ABOVE SUPPORTING SLAB (SEE TABLE BELOW).
8. AT CONTRACTOR'S OPTION, CONCRETE ANCHORS MAY BE USED IN LIEU OF CAST-IN-PLACE ANCHOR BOLTS FOR EQUIPMENT ANCHOR BOLTS LESS THAN 3/4" DIAMETER WHEN APPROVED BY THE EQUIPMENT MANUFACTURER AND APPROVED BY THE ENGINEER. ANCHORS SHALL BE INSTALLED WITH 4" MINIMUM EDGE DISTANCE IN EACH DIRECTION.

AB DIA (IN.)	1/2	5/8	3/4	7/8	1	1 1/4	1 3/8	1 1/2	1 3/4	2
MIN PAD HT (IN.)	7	8 1/2	10	11	12 1/2	15	16 1/2	18	21	24

CONCRETE EQUIPMENT PAD

NTS

0330-056



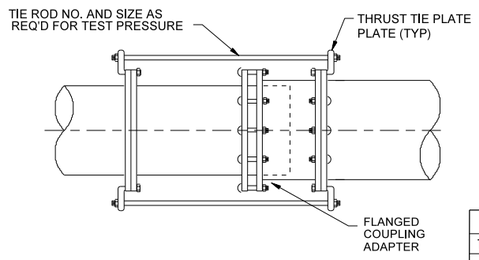
DIMENSION TABLE	
PIPE SIZE	"A" MINIMUM NOMINAL PIPE SIZE
2-1/2"	2-1/2"
3"	2-1/2"
4"	3"
6"	3"
8"	3"
10"	3"
12"	3"
14"	4"
16"	4"
20"	6"
24"	6"

NOTE:
SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED.

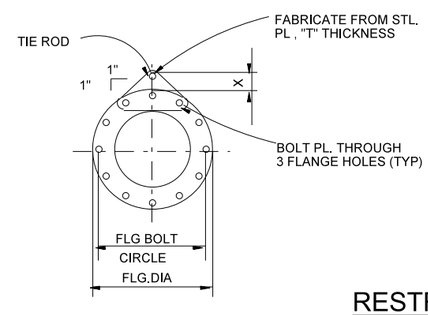
PIPE SUPPORT -SADDLE SUPPORT PEDESTAL TYPE - ADJUSTABLE

NTS

4005-500



PIPE SIZE	X	T @ TEST PRESS <150 PSI	T @ TEST 150< PRESS <375 PSI
6"	2 3/4 "	5/8 "	5/8 "
8"	2 3/4 "	5/8 "	3/4 "
10"	2 3/4 "	5/8 "	1"
12"	3"	3/4 "	1"
14	3 1/4 "	3/4 "	1"
16"	3 1/4 "	1"	1"
18"	3 1/2 "	1"	1"
20"	3 3/4 "	1"	1 1/2 "
22"	4"	1"	1 3/4 "
24"	4 1/4 "	1 1/4 "	1 3/4 "



TIE ROD SCHEDULE													
TEST PRESSURE		25 PSI		50 PSI		100 PSI		150 PSI		225 PSI		375 PSI	
PIPE DIAM. (IN.)	MINIMUM PIPE WALL THICKNESS (IN.)	TIE RODS		TIE RODS		TIE RODS		TIE RODS		TIE RODS		TIE RODS	
		DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD	DIA. (IN.)	NO. REQD
6	3/16	–	–	–	–	5/8	2	5/8	2	5/8	2	5/8	2
8	3/16	–	–	–	–	5/8	2	5/8	2	5/8	2	3/4	2
10	3/16	–	–	–	–	5/8	2	5/8	2	5/8	2	7/8	2
12	3/16	5/8	2	5/8	2	5/8	2	5/8	2	5/8	2	7/8	4
14	3/16	5/8	2	5/8	2	3/4	2	3/4	2	3/4	4	1	4
16	3/16	5/8	2	5/8	2	3/4	2	7/8	2	7/8	4	1	4
18	1/4	5/8	2	5/8	2	7/8	2	1	2	1	4	1-1/4	4
20	1/4	5/8	2	3/4	2	7/8	2	7/8	4	7/8	4	1-1/4	4
22	1/4	5/8	2	3/4	2	3/4	4	7/8	4	7/8	4	1-1/2	4
24	1/4	5/8	2	3/4	2	7/8	4	1	4	1	6	1-1/2	6

NOTES:

1. TIE RODS SHALL CONFORM TO ASTM A193 GRADE B7.
2. NUTS SHALL CONFORM TO ASTM A194 GRADE 2H.
3. PLATE SHALL CONFORM TO ASTM A283 GRADE D.
4. TIE ROD NUTS SHALL BE TIGHTENED GRADUALLY AND EQUALLY IN STAGES TO PREVENT UNEVEN ALIGNMENT AND TO ALLOW EQUAL STRESS ON ALL TIE RODS UNDER PRESSURE. TIGHTEN UNTIL SNUG. THREADS SHALL PROTRUDE FROM NUTS. PEEN THREADS AFTER TIGHTENING NUTS.

CONTRACTOR SHALL USE DATA FOR ONLY THOSE PIPE SIZES AND TEST PRESSURES SPECIFIED IN THIS CONTRACT.

RESTRAINED FLANGE COUPLING ADAPTER

NTS

4005-544

NO.	DATE	DSGN	DR	CHECKED-BY	APVD	BY	APVD
REVISION		T FU	L FINK	CHK	APVD		SEALNAME

3011 S.W. WILLISTON ROAD
GAINESVILLE, FLORIDA 32608
EB0000072 · AAC001992
CUSTOM1

WET WEATHER MANAGEMENT
WELL SYSTEM
MANATEE COUNTY
MANATEE COUNTY, FLORIDA

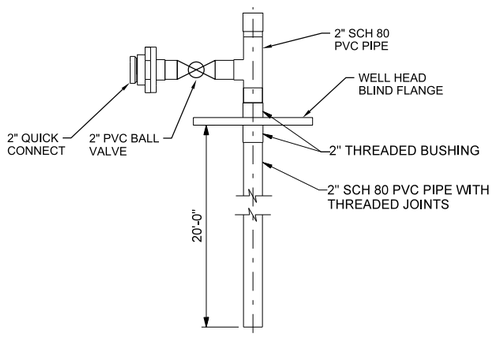
YARD PIPING

STANDARD DETAILS

AS NOTED
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	OCTOBER 2016
PROJ	674077
DWG	950-Y-501
SHEET	ShtNum of ShtTot

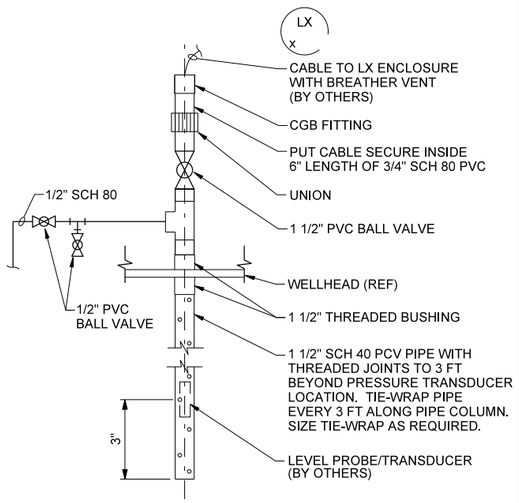
PRELIMINARY DESIGN



WELL HEAD ACCESS PORT

NTS

4027-770



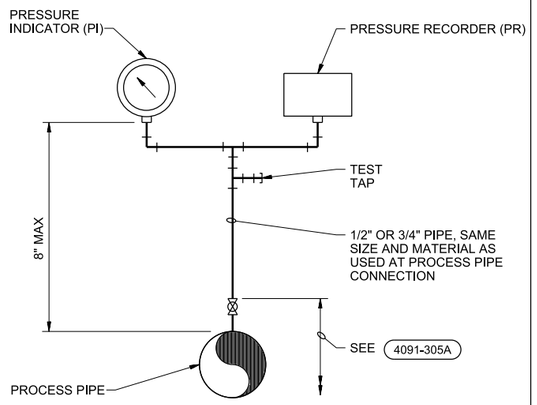
GENERAL NOTES:

1. FOR ARTESIAN WELLS THAT DEVELOP PRESSURES GREATER THAN ATMOSPHERE

HYDROSTATIC LEVEL TRANSMITTER - ARTESIAN WELL

NTS

4091-277BG



DIRECT MOUNTING

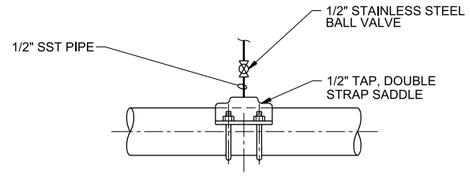
NOTES:

1. INDICATOR AND SWITCH INSTALLATION SHOWN. FOR SINGLE INSTRUMENT INSTALLATIONS, MOUNT DEVICE DIRECTLY ABOVE TEST TAP.

PRESSURE SWITCH AND INDICATOR INSTALLATION

NTS

4091-304A



CEMENT LINE STEEL PIPE, CAST IRON PIPE AND DUCTILE IRON PIPE

PRESSURE CONNECTION INSTALLATION

NTS

4091-305A

NO.	DATE	DSGN	DR	CHK	APVD	BY	REVISION	CHECKED-BY	APVD	SEALNAME
		T FU		L FINK						

3011 S.W. WILLISTON ROAD
GAINESVILLE, FLORIDA 32608
EB0000072 · AAC001992

CUSTOM1

WET WEATHER MANAGEMENT
WELL SYSTEM
MANATEE COUNTY
MANATEE COUNTY, FLORIDA

YARD PIPING

STANDARD DETAILS

PRELIMINARY DESIGN

AS NOTED

VERIFY SCALE

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	OCTOBER 2016
PROJ	674077
DWG	950-Y-502
SHEET	ShtNum of ShtTot

FILENAME: 950-Y-5002_674077.dgn PLOT DATE: 10/12/2016 PLOT TIME: 10:15:21 AM