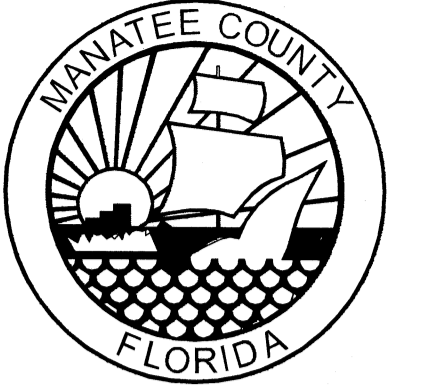


# MANATEE COUNTY, FLORIDA FORCE MAIN 14 REPLACEMENT NORTH SHORE DRIVE, ANNA MARIA 404-6079980

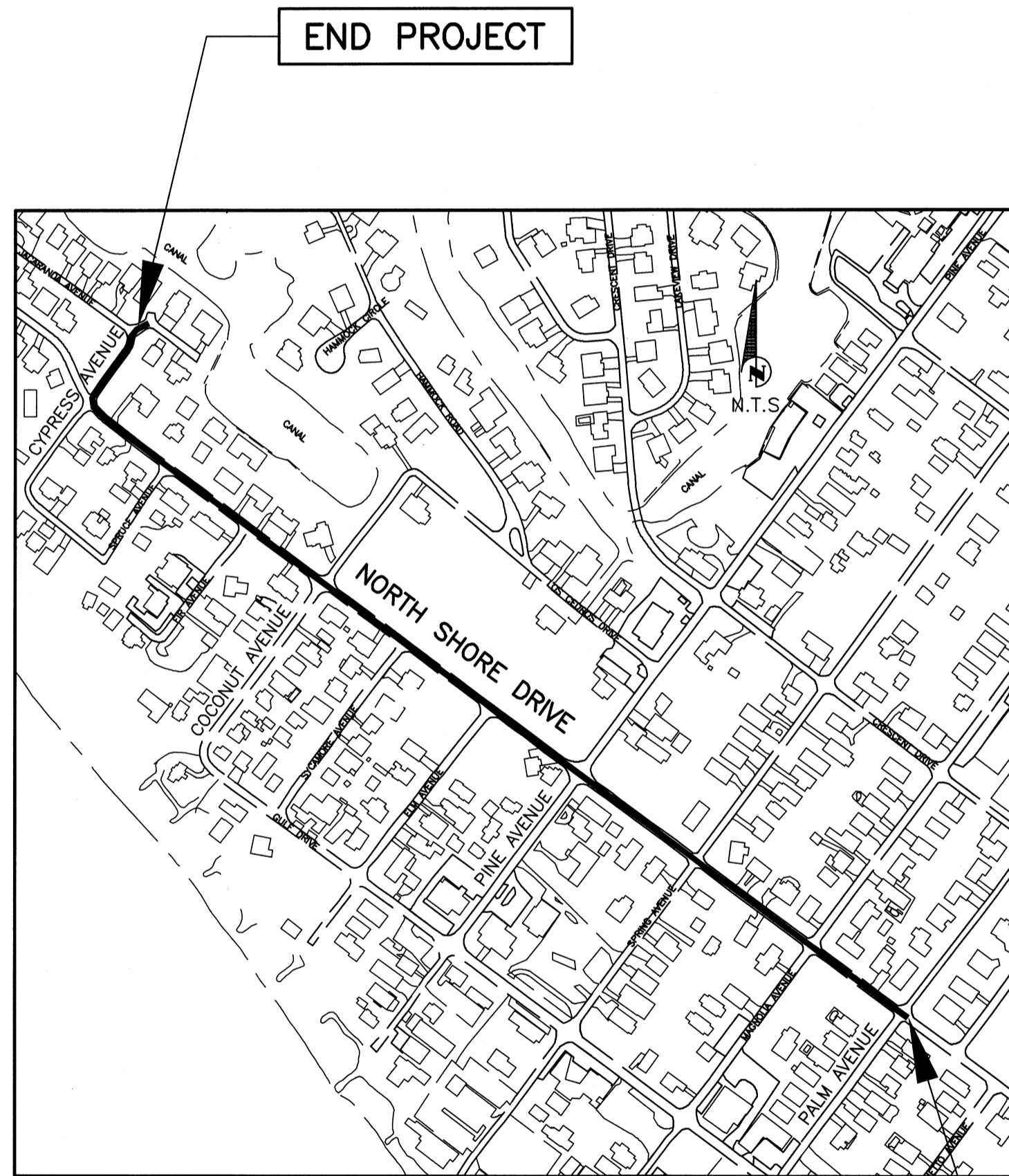
APRIL 2011

MANATEE COUNTY GOVERNMENT  
PUBLIC WORKS DEPARTMENT  
ENGINEERING SERVICES

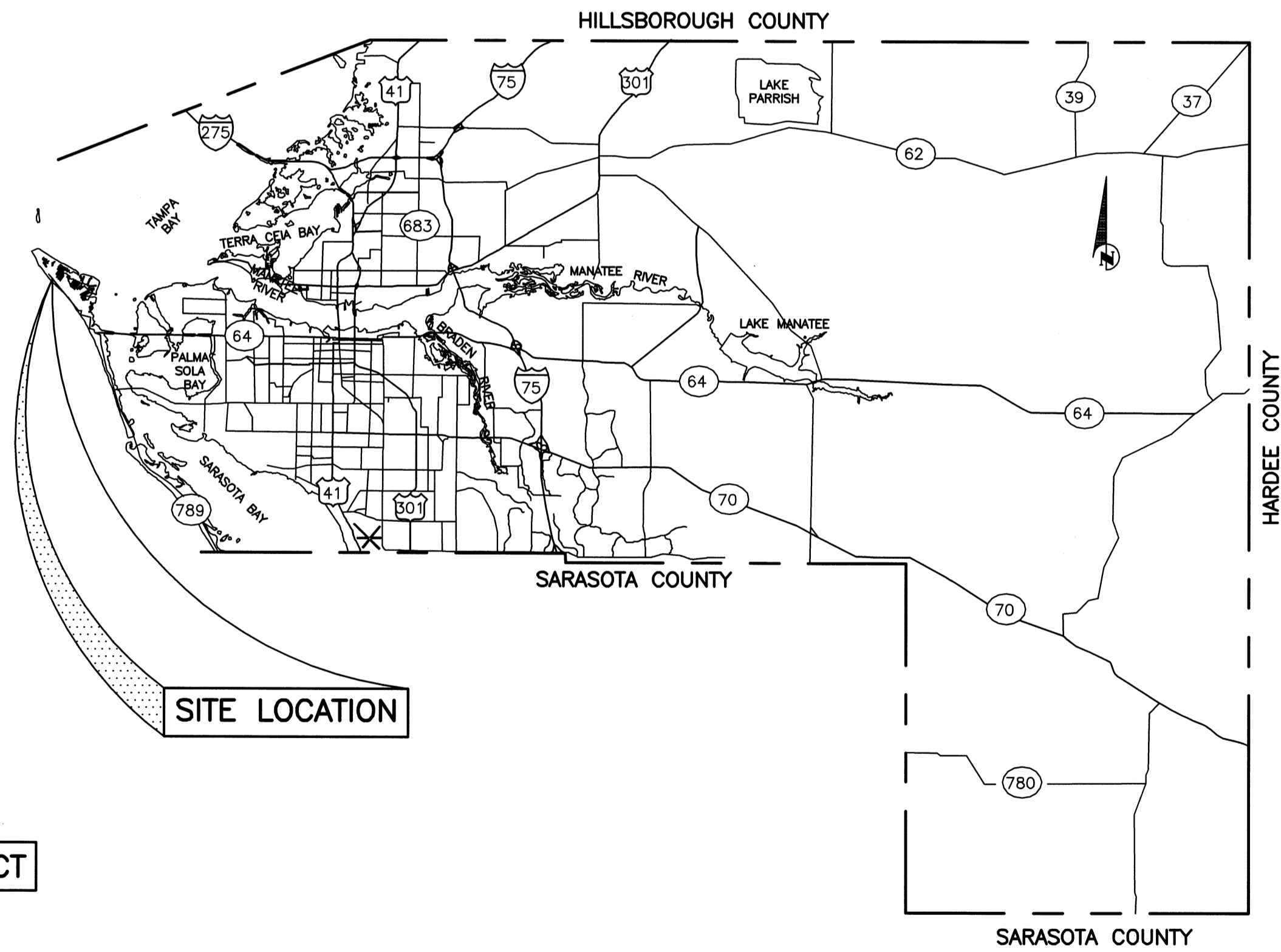


1022 26th Avenue East  
Bradenton, FL 34208

**FORCE MAIN 14 REPLACEMENT  
NORTH SHORE DR., ANNA MARIA  
COVER SHEET**



VICINITY MAP  
N.T.S.



SITE LOCATION

## BID DOCUMENTS

NO.	INDEX OF SHEETS
1	COVER SHEET
2	GENERAL NOTES & LEGEND
3-7	PLAN & PROFILE
8-9	DETAILS
10	EROSION CONTROL

**PROJECT DESCRIPTION**

REPLACE A 6" DUCTILE IRON FORCE MAIN ON NORTH SHORE DRIVE FROM CYPRESS AVENUE TO PALM AVENUE WITH A 8" HDPE FORCE MAIN DIRECTIONALLY DRILLED.

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6079980
WORK DIR. #	11.004
SEC./TWN./RGE	18/34S/16E
SCALE	1"=20'
SURVEYED	ZNS 1/7/11
DESIGNED	KE/JS 03/15/11
DRAWN	KE 04/05/11
CHECKED	JS 04/21/11

JAMES STOCKWELL, P.E.  
 LICENSE No. 67198  
 6/3/11  
 STATE OF FLORIDA  
 PROFESSIONAL ENGINEER

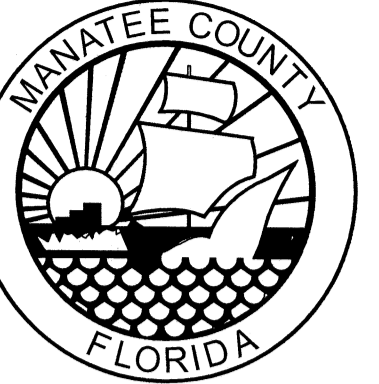
SEC.-18, TWP.-34S, RGE.-16E

COPYRIGHT 2010 MANATEE COUNTY GOVERNMENT | S:\P\W\Engineering\Shore\Util\Eng Design\Proj\SAN SWR Proj\14-14-Replace, North Shore DP\Draws\Bin FM-14\_Replace.dwg, 1-Cover, 6/3/2011 2:09 PM Cara Boyer, 12.1221, 11x17



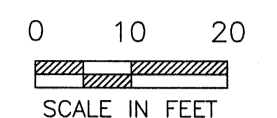
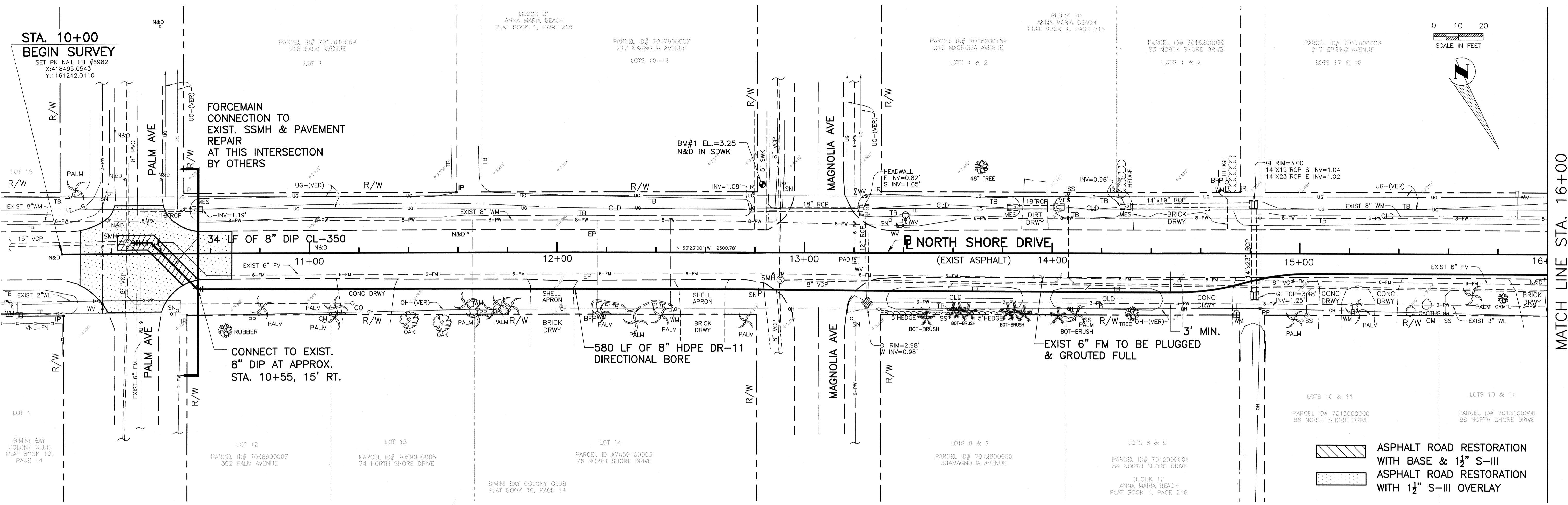
CONTRACTOR SHALL REFERENCE SECTION 14 IN THE CURRENT MANATEE COUNTY UTILITY STANDARDS FOR RECORD DRAWING REQUIREMENTS.

MANATEE COUNTY GOVERNMENT  
PUBLIC WORKS DEPARTMENT  
ENGINEERING SERVICES



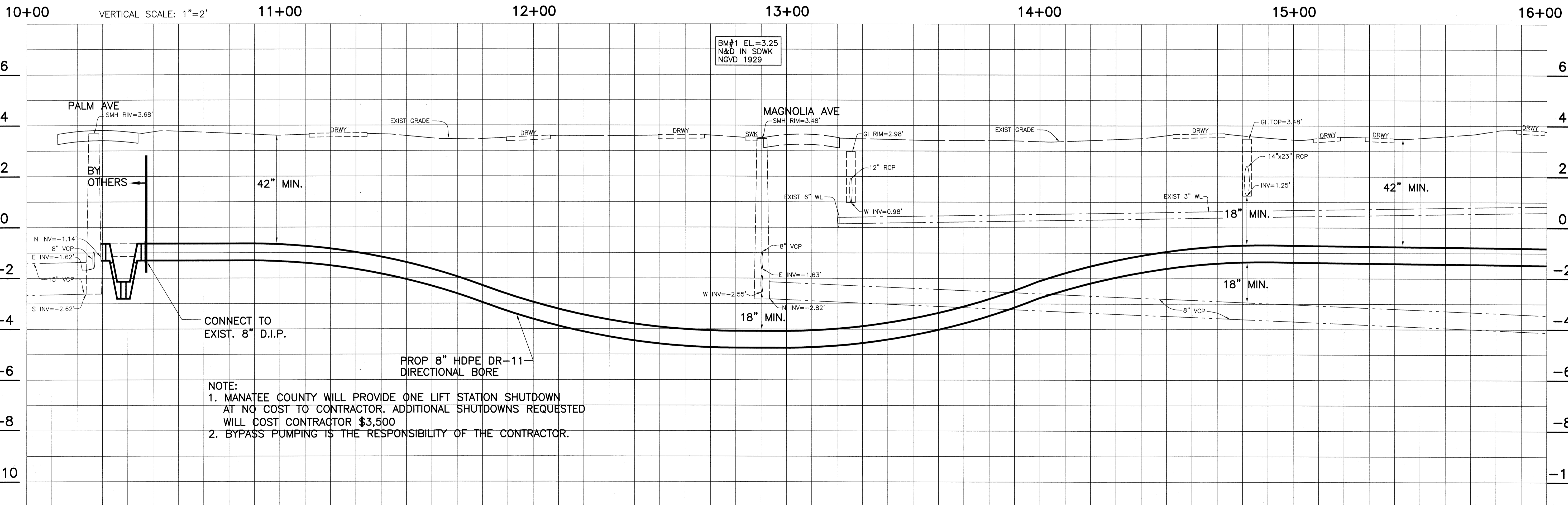
1022 26th Avenue East  
Bradenton, FL 34208

**FORCE MAIN 14 REPLACEMENT  
NORTH SHORE DR., ANNA MARIA  
PLAN & PROFILE STA. 10+00 TO 16+00**



MATCH LINE STA. 16+00

- ASPHALT ROAD RESTORATION WITH BASE & 1 1/2\"/>



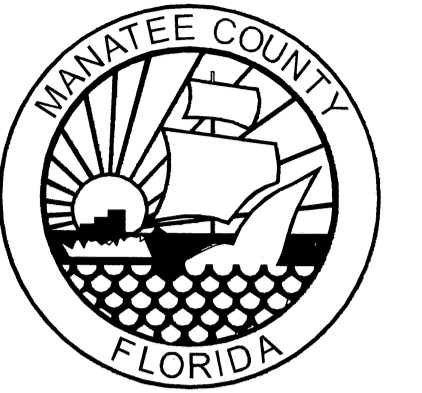
NOTE:  
1. MANATEE COUNTY WILL PROVIDE ONE LIFT STATION SHUTDOWN AT NO COST TO CONTRACTOR. ADDITIONAL SHUTDOWNS REQUESTED WILL COST CONTRACTOR \$3,500  
2. BYPASS PUMPING IS THE RESPONSIBILITY OF THE CONTRACTOR.

NO.	DATE	BY	REVISION DESCRIPTION
PROJECT #	404-6079980		
SURVEY #	11.004		
SEC./TWN./RGE	18/34S/16E		
SCALE	1"=20'		
	BY	DATE	
SURVEYED	ZNS	1/7/11	
DESIGNED	KE/JS	03/15/11	
DRAWN	KE	04/05/11	
CHECKED	JS	04/21/11	
JAMES STOCKWELL, P.E. PROFESSIONAL ENGINEER No. 07198 State of Florida Date			

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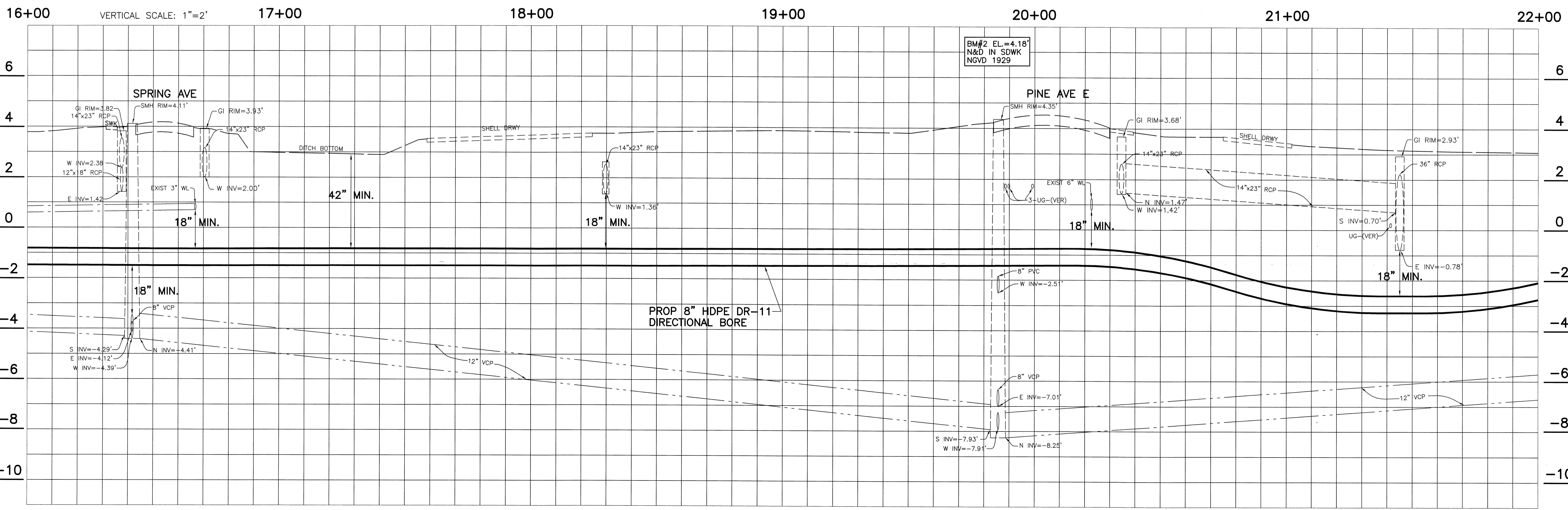
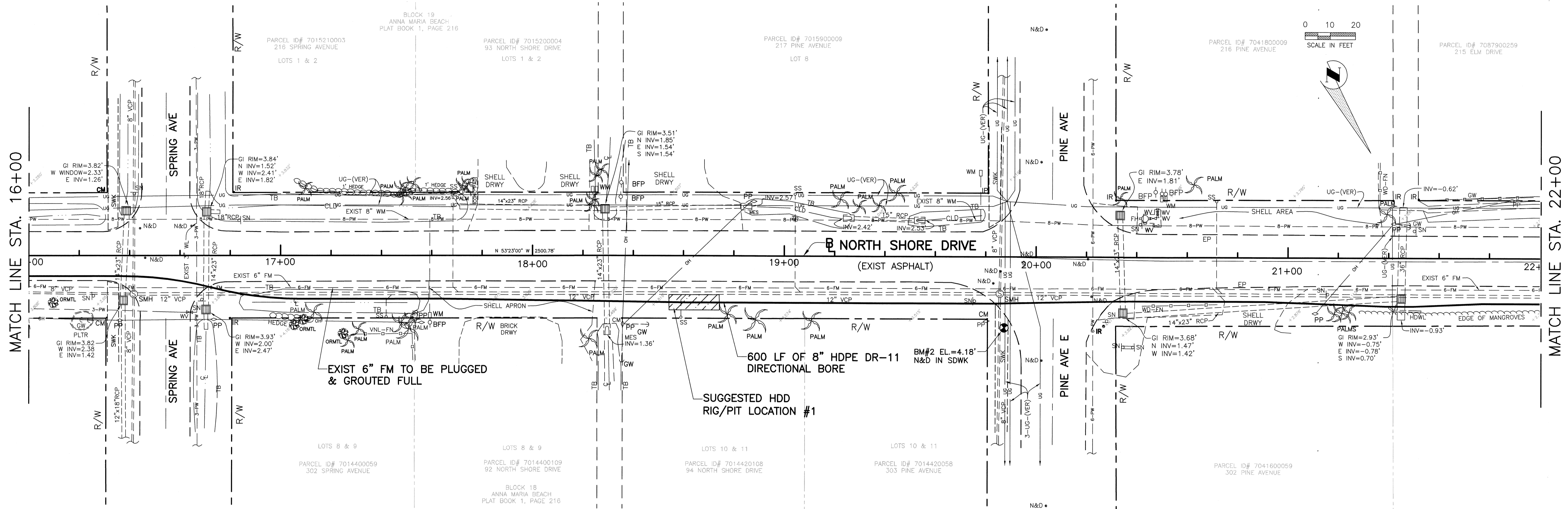
CONTRACTOR SHALL REFERENCE SECTION 14 IN THE CURRENT MANATEE COUNTY UTILITY STANDARDS FOR RECORD DRAWING REQUIREMENTS.

MANATEE COUNTY GOVERNMENT  
PUBLIC WORKS DEPARTMENT  
ENGINEERING SERVICES



1022 26th Avenue East  
Bradenton, FL 34208

**FORCE MAIN 14 REPLACEMENT  
NORTH SHORE DR., ANNA MARIA  
PLAN & PROFILE STA. 16+00 TO 22+00**



NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6079980
SURVEY #	11.004
SEC./TWN./RGE	18/34S/16E
SCALE	1"=20'
SURVEYED	ZNS 1/7/11
DESIGNED	KE/JS 03/15/11
DRAWN	KE 04/05/11
CHECKED	JS 04/21/11

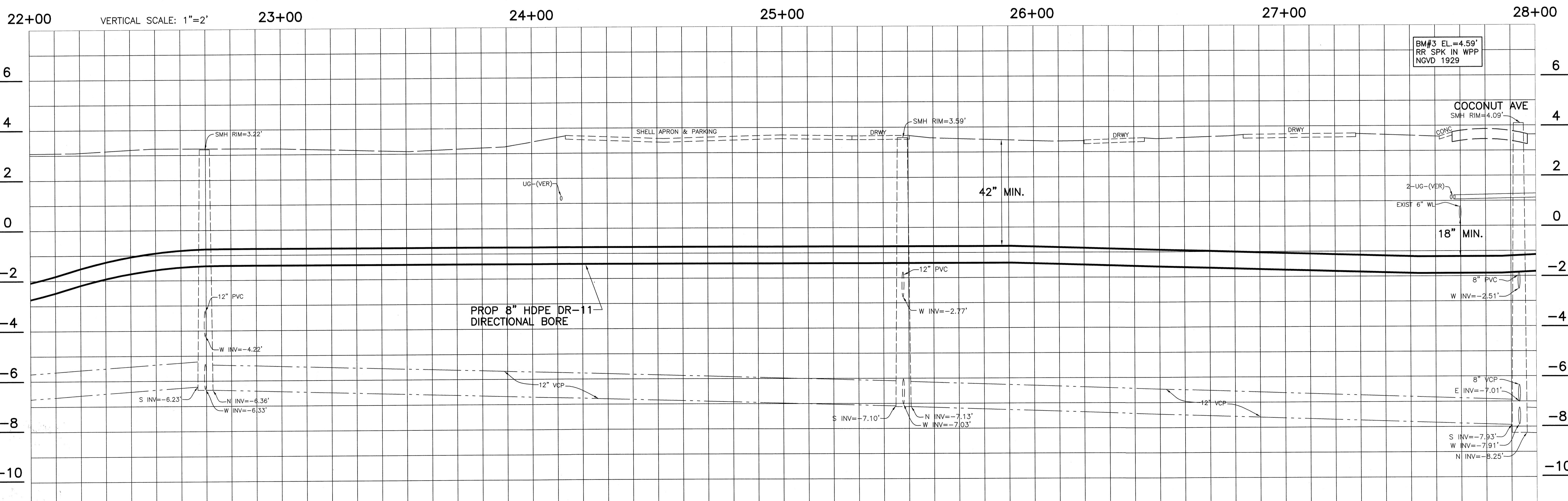
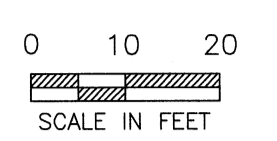
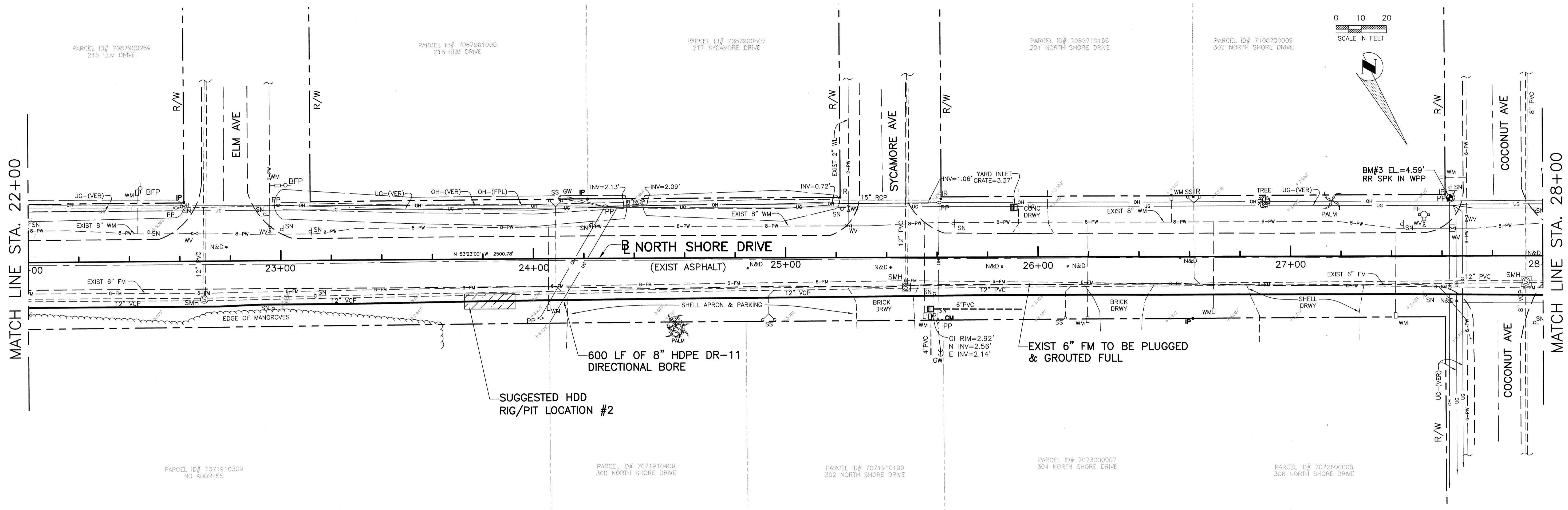
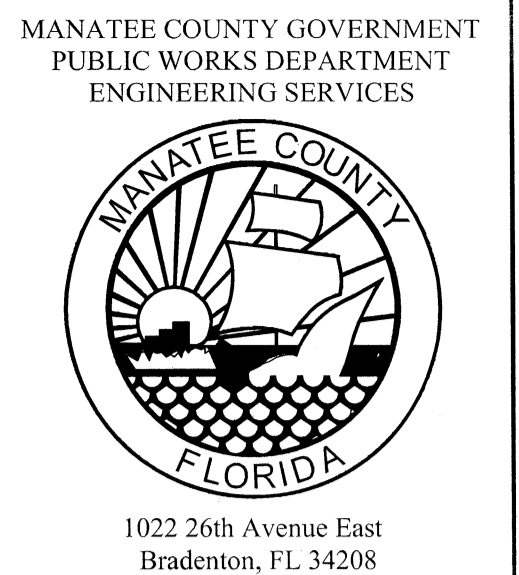
  

JAMES STOCKWELL, P.E.	
FLORIDA PROFESSIONAL ENGINEER LICENSE NO. 67198	DATE
STATE OF FLORIDA	DATE

SHEET 4 OF 10

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CONTRACTOR SHALL REFERENCE SECTION 14 IN THE CURRENT MANATEE COUNTY UTILITY STANDARDS FOR RECORD DRAWING REQUIREMENTS.



**FORCE MAIN 14 REPLACEMENT  
NORTH SHORE DR., ANNA MARIA  
PLAN & PROFILE STA. 22+00 TO 28+00**

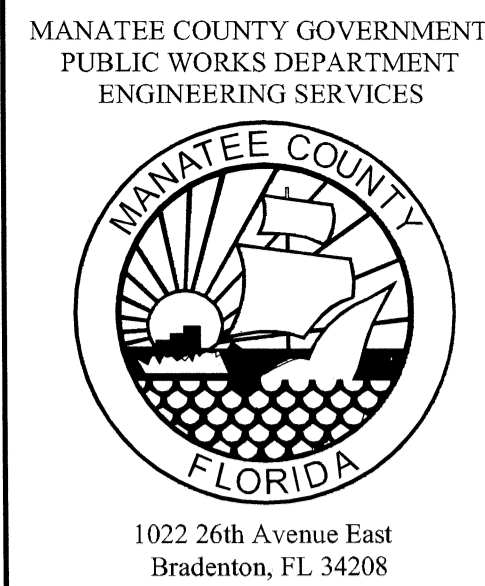
NO.	DATE	REVISION DESCRIPTION

PROJECT #	404-6079980
SURVEY #	11.004
SEC./TWN./RGE	18/34S/16E
SCALE	1"=20'
SURVEYED	ZNS 1/7/11
DESIGNED	KE/JS 03/15/11
DRAWN	KE 04/05/11
CHECKED	JS 04/21/11

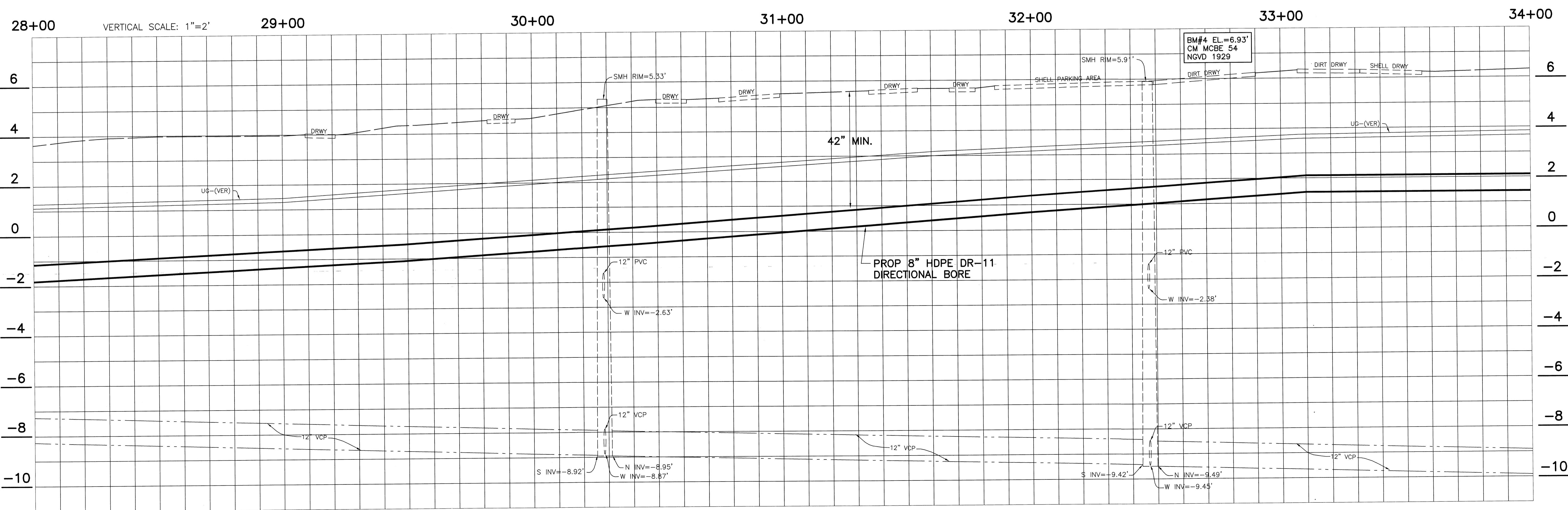
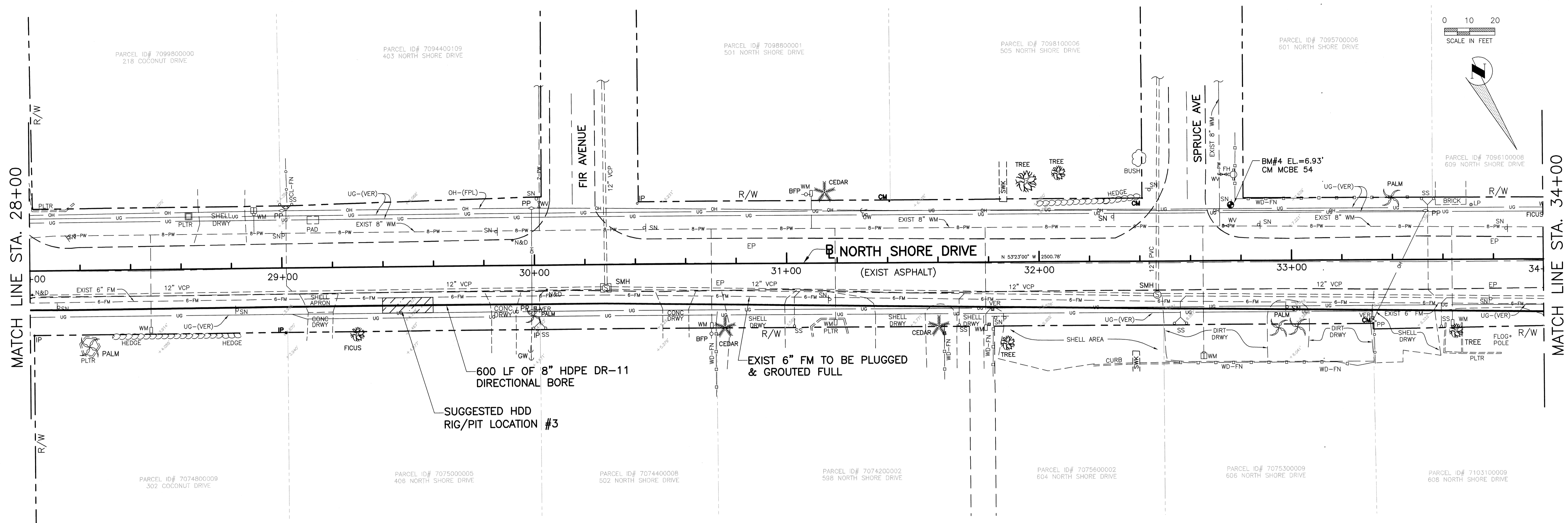
JAMES STOCKWELL, P.E.  
 LICENSE NO. 67198  
 STATE OF FLORIDA  
 PROFESSIONAL ENGINEER  
 CIVIL ENGINEERING

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CONTRACTOR SHALL REFERENCE SECTION 14 IN THE CURRENT MANATEE COUNTY UTILITY STANDARDS FOR RECORD DRAWING REQUIREMENTS.



**FORCE MAIN 14 REPLACEMENT  
NORTH SHORE DR., ANNA MARIA  
PLAN & PROFILE STA. 28+00 TO 34+00**



NO.	REVISION DESCRIPTION	BY	DATE

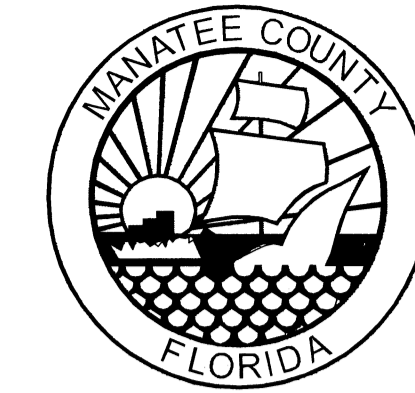
  

PROJECT #	404-6079980
SURVEY #	11.004
SEC./TWN./RGE	18/34S/16E
SCALE	1"=20'
SURVEYED	ZNS 1/7/11
DESIGNED	KE/JS 03/15/11
DRAWN	KE 04/05/11
CHECKED	JS 04/21/11

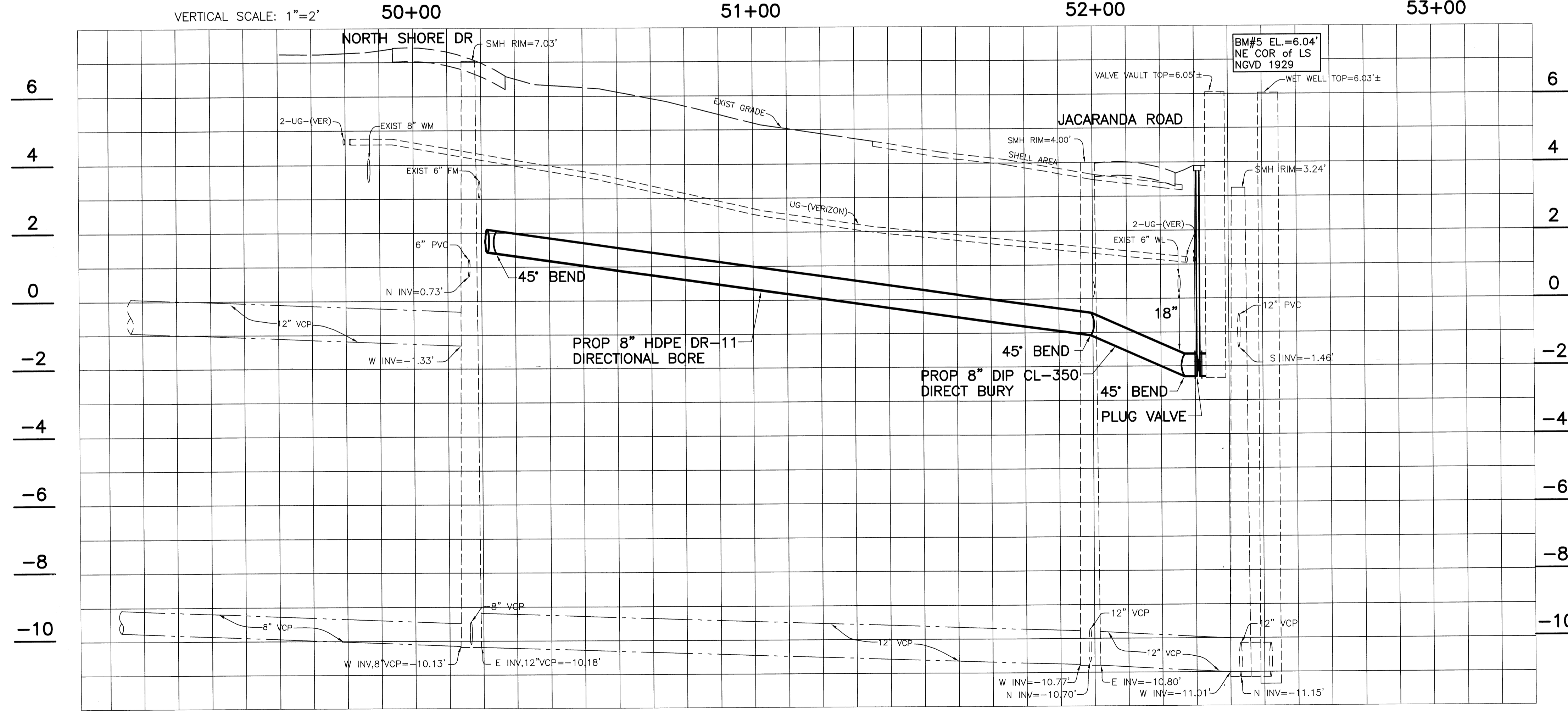
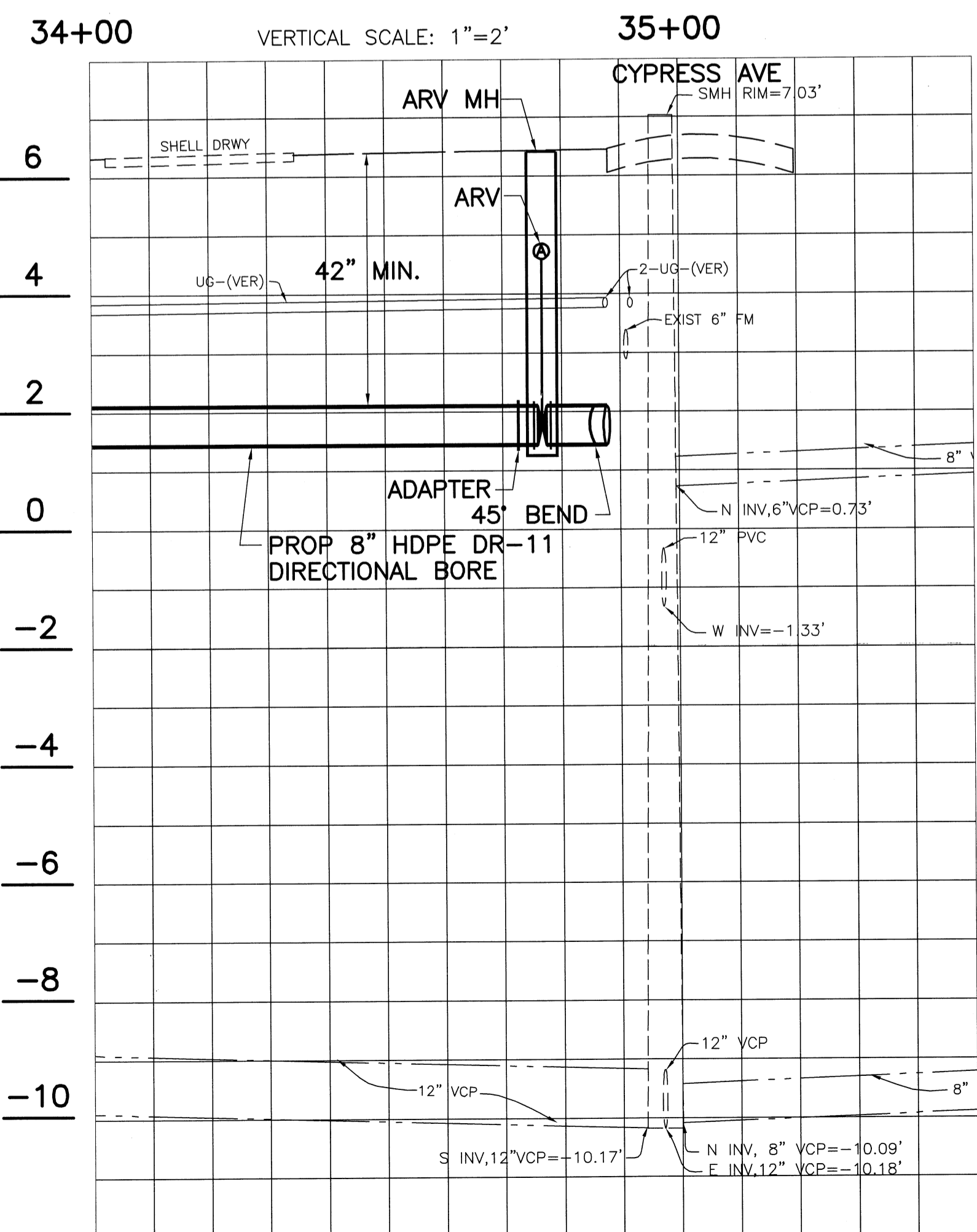
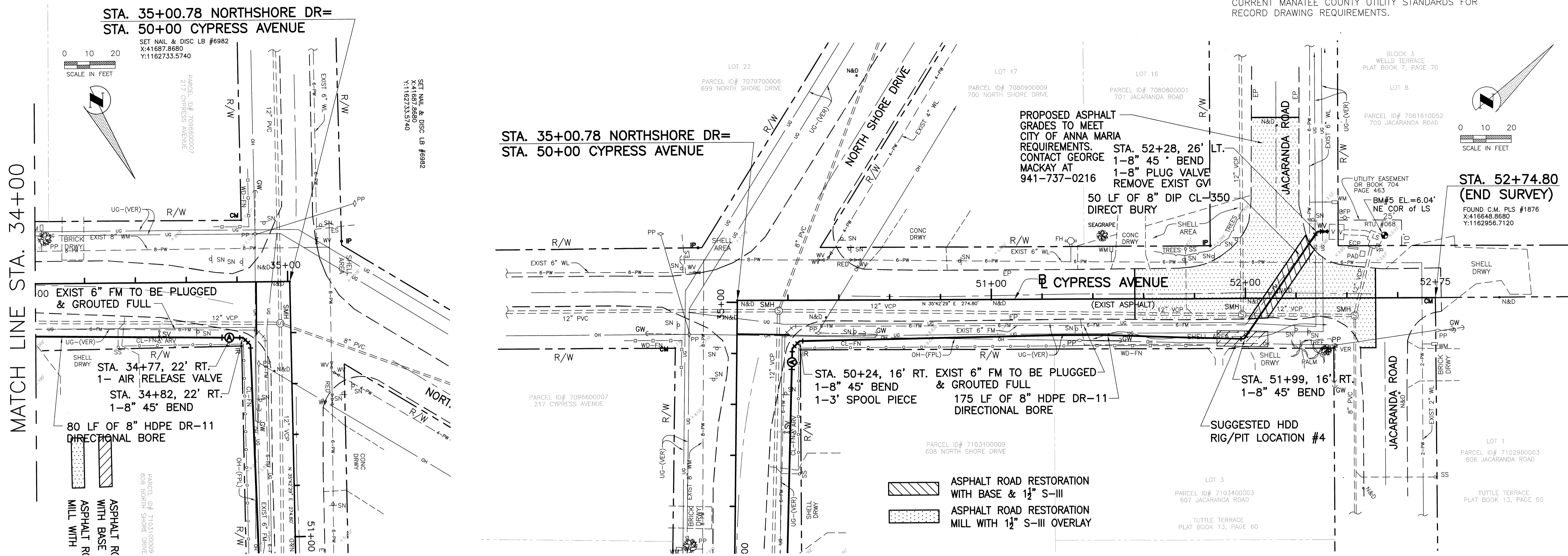
  

JAMES STOCKWELL, P.E.	
No. 67198	
6/21/11	
STATE OF FLORIDA	
Professional Engineer	
Signature	Date

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CONTRACTOR SHALL REFERENCE SECTION 14 IN THE CURRENT MANATEE COUNTY UTILITY STANDARDS FOR RECORD DRAWING REQUIREMENTS.



**FORCE MAIN 14 REPLACEMENT**  
**NORTH SHORE DR., ANNA MARIA**  
**PLAN & PROFILE STA. 34+00 TO 52+00**

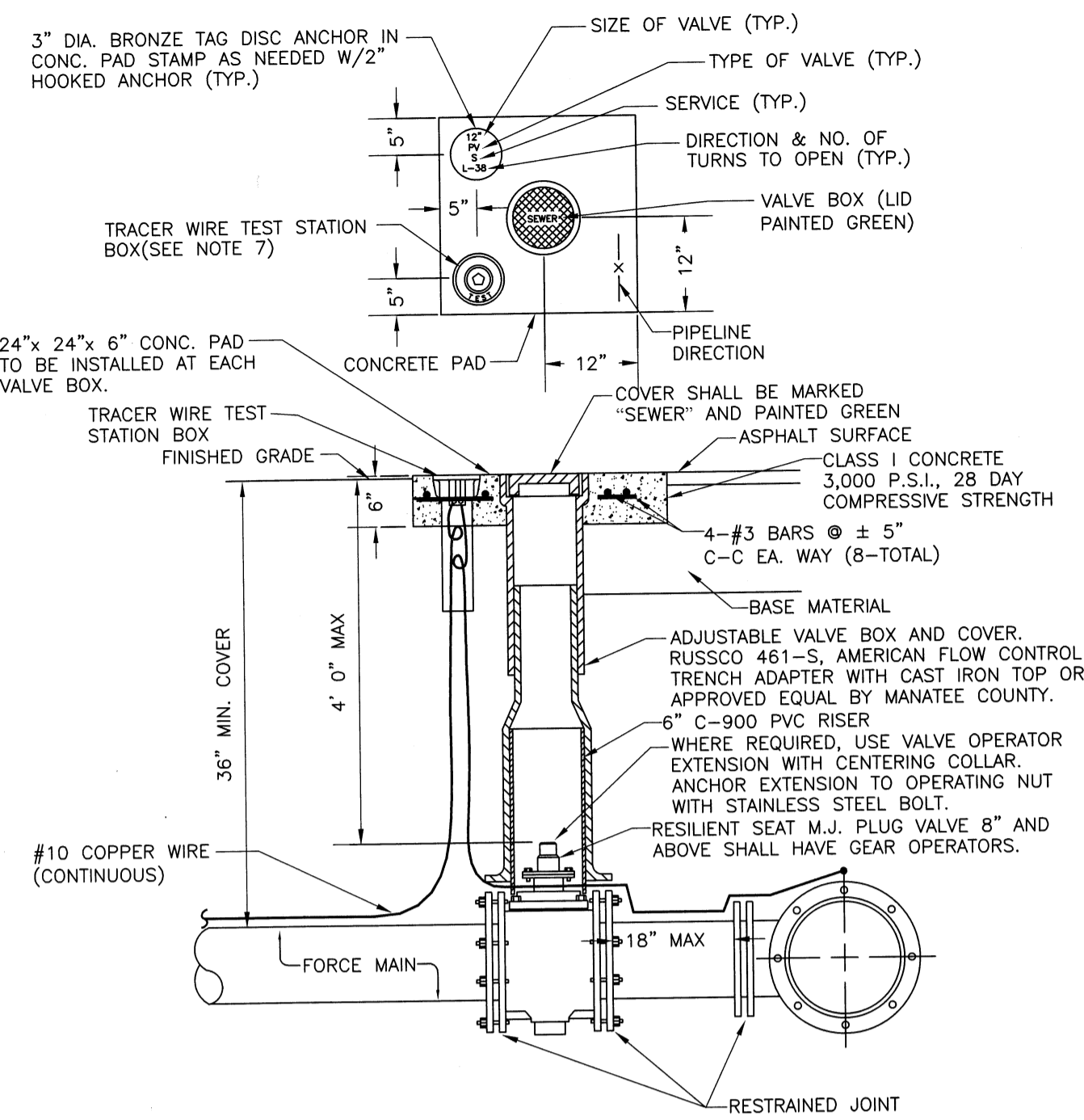
NO.	REVISION DESCRIPTION	DATE

PROJECT #	404-6079980
SURVEY #	11.004
SEC./TWN./RGE	18/34S/16E
SCALE	1"=20'
SURVEYED	ZNS 1/7/11
DESIGNED	KE/JS 03/15/11
DRAWN	KE 04/05/11
CHECKED	JS 04/21/11

JAMES STOCKWELL, P.E.  
FLORIDA LICENSE # 67198  
STATE OF FLORIDA  
PROFESSIONAL ENGINEER

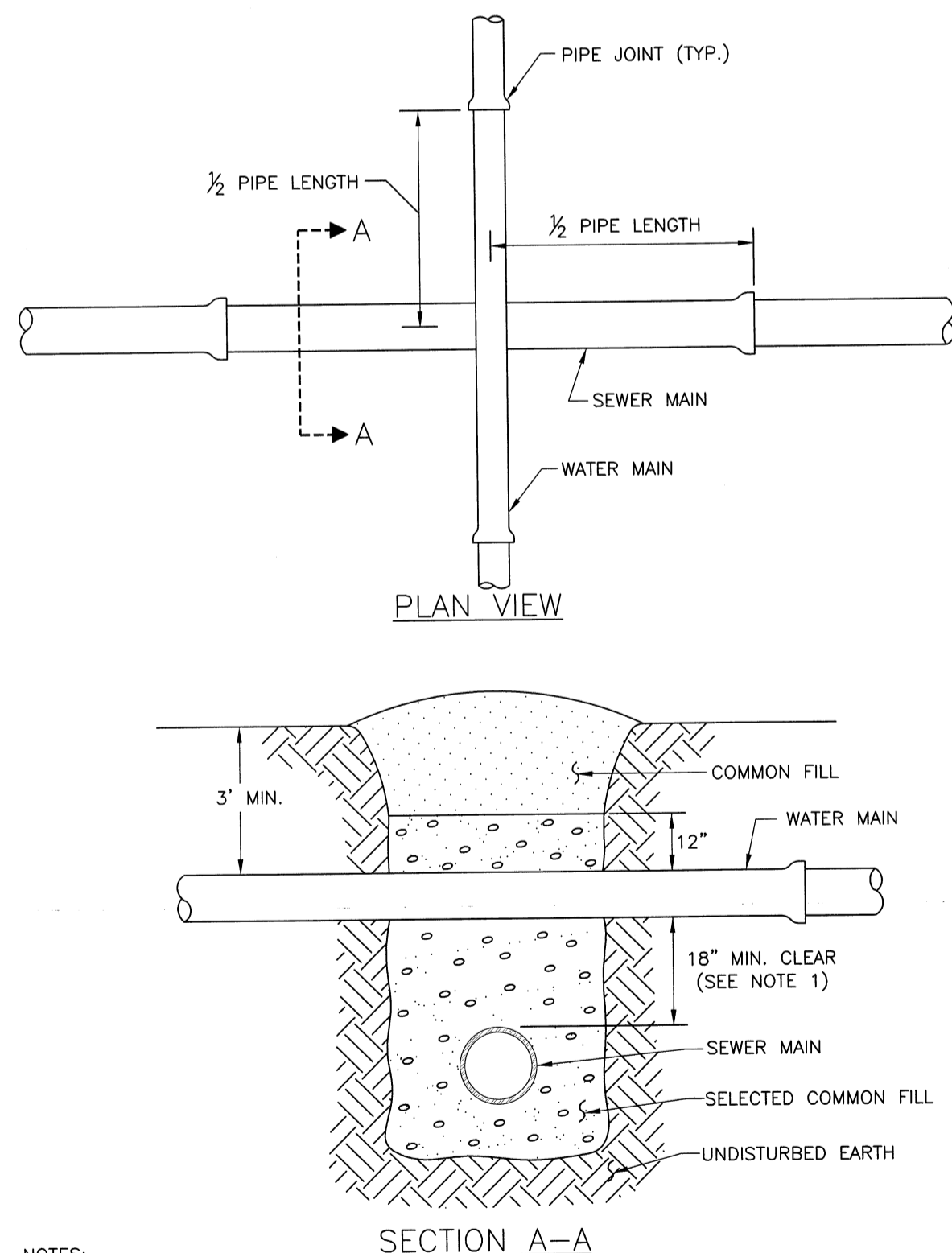
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COPYRIGHT 2010 MANATEE COUNTY GOVERNMENT S:\P\W\Engineering\Share\Auto Eng Design\Proj\SAAS SWP\FM-14 Replace.dwg 6/27/2011 2:05 PM Kenneth Esmatch, 1:1, ARCH full bleed D (36.00 x 24.00 inches)



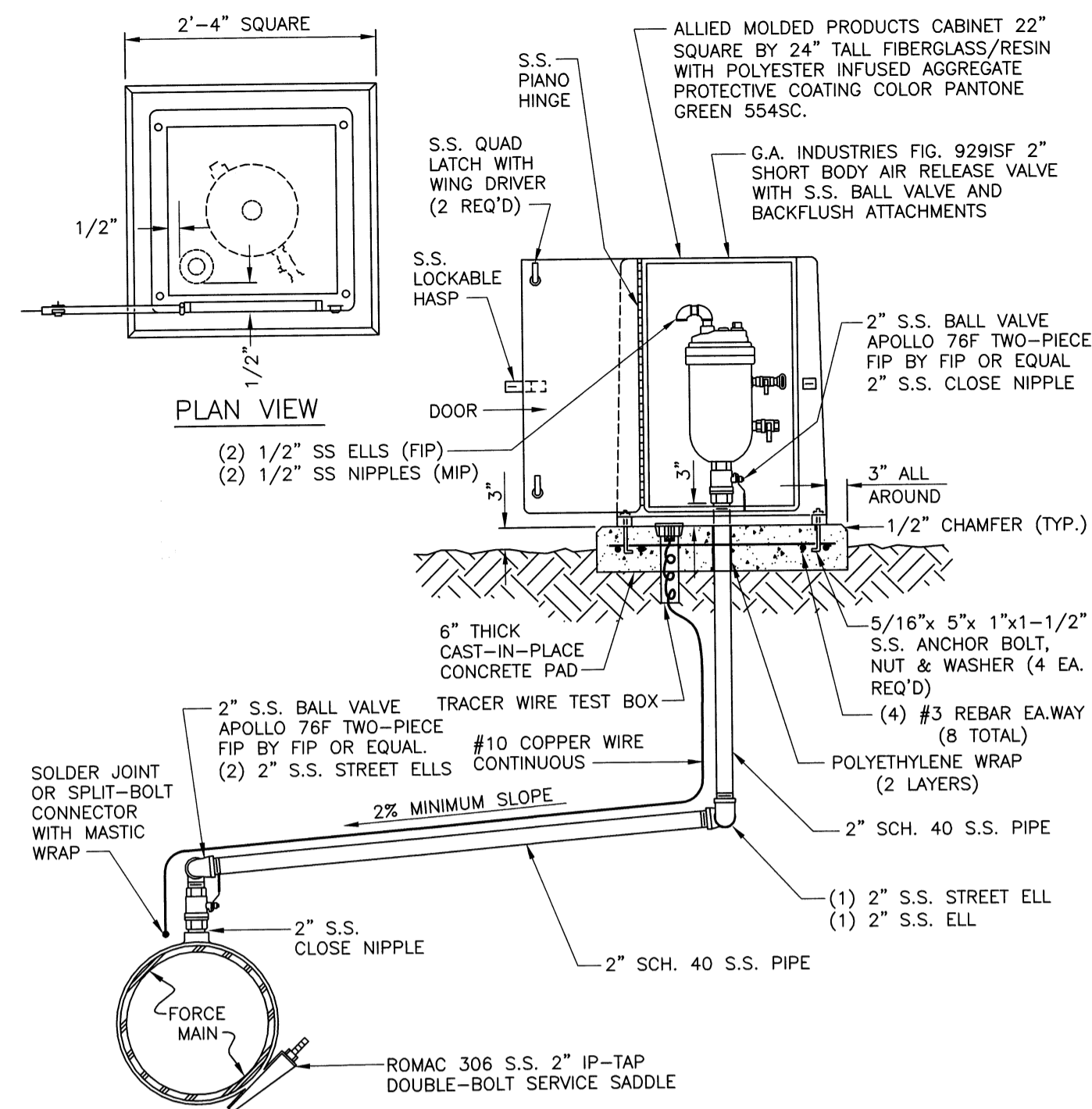
- NOTES:**
- "SV" TO BE IMPRESSED INTO THE NEWLY-POURED CONCRETE CURB, ALONG WITH DISTANCE IN FEET TO THE VALVE. IF NO CURB, INSTALL A GREEN DISC WITH "SV" AND A 1/8"x1" GALVANIZED STEEL SCREW IN THE EDGE OF PAVEMENT WITH THE DISTANCE (FT.) FROM THE DISC TO THE VALVE.
  - ALL EXISTING AND PROPOSED VALVE BOXES SHALL BE ADJUSTED TO FINISHED GRADES AS ESTABLISHED IN THE FIELD.
  - SEWER VALVES SHALL NOT BE PLACED IN HANDICAPPED RAMPS.
  - PRECAST CONCRETE PADS SHALL NOT BE USED.
  - ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1/2".
  - PLUG VALVES SHALL NOT BE USED AS A TAPPING VALVE. WHERE AN EXISTING FORCE MAIN IS TO BE TAPPED, USE A TAPPING GATE VALVE PER THE TAPPING SLEEVE AND VALVE DETAIL.
  - TEST BOX TO BE BINGHAM & TAYLOR P200FNG OR EQUAL FOR NORMAL YARD SERVICE. WHERE VALVE WILL BE IN STREET OR UNDER VEHICLE TRAFFIC, USE P525RD CENTERED IN SEPARATE CONCRETE PAD SIMILAR TO STANDARD VALVE BOX PAD.

**PLUG VALVE, BOX, COVER AND TAG**  
NTS US-12



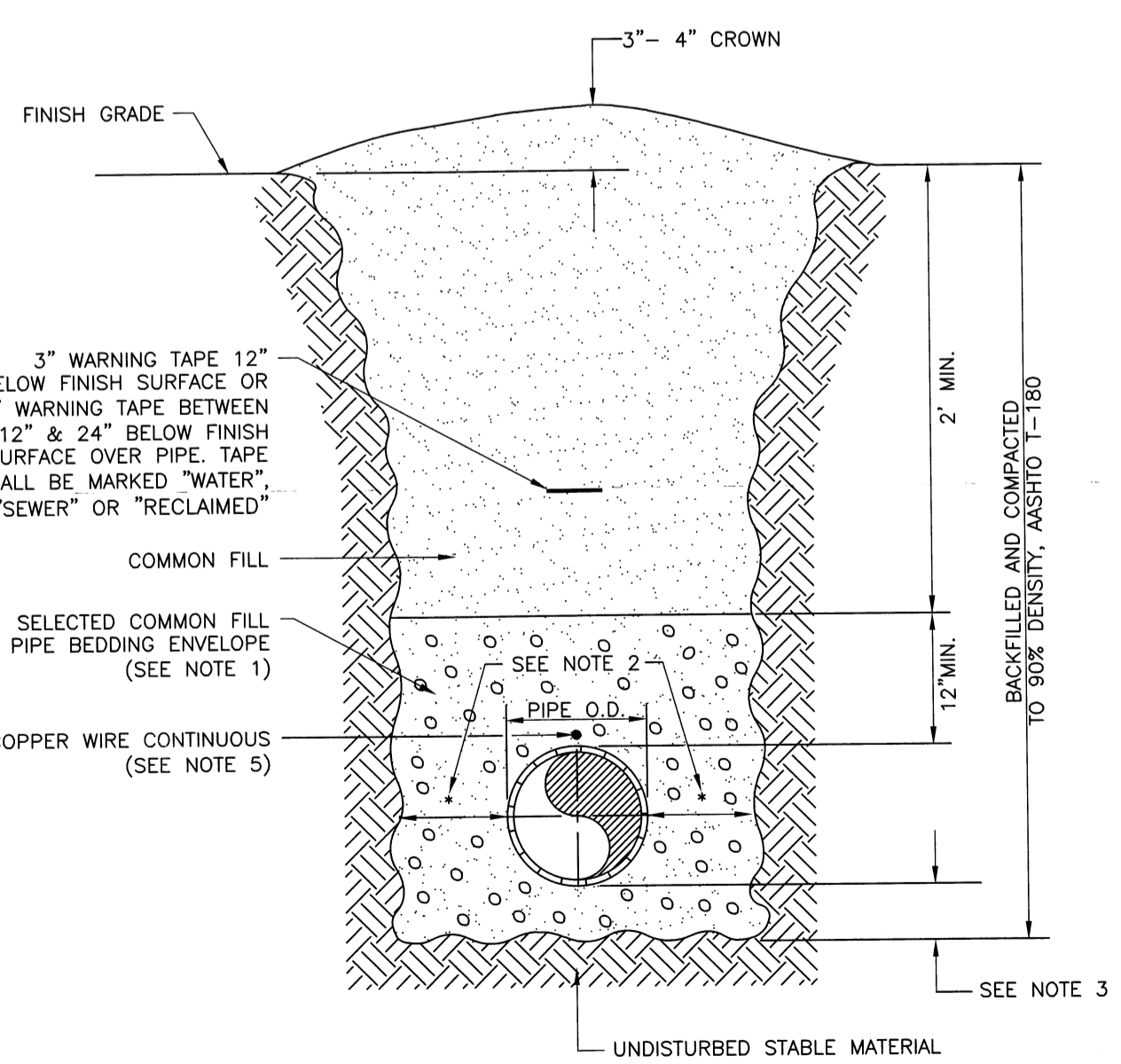
- NOTES:**
- CLEARANCE MAY BE REDUCED TO 6" FOR GRAVITY SEWER WHERE WATER MAIN IS DUCTILE IRON OR 3" FOR FORCE MAIN WHERE FORCE MAIN IS ENCASED.
  - WHERE NO ENCASEMENT IS REQUIRED, PIPE SECTIONS SHALL BE FULL-LENGTH AND SHALL BE ADJUSTED HORIZONTALLY SO THAT THE CROSSING IS AT EACH PIPE SECTION'S MIDPOINT REGARDLESS OF THE VERTICAL CLEARANCE.
  - REFER TO THE JACK & BORE CROSSING DETAIL FOR CASING AND SPACER REQUIREMENTS.

**TYPICAL WATER & SEWER CROSSING**  
NTS UG-2

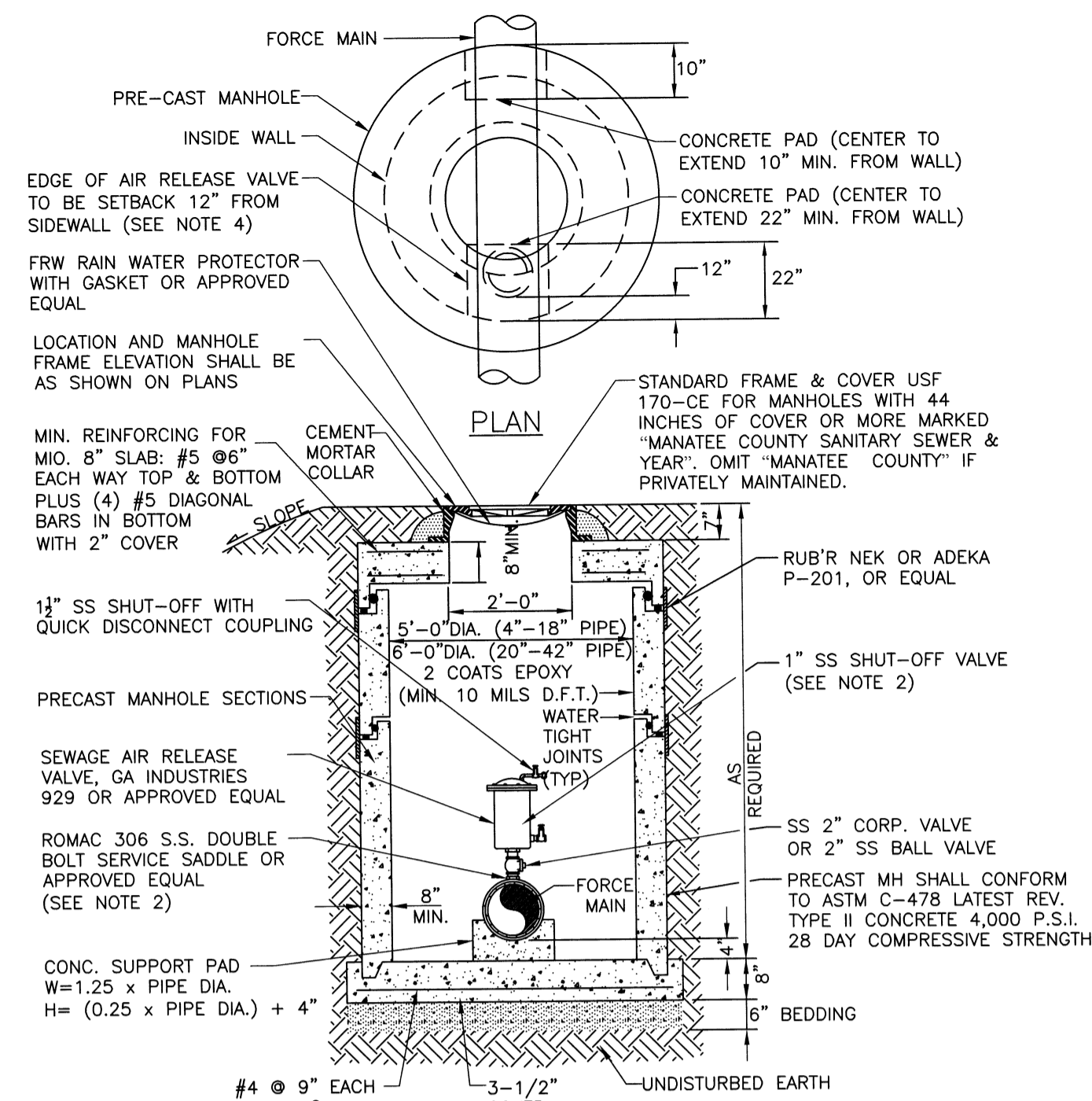


- NOTES:**
- AIR RELEASE VALVES TO BE INSTALLED AT HIGH POINTS, OR WHERE AIR WOULD BE ENTRAPPED, ALONG 4" AND LARGER FORCE MAINS.
  - FORCE MAIN VERTICAL ALIGNMENT TO BE DESIGNED SUCH THAT THE MINIMUM NUMBER OF REQUIRED AIR RELEASE VALVES ARE INSTALLED.
  - ALL INCIDENTAL FITTINGS AND HARDWARE TO BE STAINLESS STEEL.
  - ALL PIPE THREADS TO BE SEALED AIR TIGHT.
  - VENT PIPE TO BE LAID ACCURATELY ON SLOPE, WITHOUT HIGH OR LOW POINTS.
  - AIR RELEASE VALVES TO BE IN BELOW-GRADE INSTALLATIONS UNLESS IMPRACTICAL. INSTALLATIONS MAY BE ABOVE-GROUND ONLY WHERE APPROVED AND SPECIFICALLY INDICATED ON THE PLAN.
  - CONCRETE PAD SHALL BE TYPE I CONCRETE W/ 3,000 P.S.I., 28 DAY COMPRESSIVE STRENGTH.

**ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR FORCE MAINS**  
NTS US-25

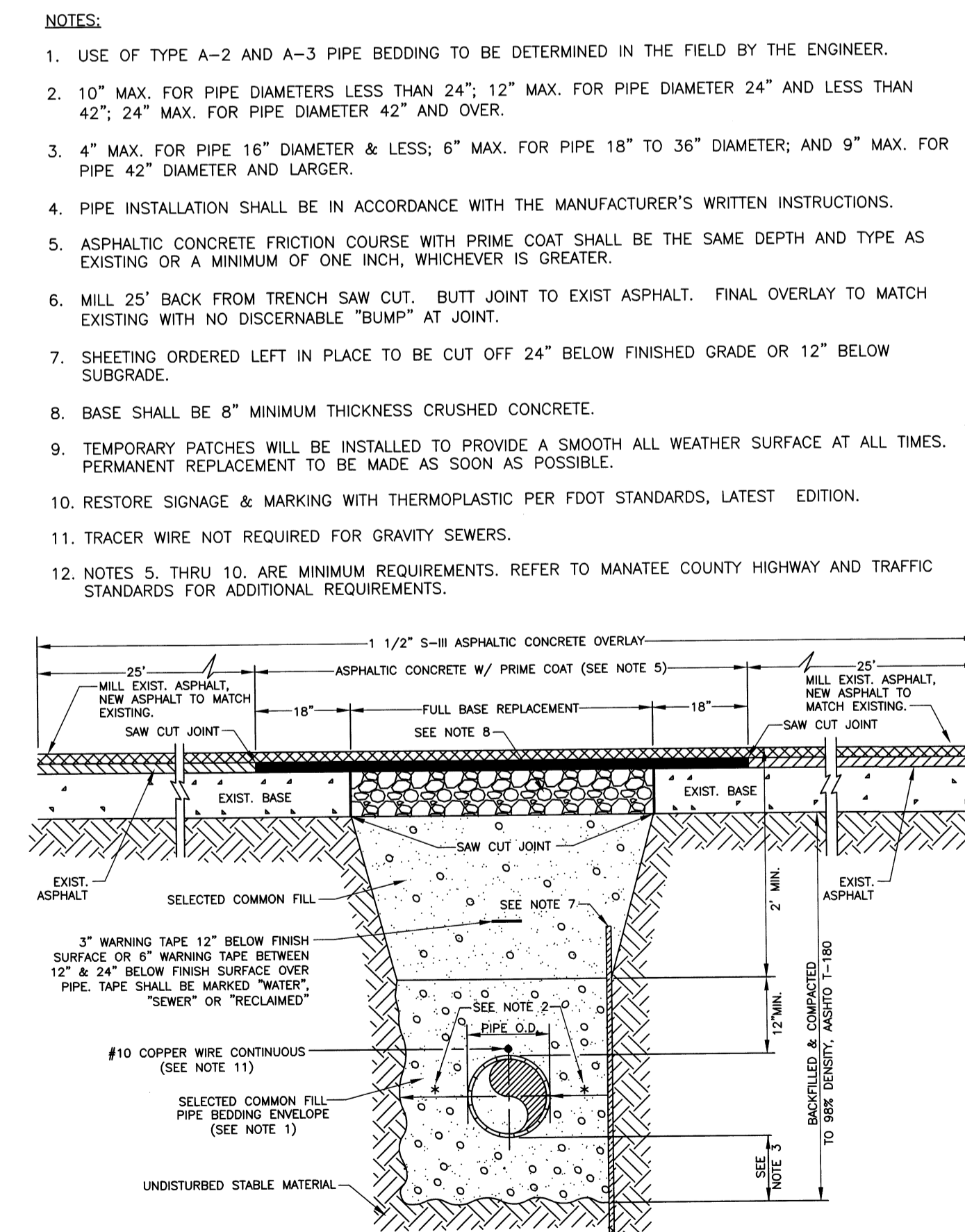


**TRENCH WITH UNIMPROVED BEDDING SURFACE**  
TYPE A-1 PIPE BEDDING  
NTS UG-11

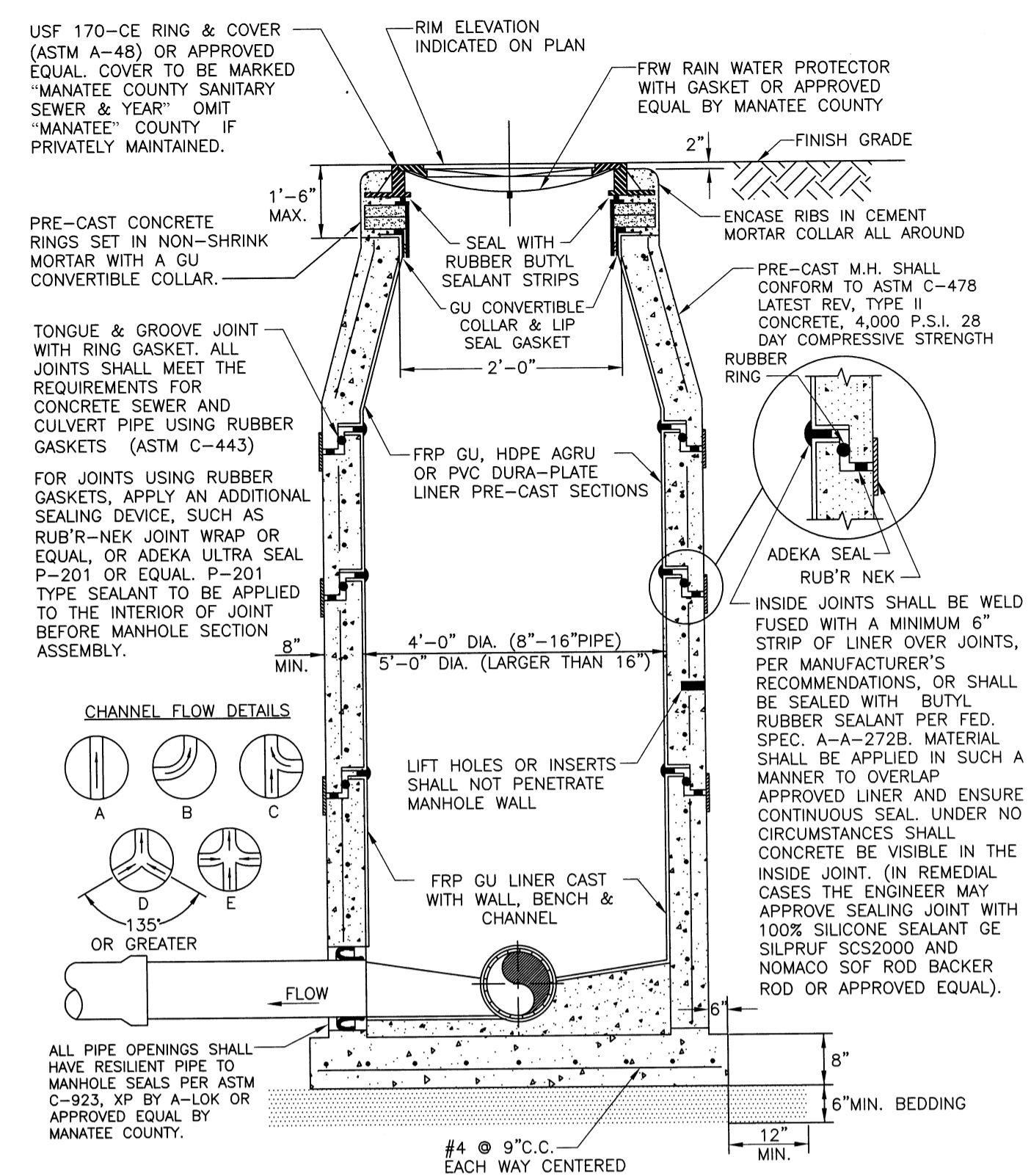


- NOTES:**
- AIR RELEASE VALVES WHERE REQUIRED ON 4" AND LARGER FORCE MAINS.
  - ARY TO BE SIZED ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR FORCE MAIN SIZE.
  - SERVICE SADDLE, NIPPLES AND CORPORATION BALL VALVE SHALL BE STAINLESS STEEL.
  - FOR MANHOLES WITH LESS THAN 44 INCHES OF COVER FROM TOP-OF-PIPE TO TOP-OF-FRAME, FRAME & COVER TO BE 3/2-INCH PAMREX WITH 3/2 INCH OPENING. DESEIT ARV 7.5 INCHES FROM CENTER OF OPENING. MINIMUM ALLOWABLE COVER IS 36 INCHES.
  - ALL PIPE PENETRATING MANHOLE SHALL HAVE RESILIENT PIPE TO MANHOLE SEALS PER ASTM-923.
  - FINAL GRADE TO BE SLOPED AWAY FROM MANHOLE.

**BELOW GRADE AIR RELEASE VALVE FOR FORCE MAINS**  
NTS US-10

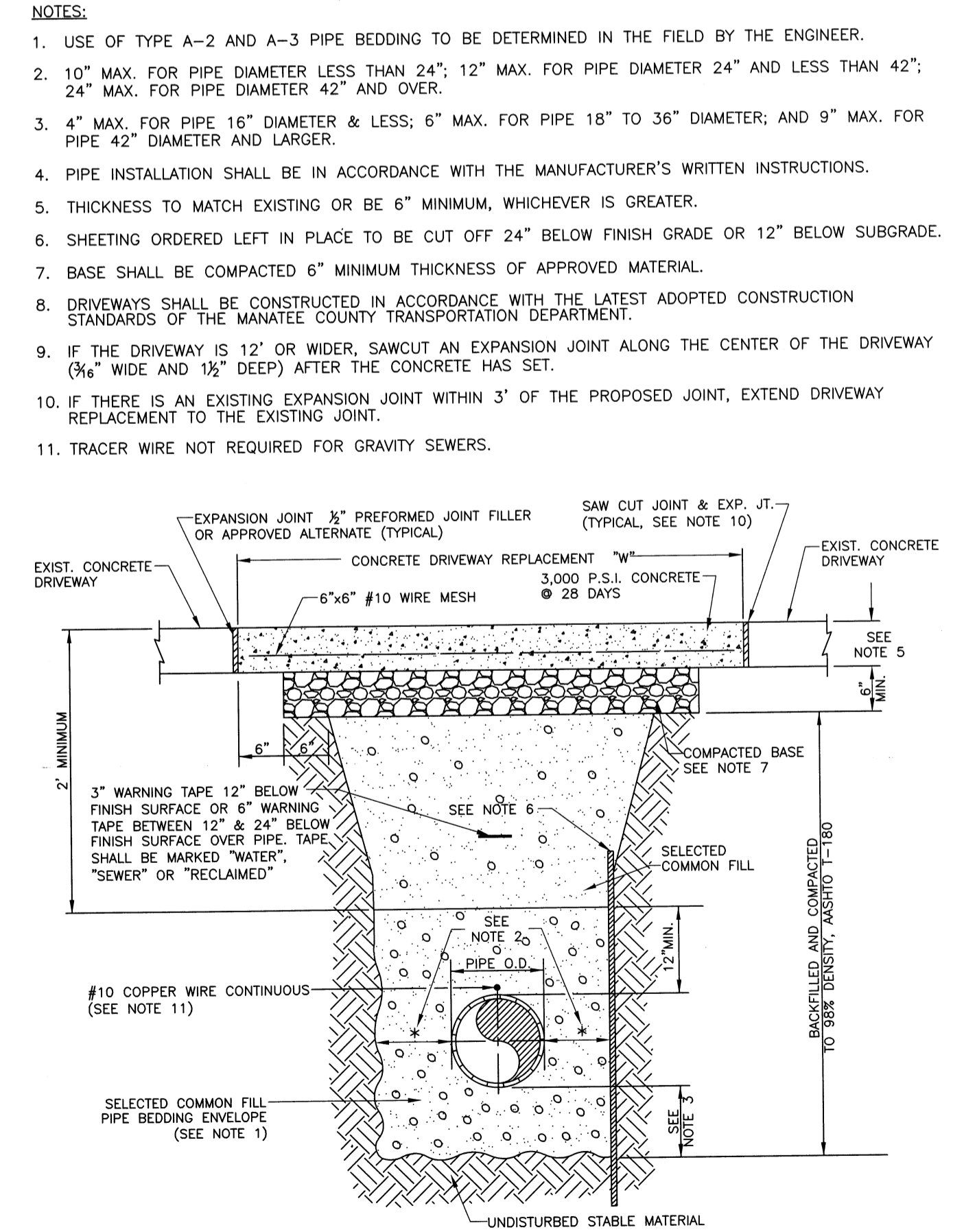


**TRENCH WITH ASPHALT PAVEMENT SURFACE**  
TYPE A-1 PIPE BEDDING  
NTS UG-12



- NOTES:**
- USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
  - 10" MAX. FOR PIPE DIAMETERS LESS THAN 24"; 12" MAX. FOR PIPE DIAMETER 24" AND LESS THAN 42"; 24" MAX. FOR PIPE DIAMETER 42" AND OVER.
  - 4" MAX. FOR PIPE 16" DIAMETER & LESS; 6" MAX. FOR PIPE 18" TO 36" DIAMETER; AND 9" MAX. FOR PIPE 42" DIAMETER AND LARGER.
  - PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
  - THICKNESS TO MATCH EXISTING OR BE 6" MINIMUM, WHICHEVER IS GREATER.
  - SHEETING ORDERED LEFT IN PLACE TO BE CUT OFF 24" BELOW FINISH GRADE OR 12" BELOW SUBGRADE.
  - BASE SHALL BE COMPACTED 6" MINIMUM THICKNESS OF APPROVED MATERIAL.
  - DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST ADOPTED CONSTRUCTION STANDARDS OF THE MANATEE COUNTY TRANSPORTATION DEPARTMENT.
  - IF THE DRIVEWAY IS 12" OR WIDER, SAWCUT AN EXPANSION JOINT ALONG THE CENTER OF THE DRIVEWAY (3/4" WIDE AND 1/2" DEEP) AFTER THE CONCRETE HAS SET.
  - IF THERE IS AN EXISTING EXPANSION JOINT WITHIN 3' OF THE PROPOSED JOINT, EXTEND DRIVEWAY REPLACEMENT TO THE EXISTING JOINT.
  - TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.

**STANDARD PRE-CAST SANITARY SEWER MANHOLE FOR TURBULENT FLOW**  
NTS US-3



**TRENCH WITH CONCRETE DRIVEWAY SURFACE**  
TYPE A-1 PIPE BEDDING  
NTS UG-14

**FORCE MAIN 14 REPLACEMENT  
NORTH SHORE DR., ANNA MARIA  
DETAILS**

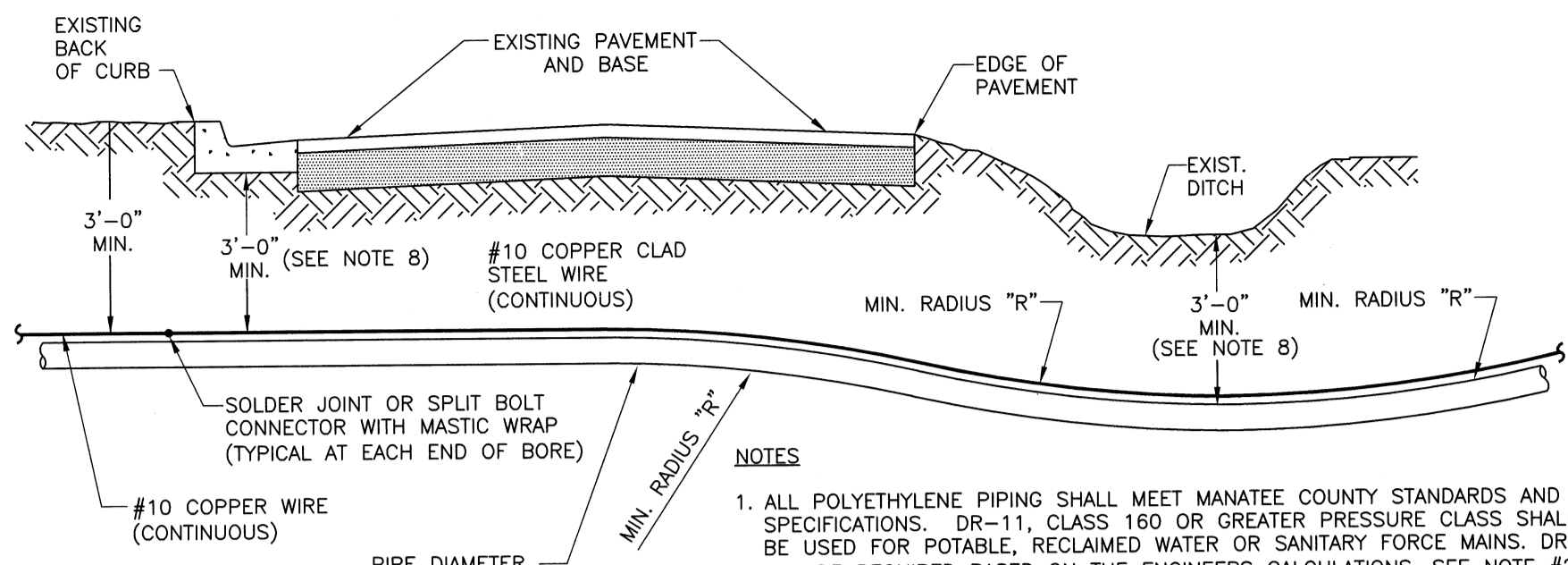
NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6079980
SURVEY #	11.004
SEC./TWN./RGE	18/34S/16E
SCALE	1"=20'
	BY DATE
SURVEYED	ZNS 1/7/11
DESIGNED	KE/JS 03/15/11
DRAWN	KE 04/05/11
CHECKED	JS 04/21/11
JAMES STOCKWELL, P.E.	

SHEET 8 OF 10



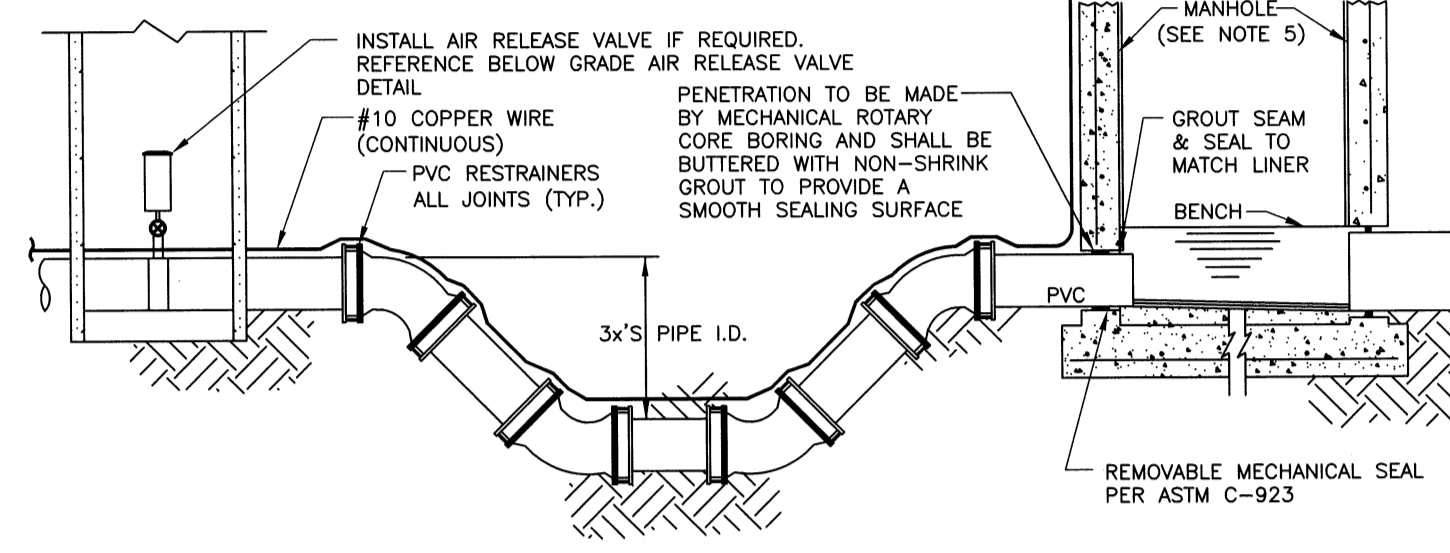
FORCE MAIN 14 REPLACEMENT  
NORTH SHORE DR., ANNA MARIA  
DETAILS



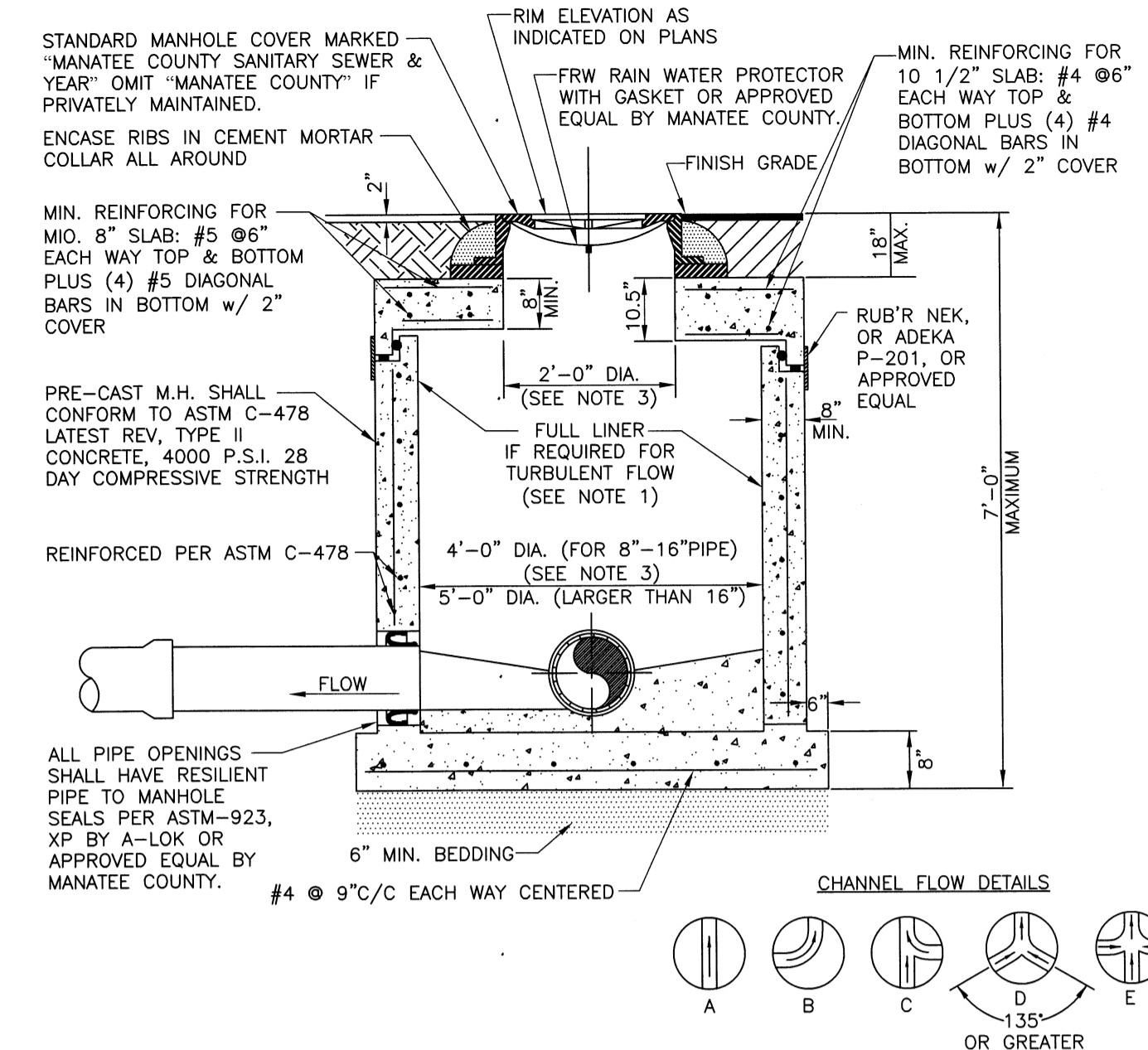
PIPE DIAMETER "D" IN INCHES	MIN. RADIUS FOR PE PIPE IN FEET	
	MIN. RADIUS "R" FOR DR-11	MIN. RADIUS "R" FOR DR-9
2	4	5.5
3	6	8.3
4	8	11.0
6	12	16.5
8	16	22.0
10	20	27.5
12	24	33.0
16	32	44.0
18	40	49.5
20	40	55.0

**DIRECTIONAL BORE ROADWAY CROSSING**  
NTS UG-4

- NOTES:
- PIPE FITTINGS TO BE AWWA C-907, CLASS 150 MINIMUM.
  - PVC RESTRAINERS TO BE EBAA IRON SERIES 2000PV OR SERIES 2500 OR APPROVED EQUAL.
  - WHEN FORCE MAIN ENTERS M.H. ABOVE BOTTOM, REFER TO FORCE MAIN RETROFIT FOR INSIDE DROP CONNECTION DETAIL.
  - BUILD FLOW CHANNEL PER DETAIL SEWER MANHOLE FOR TURBULENT FLOW AND FINISH SMOOTH WITH GROUT.
  - THIS IS AN INTERCEPT MANHOLE AND MUST BE LINED WITH AN APPROVED LINER.

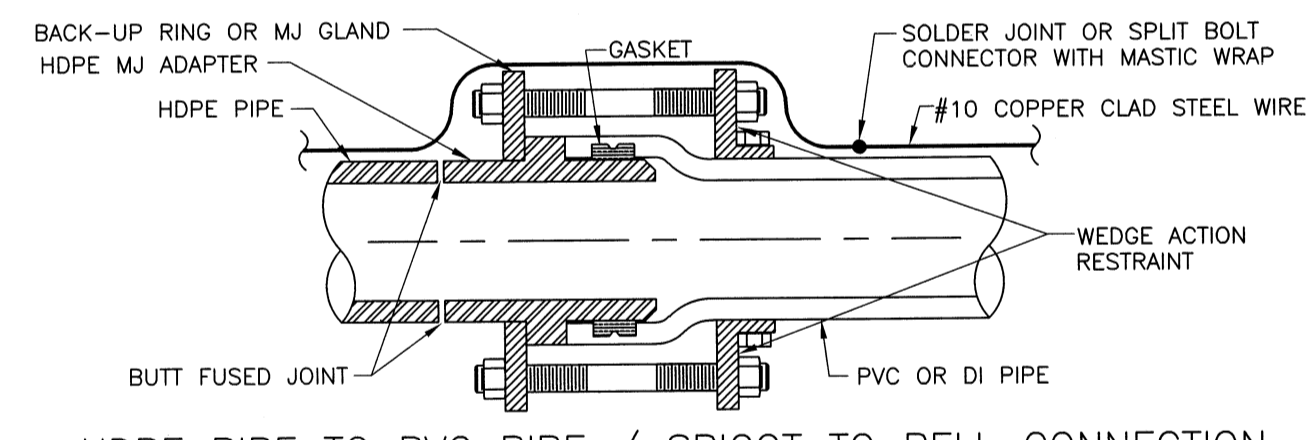


**FORCE MAIN CONNECTION TO MANHOLE**  
NTS US-9

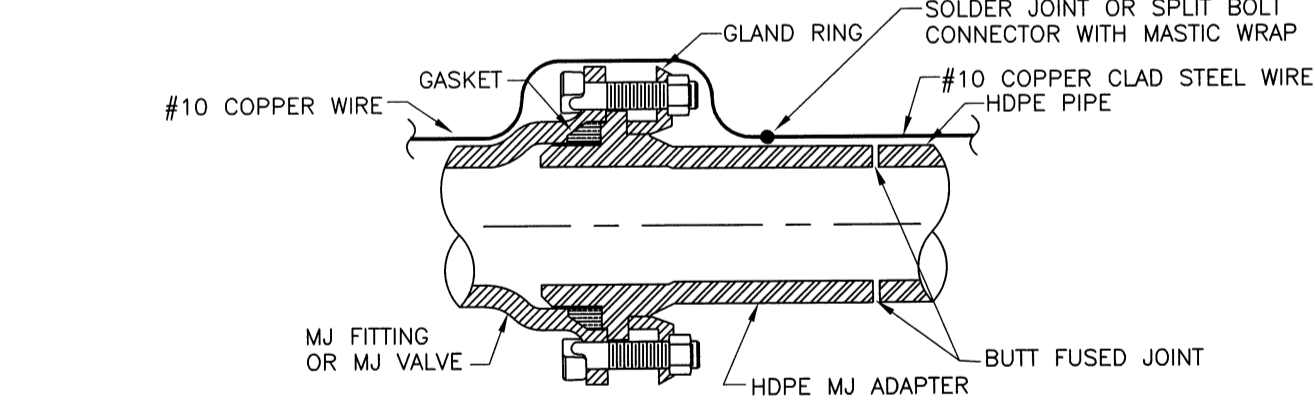


- NOTES:
- DROP MANHOLES, MANHOLES WITH OPPOSING FLOW (DETAILS D & E), MANHOLES IMMEDIATELY UPSTREAM OF A LIFT STATION WET WELL, MANHOLES WITH GRAVITY SEWERS GREATER THAN 12 INCHES IN DIAMETER, MANHOLES RECEIVING A FORCE MAIN AND THE FIRST TWO GRAVITY MANHOLES DOWNSTREAM OF MANHOLES RECEIVING A FORCE MAIN SHALL HAVE AN APPROVED LINER.
  - LIFT HOLES OR INSERTS SHALL NOT PENETRATE THE WALLS OF THE MANHOLES.
  - A MINIMUM COVER OF 3' OVER THE GRAVITY SEWER SHALL BE PROVIDED. FOR MANHOLES WITH LESS THAN 4' OF COVER OVER THE GRAVITY SEWER, THE MANHOLE INSIDE DIAMETER SHALL BE 5'-0" AND THE FRAME AND COVER SHALL BE 32" "PAMREX" WITH 32" SINGING.

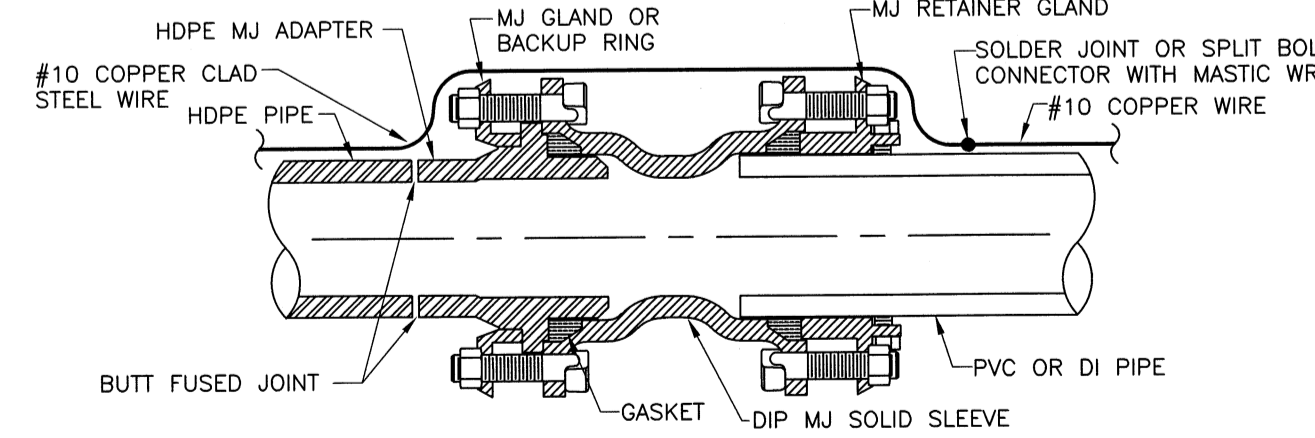
**STANDARD PRE-CAST SHALLOW MANHOLE**  
NTS US-4



**HDPE PIPE TO PVC PIPE / SPIGOT TO BELL CONNECTION**



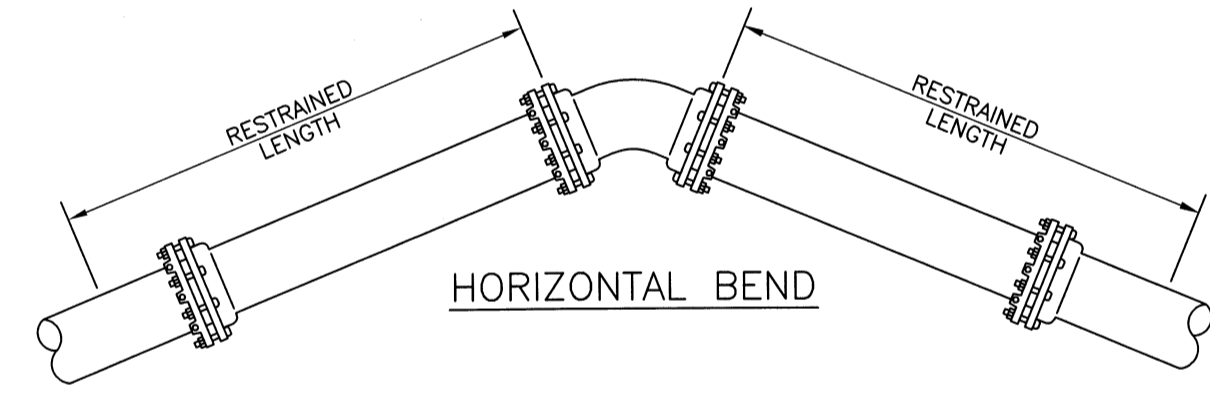
**HDPE PIPE TO MJ FITTING TRANSITION**



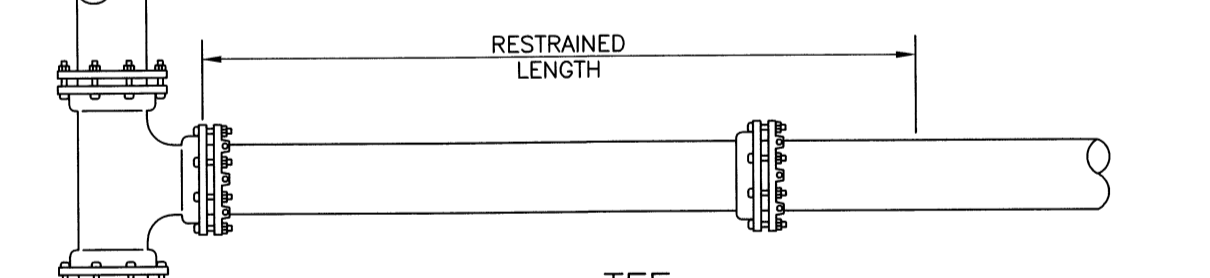
**HDPE PIPE TO PVC PIPE SPIGOT TO SPIGOT CONNECTION**

1. ONE # 10 GAUGE EXTRA HIGH STRENGTH COPPER CLAD STEEL TRACER WIRE SHALL BE PULLED AND SECURED TO THE PIPE FOR PIPELINES THAT ARE INSTALLED BY TRENCHLESS HORIZONTAL DIRECTIONAL DRILLING METHOD. IN NON-DIRECTIONAL BORE (TRENCHES AND BORE & JACK) APPLICATIONS, A # 10 GAUGE SOLID INSULATED COPPER WIRE SHALL BE ATTACHED TO THE PIPE. TRACER WIRES SHALL HAVE A MINIMUM 30-MILS OF POLYETHYLENE INSULATION.

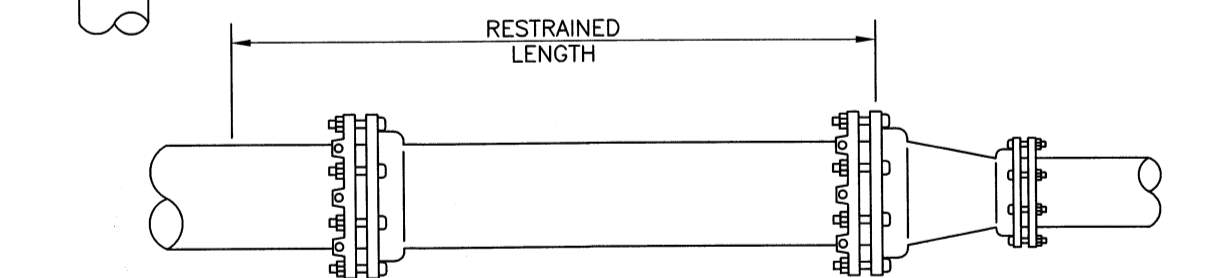
**HDPE TO PVC OR DI PIPE ADAPTER**  
NTS UG-6



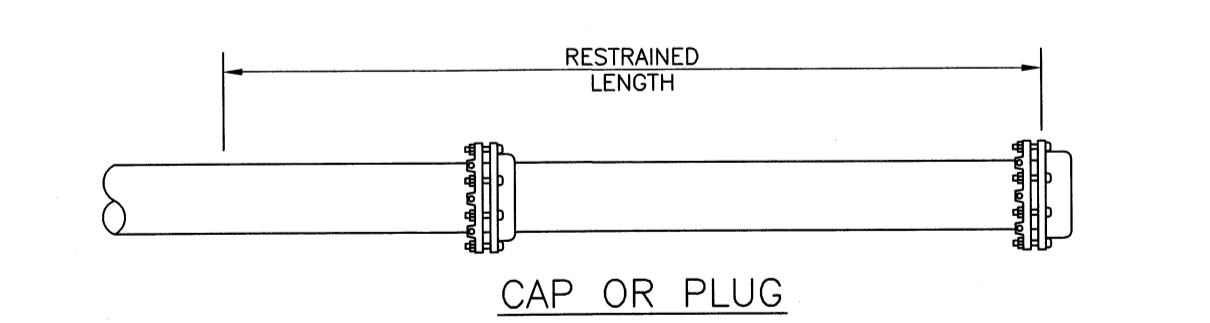
**HORIZONTAL BEND**



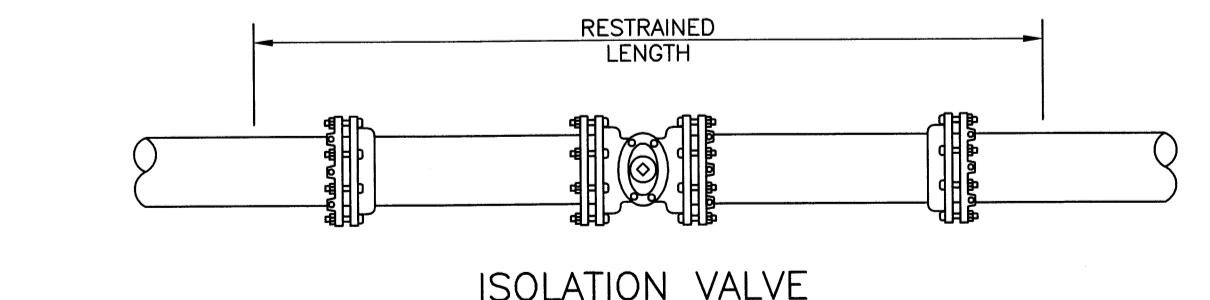
**TEE**



**REDUCER**



**CAP OR PLUG**

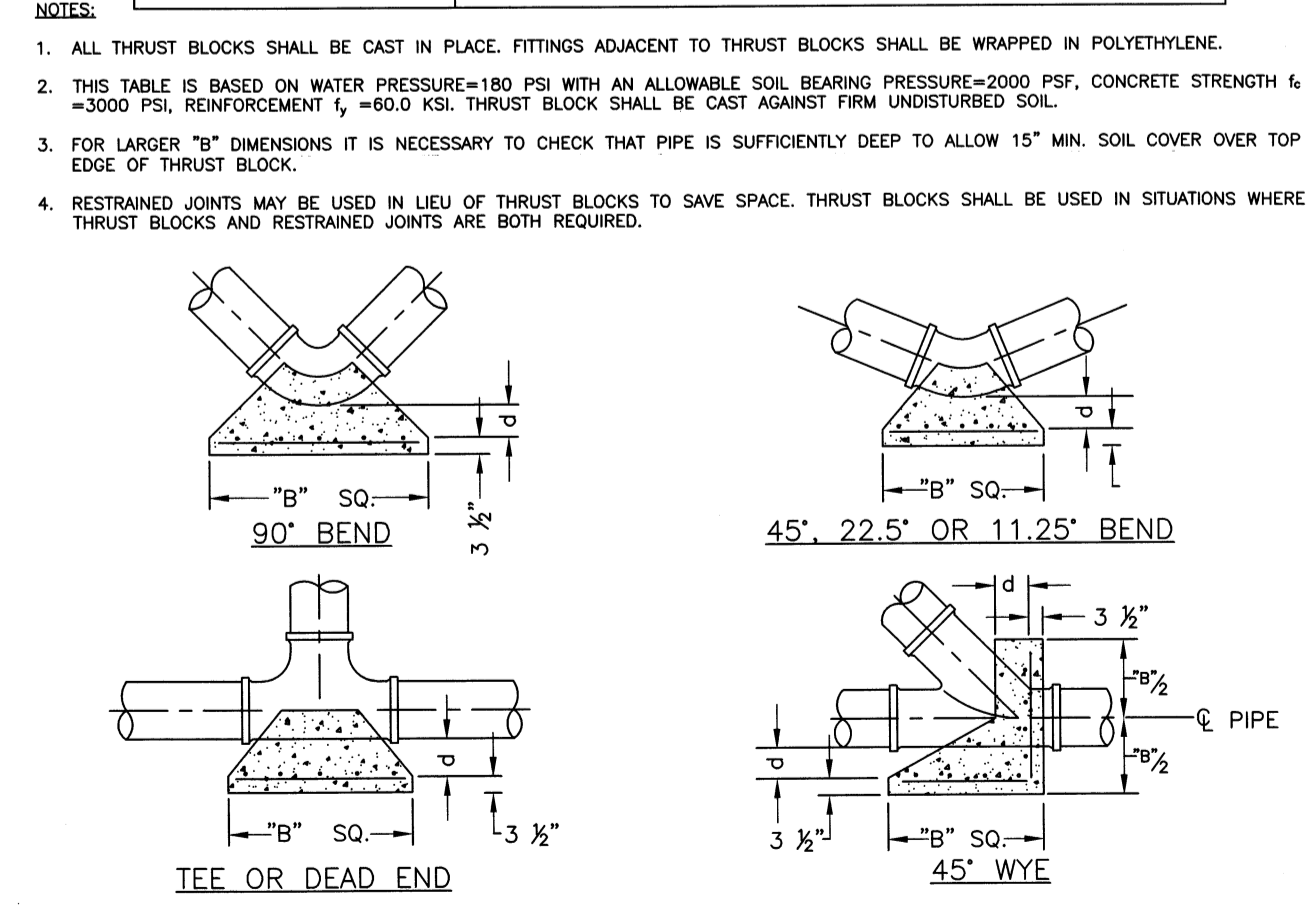


**ISOLATION VALVE**

**RESTRAINED LENGTHS FOR PIPE**  
NTS UG-10

PIPE SIZE (IN.)	THRUST BLOCK DIMENSIONS B ft., x d inches											
	90° BEND		45° BEND		22.5° BEND		11.25° BEND		DEAD END & TEE		45° WYE	
	B	d	B	d	B	d	B	d	B	d	B	d
4	1.5	3 1/2	1.1	3 1/2	0.8	3 1/2	0.6	3 1/2	1.3	3 1/2	1.1	3 1/2
6	2.2	5 1/4	1.6	3 3/4	1.2	3 3/4	0.8	3 3/4	1.9	4 1/2	1.6	3 3/4
8	2.9	7	2.1	5	1.5	3 3/4	1.1	3 3/4	2.4	5 3/4	2.0	4 3/4
10	3.5	8 1/2	2.6	6 1/4	1.9	4 1/2	1.3	3 3/4	3.0	7 1/4	2.5	6
12	4.2	10	3.1	7 1/2	2.2	5 1/4	1.6	3 3/4	3.5	8 1/4	3.0	7 1/4
14	4.9	11 3/4	3.6	8 3/4	2.6	6 1/4	1.8	4 1/4	4.1	9 3/4	3.4	8 1/4
16	5.5	13 1/4	4.1	9 3/4	2.9	7	2.1	5	4.7	11 1/4	3.9	9 1/4
18	6.2	15	4.6	11	3.3	8	2.3	5 1/2	5.2	12 1/2	4.4	10 1/2
20	6.9	16 1/2	5.0	12	3.6	8 3/4	2.6	6 1/4	5.8	14	4.9	11 3/4
24	8.2	19 1/4	6.0	14 1/4	4.3	10 1/4	3.1	7 1/2	6.9	16 1/2	5.8	14
30	10.1	24 1/4	7.5	18	5.3	12 3/4	3.8	9	8.5	20 1/2	7.2	17 1/4
36	12.1	29	8.9	21 1/4	6.4	15 1/4	4.5	10 3/4	10.2	24 1/2	8.6	20 3/4

REINFORCEMENT MAT SCHEDULE  
FOR DIM. "B" BETWEEN 5.75' & 12.5' USE #4 @ 8" EACH WAY  
FOR DIM. "B" LESS THAN 5.75' USE #3 @ 8" EACH WAY



**CONCRETE THRUST BLOCKS**  
NTS UG-7

**REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (POLY-WRAPPED)**

MAIN PIPE SIZE	HORIZ. BENDS			TEES		REDUCERS		PLUGS & VALVES
	90°	45°	22.5°	SIZE	LENGTH	SIZE	LENGTH	
36	142	59	28	X36	X30	X24	X20	453
30	124	51	25	X30	X24	X20	X16	391
24	106	44	21	X24	X20	X16	X12	327
20	92	38	18	X20	X16	X12	X10	280
16	77	32	15	X16	X12	X10	X8	231
12	61	25	12	X12	X10	X8	X6	181
10	52	22	10	X10	X8	X6	X4	153
8	44	18	9	X8	X6	X4	X2	128
6	34	14	7	X6	X4	X2	X1	98
4	24	10	5	X4	X2	X1	X1	69

**REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DIP (NON-WRAPPED)**

MAIN PIPE SIZE	HORIZ. BENDS			TEES		REDUCERS		PLUGS & VALVES
	90°	45°	22.5°	SIZE	LENGTH	SIZE	LENGTH	
36	100	42	20	X36	X30	X24	X20	188
30	88	37	18	X30	X24	X20	X16	162
24	75	31	15	X24	X20	X16	X12	135
20	65	27	13	X20	X16	X12	X10	116
16	54	22	11	X16	X12	X10	X8	96
12	43	18	8	X12	X10	X8	X6	75
10	37	15	7	X10	X8	X6	X4	63
8	30	13	6	X8	X6	X4	X2	53
6	24	10	5	X6	X4	X2	X1	41
4	17	7	3	X4	X2	X1	X1	29

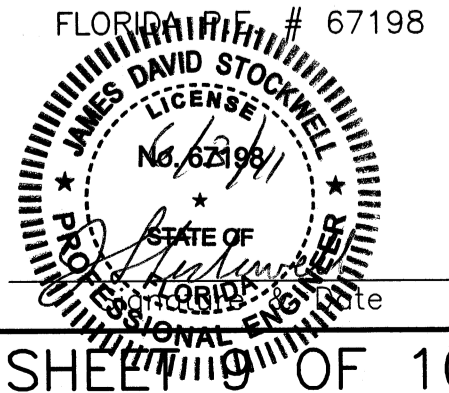
- NOTE:  
SEE RESTRAINED LENGTHS FOR PVC PIPE DETAIL FOR NOTES 1 THROUGH 8 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR DIP.

**RESTRAINED LENGTHS FOR DIP**  
NTS UG-9

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6079980
SURVEY #	11.004
SEC./TWN./RGE	18/34S/16E
SCALE	1"=20'
SURVEYED	ZNS 1/7/11
DESIGNED	KE/JS 03/15/11
DRAWN	KE 04/05/11
CHECKED	JS 04/21/11

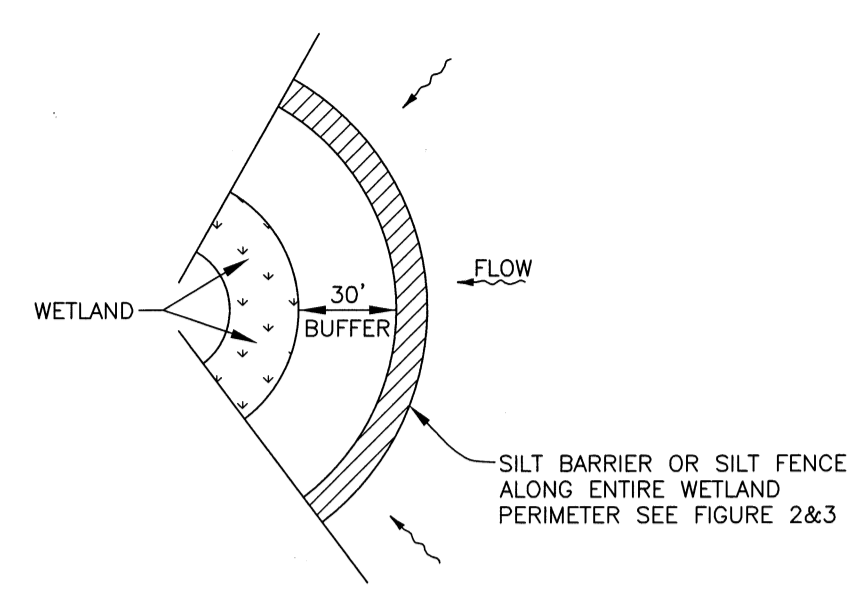
JAMES STOCKWELL, P.E.  
FLORIDA PROFESSIONAL ENGINEER  
LICENSE # 67198  
No. 62991



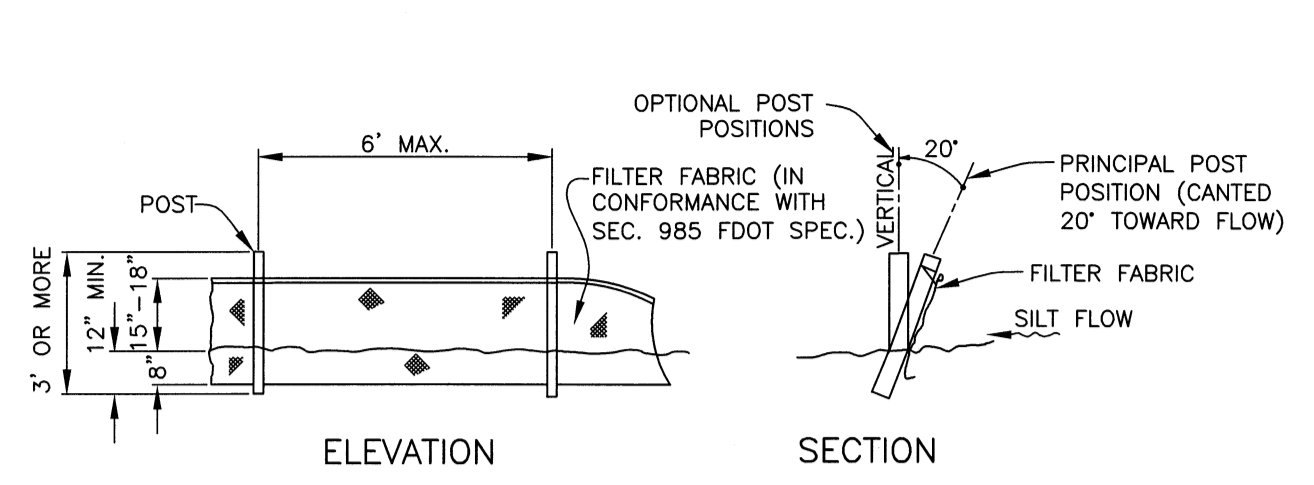
SHEET 9 OF 10

COPYRIGHT 2010 MANATEE COUNTY GOVERNMENT. S:\VPWD\_Engineering\_Series\Util\_Eng\_Design\_Proj\14\_Replace\_North Shore Dr\Drawn\_Bin\_FM-14\_Replace.dwg, 6/22/2011 2:06 PM Kenneth Emshie, 1:1, RECH full bleed D (36.00 x 24.00 inches)

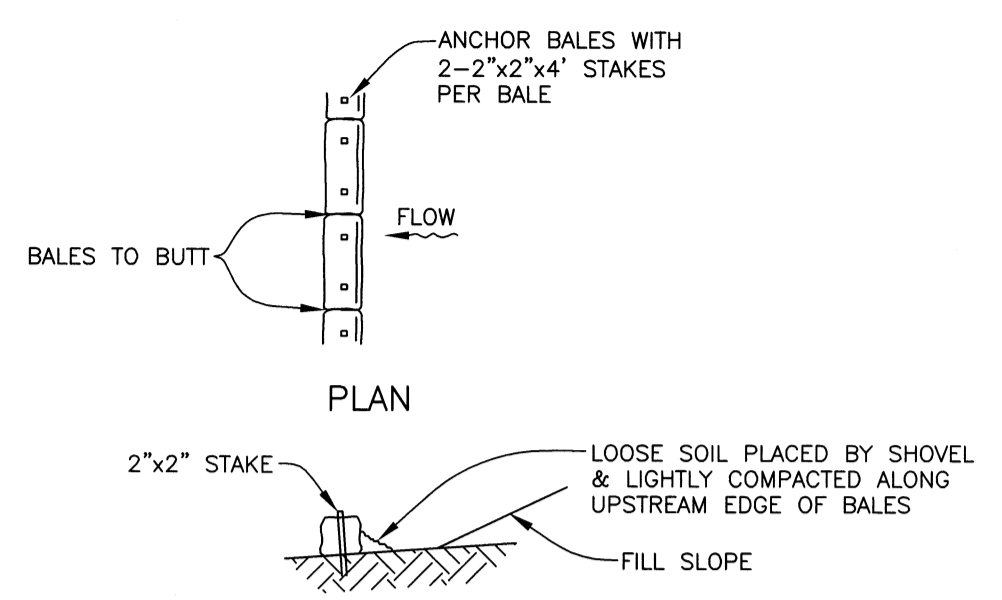
**FORCE MAIN 14 REPLACEMENT  
NORTH SHORE DR., ANNA MARIA  
EROSION CONTROL**



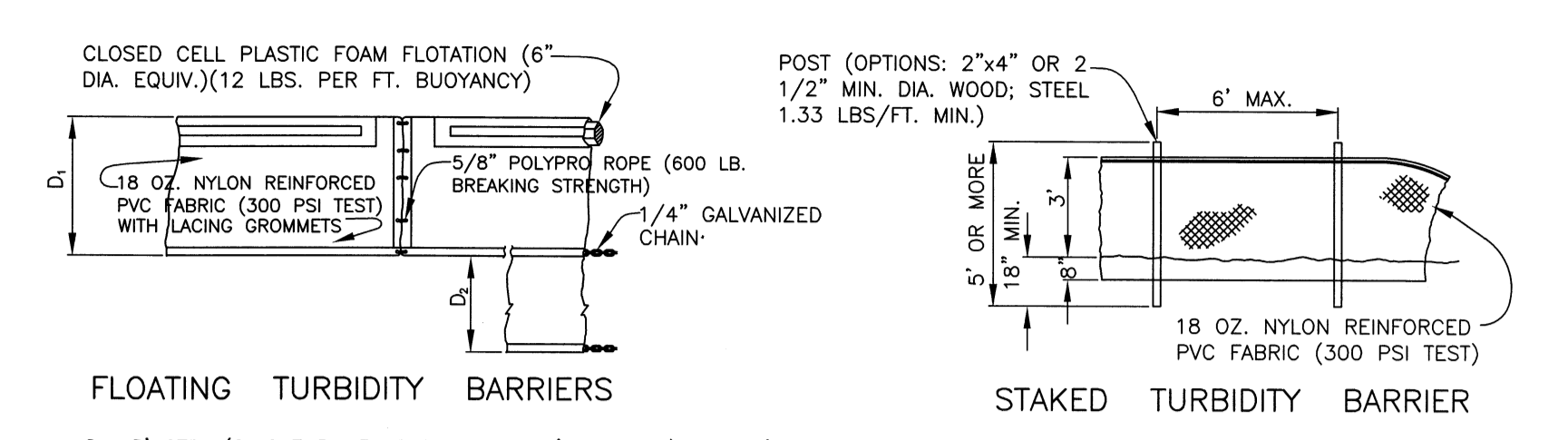
**WETLAND BUFFER**  
FIGURE 1



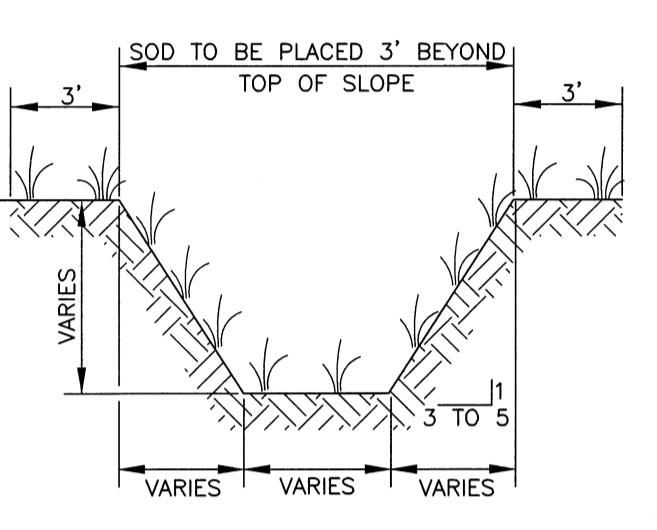
**TYPICAL SILT FENCE**  
FIGURE 2



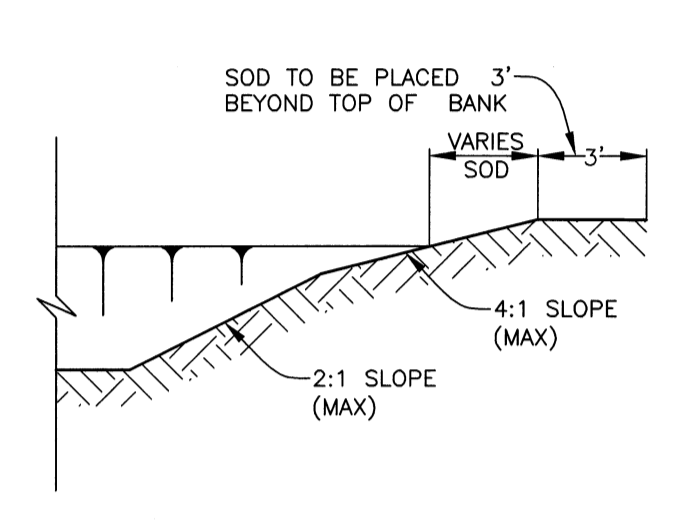
**TYPICAL BALE SILT BARRIER**  
FIGURE 3



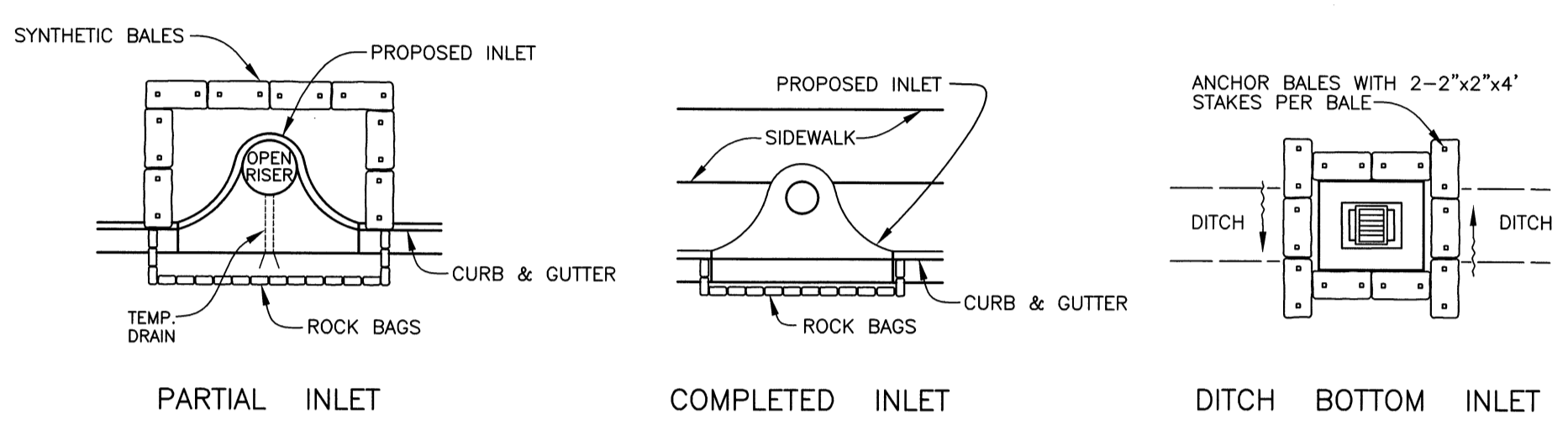
**FLOATING TURBIDITY BARRIERS**  
**STAKED TURBIDITY BARRIER**



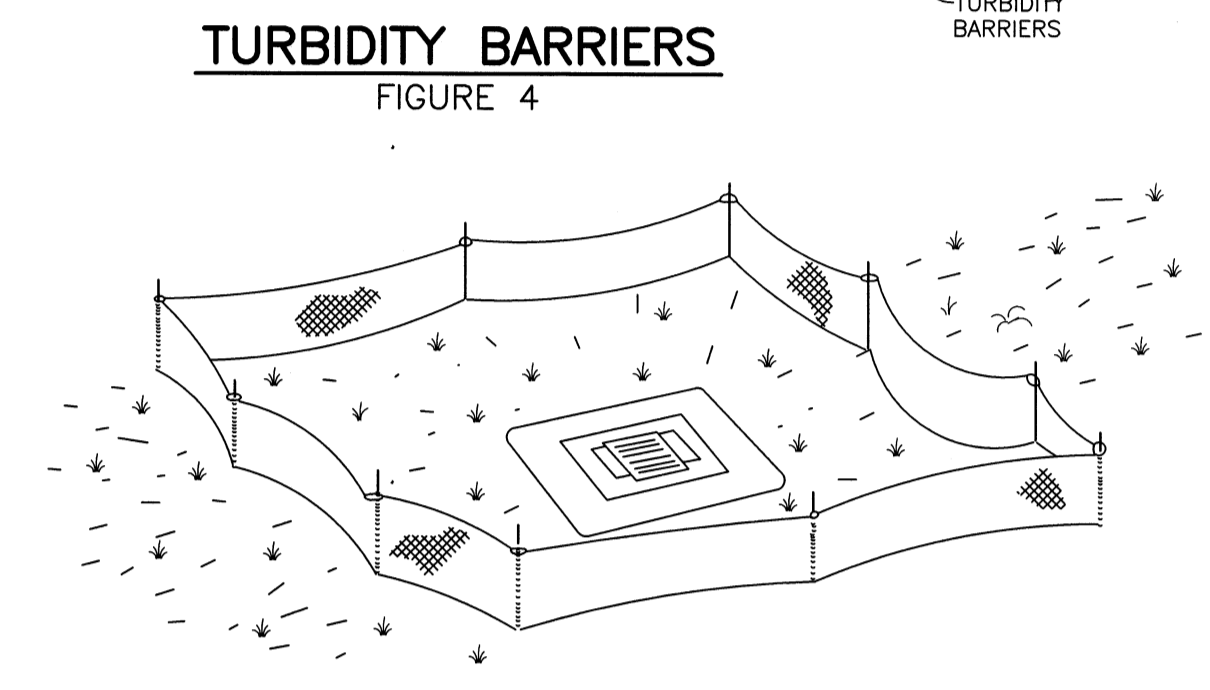
**TYPICAL SWALE SECTION**  
FIGURE 5



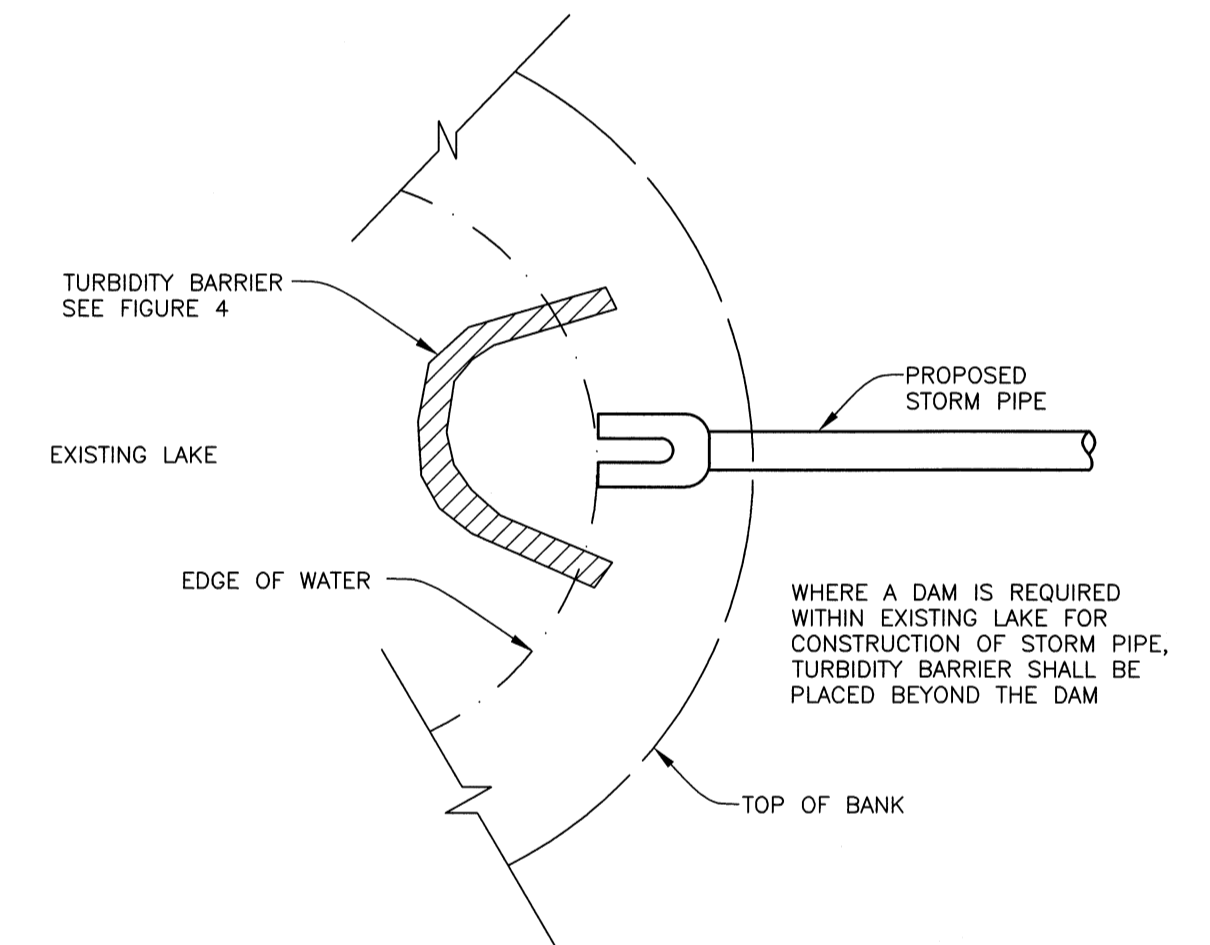
**TYPICAL RETENTION/DETENTION POND SECTION**  
FIGURE 6



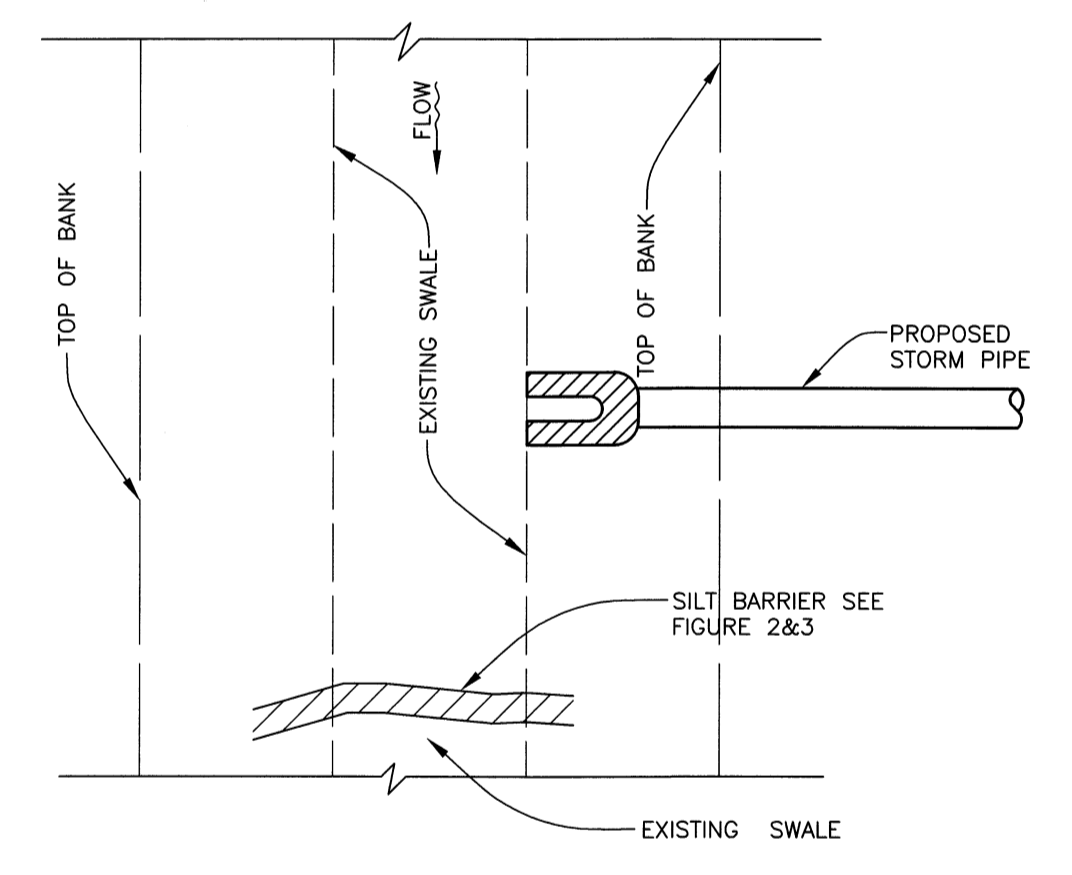
**SYNTHETIC BALE PROTECTION AROUND  
INLETS OR SIMILAR STRUCTURES**  
FIGURE 7



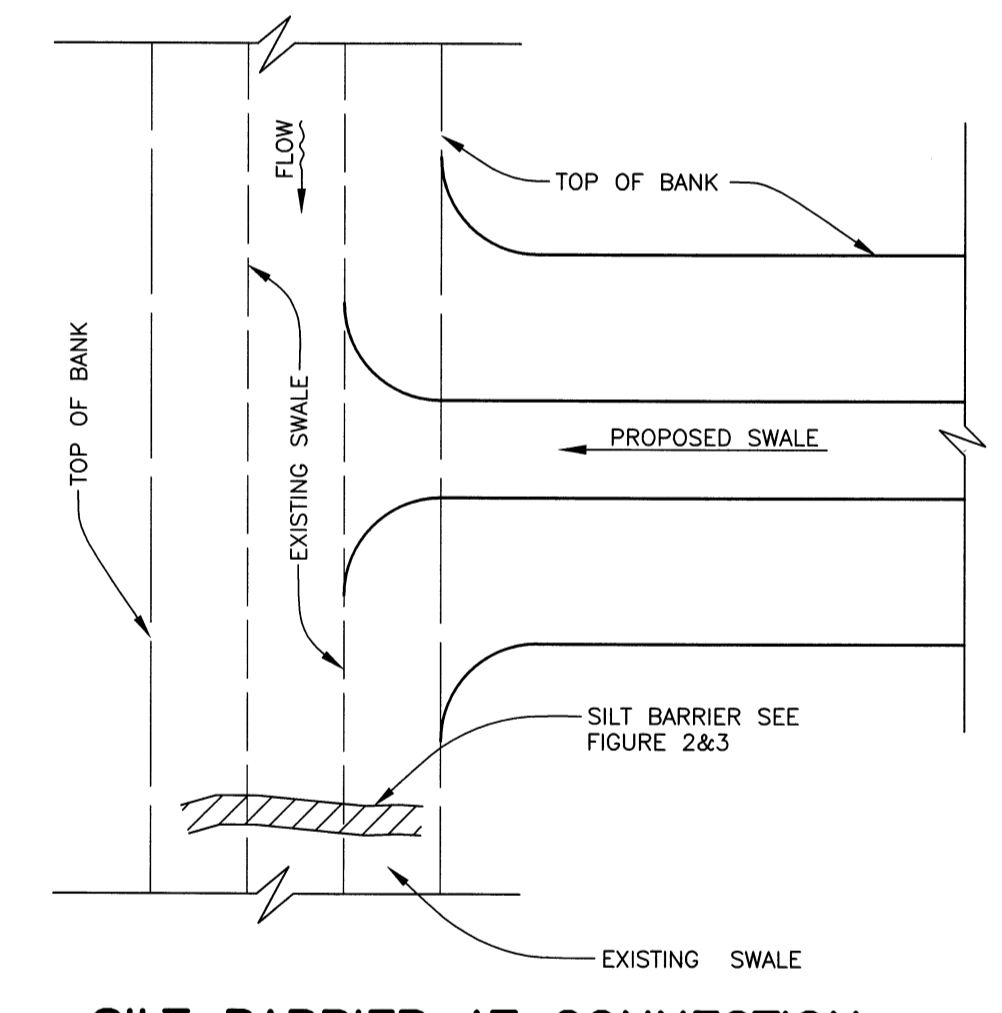
**TYPE III SILT FENCE PROTECTION  
AROUND DITCH BOTTOM INLETS**  
**STAKED SILT BARRIER OR SILT FENCE  
PROTECTION AROUND DITCH BOTTOM INLETS**  
FIGURE 8



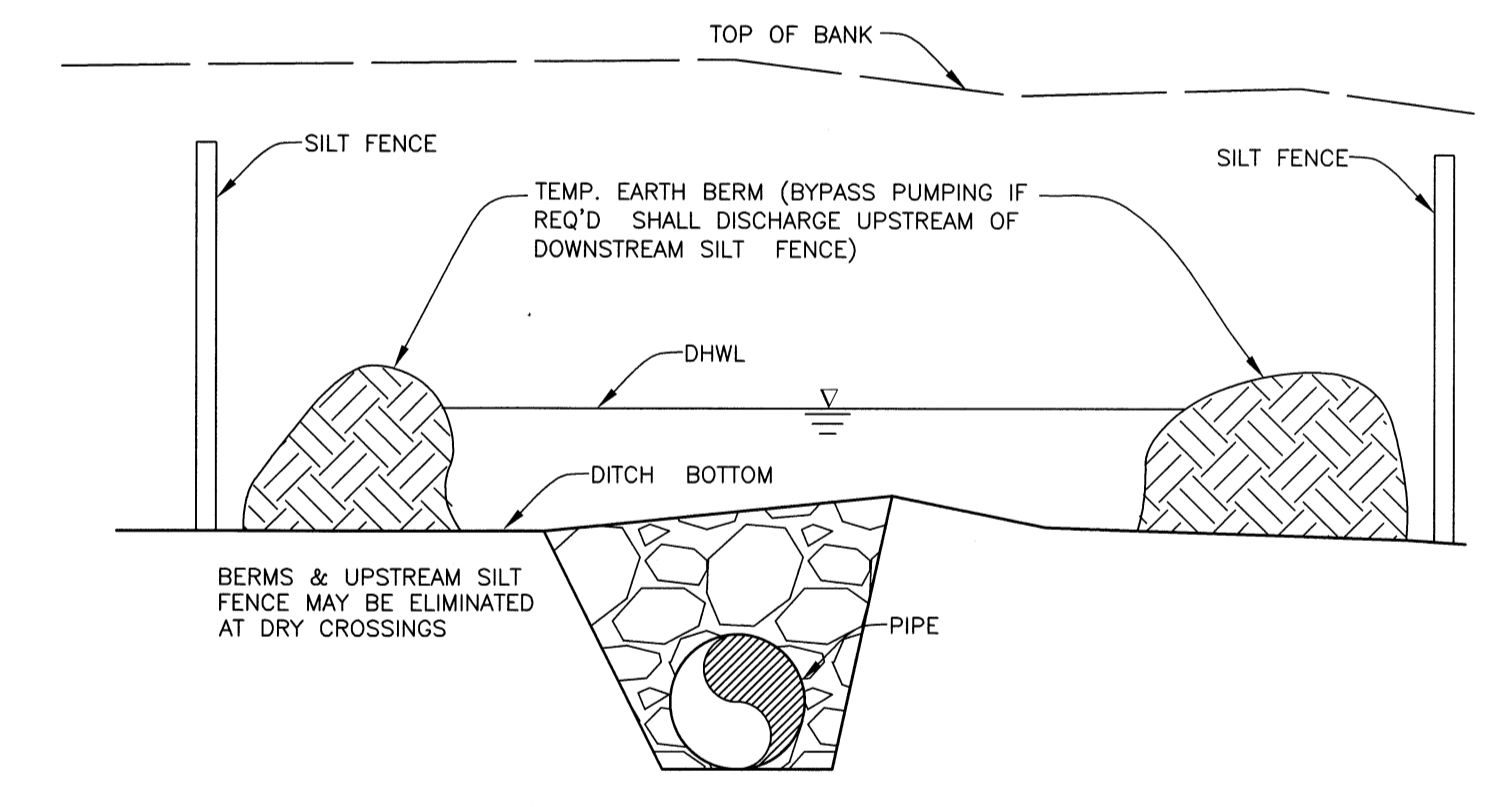
**TURBIDITY BARRIER AT CONNECTION OF  
STORM PIPE TO EXISTING LAKE**  
FIGURE 9



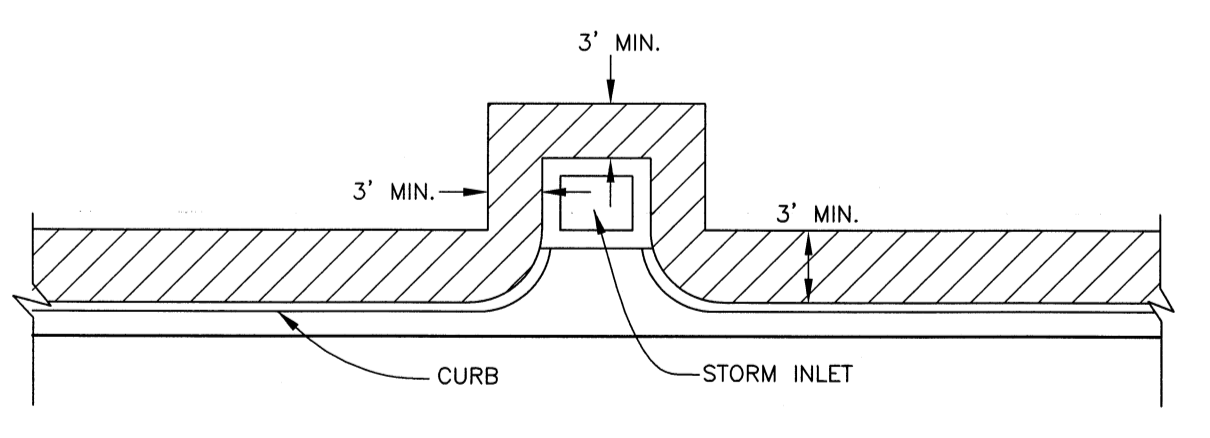
**SILT BARRIER AT CONNECTION OF  
STORM PIPE TO EXISTING SWALE**  
FIGURE 10



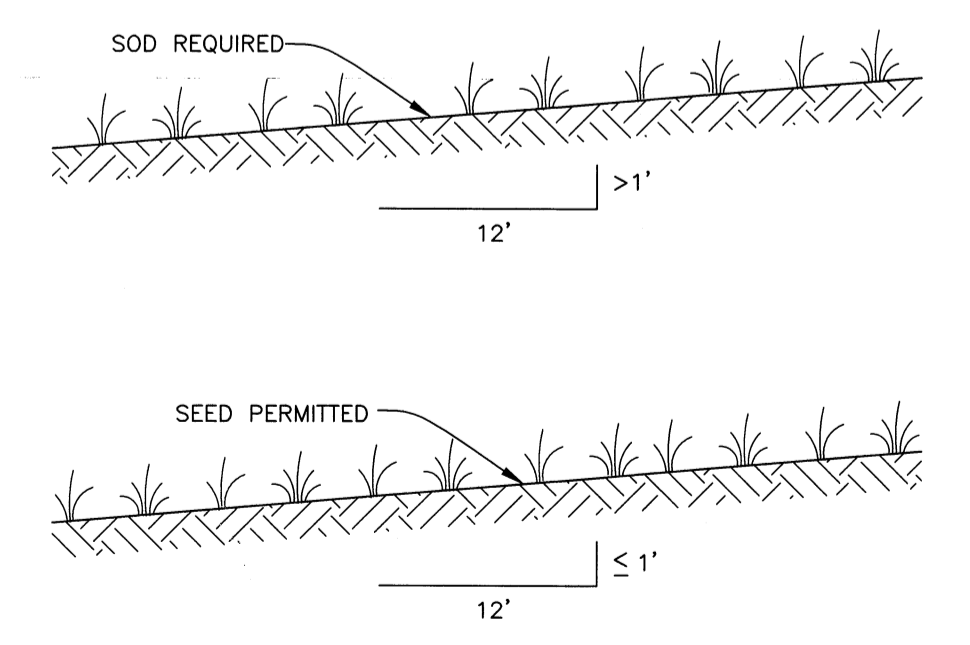
**SILT BARRIER AT CONNECTION  
OF SWALE TO EXISTING SWALE**  
FIGURE 11



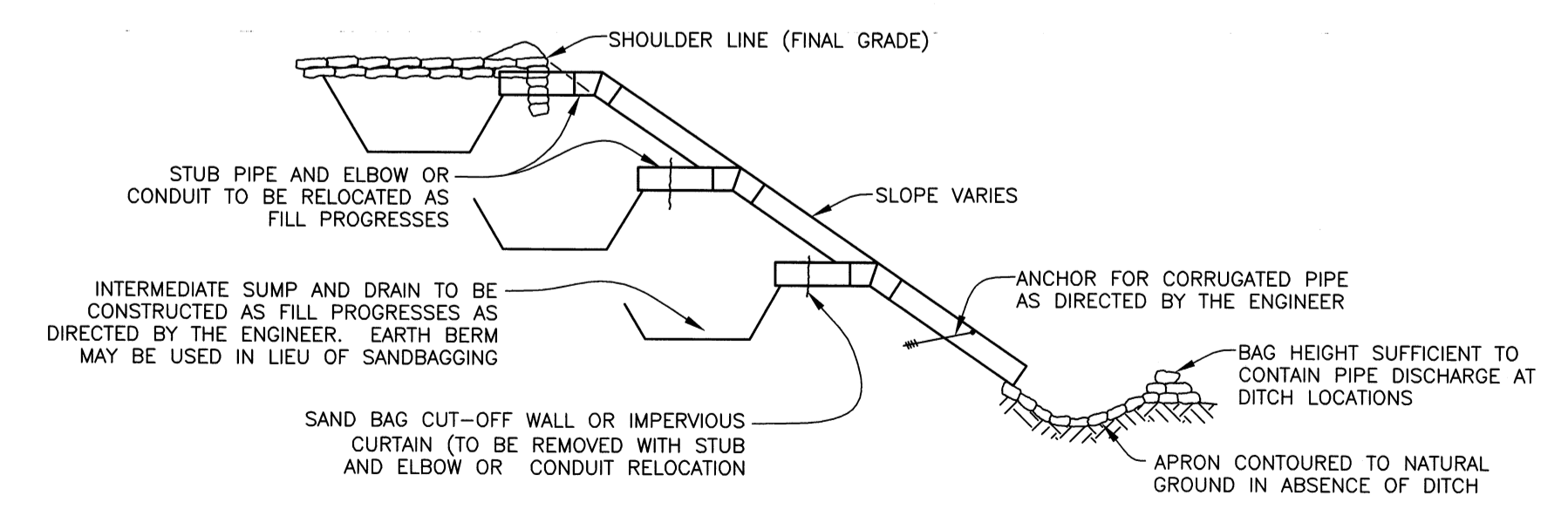
**UNDERGROUND PIPE CROSSING**  
FIGURE 12



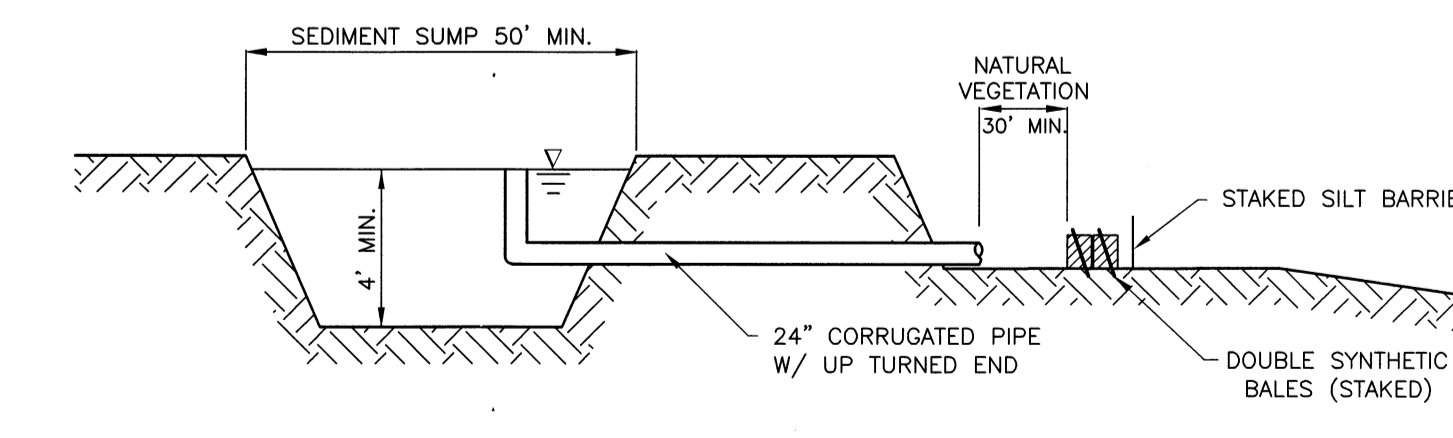
**SOD ALONG CURB  
AND AROUND INLET**  
FIGURE 14



**GRASS SLOPES**  
FIGURE 13



**SECTION AA  
TEMPORARY SLOPE DRAIN**  
FIGURE 15



**SEDIMENT SUMP SECTION**  
FIGURE 16

**NOTE:**  
REFERENCE THE FDOT DESIGN STANDARDS  
LATEST EDITION FOR ALL TEMPORARY  
EROSION CONTROL MEASURES.

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6079980
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CHECKED	JS 04/21/11

JAMES STOCKWELL, P.E.  
67198  
No. 67198  
6/2/11  
STATE OF FLORIDA  
Professional Engineer  
Date

COPYRIGHT 2010 MANATEE COUNTY GOVERNMENT | S:\PMD\_Engineering\Shara Viji Eng Design\Proj\San\_SWR\_Pkg\VM-14\_Replace\_North Shore\DWG\14\_Replace.dwg | 1:1 ARCH Tull bleed D (36.00 x 24.00 inches)