



PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

100% PLANS

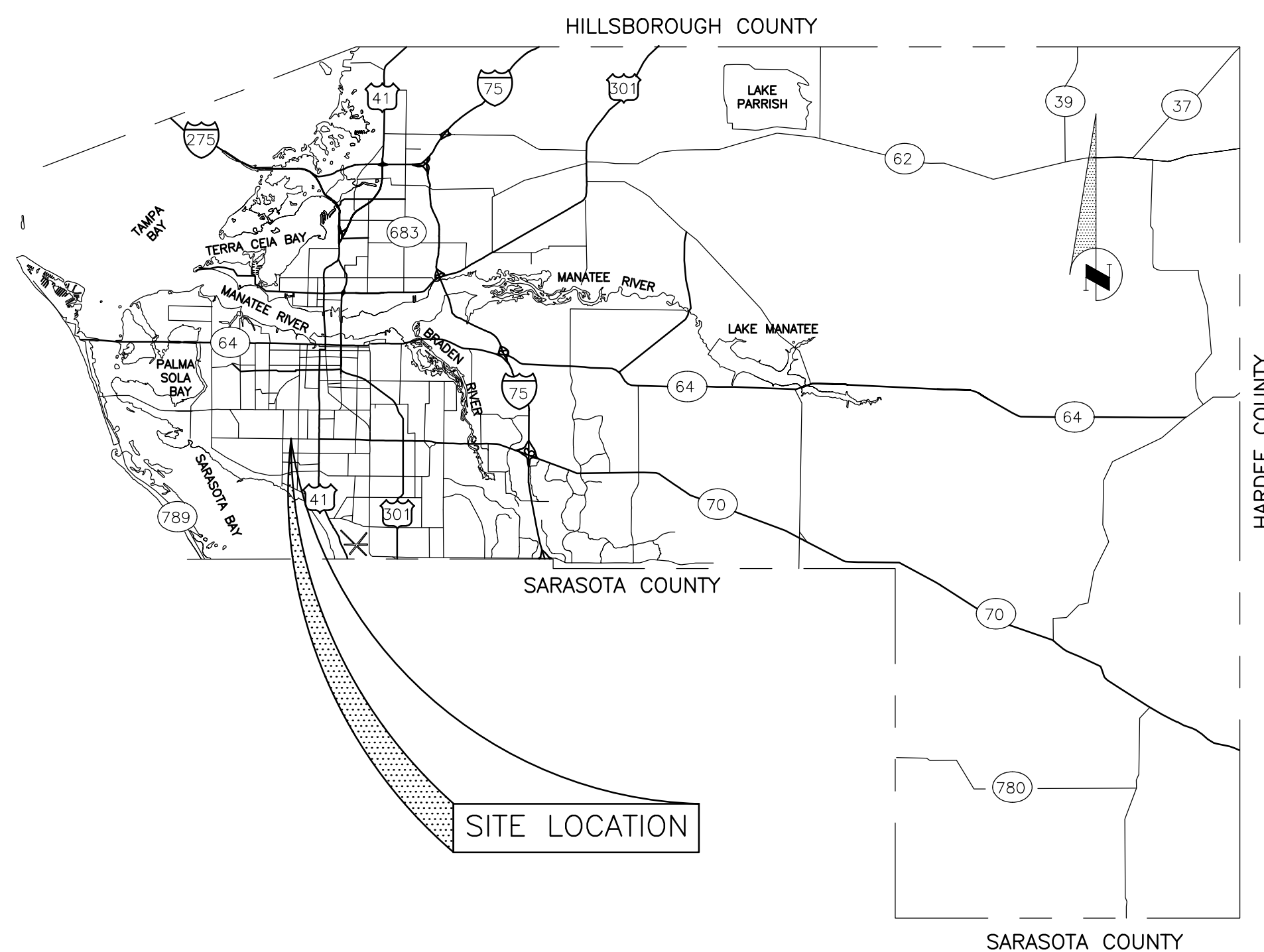
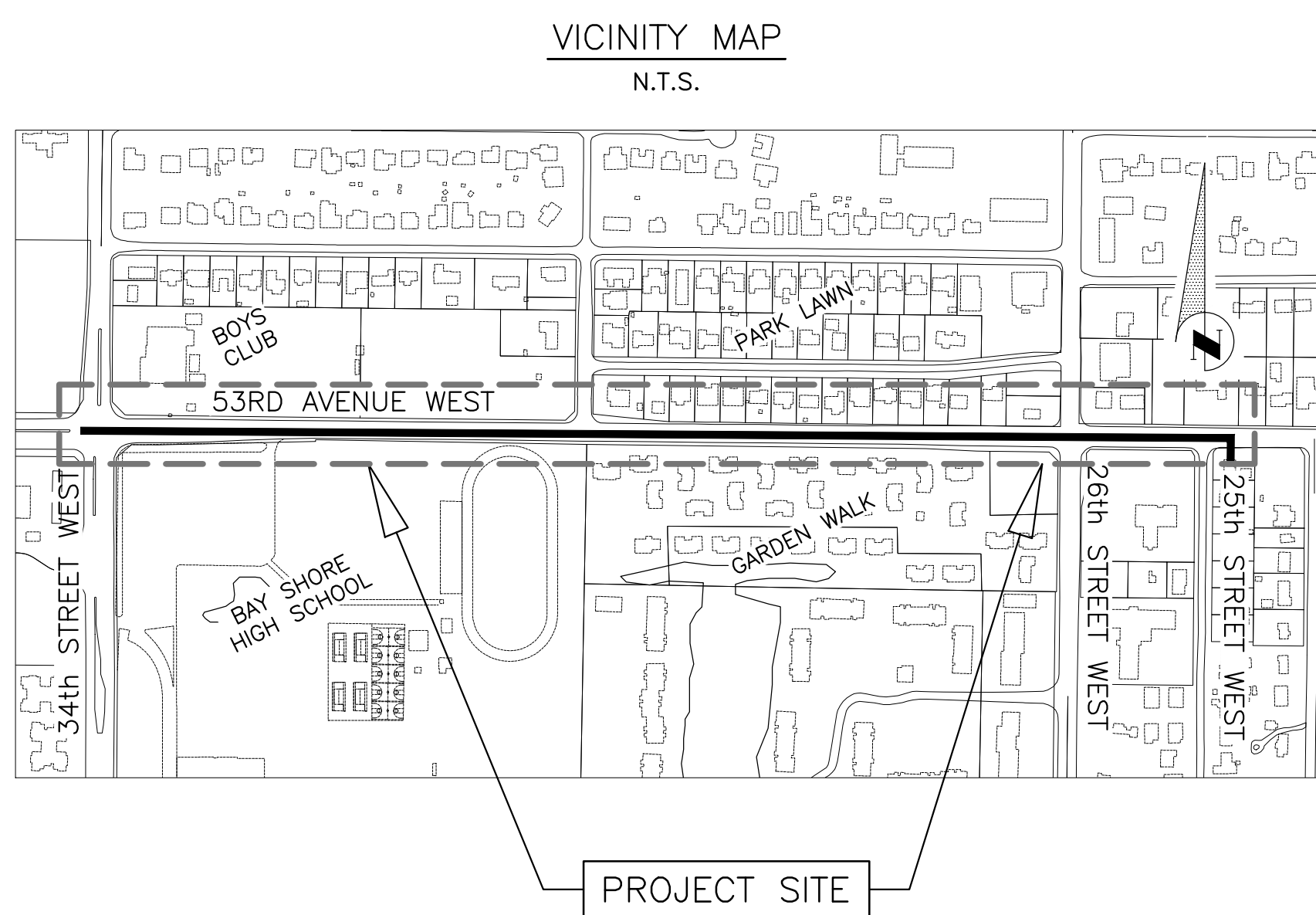
FORCE MAIN 27-A REHABILITATION

53RD AVE. W. FROM 25TH TO 34TH ST. W.

404-6023180

September 2019

**FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
COVER**



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04	STA. 15+20 TO 20+80
05	STA. 20+80 TO 26+40
06	STA. 26+40 TO 32+00
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13	DETAILS
14	SURVEY CONTROL
15	EROSION CONTROL

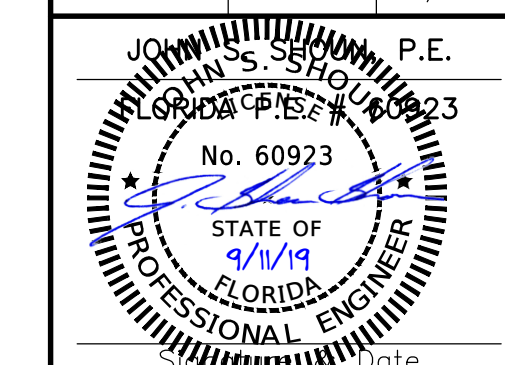
PROJECT DESCRIPTION

- THIS PROJECT WILL INCLUDE THE FOLLOWING:
- REPLACE ±3,400 LF OF EX. DIP 20" FORCE MAIN WITH 20" PVC FORCE MAIN AND SMALL AMOUNTS OF 12" AND 18" DIP FORCE MAIN AT THE MLS 27A VIA JACK AND BORE AND DIRECT BURY;
 - INSTALL A FLOW METER AND METER VAULT;
 - REPLACEMENT OF DISCHARGE PIPING IN THE MASTER LIFT STATION, AND ASSOCIATED APPURTENANCES.
 - REPLACE ±200 LF OF EX. 6" PVC (CL160) WITH 6" DIP (CL350) WATER MAIN
 - ALL NECESSARY PAVEMENT, CURB, AND SIDEWALK RESTORATION.

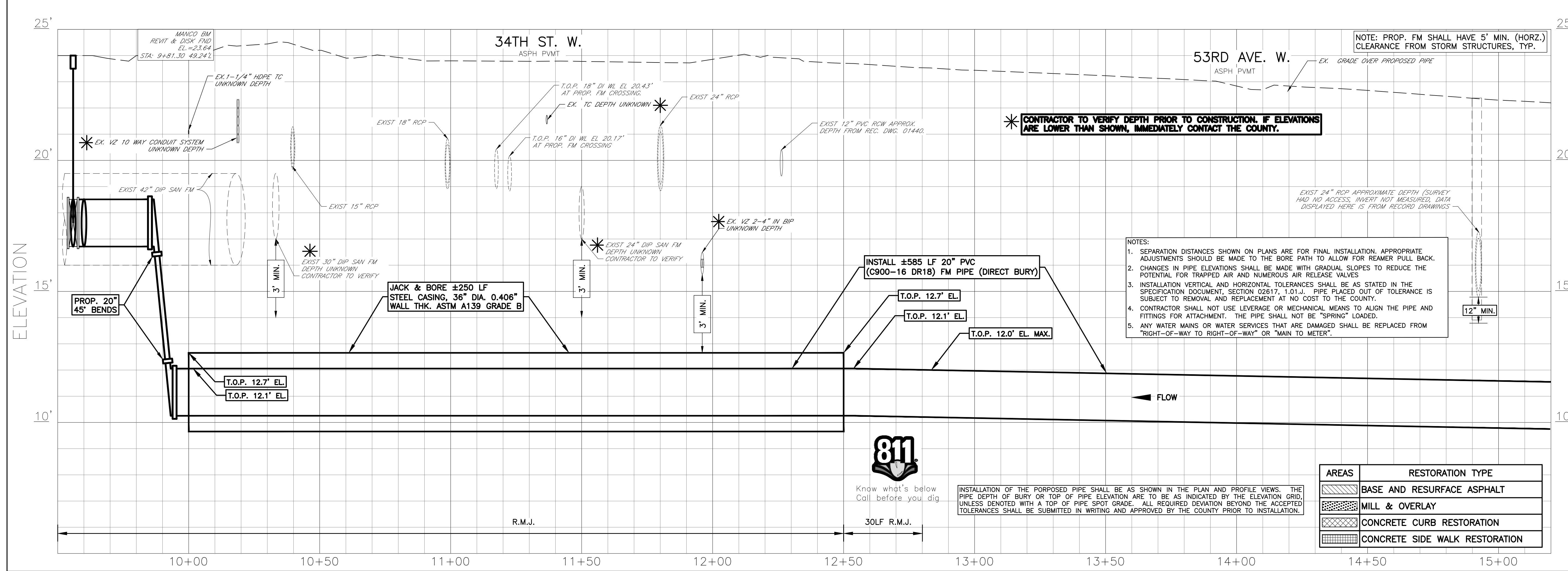
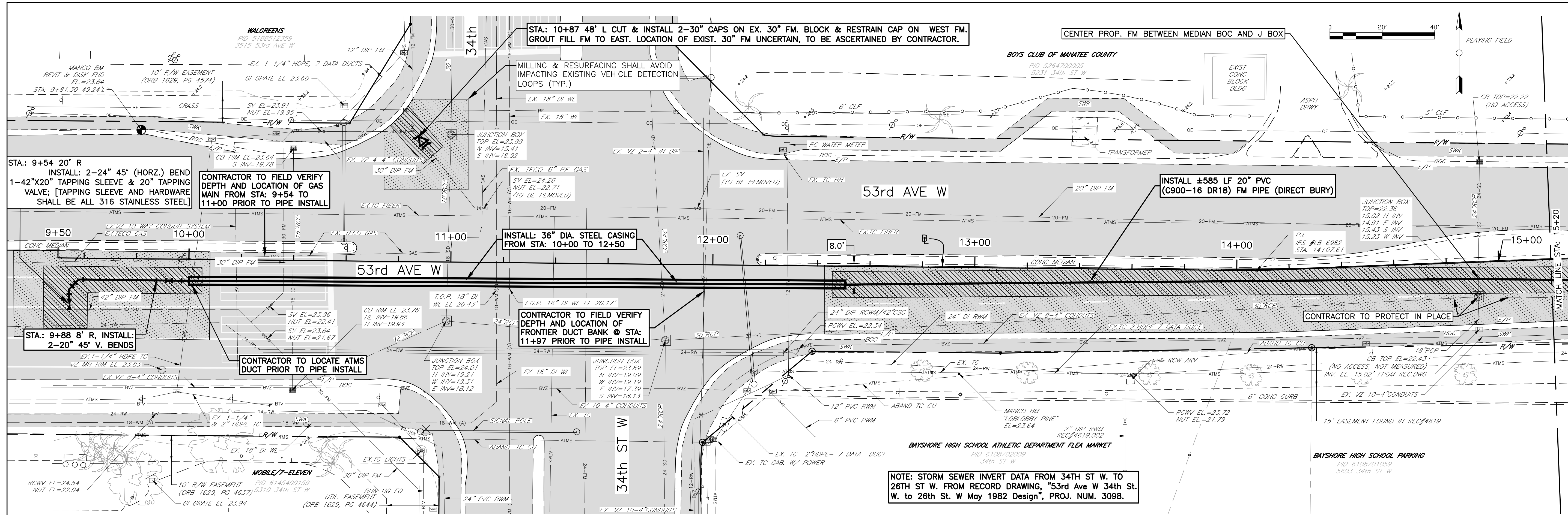


Know what's below
Call before you dig

NO.	REVISION DESCRIPTION	BY	DATE



FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
STA. 10+00 TO 15+20



Know what's below
Call before you dig

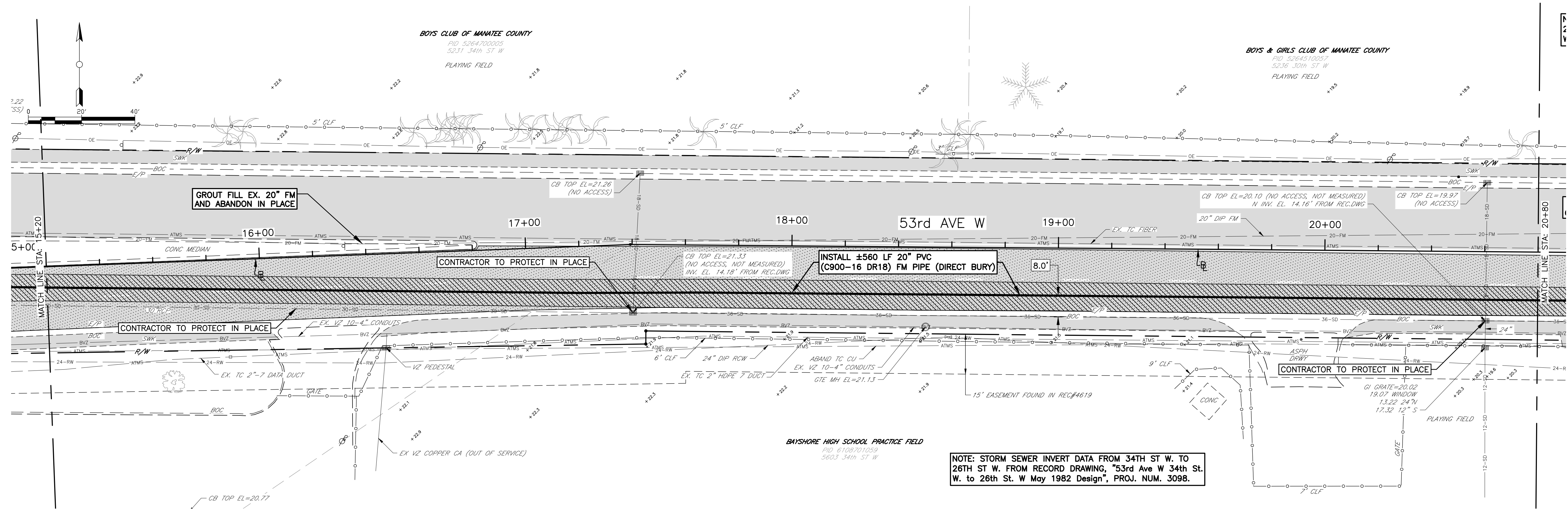
INSTALLATION OF THE PROPOSED PIPE SHALL BE AS SHOWN IN THE PLAN AND PROFILE VIEWS. THE PIPE DEPTH OF BURY OR TOP OF PIPE ELEVATION ARE TO BE AS INDICATED BY THE ELEVATION GRID, UNLESS DENOTED WITH A TOP OF PIPE SPOT GRADE. ALL REQUIRED DEVIATION BEYOND THE ACCEPTED TOLERANCES SHALL BE SUBMITTED IN WRITING AND APPROVED BY THE COUNTY PRIOR TO INSTALLATION.

AREAS	RESTORATION TYPE
	BASE AND RESURFACE ASPHALT
	MILL & OVERLAY
	CONCRETE CURB RESTORATION
	CONCRETE SIDE WALK RESTORATION

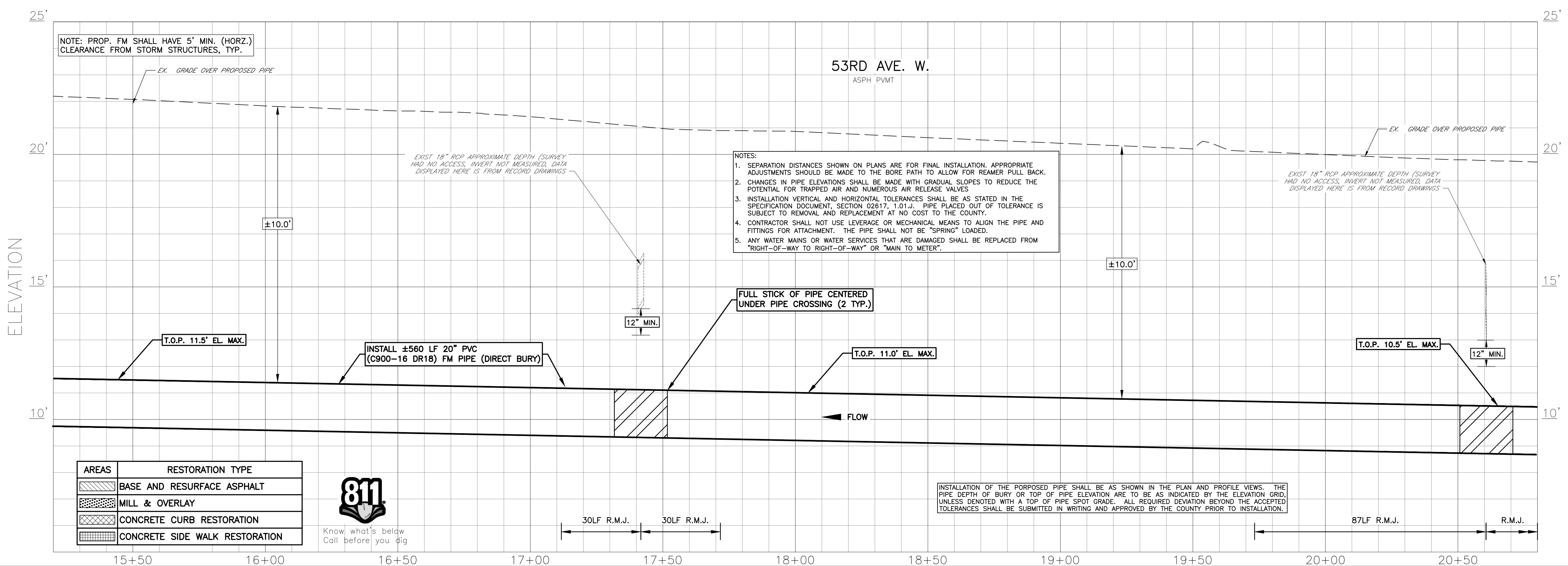
NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6023180
SURVEY #	00-43863
SEC./TWN./RGE	9,10,15,16/35/17
VERT. SCALE	1"=2'
HORZ. SCALE	1"=20'
VERTICAL DATUM	NAVD 88
SURVEYED	ZNS 04/07/15
DESIGNED	JDS 10/2015
DRAWN	BLR 10/2015

JOHN S. SHAW, P.E.
Professional Engineer
No. 60923
State of Florida
9/11/19



NOTE: STORM SEWER INVERT DATA FROM 34TH ST W. TO 26TH ST W. FROM RECORD DRAWING, "53rd Ave W 34th St. W. to 26th St. W May 1982 Design", PROJ. NUM. 3098.



- NOTES:
- SEPARATION DISTANCES SHOWN ON PLANS ARE FOR FINAL INSTALLATION. APPROPRIATE ADJUSTMENTS SHOULD BE MADE TO THE BORE PATH TO ALLOW FOR REAMER PULL BACK.
 - CHANGES IN PIPE ELEVATIONS SHALL BE MADE WITH GRADUAL SLOPES TO REDUCE THE POTENTIAL FOR TRAPPED AIR AND NUMEROUS AIR RELEASE VALVES.
 - INSTALLATION VERTICAL AND HORIZONTAL TOLERANCES SHALL BE AS STATED IN THE SPECIFICATION DOCUMENT, SECTION 02617, 1.01.1. PIPE PLACED OUT OF TOLERANCE IS SUBJECT TO REMOVAL AND REPLACEMENT AT NO COST TO THE COUNTY.
 - CONTRACTOR SHALL NOT USE LEVERAGE OR MECHANICAL MEANS TO ALIGN THE PIPE AND FITTINGS FOR ATTACHMENT. THE PIPE SHALL NOT BE "SPRING" LOADED.
 - ANY WATER MAINS OR WATER SERVICES THAT ARE DAMAGED SHALL BE REPLACED FROM "RIGHT-OF-WAY TO RIGHT-OF-WAY" OR "MAIN TO METER".

AREAS	RESTORATION TYPE
	BASE AND RESURFACE ASPHALT
	MILL & OVERLAY
	CONCRETE CURB RESTORATION
	CONCRETE SIDE WALK RESTORATION



INSTALLATION OF THE PROPOSED PIPE SHALL BE AS SHOWN IN THE PLAN AND PROFILE VIEWS. THE PIPE DEPTH OF BURY OR TOP OF PIPE ELEVATION ARE TO BE AS INDICATED BY THE ELEVATION GRID, UNLESS DENOTED WITH A TOP OF PIPE SPOT GRADE. ALL REQUIRED DEVIATION BEYOND THE ACCEPTED TOLERANCES SHALL BE SUBMITTED IN WRITING AND APPROVED BY THE COUNTY PRIOR TO INSTALLATION.

FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
STA. 15+20 TO 20+80

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6023180
SURVEY #	00-43863
SEC./TWN./RGE	9.10,15,16/35/17
VERT. SCALE	1"=2'
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STATE OF FLORIDA
Professional Engineer
Date

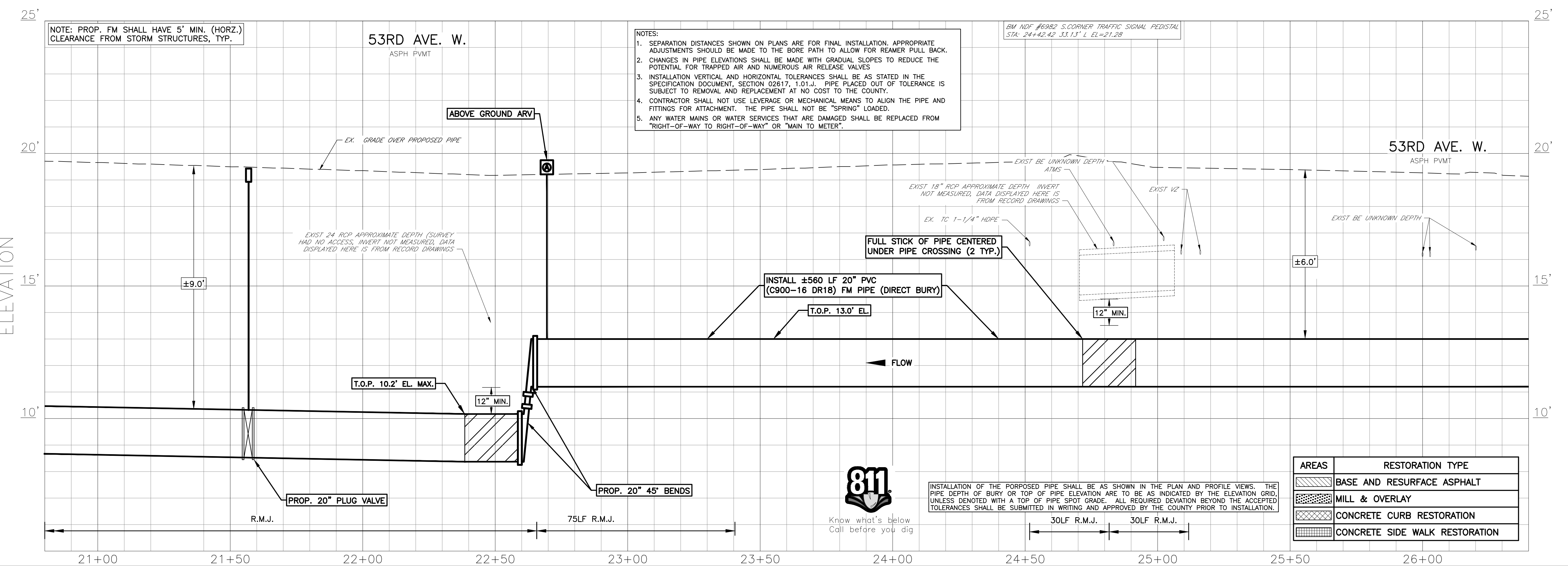
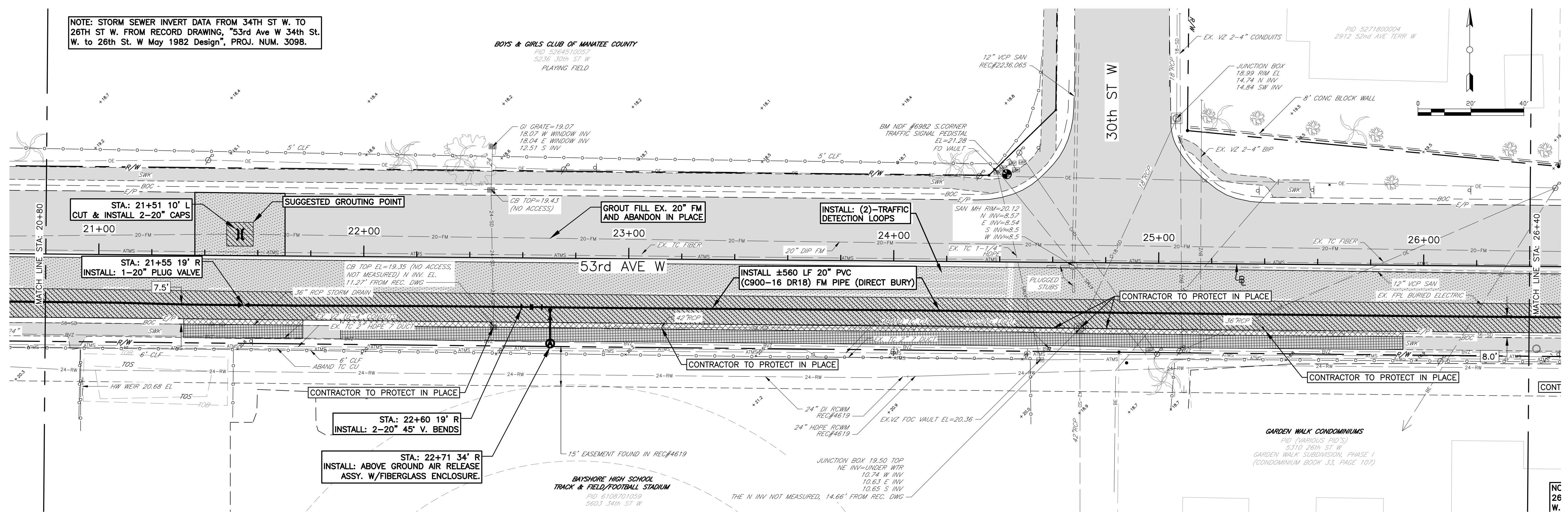
SHEET 04 OF 15

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FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
STA. 20+80 TO 26+40

NOTE: STORM SEWER INVERT DATA FROM 34TH ST W. TO 26TH ST W. FROM RECORD DRAWING, "53rd Ave W 34th St. W. to 26th St. W May 1982 Design", PROJ. NUM. 3098.

BOYS & GIRLS CLUB OF MANATEE COUNTY
PID 5264510057
5336 30th ST W
PLAYING FIELD



- NOTES:
1. SEPARATION DISTANCES SHOWN ON PLANS ARE FOR FINAL INSTALLATION. APPROPRIATE ADJUSTMENTS SHOULD BE MADE TO THE BORE PATH TO ALLOW FOR REAMER PULL BACK.
 2. CHANGES IN PIPE ELEVATIONS SHALL BE MADE WITH GRADUAL SLOPES TO REDUCE THE POTENTIAL FOR TRAPPED AIR AND NUMEROUS AIR RELEASE VALVES.
 3. INSTALLATION VERTICAL AND HORIZONTAL TOLERANCES SHALL BE AS STATED IN THE SPECIFICATION DOCUMENT, SECTION 02617, 1.01.J. PIPE PLACED OUT OF TOLERANCE IS SUBJECT TO REMOVAL AND REPLACEMENT AT NO COST TO THE COUNTY.
 4. CONTRACTOR SHALL NOT USE LEVERAGE OR MECHANICAL MEANS TO ALIGN THE PIPE AND FITTINGS FOR ATTACHMENT. THE PIPE SHALL NOT BE "SPRING" LOADED.
 5. ANY WATER MAINS OR WATER SERVICES THAT ARE DAMAGED SHALL BE REPLACED FROM "RIGHT-OF-WAY TO RIGHT-OF-WAY" OR "MAIN TO METER".

AREAS	RESTORATION TYPE
	BASE AND RESURFACE ASPHALT
	MILL & OVERLAY
	CONCRETE CURB RESTORATION
	CONCRETE SIDE WALK RESTORATION

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6023180
SURVEY #	00-43863
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VERT. SCALE	1"=2'
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DESIGNED	JDS 10/2015
DRAWN	BLR 10/2015

BY	DATE

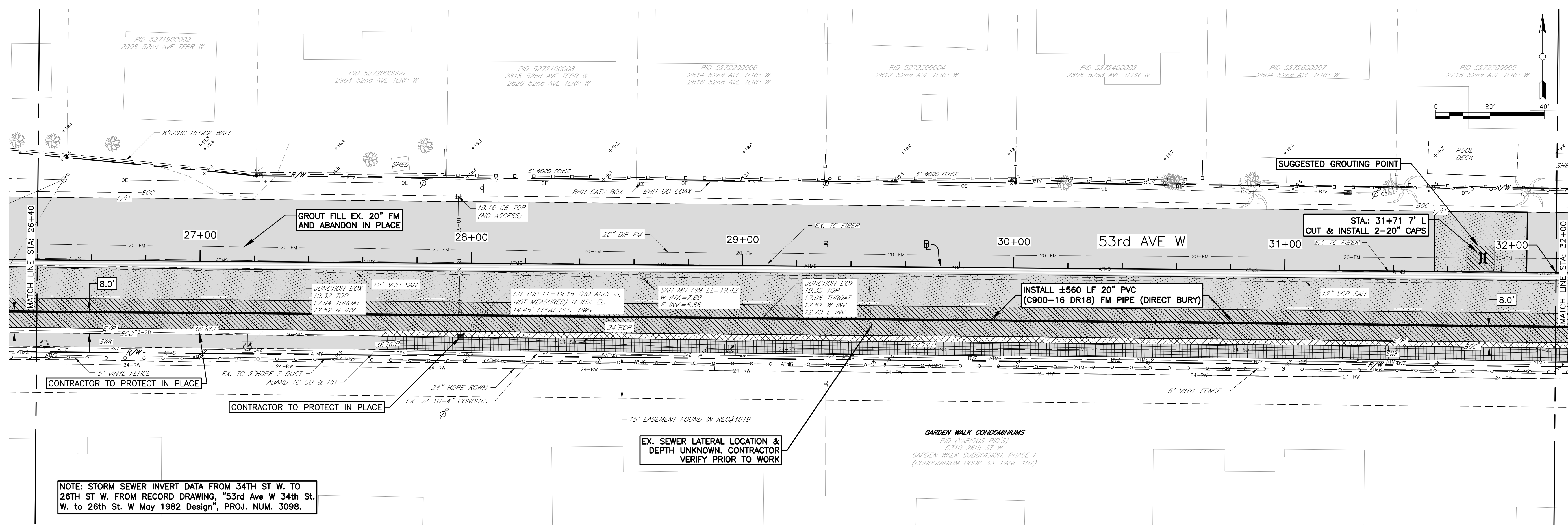
PROJECT #	404-6023180
DATE	10/8/19
ENGINEER	JOHN S. SHOWN, P.E.
LICENSE #	60923

SHEET 05 OF 15



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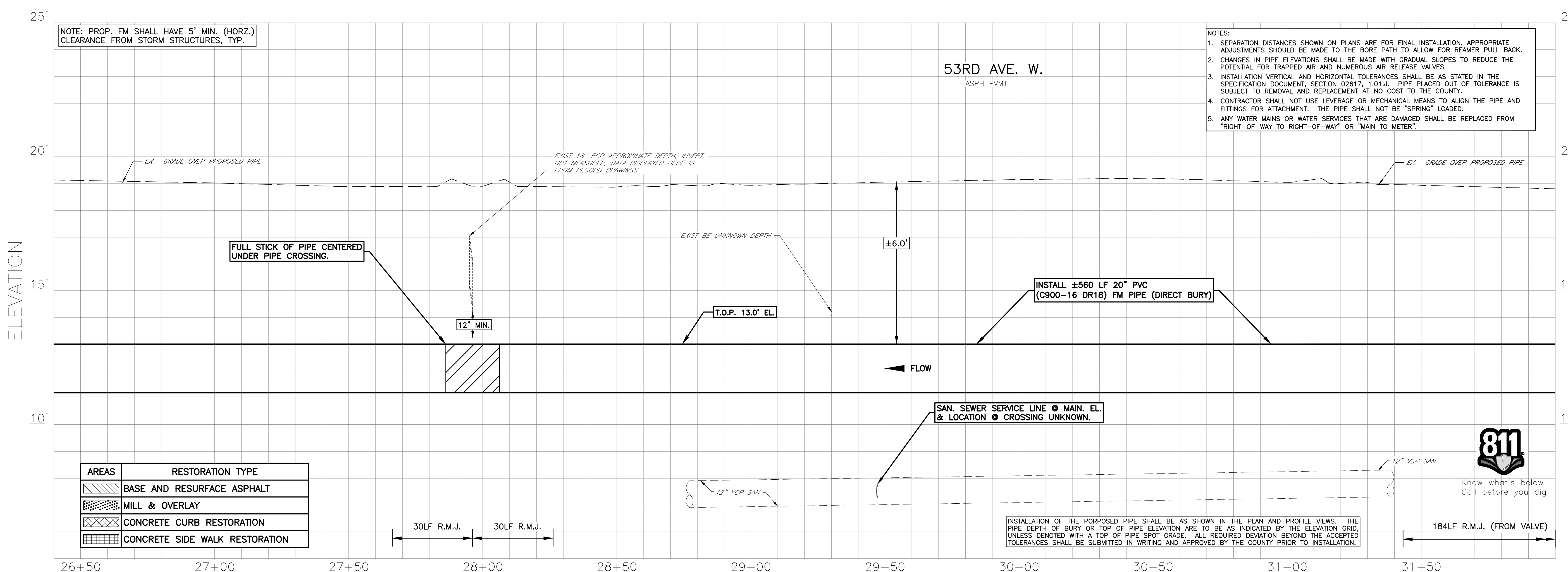
FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
STA. 26+40 TO 32+00



NOTE: STORM SEWER INVERT DATA FROM 34TH ST W. TO 26TH ST W. FROM RECORD DRAWING, "53rd Ave W 34th St. W. to 26th St. W May 1982 Design", PROJ. NUM. 3098.

EX. SEWER LATERAL LOCATION & DEPTH UNKNOWN. CONTRACTOR VERIFY PRIOR TO WORK

GARDEN WALK CONDOMINIUMS
PID (VARIOUS PIDS)
5310 26th ST W
GARDEN WALK SUBDIVISION, PHASE 1
(CONDOMINIUM BOOK 33, PAGE 107)



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	BASE AND RESURFACE ASPHALT
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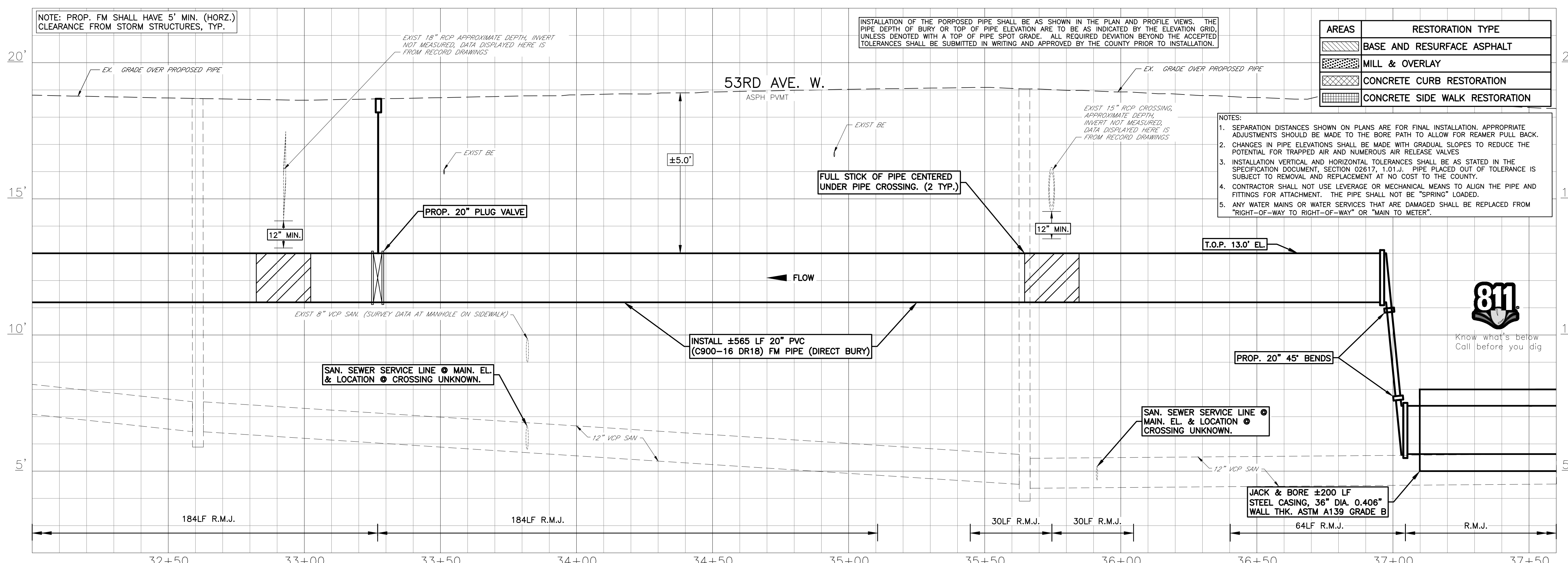
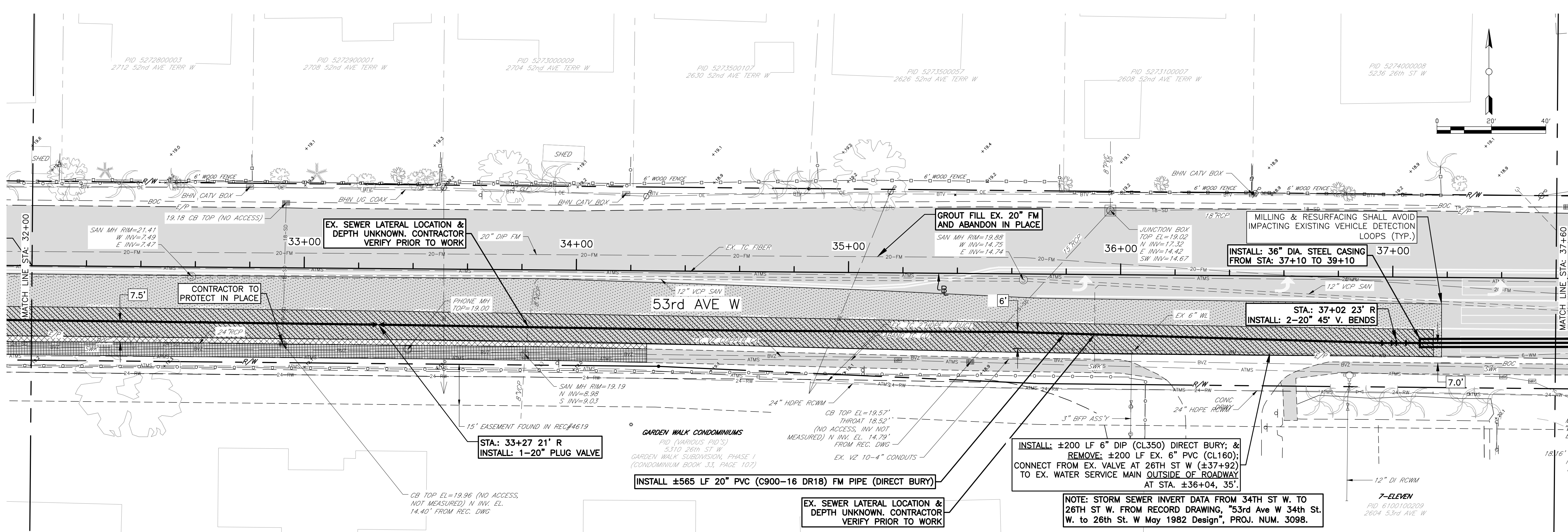
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VERT. SCALE	1"=2'
HORZ. SCALE	1"=20'
VERTICAL DATUM	NAVD 88
SURVEYED	BY ZNS DATE 04/07/15
DESIGNED	JDS 10/2015
DRAWN	BLR 10/2015

JOHN S. SHORR, P.E.
Professional Engineer
No. 60923
STATE OF FLORIDA
Professional Engineer
Signature: [Signature]

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FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
STA. 32+00 TO 37+60



AREAS	RESTORATION TYPE
[Hatched Pattern]	BASE AND RESURFACE ASPHALT
[Dotted Pattern]	MILL & OVERLAY
[Cross-hatched Pattern]	CONCRETE CURB RESTORATION
[Grid Pattern]	CONCRETE SIDE WALK RESTORATION

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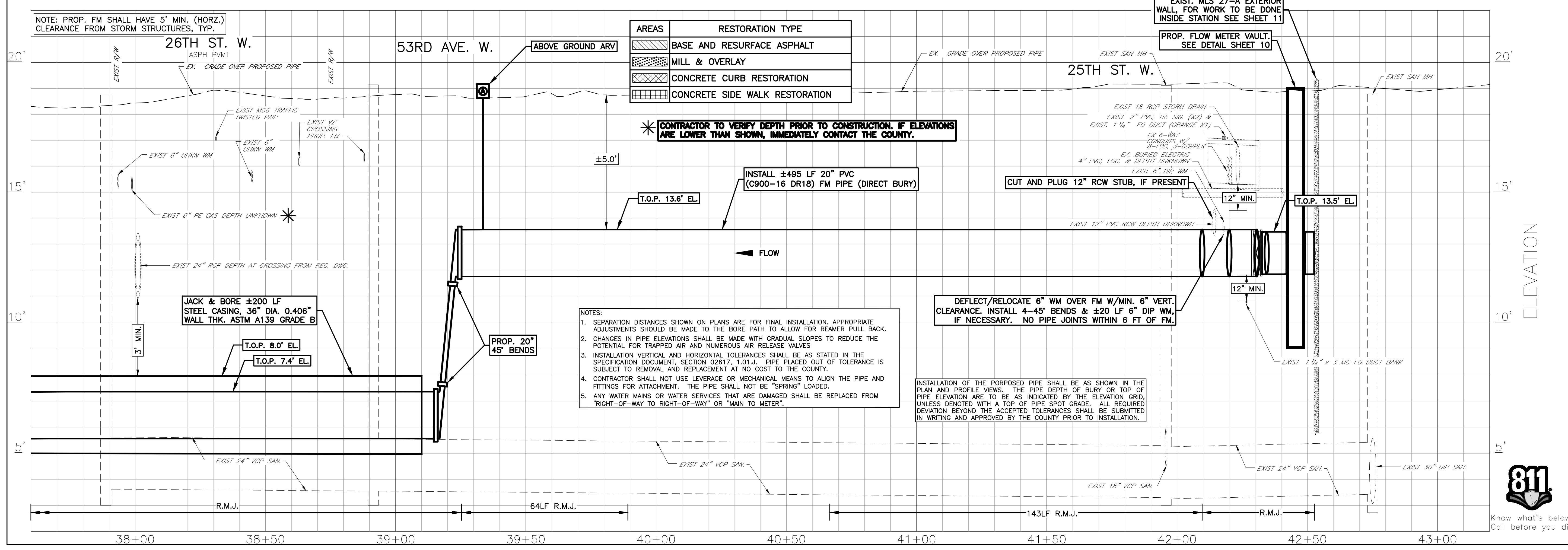
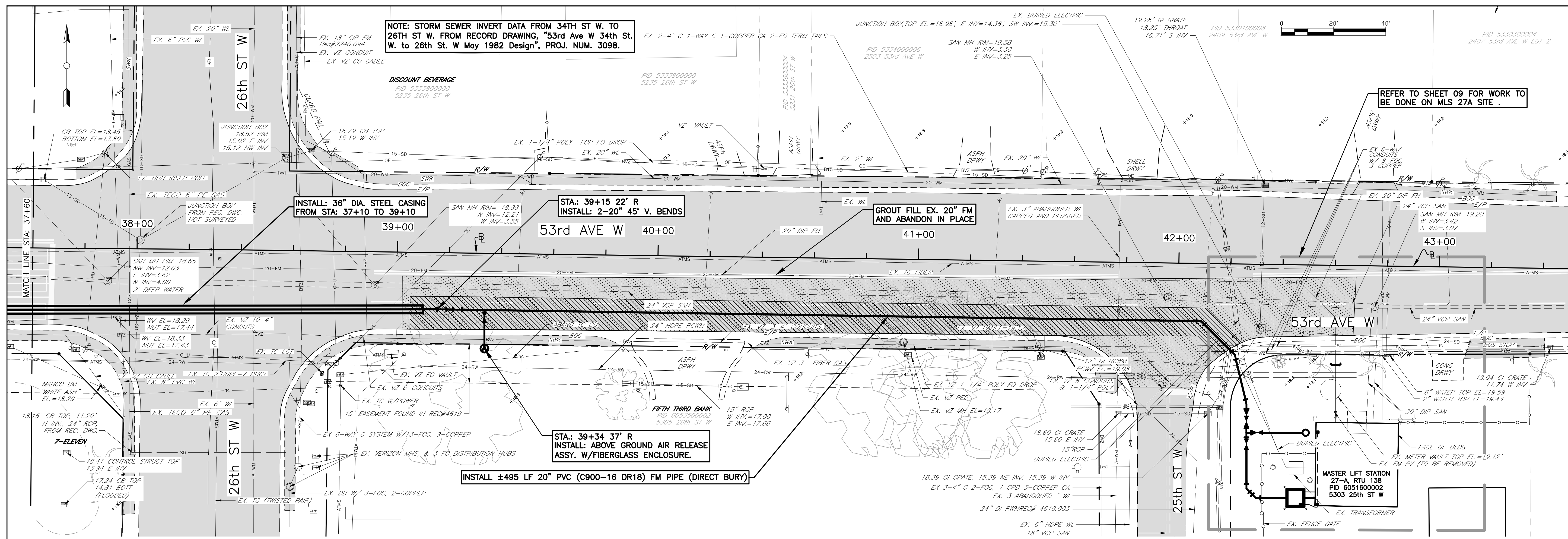
PROJECT #	404-6023180
SURVEY #	00-43863
SEC./TWN./RGE	9,10,15,16/35/17
VERT. SCALE	1"=2'
HORZ. SCALE	1"=20'
VERTICAL DATUM	NAVD 88

SURVEYED	ZNS	04/07/15
DESIGNED	JDS	10/2015
DRAWN	BLR	10/2015

JOHN S. SHORR P.E.
No. 60923
STATE OF FLORIDA
PROFESSIONAL ENGINEER

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FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
STA. 37+60 TO 43+20



NO.	REVISION DESCRIPTION	BY	DATE
1	FORCEMAIN & VAULT REVISIONS	JDS/JSS	10/19/17

PROJECT #	404-6023180
SURVEY #	00-43863
SEC./TWN./RGE	9,10,15,16/35/17
VERT. SCALE	1"=2'
HORZ. SCALE	1"=20'
VERTICAL DATUM	NAVD 88
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DESIGNED	JDS 10/2015
DRAWN	BLR 10/2015

JOHN SHORR, P.E.
No. 60923
STATE OF FLORIDA
PROFESSIONAL ENGINEER
Signature: [Signature] Date: [Date]

811 Know what's below Call before you dig

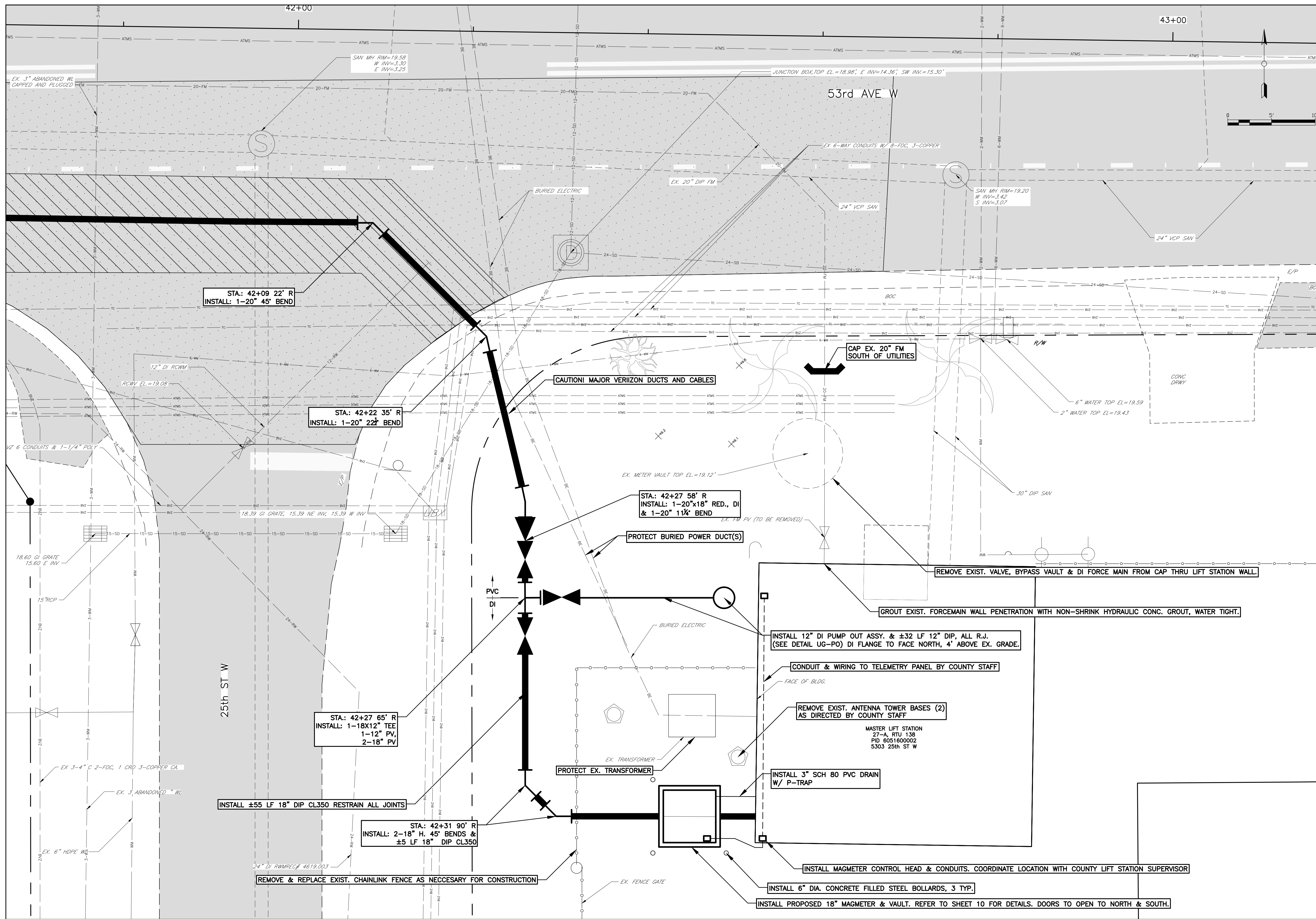
SHEET 08 OF 15

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PUBLIC WORKS DEPARTMENT
ENGINEERING SERVICES
1022 26th Avenue East, Bradenton, FL 34208

**FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
MLS 27A - SITE PIPING PLAN**



NO.	REVISION DESCRIPTION	BY	DATE

PROJECT # 404-6023180
 SURVEY # 00-43863
 SEC./TWN./RGE 9,10,15,16/35/17
 VERT. SCALE NA
 HORIZ. SCALE 1"=5'
 VERTICAL DATUM NAVD 88

SURVEYED	ZNS	04/07/15
DESIGNED	JDS	10/2015
DRAWN	BLR	10/2015

JOHN S. SHORR, P.E.
 No. 60923
 4/1/19
 STATE OF FLORIDA
 PROFESSIONAL ENGINEER

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**FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
FLOW METER (LOOKING NORTH)**



CONTRACTOR TO MOUNT FLOW METER CONTROL HEAD TO INTERIOR WALL IN MLS. COORDINATE LOCATION & CONDUIT/WIRING WITH COUNTY L.S. STAFF. (SEE NOTE 1)

INSTALL: 6'(L)x6'(W)x11'(D) PRECAST CONC. VAULT W/ 48"x48" HEAVY DUTY DOUBLE DOOR ALUMINUM HATCH, W/PADLOCK, HALLIDAY OR EQUIVALENT. RIM ELEVATION SHALL MATCH THE FINISH FLOOR OF THE MLS WITH A 4" REVEAL FROM SURROUND GRADE. CONTRACTOR SHALL RE-GRADE SITE AS NECESSARY TO ENSURE 4" REVEAL AND STORM RUNOFF IS DIRECTED AWAY FROM THE VAULT AND MLS. HATCH

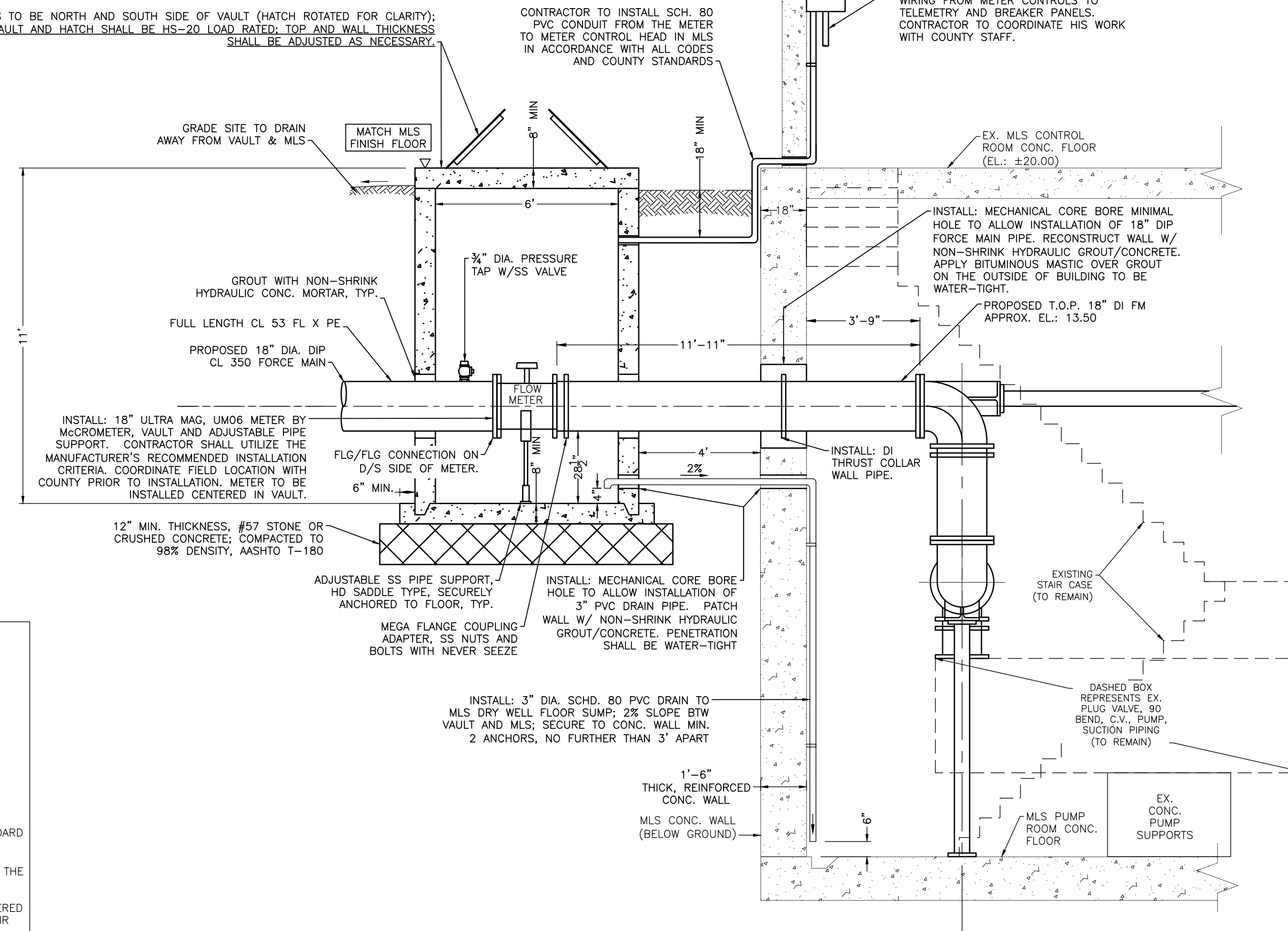
HINGES TO BE NORTH AND SOUTH SIDE OF VAULT (HATCH ROTATED FOR CLARITY); THE VAULT AND HATCH SHALL BE HS-20 LOAD RATED; TOP AND WALL THICKNESS SHALL BE ADJUSTED AS NECESSARY.

CONTRACTOR TO INSTALL SCH. 80 PVC CONDUIT FROM THE METER TO METER CONTROL HEAD IN MLS IN ACCORDANCE WITH ALL CODES AND COUNTY STANDARDS

WALLS SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. LOCATIONS NOT TO SCALE

CONTRACTOR TO MOUNT FLOW METER CONTROL HEAD TO INTERIOR WALL OF THE SOUTHWEST CORNER OF THE MLS. EXACT LOCATION SHALL BE COORDINATED WITH COUNTY L.S. STAFF.

COUNTY STAFF TO INSTALL CONDUIT AND WIRING FROM METER CONTROLS TO TELEMETRY AND BREAKER PANELS. CONTRACTOR TO COORDINATE HIS WORK WITH COUNTY STAFF.

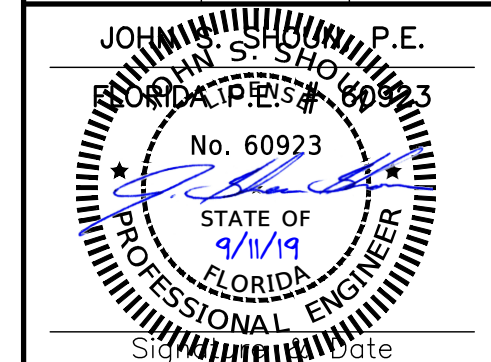


- NOTES:**
- CONTRACTOR SHALL INSTALL ALL CONDUITS AND WIRING FROM MAGMETER TO CONTROL HEAD, INCLUDING CONDUIT & 110VAC AND SHIELDED TWO PAIR CABLE TO THE METER CONTROLS ON WALL (SEE PHOTO). COORDINATE EXACT LOCATION WITH COUNTY LIFT STATION STAFF.
 - COUNTY WILL LAND THE 4-20mA SIGNAL WIRE TO THE SCADA AND INSTALL CONDUIT AND WIRING FROM THE METER CONTROLS TO THE TELEMETRY AND BREAKER PANELS.
 - MAGMETER SHALL BE FURNISHED, INSTALLED & CALIBRATED BY THE CONTRACTOR IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS & REQUIREMENTS. INSTALL 18" MAGMETER MCCROMETER ULTRAMAG UM06 W/ 316 SS GROUND RINGS & ELECTRODES, FLANGES & CABLE LENGTH AS REQUIRED, KIT FOR POTTED AND FITTED CABLE. METER AND ALL ELECTRICAL IN VAULT SHALL BE RATED FOR CONTINUOUS SUBMERSION. ALL ELECTRICAL WORK SHALL COMPLY WITH THE CURRENT NEC, NESC AND LOCAL CODES, INCLUDING COUNTY AND MANUFACTURER'S REQUIREMENTS. CONTRACTOR SHALL PROVIDE ALL GROUNDING REQUIREMENTS AS RECOMMENDED BY THE METER MANUFACTURER.
 - REFER TO MANATEE COUNTY STDS. SECTION 1.13.2C FOR ADDITIONAL HATCH REQUIREMENTS.
 - SITE VISITS ARE MANDATORY FOR ALL BIDDERS. THESE SITE VISITS CAN BE ARRANGED THROUGH NICK WAGNER, LIFT STATION SUPERINTENDENT, 941-792-8811 X5377.
 - ALL CONSTRUCTION ON THIS PROJECT SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF MANATEE COUNTY UTILITY AND TRANSPORTATION STANDARDS AND FDOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" UNLESS OTHERWISE INDICATED ON THE PLANS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING ALL CONDITIONS AND REQUIREMENTS OF ALL PERMITS AND ALL GOVERNING FEDERAL, STATE, AND LOCAL AGENCIES. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED PERMITS THAT ARE NOT PROVIDED IN THE BID DOCUMENTS, AT NO ADDITIONAL COST TO THE OWNER.
 - THE INFORMATION PROVIDED IN THESE PLANS IS SOLELY TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF THE CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF WORK. ALL CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT WHATEVER INVESTIGATION THEY MAY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH THEIR BIDS WILL BE BASED.
 - ALL DIMENSIONS ARE CONSIDERED APPROXIMATE. THE CONTRACTOR SHALL REVIEW AND VERIFY ALL DIMENSIONS ON THE PLANS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT CONSTRUCTION. SHOULD DISCREPANCIES OCCUR, THE CONTRACTOR SHALL NOTIFY THE COUNTY TO OBTAIN THE ENGINEER'S CLARIFICATION BEFORE COMMENCING WITH CONSTRUCTION.
 - THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. THIS EXCLUSION DOES NOT ALLEVIATE THE CONTRACTOR FROM PROVIDING A CONTINUOUS SAFE WORKSPACE.
 - THE CONFIGURATION OF THE MASTER LIFT STATION SHOWN ON THESE GRAPHICS MAY VARY FROM THE ACTUAL STRUCTURE. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITION, ELEVATIONS, CONFIGURATIONS, ETC FOR ACCURACY.
 - CONTRACTOR IS RESPONSIBLE FOR ALL LABOR, EQUIPMENT, AND ALL MATERIALS REQUIRED TO COMPLETE THE JOB AS INTENDED.
 - CONTRACTOR SHALL PROVIDE, AT A MINIMUM, SHOP DRAWINGS OF THE CONDUIT AND WIRING, METER VAULT, HATCH, AND METER/METER CONTROLS FOR REVIEW AND APPROVAL BY THE COUNTY.

**PROPOSED CONDITIONS
(SECTION VIEW - LOOKING NORTH)**

NO.	REVISION DESCRIPTION	BY	DATE

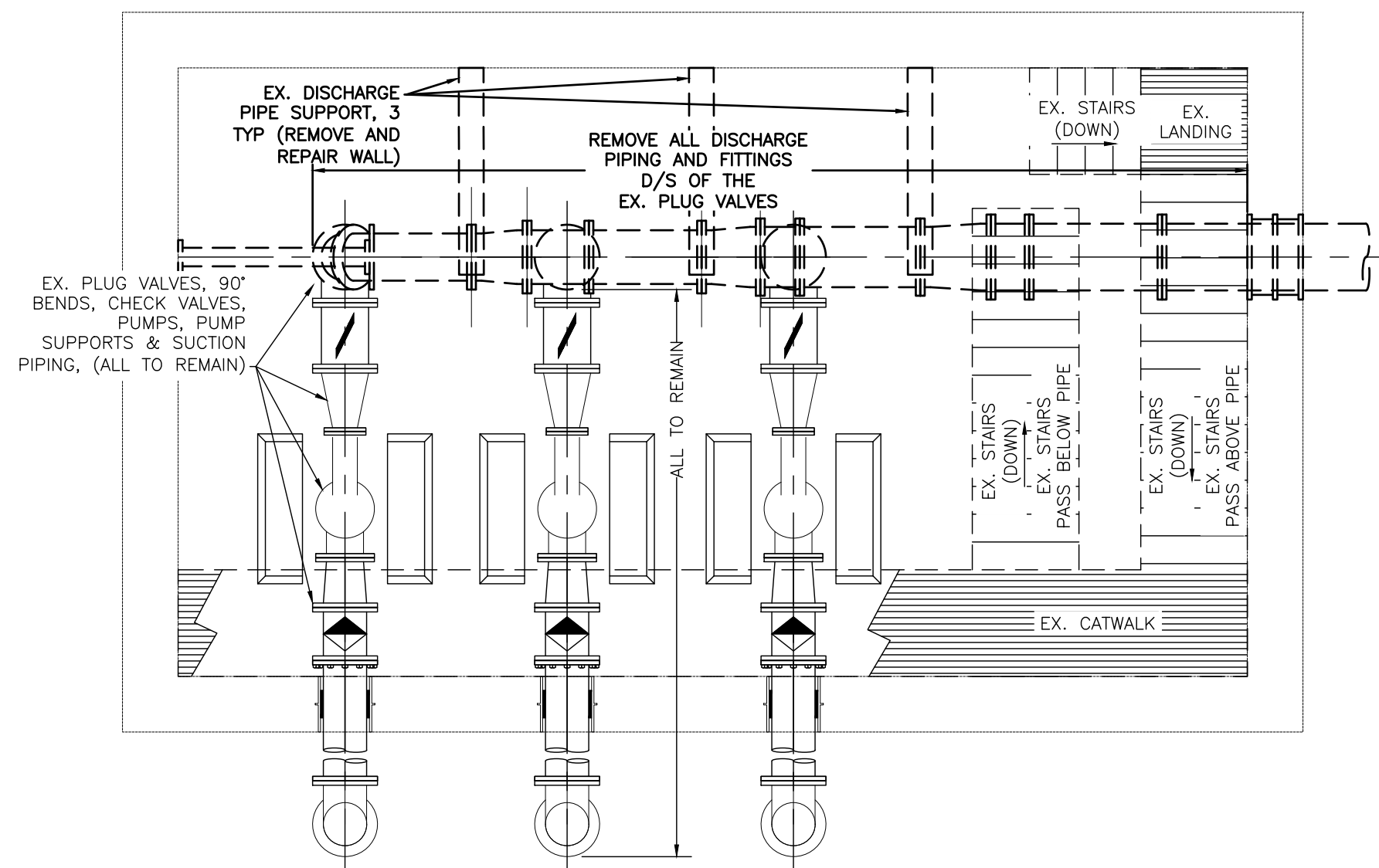
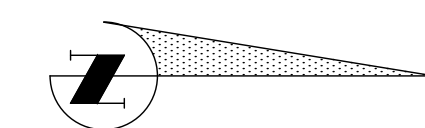
PROJECT #	404-6023180
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SCALE	N.T.S.
VERTICAL DATUM	NAVD 88
SURVEYED	ZNS 04/07/15
DESIGNED	JSS 10/2015
DRAWN	JSS 10/2015



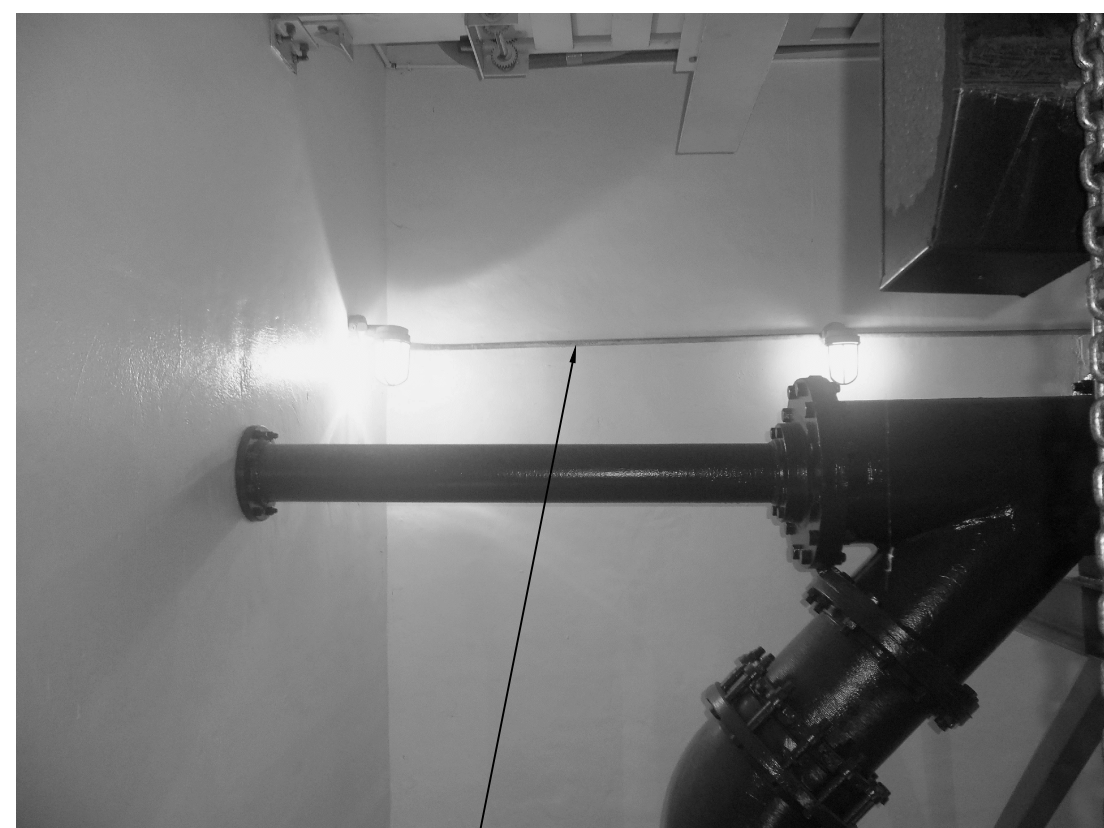
COPYRIGHT 2010 MANATEE COUNTY GOVERNMENT H:\Util_Eng_Design\Proj\53A\SWR_Proj\FA-27A\DWG\SWR-FA-27A-Cover_Notes_Details.dwg, 0: 9/17/2019 10:54 AM Bruce Robertson, 1:1, ANS full bleed D (34.00 x 22.00 inches)

FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
MLS 27A - DRY WELL REHAB

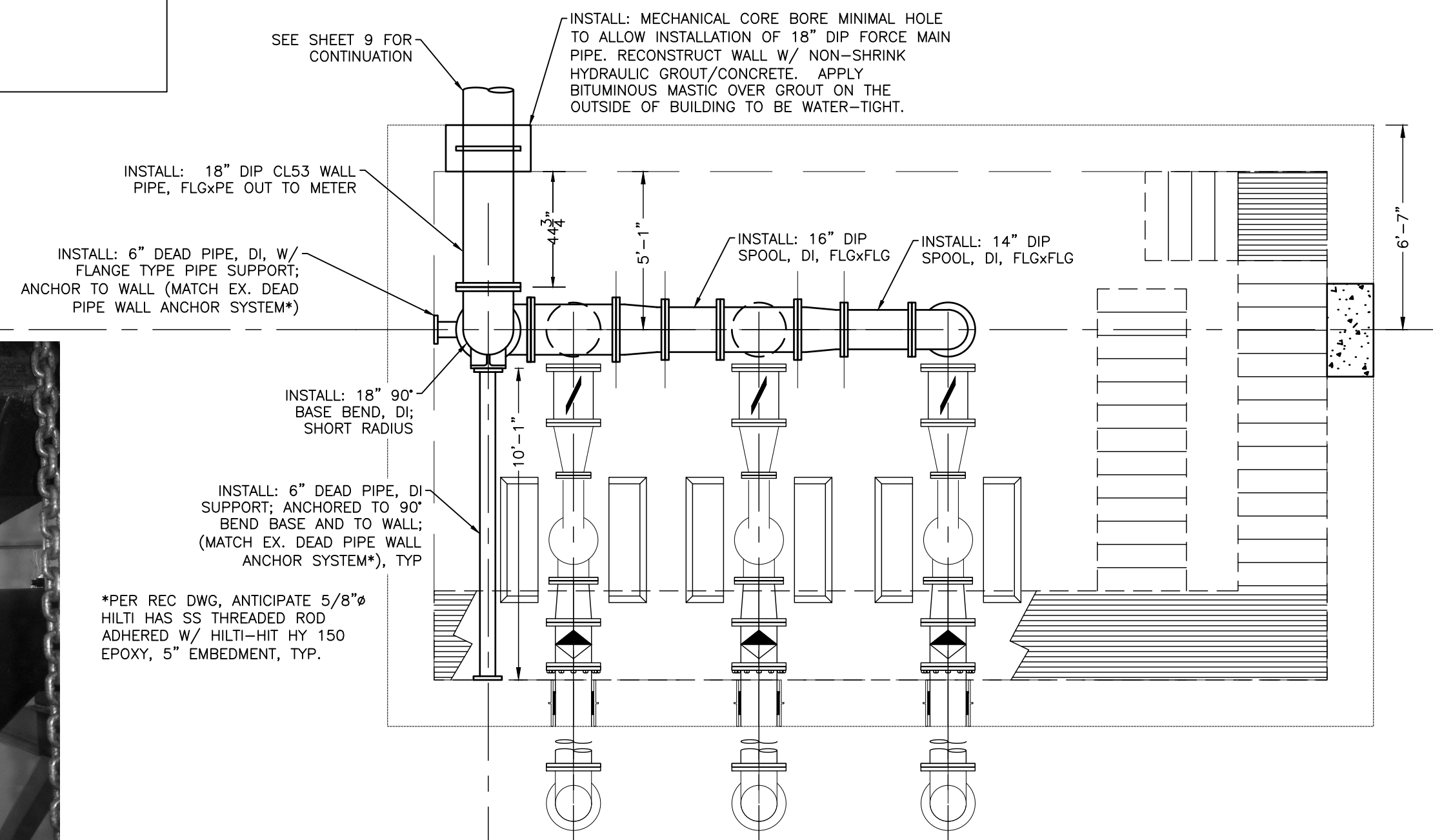
- GENERAL NOTES**
1. ALL FLANGE ADAPTERS TO CONTAIN WEDGE TYPE RESTRAINTS— EBBA MEGA FLANGE 2100 OR EQUIVALENT.
 2. FLANGE SPOOL PIECES TO BE FABRICATED TO 1/8" TOLERANCE.
 3. ALL FLANGED CONNECTIONS INCLUDE AMERICAN TORQUESEAL FLANGE GASKET OR EQUIVALENT.
 4. ANCHOR BOLTS AND RODS SHALL BE 304 STAINLESS STEEL.
 5. ALL BOLTS, NUTS, WASHERS, SHALL BE CORTEN OR EQUIVALENT.
 6. ANCHOR BOLTS SHALL BE FURNISHED WITH HEAVY HEX NUTS AND FLAT WASHERS, AND SHALL BE THREADED WITH A NUT AT THE EMBEDDED END.
 7. ALL ADHESIVE ANCHORS SHALL BE THE HILTI HIT-HY 200 ADHESIVE ANCHOR SYSTEM (OR EQUIVALENT) INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
 8. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL EXISTING REBAR PRIOR TO DRILLING FOR ANCHOR BOLTS. DRILLING THRU EXISTING REBAR IS NOT ALLOWED.
 9. REFER TO SHEET 9 FOR ADDITIONAL APPLICABLE NOTES.



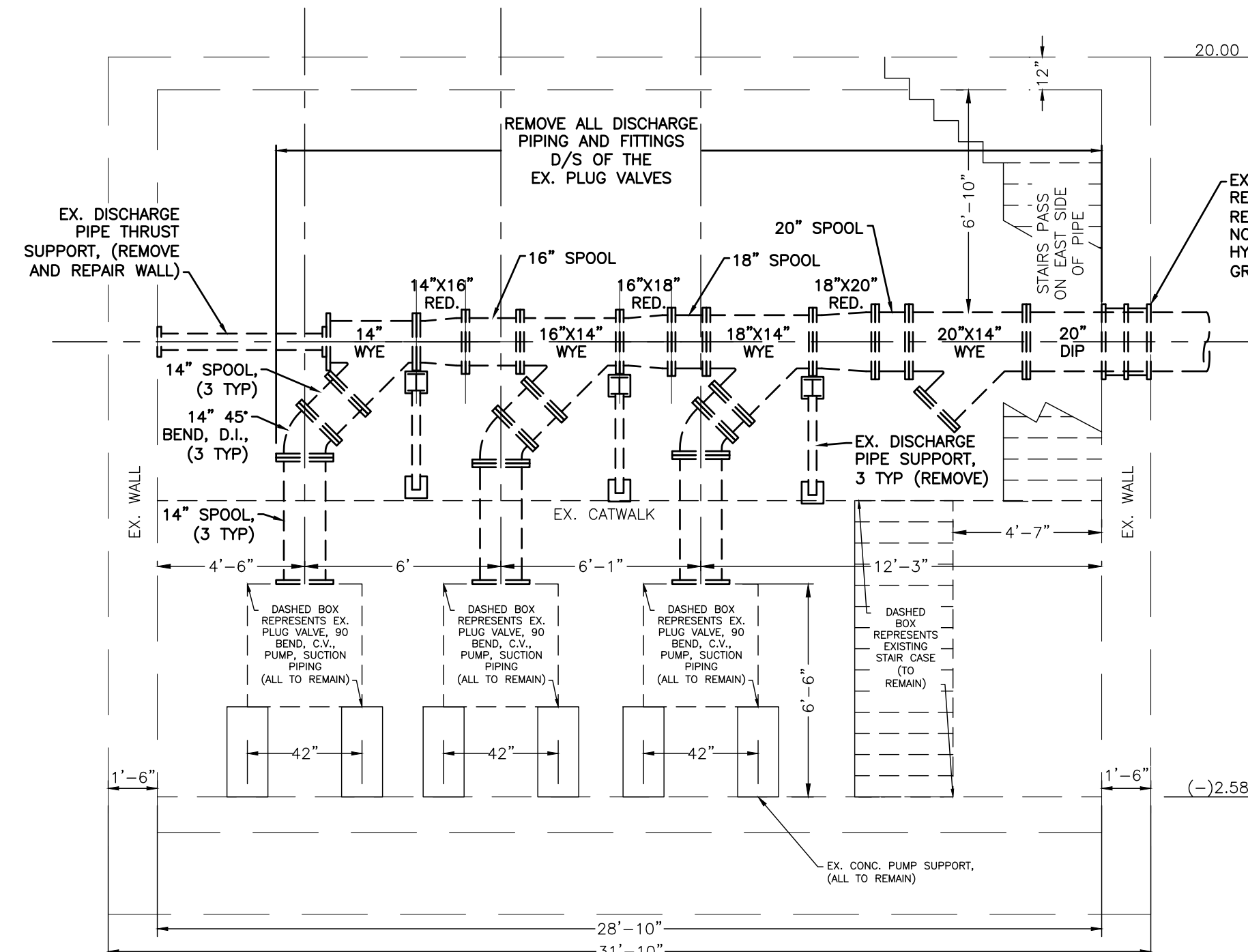
EXISTING CONDITIONS - PUMP OPERATING FLOOR
(PLAN VIEW)



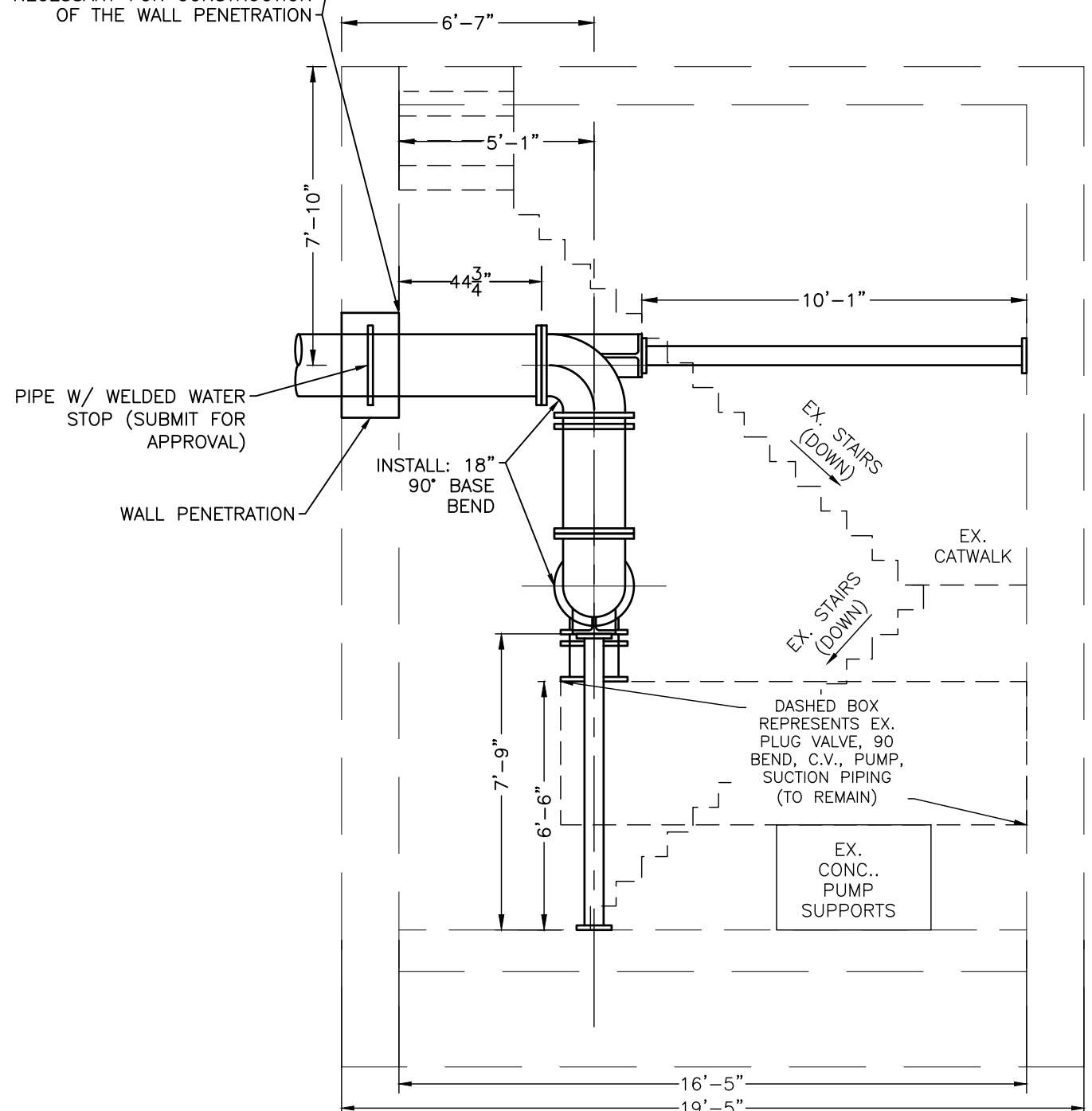
RELOCATE DRY WELL LIGHTING AND CONDUIT IN THE SOUTHWEST CORNER AS NECESSARY FOR CONSTRUCTION OF THE WALL PENETRATION



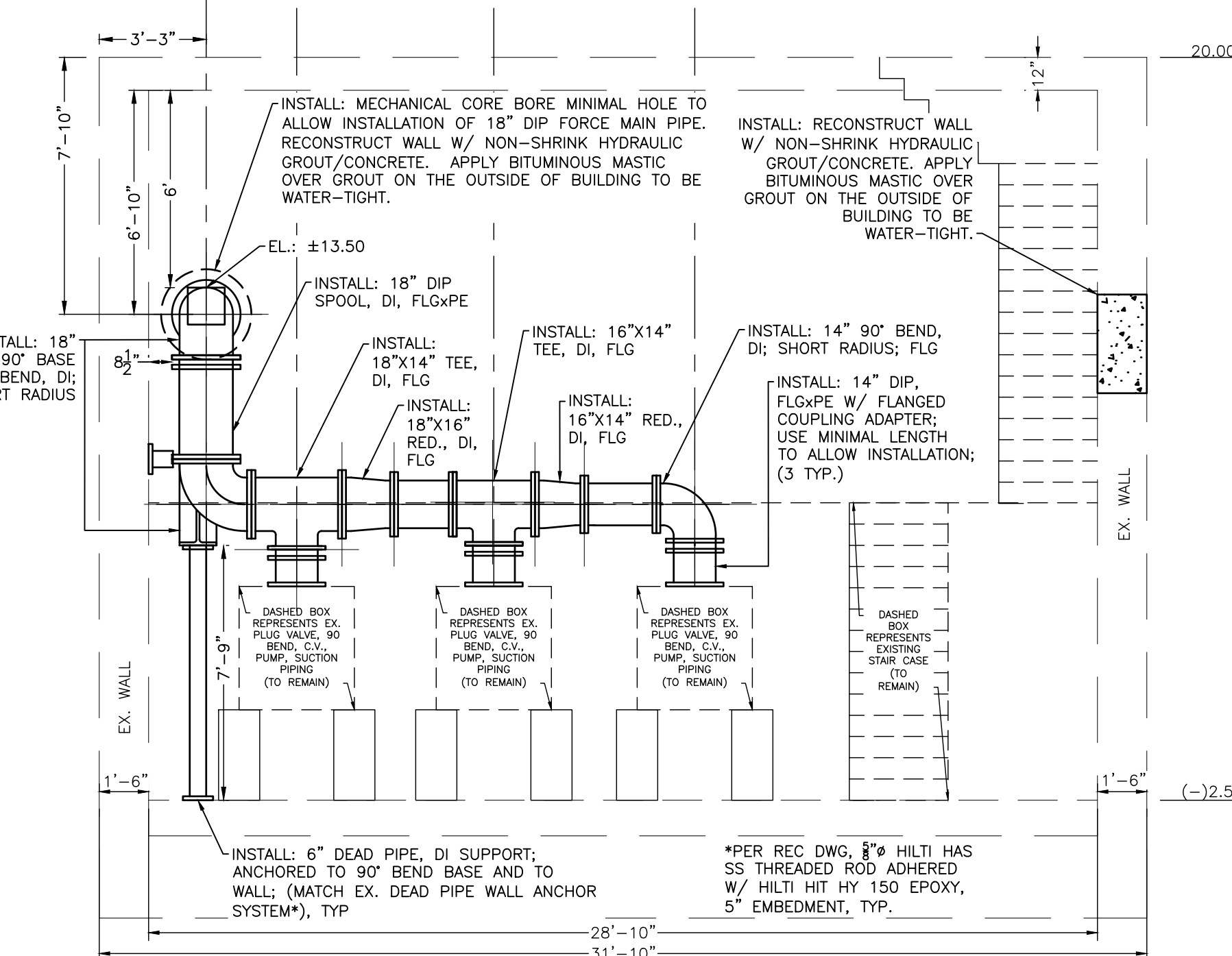
PROPOSED CONDITIONS - PUMP OPERATING FLOOR
(PLAN VIEW)



EXISTING CONDITIONS - PUMP OPERATING FLOOR
(SECTION VIEW - LOOKING WEST)



PROPOSED CONDITIONS - PUMP OPERATING FLOOR
(SECTION VIEW - LOOKING NORTH)



PROPOSED CONDITIONS - PUMP OPERATING FLOOR
(SECTION VIEW - LOOKING WEST)

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6023180
SURVEY #	00-43863
SEC./TWN./RGE	9.10.15.16/35/17
SCALE	1" = 4'
VERTICAL DATUM	NAVD 88
SURVEYED	ZNS 04/07/15
DESIGNED	JSS 10/17
DRAWN	JSS 10/17

JOHN S. SHOOK, P.E.
FLORIDA PROFESSIONAL ENGINEER
No. 60923
STATE OF FLORIDA
4/1/19

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FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.

DETAILS

REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DR-18 PVC PIPE

MAIN PIPE SIZE	HORIZ. BENDS			TEES						REDUCERS						PLUGS & VALVES
	90°	45°	22.5°	SIZE		LENGTH				SIZE		LENGTH				
24	90	38	18	X20	120	X20	132	X16	X12	X10	X20	64	X16	X12	158	214
20	78	32	16	X20	141	X16	101	X12	53	X8	24	X16	65	X12	149	184
16	66	27	13	X16	111	X12	67	X8	41	X8	12	X12	64	X10	111	151
12	52	22	10	X12	80	X10	56	X8	31	X6	1	X10	58	X8	86	118
10	44	18	9	X10	63	X8	40	X6	7	X4	1	X8	33	X6	61	100
8	37	15	7	X8	49	X6	29	X4	1	X4	1	X6	35	X4	60	83
6	29	12	6	X6	39	X4	23	X4	1	X4	1	X4	33	X4	57	63
4	21	8	4	X4	31	X4	21	X4	1	X4	1	X4	33	X4	57	45

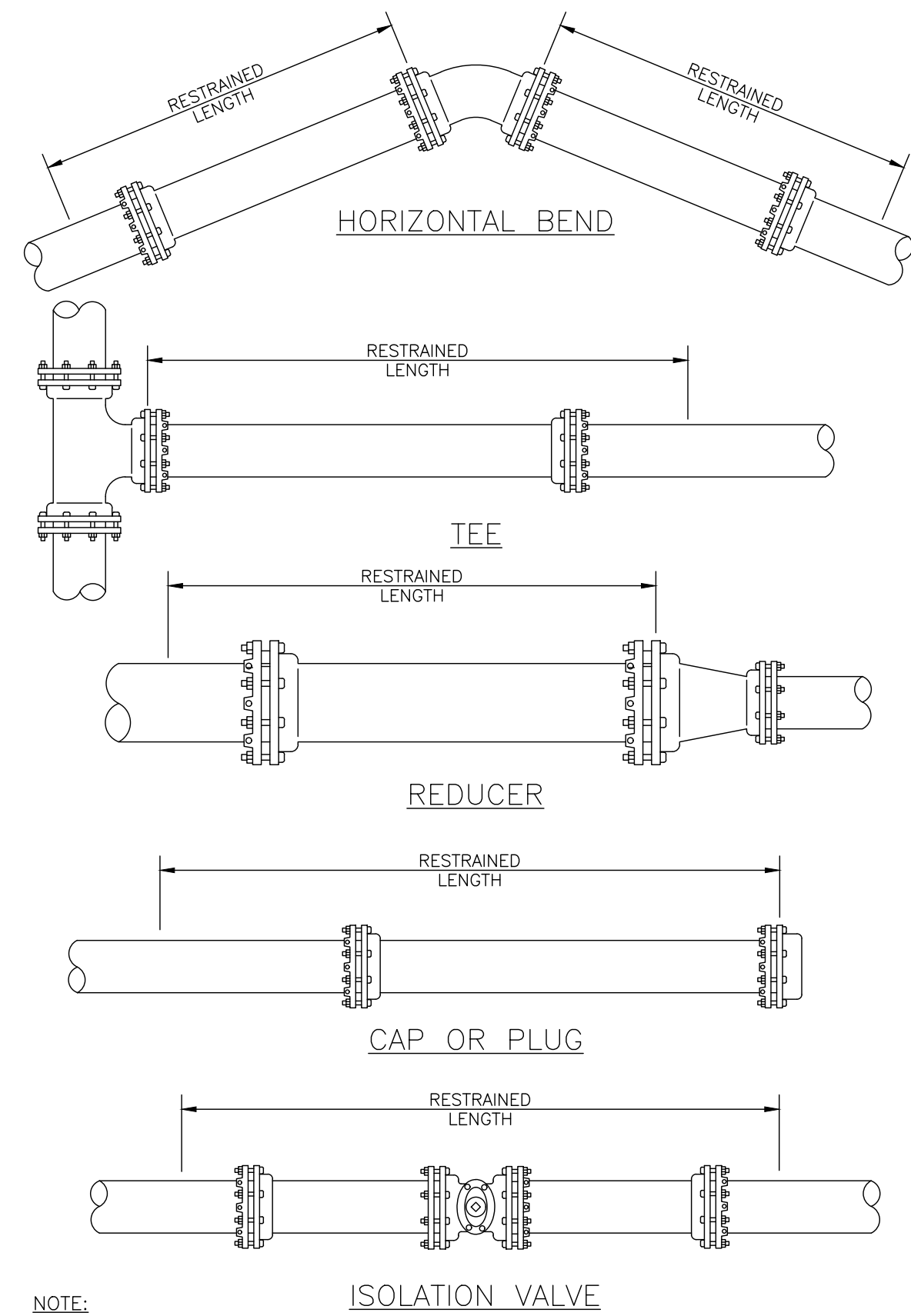
NOTES:

- RESTRAIN 11.25' BENDS 50% OF LENGTH FOR 22.5° BENDS.
- ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
- ALL ISOLATION VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION.
- PIPE SIZES ARE GIVEN IN INCHES.
- RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.
- LENGTHS SHOWN ARE FOR A TEST PRESSURE OF 180 PSI.
- THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON SOIL CLASSIFICATION SP WITH AWWA TYPE 3 TRENCH CONDITIONS, 180 PSI TEST PRESSURE, 3 FEET OF COVER AND 1.5 FACTOR OF SAFETY. ACTUAL BURY CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY.
- RESTRAINED LENGTHS TO BE APPLIED TO PIPELINES PER DETAIL RESTRAINED LENGTHS FOR PIPE.
- ALL RESTRAINED JOINT HARDWARE SHALL CONFORM TO 1.11.18.E OF THE PUBLIC WORKS UTILITIES STANDARDS MANUAL.

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

RESTRAINED LENGTHS FOR PVC PIPE UG-8

REV. BY DATE DATE OF APPROVAL



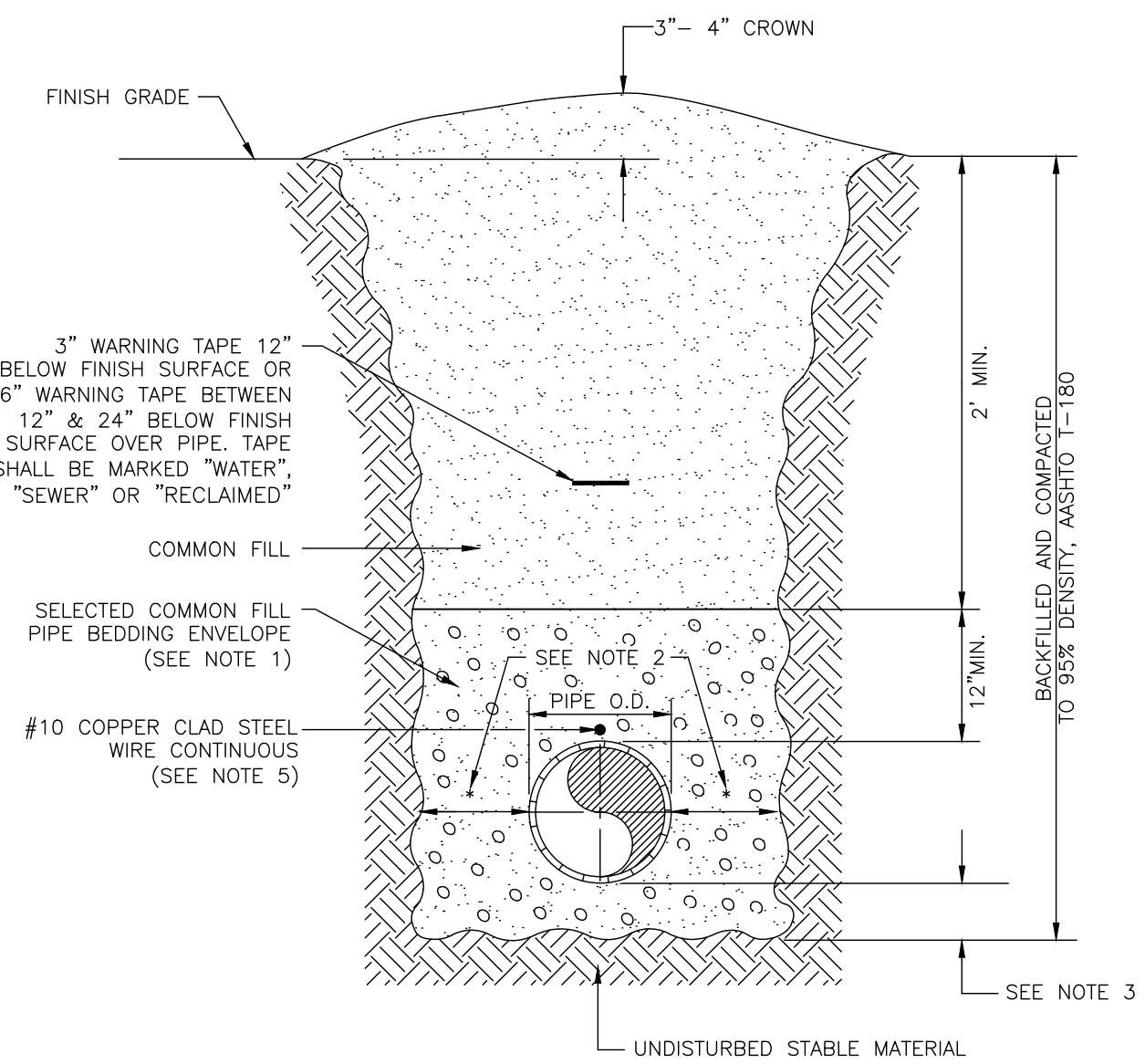
NOTE: 1. SEE RESTRAINED LENGTHS FOR PVC PIPE DETAIL FOR NOTES 1 THROUGH 9 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR PIPE.

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

RESTRAINED LENGTHS FOR PIPE UG-10

REV. BY DATE DATE OF APPROVAL

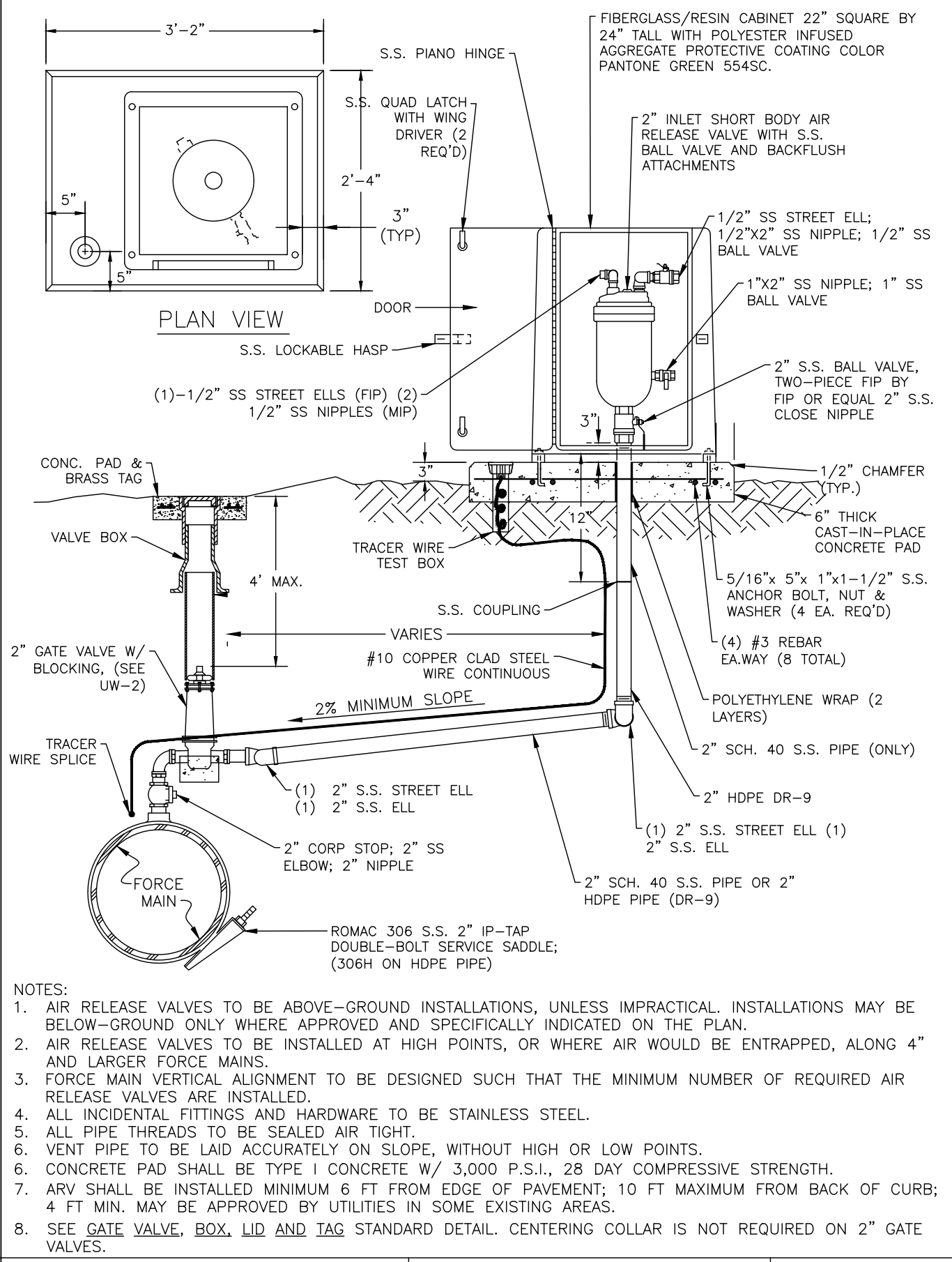
- NOTES:**
- USE OF TYPE A-2 AND A-3 PIPE BEDDING TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
 - PROVIDE ADEQUATE CLEARANCE TO PLACE AND COMPACT STAGE 1 BEDDING MATERIAL IN TRENCH AREA BELOW PIPE SPRINGLINE. PIPE EMBEDMENT MUST BE COMPACTED OUT TO THE TRENCH WALL OR 2.5 TIMES THE PIPE OD, WHICHEVER IS LESS.
 - TYPICALLY 4" TO 6".
 - PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
 - TRACER WIRE NOT REQUIRED FOR GRAVITY SEWERS.



MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

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

REV. BY DATE DATE OF APPROVAL

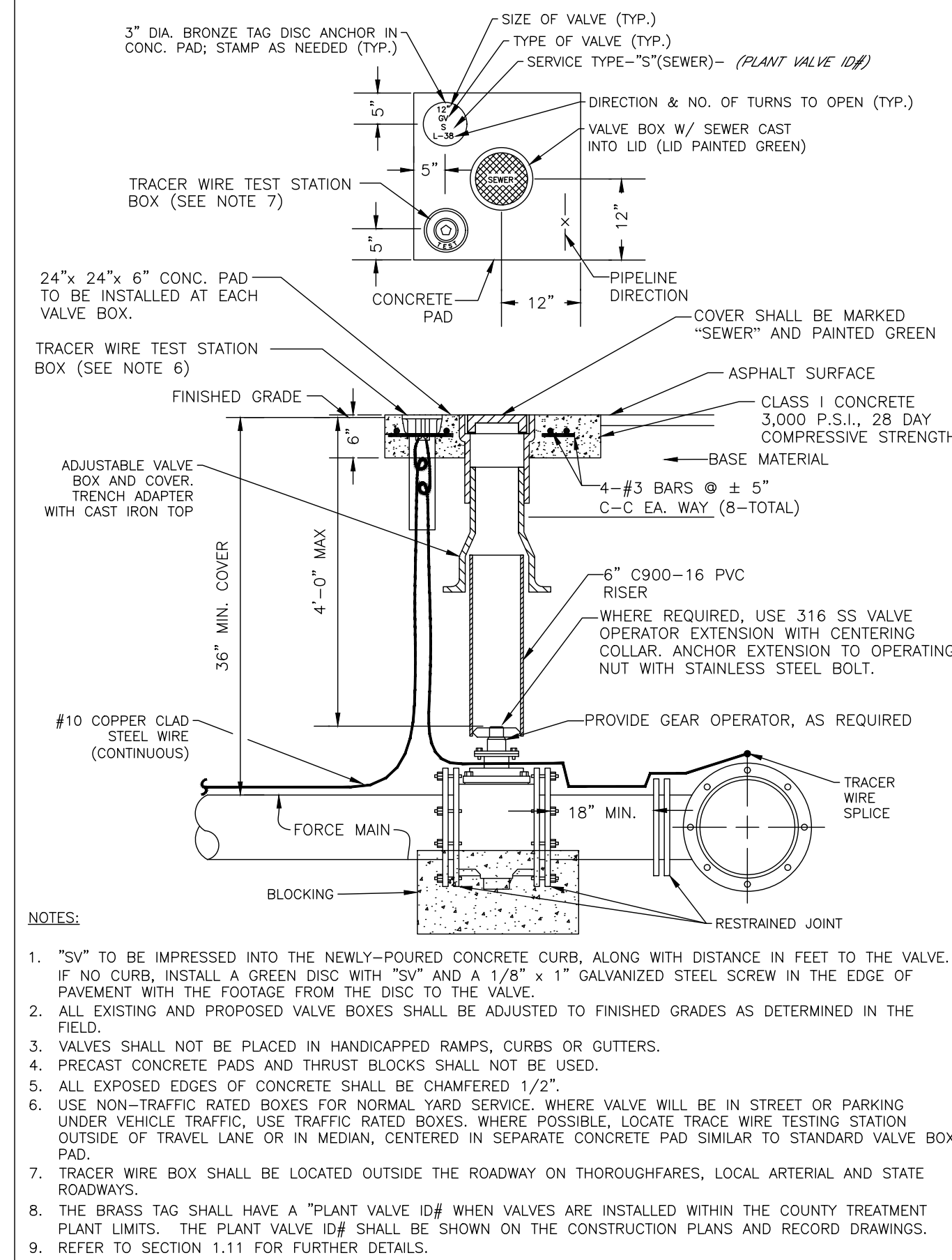


- NOTES:**
- AIR RELEASE VALVES TO BE ABOVE-GROUND INSTALLATIONS, UNLESS IMPRACTICAL. INSTALLATIONS MAY BE BELOW-GROUND ONLY WHERE APPROVED AND SPECIFICALLY INDICATED ON THE PLAN.
 - RELEASE VALVES TO BE INSTALLED AT HIGH POINTS, OR WHERE AIR WOULD BE ENTRAPPED, ALONG 4" AND LARGER FORCE MAINS.
 - FORCE 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.
 - CONCRETE PAD SHALL BE TYPE I CONCRETE W/ 3,000 P.S.I., 28 DAY COMPRESSIVE STRENGTH.
 - ARV SHALL BE INSTALLED MINIMUM 6 FT FROM EDGE OF PAVEMENT, 10 FT MAXIMUM FROM BACK OF CURB; 4 FT MIN. MAY BE APPROVED BY UTILITIES IN SOME EXISTING AREAS.
 - SEE GATE VALVE, BOX, LID AND TAG STANDARD DETAIL. CENTERING COLLAR IS NOT REQUIRED ON 2" GATE VALVES.

MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

ABOVE-GROUND AIR RELEASE VALVE ASSY. FOR FORCE MAINS US-9

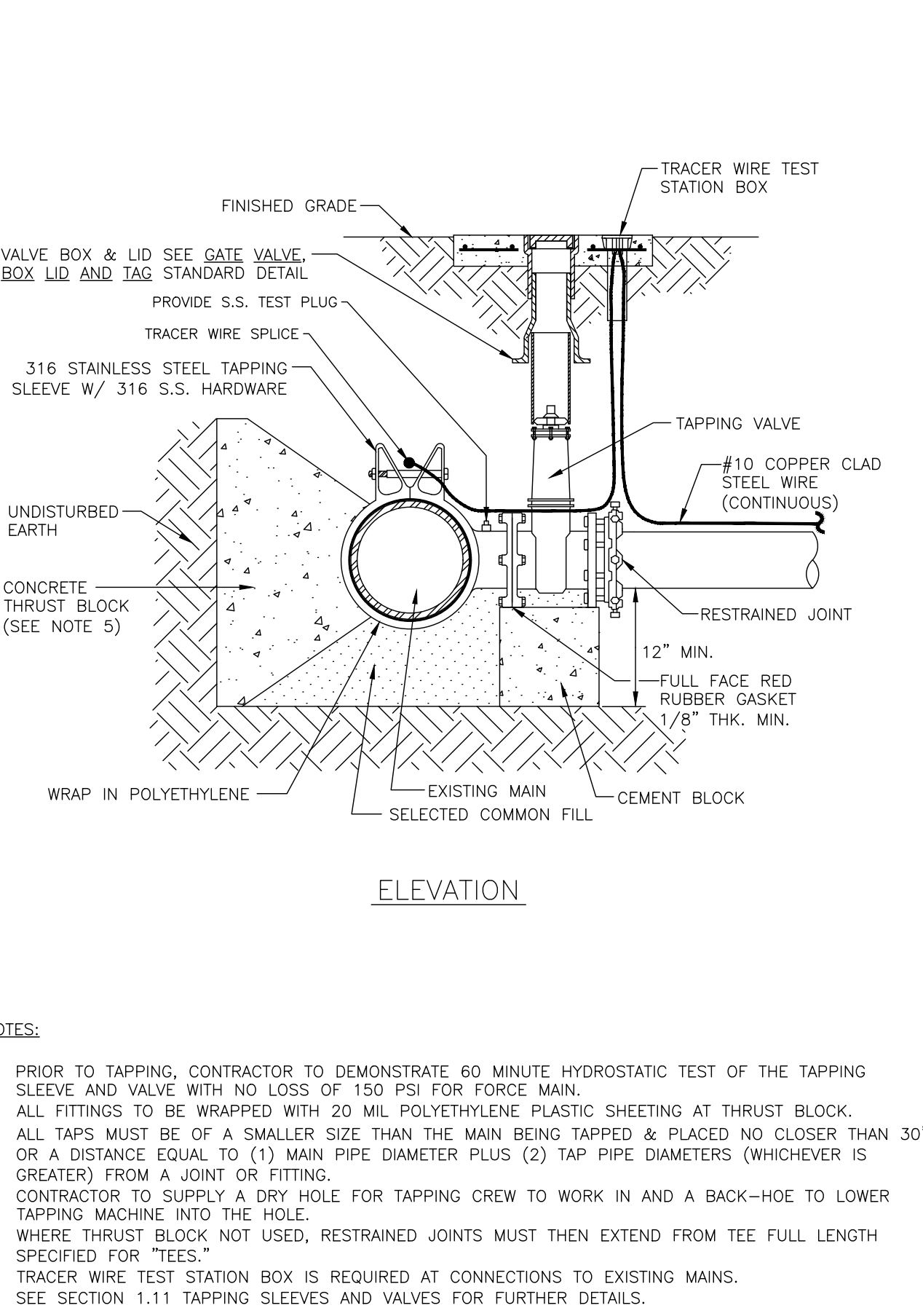
REV. BY DATE DATE OF APPROVAL



MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

VALVE, BOX, COVER AND TAG US-11

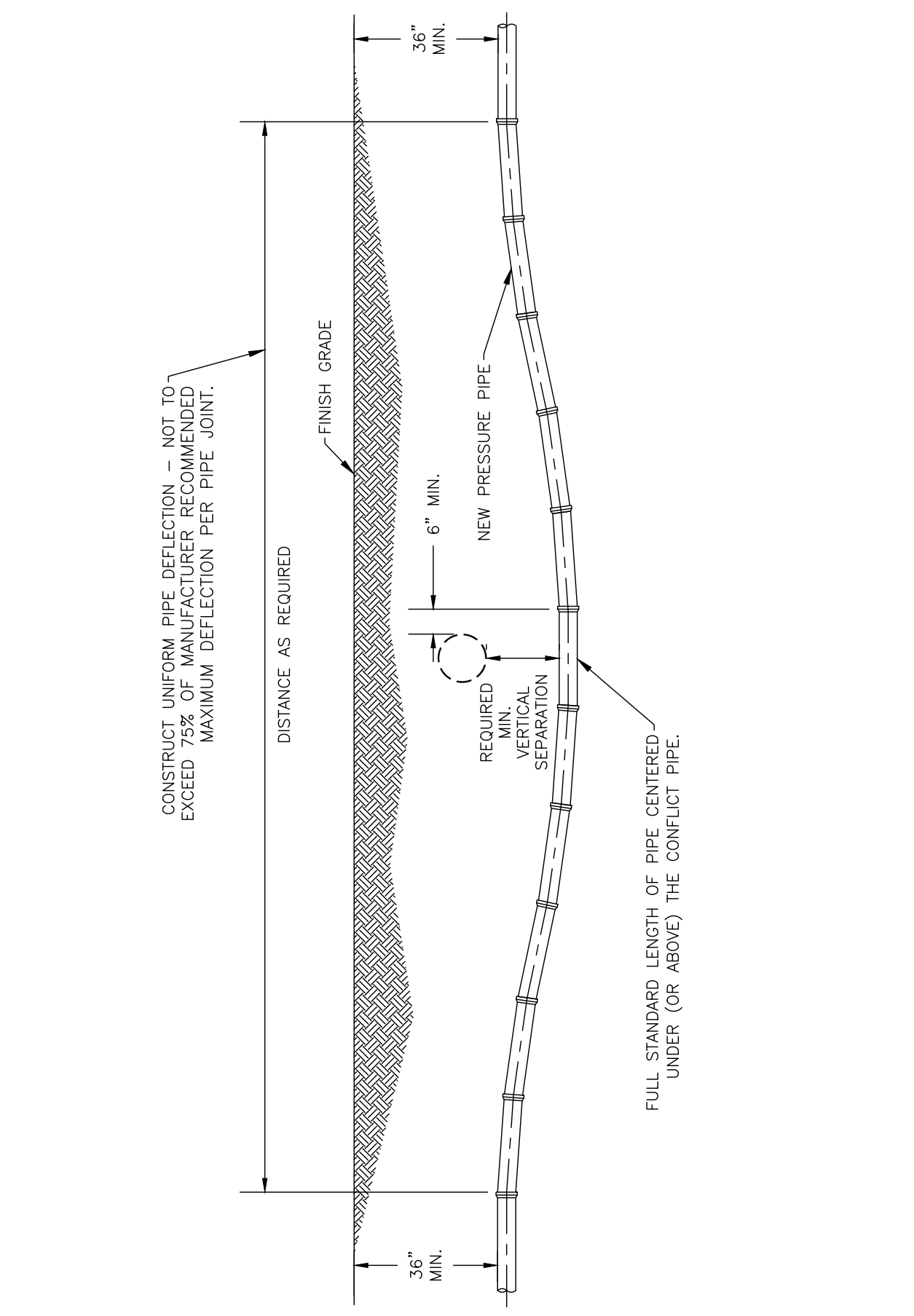
REV. BY DATE DATE OF APPROVAL



MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

TAPPING SLEEVE AND VALVE (FORCE MAINS) US-12

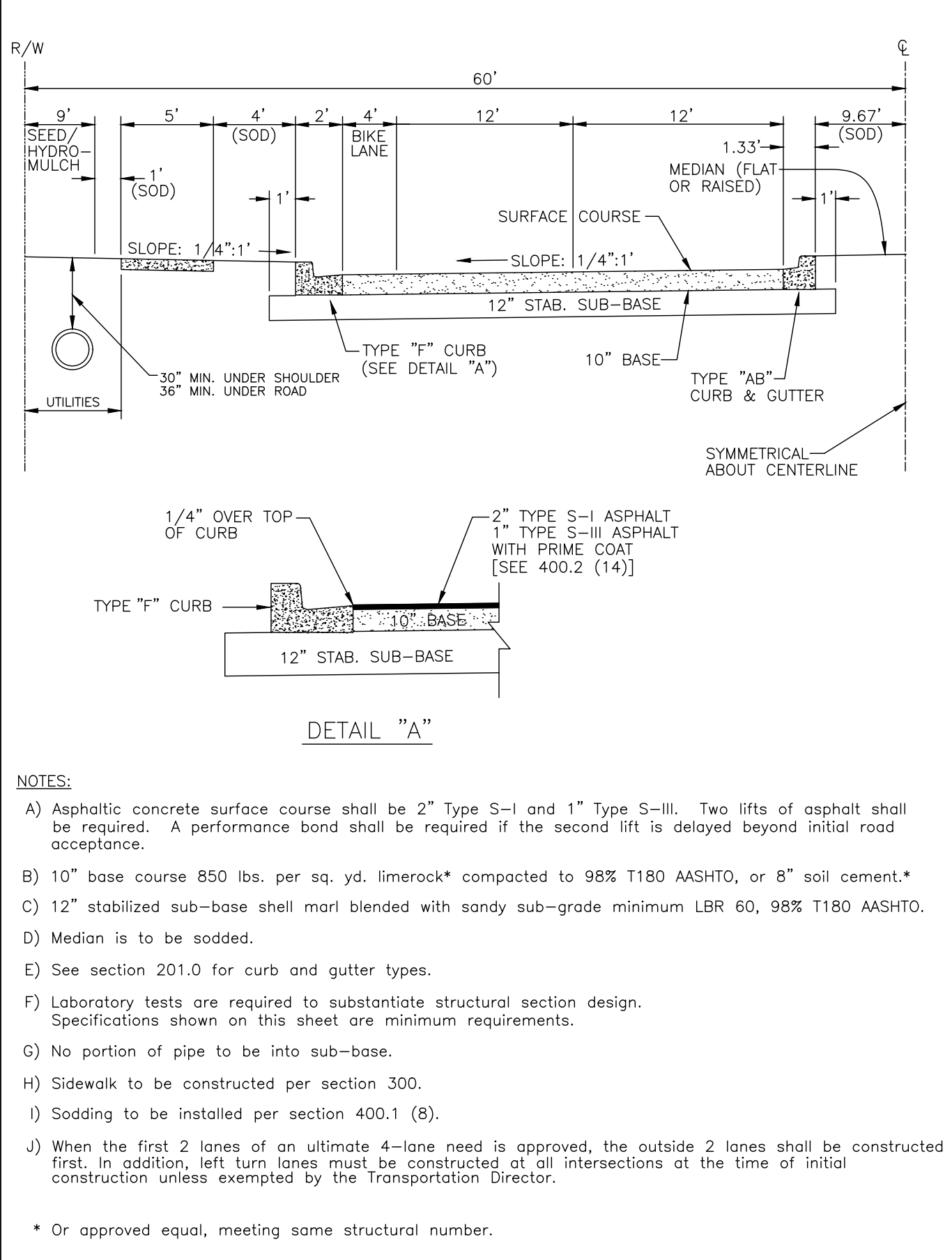
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MANATEE COUNTY
PUBLIC WORKS DEPARTMENT

PRESSURE PIPE DEFLECTION AT UTILITY CROSSING UG-18

REV. BY DATE DATE OF APPROVAL



MANATEE COUNTY
TRANSPORTATION DEPARTMENT

TYPICAL 4-LANE DIVIDED ROADWAY 401.2

6/12/07 DATE OF B.O.C.C. APPROVAL

NO.	REVISION DESCRIPTION	BY	DATE

PROJECT #	404-6023180
SURVEY #	00-43863
SEC./TWN./RGE	9.10.15.16/35/17
SCALE	N.T.S.
VERTICAL DATUM	NAVD 88
SURVEYED	ZNS 04/07/15
DESIGNED	JDS 10/2015
DRAWN	BLR 10/2015

PROJECT # 404-6023180

SURVEY # 00-43863

SEC./TWN./RGE 9.10.15.16/35/17

SCALE N.T.S.

VERTICAL DATUM NAVD 88

SURVEYED ZNS 04/07/15

DESIGNED JDS 10/2015

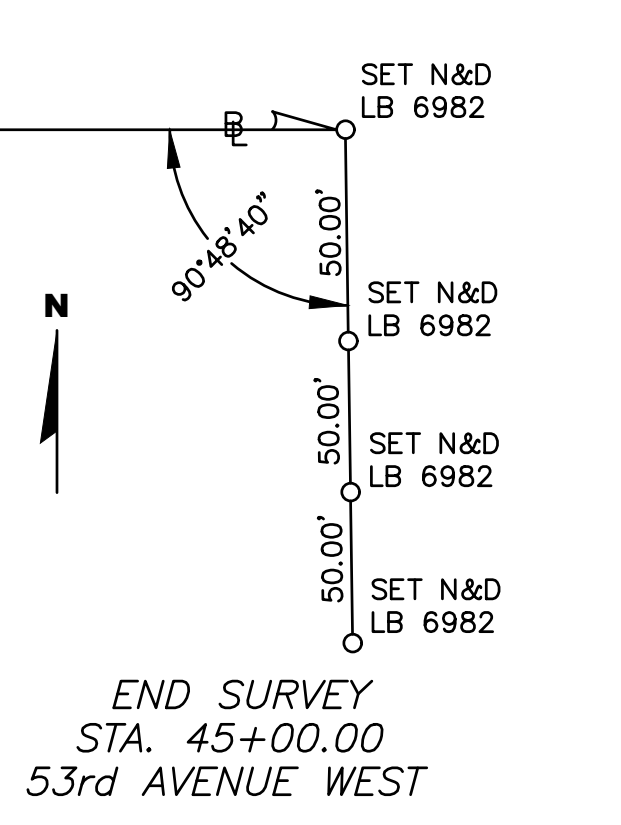
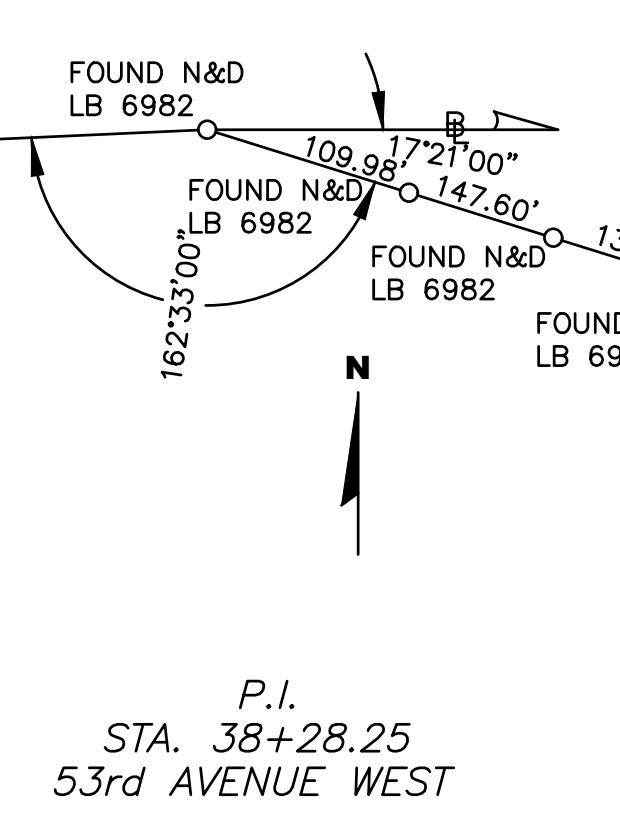
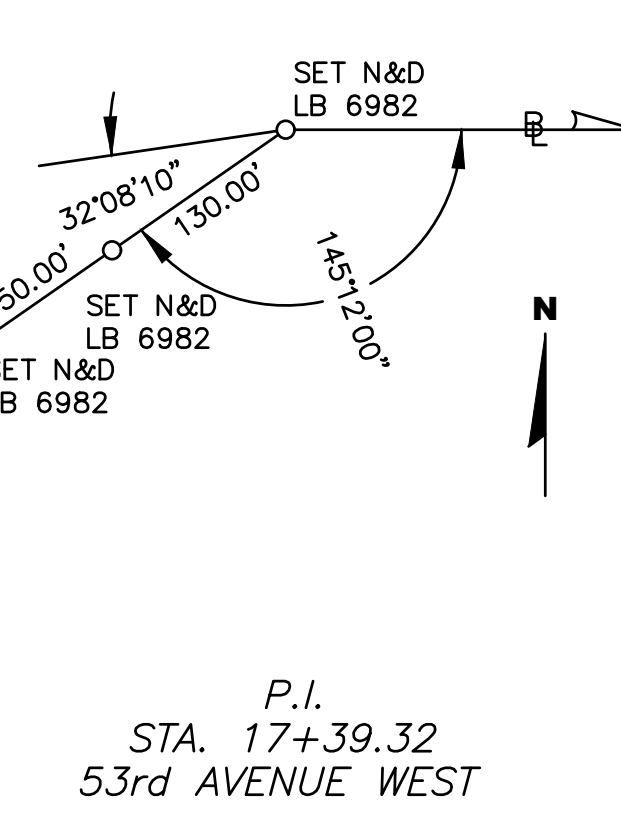
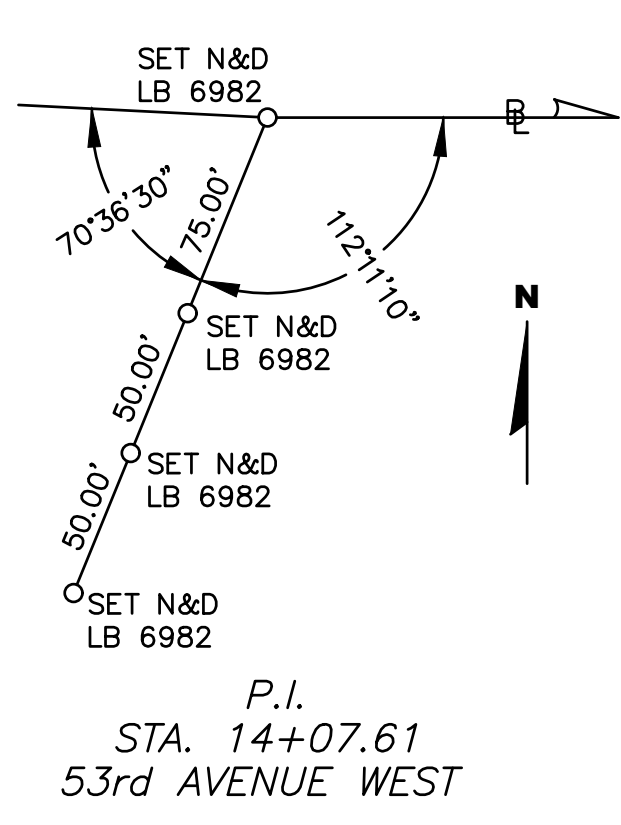
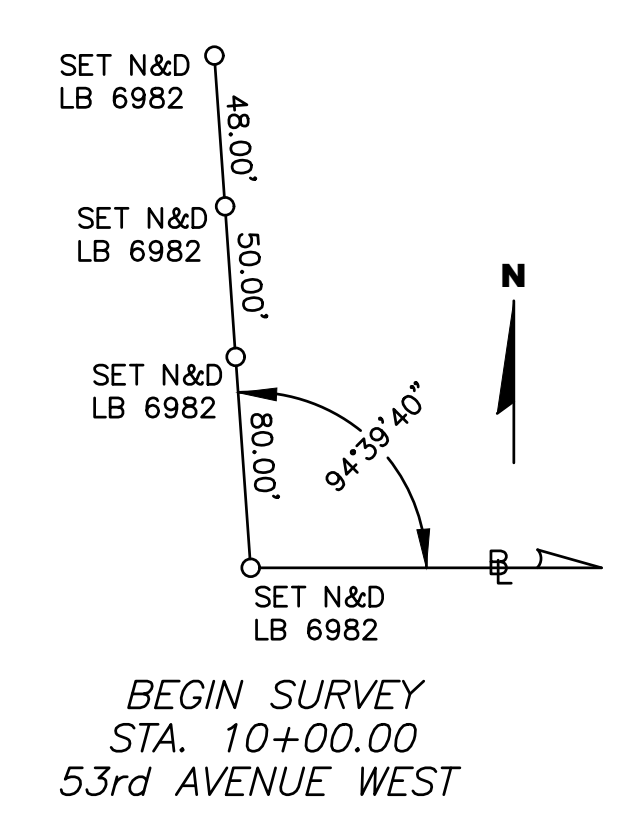
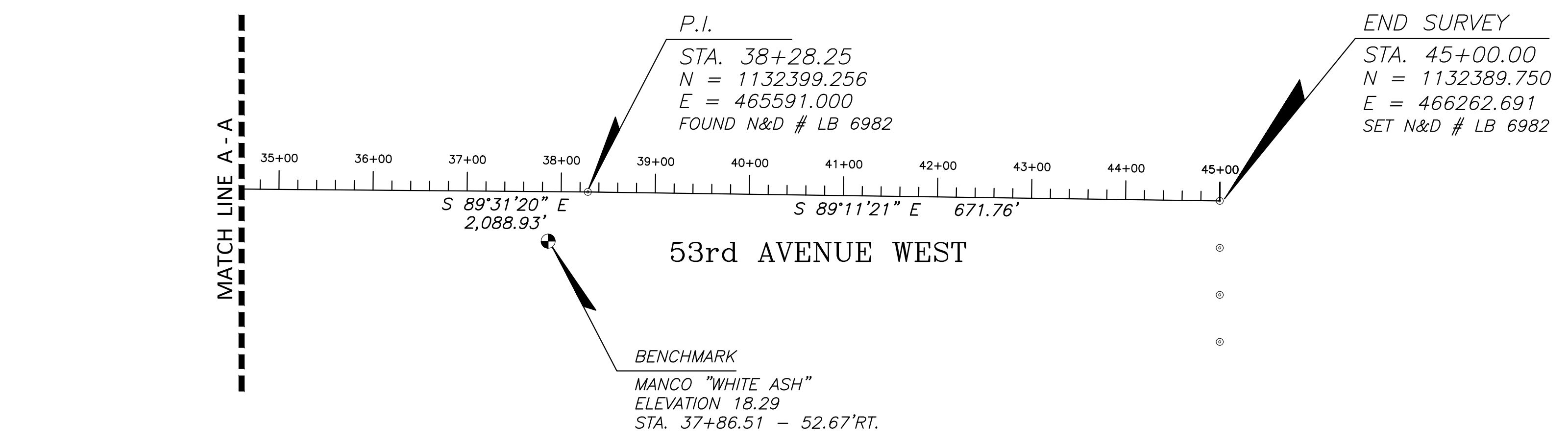
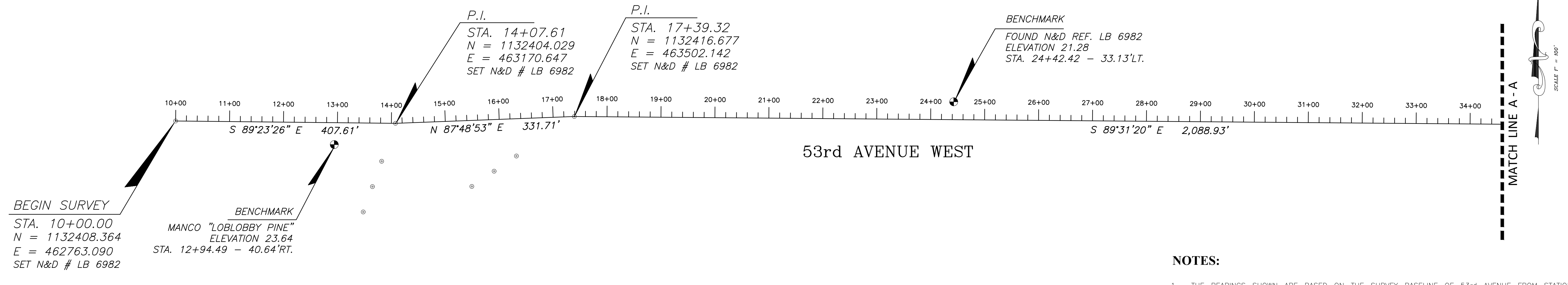
DRAWN BLR 10/2015

JOHN J. SPINDO P.E.
No. 60923
STATE OF FLORIDA
PROFESSIONAL ENGINEER

**FORCE MAIN 27-A REHABILITATION
53RD AVE. W. FROM 25TH TO 34TH ST. W.
SURVEY CONTROL**

NO.	REVISION DESCRIPTION	BY	DATE

JAMES N. GATCH, JR., P.E.
No. 60923
STATE OF FLORIDA
PROFESSIONAL ENGINEER



NOTES:

1. THE BEARINGS SHOWN ARE BASED ON THE SURVEY BASELINE OF 53rd AVENUE FROM STATION 10+00 TO STATION 14+07.61 HAVING A BEARING OF S 89°23'26" E AND ARE RELATED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM (WEST ZONE) NAD 83/90 AND WERE DERIVED USING REAL TIME KINEMATIC METHOD AND THE FLORIDA DEPARTMENT OF TRANSPORTATION PERMANENT REFERENCE NETWORK. THE PUBLISHED VALUES OF "WHITE ASH" (PID DN6224) AND "MYRTLE OAK" (PID DN6221) WERE USED TO VALIDATE THE PROJECT COORDINATES.
2. BEARINGS AND DISTANCES ARE FIELD MEASUREMENTS UNLESS NOTED OTHERWISE.
3. THIS SURVEY MEETS THE REQUIREMENTS OF CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE AS IT PERTAINS TO SPECIFIC PURPOSE SURVEYS FOR RIGHT-OF-WAY MAPPING PURPOSES.
4. THIS DRAWING IS NOT VALID WITHOUT THE ORIGINAL RAISED SEAL AND SIGNATURE OF THE FLORIDA REGISTERED SURVEYOR AND MAPPER SHOWN HEREON. AN ELECTRONIC COPY OF THIS DRAWING MUST BE VERIFIED WITH A SEALED DRAWING OF THE SAME.
5. ANY ADDITIONS OR DELETIONS TO THIS SPECIFIC PURPOSE SURVEY BY OTHER THAN THE SIGNING PARTY IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY. A COPY OF THIS DRAWING MUST BE VERIFIED WITH A SEALED DRAWING OF THE SAME.
6. IMPROVEMENTS SUCH AS, BUT NOT LIMITED TO, FOUNDATIONS, SUBSURFACE IMPROVEMENTS AND LANDSCAPE FEATURES, ETC., HAVE NOT BEEN LOCATED EXCEPT AS SHOWN.
7. THIS SURVEY HAS BEEN PREPARED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT OR ABSTRACT AND THEREFORE DOES NOT NECESSARILY INDICATE ALL THE ENCUMBRANCES ON THE PROPERTY.
8. ELEVATIONS SHOWN HEREON ARE BASED ON N.A.V.D. 1988 DATUM, THE BENCHMARKS THAT THESE ELEVATIONS ARE DERIVED FROM ARE:
MANATEE COUNTY BENCHMARK "LOBLOBBY PINE" (PID DN6223), ELEVATION OF 23.64 AS PUBLISHED.
MANATEE COUNTY BENCHMARK "WHITE ASH" (PID DN6224), ELEVATION OF 18.29 AS PUBLISHED.
9. THE INTENDED DISPLAY SCALE OF THE 22"x34" PAPER SKETCH OF SURVEY IS 1"=20' OR 11"x17" PAPER SKETCH OF SURVEY IS 1"=40'. THE REDUCTION OF THIS SURVEY TO FIT A DIFFERENT SIZE MEDIA WILL RESULT IN A NON-SCALEABLE DRAWING. AN ELECTRONIC DATA FILE OF THIS SURVEY IN MODEL SPACE IS TO BE A SCALE OF 1 UNIT TO 1 UNIT.

LEGEND:

	- BENCHMARK (AS NOTED)
	- IRON MARKER FOUND/SET (AS NOTED)
	- NAIL & DISK FOUND/SET (AS NOTED)
	- IRON ROD
	- NAIL & DISK
	- SURVEY BASELINE
	- POINT OF INTERSECTION
	- STATION
	- IDENTIFICATION
	- RIGHT
	- LEFT
	- PARCEL IDENTIFICATION (NUMBER)
	- NORTH AMERICAN VERTICAL DATUM
	- LICENSED SURVEYOR
	- PROFESSIONAL SURVEYOR & MAPPER
	- LICENSED BUSINESS

SCALE: 1" = 100' (22"x34")
SCALE: 1" = 200' (11"x17")

**NOT A BOUNDARY SURVEY
CERTIFIED AS TO PURPOSE OF SURVEY
SPECIFIC PURPOSE SURVEY**

**SURVEY CONTROL LINE OF
FORCE MAIN 27A
LOCATED IN
SECTIONS 9, 10, 15, 16, TOWNSHIP 35 SOUTH, RANGE 17 EAST
MANATEE COUNTY, FLORIDA**

NOTE: THIS SURVEY IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.

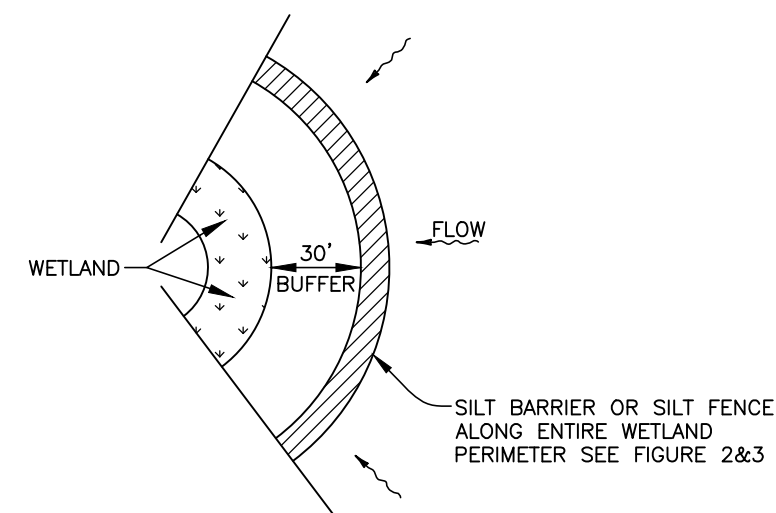
CERTIFICATE OF SURVEYOR
I, THE UNDERSIGNED PROFESSIONAL SURVEYOR & MAPPER, HEREBY CERTIFY THAT THIS RECORD OF LAND SURVEY WAS PREPARED UNDER MY DIRECT SUPERVISION THAT TO THE BEST OF MY KNOWLEDGE, INFORMATION AND BELIEF IS A TRUE AND CORRECT REPRESENTATION OF THE LAND AS SHOWN AND DESCRIBED HEREON, AND THAT IT MEETS THE "MINIMUM TECHNICAL STANDARDS FOR SURVEYING IN THE STATE OF FLORIDA", CHAPTER 5J-17.050, OF THE FLORIDA ADMINISTRATIVE CODE.
FLORIDA CERTIFICATE No. LS 4295
DATE OF CERTIFICATION 04/10/15
DATE OF FIELD SURVEY 04/07/15
BY:
JAMES N. GATCH, JR., P.S.M.

ZNS ENGINEERING
ENGINEERS | PLANNERS | SURVEYORS
LANDSCAPE ARCHITECTS | ENVIRONMENTAL CONSULTANTS
201 5th AVENUE DRIVE EAST BRADENTON, FL 34208
E-MAIL: ZNS@ZNSENG.COM TELEPHONE (941) 748-8880 FAX (941) 748-3316

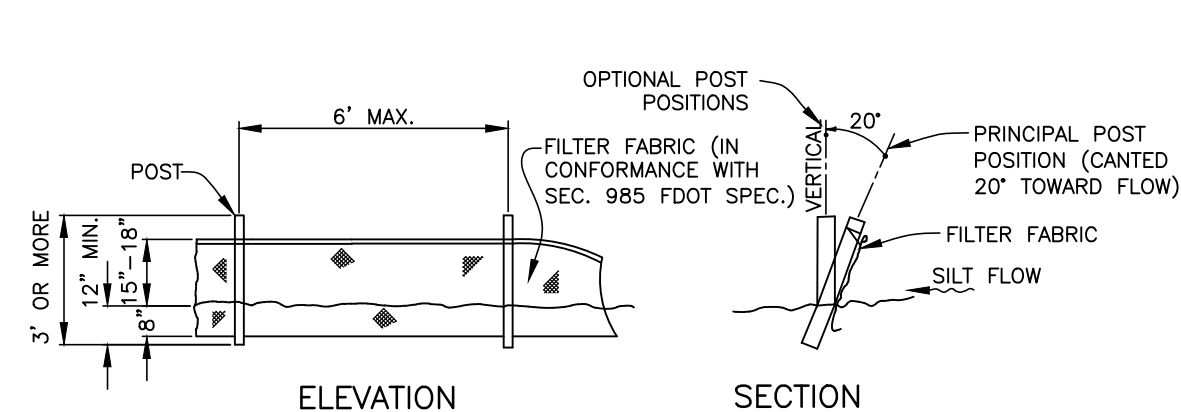
DRAWING: I:\MANATEE\FORCE MAIN 27A REHABILITATION\FM-27A-CNTL-SPS.dwg DATE 04/10/15 SCALE 1" = 100'
DRAWN GB JOB NO. 00-43863 FIELD BOOK 668 PAGE 18 SHEET X OF X

NOTE:
THE SURVEY CONTROL
LINE IS ALSO THE
CONSTRUCTION BASE LINE.

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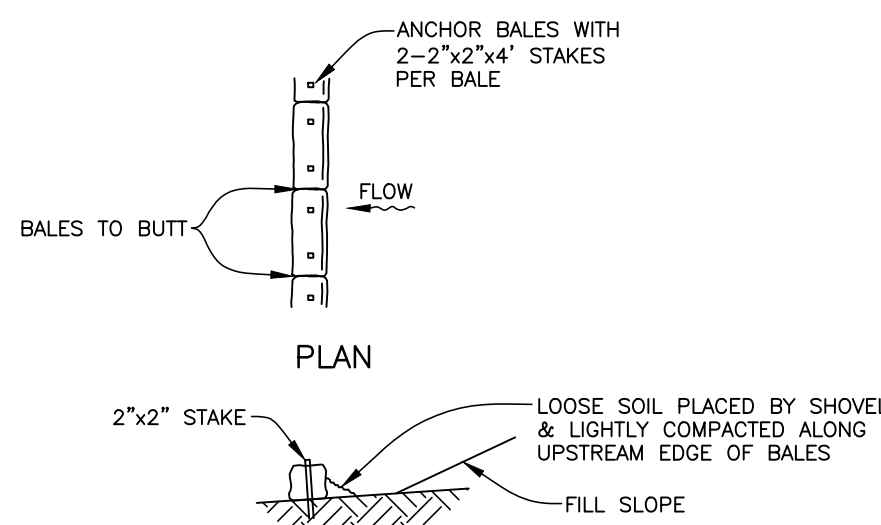


WETLAND BUFFER
FIGURE 1

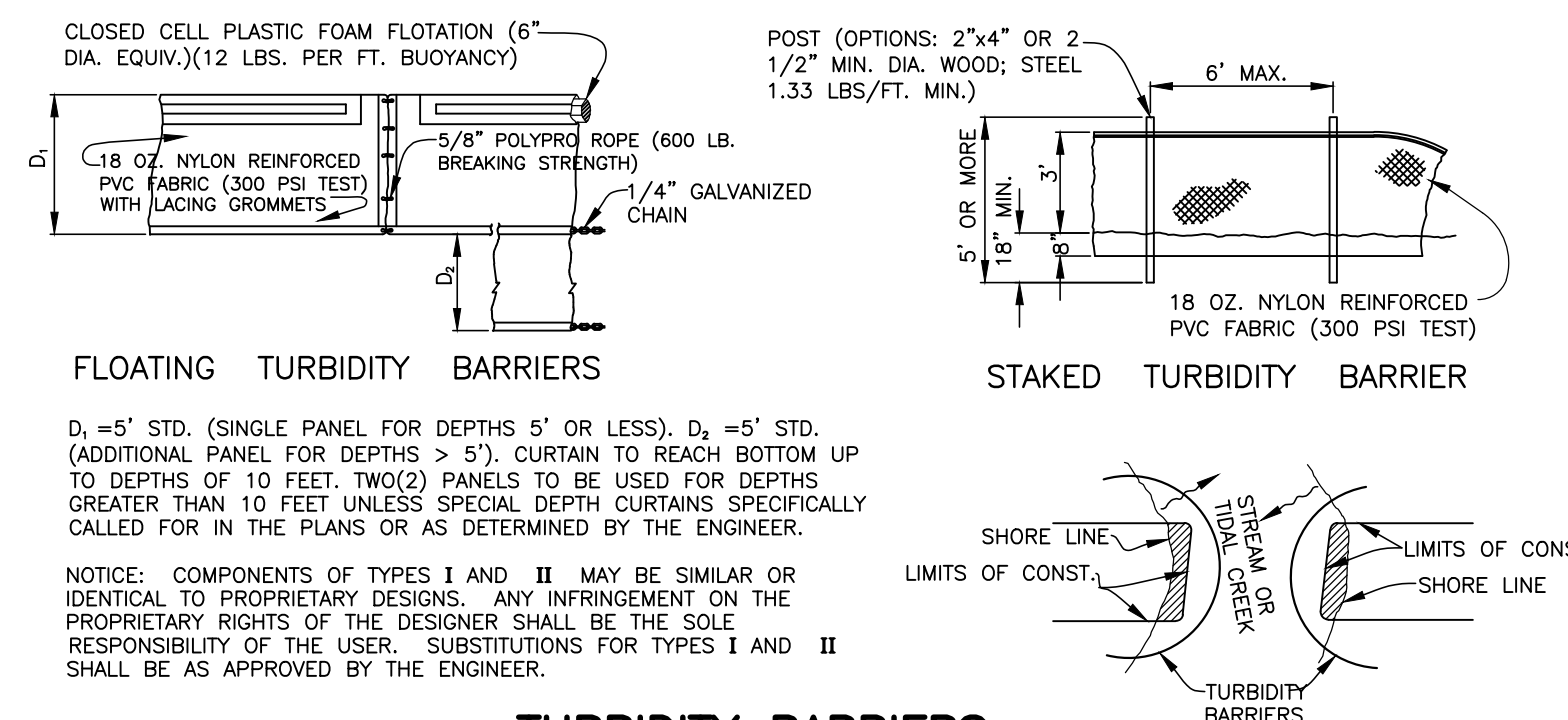


NOTE: SILT FENCE TO BE PAID FOR UNDER THE CONTRACT UNIT PRICE FOR STAKED SILT FENCE (LF).

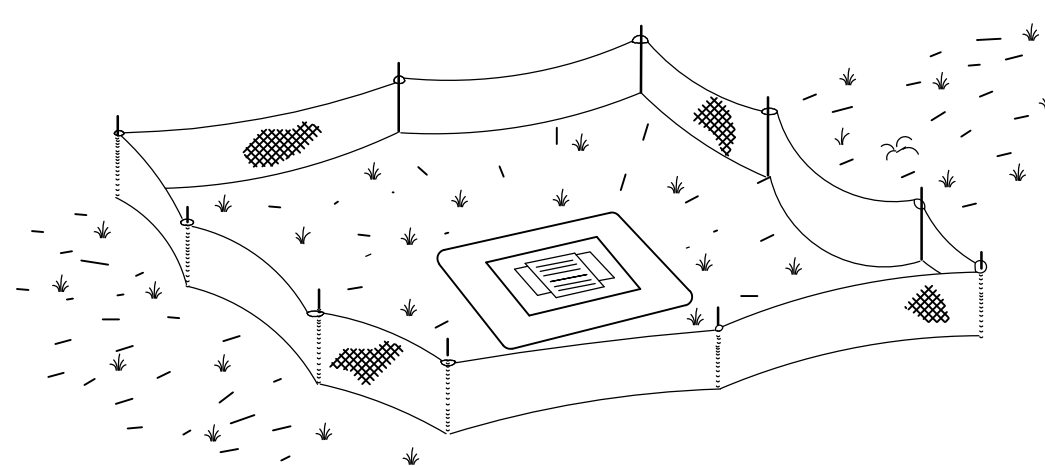
TYPICAL SILT FENCE
FIGURE 2



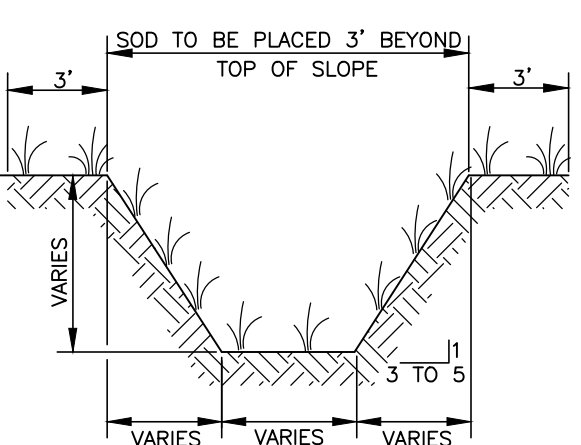
TYPICAL BALE SILT BARRIER
FIGURE 3



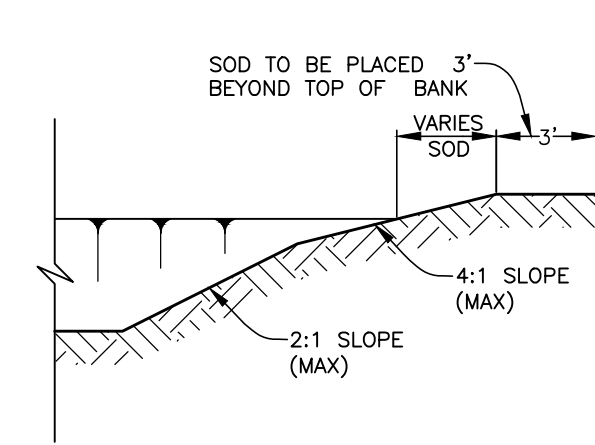
TURBIDITY BARRIERS
FIGURE 4



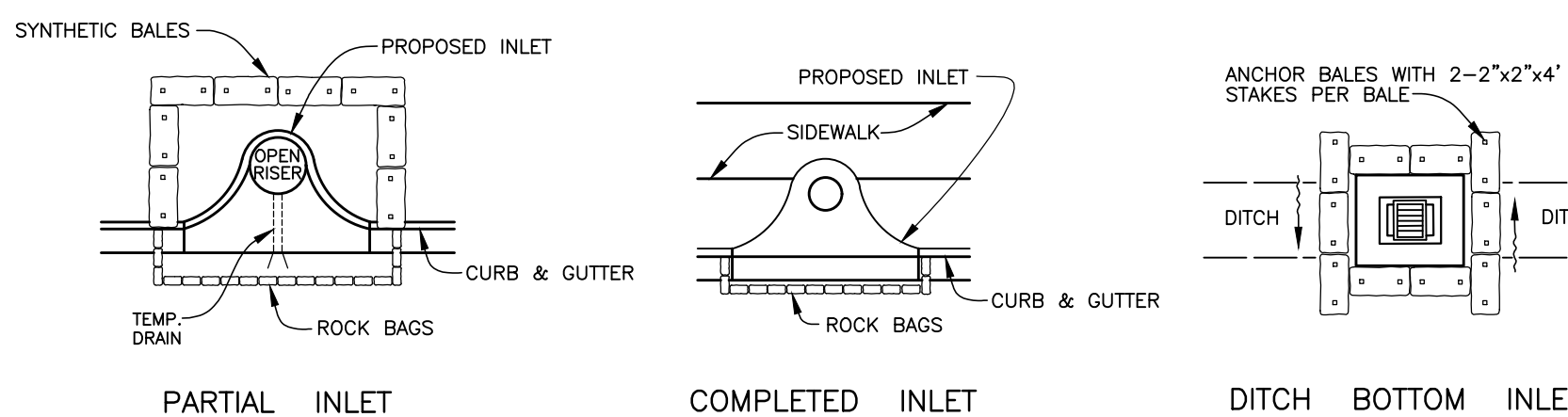
TYPE III SILT FENCE PROTECTION
AROUND DITCH BOTTOM INLETS
STAKED SILT BARRIER OR SILT FENCE
PROTECTION AROUND DITCH BOTTOM INLETS
FIGURE 8



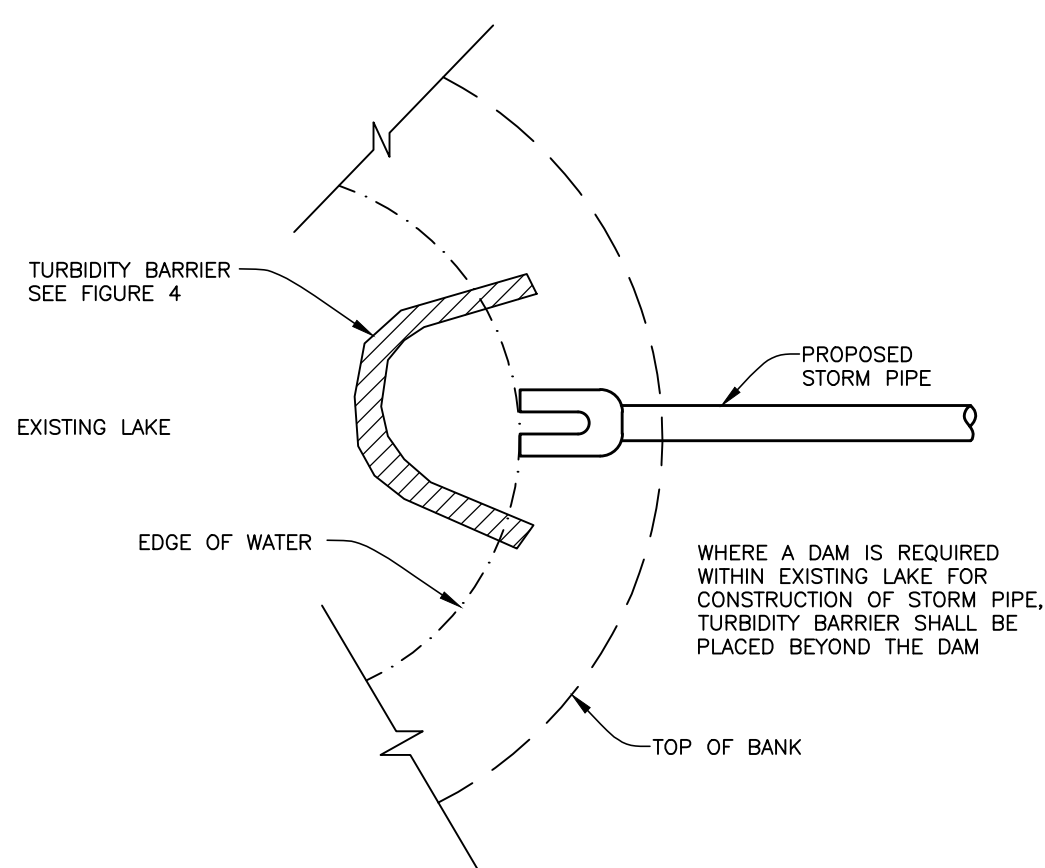
TYPICAL SWALE SECTION
FIGURE 5



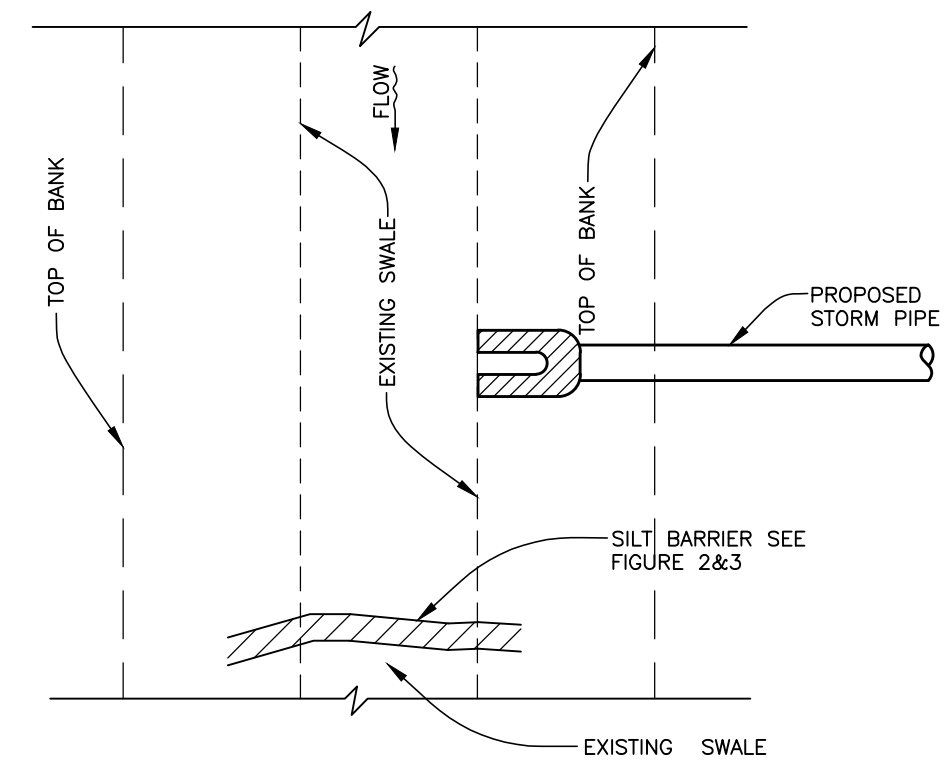
TYPICAL RETENTION/DETENTION POND SECTION
FIGURE 6



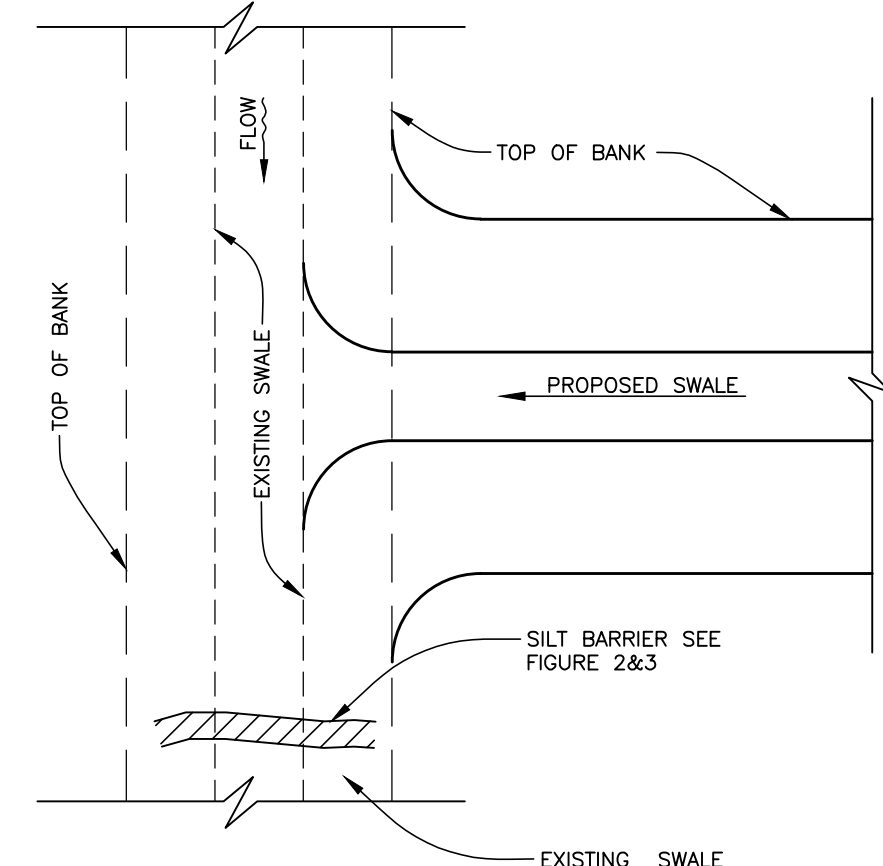
SYNTHETIC BALE PROTECTION AROUND
INLETS OR SIMILAR STRUCTURES
FIGURE 7



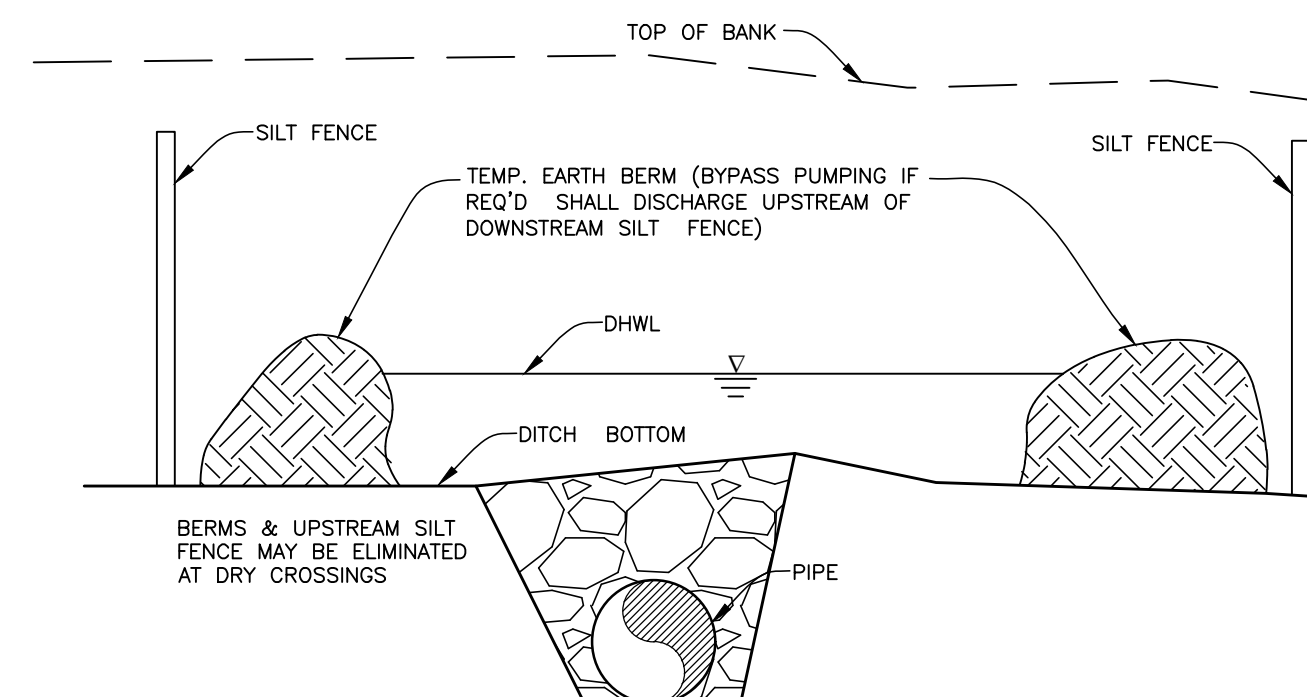
TURBIDITY BARRIER AT CONNECTION OF
STORM PIPE TO EXISTING LAKE
FIGURE 9



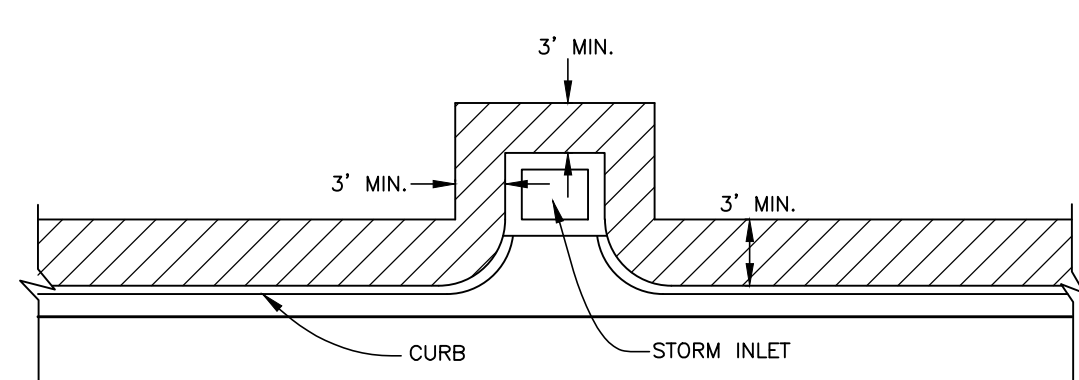
SILT BARRIER AT CONNECTION OF
STORM PIPE TO EXISTING SWALE
FIGURE 10



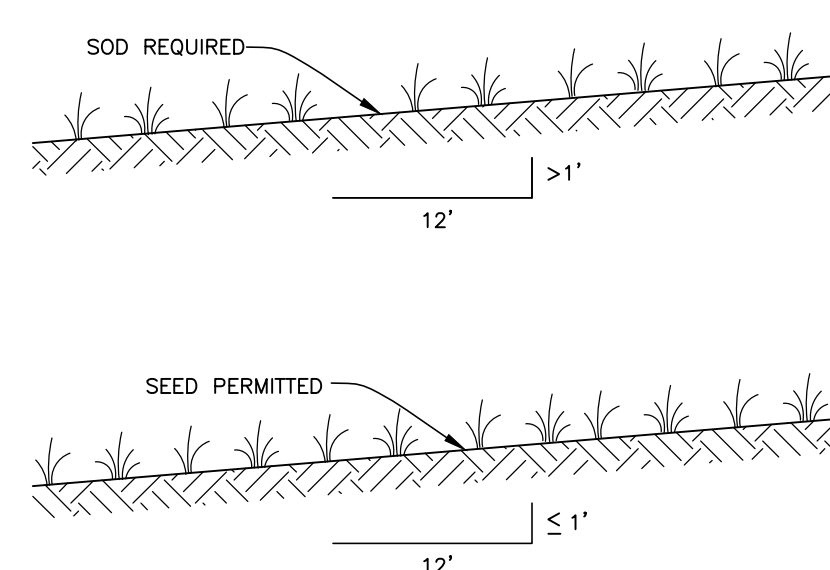
SILT BARRIER AT CONNECTION
OF SWALE TO EXISTING SWALE
FIGURE 11



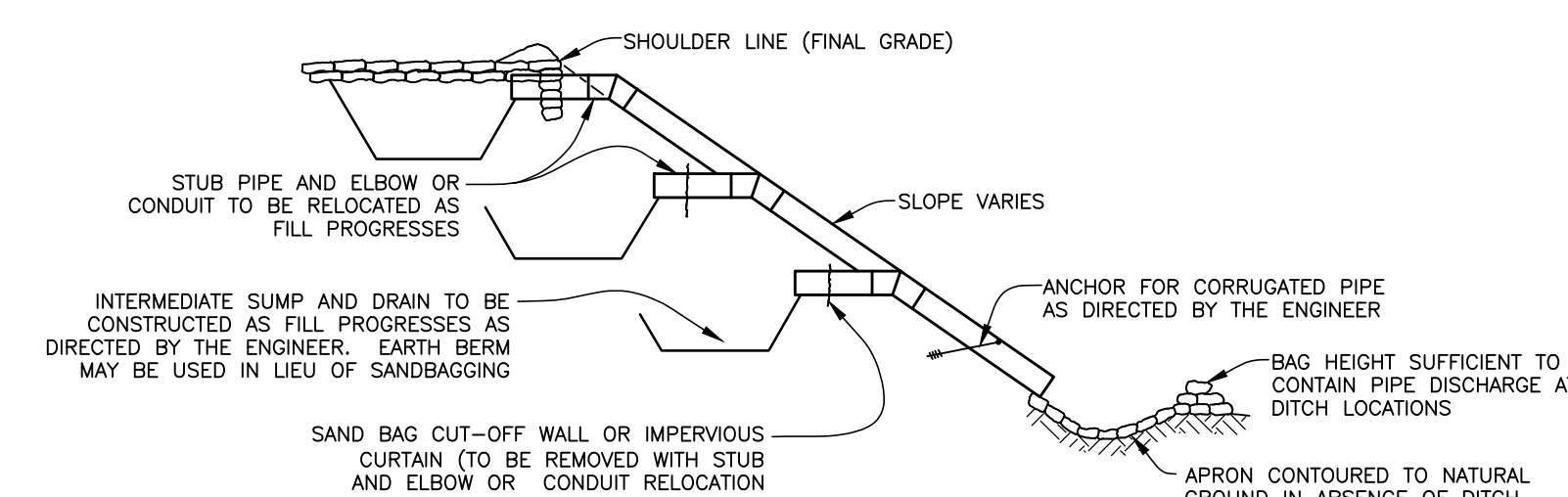
UNDERGROUND PIPE CROSSING
FIGURE 12



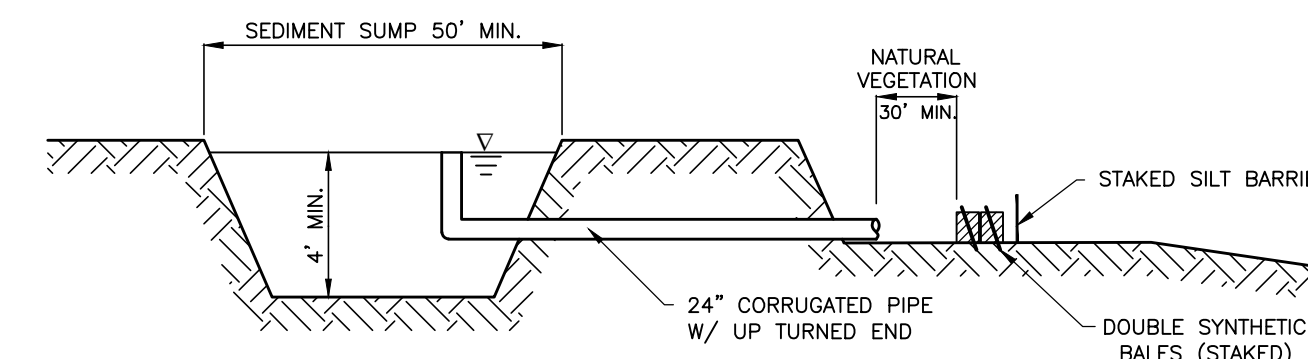
SOD ALONG CURB
AND AROUND INLET
FIGURE 14



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 #	404-6023180
SURVEY #	00-43863
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SCALE	N.T.S.
VERTICAL DATUM	NAVD 88
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FLORIDA PROFESSIONAL ENGINEER
No. 60923
STATE OF FLORIDA
4/11/19
Professional Engineer