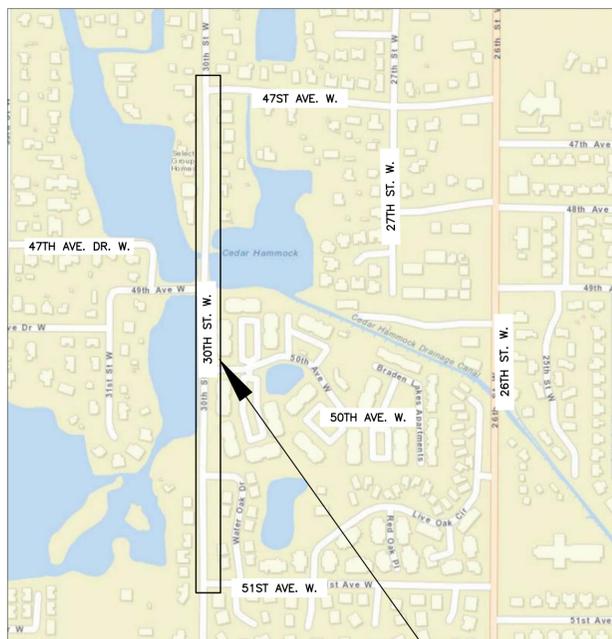




# FORCE MAIN 30A REPLACEMENT 51ST AVE. WEST TO 47TH AVE. WEST 404-6028387

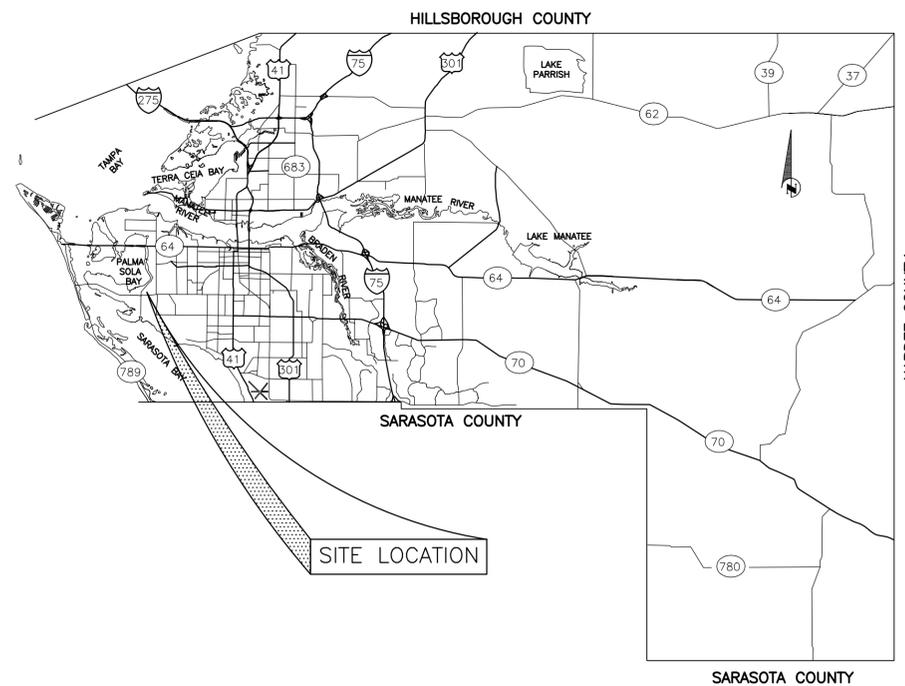
August 2019

## BID PLANS



VICINITY MAP  
N.T.S.

PROJECT SITE



SITE LOCATION

NO.	INDEX OF SHEETS
01	COVER
02	NOTES & LEGEND
03	GRAVITY MANHOLE REHABILITATION
04-07	PLAN & PROFILE
08-09	DETAILS
10	SURVEY CONTROL
11	EROSION CONTROL

### NAVD 88 DATUM



Know what's below  
Call before you dig

**PROJECT DESCRIPTION**

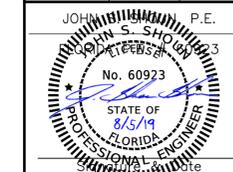
REPLACE EXISTING 8" FORCEMAIN WITH 2,400 LF 8" HDPE FORCEMAIN.  
EXISTING FORCEMAIN TO BE GROUTED AND ABANDONED IN PLACE.

**FORCE MAIN 30A REPLACEMENT  
51ST AVE. WEST TO 47TH AVE. WEST  
COVER**

NO.	REVISION DESCRIPTION	BY	DATE

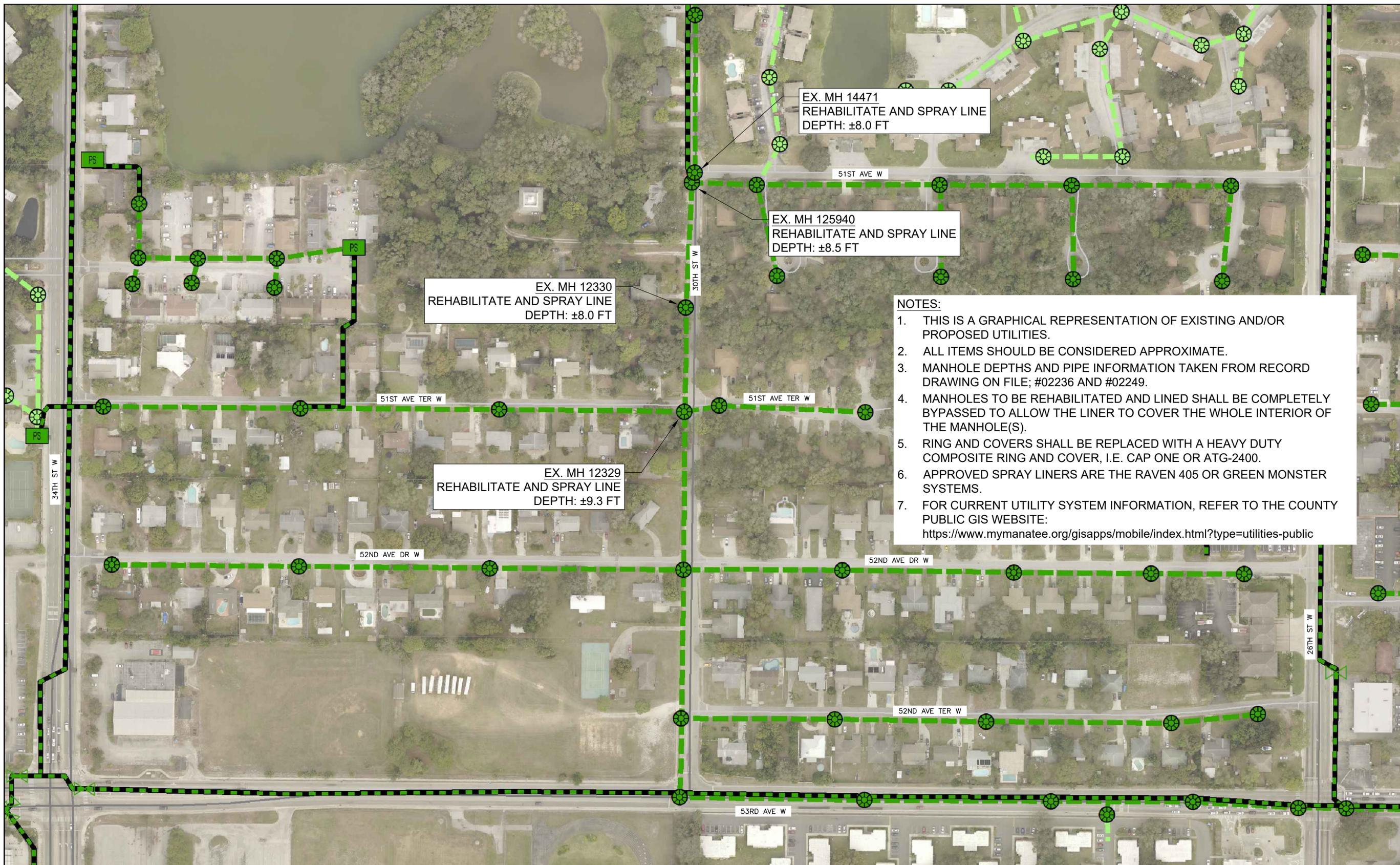
PROJECT #	404-6028387
SURVEY #	01526
SEC./TWN./RGE	10/35S/17E

	BY	DATE
SURVEYED	FKL	04/2017
DESIGNED	JSS	03/19
DRAWN	BLR/JSS	03/19
CHECKED	-	-



S:\P\B\Engineering\_Shore\Util\_Eng\_Design\PROJ\30A\_SRR\_Proj\30A\_SRR\_Proj\30A\_Replacement\DWG\FM-30A\_P\_Design.dwg, 1, 8/5/2019 8:34 AM Sheet Shoun, 1:1, ANSI full bleed D (34.00 x 22.00 inches)





**NOTES:**

1. THIS IS A GRAPHICAL REPRESENTATION OF EXISTING AND/OR PROPOSED UTILITIES.
2. ALL ITEMS SHOULD BE CONSIDERED APPROXIMATE.
3. MANHOLE DEPTHS AND PIPE INFORMATION TAKEN FROM RECORD DRAWING ON FILE; #02236 AND #02249.
4. MANHOLES TO BE REHABILITATED AND LINED SHALL BE COMPLETELY BYPASSED TO ALLOW THE LINER TO COVER THE WHOLE INTERIOR OF THE MANHOLE(S).
5. RING AND COVERS SHALL BE REPLACED WITH A HEAVY DUTY COMPOSITE RING AND COVER, I.E. CAP ONE OR ATG-2400.
6. APPROVED SPRAY LINERS ARE THE RAVEN 405 OR GREEN MONSTER SYSTEMS.
7. FOR CURRENT UTILITY SYSTEM INFORMATION, REFER TO THE COUNTY PUBLIC GIS WEBSITE:  
<https://www.myanatee.org/gisapps/mobile/index.html?type=utilities-public>

NO.	REVISION DESCRIPTION	BY	DATE

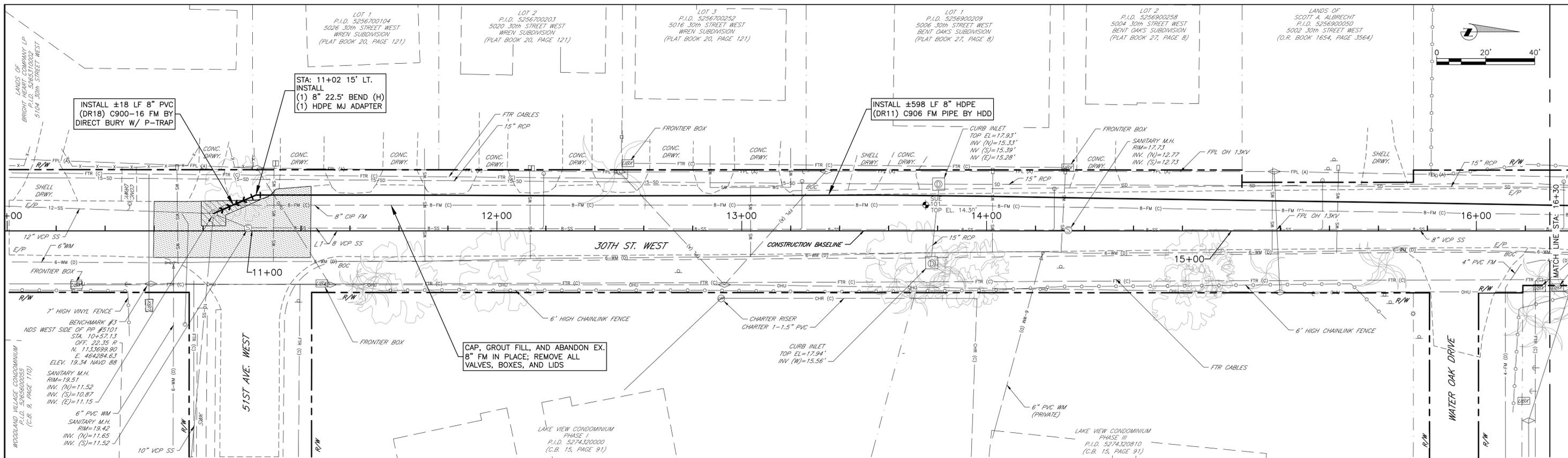
# FORCE MAIN 30A REPLACEMENT 51ST AVE. WEST TO 47TH AVE. WEST GRAVITY MANHOLE REHABILITATION MAP



PROJECT #	404-6028387
SURVEY #	01526
SEC./TWN./RGE	10/35S/17E
SCALE	1" = 100'
SURVEYED	FKL 04/2017
DESIGNED	JSS 03/19
DRAWN	BLR/JSS 03/19
CHECKED	- -

JOHN S. SHOUN, P.E.  
 FLORIDA PROFESSIONAL ENGINEER  
 LICENSE No. 60923  
 STATE OF FLORIDA  
 8/5/19  
 Sign \_\_\_\_\_ Date \_\_\_\_\_

S:\P\02\_Engineering-Shoun\011\_Eng\_Design\FRGA\30A\_SRR\_Proj\FM-30A\_Replacement\DWG\FM-30A\_F\_Design.dwg, 8/5/2019 8:34 AM Shea Shoun, P.E. ANSI Full bleed D (34.00 x 22.00 inches)



STA: 11+02 15' LT.  
INSTALL  
(1) 8" 22.5' BEND (H)  
(1) HDPE MJ ADAPTER

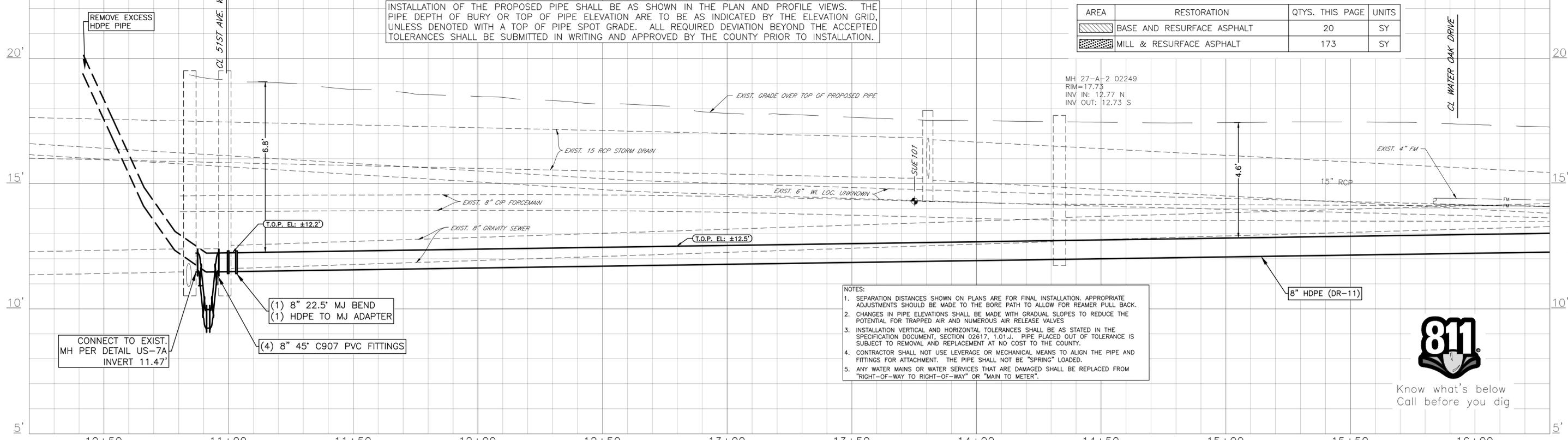
INSTALL ±18 LF 8" PVC  
(DR18) C900-16 FM BY  
DIRECT BURY W/ P-TRAP

INSTALL ±598 LF 8" HDPE  
(DR11) C906 FM PIPE BY HDD

CAP, GROUT FILL, AND ABANDON EX.  
8" FM IN PLACE; REMOVE ALL  
VALVES, BOXES, AND LIDS

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.

AREA	RESTORATION	QTY. THIS PAGE	UNITS
	BASE AND RESURFACE ASPHALT	20	SY
	MILL & RESURFACE ASPHALT	173	SY



- 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".



Know what's below  
Call before you dig

NO.	REVISION DESCRIPTION	BY	DATE

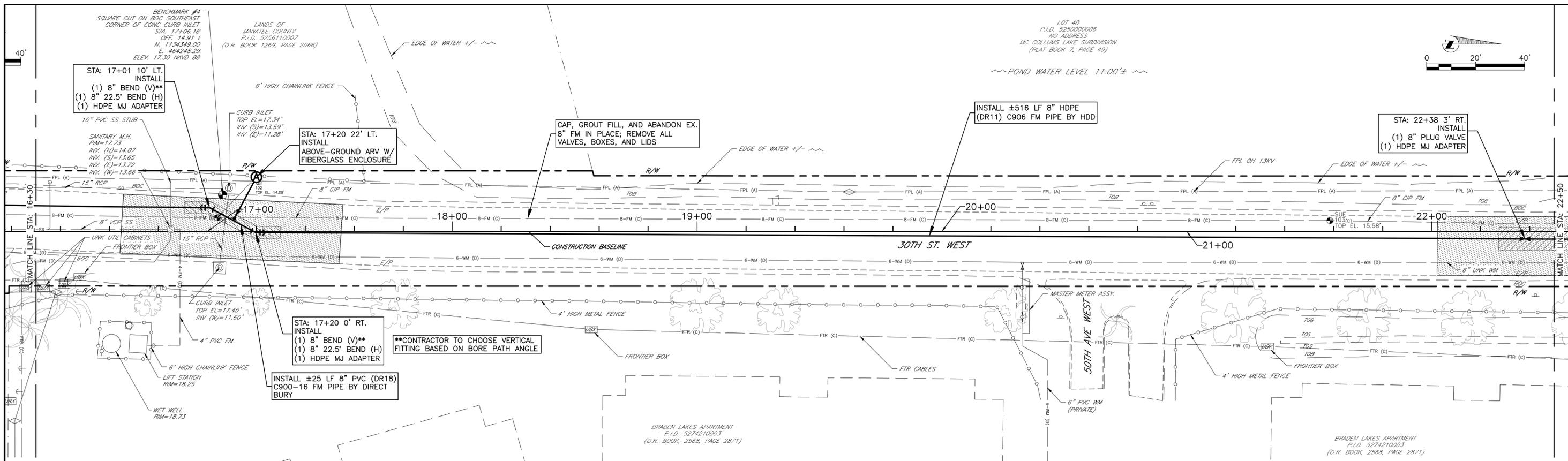
# FORCE MAIN 30A REPLACEMENT 51ST AVE. WEST TO 47TH AVE. WEST PLAN & PROFILE STA. 10+00 TO 16+30



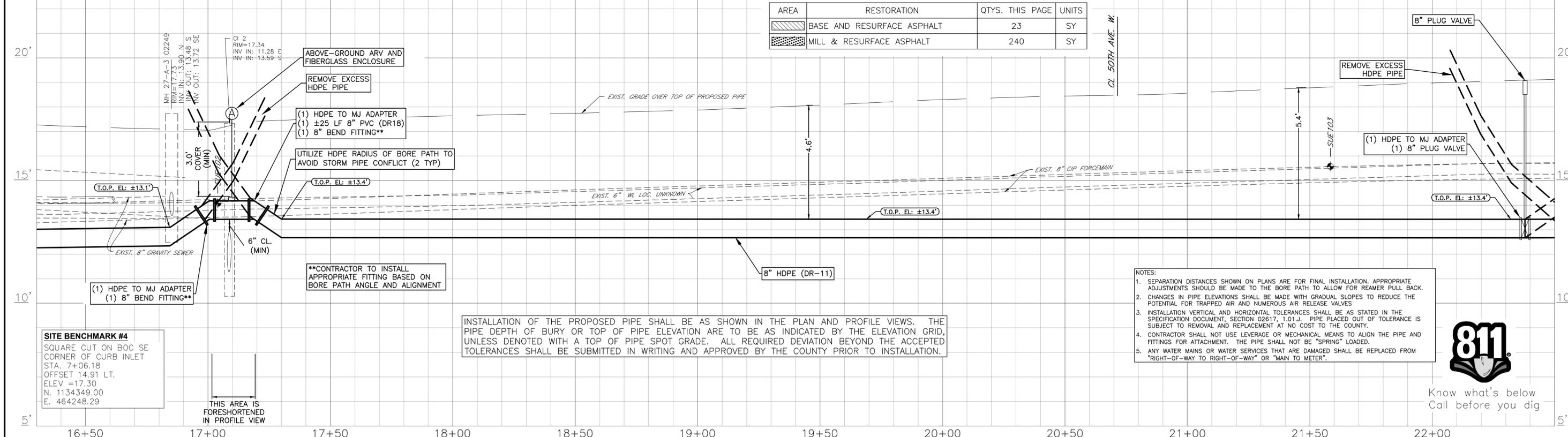
PROJECT #	404-6028387	JOHN S. SHOUN, P.E.
SURVEY #	01526	
SEC./TWN./RGE	10/35S/17E	
SCALE	1" = 20'	
BY	DATE	
SURVEYED	FKL 04/2017	
DESIGNED	JSS 03/19	
DRAWN	BLR/JSS 03/19	
CHECKED	-	

DATE

SHEET 4 OF 11



AREA	RESTORATION	QTY. THIS PAGE	UNITS
	BASE AND RESURFACE ASPHALT	23	SY
	MILL & RESURFACE ASPHALT	240	SY



- 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.
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  - ANY WATER MAINS OR WATER SERVICES THAT ARE DAMAGED SHALL BE REPLACED FROM "RIGHT-OF-WAY TO RIGHT-OF-WAY" OR "MAIN TO METER".



Know what's below  
Call before you dig

# FORCE MAIN 30A REPLACEMENT 51ST AVE. WEST TO 47TH AVE. WEST PLAN & PROFILE STA. 16+30 TO 22+50

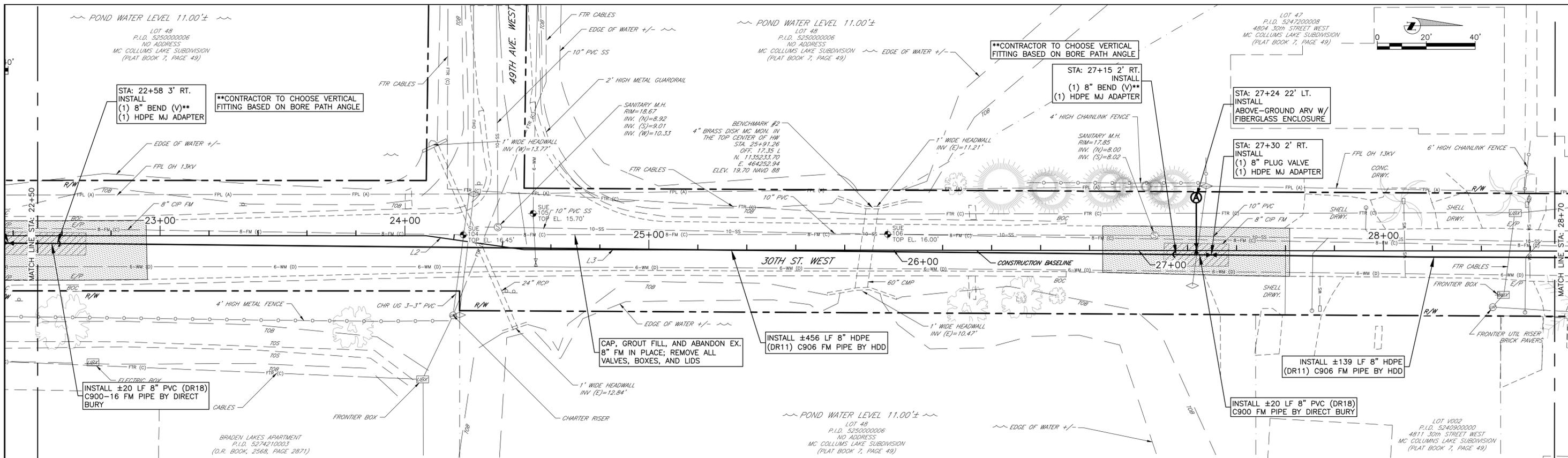


PROJECT #	404-6028387
SURVEY #	01526
SEC./TWN./RGE	10/35S/17E
SCALE	1" = 20'
BY	DATE
SURVEYED	FKL 04/2017
DESIGNED	JSS 03/19
DRAWN	BLR/JSS 03/19
CHECKED	-

JOHN S. SHOUN, P.E.  
 LICENSE NO. 23  
 STATE OF FLORIDA  
 PROFESSIONAL ENGINEER  
 SIGNATURE

SHEET 5 OF 11

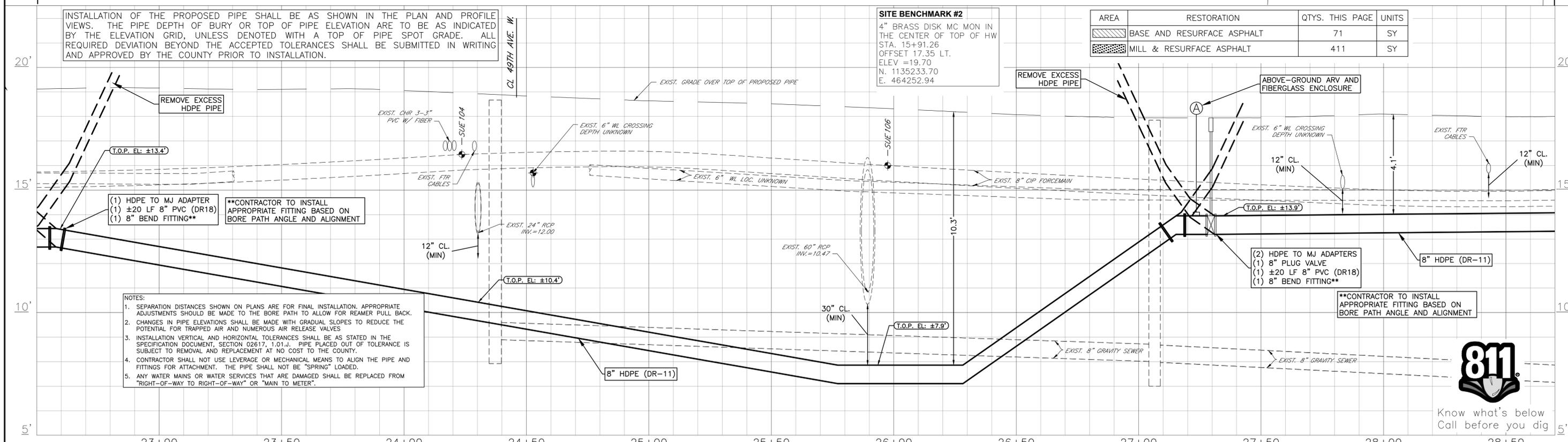
NO.	REVISION DESCRIPTION	BY	DATE



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.

**SITE BENCHMARK #2**  
 4" BRASS DISK MC MON IN THE CENTER OF TOP OF HW  
 STA. 15+91.26  
 OFFSET 17.35 LT.  
 ELEV. = 19.70  
 N. 1135233.70  
 E. 464252.94

AREA	RESTORATION	QTY'S. THIS PAGE	UNITS
	BASE AND RESURFACE ASPHALT	71	SY
	MILL & RESURFACE ASPHALT	411	SY



- 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.
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NO.	REVISION DESCRIPTION	BY	DATE

# FORCE MAIN 30A REPLACEMENT 51ST AVE. WEST TO 47TH AVE. WEST PLAN & PROFILE STA. 22+50 TO 28+70

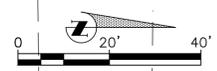
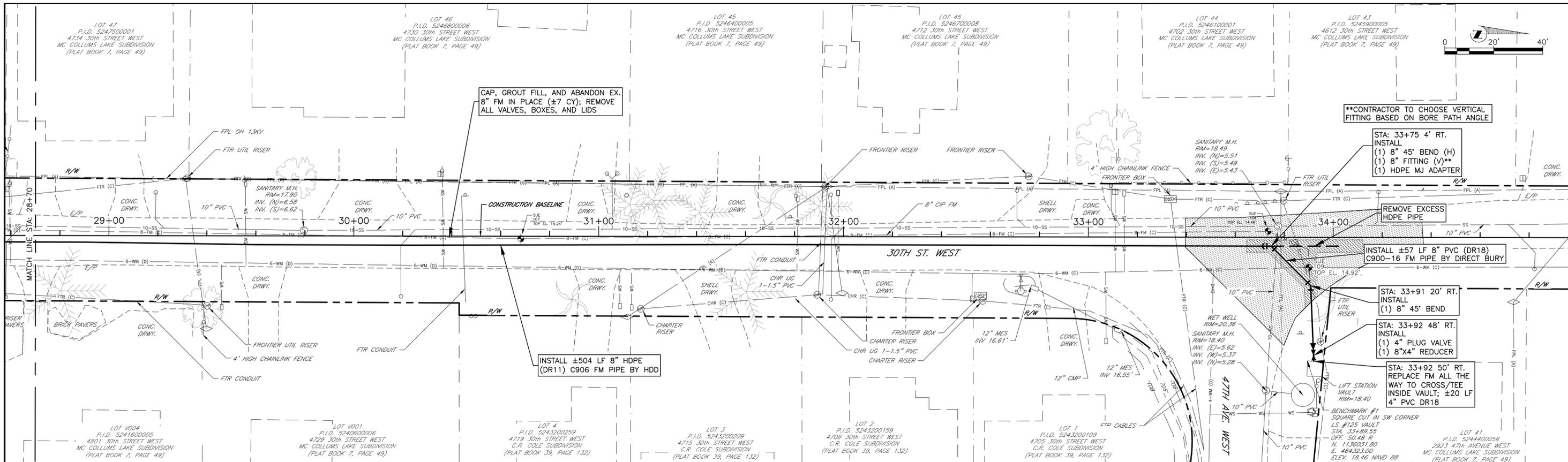


PROJECT #	404-6028387
SURVEY #	01526
SEC./TWN./RGE	10/35S/17E
SCALE	1" = 20'
SURVEYED	FKL 04/2017
DESIGNED	JSS 03/19
DRAWN	BLR/JSS 03/19
CHECKED	-

JOHN S. SHOUN, P.E.  
 License No. 60923  
 STATE OF FLORIDA  
 PROFESSIONAL ENGINEER  
 Signature & Date

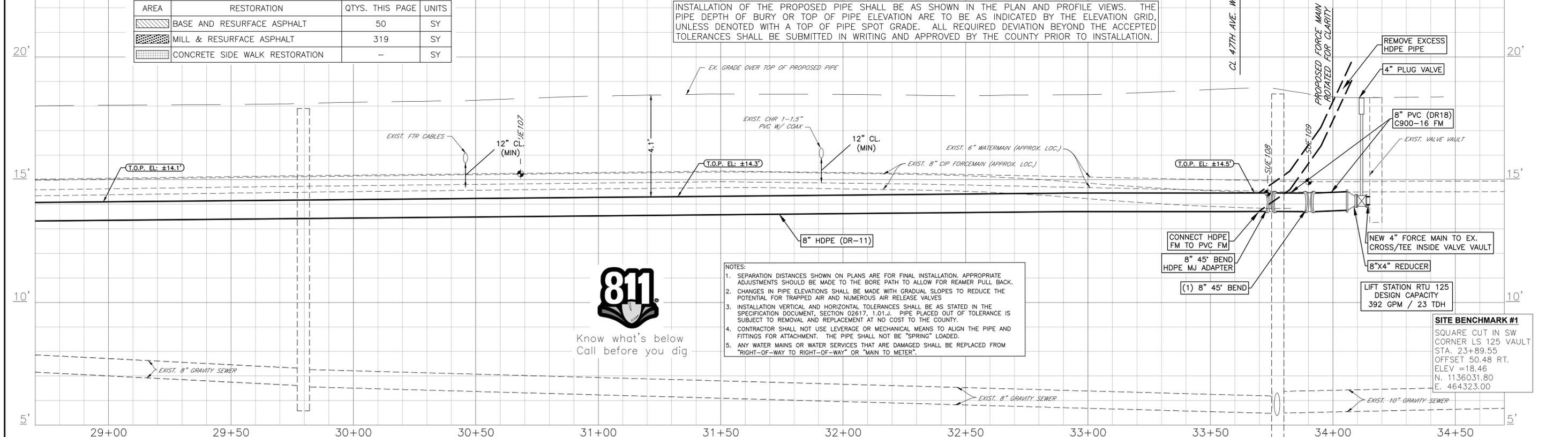
SHEET 6 OF 11

S:\P\10\_Engineering-Shore\U\1\_Eng\_Design\Proj\30A\_Rep\30A\_Rep\30A\_Rep\30A\_Rep.dwg, 6/8/2019 8:24 AM Shea Shoun, 11, ANSI full bleed D (34.00 x 22.00 inches)



AREA	RESTORATION	QTY. THIS PAGE	UNITS
	BASE AND RESURFACE ASPHALT	50	SY
	MILL & RESURFACE ASPHALT	319	SY
	CONCRETE SIDE WALK RESTORATION	-	SY

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.



Know what's below  
Call before you dig

- NOTES:
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NO.	REVISION DESCRIPTION	BY	DATE

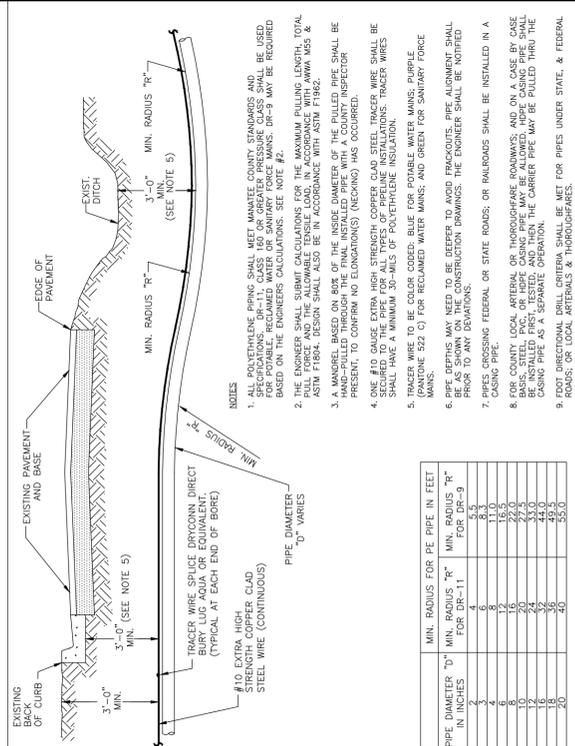
# FORCE MAIN 30A REPLACEMENT

## 51ST AVE. WEST TO 47TH AVE. WEST

### PLAN & PROFILE STA. 28+70 TO 34+70

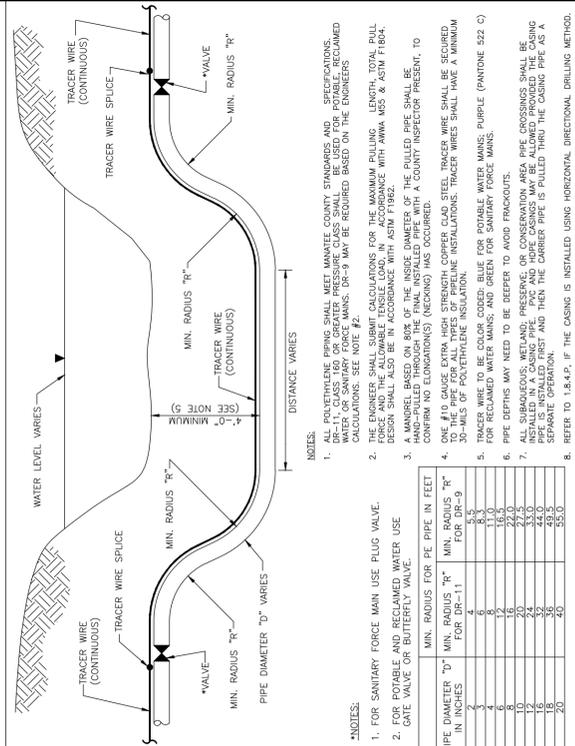


PROJECT #	404-6028387	JOHN S. SHOUN, P.E.
SURVEY #	01526	FLORIDA PROFESSIONAL ENGINEER LICENSE No. 60923
SEC./TWN./RGE	10/35S/17E	STATE OF FLORIDA
SCALE	1" = 20'	8/5/19
SURVEYED	FKL 04/2017	DESIGNED
DESIGNED	JSS 03/19	DRAWN
DRAWN	BLR/JSS 03/19	CHECKED
CHECKED	-	



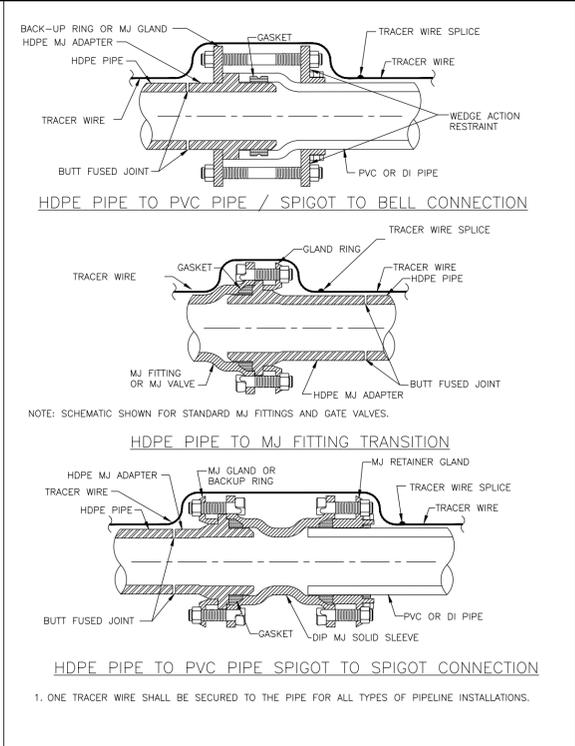
- NOTES:**
- ALL POLYETHYLENE PIPING SHALL MEET MANATEE COUNTY STANDARDS AND SPECIFICATIONS. DR-11, CLASS 100 OR GREATER PRESSURE CLASS SHALL BE USED FOR POTABLE, RECLAIMED WATER OR SANITARY FORCE MAINS. DR-9 MAY BE REQUIRED BASED ON THE ENGINEER'S CALCULATIONS. SEE NOTE #2.
  - ENGINEER SHALL SUBMIT CALCULATIONS FOR THE MAXIMUM PULLING LENGTH, TOTAL FORCE AND THE ALLOWABLE TENSILE LOAD, IN ACCORDANCE WITH AWWA M55 & ASTM F182, TO THE MANATEE COUNTY ENGINEER. THE ALLOWABLE TENSILE LOAD SHALL BE IN ACCORDANCE WITH ASTM F182.
  - A MANHOLE, BASED ON 80% OF THE INSIDE DIAMETER OF THE PULLED PIPE SHALL BE PRESENT, TO CONFORM TO ELONGATIONS (NEEDING) HAS OCCURRED.
  - ONE #10 GAUGE EXTRA HIGH STRENGTH CORNER CLAD STEEL TRACER WIRE SHALL BE SECURED TO THE PIPE FOR ALL TYPES OF PIPELINE INSTALLATIONS. TRACER WIRES SHALL HAVE A MINIMUM 30-MILES OF POLYETHYLENE INSULATION.
  - TRACER WIRE TO BE COLOR CODED: BLUE FOR POTABLE WATER MAINS, PURPLE (PANTONE 522 C) FOR RECLAIMED WATER MAINS, AND GREEN FOR SANITARY FORCE MAINS. (SEE NOTE 5)
  - PIPE DEPTHS MAY NEED TO BE DEEPER TO AVOID FRACKINGS; PIPE ALIGNMENT SHALL BE DEEPER TO ANY DEVIATIONS. THE ENGINEER SHALL BE NOTIFIED PRIOR TO ANY DEVIATIONS.
  - PIPES CROSSING FEDERAL OR STATE ROADS, OR RAILROADS SHALL BE INSTALLED IN A CASING PIPE.
  - FOR COUNTY LOCAL ARTERIAL OR THROUGHFARE ROADWAYS; AND ON A CASE BY CASE BASIS, THE ENGINEER SHALL DETERMINE IF THE CASING PIPE SHALL BE INSTALLED FIRST, AND THEN THE CARRIER PIPE. THE CARRIER PIPE SHALL BE PULLED THROUGH THE CASING PIPE AS A SEPARATE OPERATION.
  - FOOT DIRECTIONAL DRILL CRITERIA SHALL BE MET FOR PIPES UNDER STATE, & FEDERAL ROADS, OR LOCAL ARTERIALS & THROUGHFARES.

PIPE DIAMETER "D" IN INCHES	MIN. RADIUS FOR PE PIPE IN FEET FOR DR-11	MIN. RADIUS "R" IN INCHES
4	6	8.3
6	9	11.0
8	12	14.7
10	15	19.0
12	18	24.0
14	21	29.7
16	24	36.0
18	27	42.7
20	30	50.0
24	36	60.0
30	45	75.0
36	54	90.0



- NOTES:**
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PIPE DIAMETER "D" IN INCHES	MIN. RADIUS FOR PE PIPE IN FEET FOR DR-9	MIN. RADIUS "R" IN INCHES
4	4	5.3
6	6	8.0
8	8	10.7
10	10	14.0
12	12	17.3
14	14	21.0
16	16	25.0
18	18	29.3
20	20	34.0
24	24	41.0
30	30	50.0
36	36	60.0
42	42	72.0
48	48	84.0
54	54	96.0
60	60	108.0



- NOTES:**
- ONE TRACER WIRE SHALL BE SECURED TO THE PIPE FOR ALL TYPES OF PIPELINE INSTALLATIONS.

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

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	

**NOTES:**

- ALL THRUST BLOCKS SHALL BE CAST IN PLACE. FITTINGS ADJACENT TO THRUST BLOCKS SHALL BE WRAPPED IN POLYETHYLENE.
- THIS TABLE IS BASED ON WATER PRESSURE=180 PSI WITH AN ALLOWABLE SOIL BEARING PRESSURE=2000 PSF. CONCRETE STRENGTH  $f_c$  = 3000 PSI, REINFORCEMENT  $f_y$  = 60.0 KSI. THRUST BLOCK SHALL BE CAST AGAINST FIRM UNDISTURBED SOIL.
- FOR LARGER "B" DIMENSIONS IT IS NECESSARY TO CHECK THAT PIPE IS SUFFICIENTLY DEEP TO ALLOW 15" MIN. SOIL COVER OVER TOP EDGE OF THRUST BLOCK.
- RESTRAINED JOINTS MAY BE USED IN LIEU OF THRUST BLOCKS TO SAVE SPACE. HOWEVER, WHERE THRUST BLOCKS AND RESTRAINED JOINTS ARE CALLED OUT/ILLUSTRATED IN THE DETAILS, BOTH SHALL BE INSTALLED.

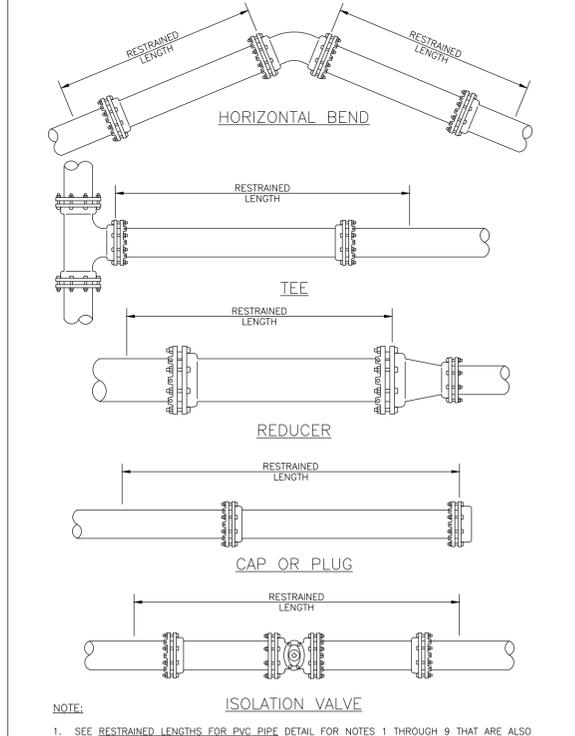
MANATEE COUNTY PUBLIC WORKS DEPARTMENT	DIRECTIONAL BORE ROADWAY CROSSING	UG-4
REV. BY	DATE	DATE OF APPROVAL

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	DIRECTIONAL BORE SUBAQUEOUS CROSSING	UG-5
REV. BY	DATE	DATE OF APPROVAL

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	HDPE TO PVC OR DI PIPE ADAPTER	UG-6
REV. BY	DATE	DATE OF APPROVAL

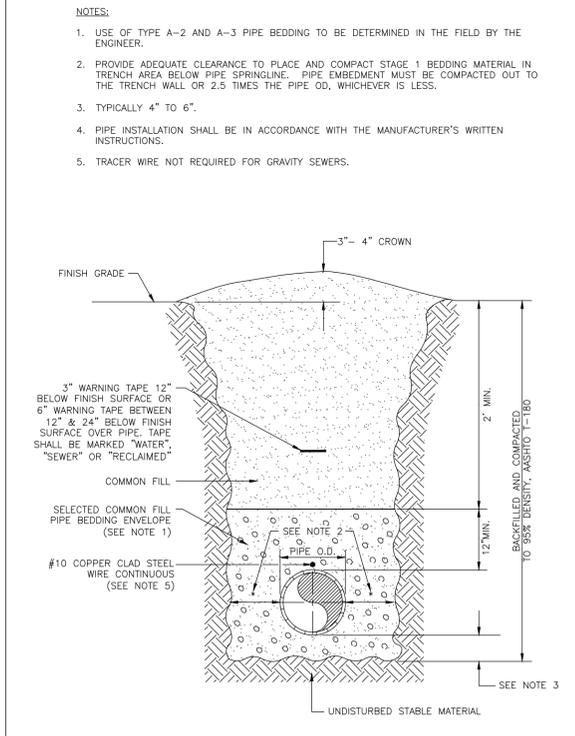
MANATEE COUNTY PUBLIC WORKS DEPARTMENT	CONCRETE THRUST BLOCKS	UG-7
REV. BY	DATE	DATE OF APPROVAL

MANATEE COUNTY PUBLIC WORKS DEPARTMENT	RESTRAINED LENGTHS FOR PVC PIPE	UG-8
REV. BY	DATE	DATE OF APPROVAL

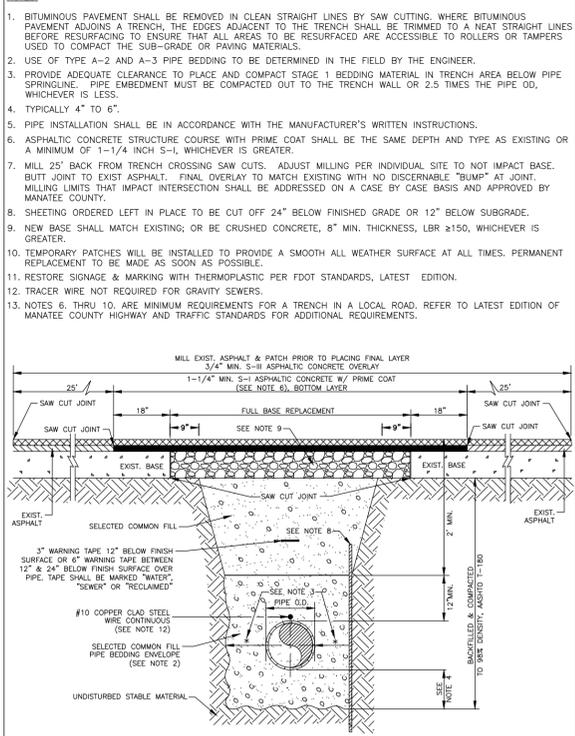


- NOTE:**
- SEE RESTRAINED LENGTHS FOR PVC PIPE DETAIL FOR NOTES 1 THROUGH 9 THAT ARE ALSO APPLICABLE TO RESTRAINED LENGTHS FOR PIPE.

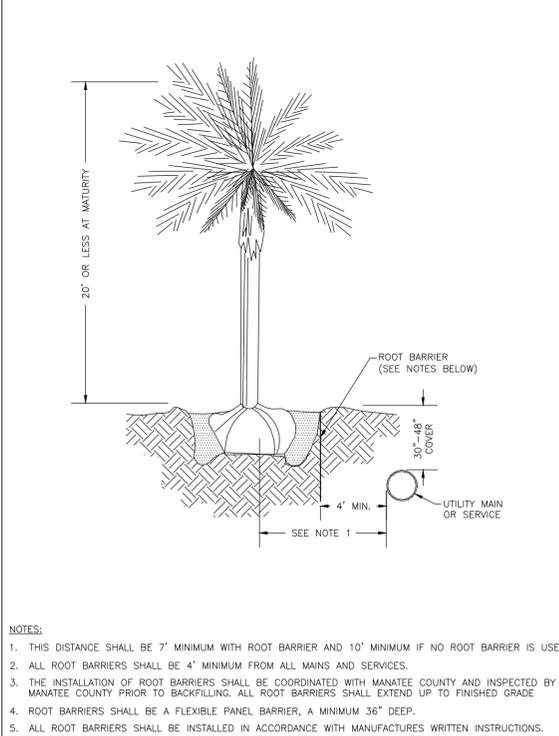
MANATEE COUNTY PUBLIC WORKS DEPARTMENT	RESTRAINED LENGTHS FOR PIPE	UG-10
REV. BY	DATE	DATE OF APPROVAL



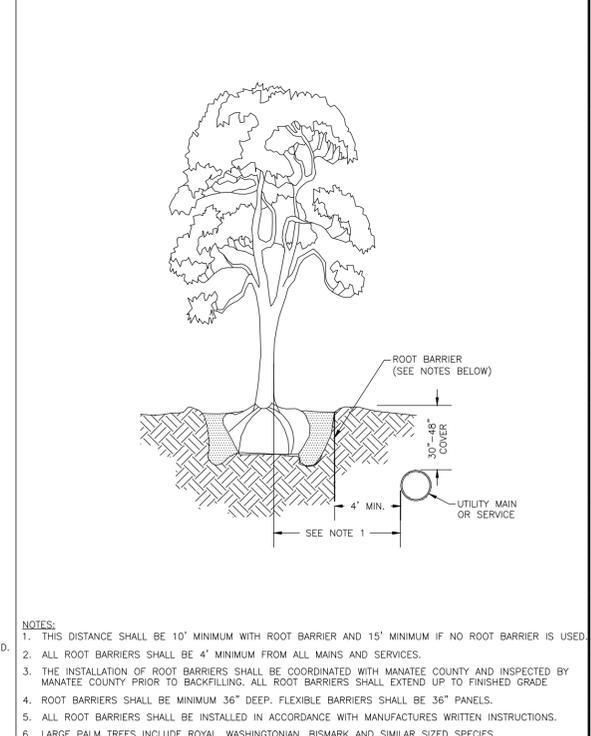
MANATEE COUNTY PUBLIC WORKS DEPARTMENT	TRENCH WITH UNIMPROVED SURFACE TYPE A-1 PIPE BEDDING	UG-11
REV. BY	DATE	DATE OF APPROVAL



MANATEE COUNTY PUBLIC WORKS DEPARTMENT	TRENCH CROSSING WITH ASPHALT PAVEMENT SURFACE TYPE A-1 PIPE BEDDING	UG-12
REV. BY	DATE	DATE OF APPROVAL



MANATEE COUNTY PUBLIC WORKS DEPARTMENT	TYP. SMALL TREE OR PALM TREE WITH ROOT BARRIER	UG-19
REV. BY	DATE	DATE OF APPROVAL



MANATEE COUNTY PUBLIC WORKS DEPARTMENT	TYP. CANOPY TREE, LARGE PALM OR EXOTIC TREE WITH ROOT BARRIER	UG-20
REV. BY	DATE	DATE OF APPROVAL

# FORCE MAIN 30A REPLACEMENT

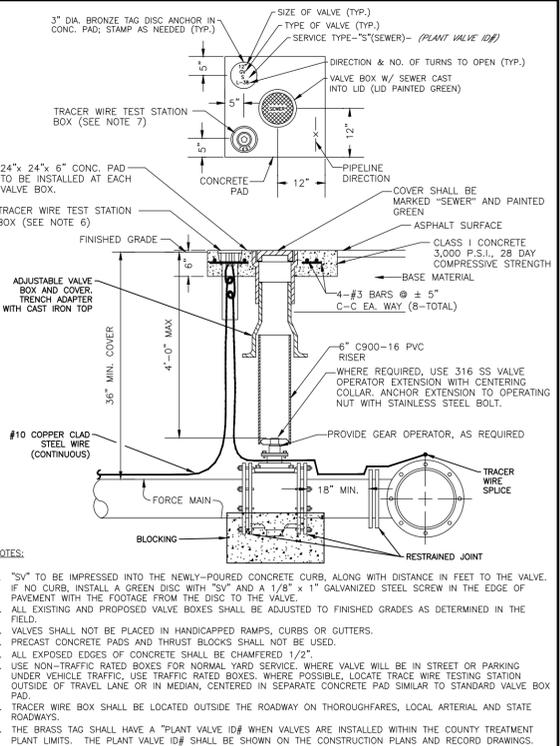
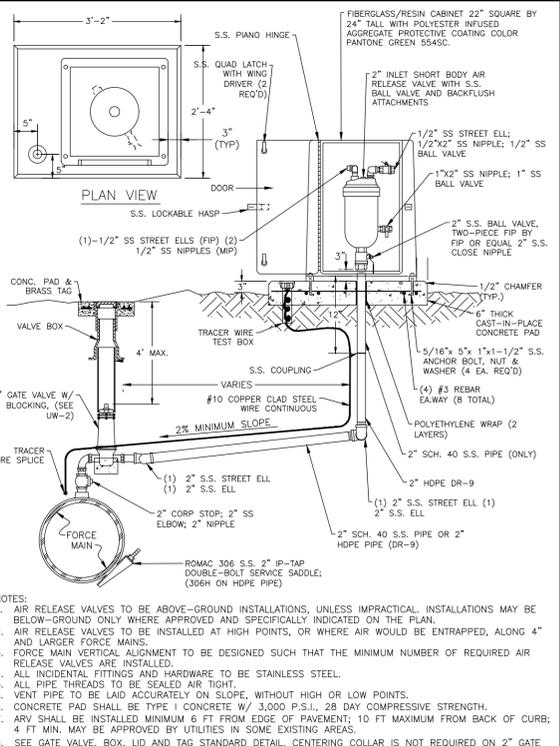
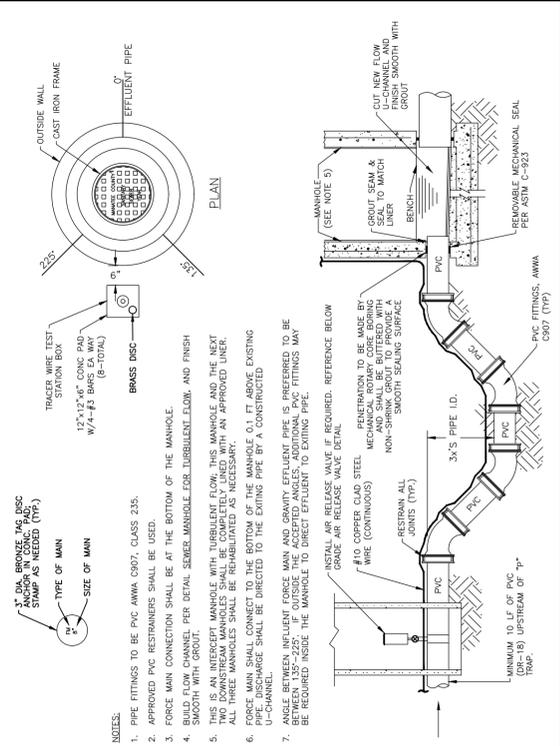
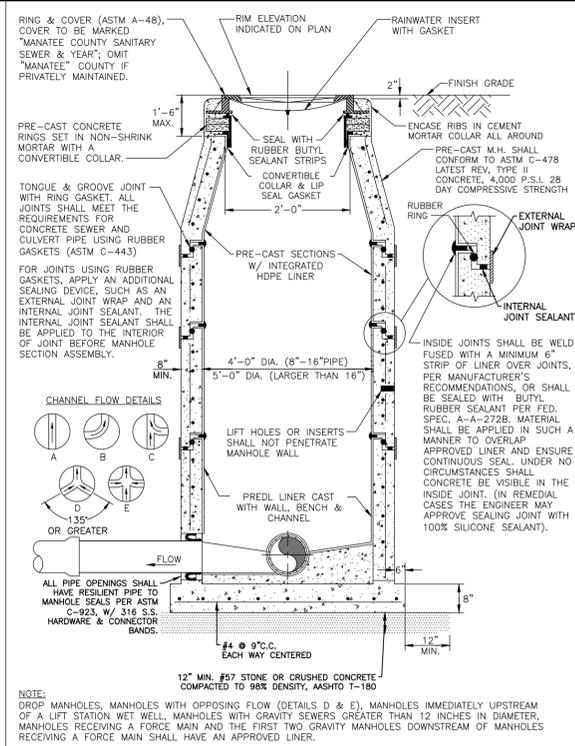
## 51ST AVE. WEST TO 47TH AVE. WEST

### DETAILS



PROJECT #	404-6028387	JOHN S. SHOUN, P.E.
SURVEY #	01526	
SEC./TWN./RGE	10/35S/17E	
SCALE	1" = 20'	
SURVEYED	FKL 04/2017	
DESIGNED	JSS 03/19	
DRAWN	BLR/JSS 03/19	
CHECKED	-	





NO.	REVISION DESCRIPTION	BY	DATE

# FORCE MAIN 30A REPLACEMENT

## 51ST AVE. WEST TO 47TH AVE. WEST

### DETAILS



PROJECT #	404-6028387
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CHECKED	-

JOHN SHOUN, P.E.  
Professional Engineer  
No. 60923  
FLORIDA  
8/5/19  
Signature & Date

SHEET 9 OF 11

S:\P\ID\_Engineering\_Shoum\UHI\_Eng\_Design\dwg\30A\_P\_Replacement\DWG\30A\_P\_Replacement\PROJ\30A\_P\_Replacement.dwg, 8/5/2019 8:34 AM Shea Shoun, 1:1, ANSI full bleed D (34.00 x 22.00 inches)

BASELINE REFERENCE TABLE (STA. 10+00)			
BASELINE REFERENCED	BEARING	DISTANCE	DESCRIPTION OF ACCESSORY
① P.K. NAIL & REFERENCE DISC, SET (LB2241) STATE PLANE COORDINATE N=1135642.8008 E=464262.2031	S-28°-W	67.50'	PK NAIL & DISC (WITNESS LB2241) SET ON SOUTH SIDE OF A WOOD POWER POLE
	N-04°-W	84.30'	NAIL & DISC (WITNESS LB2241) SET ON THE SOUTHWEST CORNER OF A CONCRETE ELECTRIC BOX PAD
	N-20°-E	61.70'	PK NAIL & DISC (WITNESS LB2241) SET ON EAST SIDE OF A WOOD POWER POLE

BASELINE REFERENCE TABLE STA (24+08.70)			
BASELINE REFERENCED	BEARING	DISTANCE	DESCRIPTION OF ACCESSORY
③ P.K. NAIL & REFERENCE DISC, SET (LB2241) STATE PLANE COORDINATE N=1135091.4992 E=464264.1837	N-67°-E	34.70'	NAIL & DISC (WITNESS LB2241) SET ON WEST SIDE OF A WOOD POWER POLE
	S-84°-W	36.90'	NAIL & DISC (WITNESS LB2241) SET ON THE CENTER OF A CONCRETE HEADWALL
	N-41°-W	25.80'	NAIL & DISC (WITNESS LB2241) SET ON EAST SIDE OF A WOOD POWER POLE

BASELINE REFERENCE TABLE (STA. 30+00)			
BASELINE REFERENCED	BEARING	DISTANCE	DESCRIPTION OF ACCESSORY
⑤ P.K. NAIL & REFERENCE DISC, SET (LB2241) STATE PLANE COORDINATE N=1135642.3919 E=464271.4236	N-16°-E	92.50'	NAIL & DISC (WITNESS LB2241) SET ON WEST SIDE OF A 12" PALM TREE
	S-19°-W	71.10'	NAIL & DISC (WITNESS LB3341) SET ON THE NORTH SIDE OF A WOODEN POWER POLE
	N-22°-W	43.40'	WOODEN MAIL BOX POST

BASELINE REFERENCE TABLE (STA. 17+00)			
BASELINE REFERENCED	BEARING	DISTANCE	DESCRIPTION OF ACCESSORY
② P.K. NAIL & REFERENCE DISC, SET (LB2241) STATE PLANE COORDINATE N=1134342.7999 E=464263.1873	S-67°-W	18.40'	DISC (WITNESS LB2241) SET ON NORTHEAST CORNER OF A CURB INLET
	S-22°-E	65.20'	NAIL & DISC (WITNESS LB2241) SET ON THE NORTH SIDE OF A WOODEN POWER POLE
	N-59°-W	23.40'	DISC (WITNESS LB2241) SET ON NORTHWEST CORNER OF A CURB INLET

BASELINE REFERENCE TABLE STA (24+48.94)			
BASELINE REFERENCED	BEARING	DISTANCE	DESCRIPTION OF ACCESSORY
④ P.K. NAIL & REFERENCE DISC, SET (LB2241) STATE PLANE COORDINATE N=1135091.3341 E=464269.8794	S-67°-E	36.50'	NAIL & DISC (WITNESS LB2241) SET ON WEST SIDE OF A WOOD POWER POLE
	S-48°-W	30.50'	NAIL & DISC (WITNESS LB2241) SET ON EAST SIDE OF A WOOD POWER POLE
	S-83°-E	32.00'	NAIL & DISC (WITNESS LB2241) SET ON THE CENTER OF A CONCRETE HEADWALL

BASELINE REFERENCE TABLE (STA. 34+61.92)			
BASELINE REFERENCED	BEARING	DISTANCE	DESCRIPTION OF ACCESSORY
⑥ P.K. NAIL & REFERENCE DISC, SET (LB2241) STATE PLANE COORDINATE N=1136104.3101 E=464272.7180	N-62°-E	11.20'	NAIL & DISC (WITNESS LB2241) SET ON WEST SIDE OF A 24" OAK TREE
	S-12°-W	84.60'	NAIL & DISC (WITNESS LB2241) SET ON WEST SIDE OF A WOOD POWER POLE
	N-17°-W	43.40'	NAIL & DISC (WITNESS LB2241) SET ON WEST SIDE OF A WOOD POWER POLE

**SURVEYOR'S NOTES:**

- BEARINGS ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM, WEST ZONE NAD 83 (2011) AS DERIVED FROM NATIONAL GEODETIC SURVEY OPUS CONTROL POINTS DM6221 "MYRTLE OAK" AND DM6224 "WHITE ASH", WITH A BEARING OF S88°40'20"E BETWEEN SAID POINTS, WHICH ARE FULLY DESCRIBED HEREON.
- LOCATIONS SHOWN HEREON ARE BASED ON VISIBLE IMPROVEMENTS ONLY, THEREFORE EXCEPTION IS MADE HEREIN REGARDING THE EXISTENCE OF UNDERGROUND UTILITIES OR STRUCTURES NOT MARKED OR KNOWN AT THE DATE OF SURVEY.
- THIS SURVEY WAS PREPARED USING INFORMATION FROM THE MANATEE COUNTY GOVERNMENT G.I.S. MAPS, ALONG WITH PLATS AND DEEDS OF RECORD. NO ATTEMPT WAS MADE TO ESTABLISH PROPERTY LINES BEYOND THE POINT NECESSARY TO CONFIRM THE PHYSICAL MONUMENTATION ALONG THE RIGHTS-OF-WAY.
- ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (N.A.V.D. 1988). ORIGIN BENCHMARK IS NATIONAL GEODETIC SURVEY PID DP5439, MANATEE COUNTY DISK "JOHN JACKSON 2014", WITH A PUBLISHED ELEVATION OF 17.68 FT. N.A.V.D. 1988. CLOSING BENCHMARK IS NATIONAL GEODETIC SURVEY PID DM6224, MANATEE COUNTY DISK "WHITE ASH 2009", WITH A PUBLISHED ELEVATION OF 18.29 FT. N.A.V.D. 1988.
- BENCHMARKS SHOWN ON THIS SURVEY HAVE BEEN PLACED ON THE BEST AVAILABLE FEATURES, EITHER NATURAL OR ARTIFICIAL. IT IS THE RESPONSIBILITY OF THE USER TO CONFIRM THE POSSIBILITY OF MOVEMENT AND/OR RELIABILITY OF SAID FEATURES AT THE TIME OF USE.
- THIS GRAPHIC DEPICTION OF THE TOPOGRAPHIC SURVEY DOES NOT CONTAIN ALL OF THE ELEVATION POINTS COLLECTED IN THE FIELD, FOR CLARITIES SAKE. REFER TO THE ELECTRONIC FILES OF THIS SURVEY FOR COMPLETE INFORMATION.
- THE SUBJECT PROPERTY LIES IN FLOOD ZONE "X" PER FLOOD INSURANCE RATE MAP (F.I.R.M.) (PANEL NUMBER 12081C0304E, EFFECTIVE DATE MARCH 17, 2014).

30TH ST WEST CONSTRUCTION BASELINE											
Number	Length	Radius	Delta Angle	Line/Chord	Chord Length	Start Station	Start Northing	Start Easting	End Station	End Northing	End Easting
L1	1707.703			N00° 04' 50.08"E		7+01.00	1133343.80	464261.79	24+08.70	1135051.50	464264.19
L2	40.237			N08° 08' 14.48"E		24+08.70	1135051.50	464264.19	24+48.94	1135091.33	464269.88
L3	1392.267			N00° 09' 38.09"E		24+48.94	1135091.33	464269.88	38+41.21	1136483.60	464273.79

**GEODETIC DATA:** GEODETIC CONTROL POINTS USED (U.S. SURVEY FOOT)

DM6221 MYRTLE OAK	MARK IS LOCATED 725 FT. EASTERLY OF THE INTERSECTION OF 53RD AVENUE WEST (STATE ROAD 70) AND NORTHERLY OF 43RD STREET WEST. THE MARK IS 90.44 FT. SOUTHEASTERLY OF A PK NAIL AND DISC (LB6982) IN THE SOUTH SIDE OF A 5 FT. WIDE CONCRETE SIDEWALK. IT IS 20.53 FT. SOUTHERLY OF A PK NAIL AND DISC (LB6982) IN THE WEST SIDE OF A 10" PALM TREE. IT IS 77.40 FT. NORTHWESTERLY OF A TRAFFIC CONTROL SOLAR PANEL POLE. THE MARK IS ABOUT 2 FT. SOUTHERLY OF A CONCRETE SIDEWALK. ROD IS DRIVEN TO REFUSAL. MARK IS SURROUNDED (NOT INCASED) BY A 10" CONCRETE CYLINDER FLUSH WITH THE GROUND.  NAD 83 (2011) COORDINATE VALUE PUBLISHED BY THE NATIONAL GEODETIC SURVEY (NGS)  LATITUDE: 27°26'52.51274"N NORTHING: 1132475.89 CONVERGENCE: (-)0.27882542' LONGITUDE: -82°36'17.58707"W EASTING: 459988.44 SCALE FACTOR: 0.99998530
DM6224 WHITE ASH	FROM THE INTERSECTION US 41/ (14TH STREET WEST) AND 53RD AVENUE WEST (STATE ROAD 70) PROCEED WESTERLY ALONG 53RD AVENUE WEST (STATE ROAD 70), A DISTANCE OF 0.75 MILES TO THE INTERSECTION OF 53RD AVENUE WEST AND 26TH STREET WEST. THE MARK LIES 36.00 FT. SOUTH OF THE CENTERLINE OF 53RD AVENUE WEST (STATE ROAD 70), AND 40.00 FT. WEST OF THE CENTERLINE OF 26TH STREET WEST.  NAD 83 (2011) COORDINATE VALUE PUBLISHED BY THE NATIONAL GEODETIC SURVEY (NGS)  LATITUDE: 27°26'51.49984"N NORTHING: 1132346.93 CONVERGENCE: (-)0.27091897' LONGITUDE: -82°35'15.86229"W EASTING: 465548.83 SCALE FACTOR: 0.99998283

THIS PAGE IS COMPROMISED OF INFORMATION EXTRACTED FROM THE ORIGINAL TOPOGRAPHIC SURVEY BY FOLEY/KOLARIC INC., THIS SURVEY IS AVAILABLE UPON REQUEST.

**Foley/Kolarik, Inc.**

503 8th Avenue West Palmetto, Florida  
34221 (941) 722-4561 Fax (941)  
729-6248

**Subsurface Utility Engineering Test Hole Field Data**

F/K Project No.:	10526.0000					Date:	6/22/2017						
Client Name:	Manatee County												
Proj. Name:	Force Main 30A Replacement												
City / County / State:	Bradenton / Manatee County / Florida					Horizontal Datum:	NAD 83 (2011)		Vertical Datum:	NAVD 88			
Legend:	O.D.	Outside Diameter											
	E-W	East-West											
	N-S	North-South											
Test Hole Date	Test Hole Number	Utility Size, Material & Type (Size measured in inches and is O.D.)	Northing	Easting	Baseline	Station	Offset	Ground Elevation	Manual Depth (Top)	Utility Elevation (Top)	Utility Owner	Utility Direction	Surface Type
5/23/2017	101	8" Cast-Iron Force Main	1134017.942	464252.170	30th Street West	13+75.13	10.56' L	17.65	3.35'	14.30	Manatee Co.	N-S	Soil
5/23/2017	102	8" Cast-Iron Force Main	1134346.870	464257.640	30th Street West	17+04.06	5.56' L	17.08	3.00'	14.08	Manatee Co.	N-S	Soil
5/23/2017	103	8" Cast-Iron Force Main	1134801.214	464259.450	30th Street West	21+58.41	4.39' L	18.43	2.85'	15.58	Manatee Co.	N-S	Soil
5/23/2017	104	8" Cast-Iron Force Main	1135066.591	464263.849	30th Street West	24+23.59	2.47' L	18.80	2.35'	16.45	Manatee Co.	N-S	Soil
5/23/2017	105	6" Cast-Iron Force Main	1135095.159	464255.194	30th Street West	24+52.72	14.70' L	18.35	2.65'	15.70	Manatee Co.	E-W	Soil
5/23/2017	106	8" Cast-Iron Force Main	1135239.923	4464263.861	30th Street West	25+97.51	6.44' L	18.10	2.10'	16.00	Manatee Co.	N-S	Soil
5/23/2017	107	8" Cast-Iron Force Main	1135710.615	464272.627	30th Street West	30+68.23	1.01' R	18.14	2.90'	15.24	Manatee Co.	N-S	Soil
5/23/2017	108	8" Cast-Iron Force Main	1136015.763	464270.036	30th Street West	33+73.37	2.44' L	18.46	4.00'	14.46	Manatee Co.	N-S	Soil
5/23/2017	109	6" Asbestos-Cement Water	1136032.408	464284.801	30th Street West	33+90.05	12.28' R	18.39	3.47'	14.92	Manatee Co.	N-S	Soil

NO.	REVISION DESCRIPTION	BY	DATE

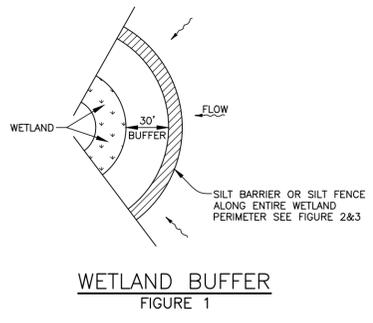
**FORCE MAIN 30A REPLACEMENT  
51ST AVE. WEST TO 47TH AVE. WEST  
SURVEY CONTROL**



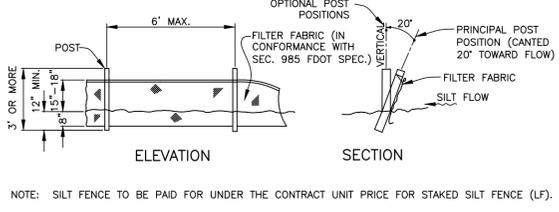
PROJECT #	404-6028387	
SURVEY #	01526	
SEC./TWN./RGE	10/35S/17E	
BY	DATE	
SURVEYED	FKL	04/2017
DESIGNED	JSS	03/19
DRAWN	BLR/JSS	03/19
CHECKED	-	-

JOHN S. SHEPHERD, P.E.  
FLORIDA PROFESSIONAL ENGINEER  
No. 60923  
STATE OF FLORIDA  
8/5/19  
Signature & Date

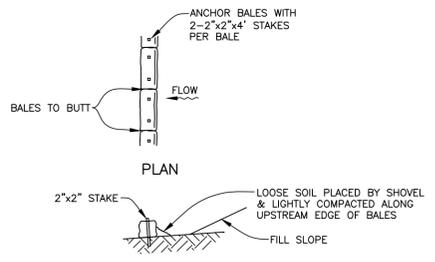
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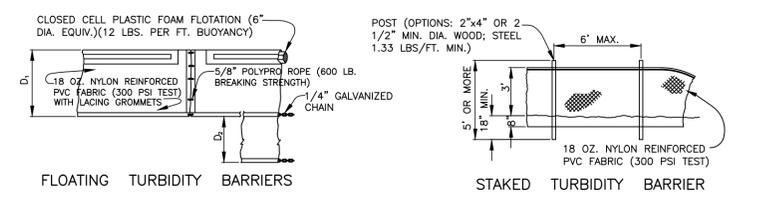
**WETLAND BUFFER**  
FIGURE 1



**TYPICAL SILT FENCE**  
FIGURE 2



**TYPICAL BALE SILT BARRIER**  
FIGURE 3

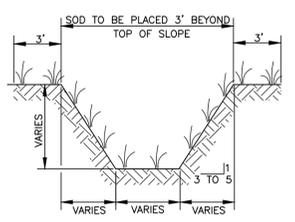


**FLOATING TURBIDITY BARRIERS**

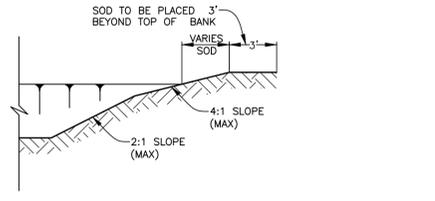
**STAKED TURBIDITY BARRIER**

NOTE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.

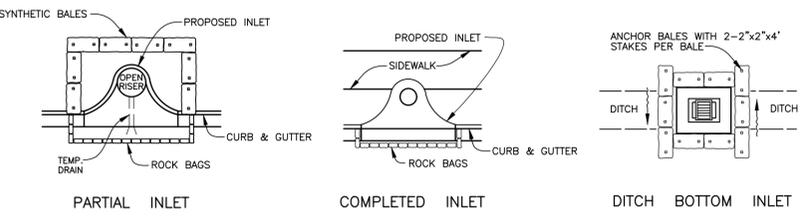
**TURBIDITY BARRIERS**  
FIGURE 4



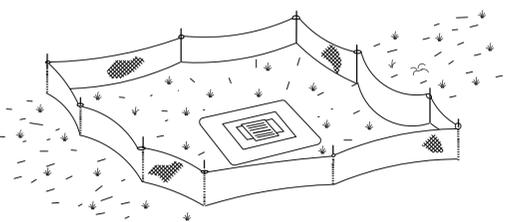
**TYPICAL SWALE SECTION**  
FIGURE 5



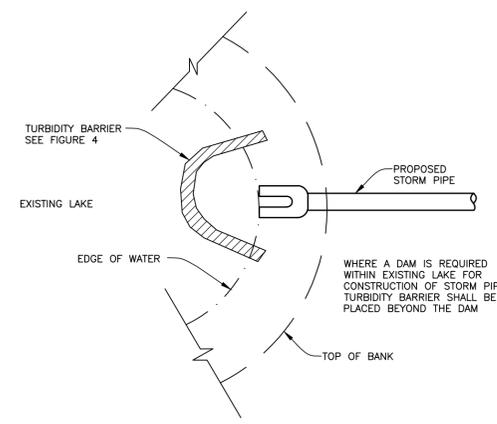
**TYPICAL RETENTION/DETECTION POND SECTION**  
FIGURE 6



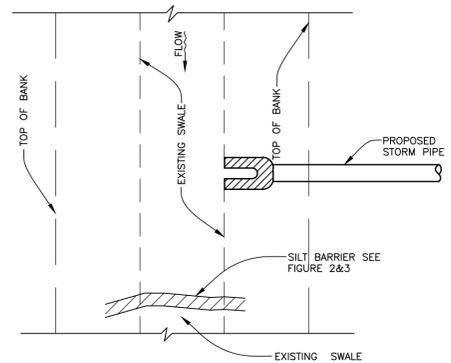
**SYNTHETIC BALE PROTECTION AROUND INLETS OR SIMILAR STRUCTURES**  
FIGURE 7



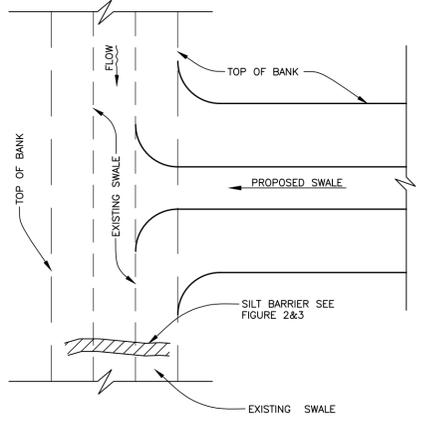
**TYPE III SILT FENCE PROTECTION AROUND DITCH BOTTOM INLETS**  
**STAKED SILT BARRIER OR SILT FENCE PROTECTION AROUND DITCH BOTTOM INLETS**  
FIGURE 8



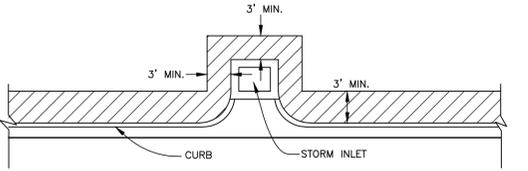
**TURBIDITY BARRIER AT CONNECTION OF STORM PIPE TO EXISTING LAKE**  
FIGURE 9



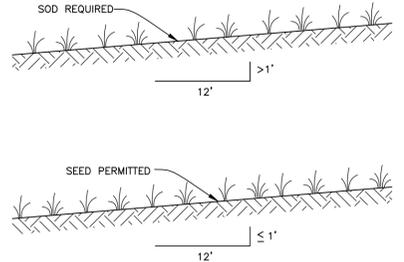
**SILT BARRIER AT CONNECTION OF STORM PIPE TO EXISTING SWALE**  
FIGURE 10



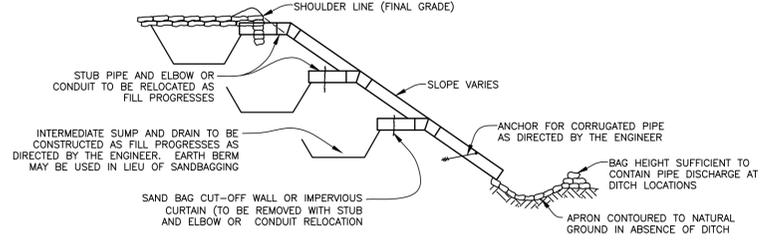
**SILT BARRIER AT CONNECTION OF SWALE TO EXISTING SWALE**  
FIGURE 11



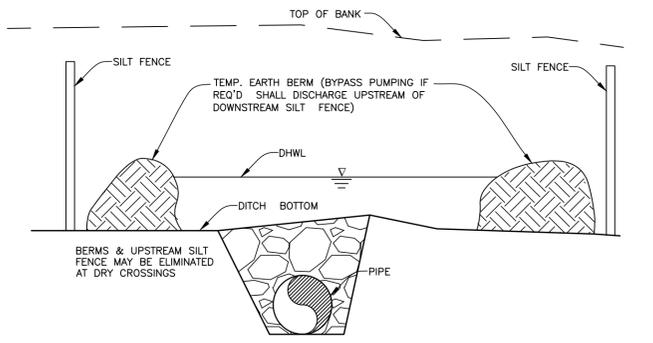
**SOD ALONG CURB AND AROUND INLET**  
FIGURE 14



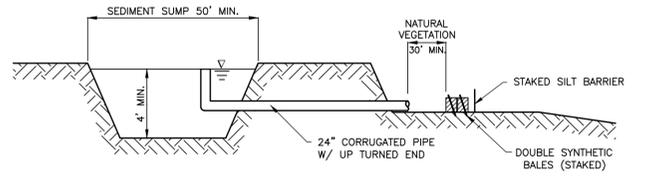
**GRASS SLOPES**  
FIGURE 13



**SECTION AA**  
**TEMPORARY SLOPE DRAIN**  
FIGURE 15



**UNDERGROUND PIPE CROSSING**  
FIGURE 12



**SEDIMENT SUMP SECTION**  
FIGURE 16

NOTE: REFERENCE THE STATE OF FLORIDA EROSION AND SEDIMENT CONTROL DESIGNER AND REVIEWER MANUAL, LATEST EDITION, FOR ALL TEMPORARY EROSION CONTROL MEASURES

NO.	REVISION DESCRIPTION	BY	DATE

# FORCE MAIN 30A REPLACEMENT 51ST AVE. WEST TO 47TH AVE. WEST EROSION CONTROL



PROJECT #	404-6028387
SURVEY #	01526
SEC./TWN./RGE	10/35S/17E
BY	DATE
SURVEYED	FKL 04/2017
DESIGNED	JSS 03/19
DRAWN	BLR/JSS 03/19
CHECKED	-

JOHN S. SHOUN, P.E.  
 LICENSE NO. 60923  
 STATE OF FLORIDA  
 PROFESSIONAL ENGINEER  
 Signature: [Signature]