



**INTRACOASTAL WATERWAY
MAINTENANCE DREDGING
ST. LUCIE COUNTY REACH I, FLORIDA**

APPENDIX F
Utility Information

**ST. LUCIE REACH I UTILITY SEARCH REPORT
AND
BATHYMETRIC, MAGNETOMETER, SEISMIC AND SIDE-SCAN SONAR SURVEY
INTRACOASTAL WATERWAY, CUT SL-2 THROUGH CUT SL-5
ST. LUCIE COUNTY, FLORIDA**

St. Lucie Reach 1 Utility Search

Introduction

SONOGRAPHICS, INC. and MORGAN & EKLUND, INC. (M&E) have completed an underwater survey of Reach 1 of the Intracoastal Waterway in St. Lucie County, Florida to detect the possible presence of utilities crossing. This report describes the equipment used, the methods implemented and the results obtained.

A. Equipment Used to Detect Submerged Utilities

A-1 MAGNETOMETER:

To locate utilities such as pipelines and cables under a waterway, several devices were employed. One device was the Geometrics Model G-882 marine magnetometer. It is a highly sensitive cesium pumped digital unit capable of sampling at 10 times per second. It is capable of locating ferrous objects because they interrupt the earth's magnetic field. It is a very common tool for locating pipelines and cables that have ferrous iron in their construction. The limitations of a magnetometer are:

- 1. If the cable or pipeline is not made with ferrous iron they will not be detected by the magnetometer.**
- 2. If a utility is detected the depth of burial can only be determined through calculations that are imprecise and therefore are not very accurate or reliable.**
- 3. If there are other ferrous items in the vicinity they must be separated from the potential utility contacts usually by comparing positions and analyzing signatures.**
- 4. Selecting the exact position of an anomaly can be difficult due to the context in which the anomaly is situated relative to the earth's field and other ferrous objects. Some positions are straightforward and accurate while others are subject to interpretation.**

A-2 SIDE-SCAN SONAR:

The second device employed was an EdgeTech dual frequency (600 kHz and 1600 kHz) chirp side-scan sonar. The model used was the 4125. The side-scan sonar is capable of producing sonic images of the bottom with the resolution to display the utility if it is exposed and not completely buried. It is capable of covering the entire bottom of the waterway from one side to the other. The limitation of the side-scan sonar is that it cannot penetrate the bottom and detect a buried utility.

A-3 SUB-BOTTOM PROFILER:

The third device employed was an EdgeTech X-Star Chirp Sub-bottom Profiler (SBP). The tow-fish used was the model SB-216S which can sweep sonic pulses from 2 kHz to 16 kHz. The sub-bottom profiler is capable of penetrating the sediment and getting reflections from the utility if it is significantly different in density from the surrounding sediment. The beam pattern of the sub-bottom profiler is wide enough fore and aft to detect the utility before and after it is directly under the tow-fish resulting in a classic hyperbolic pattern. If such a pattern is detected, then the actual depth of burial can be measured accurately relative to the surrounding bottom. The limitations of the sub-bottom profiler are:

1. The sediment may not be conducive to penetration if it contains gaseous organic material.
 2. If the utility was purposely buried in the sediment, it may have been backfilled with material that is impenetrable. In this instance the backfill may be detected but the depth of burial would be un-measurable.
 3. The construction of the utility may be of a material that is not of sufficient difference in density from the sediment or it may be physically too small.
- Typically, utilities with a diameter smaller than 6 inches will not be detected.

B. SURVEY METHODS

On September 30th, October 1st and 2nd, 2015 the survey vessel provided by Morgan Eklund, Inc. was mobilized with the Side-Scan Sonar, Magnetometer, Sub-bottom Profiler and Trimble DGPS Navigation Systems. The Navigation computer with Hypack Navigation Software was installed to interface the DGPS and output towfish coordinates to the Side-scan computer topside. The Navigation computer was loaded with preplanned survey lines spaced at 50 and 100 foot intervals through the length of the survey area and parallel to potential utilities for the side-scan survey. It provided visual guidance to the helmsman for navigation of each line. The RTK- was able to provide WGS 84 differential positions to the Navigation computer. The published accuracy of the DGPS system is less than 1 meter.

The Side-Scan and Sub-bottom tow-fish were deployed from the side of the vessel with minimal amount of cable out. The distance from the DGPS antenna to the center of the transducers was also measured. The layback and offset was calculated by the Navigation software, enabling towfish coordinates to be sent to both the Sub-bottom and Sonar computers in real time.

The magnetometer was installed and tests were done to insure that it was interfaced and working properly. The navigation computer recorded the data from the magnetometer and combined it with the NAD83, Florida State Plane East Zone, U.S. Survey Foot tow-fish coordinates. The magnetometer sensor was towed near the water surface from 70 to 50 feet aft of the vessel. The layback and offset was calculated by the Navigation software, enabling tow-fish coordinates to be merged with the incoming magnetometer readings in real time. The sampling rate was set to

10 samples per second. The magnetometer signal strength was monitored as the vessel was operated at 8 points of the compass to ensure that the sensor would not be affected by an improper angle to the earth's magnetic field. Test passes close to a metal navigation aid produced a significant anomaly with no degradation in signal strength. The background noise level was normal throughout the test and it was deemed that the magnetometer was ready for survey operations.

C. DATA PROCESSING

C-1 SIDE-SCAN SONAR DATA:

The Side-scan data was recorded in the native EdgeTech JSF format on the hard drive in the Sonar Computer by the EdgeTech Discover program. The JSF files were read by the Chesapeake SonarWizMap program and after adjustments and navigation smoothing, image files were created for the construction of a sonar mosaic. The sonar mosaic was exported as a Geo-Tif file. Each individual sonar line was examined for possible utility targets.

C-2 MAGNETOMETER DATA:

The magnetometer data was recorded in the Hypack (RAW) files. The RAW files were imported to an editor where anomalies were analyzed in profile and recorded as targets. The targets were plotted and analyzed for continuous patterns consistent with the presence of utilities.

C-3 SUB-BOTTOM PROFILER DATA:

The Sub-bottom data was recorded in the native EdgeTech (JSF) format on the hard drive in the Sub-bottom Computer. The JSF files were read by the Chesapeake SonarWizMap program and after adjustments and navigation smoothing profiles were produced for each survey line. The data was analyzed for patterns consistent with pipeline or cable signatures. Particular attention was paid to areas where magnetic anomalies were detected.

D. RESULTS

D-1 SIDE-SCAN SONAR RESULTS:

There were no utility targets detected in the sonar data within the survey area. Some typical features were observed such as sand waves, drag marks and channel markers. There appears to be the remnant of a trench parallel to the drawing position of the 16" DIP north of the Seaway Drive Bridge. This trench (Figure 1.) appears only on the west side of the waterway from the west fender pilings of the main span extending at least 850 to the west southwest. It runs parallel to the

pipeline 50 feet to the south of the drawing position. The Sonar mosaic is available as several geo-tif files.

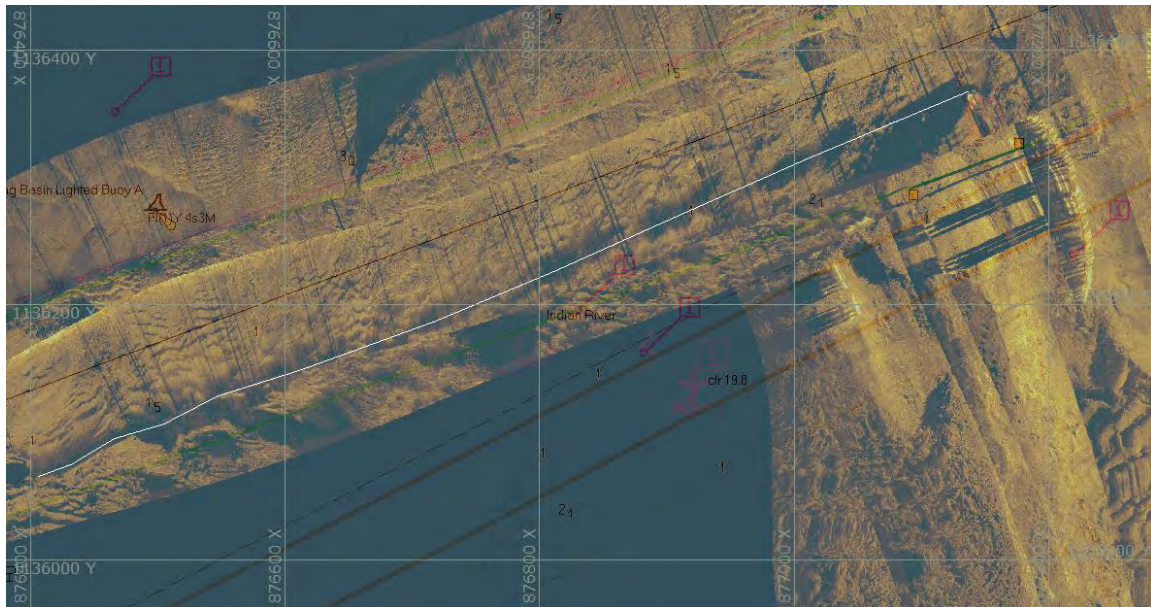


Figure 1. White line drawn through possible remnant trench north of Seaway Drive.

D-2 MAGNETOMETER RESULTS:

Numerous targets were detected throughout the area. Steel channel markers also presented significant signatures along with moored yachts and the bridges. Anomalies were plotted and analyzed for indications of a series of hits that would be aligned similar to the path of a utility. Utilities with ferrous iron in their construction will typically plot a continuous string of targets across the waterway. Those targets would normally have similar signatures such as a dipole vs. monopole and have similar intensity. One such string (Crossing 1) occurred approximately 110 to 180 feet north of the North Causeway Bridge. The plot of Crossing 1 is shown in Figure (2.) below. This string did stretch across all of the survey lines. This is very likely the 18" ductile iron pipe (DIP) water main described in the as built data supplied by M&E. There was no confirmation in the side-scan data. There were two confirming targets and one possible confirming target in the sub-bottom data. This can be classified as a utility detection due to its very close proximity to the as built plot of the DIP. A list of positions is displayed under Figure (2.) with the positive and negative intensities in nano-teslas, the easting and northing in feet (NAD83, Florida State Plane East Zone, U.S. Survey Foot) and comments for each anomaly.

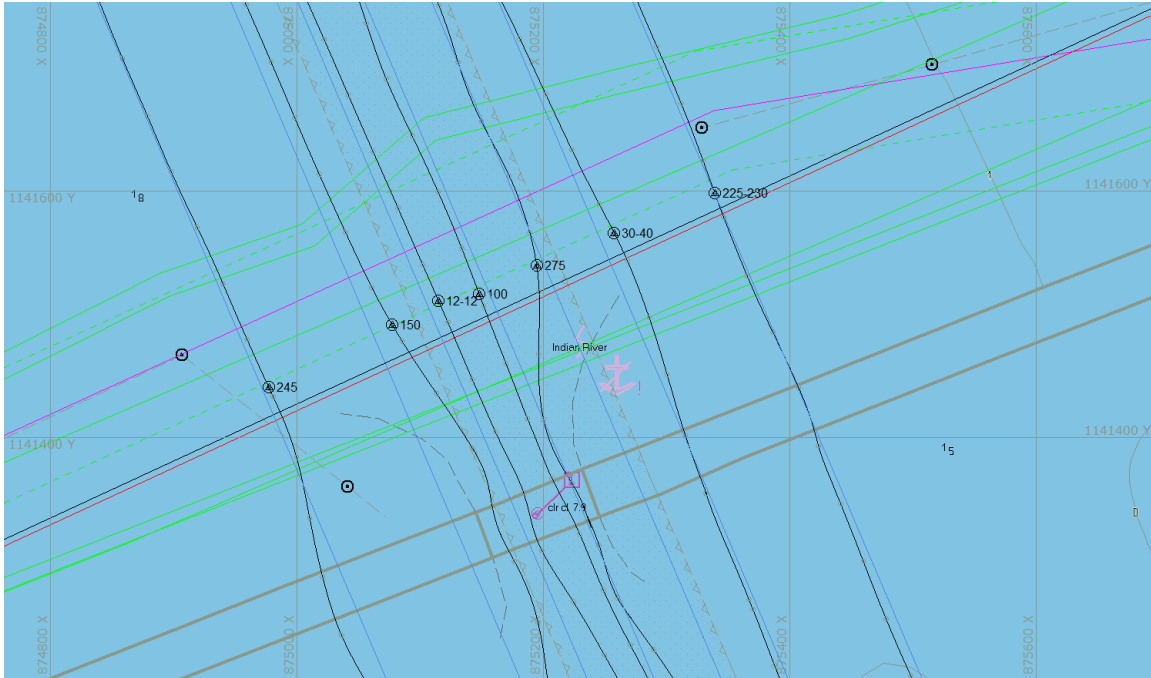


Figure 2. Crossing 1 - Detection of DIP plot 110 to 180 feet north of the North Causeway Bridge. Labels on targets are the intensity measurements as listed below.

Detected Utility – 110 to 180 feet north of the causeway

Crossing 1			
Intensity	Easting	Northing	Comments
245	874977.10	1141440.40	Sub-bottom Tgt. On 4S
150	875077.40	1141491.00	
12-12	875115.70	1141510.30	Sub-bottom Tgt. On 6S
100	875147.90	1141516.20	
275	875194.50	1141539.90	Sub-bottom Tgt. On 3N
30-40	875257.40	1141565.90	
225-230	875339.10	1141597.80	

Figure (3.) is another plot of the area north of the North Causeway Bridge with all magnetic anomalies plotted.

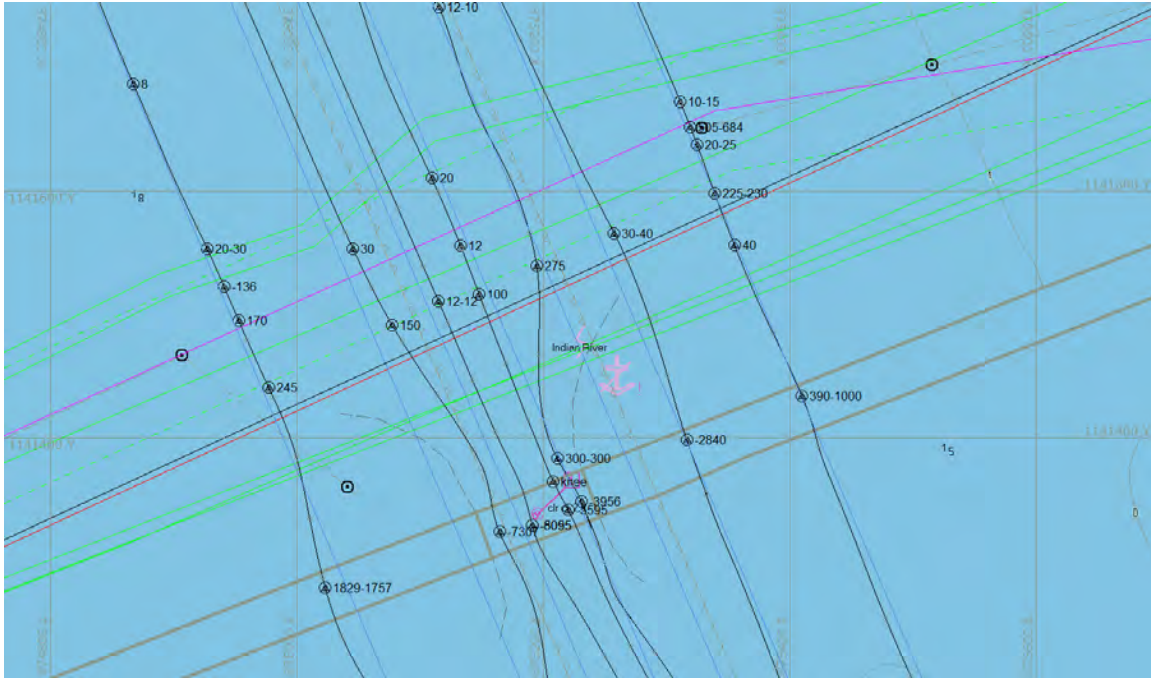


Figure 3. Target plot of all anomalies at the North Causeway Bridge.

Another string of anomalies (Crossings 2 & 3) occurred at the plotted location of the 16" DIP water line and 20' DIP Force Main that plot together and cross the waterway approximately 690 feet south southeast of the Seaway Drive Bridge. The plot of this string is shown in Figure (4.) below. This string did stretch across all of the survey lines. There was no confirmation in the side-scan data. There was one possible confirming target in the sub-bottom data. This can be classified as a utility detection due to its very close proximity to the as built plot of the two DIPs. The signature of these two pipelines displayed as one anomaly due to their proximity to each other and the distance from the magnetometer sensor. In most of the signatures the 20-inch DIP dominated and six of ten plotted anomalies fall on the pre-plot of the 20inch. Four of the ten plot on the 16-inch pre-plot. A list of positions is displayed under Figure (4.) with the positive and negative intensities in nano-teslas, the easting and northing in feet (NAD83, Florida State Plane East Zone, U.S. Survey Foot) and comments for each anomaly.

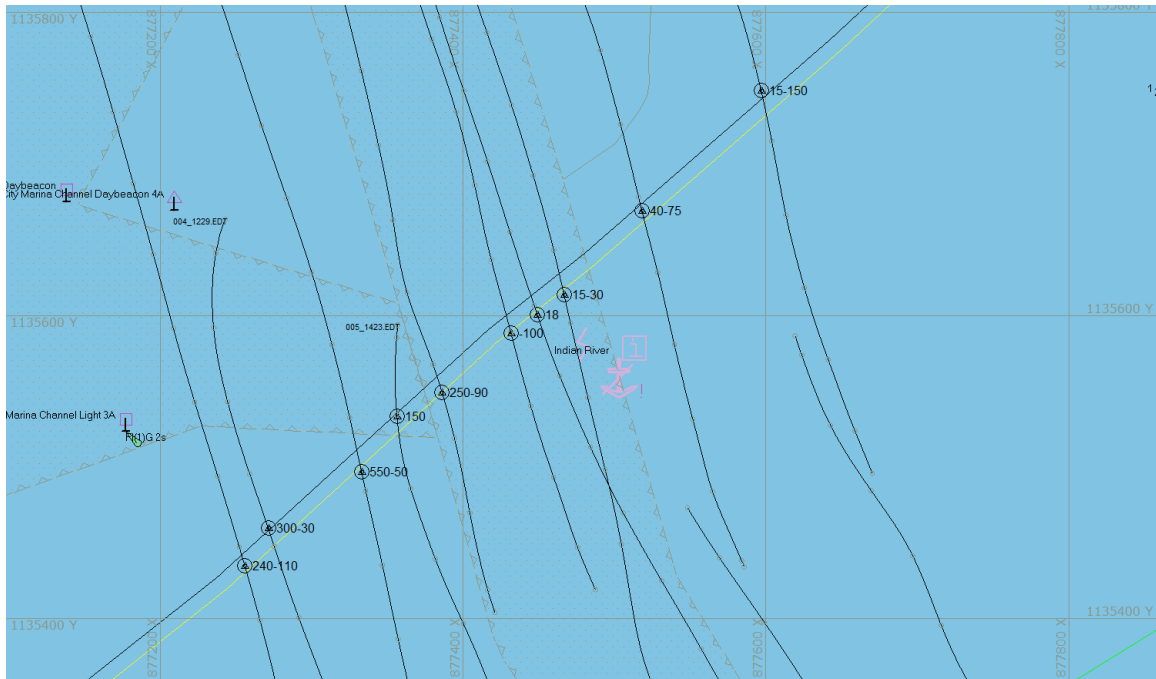


Figure 4. Crossings 2 & 3 - Detection of 16” and 20” DIP plot approximately 690 feet south of the Seaway Drive Bridge. Labels on targets are the intensity measurements as listed below.

Detected Utilities – 690 feet south of the Seaway Drive Bridge

Crossings 2 & 3

Intensity	Northing	Easting	Comments
240-110	877256.10	1135434.70	
300-30	877271.70	1135459.30	
550-50	877333.20	1135496.70	
150	877356.70	1135533.00	
250-90	877386.50	1135548.80	Sub-bottom Tgt. On 6S
-100	877431.90	1135588.30	
18	877449.20	1135600.50	
15-30	877467.00	1135613.40	
40-75	877518.40	1135668.90	
15-150	877597.10	1135748.30	

Figure (5.) is another plot of the area of the 16” and 20” DIP crossing area with all magnetic anomalies plotted.

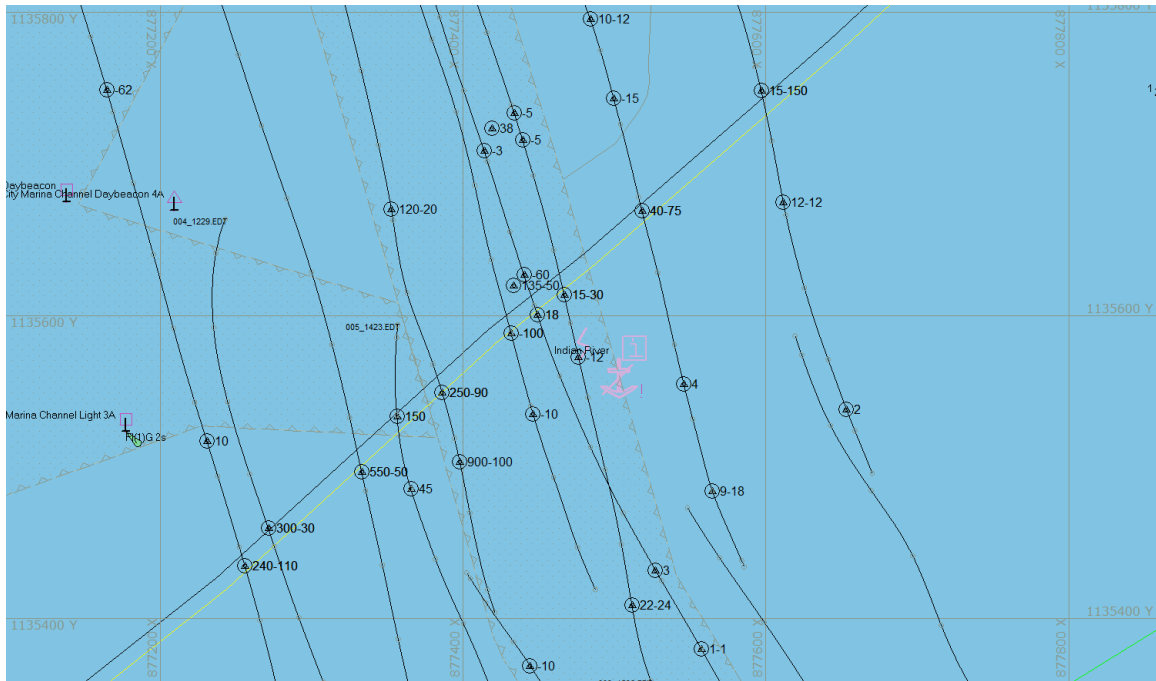


Figure 5. Plot of all detected anomalies near the 16''-20'' crossing. (Crossings 2 & 3)

Two additional strings of anomalies (Crossings 4 & 5) occurred at the plotted location of a pair of 16" Cast Iron Force Mains that plot together (50 feet apart) and cross the waterway approximately 1,025 feet south southeast of the Seaway Drive Bridge. The plot of these two strings is shown in Figure (6.) below. These strings did stretch across all of the survey lines. There was no confirmation in the side-scan data. There was no confirmation in the sub-bottom data except for shallow (1-foot-deep) trenches observed under the drawing positions of Crossing 4 and Crossing 5 on lines 42N, 5S.001, 3N.002 and 6N. One trench was observed on line 4S.001 under Crossing 5. This magnetic anomaly string can be classified as a utility detection due to its very close proximity to the as built plot of the two Cast Iron Pipelines. A list of positions is displayed under Figure (6.) with the positive and negative intensities in nano-teslas and the easting and northing in feet (NAD83, Florida State Plane East Zone, U.S. Survey Foot).

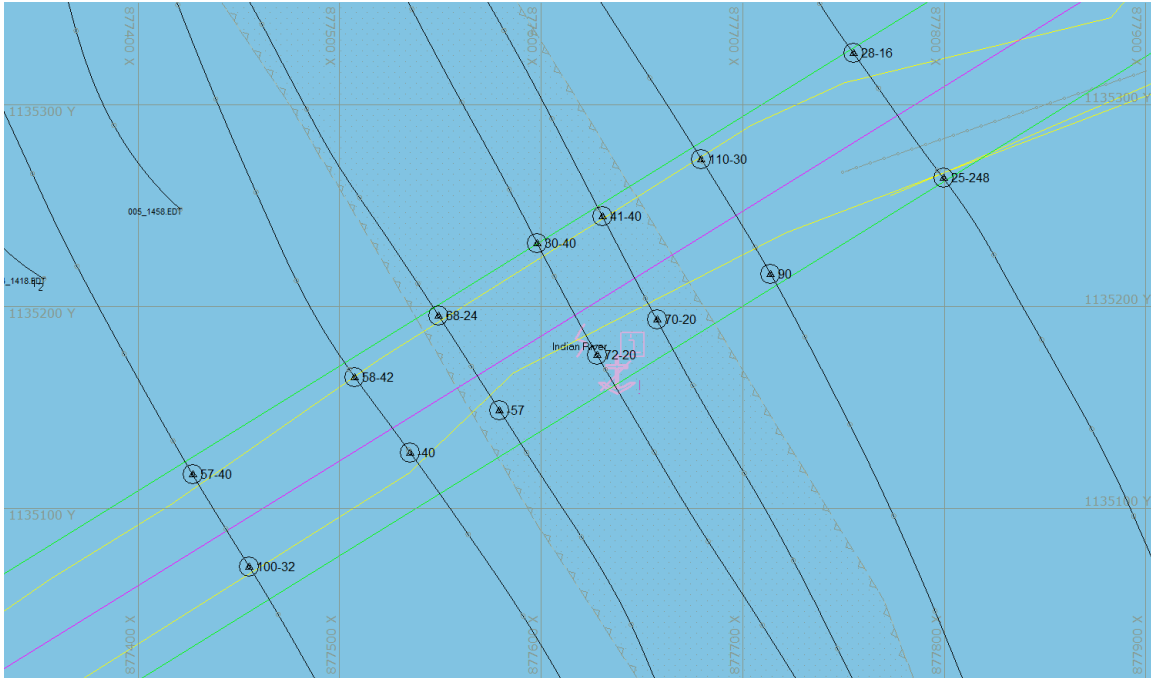


Figure 6. Crossings 4 & 5 - Detection of two 16” Cast Iron Force Mains approximately 1,025 feet south of the Seaway Drive Bridge. Labels on targets are the intensity measurements as listed below.

Detected Utilities – 1,025 feet south of the Seaway Drive Bridge

Crossing 4			Crossing 5		
North 16” Cast Iron Force Main			South 16” Cast Iron Force Main		
Intensity	Easting	Northing	Intensity	Easting	Northing
57-40	877427.20	1135116.70	25-248	877799.60	1135263.90
58-42	877507.60	1135165.00	90	877714.00	1135216.20
68-24	877549.30	1135195.40	70-20	877657.50	1135193.60
30-40	877598.10	1135231.60	72-20	877627.80	1135176.20
41-40	877630.60	1135244.60	-57	877579.40	1135148.70
110-30	877679.60	1135273.10	-40	877535.20	1135127.50
28-16	877755.10	1135325.60	100-32	877455.20	1135071.10

Figure (7.) is another plot of the area of Crossings 4 & 5 with all magnetic anomalies plotted.

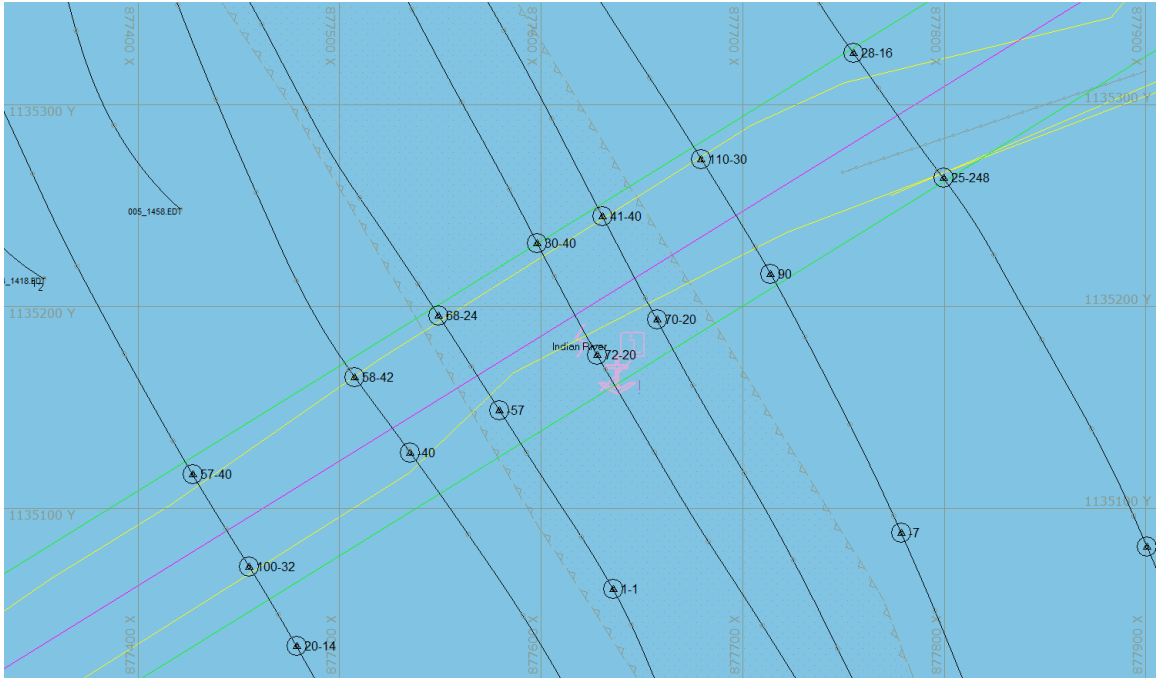


Figure 7. Plot of all detected anomalies near Crossings 4 & 5.

Another 16" DIP is plotted 100 feet north of the Seaway Drive Bridge (Crossing 6) in the survey area and it was not detected at its plotted location. It is possible that the steep magnetic gradient produced by the bridge is masking the signature from this pipeline. The plot of all magnetic anomalies in the area is displayed in Figure (8.)

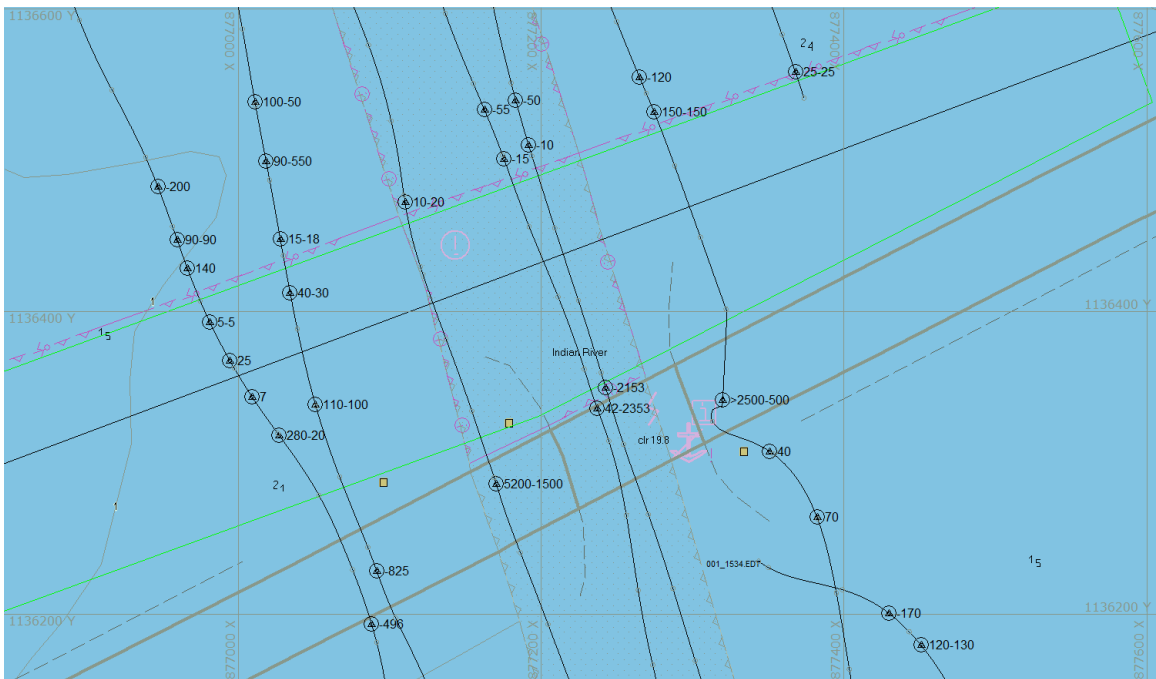


Figure 8. Crossing 6 - Plot of all magnetic anomalies near the 16" DIP north of Seaway Drive.

There was a string of anomalies 68 feet north northwest of the Crossing 6 DIP drawing position. This string did stretch across all of the survey lines. There was no confirmation in the side-scan or sub-bottom data. This can be classified as a possible utility detection. The plot of this string is shown in Figure (9.) below. A list of positions is displayed under Figure (9.) with the positive and negative intensities in nano-teslas and the easting and northing in feet (NAD83, Florida State Plane East Zone, U.S. Survey Foot).

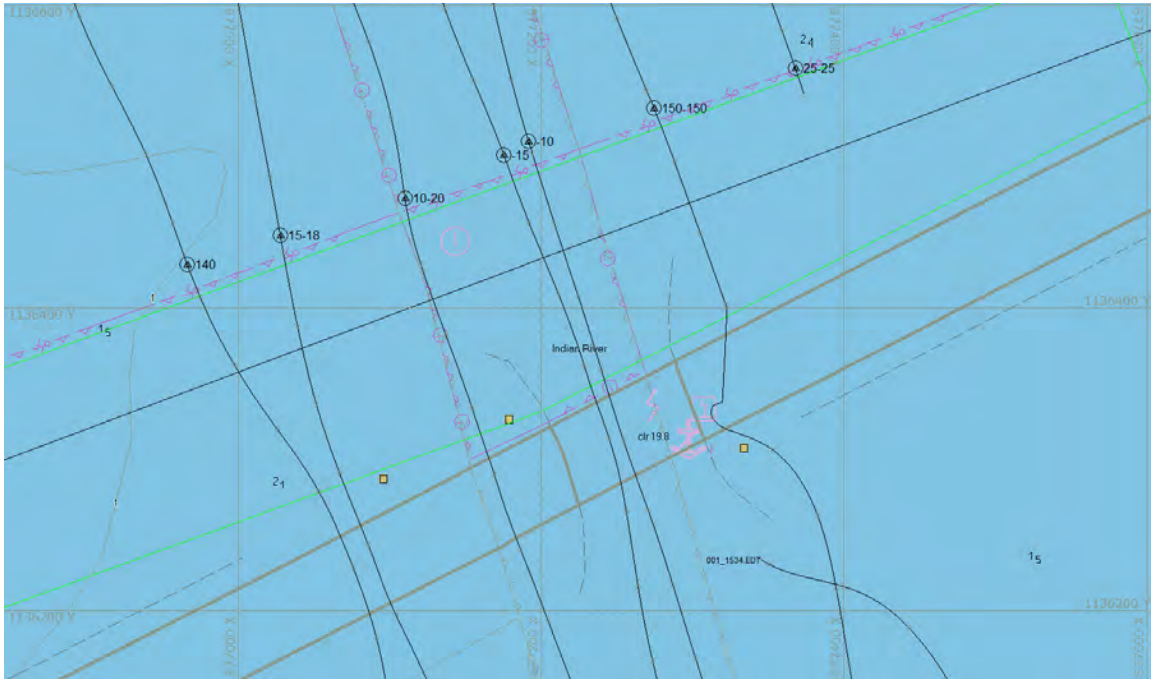


Figure 9. Plot of a possible utility detection near the 16" DIP north of Seaway Drive. Approximately 68 feet north of Crossing 6. Labels on targets are the intensity measurements as listed below.

Possible Utility – 170 feet north of the Seaway Drive Bridge

Intensity	Northing	Easting
140	876966.50	1136428.60
15-18	877027.90	1136448.00
10-20	877110.30	1136472.00
15	877175.60	1136500.80
-10	877191.90	1136510.00
150-150	877274.70	1136531.70
25-25	877368.10	1136557.90

D-3 SUB-BOTTOM PROFILER RESULTS

Numerous sub-bottom reflections were observed and geologic layers were observed as deep as 12 feet but none of the reflections displayed the classic hyperbolic signature patterns consistent with utilities. There were less dramatic signatures that tend to confirm the drawings and the magnetometer results. At Crossing 1 there were two confirming targets on the 18" DIP position (Figures 10. and 11.). Another possible confirming target near the 18' DIP position is shown in Figure 12.

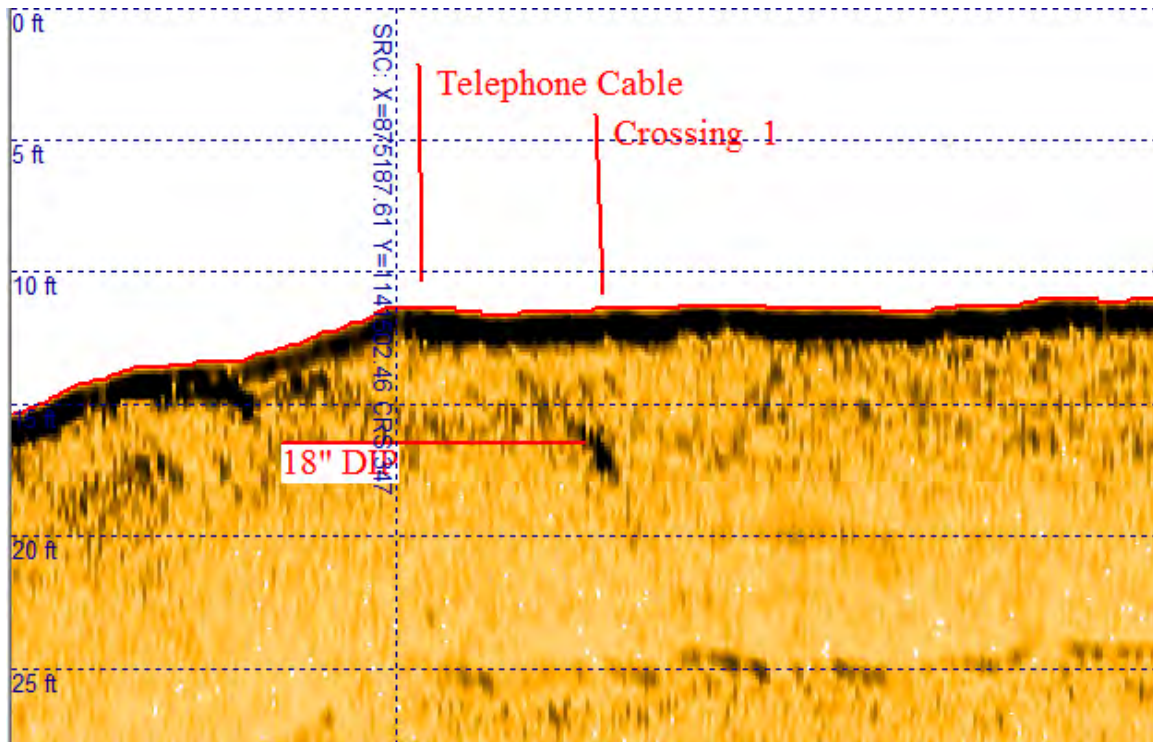


Figure 10. Partial profile of line 3N showing strong target at the 18" DIP position. Top of target is approximately 5' below surrounding bottom. The nearby telephone cable was not detected.

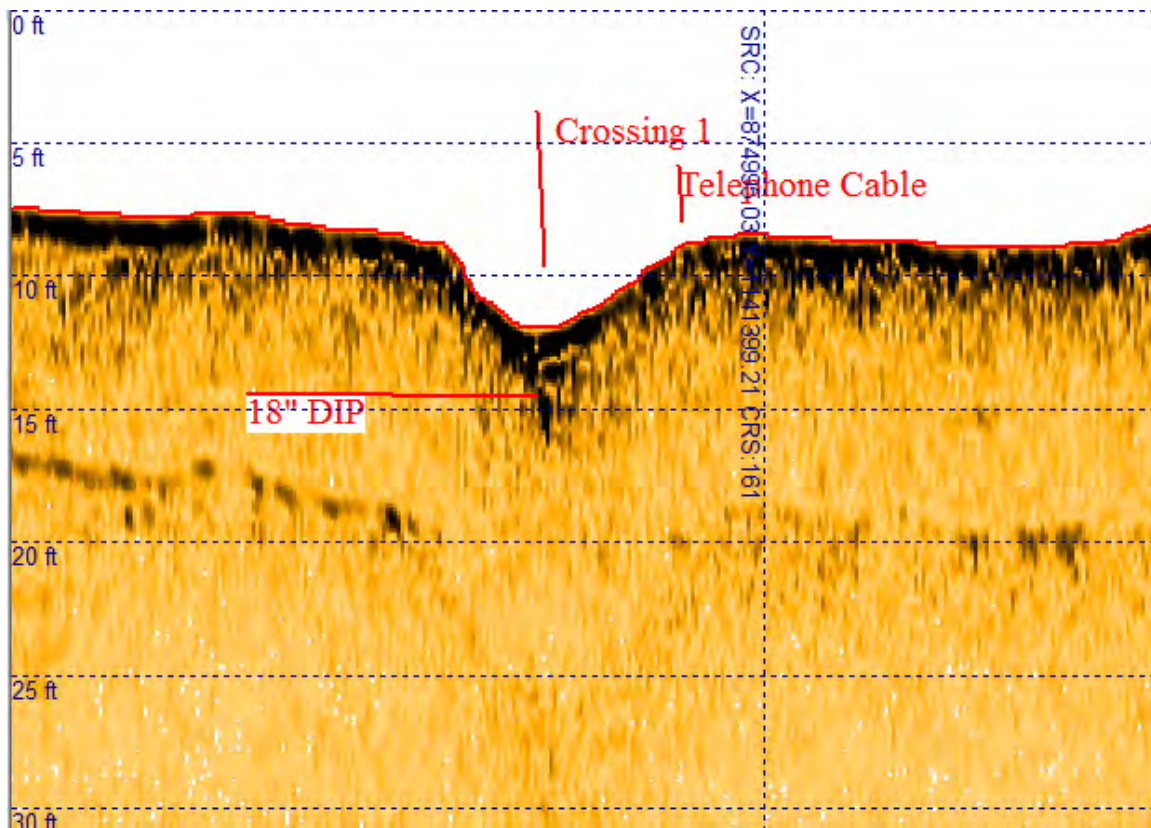


Figure 11. Partial profile of line 4S showing strong target at the 18" DIP position. Top of target is approximately 5' below surrounding bottom and 2.5' below the bottom of the trench. The nearby telephone cable was not detected.

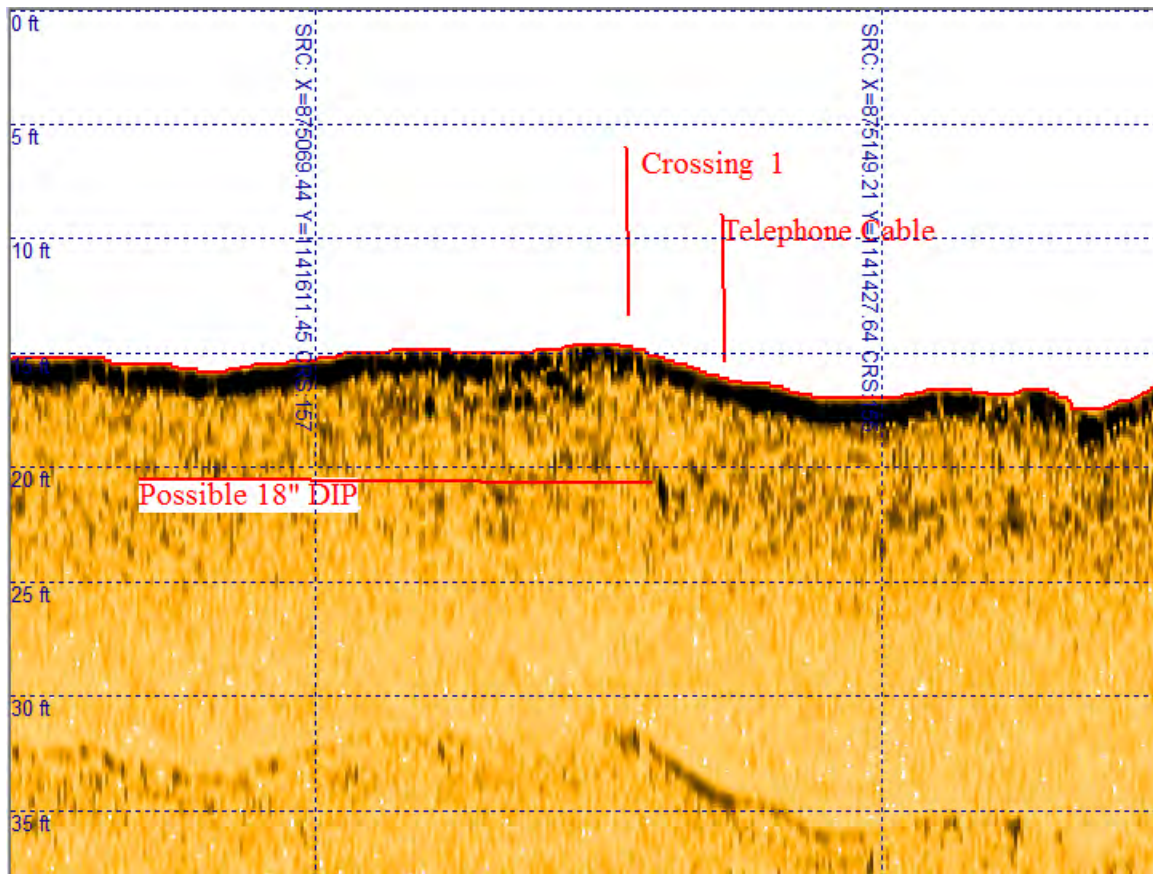


Figure 12. Partial profile of line 6S showing target near the 18" DIP position. Top of target is approximately 5' below surrounding bottom. The nearby telephone cable was not detected.

At Crossing 2 there was one possible confirming target on the 16" DIP position. (Figure 13).

At Crossing 3 there were no confirming sub-bottom targets.

At Crossings 4 and 5 there were no confirming sub-bottom targets. Some of the crossing locations had shallow 1 ft. deep trenches (Figure 14.) that tend to confirm the drawings and the magnetic anomaly strings.

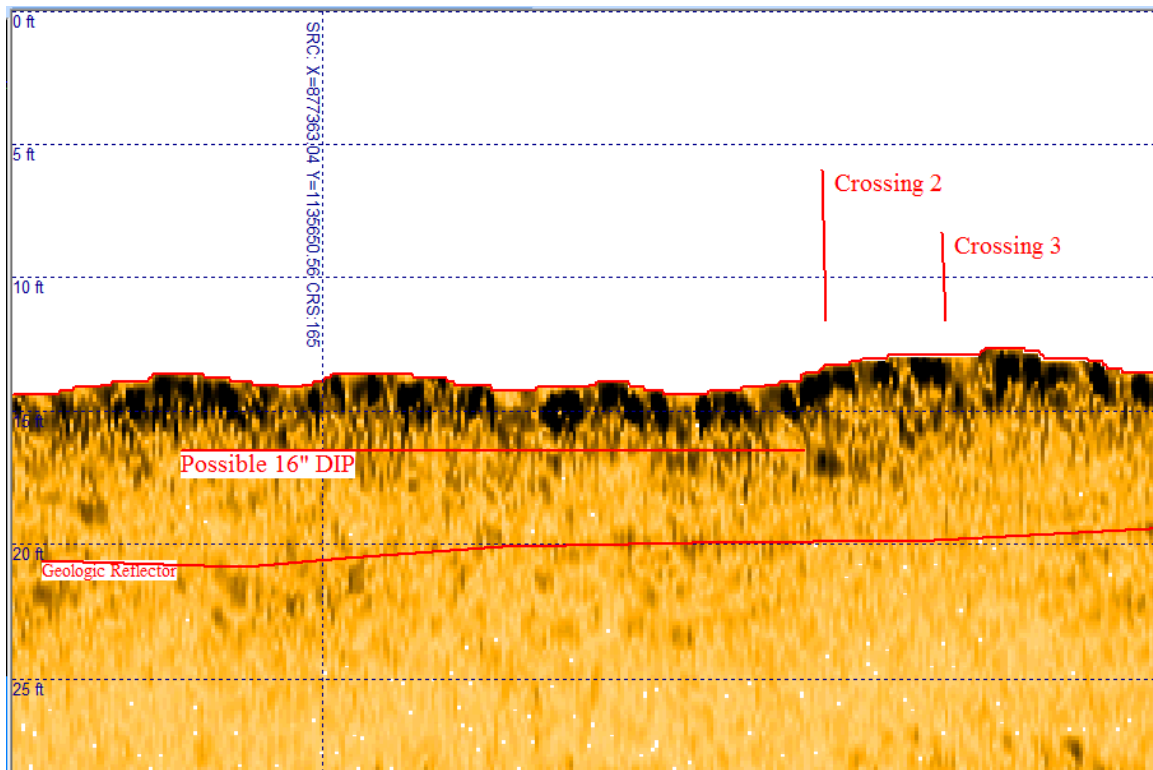


Figure 13. Crossing 2 - Partial profile of line 6S showing weak target at the 16" DIP position. Top of target is approximately 3.5' below surrounding bottom.

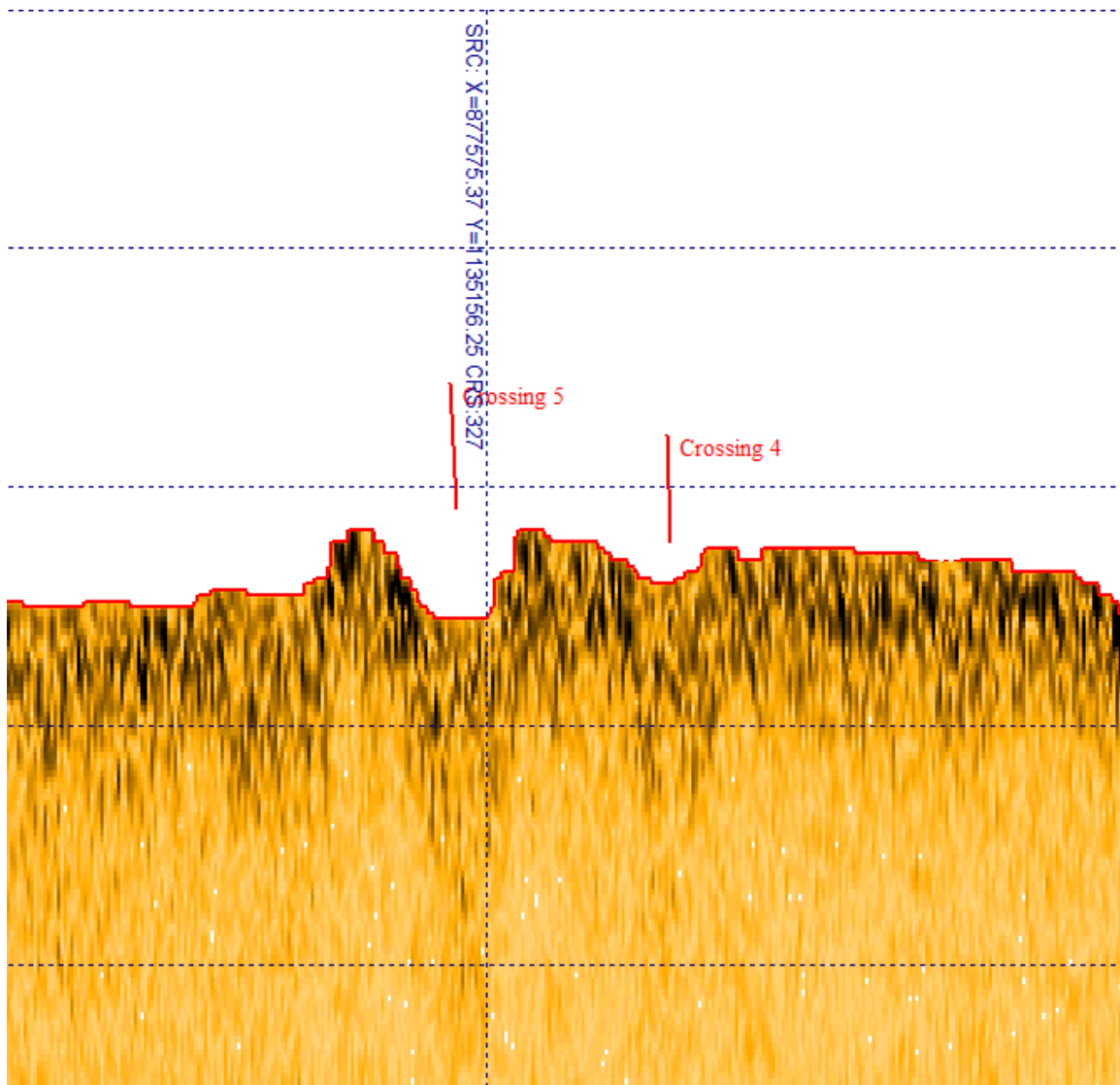


Figure 14. Example of shallow trenches at Crossings 4 and 5.

E. CONCLUSIONS

Five iron pipelines were detected by the magnetometer. One possible utility was detected approximately 68 feet north of the 16" DIP that was not detected by the magnetometer. One possible remnant trench was located by the side-scan sonar approximately 50 feet south of the 16" DIP that was not detected by the magnetometer. One possible 18" DIP target on Sub-bottom aligns with the trench discovered by the side-scan sonar. No other utilities were detected on this survey. The following table outlines these detected utilities and possible detections.

Crossing #	Item	Comments
Crossing 1	18" DIP	110 to 120 feet north of the North Causeway Bridge 2 Confirming & 1 Poss. Confirming SBP targets
Crossing 2	16" DIP	690' south of Seaway Drive 1 Possible Confirming SBP target
Crossing 3	20" DIP	700' south of Seaway Drive
Crossing 4	16" CIP	1025' south of Seaway Drive and 50' north of Cr. 4
Crossing 5	16" CIP	1075' south of Seaway Drive and 50' south of Cr. 3
Crossing 6	18" DIP	Magnetometer string found 68' north of DIP drawing - Poss. SBP target lines up with trench detected by side-scan sonar 50' south of drawing

Other known utilities that were not detected by this survey are listed here:

- E-1. 25Kv copper cable in an 8" DDPE conduit approximately 320' north of the center line of the North Causeway Bridge (Crossing 1).**
- E-2 7.6Kv 3 conductor Paper Insulated Lead sheath Cable (PILC) 240' to 250' north of the North Causeway Bridge (Crossing 1).**
- E-3. 2 – 8" PE ducts buried with the 16" DIP at Crossing 1, 130' to 150' north of the North Causeway Bridge (Crossing 1).**
- E-4. 25Kv cable in 8" PVC 100' north of the North Causeway Bridge (Crossing 1).**
- E-5. A telephone cable about 120' north of the North Causeway Bridge (Crossing 1).**
- E-6. A telephone cable about 35' to 175' north of the Seaway Drive Bridge (Crossing 6).**

The power and telephone cables do not have significant ferrous iron in their construction that would allow them to be detected by the magnetometer. Occasionally the magnetometer will detect a large amount of current flowing through a power cable but that is a variable factor and did not occur during this survey.

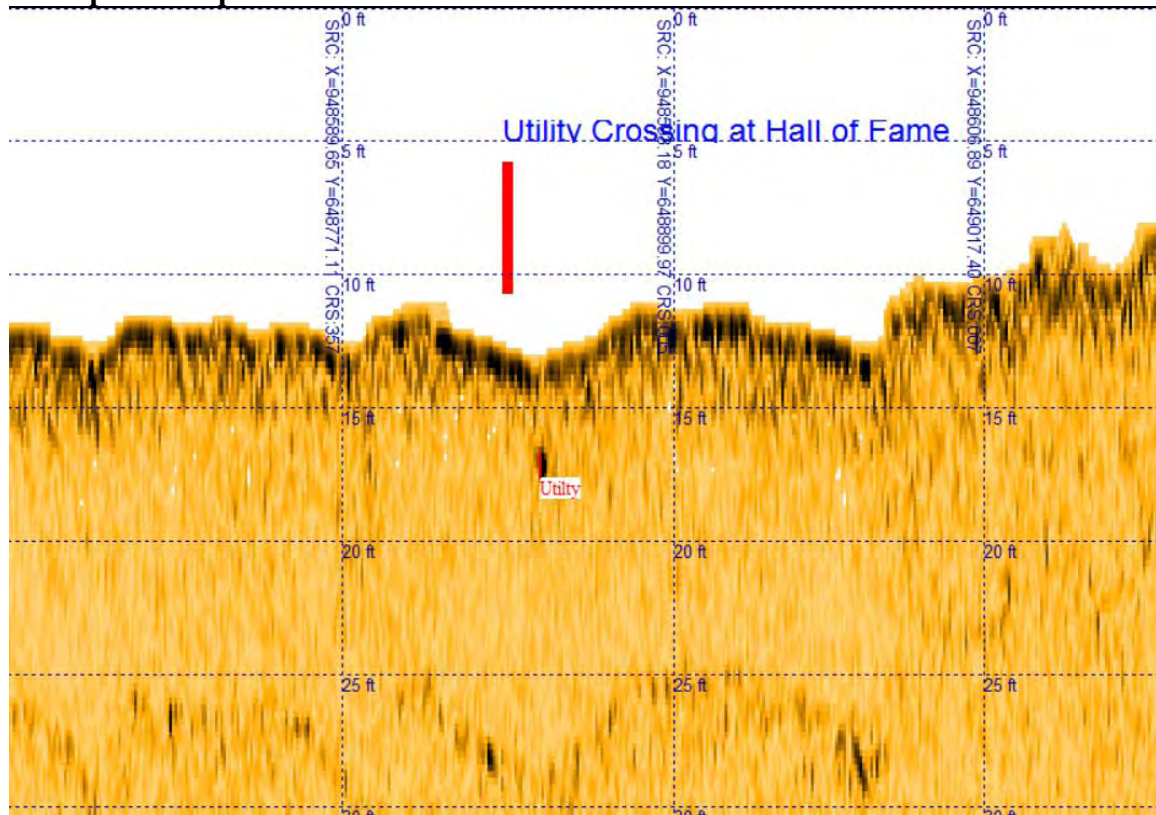
The power conduits were large enough to be detected by the sub-bottom profiler but all were made of material that either absorbs or is transparent to sound. The cables that were not in conduit had a diameter that was too small to be detected by the sub-bottom profiler.

The side-scan did not detect any utilities on the river bed indicating that they were all sufficiently buried to prevent detection by high frequency sonar.

It should be understood that the results of this survey are an interpretation of remote sensing data and as such cannot be relied upon as positive confirmation of the existence or nonexistence of submerged or buried utilities.

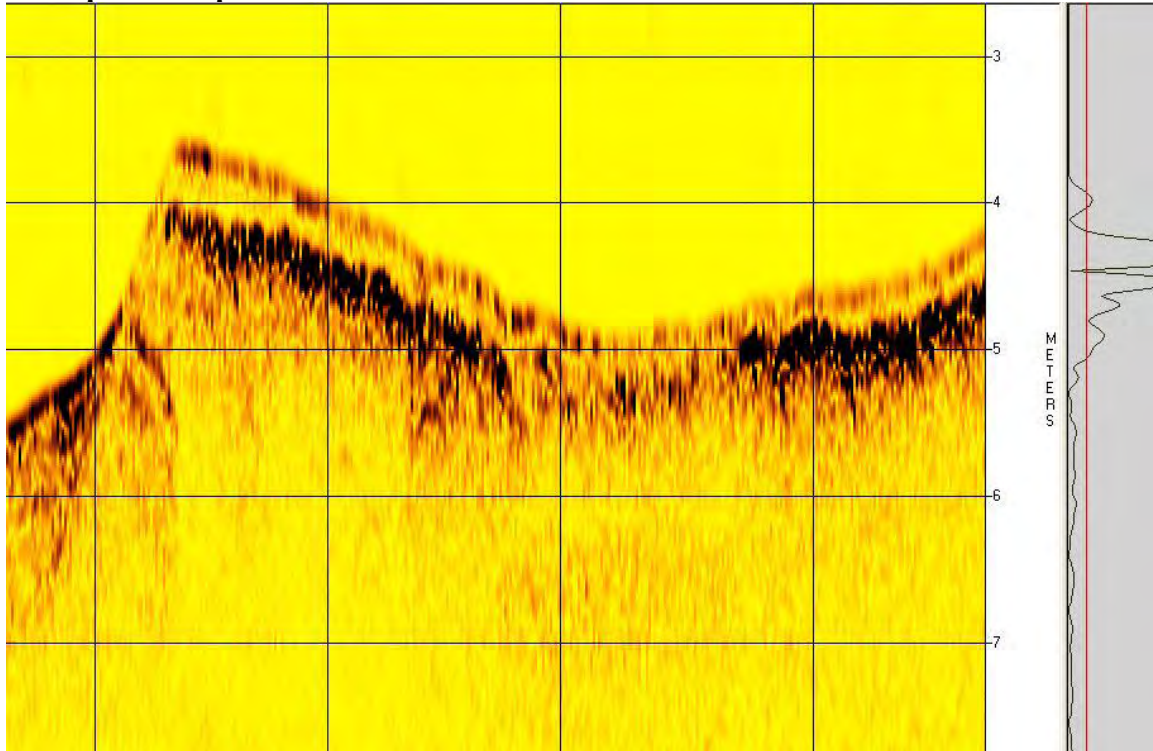
Some examples of sub-bottom targets from other project areas are shown below:

Example: X1sbp



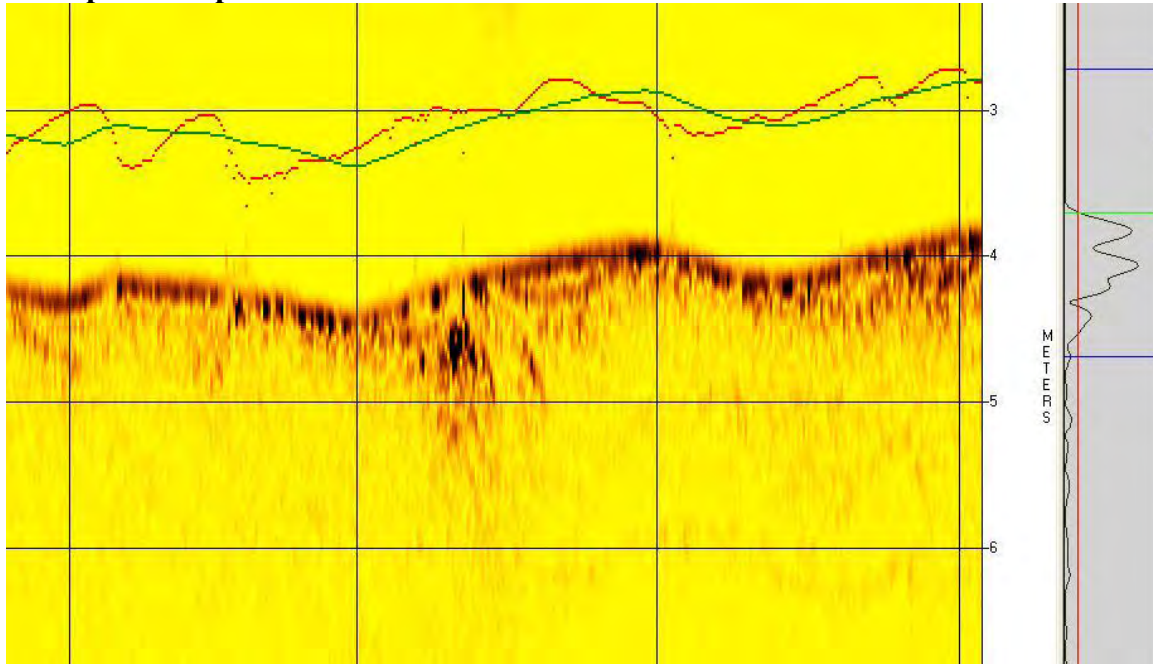
Utility located by SB-216s System in Florida Intracoastal Waterway

Example: X2sbp



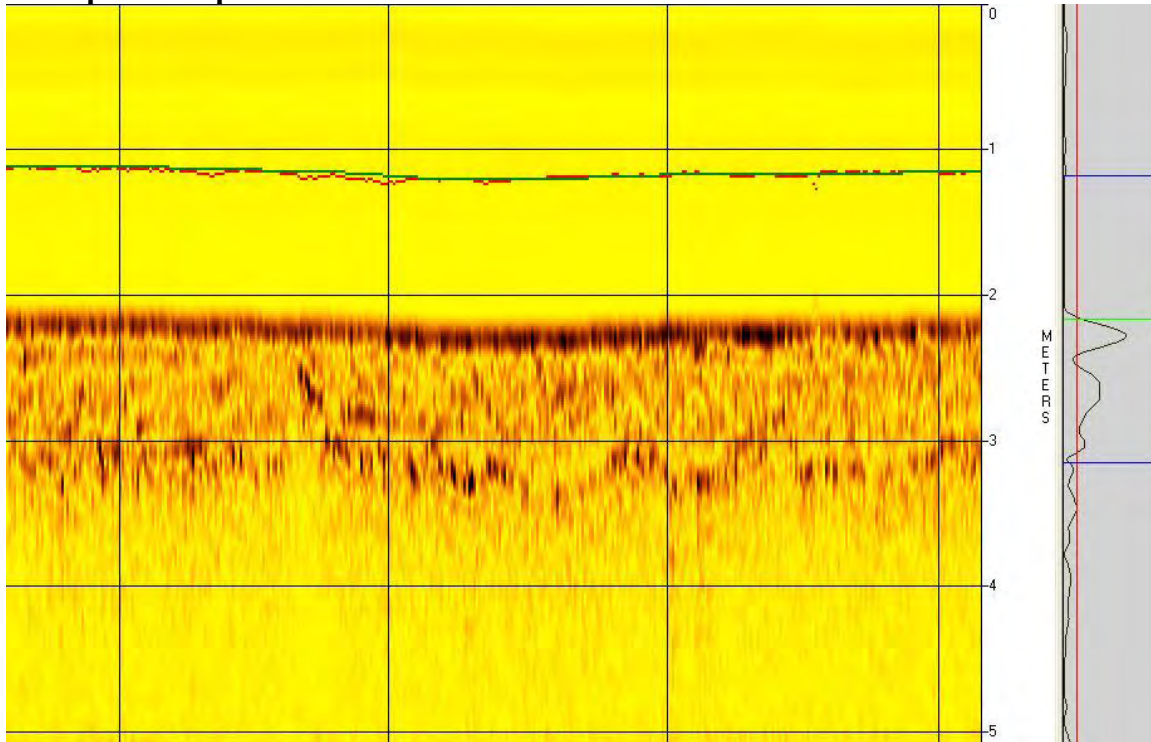
Example of apparent point source object at 5.3meters presenting partial hyperbolic pattern. Bottom is 4.4meters at that point thus object may be buried 0.9meters.

Example: X3sbp



Example of possible backfill pattern.

Example: X4sbp



Example of Sub-surface anomaly. Object at 2.5meters with bottom at 2.1meters thus top of object may be buried 0.4meters. Note masking of sub-bottom reflector by object.

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LOCATION MAP
1" INCH = 5,000 FEET

SURVEY NOTES:

- MAGNETOMETER, SEISMIC AND SIDE-SCAN SONAR SURVEY DATA COLLECTED BY SONOGRAPHICS, INC., WILTON MANORS, FLORIDA.
- COORDINATES SHOWN ARE IN U.S. SURVEY FEET, AND ARE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983, ADJUSTMENT OF 2011 (NAD 83/2011).
- ELEVATIONS ARE REFERENCED TO **MEAN LOWER LOW WATER** (SEE VERTICAL DATUM DIAGRAM).
- ELEVATIONS SHOWN ARE IN FEET AND ARE REFERENCED TO **MEAN LOWER LOW WATER**. ELEVATION DATA WAS COLLECTED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AND CONVERTED TO MLLW USING THE LATEST VERSION OF VDATUM (VERTICAL DATUM TRANSFORMATION) PROVIDED BY NOAA, NATIONAL OCEAN SERVICE (NOS).
- CAUTION:** THE DIFFERENCE BETWEEN NAVD 88 AND MEAN LOWER LOW WATER VARIES AND MAY NOT BE THE SAME AS THE DIFFERENCE USED FOR PREVIOUS ACOE SURVEYS. TO MAKE A DIRECT COMPARISON BETWEEN SURVEYS, THE USER NEEDS TO BE CAREFUL TO VERIFY THE VERTICAL DATUM TRANSFORMATION PARAMETERS FOR EACH PROJECT AREA.
- COORDINATES AND ELEVATIONS ARE BASED UPON THE MONUMENTS SHOWN IN THE CONTROL TABLE.
- BATHYMETRIC, MAGNETOMETER, SEISMIC RESULTS AND SIDE-SCAN SONAR INFORMATION DEPICTED ON THIS SURVEY REPRESENT THE EXISTING CONDITIONS ON THE DATE OF THE FIELD SURVEY.
- AERIAL IMAGERY WAS TAKEN IN 2012 AND WAS PROVIDED BY THE FLORIDA DEPARTMENT OF TRANSPORTATION.
- AERIAL IMAGERY IS DISPLAYED HEREON FOR INFORMATION PURPOSES ONLY, NO PHOTOGRAPHIC ACCURACY IS IMPLIED BY THIS MAP.
- NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
- HORIZONTAL POSITIONING UTILIZED A TRIMBLE SPS 852 REAL TIME REAL TIME KINEMATIC GPS RECEIVER WITH REAL TIME CORRECTIONS APPLIED FROM POINT 212.
- SOUNDINGS WERE OBTAINED USING AN ODOM CVM SINGLE BEAM ECHO SOUNDER OPERATING AT 200KHZ.
- WATER SURFACE ELEVATIONS WERE OBTAINED USING A TRIMBLE SPS 852 REAL TIME KINEMATIC (RTK) DUAL FREQUENCY GPS RECEIVER WITH REAL TIME CORRECTIONS APPLIED FROM A TRIMBLE 5700 DUAL FREQUENCY BASE STATION OCCUPYING POINTS SHOWN IN THE CONTROL TABLE AND WERE VERIFIED TO A TIDE STAFF ELEVATED FROM CONTROL POINT 115.
- THE SIDE-SCAN SONAR DATA WAS COLLECTED USING THE EDGETECH DUAL FREQUENCY (600 KHZ AND 1600 KHZ) CHIRP SIDE-SCAN SONAR. THE MODEL USED WAS THE 4125. THE SIDE-SCAN SONAR IS CAPABLE OF PRODUCING SONIC IMAGES OF THE BOTTOM WITH THE RESOLUTION TO DISPLAY SMALL OBJECTS IF THEY ARE EXPOSED AND NOT COMPLETELY BURIED. THE LIMITATIONS OF THE SIDE-SCAN SONAR ARE THAT IT CANNOT PENETRATE THE BOTTOM AND DETECT A BURIED OBJECT.
- MAGNETOMETER DATA WAS COLLECTED USING THE GEOMETRICS G-882 DIGITAL CESIUM MAGNETOMETER WITH ALTIMETER AND DEPTH SENSOR. THE MAGNETOMETER READS THE EARTH'S MAGNETIC FIELD AND MEASURES THE EFFECTS OF FERROUS OBJECTS UPON IT.
- THE SUB-BOTTOM (SEISMIC) DATA WAS COLLECTED USING AN EDGETECH X-STAR CHIRP SUB-BOTTOM PROFILER.
- ADDITIONS OR DELETIONS TO THIS SURVEY MAP ARE PROHIBITED WITHOUT WRITTEN CONSENT.

BATHYMETRIC, MAGNETOMETER, SEISMIC AND
SIDE-SCAN SONAR SURVEY
INTRACOASTAL WATERWAY, CUT SL-2 THROUGH CUT SL-5
ST. LUCIE COUNTY, FLORIDA
-FOR-
TAYLOR ENGINEERING, INC.

DATE: OCTOBER 2, 2015
COMMISSION NUMBER: 5624.00

PREPARED BY:

MORGAN & EKLUND, INC.

PROFESSIONAL SURVEY CONSULTANTS



8745 US HIGHWAY #1
P.O. BOX 701420
WABASSO, FL 32970
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FAX: (772) 388-3165

LB #4298

1159 SW 1ST WAY
DEERFIELD BEACH, FL 33441
PHONE: (954) 421-6882
FAX: (954) 421-0425

LEGEND

- | | |
|-------|--|
| APM | ALUMINUM PIPE MONUMENT |
| CGS | COAST & GEODETIC SURVEY |
| CM | CONCRETE MONUMENT |
| DM ID | FDEP DOCUMENT IDENTIFICATION NUMBER |
| DRM | DEEP ROD MONUMENT |
| FDEP | FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION |
| FPUA | FORT PIERCE UTILITIES AUTHORITY |
| ICWW | INTRACOASTAL WATERWAY |
| M&E | MORGAN & EKLUND, INC. |
| MLLW | MEAN LOWER LOW WATER |
| NGS | NATIONAL GEODETIC SURVEY |
| NOAA | NATIONAL OCEANIC AND ATMOSPHERIC ASSOCIATION |
| CL | CENTERLINE |
| ⊗ | RED CHANNEL MARKER |
| ⊙ | GREEN CHANNEL MARKER |

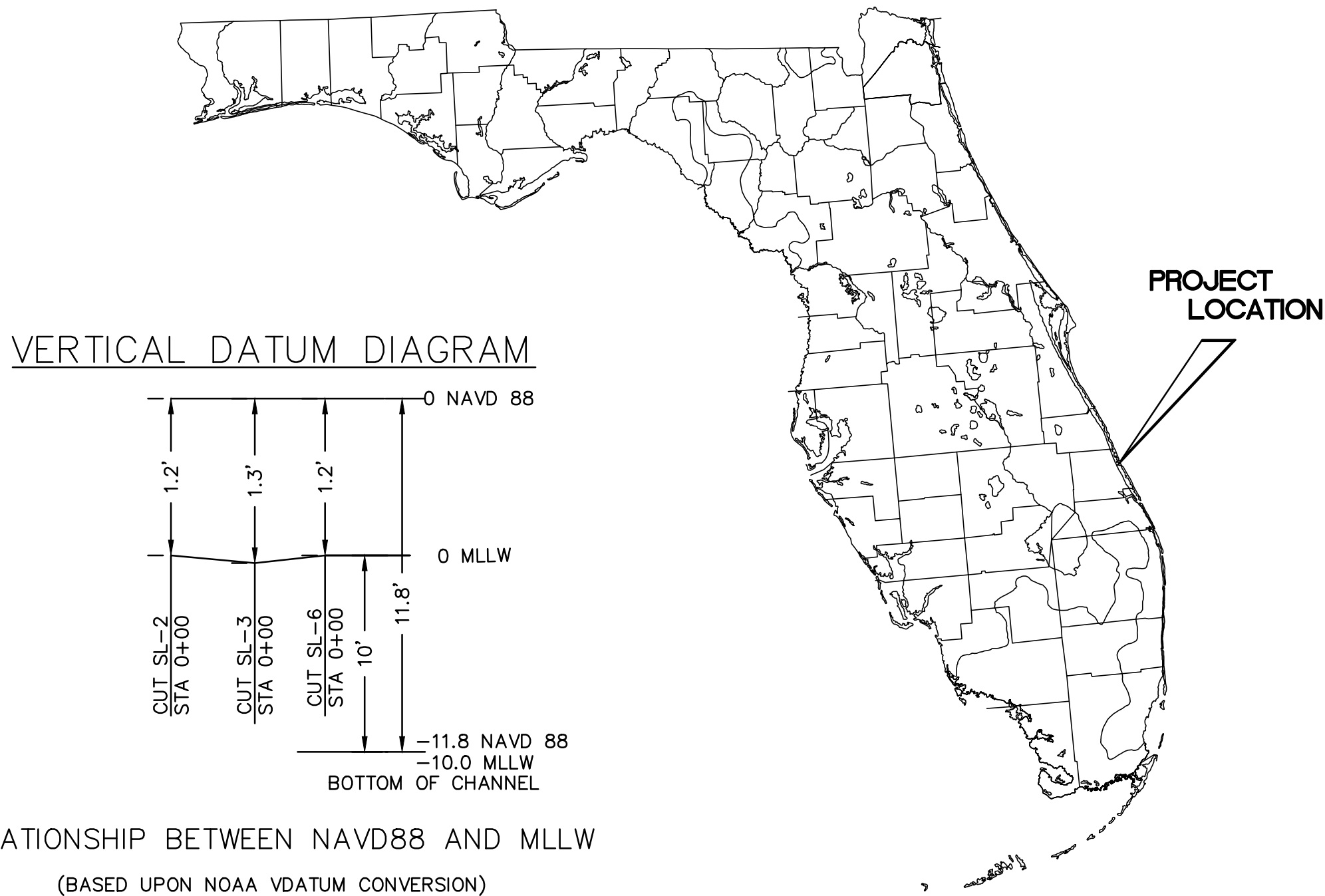
CAUTION**

THERE MAY BE OTHER UTILITY CROSSINGS
THAT WERE NOT DETECTED DURING THIS
SURVEY. CONTRACTOR IS TO VERIFY
UTILITY LOCATIONS PRIOR TO DREDGING.

CONTROL TABULATION

DESIGNATION	NAD 83/11 NORTHING	SPCS 0901 EASTING	NAVD 88* ELEVATION	STAMPING	DESCRIPTION
150			12.55	P 200 1960	CGS DISK
114	1136048.96	875444.32	5.63	ND 3 1930	CGS CM
110	1135863.24	875523.97	5.71	212 BM11	M&E APM
212	1135861.07	875623.48	5.50	212	5/8" REBAR & CAP
113	1159230.63	865846.02	11.11	G 401 1991	NGS DRM
109	1135805.52	875717.71	3.50	ND 2 1969	CGS CM
115	1135781.29	875631.81	3.44	ND 3 A 1969	CGS CM
145	1109155.44	884188.56	27.68	WHITE 2 1966 ND 5 1985	NGS CM
208	1108617.22	884684.62	22.50	208	5/8" REBAR & CAP
209	1108525.33	884678.89	22.98	209	5/8" REBAR & CAP
111	1108443.96	884448.67	28.49	GPS SAV 3	GCY1 CM

* ALL ELEVATION DATA SHOWN ON THE FOLLOWING PAGES HAVE BEEN CONVERTED TO MEAN LOWER LOW WATER USING THE LATEST VERSION OF VDATUM (VERTICAL DATUM TRANSFORMATION) PROVIDED BY NOAA, NATIONAL OCEAN SERVICE (NOS).



RELATIONSHIP BETWEEN NAVD88 AND MLLW
(BASED UPON NOAA VDATUM CONVERSION)

UTILITY CROSSINGS**							
Station	Designation	Identified Utility	Elevation Datum	Attachment Number	Comments	Sheet Number	
SL-2 STA 13+75	Crossing E-1	Florida Power and Light	N/A	DM ID 329206	25Kv Copper cable, no mag hits	3, 13	
SL-2 STA 14+50 (center easement)	Crossing E-2	Florida Power and Light	N/A	DM ID 142929	7.6Kv 3 conductor Paper Insulated Lead Cable.	3, 13	
SL-2 Sta 15+10±	Crossing 1 and Crossing E-3	Fort Pierce Utilities Authority 18" DIP Water Main	-18± MSL -16± MLLW	FPUA WATER - MAG HITS Fort Pierce Utilities Authority - Plan and Profile Drawing BC38100.B1	18" DIP water main and 32 4" communications conduits buried in a trench at 36" depth below existing river grade.	3, 13	
SL - 2 Sta 15+30 (center easement)	Crossing E-5	Southern Bell Telephone and Telegraph	36" below bottom	DM ID 0141438	Telephone Cable	3, 13	
SL-2 STA 13 thru STA 16+00		Florida Power and Light	(-18)?, 4' minimum cover below river bottom?	North of Crossing 1 - No Mag Hits	32 Kv power cable. Can't determine if this cable(s) are directly laid on the bottom or buried 4' below channel bottom	3, 13	
SL-2 STA 15+85	Crossing E-4	Florida Power and Light	-32' (no datum stated)	SOUTH OF CROSSING 1 (F29PP1)	13Kv cable (8" HDPE Conduit). Paperwork seems to indicate that there is an abandoned cable buried a few (6') below channel bottom that was replaced by this cable is directionally bored to -32'	3, 13	
SL-3N Sta 13+45	Crossing 6	Fort Pierce Utilities Authority	N/A	Crossing 6 ETAL	16" DIP Water Main	5, 15	
SL - 3S Sta 0+20 (center easement)	Crossing E-6	Southern Bell Telephone and Telegraph	N/A	DM ID 0141464	Telephone Cable	5, 15	
SL-3S Sta 8+75	Crossing 2	Fort Pierce Utilities Authority	N/A	Crossings 2 thru 4	16" DIP Water Line	5, 15	
SL-3S Sta 8+85	Crossing 3	Fort Pierce Utilities Authority	N/A	Crossings 2 thru 4	20" DIP Reuse Water Main	5, 15	
SL-4 Sta 2+20	Crossing 4	Fort Pierce Utilities Authority	22.1' - MHW MLLW	-20.5	As-built drawings - Water main and reuse main subaqueous crossing of The Indian River and outfall diffuser for the Fort Pierce Utilities Authority, Fort Pierce, FL	16" DIP	5, 15
SL-4 Sta 2+80	Crossing 5	Fort Pierce Utilities Authority	22.5' - MHW MLLW	-20.9		16" DIP	

**SEE CAUTION NOTE THIS PAGE

SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	KEY MAP
3-12	ELEVATION DATA
13-22	MAGNETOMETER, SEISMIC & SIDE-SCAN SONAR DATA
23-28	SURVEY REPORT

FIELD BOOK: ST. LUCIE 93, PAGES 73,
FIND 18, PAGES 17-22



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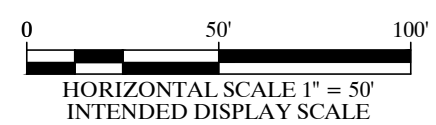
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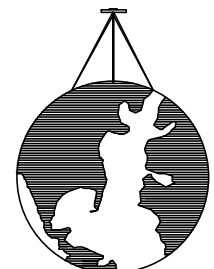
JOHN R. MORGAN II, PLS
PROFESSIONAL LAND SURVEYOR #3520
STATE OF FLORIDA

KEY MAP
BATHYMETRIC, MAGNETOMETER, SEISMIC AND
SIDE-SCAN SONAR SURVEY
INTRACOASTAL WATERWAY, CUT SL-2 THROUGH SL-5
ST. LUCIE COUNTY, FLORIDA
FOR TAYLOR ENGINEERING, INC.

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					DATE 10/6/15
					SHEET 2 OF 28



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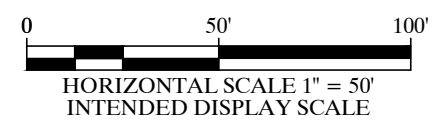
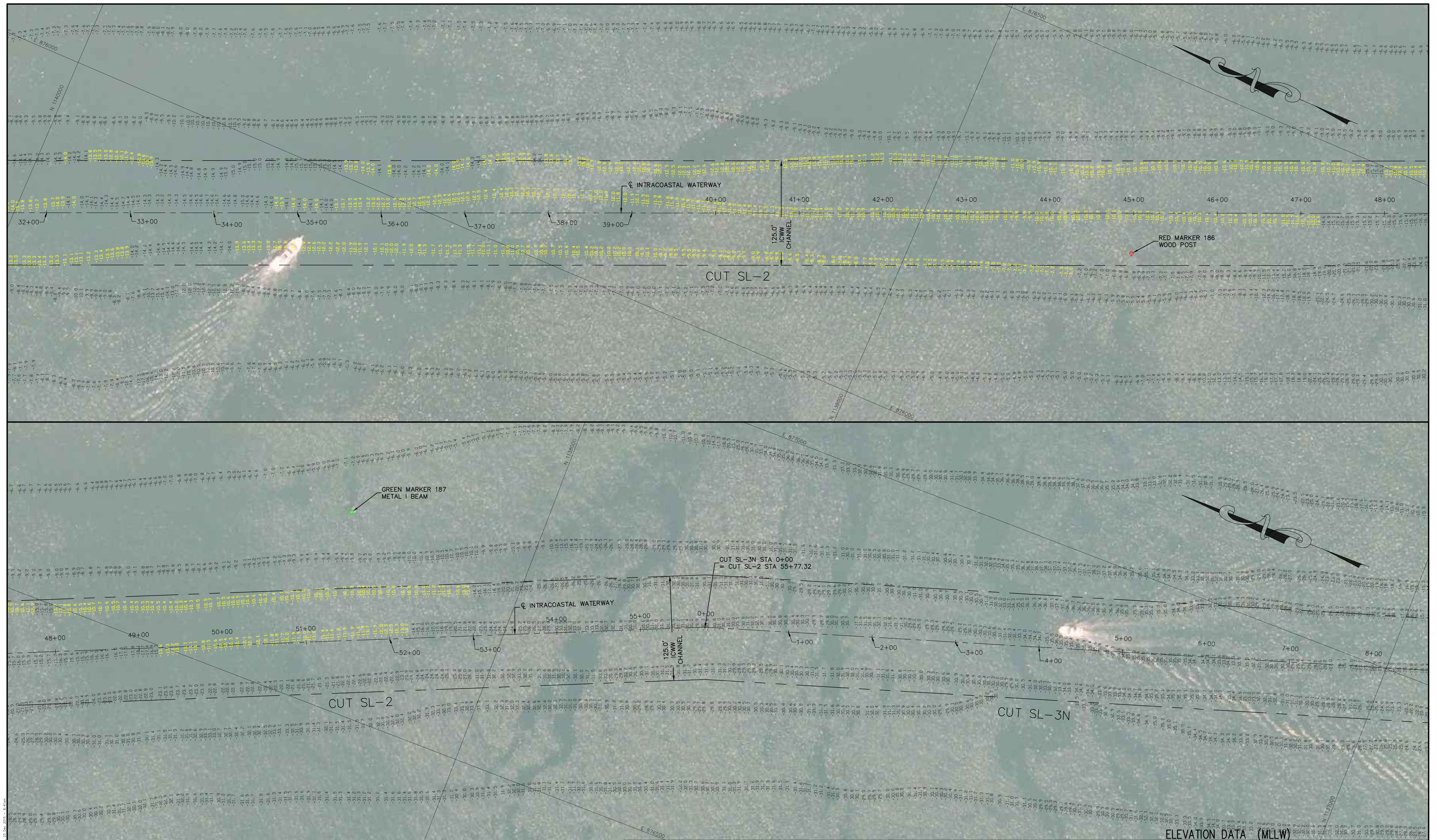
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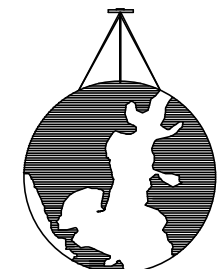
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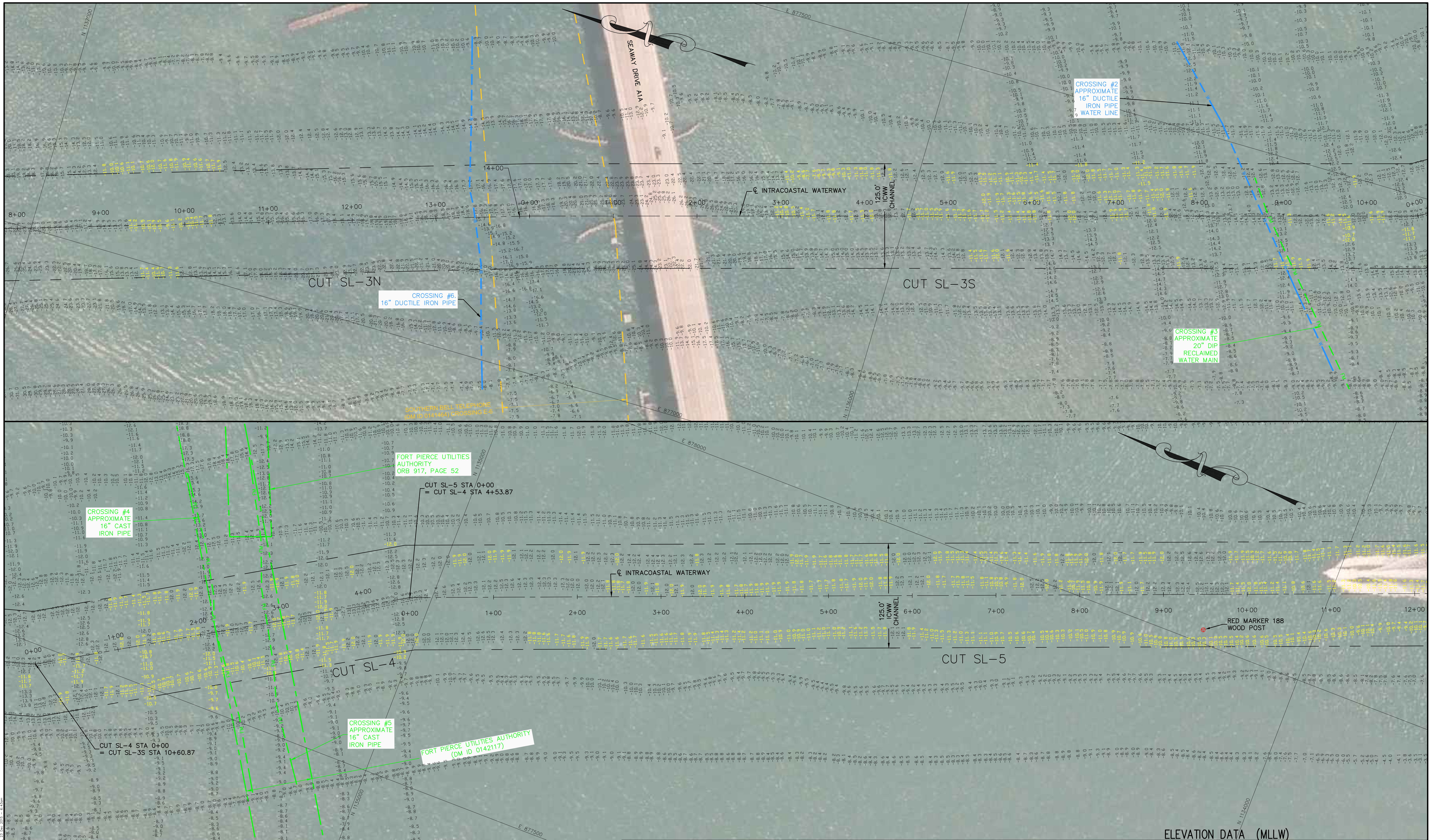
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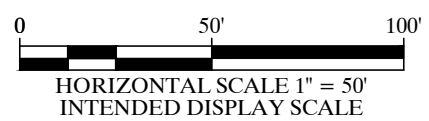
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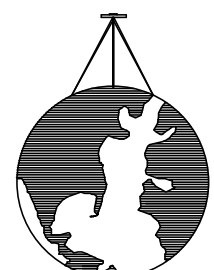
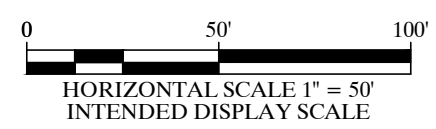
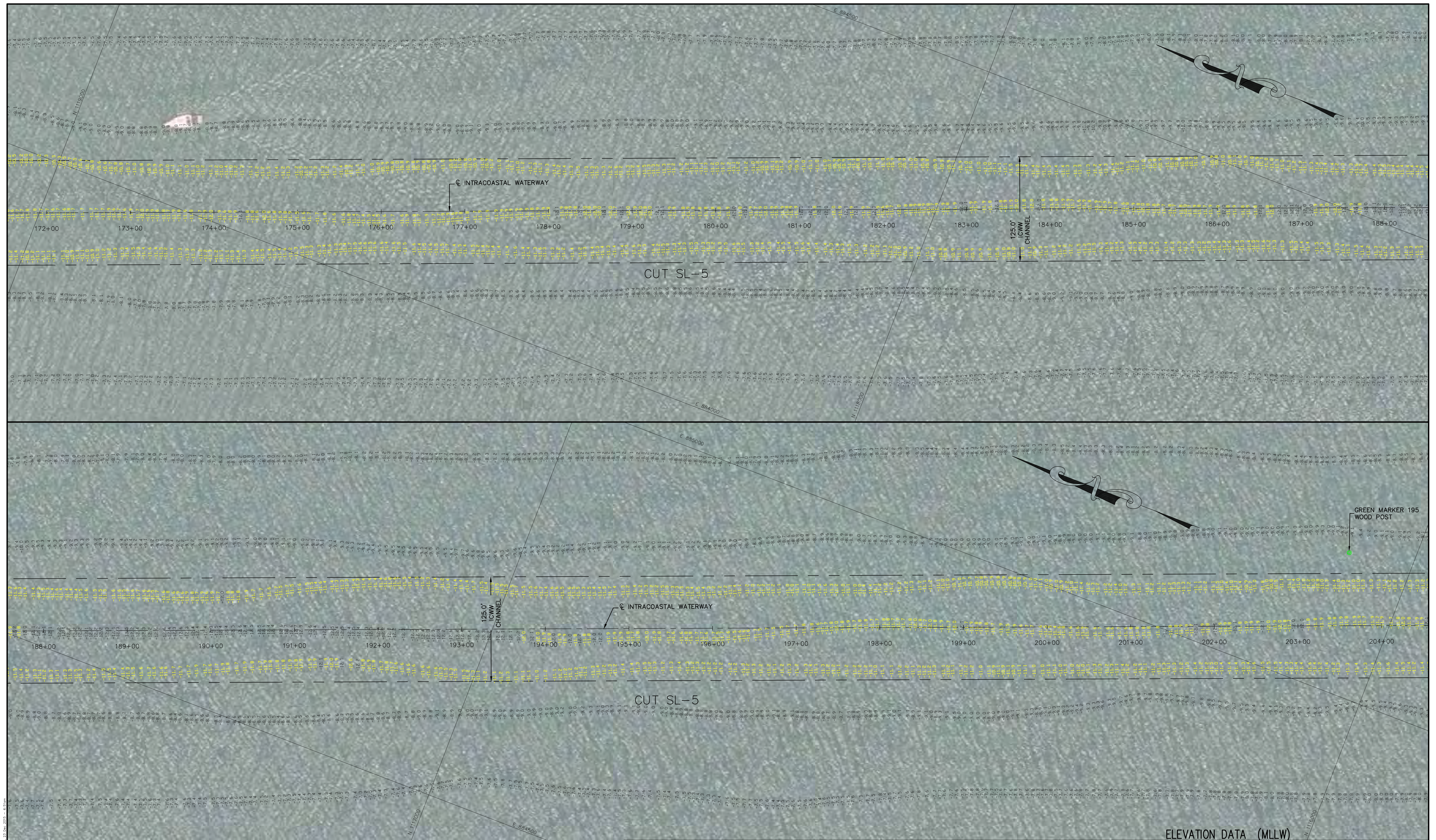
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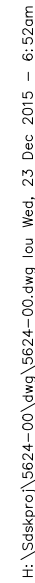
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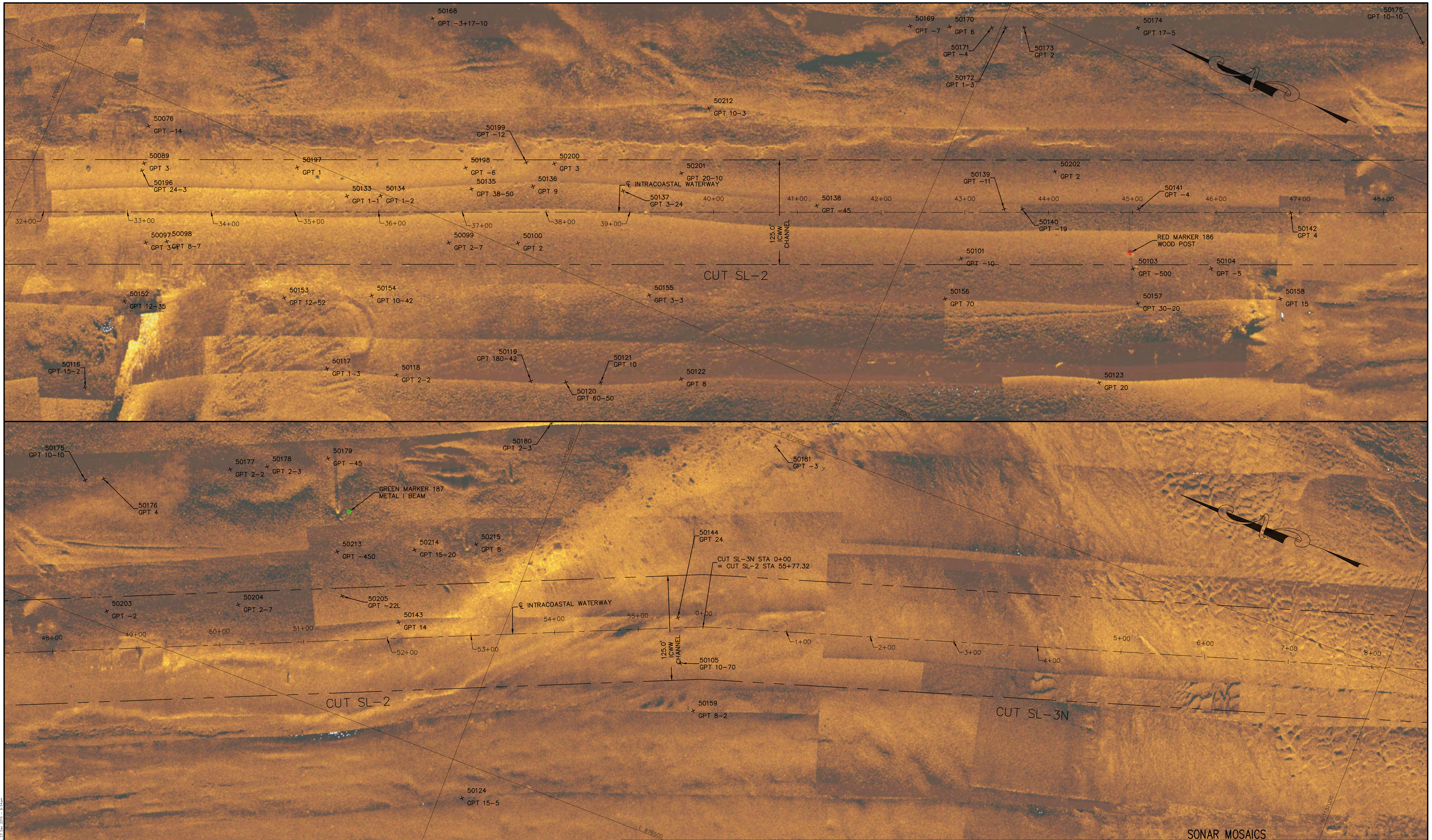
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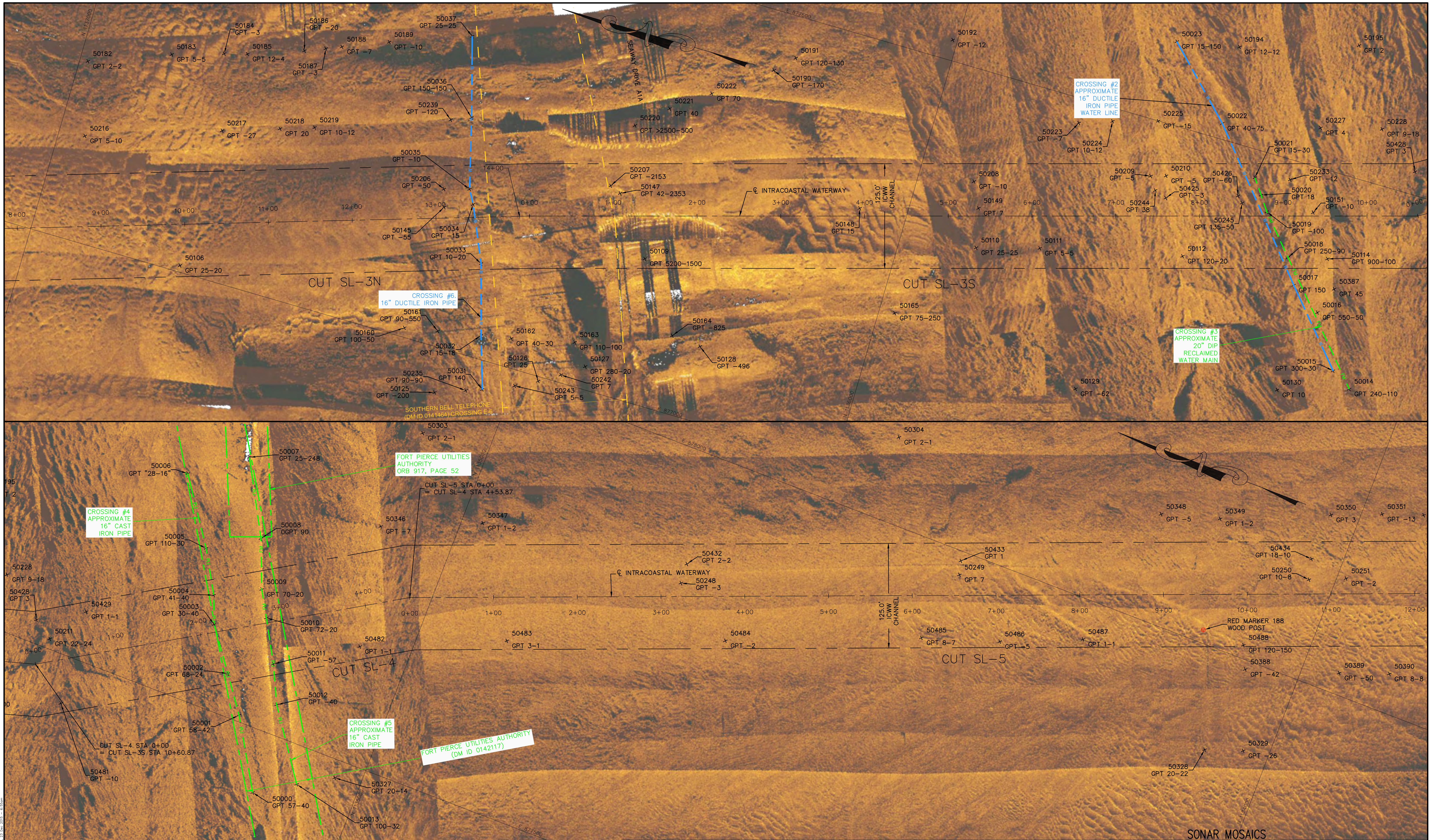
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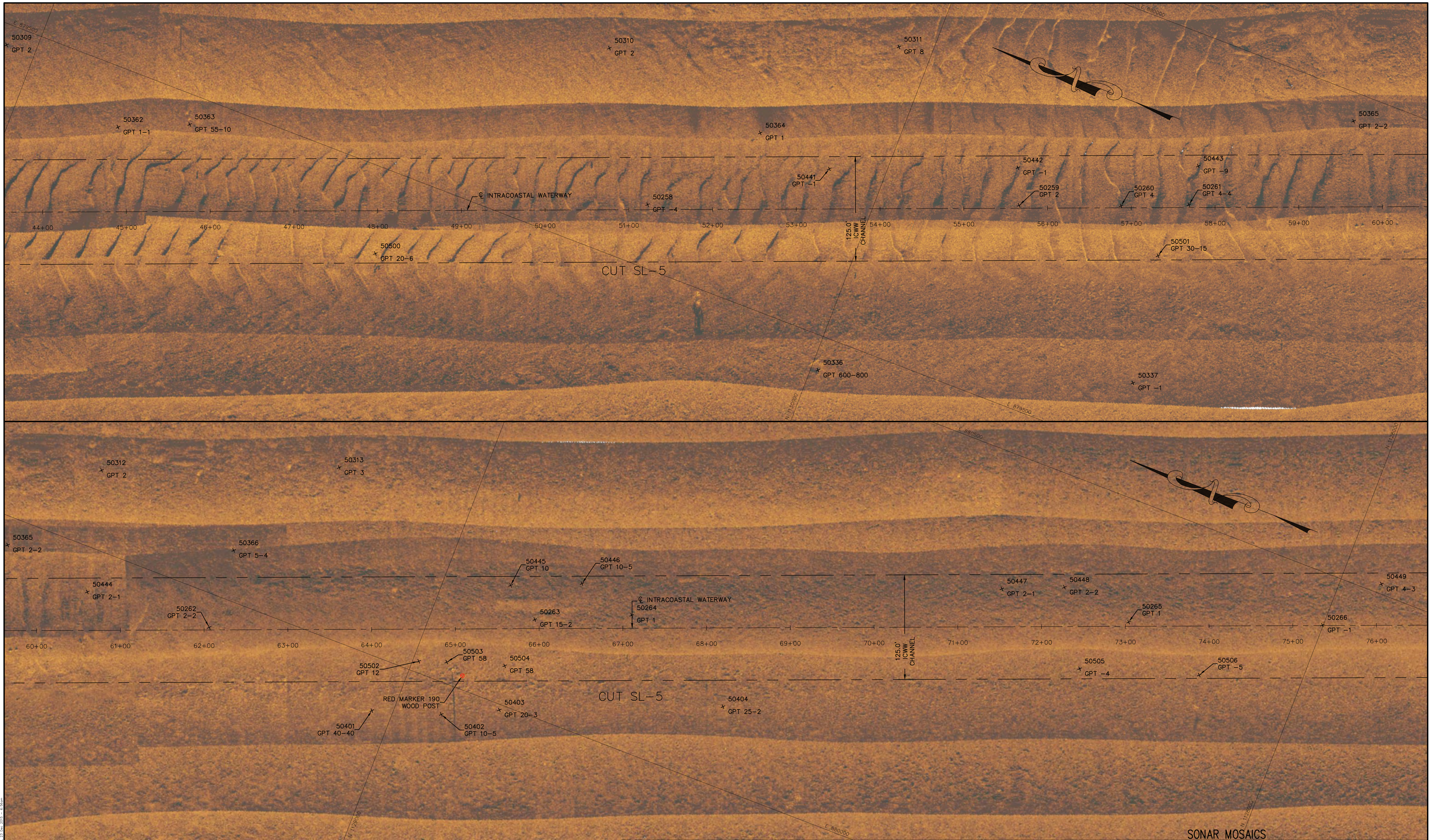
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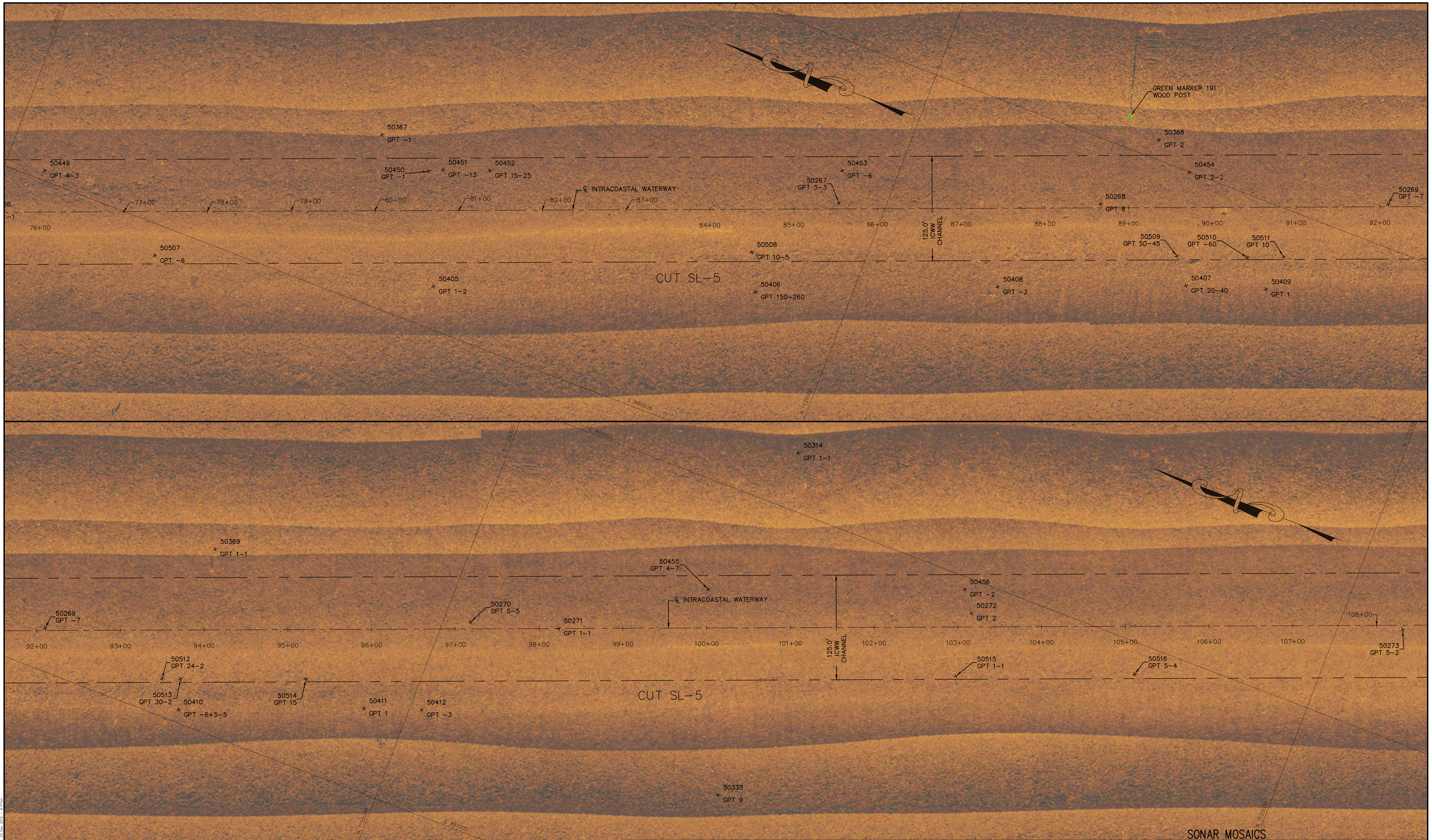
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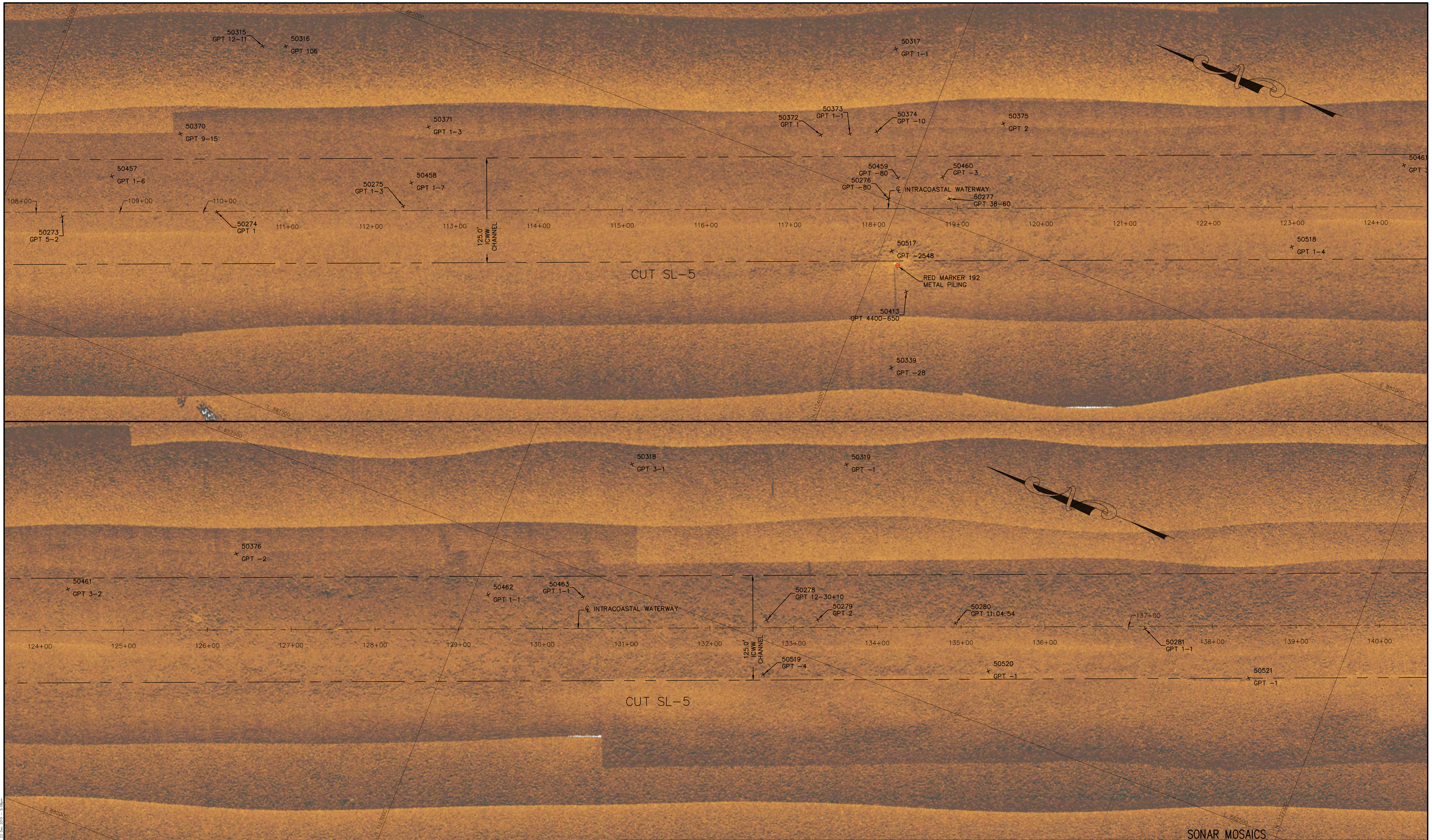
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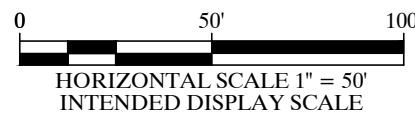
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LB #4298

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JOHN R. MORGAN II, PLS
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STATE OF FLORIDA

SONAR MOSAICS				COMMISSION NO.	
BATHYMETRIC, MAGNETOMETER, SEISMIC AND SIDE-SCAN SONAR SURVEY				5624.00	
INTRACOASTAL WATERWAY, CUT SL-2 THROUGH SL-5				SCALE	
ST. LUCIE COUNTY, FLORIDA				AS NOTED	
FOR TAYLOR ENGINEERING, INC.				DATE	
				10/6/15	
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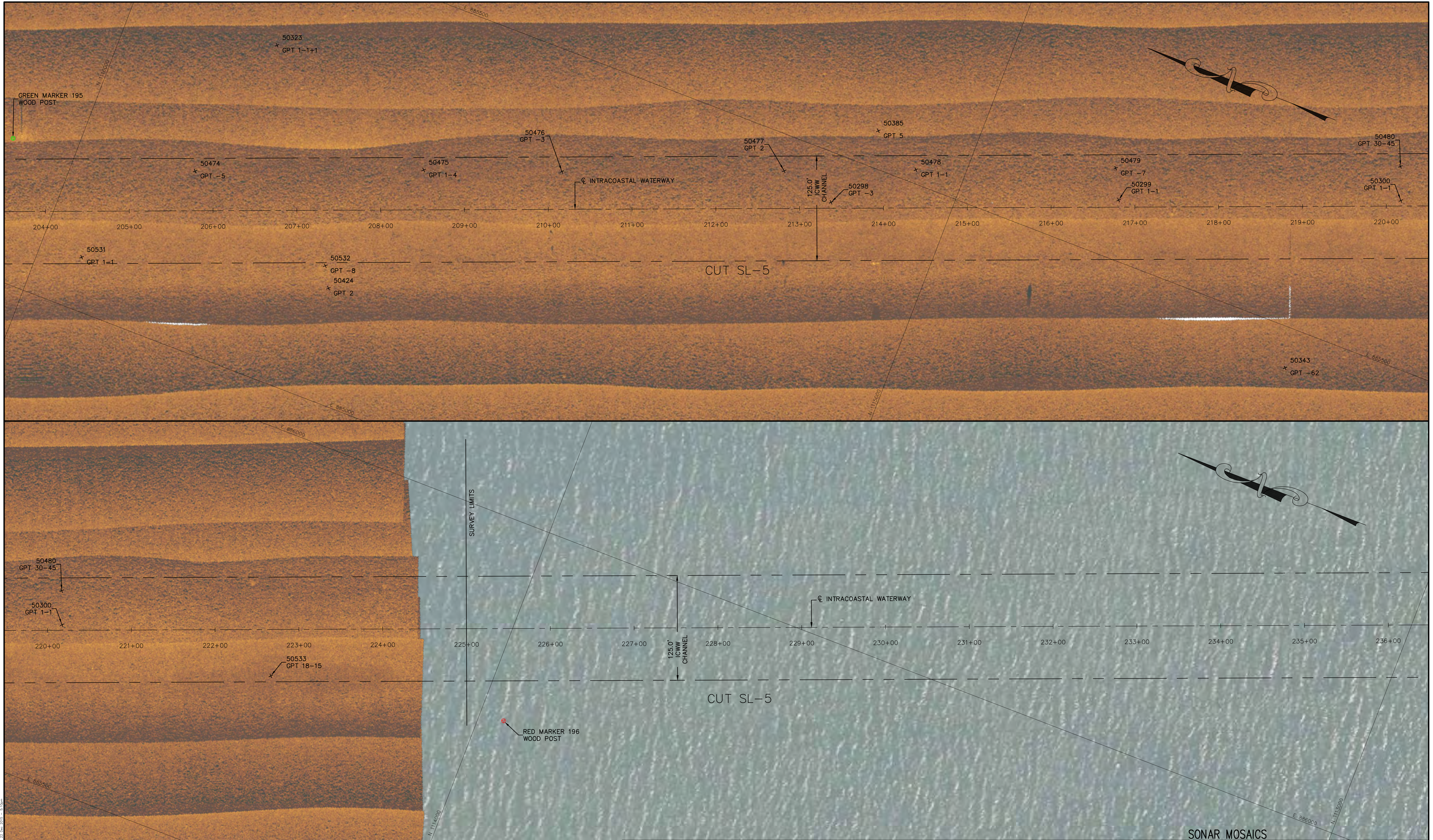
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**BATHYMETRIC, MAGNETOMETER, SEISMIC AND
SIDE-SCAN SONAR SURVEY
INTRACOASTAL WATERWAY, CUT SL-2 THROUGH SL-5
ST. LUCIE COUNTY, FLORIDA
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St. Lucie Reach 1 Utility Search

Introduction

SONOGRAPHICS, INC. and MORGAN & EKLUND, INC. (M&E) have completed an underwater survey of Reach 1 of the Intracoastal Waterway in St. Lucie County, Florida to detect the possible presence of utilities crossing. This report describes the equipment used, the methods implemented and the results obtained.

A. Equipment Used to Detect Submerged Utilities

A-1 MAGNETOMETER:

To locate utilities such as pipelines and cables under a waterway, several devices were employed. One device was the Geometrics Model G-882 marine magnetometer. It is a highly sensitive cesium pumped digital unit capable of sampling at 10 times per second. It is capable of locating ferrous objects because they interrupt the earth’s magnetic field. It is a very common tool for locating pipelines and cables that have ferrous iron in their construction. The limitations of a magnetometer are:

- 1. If the cable or pipeline is not made with ferrous iron they will not be detected by the magnetometer.
- 2. If a utility is detected the depth of burial can only be determined through calculations that are imprecise and therefore are not very accurate or reliable.
- 3. If there are other ferrous items in the vicinity they must be separated from the potential utility contacts usually by comparing positions and analyzing signatures.
- 4. Selecting the exact position of an anomaly can be difficult due to the context in which the anomaly is situated relative to the earth’s field and other ferrous objects. Some positions are straightforward and accurate while others are subject to interpretation.

A-2 SIDE-SCAN SONAR:

The second device employed was an EdgeTech dual frequency (600 kHz and 1600 kHz) chirp side-scan sonar. The model used was the 4125. The side-scan sonar is capable of producing sonic images of the bottom with the resolution to display the utility if it is exposed and not completely buried. It is capable of covering the entire bottom of the waterway from one side to the other. The limitation of the side-scan sonar is that it cannot penetrate the bottom and detect a buried utility.

A-3 SUB-BOTTOM PROFILER:

The third device employed was an EdgeTech X-Star Chirp Sub-bottom Profiler (SBP). The tow-fish used was the model SB-216S which can sweep sonic pulses from 2 kHz to 16 kHz. The sub-bottom profiler is capable of penetrating the sediment and getting reflections from the utility if it is significantly different in density from the surrounding sediment. The beam pattern of the sub-bottom profiler is wide enough fore and aft to detect the utility before and after it is directly under the tow-fish resulting in a classic hyperbolic pattern. If such a pattern is detected, then the actual depth of burial can be measured accurately relative to the surrounding bottom. The limitations of the sub-bottom profiler are:

- 1. The sediment may not be conducive to penetration if it contains gaseous organic material.
- 2. If the utility was purposely buried in the sediment, it may have been backfilled with material that is impenetrable. In this instance the backfill may be detected but the depth of burial would be un-measurable.
- 3. The construction of the utility may be of a material that is not of sufficient difference in density from the sediment or it may be physically too small. Typically, utilities with a diameter smaller than 6 inches will not be detected.

B. SURVEY METHODS

On September 30th, October 1st and 2nd, 2015 the survey vessel provided by Morgan Eklund, Inc. was mobilized with the Side-Scan Sonar, Magnetometer, Sub-bottom Profiler and Trimble DGPS Navigation Systems. The Navigation computer with Hypack Navigation Software was installed to interface the DGPS and output towfish coordinates to the Side-scan computer topside. The Navigation computer was loaded with preplanned survey lines spaced at 50 and 100 foot intervals through the length of the survey area and parallel to potential utilities for the side-scan survey. It provided visual guidance to the helmsman for navigation of each line. The RTK- was able to provide WGS 84 differential positions to the Navigation computer. The published accuracy of the DGPS system is less than 1 meter.

The Side-Scan and Sub-bottom tow-fish were deployed from the side of the vessel with minimal amount of cable out. The distance from the DGPS antenna to the center of the transducers was also measured. The layback and offset was calculated by the Navigation software, enabling towfish coordinates to be sent to both the Sub-bottom and Sonar computers in real time.

The magnetometer was installed and tests were done to insure that it was interfaced and working properly. The navigation computer recorded the data from the magnetometer and combined it with the NAD83, Florida State Plane East Zone, U.S. Survey Foot tow-fish coordinates. The magnetometer sensor was towed near the water surface from 70 to 50 feet aft of the vessel. The layback and offset was calculated by the Navigation software, enabling tow-fish coordinates to be merged with the incoming magnetometer readings in real time. The sampling rate was set to

10 samples per second. The magnetometer signal strength was monitored as the vessel was operated at 8 points of the compass to ensure that the sensor would not be affected by an improper angle to the earth’s magnetic field. Test passes close to a metal navigation aid produced a significant anomaly with no degradation in signal strength. The background noise level was normal throughout the test and it was deemed that the magnetometer was ready for survey operations.

C. DATA PROCESSING

C-1 SIDE-SCAN SONAR DATA:

The Side-scan data was recorded in the native EdgeTech JSF format on the hard drive in the Sonar Computer by the EdgeTech Discover program. The JSF files were read by the Chesapeake SonarWizMap program and after adjustments and navigation smoothing, image files were created for the construction of a sonar mosaic. The sonar mosaic was exported as a Geo-Tif file. Each individual sonar line was examined for possible utility targets.

C-2 MAGNETOMETER DATA:

The magnetometer data was recorded in the Hypack (RAW) files. The RAW files were imported to an editor where anomalies were analyzed in profile and recorded as targets. The targets were plotted and analyzed for continuous patterns consistent with the presence of utilities.


C-3 SUB-BOTTOM PROFILER DATA:

The Sub-bottom data was recorded in the native EdgeTech (JSF) format on the hard drive in the Sub-bottom Computer. The JSF files were read by the Chesapeake SonarWizMap program and after adjustments and navigation smoothing profiles were produced for each survey line. The data was analyzed for patterns consistent with pipeline or cable signatures. Particular attention was paid to areas where magnetic anomalies were detected.

D. RESULTS

D-1 SIDE-SCAN SONAR RESULTS:

There were no utility targets detected in the sonar data within the survey area. Some typical features were observed such as sand waves, drag marks and channel markers. There appears to be the remnant of a trench parallel to the drawing position of the 16” DIP north of the Seaway Drive Bridge. This trench (Figure 1.) appears only on the west side of the waterway from the west fender pilings of the main span extending at least 850 to the west southwest. It runs parallel to the

 <div><div><div><div><div></div><div>MORGAN & EKLUND, INC.</div></div><div><div><div><div><div></div><div>PROFESSIONAL SURVEY CONSULTANTS</div></div><div><div><div><div><div></div><div>8745 US HIGHWAY #1</div><div>P.O. BOX 701420</div><div>WABASSO, FL 32970</div><div>PHONE: (772) 388-5364</div><div>FAX: (772) 388-3165</div></div><div><div><div><div></div><div>1159 SW 1ST WAY</div><div>DEERFIELD BEACH, FL 33441</div><div>PHONE: (954) 421-6882</div><div>FAX: (954) 421-0425</div></div></div></div><div><div><div><div></div><div>JOHN R. MORGAN II, PLS</div><div>PROFESSIONAL LAND SURVEYOR #3520</div><div>STATE OF FLORIDA</div></div></div></div></div></div></div></div></div></div></div></div></div>	<div><div><div><div><div></div><div>CERTIFICATE OF SURVEYOR</div><div>— I HEREBY CERTIFY THAT THE INFORMATION SHOWN HEREON IS IN ACCORDANCE WITH A RECENT FIELD SURVEY MADE UNDER MY DIRECTION, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE STANDARDS OF PRACTICE AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 36-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.</div></div></div><div><div><div><div></div><div>JOHN R. MORGAN II, PLS</div><div>PROFESSIONAL LAND SURVEYOR #3520</div><div>STATE OF FLORIDA</div></div></div></div></div></div>	BATHYMETRIC, MAGNETOMETER, SEISMIC AND SIDE-SCAN SONAR SURVEY				COMMISSION NO.		
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pipeline 50 feet to the south of the drawing position. The Sonar mosaic is available as several geo-tif files.

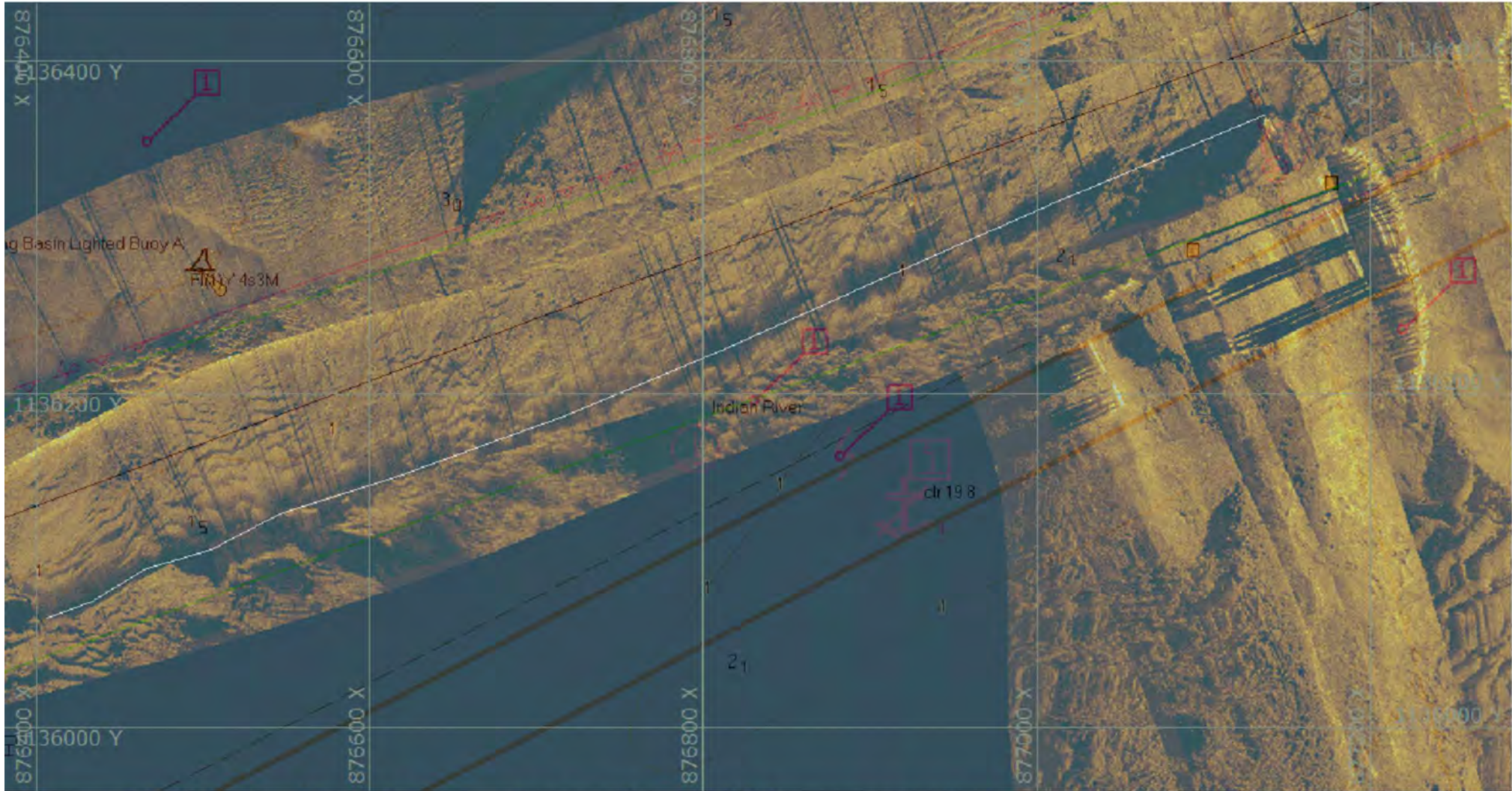


Figure 1. White line drawn through possible remnant trench north of Seaway Drive.

D-2 MAGNETOMETER RESULTS:

Numerous targets were detected throughout the area. Steel channel markers also presented significant signatures along with moored yachts and the bridges. Anomalies were plotted and analyzed for indications of a series of hits that would be aligned similar to the path of a utility. Utilities with ferrous iron in their construction will typically plot a continuous string of targets across the waterway. Those targets would normally have similar signatures such as a dipole vs. monopole and have similar intensity. One such string (Crossing 1) occurred approximately 110 to 180 feet north of the North Causeway Bridge. The plot of Crossing 1 is shown in Figure (2.) below. This string did stretch across all of the survey lines. This is very likely the 18” ductile iron pipe (DIP) water main described in the as built data supplied by M&E. There was no confirmation in the side-scan data. There were two confirming targets and one possible confirming target in the sub-bottom data. This can be classified as a utility detection due to its very close proximity to the as built plot of the DIP. A list of positions is displayed under Figure (2.) with the positive and negative intensities in nano-teslas, the easting and northing in feet (NAD83, Florida State Plane East Zone, U.S. Survey Foot) and comments for each anomaly.

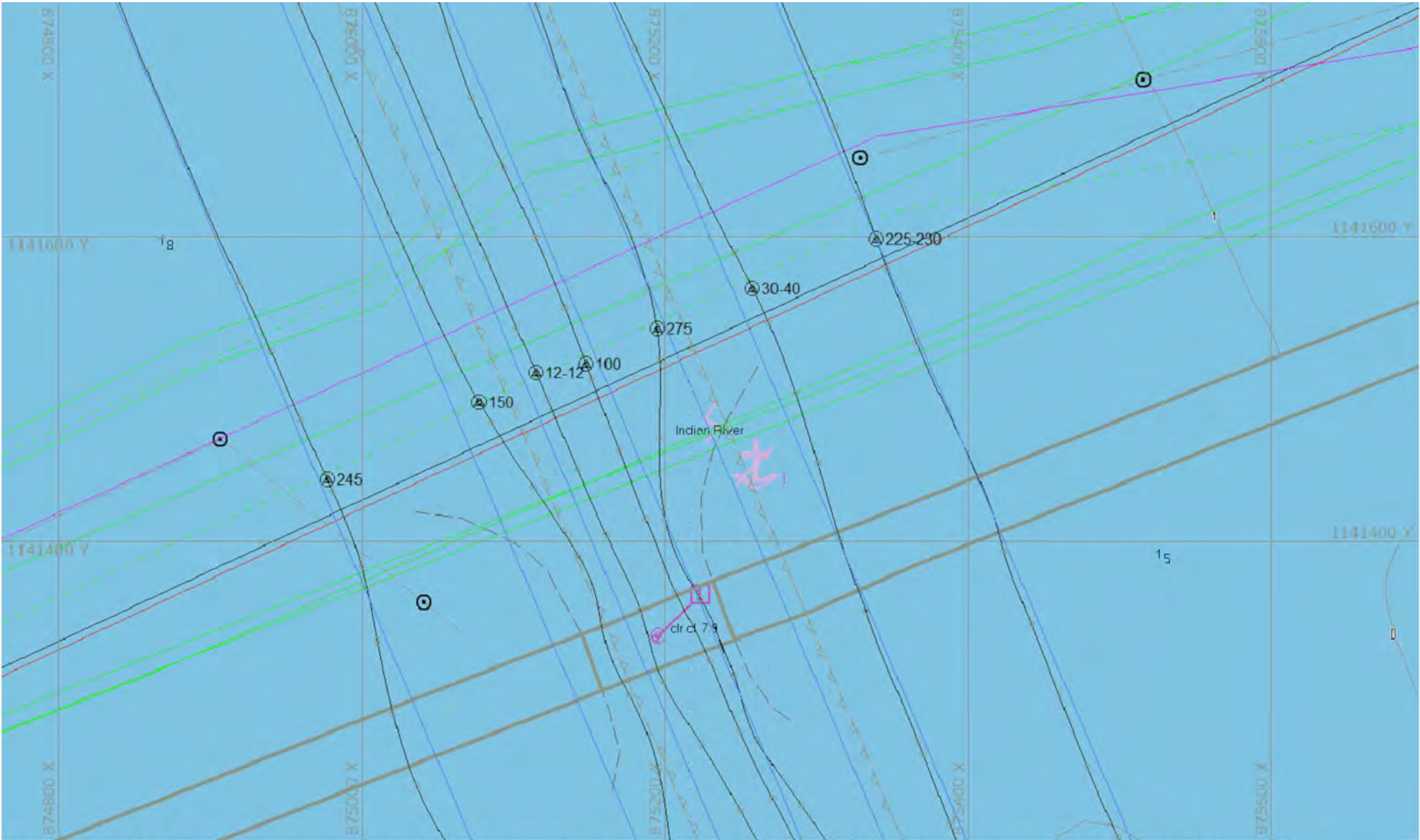


Figure 2. Crossing 1 - Detection of DIP plot 110 to 180 feet north of the North Causeway Bridge. Labels on targets are the intensity measurements as listed below.

Detected Utility – 110 to 180 feet north of the causeway

Crossing 1				
Intensity	Easting	Northing	Comments	
245	874977.10	1141440.40	Sub-bottom Tgt. On 4S	
150	875077.40	1141491.00		
12-12	875115.70	1141510.30	Sub-bottom Tgt. On 6S	
100	875147.90	1141516.20		
275	875194.50	1141539.90	Sub-bottom Tgt. On 3N	
30-40	875257.40	1141565.90		
225-230	875339.10	1141597.80		

Figure (3.) is another plot of the area north of the North Causeway Bridge with all magnetic anomalies plotted.

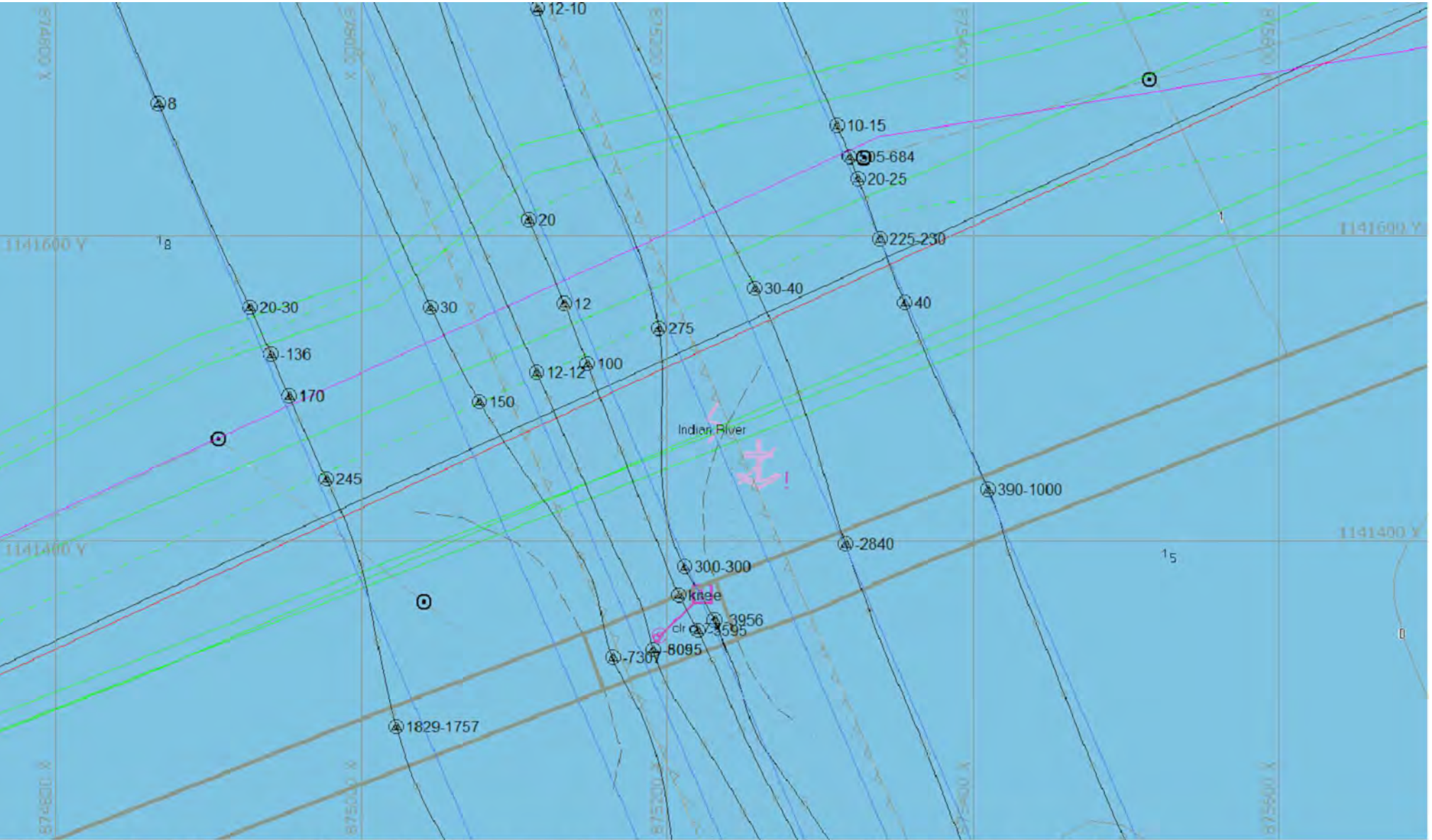
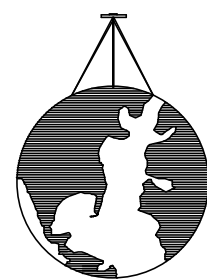


Figure 3. Target plot of all anomalies at the North Causeway Bridge.

Another string of anomalies (Crossings 2 & 3) occurred at the plotted location of the 16” DIP water line and 20’ DIP Force Main that plot together and cross the waterway approximately 690 feet south southeast of the Seaway Drive Bridge. The plot of this string is shown in Figure (4.) below. This string did stretch across all of the survey lines. There was no confirmation in the side-scan data. There was one possible confirming target in the sub-bottom data. This can be classified as a utility detection due to its very close proximity to the as built plot of the two DIPs. The signature of these two pipelines displayed as one anomaly due to their proximity to each other and the distance from the magnetometer sensor. In most of the signatures the 20-inch DIP dominated and six of ten plotted anomalies fall on the pre-plot of the 20inch. Four of the ten plot on the 16-inch pre-plot. A list of positions is displayed under Figure (4.) with the positive and negative intensities in nano-teslas, the easting and northing in feet (NAD83, Florida State Plane East Zone, U.S. Survey Foot) and comments for each anomaly.



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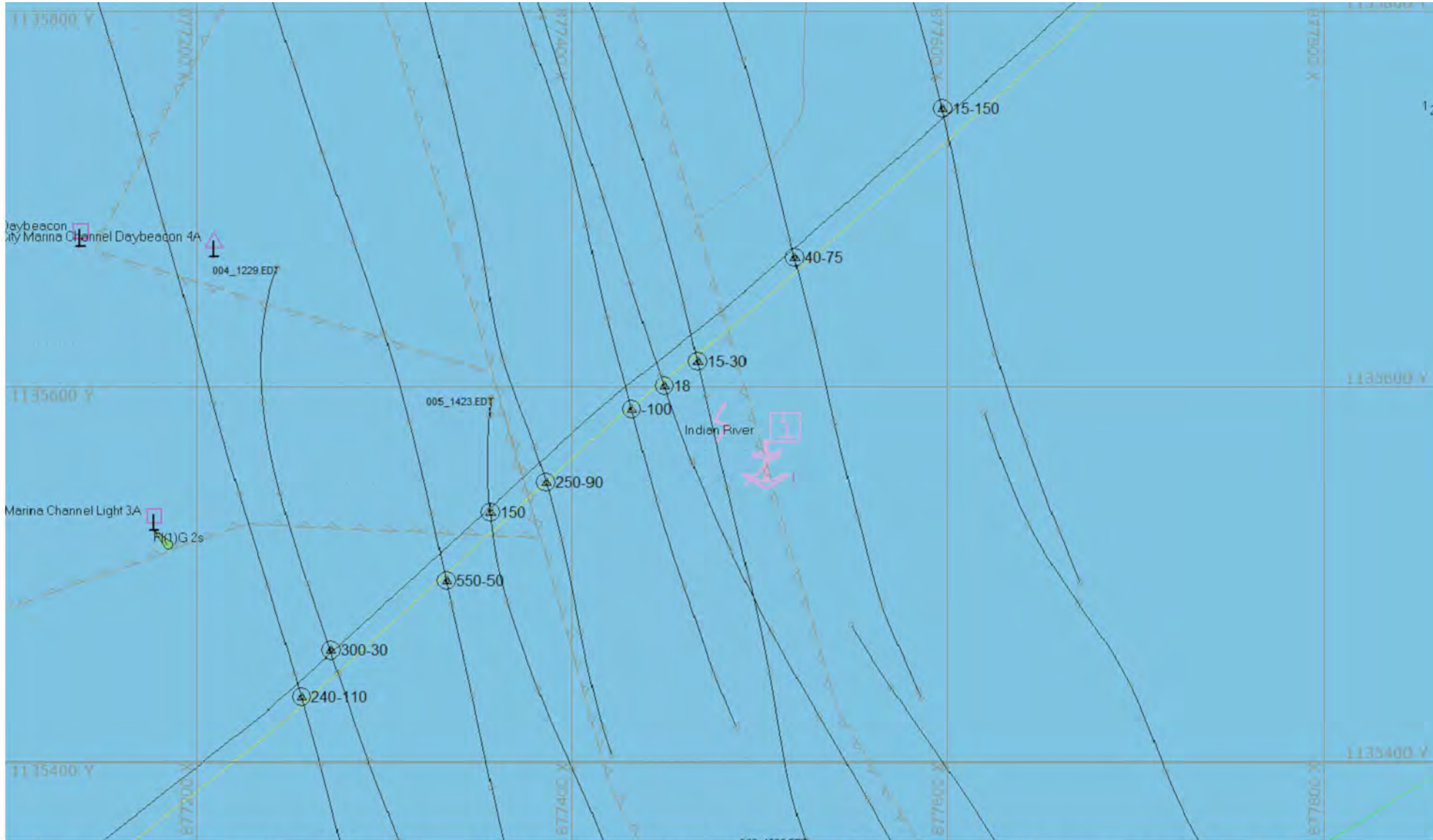


Figure 4. Crossings 2 & 3 - Detection of 16” and 20” DIP plot approximately 690 feet south of the Seaway Drive Bridge. Labels on targets are the intensity measurements as listed below.

Detected Utilities – 690 feet south of the Seaway Drive Bridge

Crossings 2 & 3			
Intensity	Northing	Easting	Comments
240-110	877256.10	1135434.70	
300-30	877271.70	1135459.30	
550-50	877333.20	1135496.70	
150	877356.70	1135533.00	
250-90	877386.50	1135548.80	Sub-bottom Tgt. On 6S
-100	877431.90	1135588.30	
18	877449.20	1135600.50	
15-30	877467.00	1135613.40	
40-75	877518.40	1135668.90	
15-150	877597.10	1135748.30	

Figure (5.) is another plot of the area of the 16” and 20” DIP crossing area with all magnetic anomalies plotted.

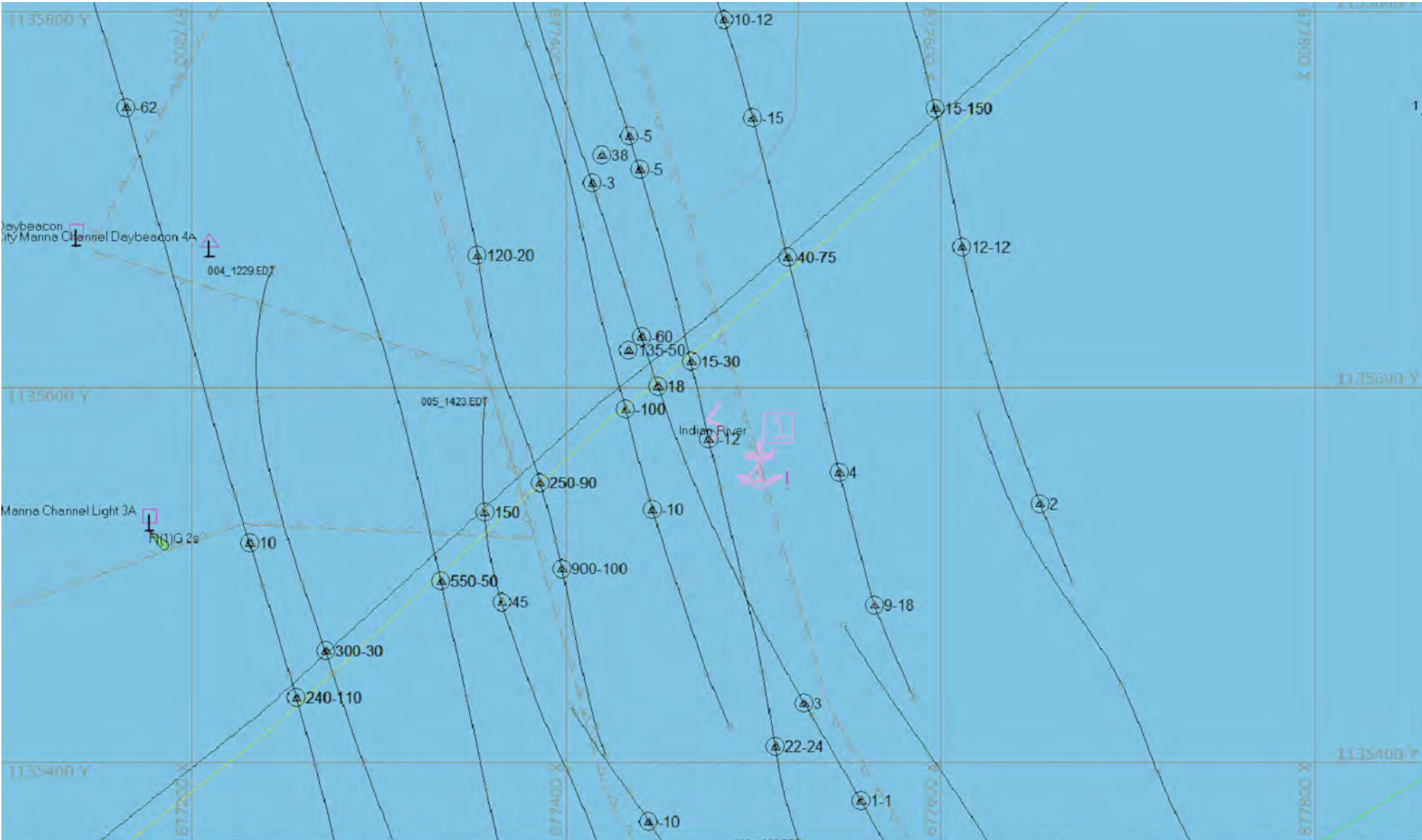


Figure 5. Plot of all detected anomalies near the 16”-20” crossing. (Crossings 2 & 3)

Two additional strings of anomalies (Crossings 4 & 5) occurred at the plotted location of a pair of 16” Cast Iron Force Mains that plot together (50 feet apart) and cross the waterway approximately 1,025 feet south southeast of the Seaway Drive Bridge. The plot of these two strings is shown in Figure (6.) below. These strings did stretch across all of the survey lines. There was no confirmation in the side-scan data. There was no confirmation in the sub-bottom data except for shallow (1-foot-deep) trenches observed under the drawing positions of Crossing 4 and Crossing 5 on lines 42N, 5S.001, 3N.002 and 6N. One trench was observed on line 4S.001 under Crossing 5. This magnetic anomaly string can be classified as a utility detection due to its very close proximity to the as built plot of the two Cast Iron Pipelines. A list of positions is displayed under Figure (6.) with the positive and negative intensities in nano-teslas and the easting and northing in feet (NAD83, Florida State Plane East Zone, U.S. Survey Foot).

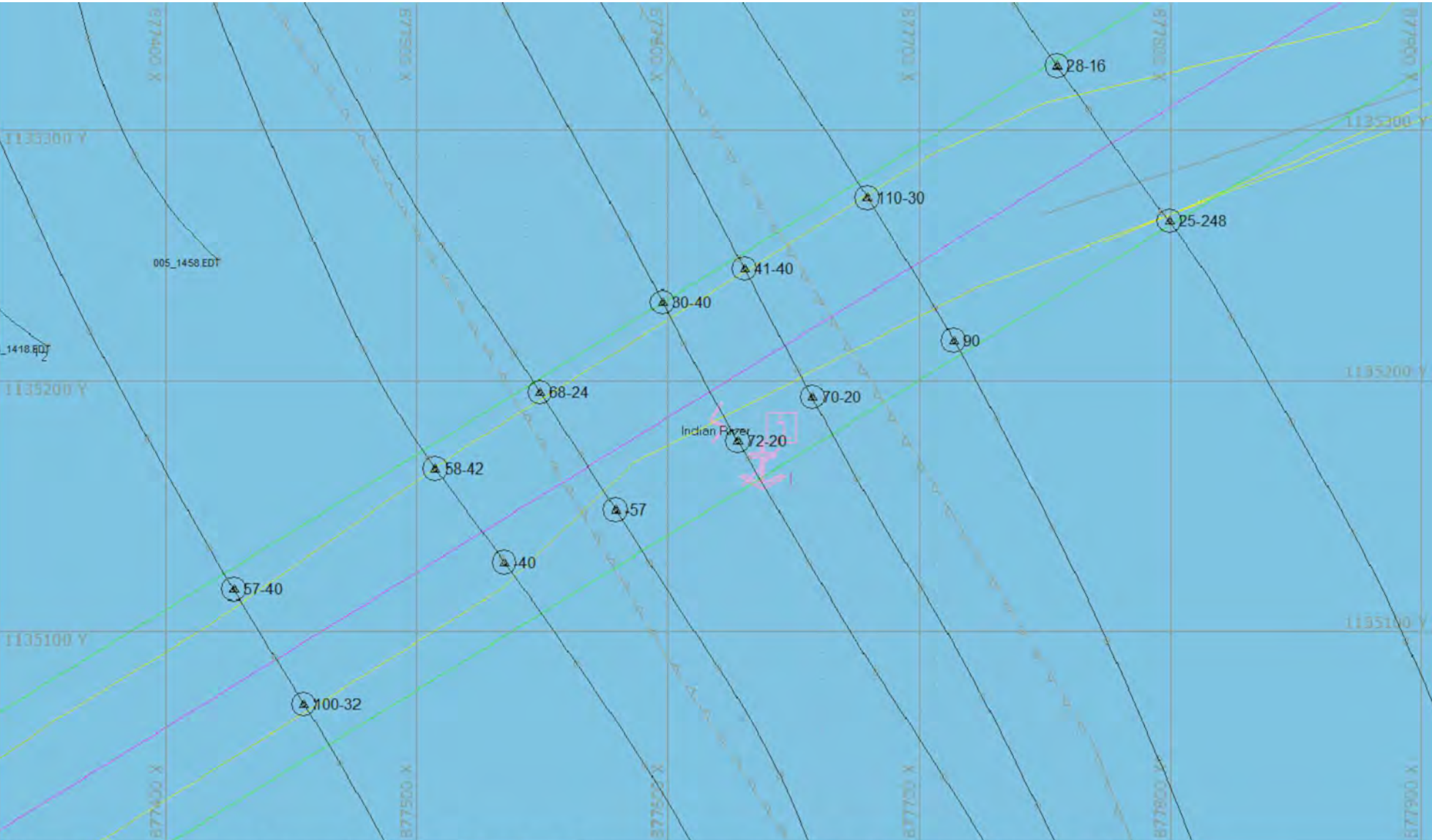
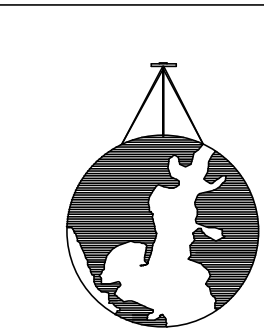


Figure 6. Crossings 4 & 5 - Detection of two 16” Cast Iron Force Mains approximately 1,025 feet south of the Seaway Drive Bridge. Labels on targets are the intensity measurements as listed below.

Detected Utilities – 1,025 feet south of the Seaway Drive Bridge

Crossing 4			Crossing 5		
North 16” Cast Iron Force Main			South 16” Cast Iron Force Main		
Intensity	Easting	Northing	Intensity	Easting	Northing
57-40	877427.20	1135116.70	25-248	877799.60	1135263.90
58-42	877507.60	1135165.00	90	877714.00	1135216.20
68-24	877549.30	1135195.40	70-20	877657.50	1135193.60
30-40	877598.10	1135231.60	72-20	877627.80	1135176.20
41-40	877630.60	1135244.60	-57	877579.40	1135148.70
110-30	877679.60	1135273.10	-40	877535.20	1135127.50
28-16	877755.10	1135325.60	100-32	877455.20	1135071.10

Figure (7.) is another plot of the area of Crossings 4 & 5 with all magnetic a



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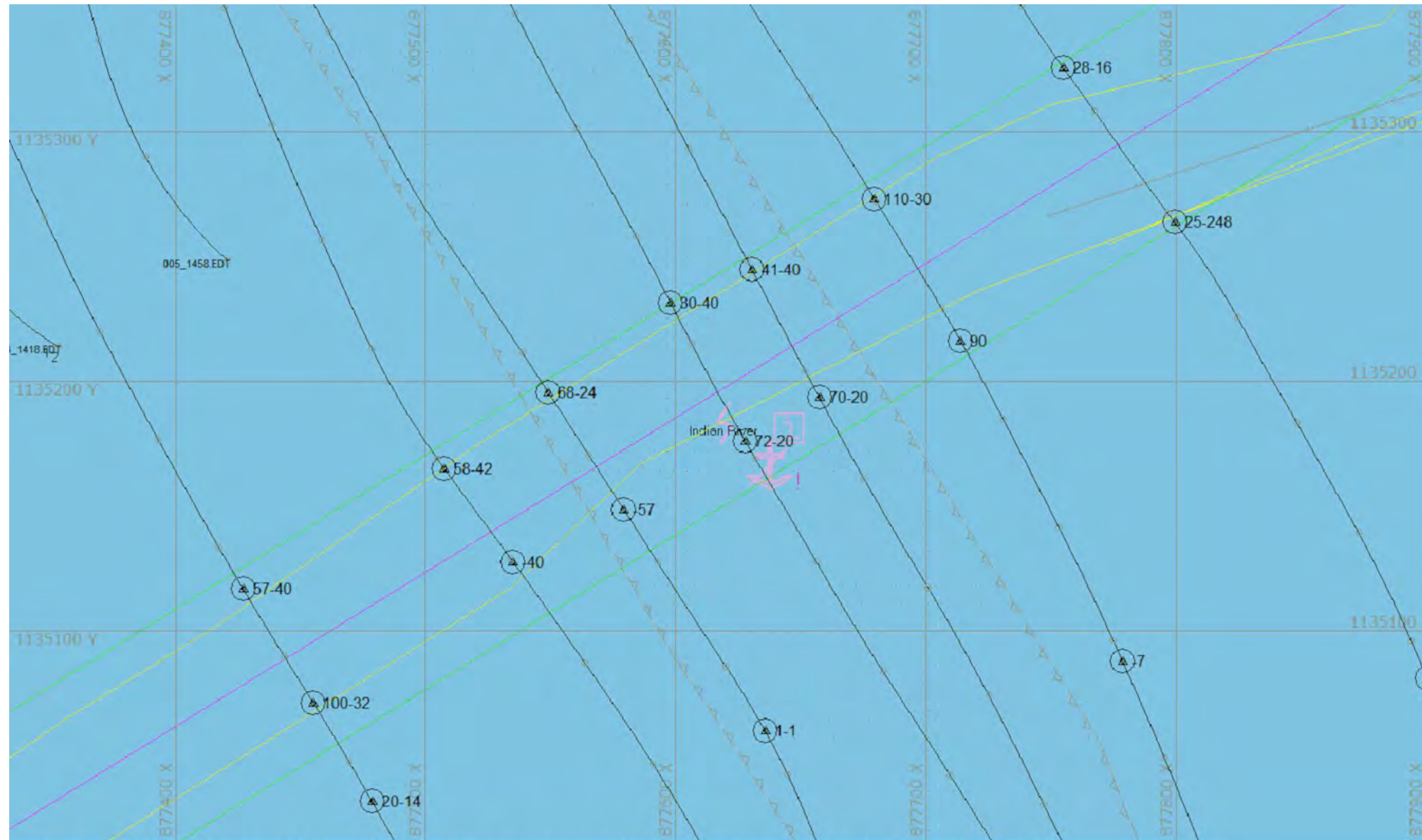
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Another 16” DIP is plotted 100 feet north of the Seaway Drive Bridge (Crossing 6) in the survey area and it was not detected at its plotted location. It is possible that the steep magnetic gradient produced by the bridge is masking the signature from this pipeline. The plot of all magnetic anomalies in the area is displayed in Figure (8.)

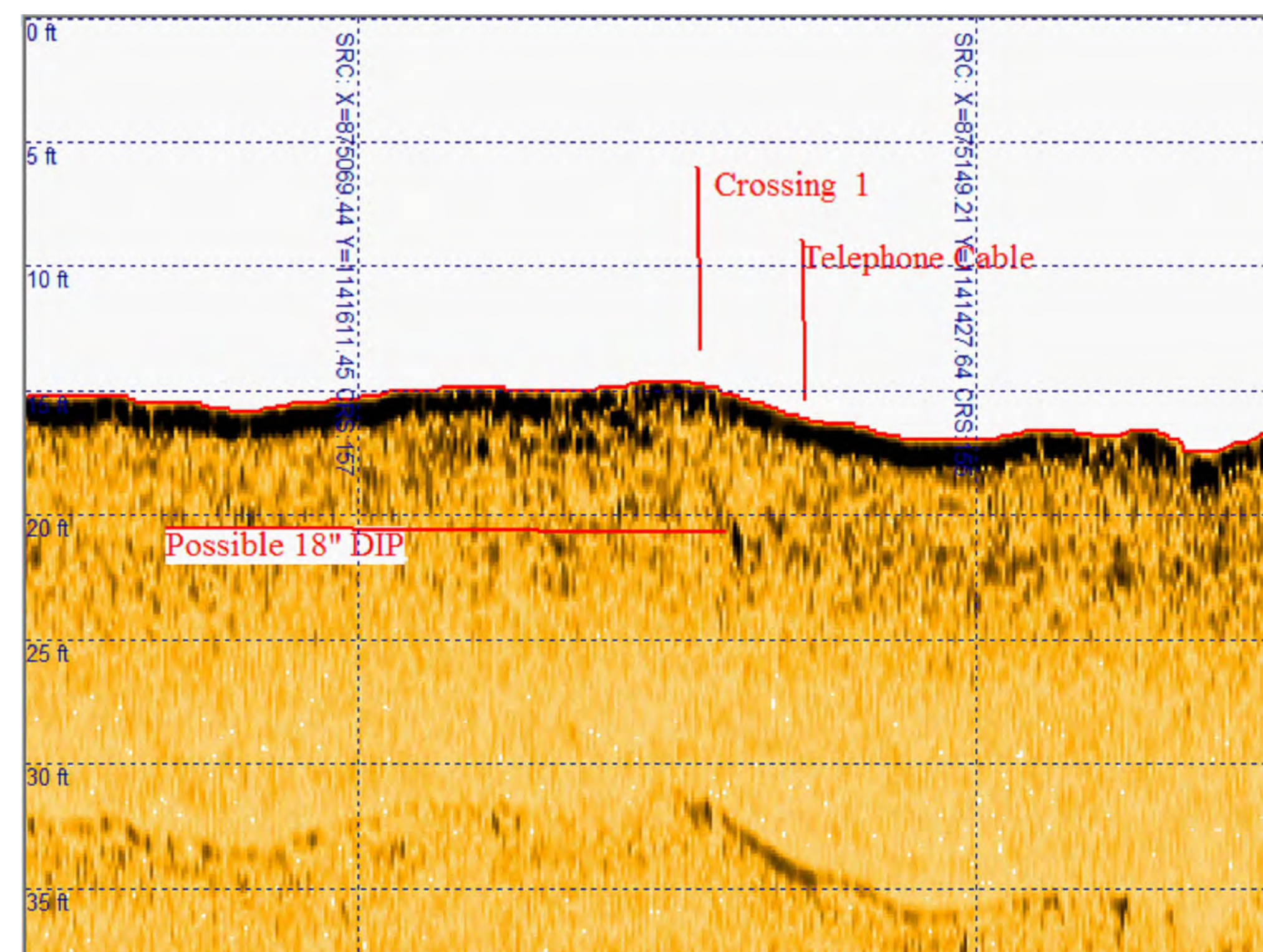
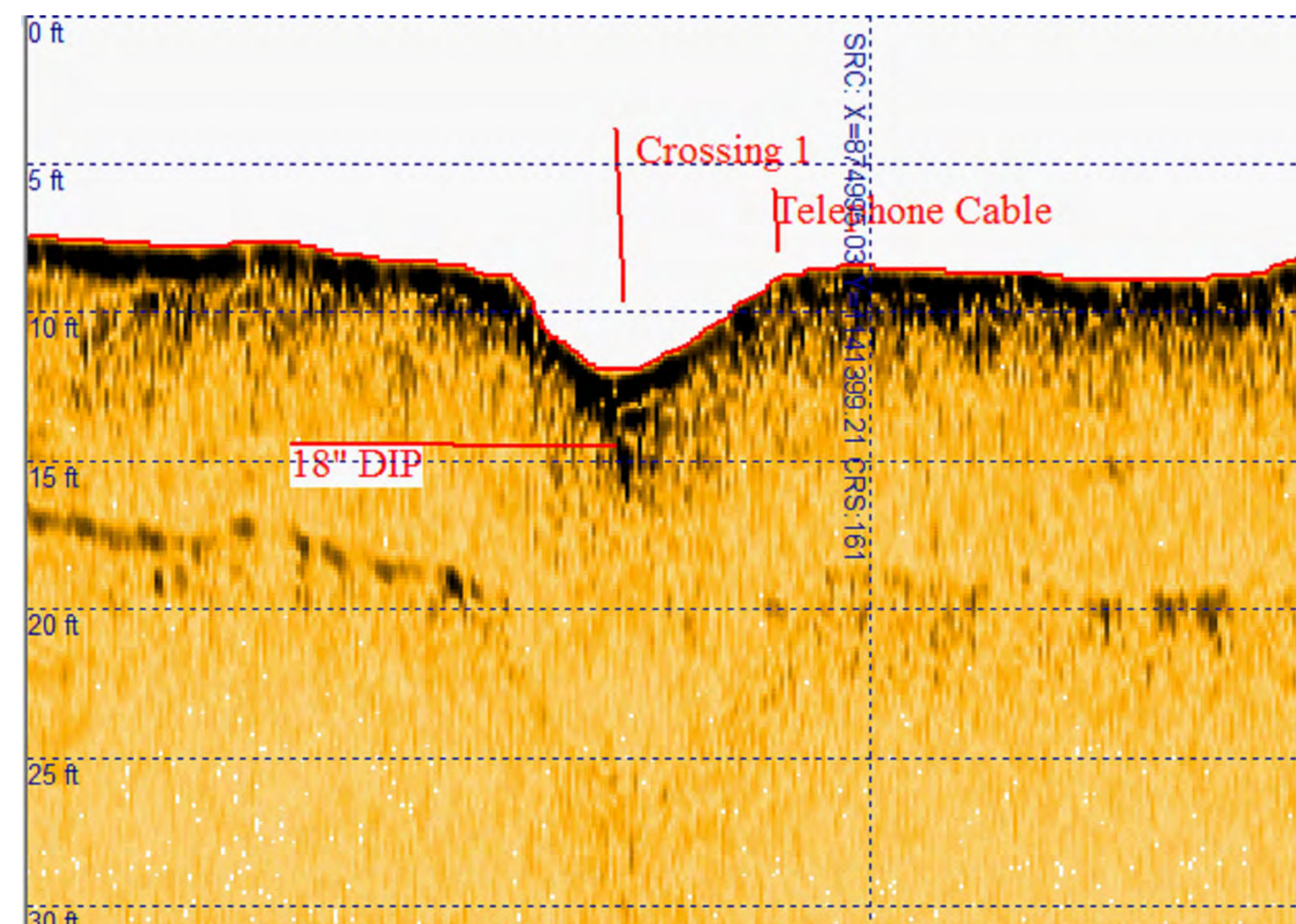
There was a string of anomalies 68 feet north northwest of the Crossing 6 DIP drawing position. This string did stretch across all of the survey lines. There was no confirmation in the side-scan or sub-bottom data. This can be classified as a possible utility detection. The plot of this string is shown in Figure (9.) below. A list of positions is displayed under Figure (9.) with the positive and negative intensities in nano-teslas and the easting and northing in feet (NAD83, Florida State Plane East Zone, U.S. Survey Foot).

Possible Utility – 170 feet north of the Seaway Drive Bridge

Intensity	Northring	Easting
140	876966.50	1136428.60
15-18	877027.90	1136448.00
10-20	877110.30	1136472.00
15	877175.60	1136500.80
-10	877191.90	1136510.00
150-150	877274.70	1136531.70
25-25	877368.10	1136557.90



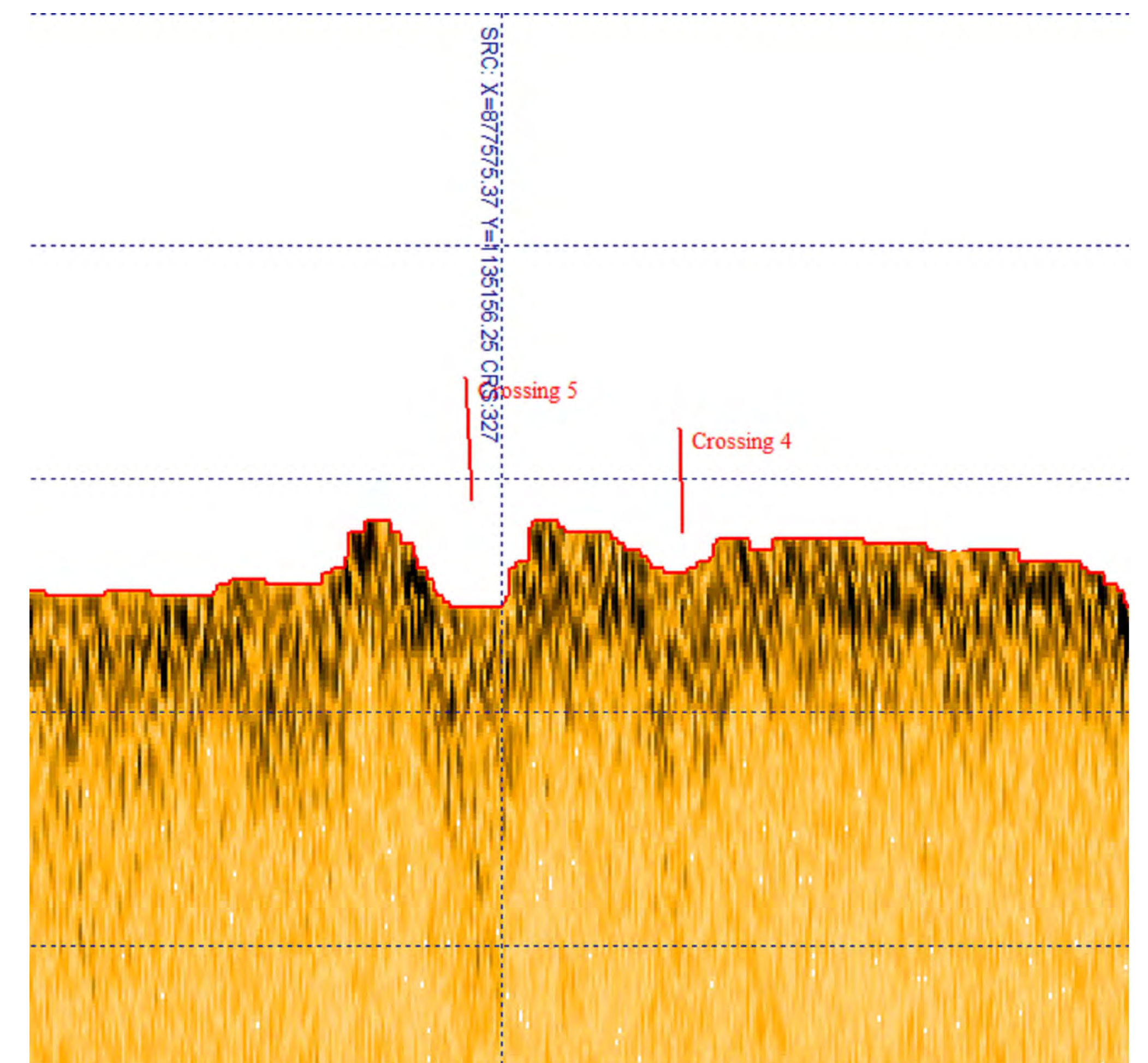
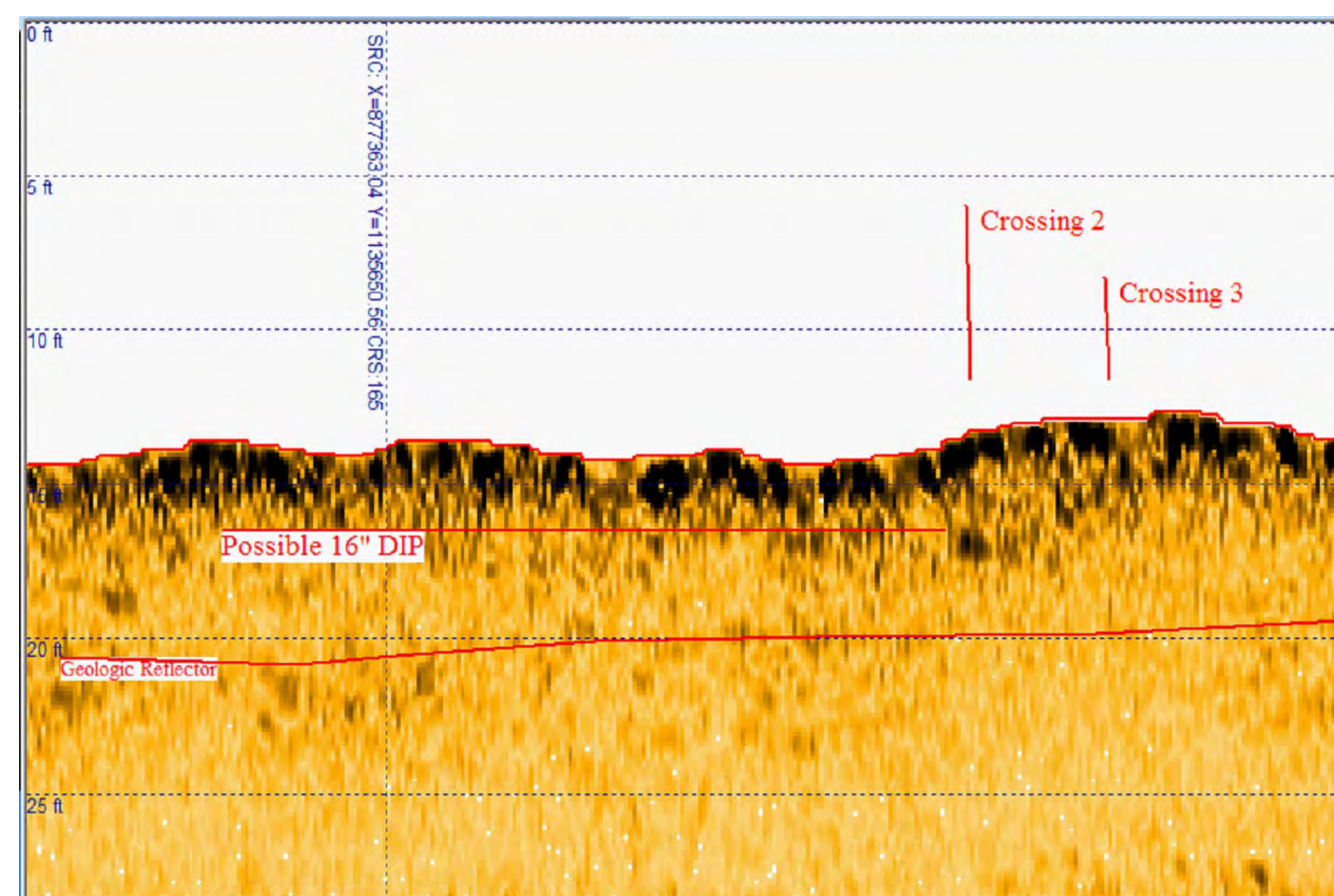
Numerous sub-bottom reflections were observed and geologic layers were observed as deep as 12 feet but none of the reflections displayed the classic hyperbolic signature patterns consistent with utilities. There were less dramatic signatures that tend to confirm the drawings and the magnetometer results. At Crossing 1 there were two confirming targets on the 18" DIP position (Figures 10. and 11.). Another possible confirming target near the 18' DIP position is shown in Figure 12.



At Crossing 2 there was one possible confirming target on the 16" DIP position. (Figure 13).


At Crossing 3 there were no confirming sub-bottom targets.

At Crossings 4 and 5 there were no confirming sub-bottom targets. Some of the crossing locations had shallow 1 ft. deep trenches (Figure 14.) that tend to confirm the drawings and the magnetic anomaly strings.



E. CONCLUSIONS

Five iron pipelines were detected by the magnetometer. One possible utility was detected approximately 68 feet north of the 16" DIP that was not detected by the magnetometer. One possible remnant trench was located by the side-scan sonar approximately 50 feet south of the 16" DIP that was not detected by the magnetometer. One possible 18" DIP target on Sub-bottom aligns with the trench discovered by the side-scan sonar. No other utilities were detected on this survey. The following table outlines these detected utilities and possible detections.

 <p>MORGAN & EKLUND, INC. PROFESSIONAL SURVEY CONSULTANTS</p> <p>8745 US HIGHWAY #1 P.O. BOX 701420 WABASSO, FL 32970 PHONE: (772) 388-5364 FAX: (772) 388-3165</p> <p>LB #4298</p> <p>JOHN R. MORGAN II, PSM FLORIDA CERTIFICATION</p>	<p>1159 SW 1ST WAY DEERFIELD BEACH, FL 33441 PHONE: (954) 421-6882 FAX: (954) 421-0425</p> <p>JOHN R. MORGAN II, PLS PROFESSIONAL LAND SURVEYOR #3520 STATE OF FLORIDA</p>	<p>SURVEY REPORT</p> <p>BATHYMETRIC, MAGNETOMETER, SEISMIC AND SIDE-SCAN SONAR SURVEY INTRACOASTAL WATERWAY, CUT SL-2 THROUGH SL-5 ST. LUCIE COUNTY, FLORIDA FOR TAYLOR ENGINEERING, INC.</p>				<p>COMMISSION NO. 5624.00</p> <p>SCALE AS NOTED</p> <p>DATE 10/6/15</p>
	<p>DRAWN BY LFP</p>	<p>CHECKED BY JRM</p>	<p>FIELD BOOK PAGE NO.</p>	<p>SEE COVER</p>	<p>DATE OF SURVEY 10/2/15</p>	<p>SHEET 27 of 28</p>
	<p>CERTIFICATE OF SURVEYOR - I HEREBY CERTIFY THAT THE INFORMATION FORESHOWN HEREON IS IN ACCORDANCE WITH A RECENTLY FIELD SURVEY MADE UNDER MY DIRECTION, AND THAT IT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE STANDARDS OF PRACTICE AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 29-17, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.022, FLORIDA STATUTES.</p>					

Crossing #	Item	Comments
Crossing 1	18" DIP	110 to 120 feet north of the North Causeway Bridge 2 Confirming & 1 Poss. Confirming SBP targets
Crossing 2	16" DIP	690' south of Seaway Drive 1 Possible Comfirming SBP target
Crossing 3	20" DIP	700' south of Seaway Drive
Crossing 4	16" CIP	1025' south of Seaway Drive and 50' north of Cr. 4
Crossing 5	16" CIP	1075' south of Seaway Drive and 50' south of Cr. 3
Crossing 6	18" DIP	Magnetometer string found 68' north of DIP drawing - Poss. SBP target lines up with trench detected by side-scan sonar 50' south of drawing

Other known utilities that were not detected by this survey are listed here:

- E-1. 25Kv copper cable in an 8" DDPE conduit approximately 320' north of the center line of the North Causeway Bridge (Crossing 1).
- E-2 7.6Kv 3 conductor Paper Insulated Lead sheath Cable (PILC) 240' to 250' north of the North Causeway Bridge (Crossing 1).
- E-3. 2 – 8" PE ducts buried with the 16" DIP at Crossing 1, 130' to 150' north of the North Causeway Bridge (Crossing 1).
- E-4. 25Kv cable in 8" PVC 100' north of the North Causeway Bridge (Crossing 1).
- E-5. A telephone cable about 120' north of the North Causeway Bridge (Crossing 1).
- E-6. A telephone cable about 35' to 175' north of the Seaway Drive Bridge (Crossing 6).

The power and telephone cables do not have significant ferrous iron in their construction that would allow them to be detected by the magnetometer. Occasionally the magnetometer will detect a large amount of current flowing through a power cable but that is a variable factor and did not occur during this survey.

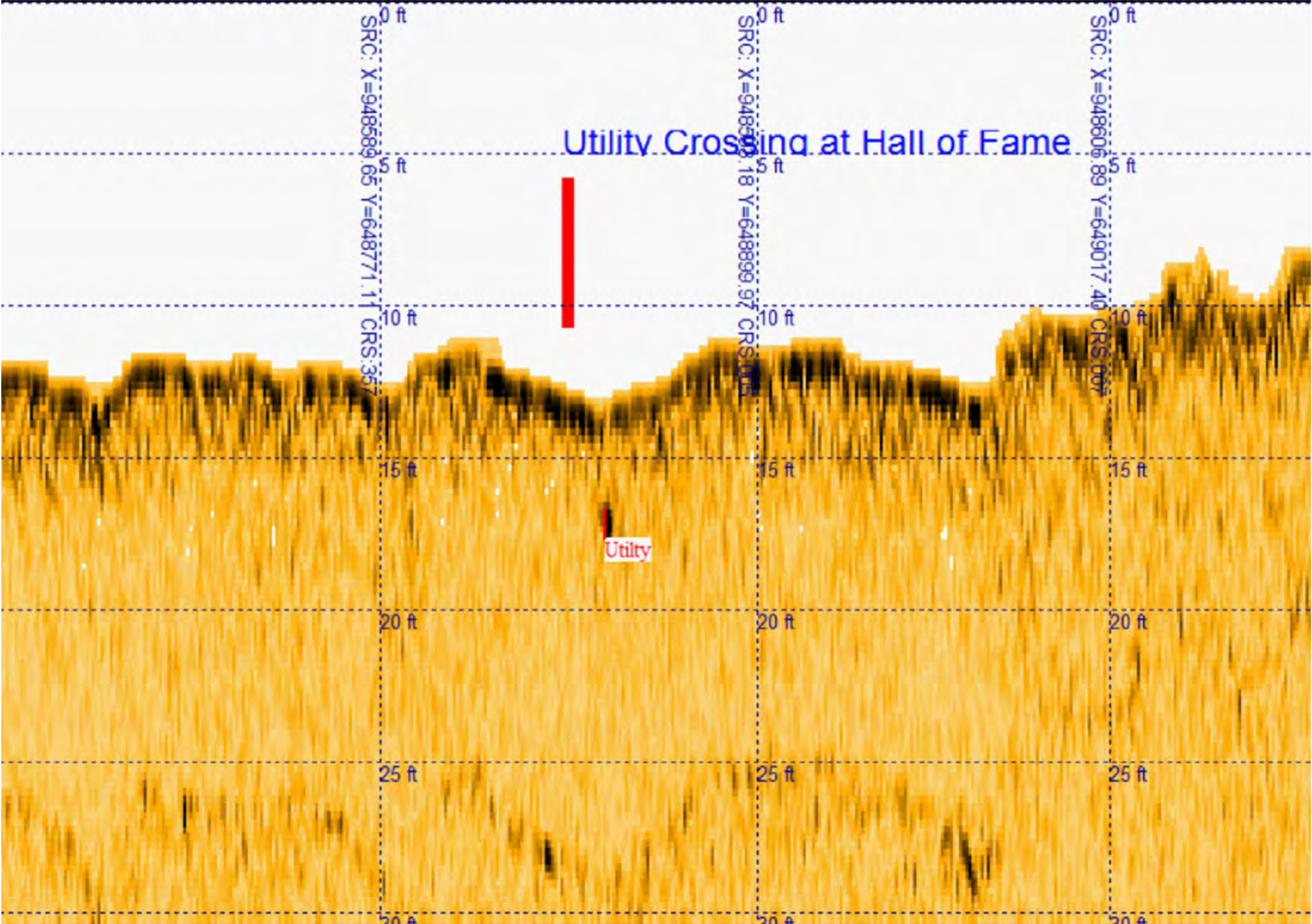
The power conduits were large enough to be detected by the sub-bottom profiler but all were made of material that either absorbs or is transparent to sound. The cables that were not in conduit had a diameter that was too small to be detected by the sub-bottom profiler.

The side-scan did not detect any utilities on the river bed indicating that they were all sufficiently buried to prevent detection by high frequency sonar.

It should be understood that the results of this survey are an interpretation of remote sensing data and as such cannot be relied upon as positive confirmation of the existence or nonexistence of submerged or buried utilities.

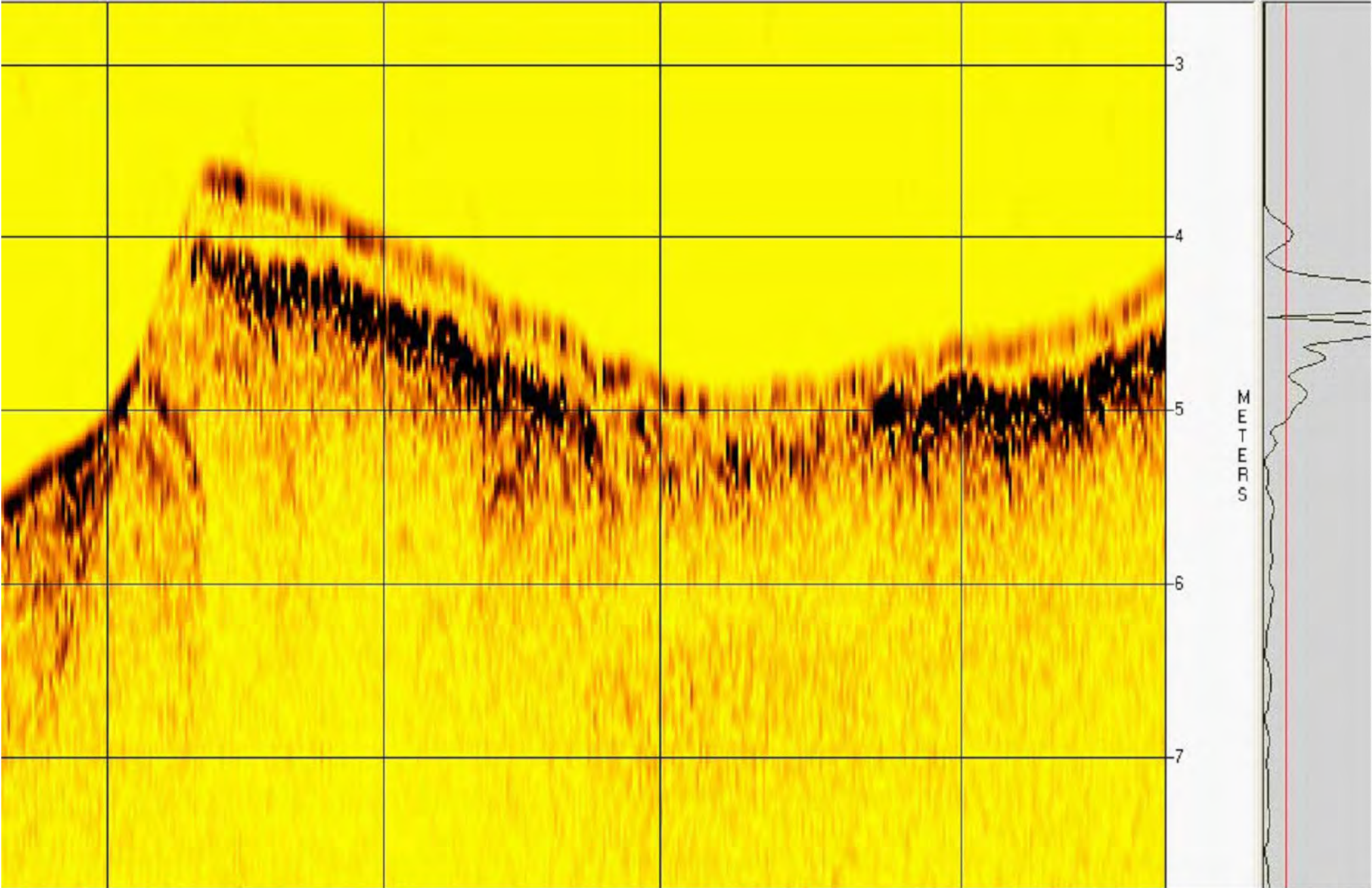
Some examples of sub-bottom targets from other project areas are shown below:

Example: X1sbp



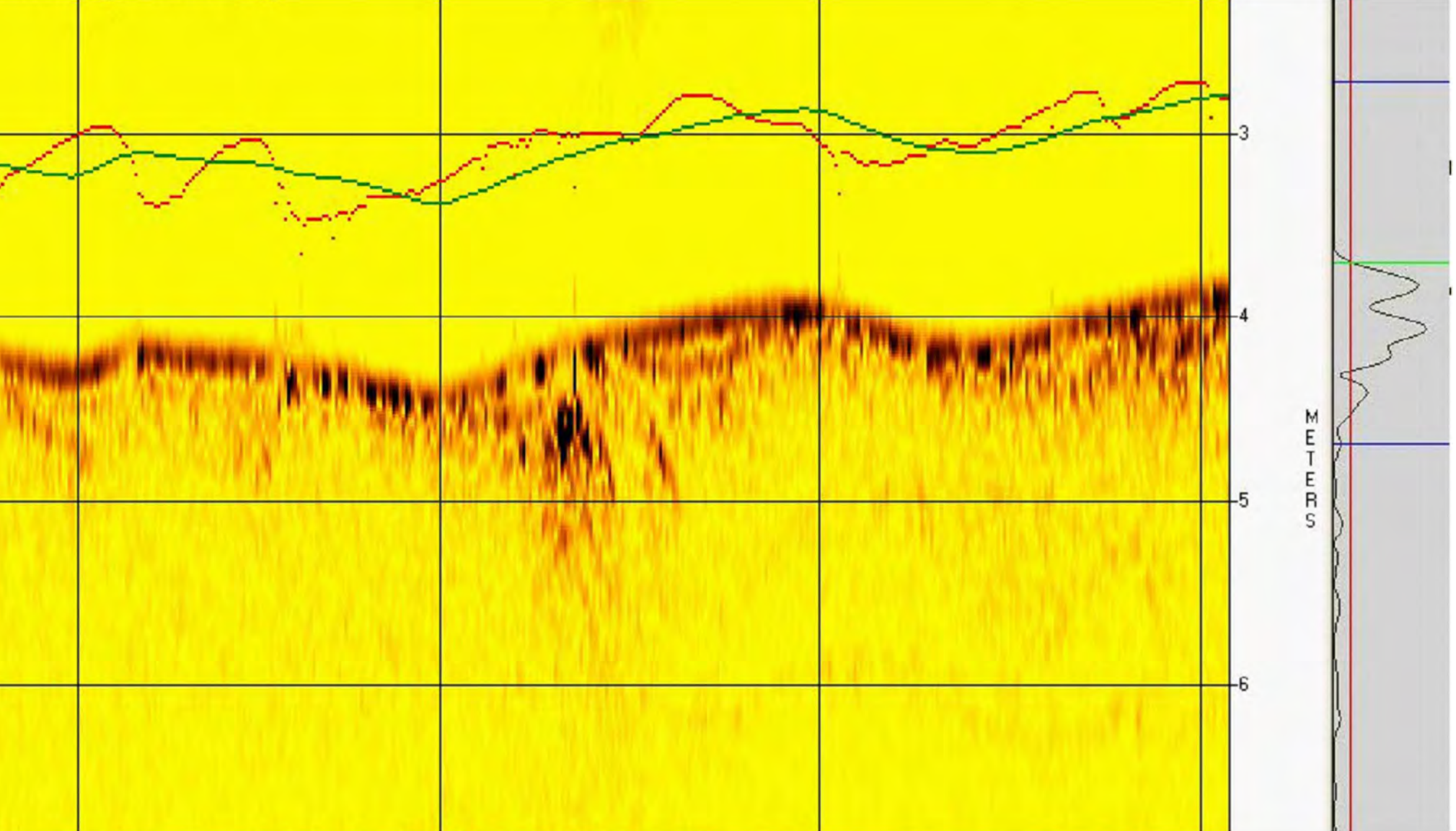
Utility located by SB-216s System in Florida Intracoastal Waterway

Example: X2sbp



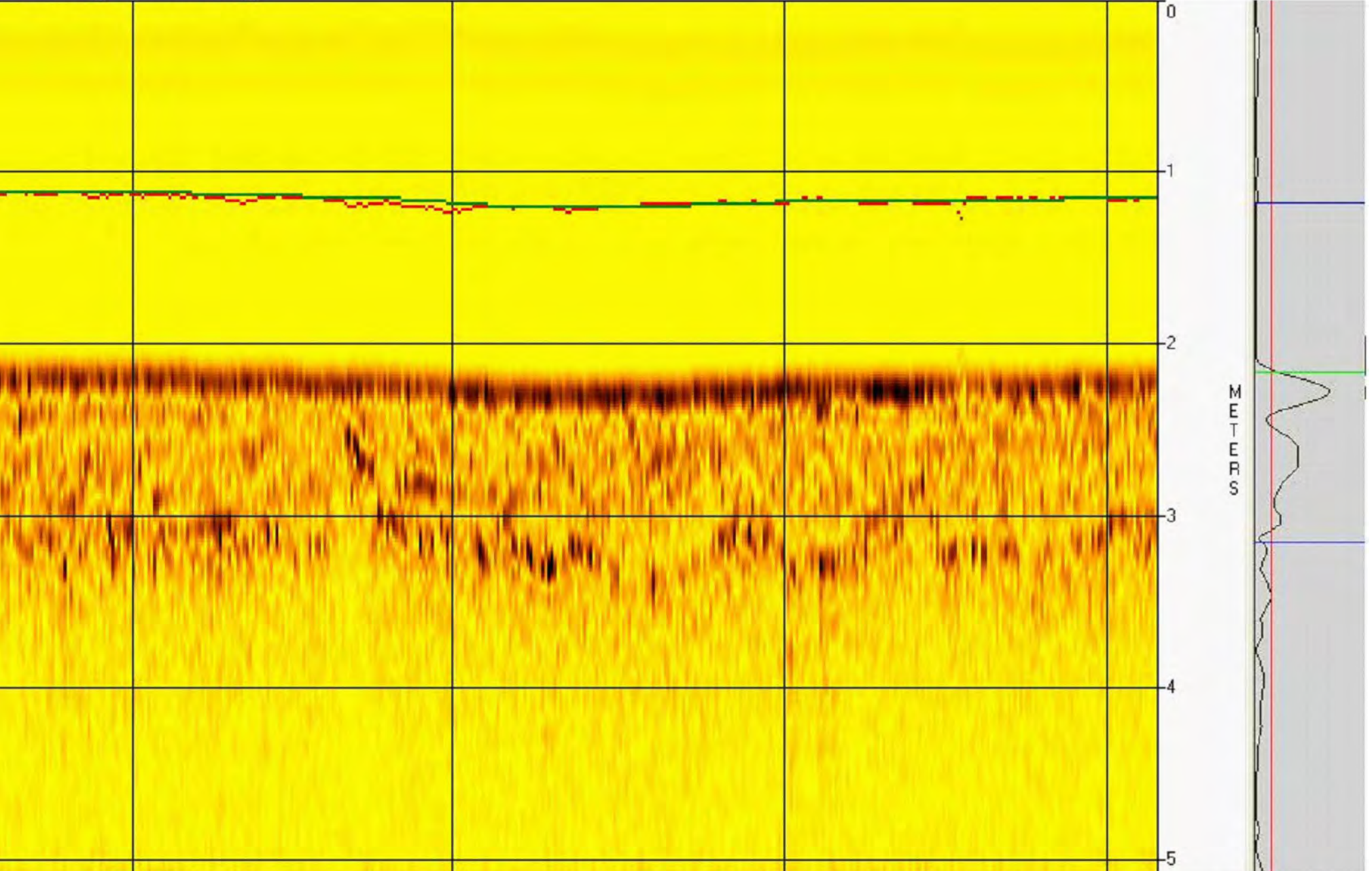
Example of apparent point source object at 5.3meters presenting partial hyperbolic pattern. Bottom is 4.4meters at that point thus object may be buried 0.9meters.

Example: X3sbp



Example of possible backfill pattern.

Example: X4sbp



Example of Sub-surface anomaly. Object at 2.5meters with bottom at 2.1meters thus top of object may be buried 0.4meters. Note masking of sub-bottom reflector by object.

Utility Crossing No. 1
Fort Pierce Utility Authority, Florida Power and Light, AT&T

DISCLAIMER

The information summarized below is for contractor information only. Per Part 1, SECTION 35 20 23 DREDGING AND DREDGED MATERIAL PLACEMENT, PARAGRAPH 1.3(J)(1), the contractor is solely responsible for investigating the location of all utility crossings via an independent and comprehensive pre-construction utility survey.

ATTACHMENTS

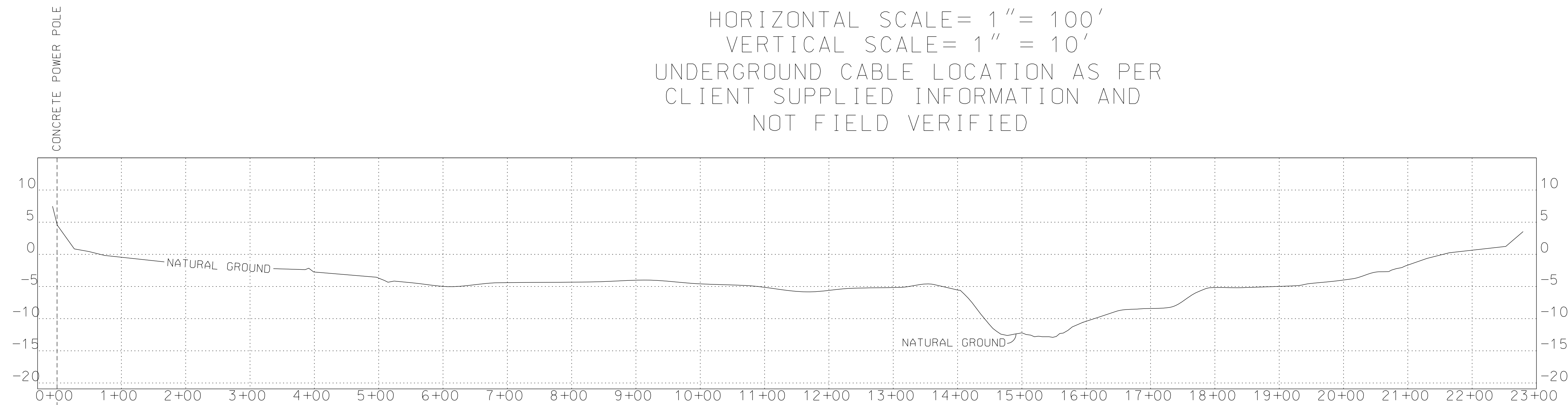
1. May 2002. As-Built Survey. Land and Sea Surveying. As-Built Survey for FP&L 25KV Copper Cable.
2. June 2003. Sovereign Submerged Lands Easement Modification for FP&L 25KV Copper Cable.
3. June 2003. Army Corps of Engineers Permit. FP&L 25KV Copper Cable
4. December 1983. Board of Trustees of the Internal Improvement Trust Fund Easement. FPL 7.6KV Cable.
5. June 2003. Consolidated Environmental Resource Permit and Intent to Grant Sovereign Submerged Lands Easement. FP&L 25KV Cable. Contains details on other abandoned cables.
6. April 2004. FDEP permit modification to allow two 8-inch conduits. FPL 25KV Cable. Has information on abandoned cable(s).
7. August 1980. Board of Trustees of the Internal Improvement Trust Fund Easement. Southern Bell Telegraph Company (AT&T).
8. August 1980. Record Drawing, Plans and Details. Fort Pierce Utilities Authority. Trench containing 18" water supply main and 32 4" AT&T conduits.

KNOWN UTILITY INFORMATION

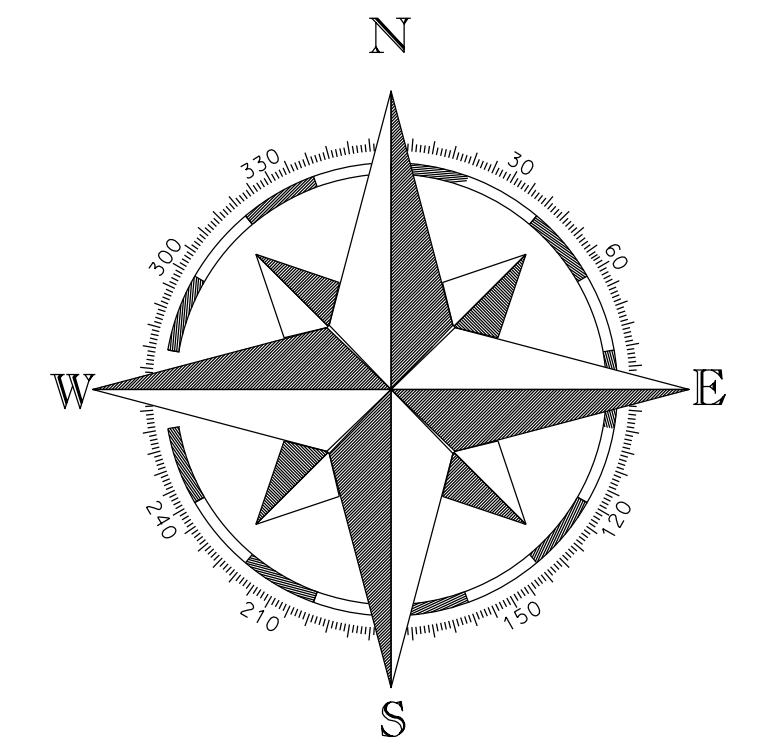
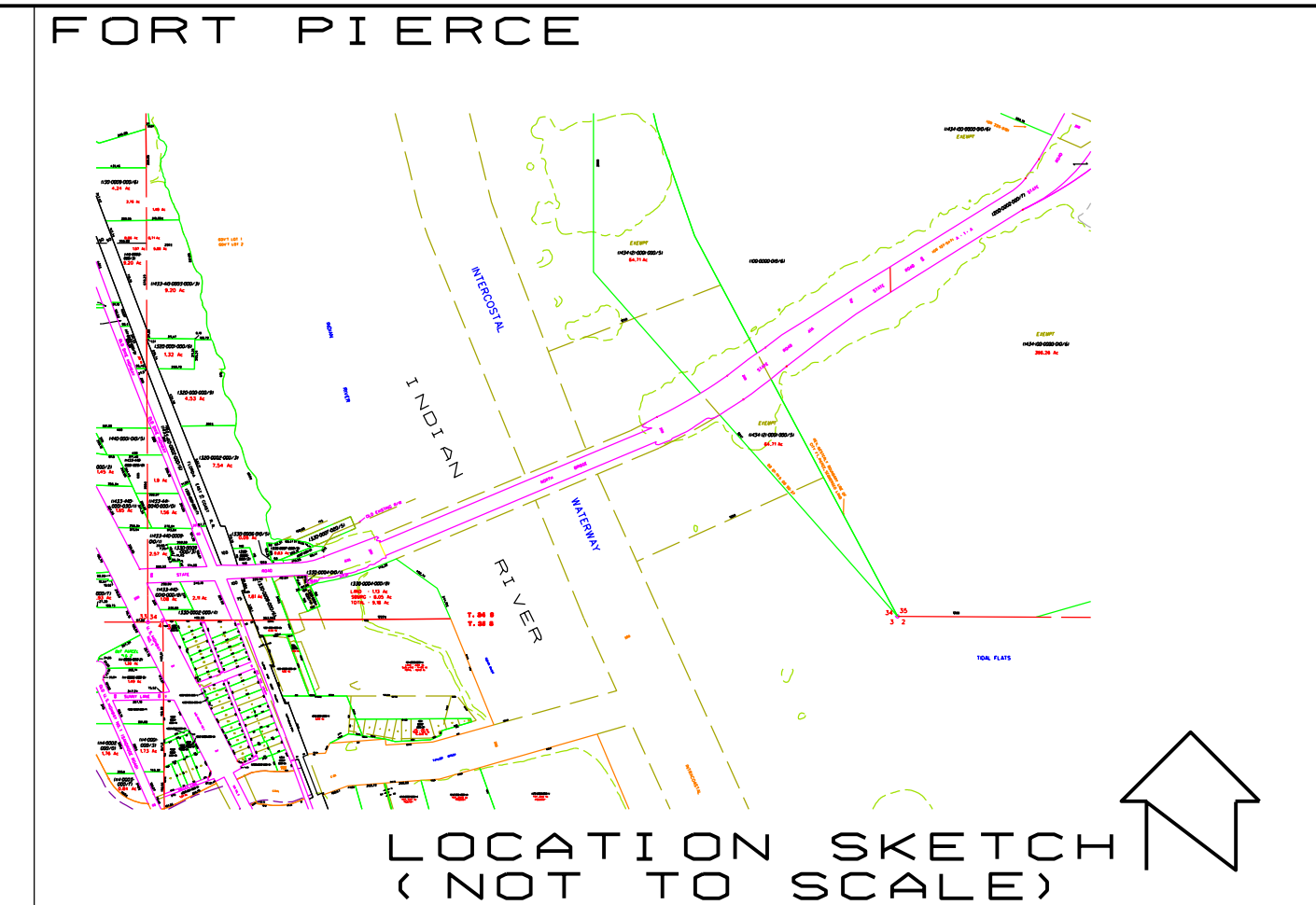
IDENTIFIED UTILITIES	ELEVATION AND DATUM	ATTACHMENT NO.
FP&L 25 KV Copper Cable	Less than -15 MLW	1, 2, 3, 5, 6
FP&L 7.6 KV 3 Conductor Paper Insulated Lead Cable	Unknown. Assumed trenched within 4' of channel bottom (Abandoned?)	4, 5, 6
FP&L 32 KV Power Cable	Unknown. Assumed trenched with 4' cover below river bottom. (Abandoned?)	3, 5, 6
FP&L 25 KV Power Cable	-32' No Datum Specified	3, 5, 6
Fort Pierce Utilities Authority. 18" DIP Water Main	-16 MLLW (?), -18 (MSL). Datum not specified	7, 8
AT&T 32 4" Conduits	-16 MLLW (?), -18 (MSL). Datum not specified	7, 8

AS-BUILT SURVEY

PROFILE VIEW
HORIZONTAL SCALE= 1" = 100'
VERTICAL SCALE= 1" = 10'
UNDERGROUND CABLE LOCATION AS PER
CLIENT SUPPLIED INFORMATION AND
NOT FIELD VERIFIED



LINE CHART		
L1	N41°19'43"E	96.85'
L2	N21°37'44"W	26.12'
L3	S73°50'46"W	50.05'
L4	N16°09'14"W	20.00'
L5	N73°50'46"E	58.73'
L6	N69°14'07"E	102.11'
L7	N62°12'06"E	138.63'
L8	S69°14'07"W	93.59'
L9	S21°37'44"E	30.11'
L10	S80°32'07"W	20.63'



100 0 100 200
SCALE 1" = 100 FEET

LEGAL:

A PARCEL OF SOVEREIGN SUBMERGED LANDS, LYING IN SECTION 34, TOWNSHIP 34 SOUTH, RANGE 40 EAST, ST. LUCIE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT A FOUND GPS MONUMENT NO. 01 A1A 94, HAVING COORDINATES OF NORTHING 1,140,878.8554 FEET AND EASTING 873,699.7474 FEET REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983/1990 ADJUSTMENT; PROCEED N41°19'43"E, A DISTANCE OF 96.85 FEET TO THE POINT OF BEGINNING ON THE SAFE UPLAND LINE OF THE WESTERLY BANK OF THE INDIAN RIVER, THENCE RUN N21°37'44"W, A DISTANCE OF 26.12 FEET, THENCE RUN S73°50'46"W, A DISTANCE OF 50.05 FEET, THENCE RUN N16°09'14"W, A DISTANCE OF 20.00 FEET, THENCE RUN N73°50'46"E, A DISTANCE OF 58.73 FEET, THENCE RUN N69°14'07"E, A DISTANCE OF 102.11 FEET, THENCE RUN N62°12'06"E, A DISTANCE OF 138.63 FEET, THENCE RUN N68°17'34"E, A DISTANCE OF 125.14 FEET, THENCE RUN N66°09'15"E, A DISTANCE OF 271.72 FEET, THENCE RUN N62°57'45"E, A DISTANCE OF 273.59 FEET, THENCE RUN N63°15'47"E, A DISTANCE OF 342.22 FEET, THENCE RUN N70°57'19"E, THENCE RUN 121.46 FEET, THENCE RUN N48°55'53"E, A DISTANCE OF 131.73 FEET, THENCE RUN N75°49'59"E, A DISTANCE OF 160.98 FEET, THENCE RUN N76°27'46"E, A DISTANCE OF 189.58 FEET, THENCE RUN N72°10'51"E, A DISTANCE OF 120.31 FEET, THENCE RUN N87°01'36"E, A DISTANCE OF 82.55 FEET, THENCE RUN N84°45'10"E, A DISTANCE OF 89.03 FEET, THENCE RUN S79°04'32"E, A DISTANCE OF 8.90 FEET, TO A POINT ON THE SAFE UPLAND LINE OF THE EASTERLY BANK OF THE INDIAN RIVER, THENCE RUN S06°23'45"E, A DISTANCE OF 20.95 FEET, THENCE RUN N79°04'32"W, A DISTANCE OF 12.29 FEET, THENCE RUN S84°45'10"W, A DISTANCE OF 86.58 FEET, THENCE RUN S87°01'36"W, A DISTANCE OF 80.34 FEET, THENCE RUN S72°10'51"W, A DISTANCE OF 118.45 FEET, THENCE RUN S76°27'46"W, A DISTANCE OF 190.21 FEET, THENCE RUN S75°49'59"W, A DISTANCE OF 156.08 FEET, THENCE RUN S48°55'53"W, A DISTANCE OF 130.84 FEET, THENCE RUN S70°57'19"W, A DISTANCE OF 124.01 FEET, THENCE RUN S63°15'47"W, A DISTANCE OF 340.83 FEET, THENCE RUN S62°57'45"W, A DISTANCE OF 274.09 FEET, THENCE RUN S66°09'15"W, A DISTANCE OF 272.65 FEET, THENCE RUN S68°17'34"W, A DISTANCE OF 124.45 FEET, THENCE RUN S62°12'06"W, A DISTANCE OF 138.79 FEET, THENCE RUN S69°14'07"W, A DISTANCE OF 93.59 FEET, THENCE RUN S21°37'44"E, A DISTANCE OF 30.11 FEET, THENCE RUN S82°32'07"W, A DISTANCE OF 20.63 FEET THE POINT OF BEGINNING. CONTAINING 44858.08 SQUARE FEET OR 1.03 ACRES, MORE OR LESS.

LEGEND:

- WPP = WOOD POWER POLE
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P.O.B. = POINT OF BEGINNING
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I.C.W.W. = INTRACOASTAL WATERWAY
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☆ POWER/LIGHT UTILITY POLE
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⊙ WATER VALVE
⊙ FPL RISER
⊙ FIRE HYDRANT
⊙ TELEPHONE RISER
⊙ WATER METER
⊙ SOUTHERN BELL MANHOLE
FPL FLORIDA POWER & LIGHT

NOTES

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- HORIZONTAL CONTROL = NAD '83, VERTICAL CONTROL = NGVD '29.

REVISIONS	
DATE:	DESCRIPTIONS

LAND-SEA SURVEYING
CONCEPTS, INC.

LAND BUSINESS #6447
PHONE: 321-454-6310
FAX: 321-454-6998
E-MAIL: TC5170@AOL.COM
1605 CHASE HAMMOCK RD.
MERRITT ISLAND, FL 32953

WWW.LAND-AND-SEA-SURVEYING.COM

CERTIFICATION

I, TIM R. CARLILE, FLORIDA REGISTERED SURVEYOR NUMBER 5170, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED UNDER MY DIRECTION AND THAT IT MEETS THE MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING IN THE STATE OF FLORIDA (CHAPTER 61G17-6) FOR THE TYPE OF SURVEY SHOWN HEREON AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Tim R. Carlile 5-15-02
TIM R. CARLILE, P.L.S. DATE
FLORIDA P.L.S. 5170
(NOT VALID UNLESS SEALED)

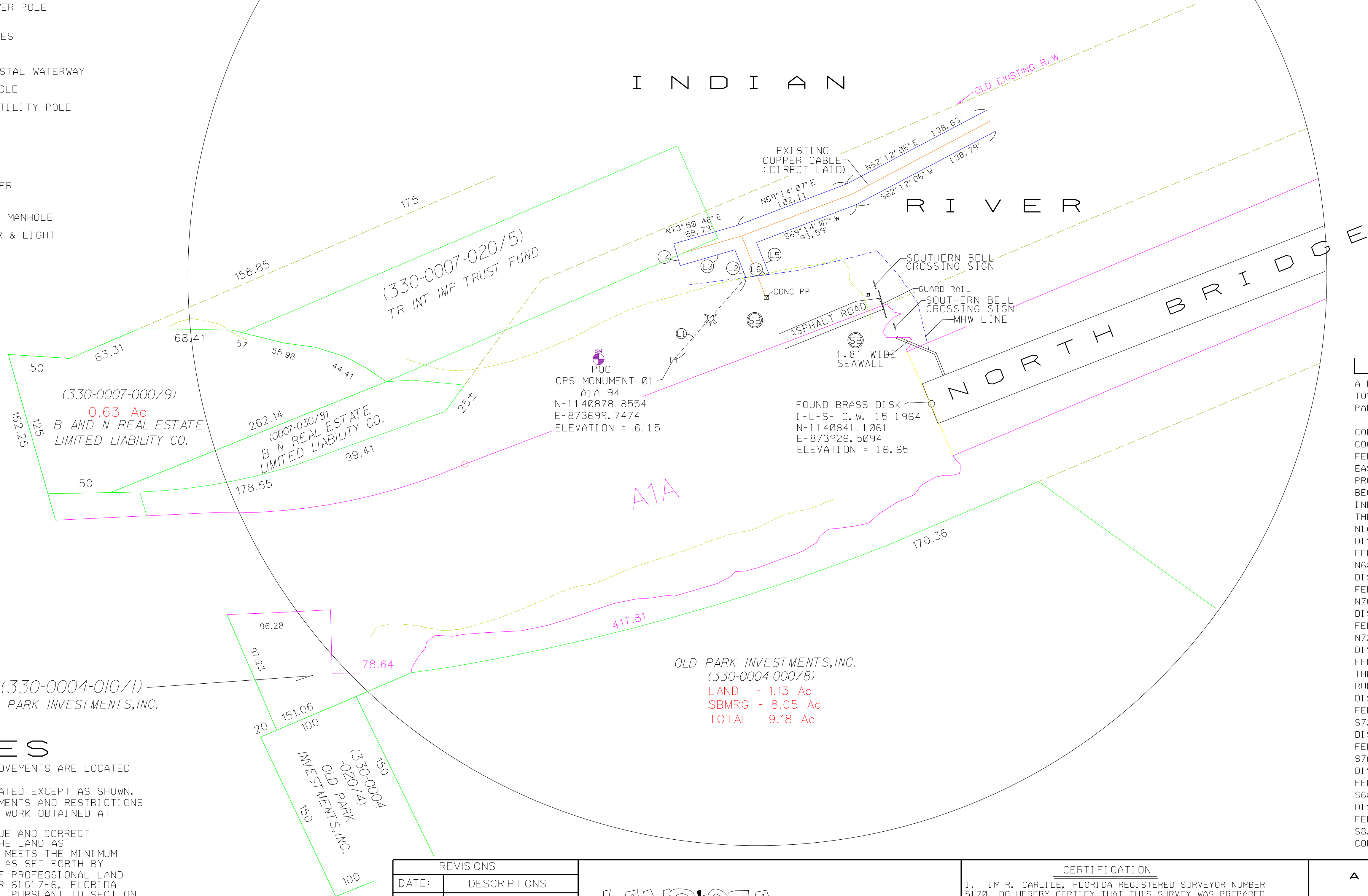
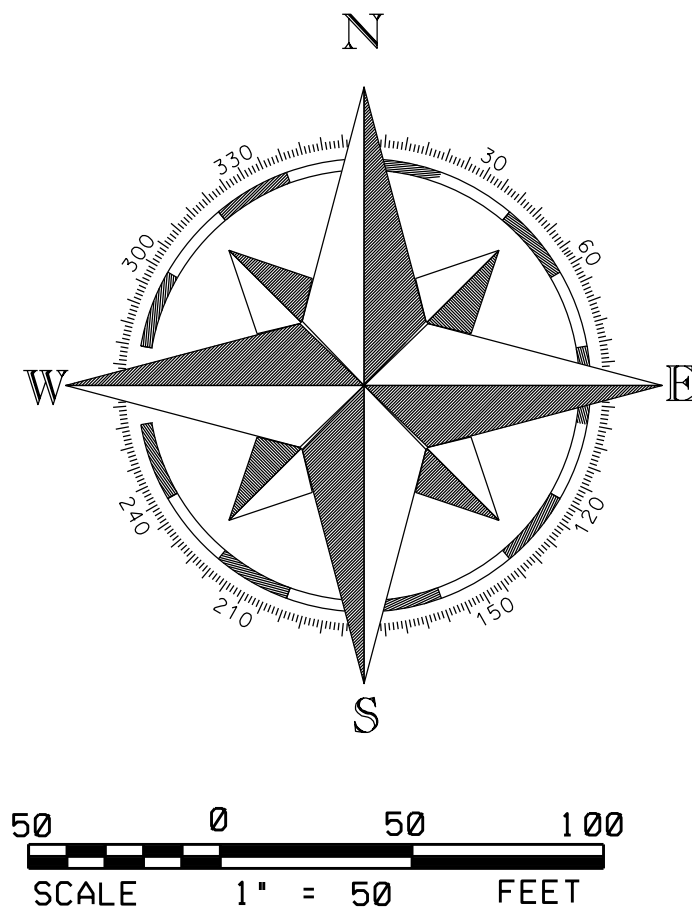
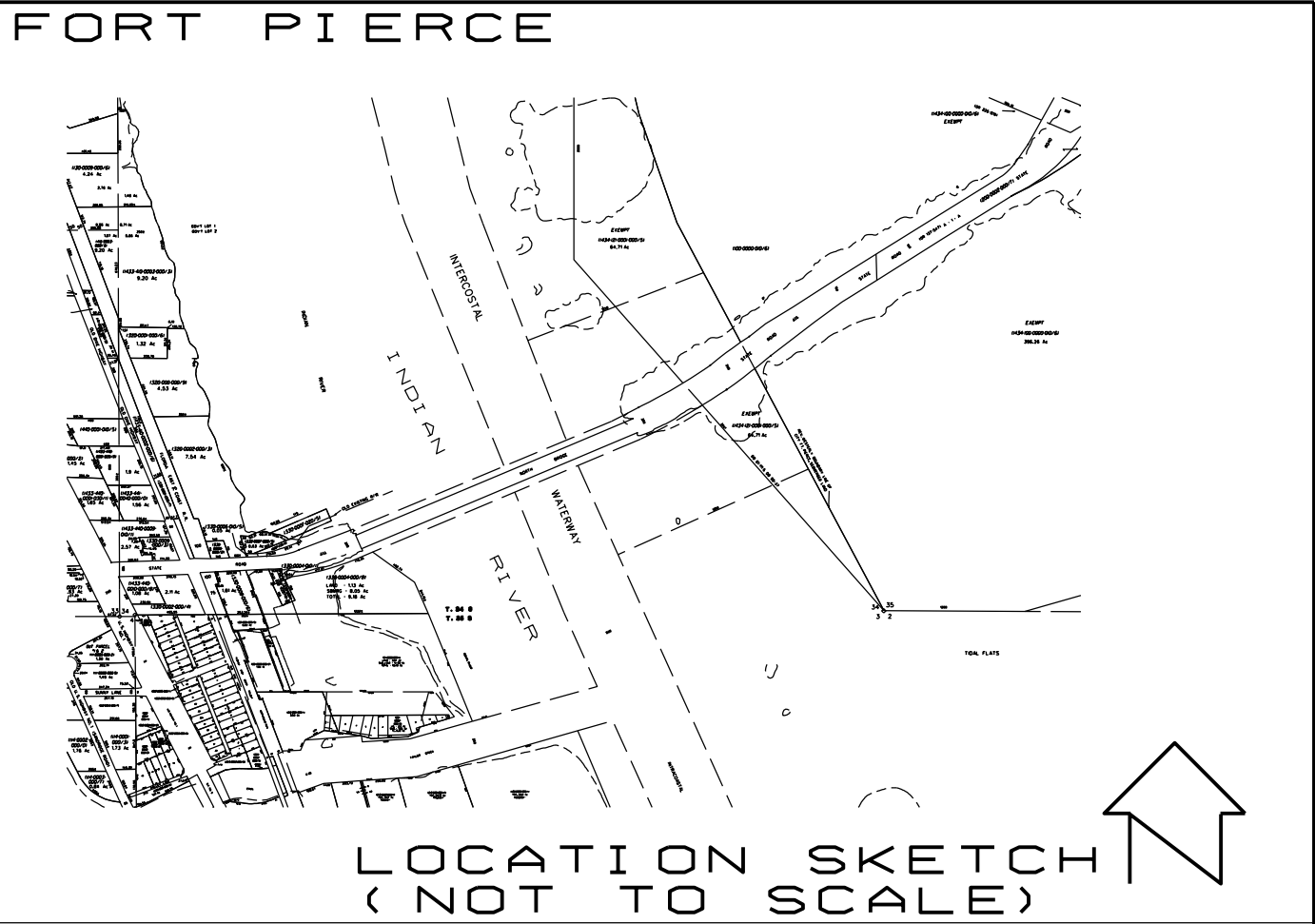
A SPECIFIC PURPOSE SURVEY HYDROGRAPHIC SURVEY FOR A SUBMERGED LANDS EASEMENT FOR FLORIDA POWER AND LIGHT SITE: FORT PIERCE CABLE CROSSING				DRAWING NO 2002-089
ST. LUCIE COUNTY, FLORIDA				SCALE 1" = 100'
DRAWN BY: SK				DATE: 5-15-02
CHECKED BY: TC				SHEET: 1 OF 3
FIELD BOOK: PAGE NO:				DATE OF SURVEY: 5-02

AS-BUILT
SURVEY

LINE CHART		
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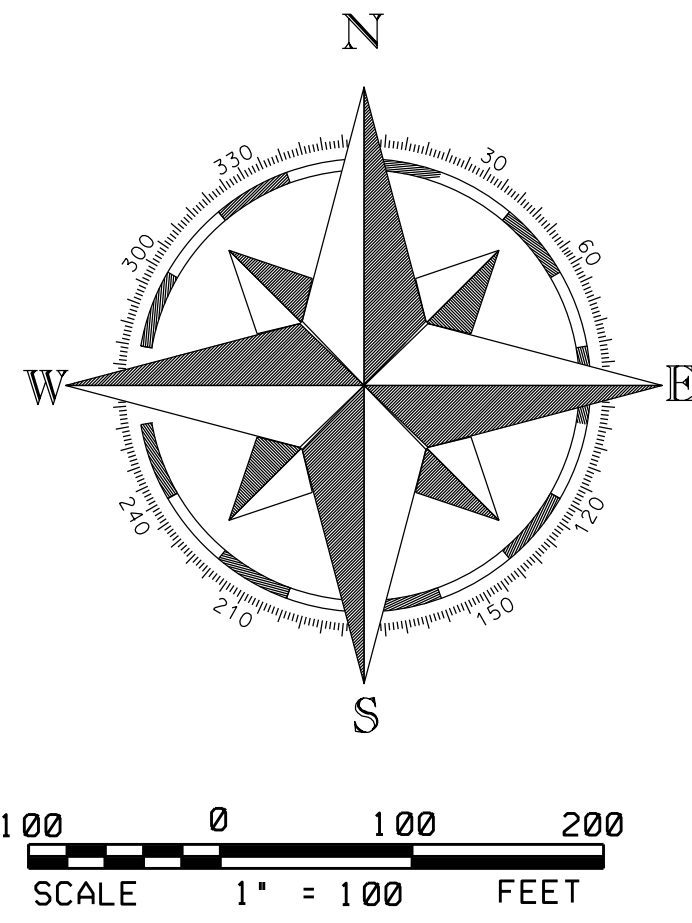
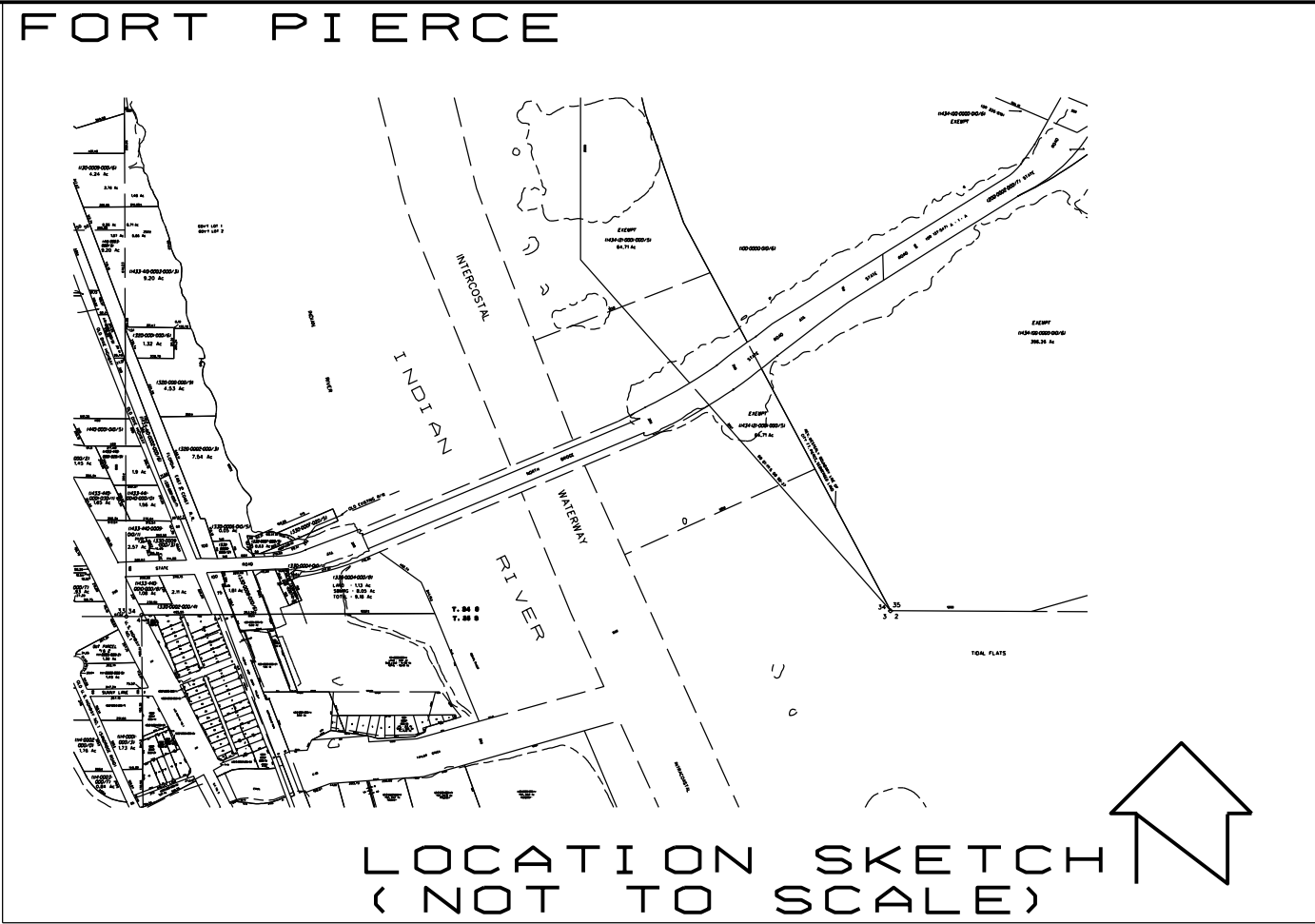
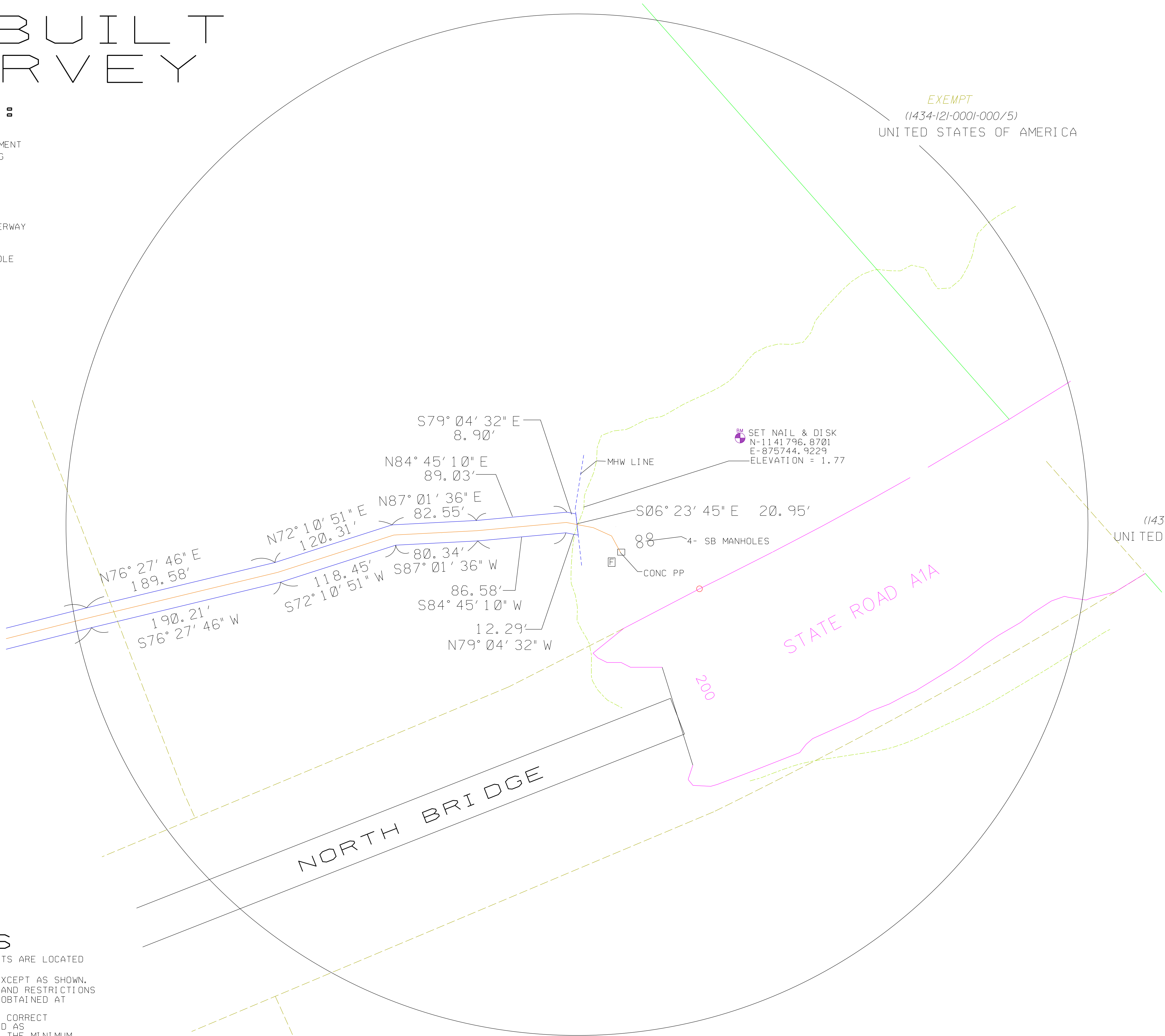
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AS-BUILT
SURVEY

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LEGAL:

A PARCEL OF SOVEREIGN SUBMERGED LANDS, LYING IN SECTION 34, TOWNSHIP 34 SOUTH, RANGE 40 EAST, ST. LUCIE COUNTY, FLORIDA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCE AT A FOUND GPS MONUMENT NO. 01 A1A 94, HAVING COORDINATES OF NORTHING 1,140,878.8554 FEET AND EASTING 873,699.7474 FEET REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE, NORTH AMERICAN DATUM OF 1983/1990 ADJUSTMENT; PROCEED N41°19'43"E, A DISTANCE OF 96.85 FEET TO THE POINT OF BEGINNING ON THE SAFE UPLAND LINE OF THE WESTERLY BANK OF THE INDIAN RIVER, THENCE RUN N21°37'44"W, A DISTANCE OF 26.12 FEET, THENCE RUN S73°50'46"W, A DISTANCE OF 50.05 FEET, THENCE RUN N16°09'14"W, A DISTANCE OF 20.00 FEET, THENCE RUN N73°50'46"E, A DISTANCE OF 58.73 FEET, THENCE RUN N69°14'07"E, A DISTANCE OF 102.11 FEET, THENCE RUN N62°12'06"E, A DISTANCE OF 138.63 FEET, THENCE RUN N68°17'34"E, A DISTANCE OF 125.14 FEET, THENCE RUN N66°09'15"E, A DISTANCE OF 271.72 FEET, THENCE RUN N62°57'45"E, A DISTANCE OF 273.59 FEET, THENCE RUN N63°15'47"E, A DISTANCE OF 342.22 FEET, THENCE RUN N70°57'19"E, THENCE RUN 121.46 FEET, THENCE RUN N48°55'53"E, A DISTANCE OF 131.73 FEET, THENCE RUN N75°49'59"E, A DISTANCE OF 160.98 FEET, THENCE RUN N76°27'46"E, A DISTANCE OF 189.58 FEET, THENCE RUN N72°10'51"E, A DISTANCE OF 120.31 FEET, THENCE RUN N87°01'36"E, A DISTANCE OF 82.55 FEET, THENCE RUN N84°45'10"E, A DISTANCE OF 89.03 FEET, THENCE RUN S79°04'32"E, A DISTANCE OF 8.90 FEET, TO A POINT ON THE SAFE UPLAND LINE OF THE EASTERLY BANK OF THE INDIAN RIVER, THENCE RUN S06°23'45"E, A DISTANCE OF 20.95 FEET, THENCE RUN N79°04'32"W, A DISTANCE OF 12.29 FEET, THENCE RUN S84°45'10"W, A DISTANCE OF 86.58 FEET, THENCE RUN S87°01'36"W, A DISTANCE OF 80.34 FEET, THENCE RUN S72°10'51"W, A DISTANCE OF 118.45 FEET, THENCE RUN S76°27'46"W, A DISTANCE OF 190.21 FEET, THENCE RUN S75°49'59"W, A DISTANCE OF 156.08 FEET, THENCE RUN S48°55'53"W, A DISTANCE OF 130.84 FEET, THENCE RUN S70°57'19"W, A DISTANCE OF 124.01 FEET, THENCE RUN S63°15'47"W, A DISTANCE OF 340.83 FEET, THENCE RUN S62°57'45"W, A DISTANCE OF 274.09 FEET, THENCE RUN S66°09'15"W, A DISTANCE OF 272.65 FEET, THENCE RUN S68°17'34"W, A DISTANCE OF 124.45 FEET, THENCE RUN S62°12'06"W, A DISTANCE OF 138.79 FEET, THENCE RUN S69°14'07"W, A DISTANCE OF 93.59 FEET, THENCE RUN S21°37'44"E, A DISTANCE OF 30.11 FEET, THENCE RUN S82°32'07"W, A DISTANCE OF 20.63 FEET THE POINT OF BEGINNING. CONTAINING 44858.08 SQUARE FEET OR 1.03 ACRES, MORE OR LESS.

NOTES

1. NO UNDERGROUND IMPROVEMENTS ARE LOCATED EXCEPT AS SHOWN.
2. NO IMPROVEMENTS LOCATED EXCEPT AS SHOWN.
3. SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD, NO TITLE WORK OBTAINED AT TIME OF SURVEY.
4. THIS SURVEY IS A TRUE AND CORRECT REPRESENTATION OF THE LAND AS SHOWN AND NOTED AND MEETS THE MINIMUM TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.
5. FIELD WORK WAS COMPLETED ON 5-12-02.
6. NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
7. HORIZONTAL CONTROL = NAD '83.
VERTICAL CONTROL = NGVD '29.

REVISIONS	
DATE:	DESCRIPTIONS

LAND-SEA
SURVEYING

CONCEPTS, INC.

LAND BUSINESS #6447
PHONE: 321-454-6310
FAX: 321-454-6998
E-MAIL: TC5170@AOL.COM
1605 CHASE HAMMOCK RD.
MERRITT ISLAND, FL 32953

WWW.LAND-AND-SEA-SURVEYING.COM

CERTIFICATION

I, TIM R. CARLILE, FLORIDA REGISTERED SURVEYOR NUMBER 5170, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED UNDER MY DIRECTION AND THAT IT MEETS THE MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING IN THE STATE OF FLORIDA (CHAPTER 61G17-6) FOR THE TYPE OF SURVEY SHOWN HEREON AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

5-15-02

TIM R. CARLILE P.L.S.

FLORIDA P.L.S. 5170

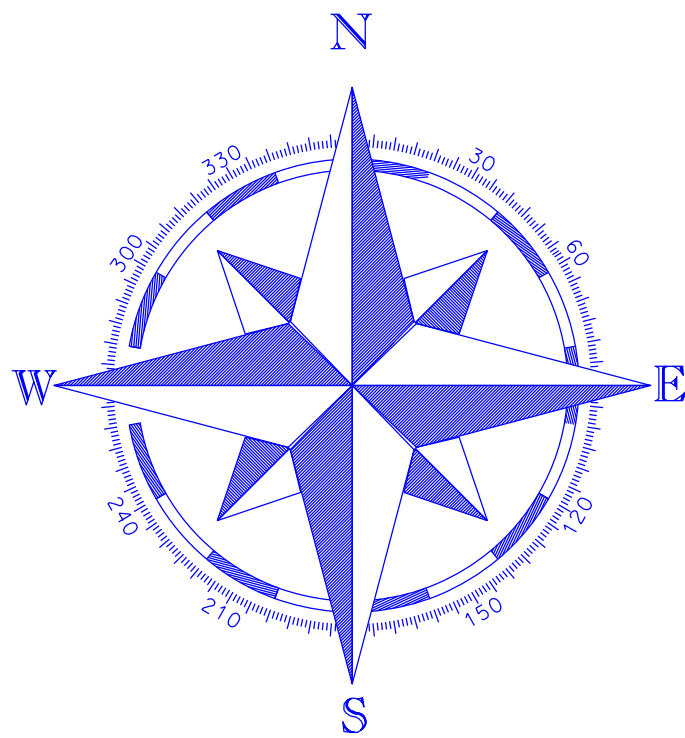
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DATE

A SPECIFIC PURPOSE SURVEY HYDROGRAPHIC SURVEY FOR A SUBMERGED LANDS EASEMENT FOR FLORIDA POWER AND LIGHT SITE: FORT PIERCE CABLE CROSSING				DRAWING NO 2002-089
ST. LUCIE COUNTY, FLORIDA				SCALE 1" = 50'
DRAWN BY: SK	CHECKED BY: TC	FIELD BOOK: PAGE NO:	DATE OF SURVEY: 5-02	DATE: 5-15-02
				SHEET: 3 OF 3

NOTES

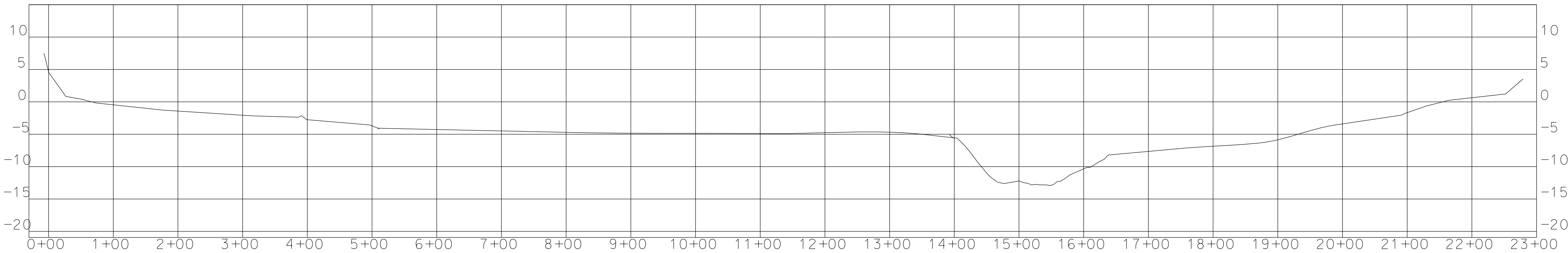
1. NO UNDERGROUND IMPROVEMENTS ARE LOCATED EXCEPT AS SHOWN.
2. NO IMPROVEMENTS LOCATED EXCEPT AS SHOWN.
3. SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD. NO TITLE WORK OBTAINED AT TIME OF SURVEY.
4. THIS SURVEY IS A TRUE AND CORRECT REPRESENTATION OF THE LAND AS SHOWN AND NOTED AND MEETS THE MINIMUM TECHNICAL STANDARDS AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL LAND SURVEYORS IN CHAPTER 61G17-6, FLORIDA ADMINISTRATIVE CODE, PURSUANT TO SECTION 472.027, FLORIDA STATUTES.
5. FIELD WORK WAS COMPLETED ON 5-12-02.
6. NOT VALID WITHOUT THE SIGNATURE AND THE ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER.
7. HORIZONTAL CONTROL = NAD '83.
VERTICAL CONTROL = NGVD '29.



LEGEND:

- WPP = WOOD POWER POLE
P.O.C. = POINT OF COMMENCEMENT
P.O.B. = POINT OF BEGINNING
CPP = CONCRETE POWER POLE
R/W = RIGHT-OF-WAY
O/H = OVERHEAD WIRES
— = GUY WIRE
I.C.W.W. INTRACOASTAL WATERWAY
⊙ SANITARY MANHOLE
☆ POWER/LIGHT UTILITY POLE
⊙ STORM MANHOLE
⊗ WATER VALVE
⊙ FPL MANHOLE
⊗ FIRE HYDRANT
☐ TELEPHONE RISER
⊞ WATER METER

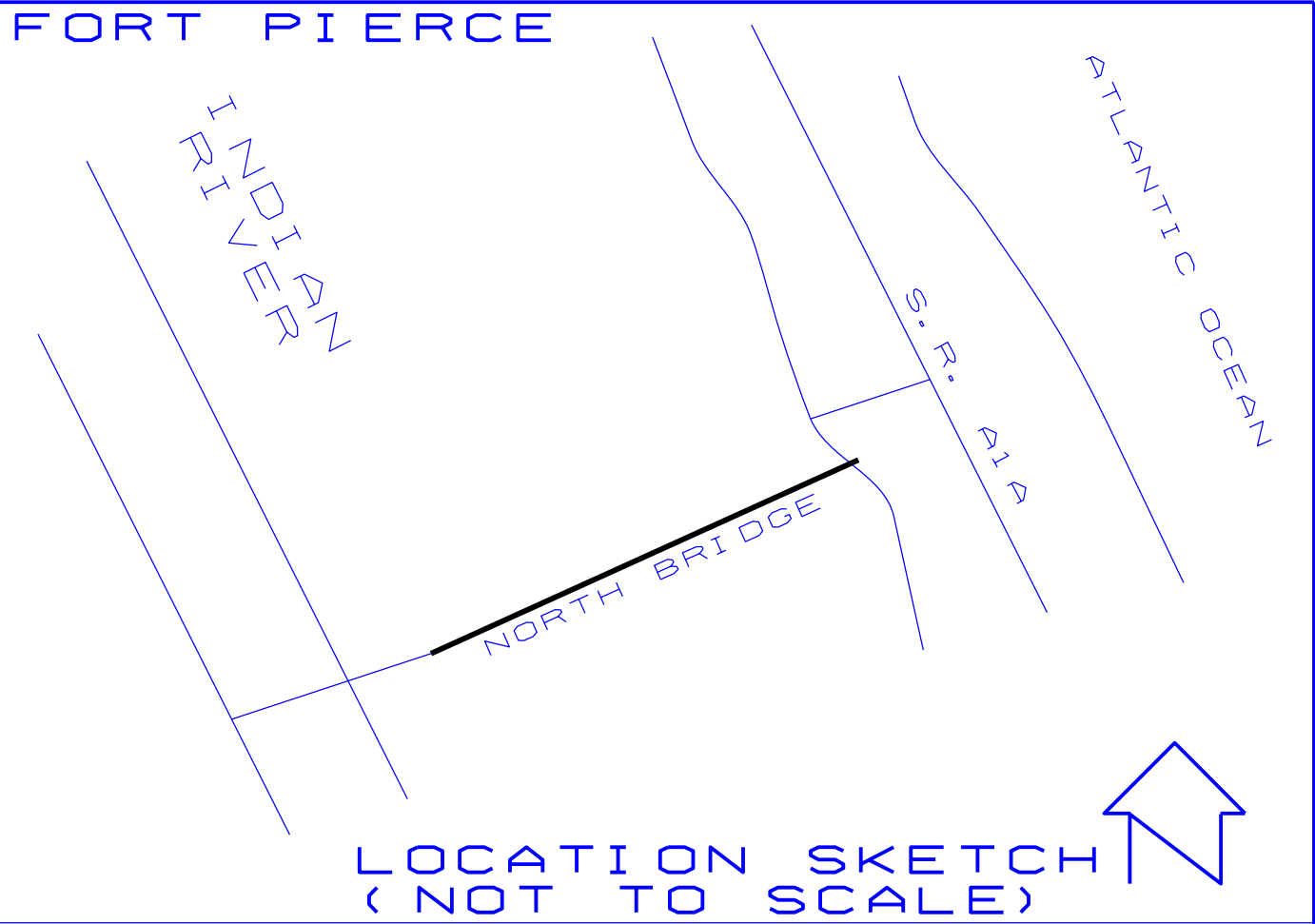
CONCRETE POWER POLE



PROFILE VIEW

HORIZONTAL SCALE= 1"= 100'
VERTICAL SCALE= 1" = 10'

UNDERGROUND CABLE LOCATION AS PER
CLIENT SUPPLIED INFORMATION AND
NOT FIELD VERIFIED



PROFILE VIEW

REVISIONS	
DATE:	DESCRIPTIONS

LAND-AND-SEA
SURVEYING

CONCEPTS, INC.

LAND BUSINESS #6447
PHONE: 321-454-6310
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1605 CHASE HAMMOCK RD.
MERRITT ISLAND, FL 32953

WWW.LAND-AND-SEA-SURVEYING.COM

CERTIFICATION

I, TIM R. CARLILE, FLORIDA REGISTERED SURVEYOR NUMBER 5170, DO HEREBY CERTIFY THAT THIS SURVEY WAS PREPARED UNDER MY DIRECTION AND THAT IT MEETS THE MINIMUM TECHNICAL STANDARDS FOR LAND SURVEYING IN THE STATE OF FLORIDA (CHAPTER 61G17-6) FOR THE TYPE OF SURVEY SHOWN HEREON AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

5-15-02

TIM R. CARLILE P.L.S.

FLORIDA P.L.S. 5170

(NOT VALID UNLESS SEALED)

DATE

A SPECIFIC PURPOSE SURVEY
HYDROGRAPHIC SURVEY
FOR A SUBMERGED LANDS EASEMENT
FOR FLORIDA POWER AND LIGHT
SITE: FORT PIERCE CABLE CROSSING
ST. LUCIE COUNTY, FLORIDA

DRAWN BY:
SK

CHECKED BY:
TC

FIELD BOOK:
PAGE NO:

DATE OF SURVEY:
5-02

DRAWING NO
2002-089

SCALE
1" = 100'

DATE:
5-15-02

SHEET:
4 OF 4

This Instrument Prepared By: JOANNE HOLMAN, CLERK OF THE CIRCUIT COURT - SAINT LUCIE COUNTY
Jeff Gentry File Number: 2281288 OR BOOK 1811 PAGE 2229
Recurring Revenue Section Recorded: 10/02/03 10:01
Bureau of Public Land Administration
3900 Commonwealth Boulevard * Doc Assump: \$ 0.00
Mail Station No. 125 * Doc Tax : \$ 0.70
Tallahassee, Florida 32399 * Int Tax : \$ 0.00

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND
OF THE STATE OF FLORIDA

SOVEREIGN SUBMERGED LANDS EASEMENT
MODIFICATION TO CHANGE FROM CENTERLINE TO 26-FOOT EASEMENT

NO. 26395
BOT FILE NO. 560629128
PA NO. 56-0204275-001

THIS EASEMENT is hereby granted by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, hereinafter referred to as the Grantor.

WITNESSETH: That for the faithful and timely performance of and compliance with the terms and conditions stated herein, the Grantor does hereby grant to Florida Power & Light Company, a Florida corporation, hereinafter referred to as the Grantee, a nonexclusive easement on, under and across the sovereign lands, if any, contained in the following legal description:

A parcel of submerged land in Section 34,
Township 34 South, Range 40 East, in Indian River,
St. Lucie County, as is more particularly described
and shown on Attachment A, dated June 15, 2002.

TO HAVE THE USE OF the hereinabove described premises from June 11, 2003, the effective date of this modified easement. The terms and conditions on and for which this easement is granted are as follows:

1. USE OF PROPERTY: The above described parcel of land shall be used solely for an existing subaqueous feeder cable. All of the foregoing subject to the remaining conditions of this Easement.
2. EASEMENT CONSIDERATION: In the event the Grantor amends its rules related to fees and the amended rules provide the Grantee will be charged a fee or an increased fee for this activity, the Grantee agrees to pay all charges required by such amended rules within 90 days of the date the amended rules become effective or by a date provided by an invoice from the Department, whichever is later. All fees charged under this provision shall be prospective in nature; i.e. they shall begin to accrue on the date that the amended rules become effective.
3. WARRANTY OF TITLE/GUARANTEE OF SUITABILITY OF USE OF LAND: Grantor neither warrants title to the lands described herein nor guarantees the suitability of any of the lands for any particular use.
4. RIGHTS GRANTED: The rights hereby granted shall be subject to any and all prior rights of the United States and any and all prior grants by the Grantor in and to the submerged lands situated within the limits of this easement.
5. DAMAGE TO EASEMENT PROPERTY AND INTERFERENCE WITH PUBLIC AND PRIVATE RIGHTS: Grantee shall not damage the easement lands or unduly interfere with public or private rights therein.
6. GRANTOR'S RIGHT TO GRANT COMPATIBLE USES OF THE EASEMENT PROPERTY: This easement is nonexclusive, and the Grantor, or its duly authorized agent, shall retain the right to enter the property or to engage in management activities not inconsistent with the use herein provided for and shall retain the right to grant compatible uses of the property to third parties during the term of this easement.
7. RIGHT TO INSPECT: Grantor, or its duly authorized agent, shall have the right at any time to inspect the works and operations of the Grantee in any matter pertaining to this easement.

[43]

(E1)
Ret: FPL
P.O. Box 8288
St. Landersdale, FL 33370-8288

8. INDEMNIFICATION/INVESTIGATION OF ALL CLAIMS: The Grantee shall investigate all claims of every nature at its expense, and shall indemnify, defend and save and hold harmless the Grantor and the State of Florida from all claims, actions, lawsuits and demands arising out of this easement, which do not arise out of or result from the negligent acts of omissions of Grantor.

9. VENUE: Grantee waives venue as to any litigation arising from matters relating to this easement and any such litigation between Grantor and Grantee shall be initiated and maintained only in Leon County, Florida.

10. ASSIGNMENT OF EASEMENT: This easement shall not be assigned or otherwise transferred without prior written consent of the Grantor or its duly authorized agent and which consent shall not be unreasonably withheld. Any assignment or other transfer without prior written consent of the Grantor shall be null and void and without legal effect.

11. TERMINATION: The Grantee, by acceptance of this easement, binds itself, its successors and assigns, to abide by the provisions and conditions herein set forth, and said provisions and conditions shall be deemed covenants of the Grantee, its successors and assigns. In the event the Grantee fails or refuses to comply with the provisions and conditions herein set forth or in the event the Grantee violates any of the provisions and conditions herein, this easement may be terminated by the Grantor upon 30 days written notice to Grantee. If terminated, all of the above-described parcel of land shall revert to the Grantor. All costs, including attorneys' fees, incurred by the Grantor to enforce the provisions of this easement shall be paid by the Grantee. All notices required to be given to Grantee by this easement or applicable law or administrative rules shall be sufficient if sent by U.S. Mail to the following address:

Florida Power & Light Company
c/o Warren Tittle
Post Office Box 8248
Ft. Lauderdale, Florida 33340

The Grantee agrees to notify the Grantor by certified mail of any changes to this address at least ten (10) days before the change is effective.

12. TAXES AND ASSESSMENTS: The Grantee shall assume all responsibility for liabilities that accrue to the subject property or to the improvements thereon, including any and all drainage or special assessments or taxes of every kind and description which are now or may be hereafter lawfully assessed and levied against the subject property during the effective period of this easement which result from the grant of this easement or the activities of Grantee hereunder.

13. REMOVAL OF STRUCTURES/ADMINISTRATIVE FINES: If the Grantee does not remove said structures and equipment occupying and erected upon the premises after expiration or cancellation of this easement, such structures and equipment will be deemed forfeited to the Grantor, and the Grantor may authorize removal and may sell such forfeited structures and equipment after ten (10) days written notice by certified mail addressed to the Grantee at the address specified in Item 11 or at such address on record as provided to the Grantor by the Grantee. However, such remedy shall be in addition to all other remedies available to Grantor under applicable laws, rules and regulations including the right to compel removal of all structures and the right to impose administrative fines.

14. ENFORCEMENT OF PROVISIONS: No failure, or successive failures, on the part of the Grantor to enforce any provision, nor any waiver or successive waivers on its part of any provision herein, shall operate as a discharge thereof or render the same inoperative or impair the right of the Grantor to enforce the same upon any renewal thereof or in the event of subsequent breach or breaches.

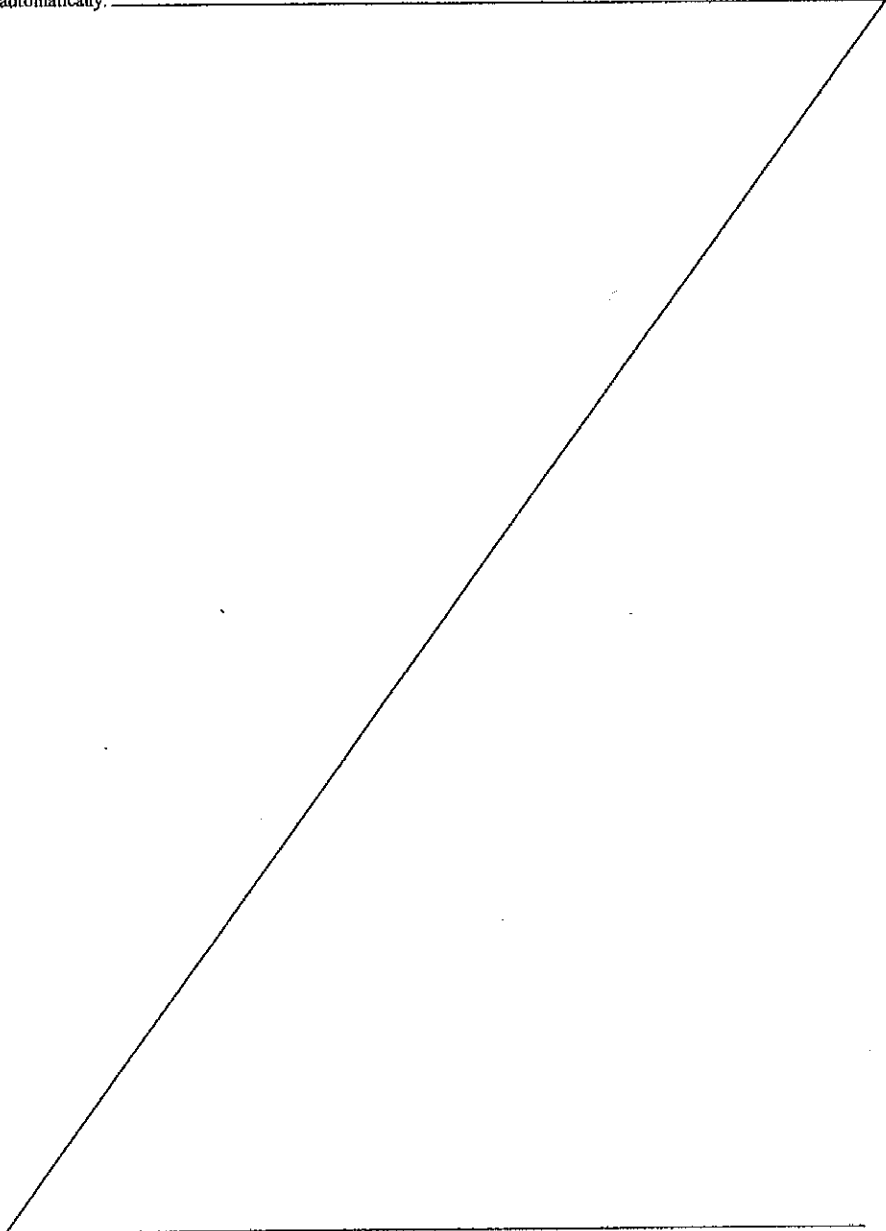
15. RECORDATION OF EASEMENT: The Grantee, at its own expense, shall record this fully executed easement in its entirety in the public records of the county within which the easement site is located within fourteen (14) days after receipt, and shall provide to the Grantor within ten (10) days following the recordation a copy of the recorded easement in its entirety which contains the O.R. Book and pages at which the easement is recorded.

16. AMENDMENT/MODIFICATIONS: This easement is the entire and only agreement between the parties. Its provisions are not severable. Any amendment or modification to this easement must be in writing and must be accepted, acknowledged and executed by the Grantee and Grantor.

17. ACOE AUTHORIZATION: Prior to commencement of construction and/or activities authorized herein, the Grantee shall obtain the U.S. Army Corps of Engineers (COE) permit if it is required by the COE. Any modifications to the construction and/or activities authorized herein that may be required by the COE shall require consideration by and the prior written approval of the Grantor prior to the commencement of construction and/or any activities on sovereign, submerged lands.

18. ADDITIONAL STRUCTURES OR ACTIVITIES/EMERGENCY STRUCTURAL REPAIRS: No additional structures shall be erected and/or activities undertaken, including but not limited to, dredging, relocation/realignment or major repairs or renovations made to authorized structures, on, in or over sovereignty, submerged lands without the prior written consent from the Grantor, with the exception of emergency repairs. Unless specifically authorized in writing by the Grantor, such activities or structures shall be considered unauthorized and a violation of Chapter 253, Florida Statutes, and shall subject the Grantee to administrative fines under Chapter 18-14, Florida Administrative Code. If emergency repairs are required to be undertaken in the interests of public health, safety or welfare, the Grantee shall notify the Grantor of such repairs as quickly as is practicable; provided, however, that such emergency activities shall not exceed the activities authorized by this easement.

19. UPLAND RIPARIAN PROPERTY INTEREST: During the term of this easement, Grantee must have satisfactory evidence of sufficient upland interest as defined in subsection 18-21.003(49), Florida Administrative Code, to the extent required by paragraph 18-21.004(3)(b), Florida Administrative Code, in order to conduct the activity described in this easement. If at any time during the term of this easement, Grantee fails to comply with this requirement, use of sovereignty, submerged lands described in this easement shall immediately cease and this easement shall terminate and title to this easement shall revert to and vest in the Grantor immediately and automatically.



WITNESSES:

Original Signature

Print/Type Name of Witness

Original Signature

Print/Type Name of Witness

BOARD OF TRUSTEES OF THE INTERNAL
IMPROVEMENT TRUST FUND OF THE STATE
OF FLORIDA

BY:

Ralph M. Perkins, Operations and Management Consultant
Manager, Bureau of Public Land Administration,
Division of State Lands, Department of Environmental
Protection, as agent for and on behalf of the Board of Trustees of
the Internal Improvement Trust Fund of the State of Florida

STATE OF FLORIDA
COUNTY OF LEON

"GRANTOR"

The foregoing instrument was acknowledged before me this 15th day of September, 2003, by Ralph M. Perkins, Operations and Management Consultant Manager, Bureau of Public Land Administration, Division of State Lands, Department of Environmental Protection, as agent for and on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. He is personally known to me.

APPROVED AS TO FORM AND LEGALITY:

DEP Attorney

Printed, Typed or Stamped Name

My Commission Expires:

Florence L. Davis
MY COMMISSION # CC974540 EXPIRES
October 11, 2004
BONDED THROUGH EXCESS INSURANCE, INC.

Commission/Serial No.

WITNESSES:

Original Signature

Typed/Printed Name of Witness

Original Signature

Typed/Printed Name of Witness

Florida Power & Light Company, a Florida corporation (SEAL)

BY:

Original Signature of Executing Authority

J.W. Moynaux

Typed/Printed Name of Executing Authority

Assistant Secretary

Title of Executing Authority

"GRANTEE"

STATE OF Florida

COUNTY OF Palm Beach

The foregoing instrument was acknowledged before me this 5 day of September, 2003, by J.W. Moynaux as Assistant Secretary of Florida Power & Light Company, a Florida corporation, for and on behalf of the corporation. He is personally known to me or who has produced _____ as identification.

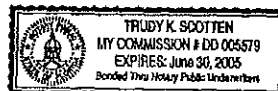
My Commission Expires:

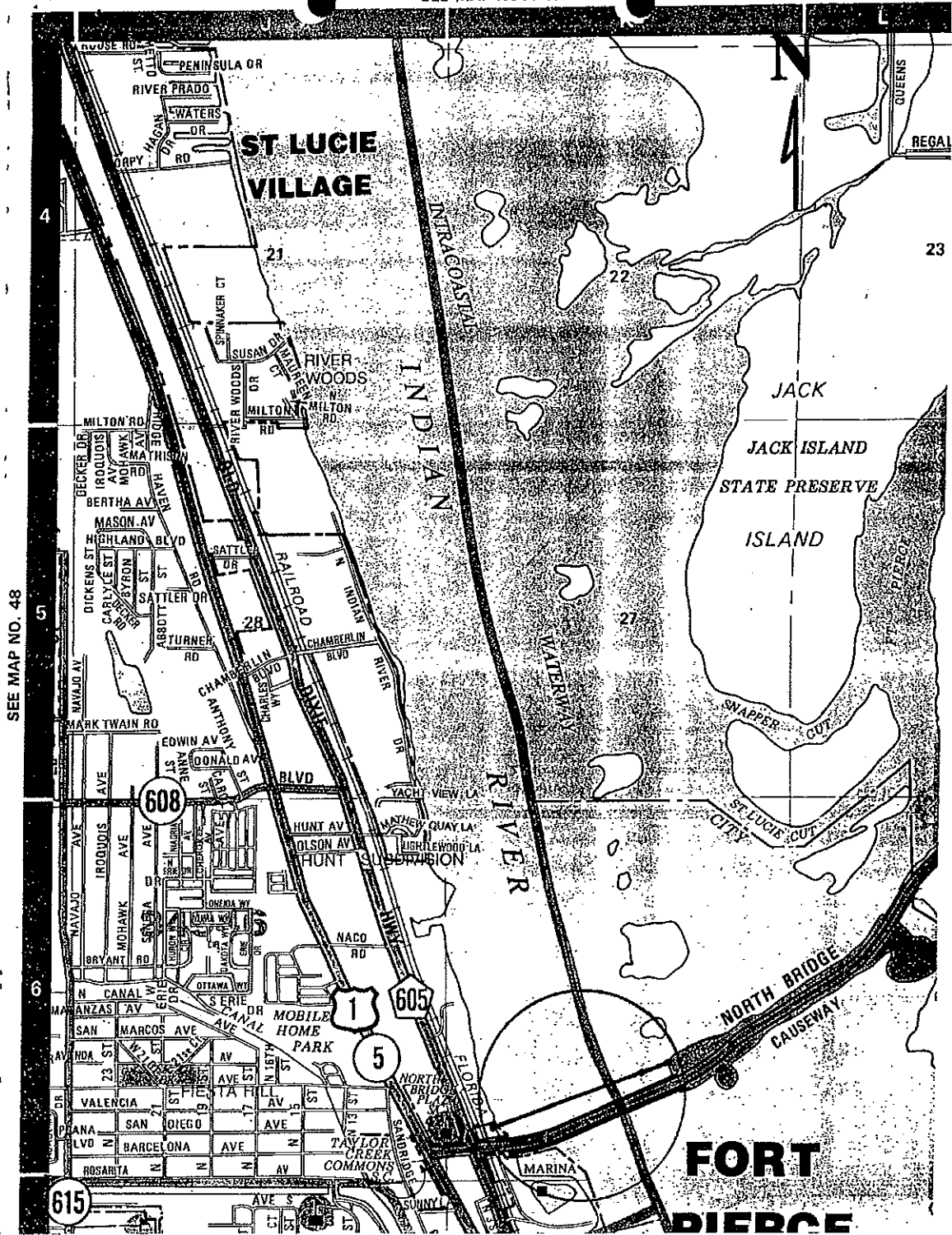
6-30-05

Commission/Serial No. #DD00579

Notary Public, State of Florida

Printed, Typed or Stamped Name

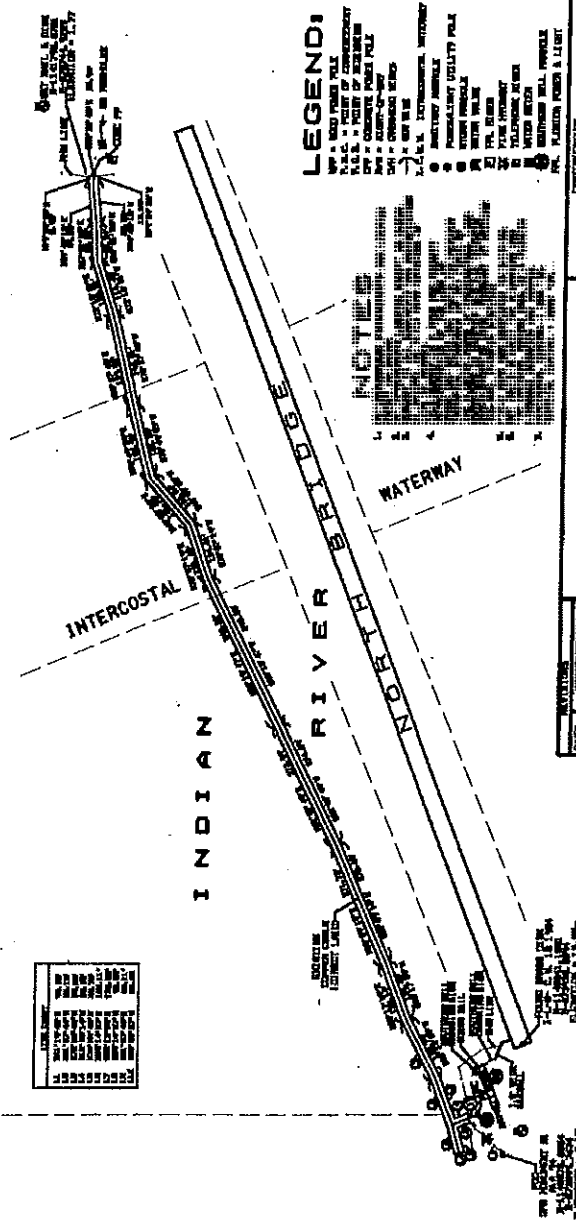
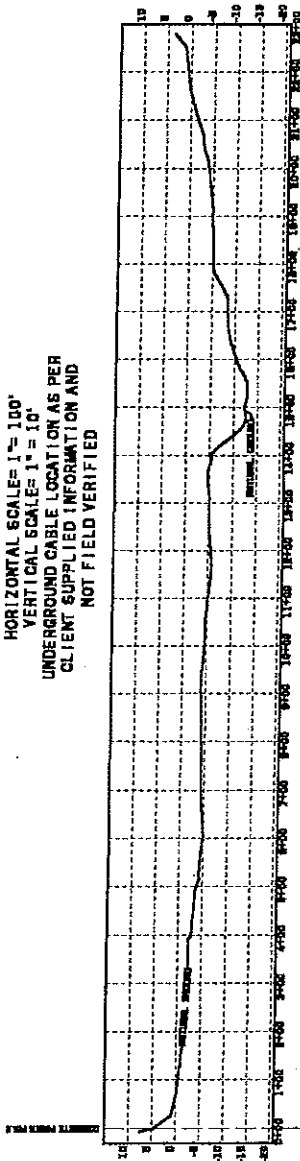




OR BOOK 1811 PAGE 2233

Attachment A
Page 5 of 9 Pages
Easement No. 26395

PROFILE VIEW
HORIZONTAL SCALE= 1"= 100'
VERTICAL SCALE= 1"= 10'
UNDERGROUND CABLE LOCATION AS PER
CLIENT SUPPLIED INFORMATION AND
NOT FIELD VERIFIED



CONCEPT

曹上卿

WATERWAY

LEGAL:

A PLEA OF CREDITING EMPLOYED LABOR, LISTED IN SECTION 8d,
TOWNSHIP OF NORTH, BOUND BY TOWN OF DIXIE COUNTY, FLORIDA,
SPECIFICALLY MENTIONED ON FORM.

[illegible]

10:00 AM

[illegible][illegible]

SECRET
REF ID: A67098

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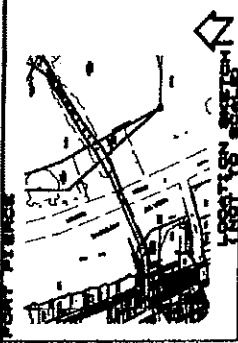
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[illegible][illegible][illegible]

This image is a high-contrast, black and white abstract pattern. It consists of a dense, irregular arrangement of small, dark, rectangular and square shapes of varying sizes, creating a textured, almost crystalline appearance. The pattern is set against a lighter, grainy background. The overall effect is one of depth and complexity, reminiscent of a microscopic view of a material or a close-up of a rough surface.

[illegible]

NOTES

1. The following information was obtained from the records of the Department of the Interior, Bureau of Land Management, and the Bureau of Reclamation, and is presented for information only. It is not to be used for any purpose other than that for which it was prepared.

2. The following information was obtained from the records of the Department of the Interior, Bureau of Land Management, and the Bureau of Reclamation, and is presented for information only. It is not to be used for any purpose other than that for which it was prepared.

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EASEMENT
Form 3722 (Stocked) Rev. 2/80.

ER No. SIO 131-5-460
Pole No. _____

Date December 10 19 82

Sec. 34 Twp. 34 Rge. 40

old easement

The undersigned, owner (s) of the premises described below, in consideration of the payment of \$1.00 and other good and valuable consideration, the adequacy and receipt of which is hereby acknowledged, grant and give to Florida Power & Light Company, its licensees, agents, successors, and assigns, an easement forever for the construction, operation and maintenance of overhead and underground electric utility facilities (including wires, poles, guys, cables, conduits and appurtenant equipment) to be installed from time to time; with the right to reconstruct, improve, add to, enlarge, change the size of and remove such facilities or any of them, on the property described as follows:

That area below the mean high water line of the Indian River lying within 50 feet each side of the following described line:

Commencing at the Northwest corner of Section 3, Township 35 South, Range 40 East, run South 89°37'30" East, a distance of 628.9 feet to a point which is the intersection of the Township line and the East line of the Florida East Coast Railroad right-of-way; thence run along a calculated reference line North 44°52'51" East, a distance of 775.69 feet to a point on the West side of the Indian River and the POINT OF BEGINNING; thence run North 65°25'13" East, 1905.15 feet; thence run North 80°40'40" East, 422.19 feet to the mean high water line at the Easterly shore of the Indian River and the end of this described line. The above lying in Section 34, Township 34 South, Range 40 East, St. Lucie County, Florida, and North of A-1-A bridge.

PREPARED BY: *[Signature]*

.. A. Gerald Weatherington P.L.S. No. 1859
together with the right to permit any other person, firm or corporation to attach wires to any facilities hereunder and lay cable and conduit within the right of way and to operate the same for communications purposes with the right of ingress and egress to said premises at all times, to clear the land and keep it cleared of all trees, undergrowth or other obstructions within the easement area; to trim and cut and keep trimmed and cut all dead, weak, leaning or dangerous trees or limbs outside of the easement area which might interfere with or fall upon the lines or systems of communications or power transmission or distribution, and further grants, to the fullest extent the undersigned has the power to grant, if at all, the rights hereinabove granted on the land heretofore described, over, along and under the roads, streets or highways adjoining or through said property.

IN WITNESS WHEREOF, the undersigned has signed and sealed this agreement on _____, 19____.

Signed, sealed and delivered
in the presence of:

_____ (SEAL)
_____ (SEAL)
_____ (SEAL)
_____ (SEAL)

STATE OF FLORIDA AND COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 19____,
by _____ and _____,
respectively the _____ President and _____ Secretary of _____
corporation, on behalf of the corporation.

NOTARY PUBLIC, STATE OF FLORIDA
MY COMMISSION EXPIRES: _____

STATE OF FLORIDA AND COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 19____,
by _____ and _____.

NOTARY PUBLIC, STATE OF FLORIDA
MY COMMISSION EXPIRES: _____



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
STUART REGULATORY OFFICE
218 ATLANTA AVENUE
STUART, FLORIDA 34994

Regulatory Division
South Permits Branch
200207691 (LP-AAZ)

JUN 12 2003

Mr. Warren Tittle
Florida Power and Light
P.O. Box 8248
Fort Lauderdale, FL 33340

Dear Mr. Tittle,

This is in reference to your request for a permit to perform work in or affecting navigable waters of the United States. Upon recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), you are authorized to install subaqueous utility lines in the Indian River along A1A at the Relief Bridge on Jim's Island located in Section 34, Township 34 South, Range 40 East, St. Lucie County, Florida in accordance with the enclosed drawings and conditions that are incorporated in, and made a part of, the permit. In addition, the permittee must comply with the following special conditions:

1. The permittee shall comply with the attached Standard Manatee Construction Precautions.

2. Turbidity screens shall be installed to completely surround and isolate the work from adjacent waters until turbidity has settled.

3. Within 60 days of the authorized work, the attached Self-Certification Statement of Compliance must be completed and submitted to the U.S. Army Corps of Engineers. Mail the completed form to the Regulatory Division, Enforcement Branch, Attention: Ms. Ivette McGraw, Post Office Box 4970, Jacksonville, Florida 32232-0019.

4. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration of the structures or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural

work or obstructions caused thereby, without expense to the United States.

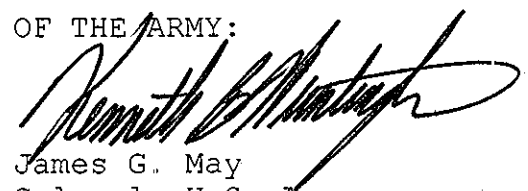
Enclosed is a Notice of Authorization, which should be displayed at the construction site. When you begin work, you must notify the District Engineer's representative, at the appropriate area office as shown on the enclosed map, of:

- a) The date of commencement of work;
- b) The dates of work suspensions and resumptions if work is suspended over a week; and,
- c) The date of final completion.

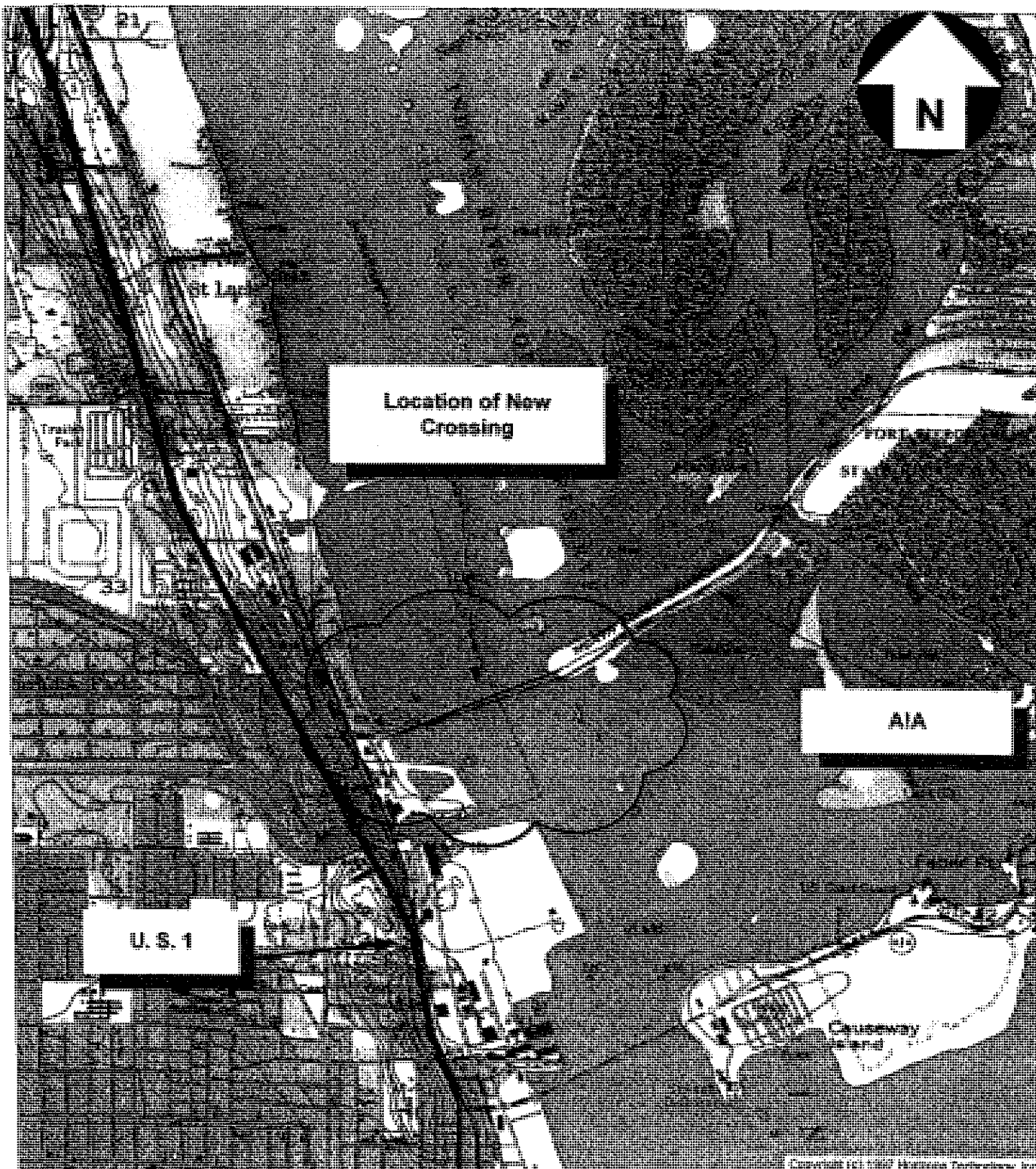
If the work authorized is not completed on or before May 29, 2008, this authorization, if not previously revoked or specifically extended, shall cease and be null and void. Please refer to the attached form, *Notification of Administrative Appeal Options and Process*, concerning your options on acceptance of this permit.

If you have any questions regarding this permit authorization, please contact Alisa Zarbo at the letterhead address or by telephone at 772-781-8088.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:


for James G. May
Colonel, U.S. Army
District Engineer

Enclosures



Copyright (c) 1997 Horizon Technology, Inc.

St. Lucie County - Florida

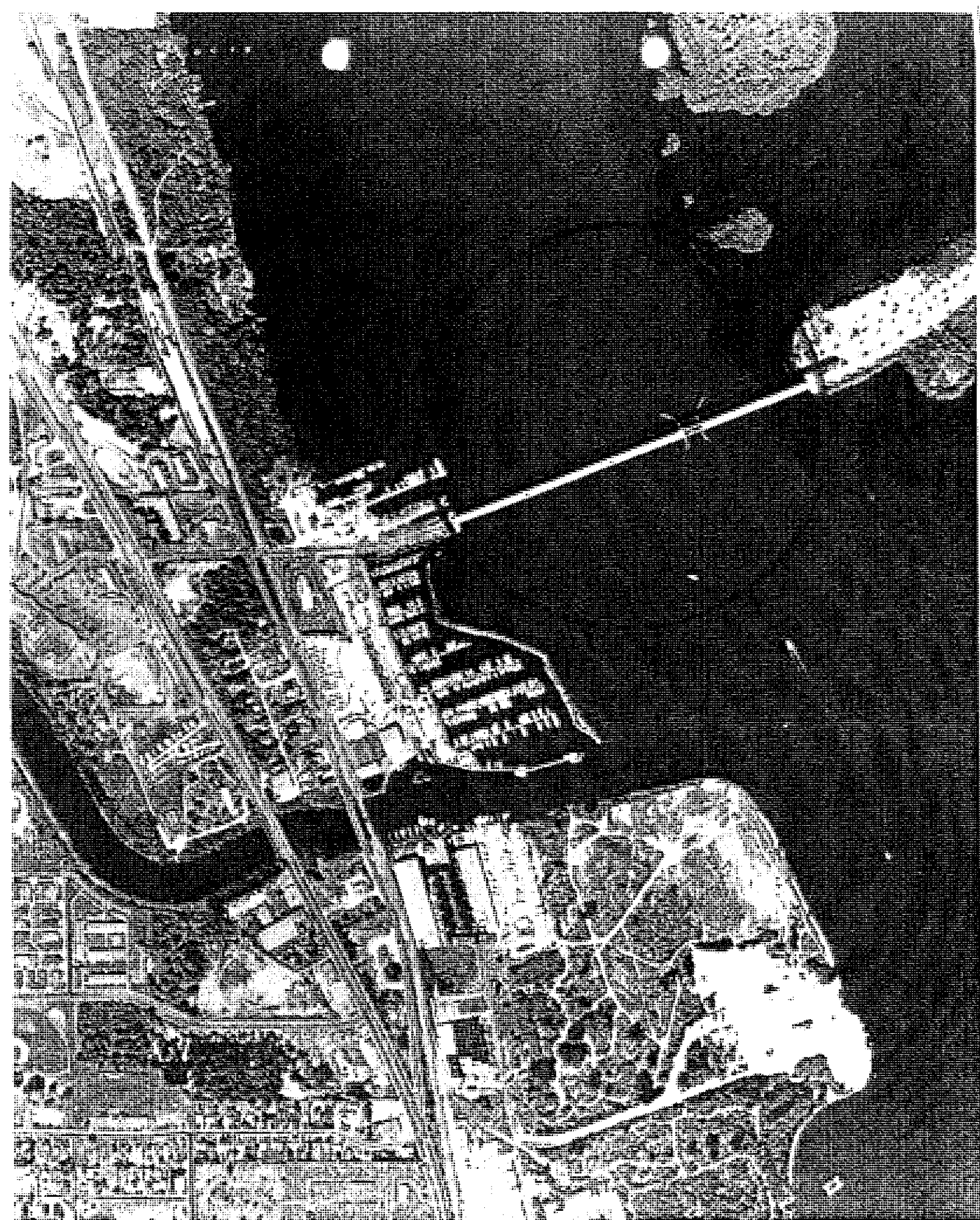
USGS - Fort Pierce

NTS



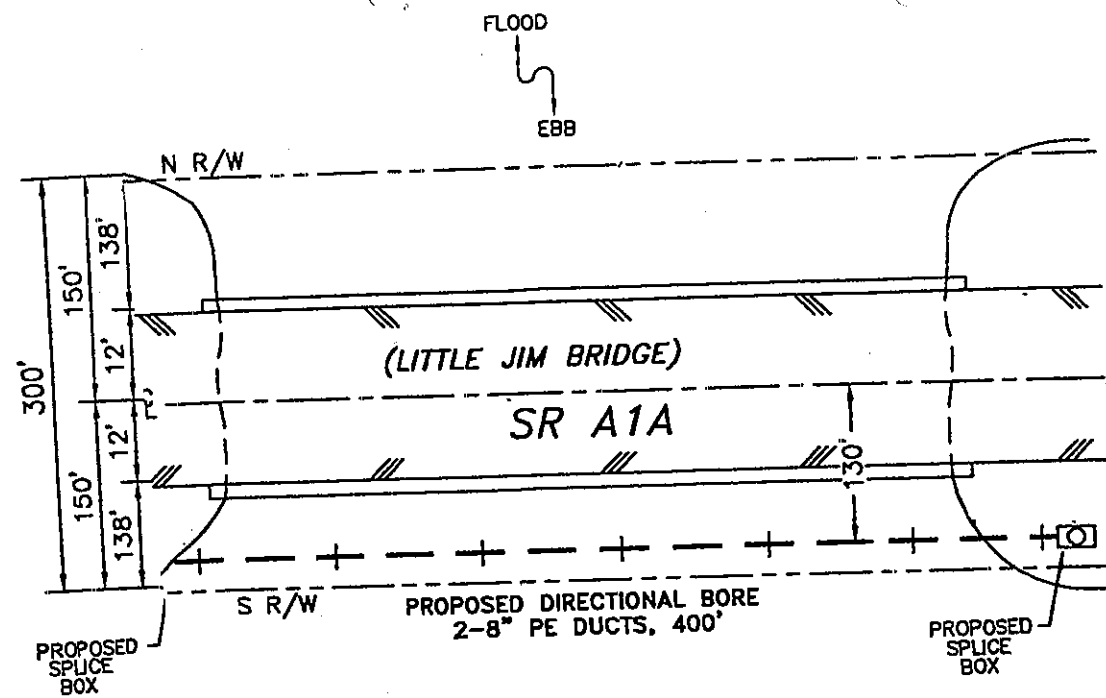
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Date : 10/23/02

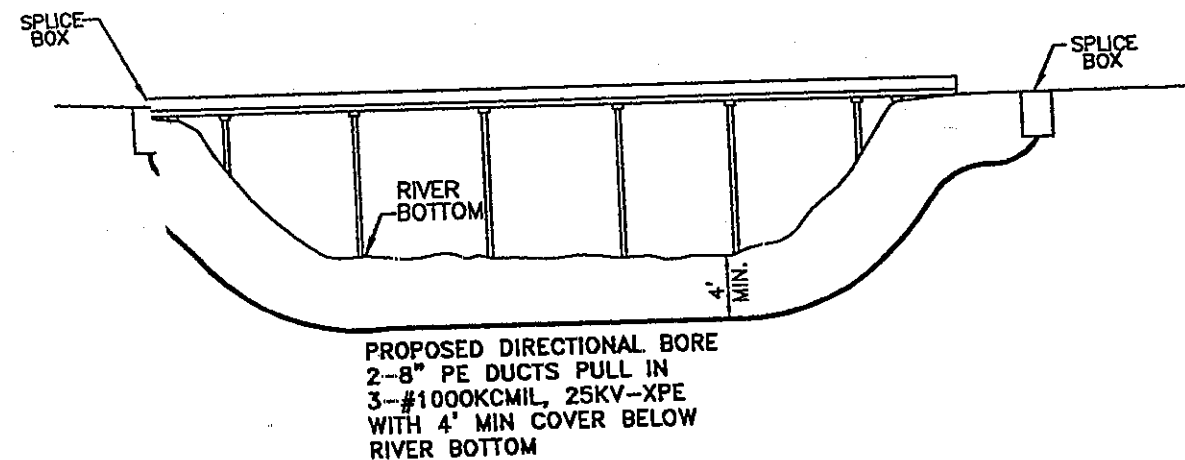


2000 2000 2000

Image courtesy of the US Geological Survey



PLAN
(N.T.S.)



MHW = 2.82
MLW = 0.21

Corof Engineers

MAX VOLT 34KV

St Lucie County, FL

SECTION: 34

TOWNSHIP: 34S

RANGE: 40E

LATITUDE: 27°28'46"N

LONGITUDE: 80°18'46"W

ENGINEER: WARREN TITTLE

SUBAQUEOUS CROSSING
LITTLE JIM BRIDGE
1 MILE TO ATLANTIC BEACH BLVD
ST. LUCIE COUNTY, FL



DATE 06/18/02
JOB NO. 4452-04-441

MAP NO. E29
DWG. NO. S34179

REV. NO. 1

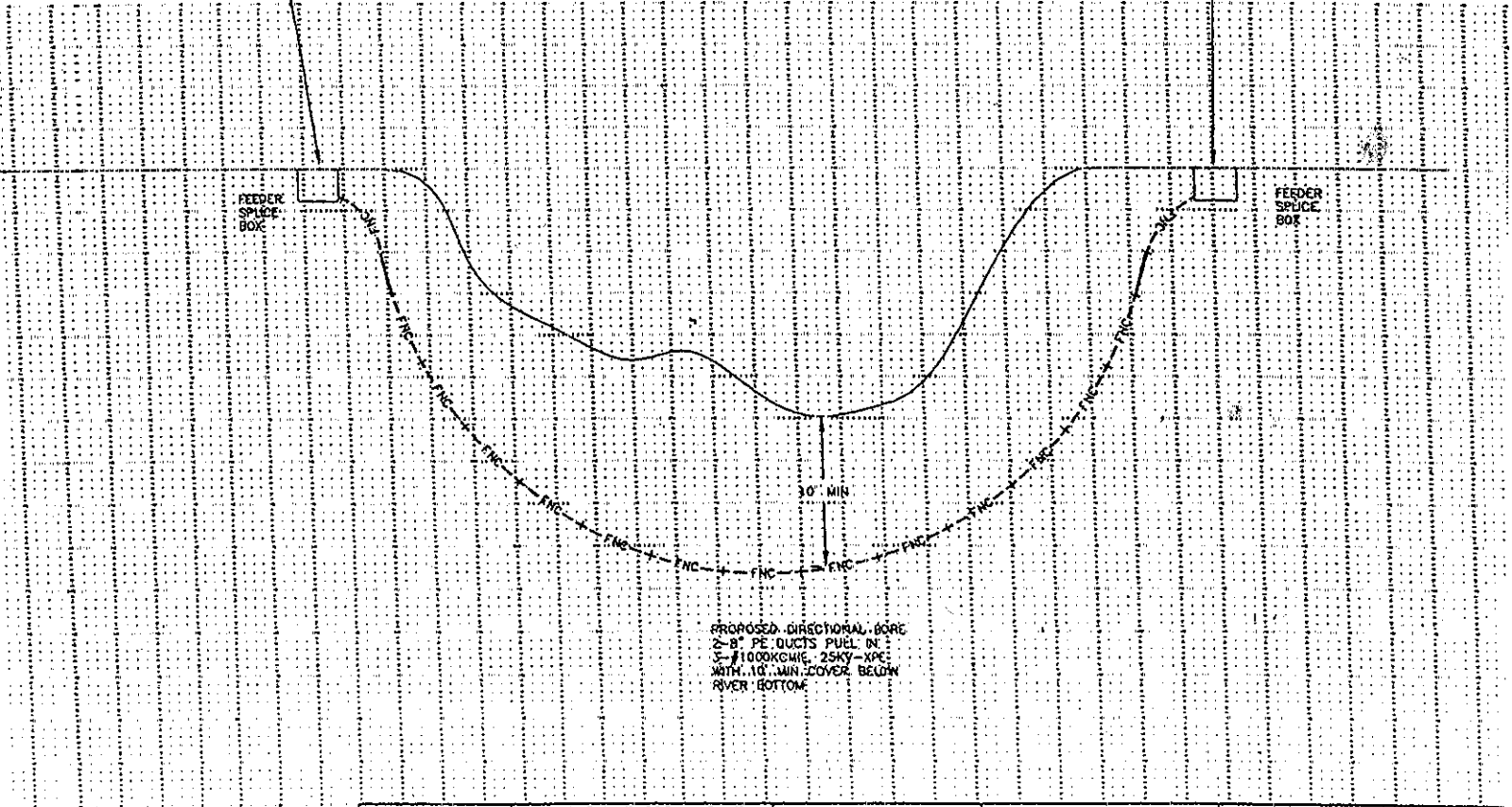
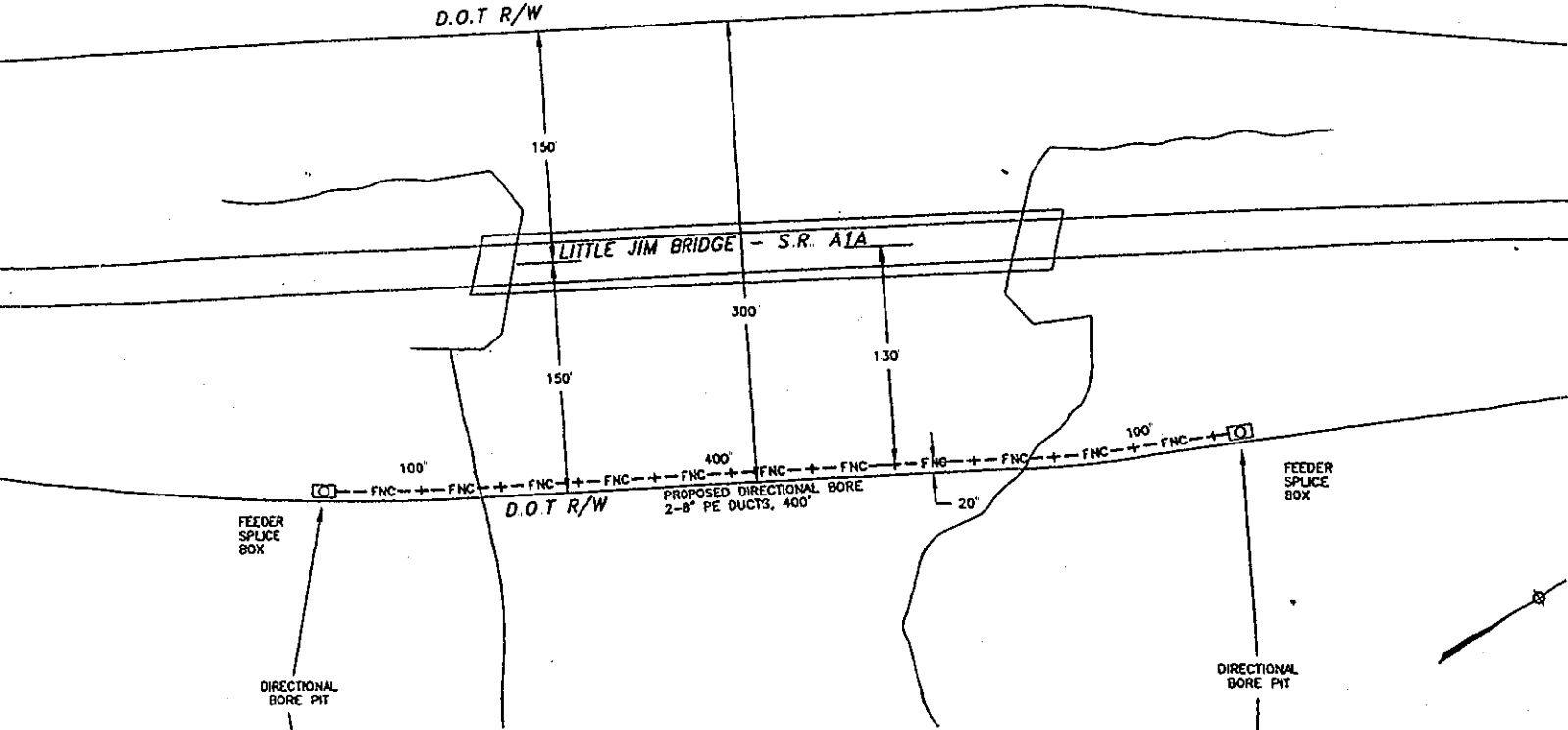
PLOT DATE: 8/19/02

8:23:35 AM

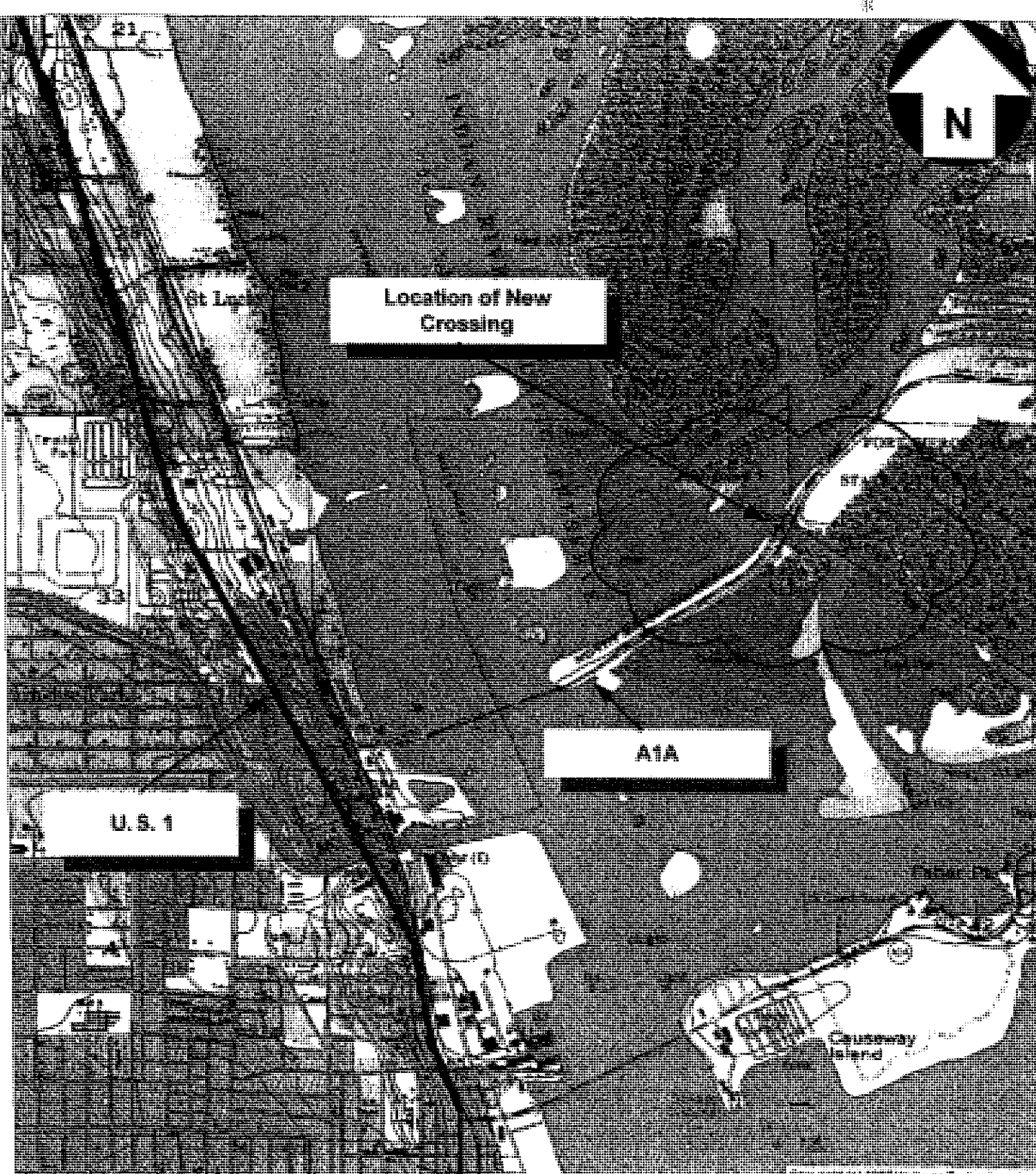
CAD NAME: RJD0817

☐ INACCESSIBLE

ONAL BORE PVC WITH 20 MIN COVER (UNLESS NOTED)
WITH AN ELECTRONIC MARKER
OR TO DIGGING



AS-BUILT COPY		AS-BUILT CREW PRINT		Easement? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		Survey/Stake? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		Work with SHOT? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
DATE	CERT. DATE	Foreman's Signature	Date	Tree Work? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Designer/Stake? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	CT/Special Mtr? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>			
Job CERTIFIED COMPLETED as shown on this AS-BUILT print Material changes shown on RDS				Map Posting? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		Trench Feet		Duct Bank Feet	
SUPERVISOR'S SIGNATURE		DATE		CITY		DR. DIST.	COUNTY AIR	STATE RD X	FAA
VER ALONG LITTLE JIM BRIDGE		All required ground rods have been driven & verified to be within FPL standards. Values are shown at all locations.		VMD		RR XING	COUNTY RD.	TRANSH.	
				Posted by		Telephone Request? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		CATV Request? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	



St. Lucie County - Florida

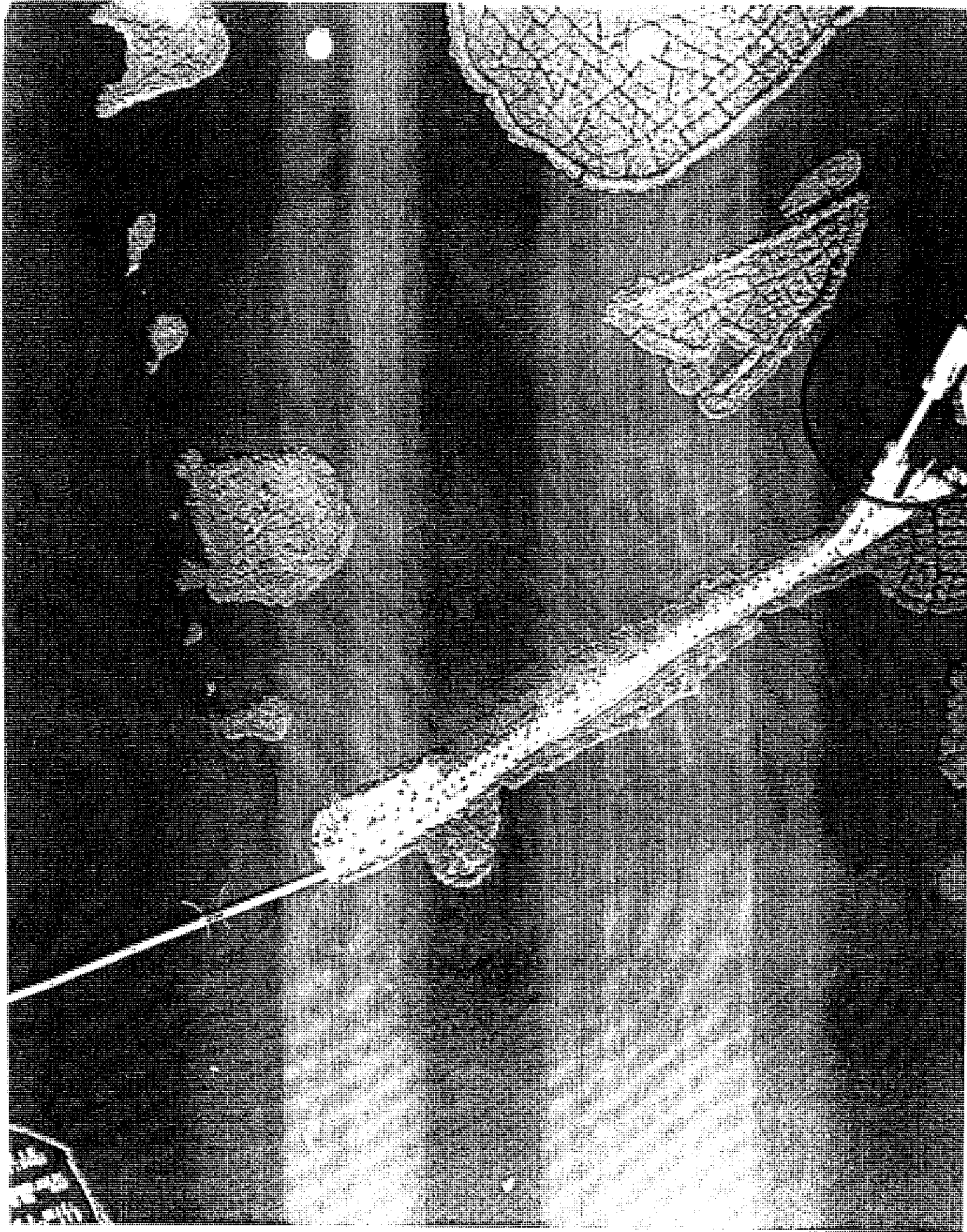
USGS - Fort Pierce

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Jims Is. to Orchard Is.

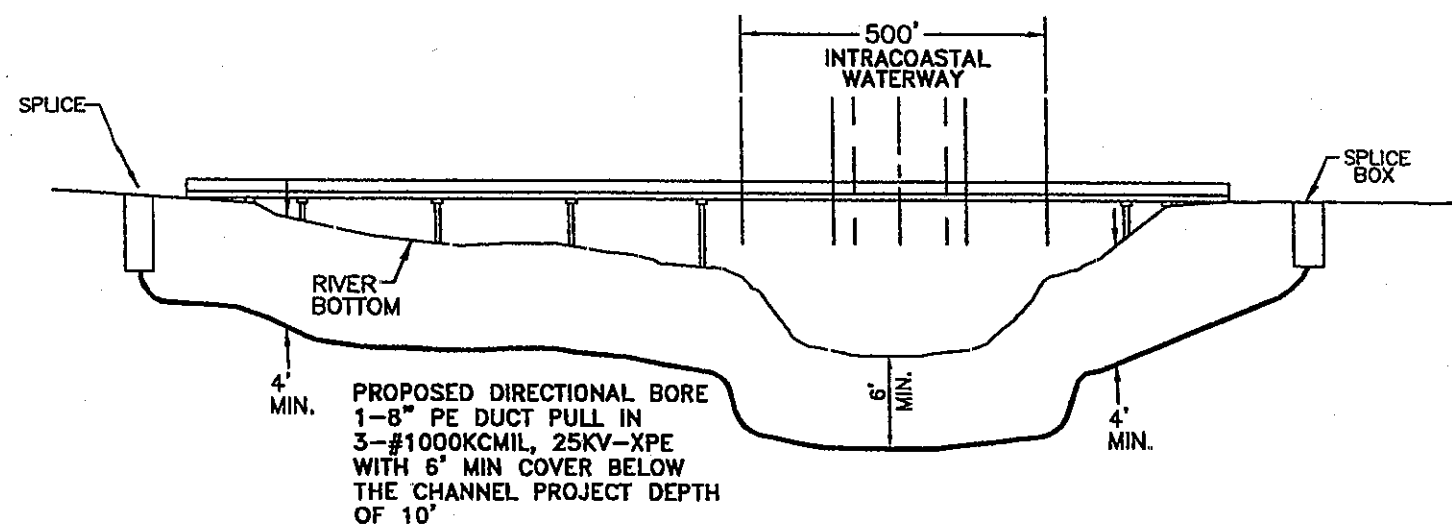
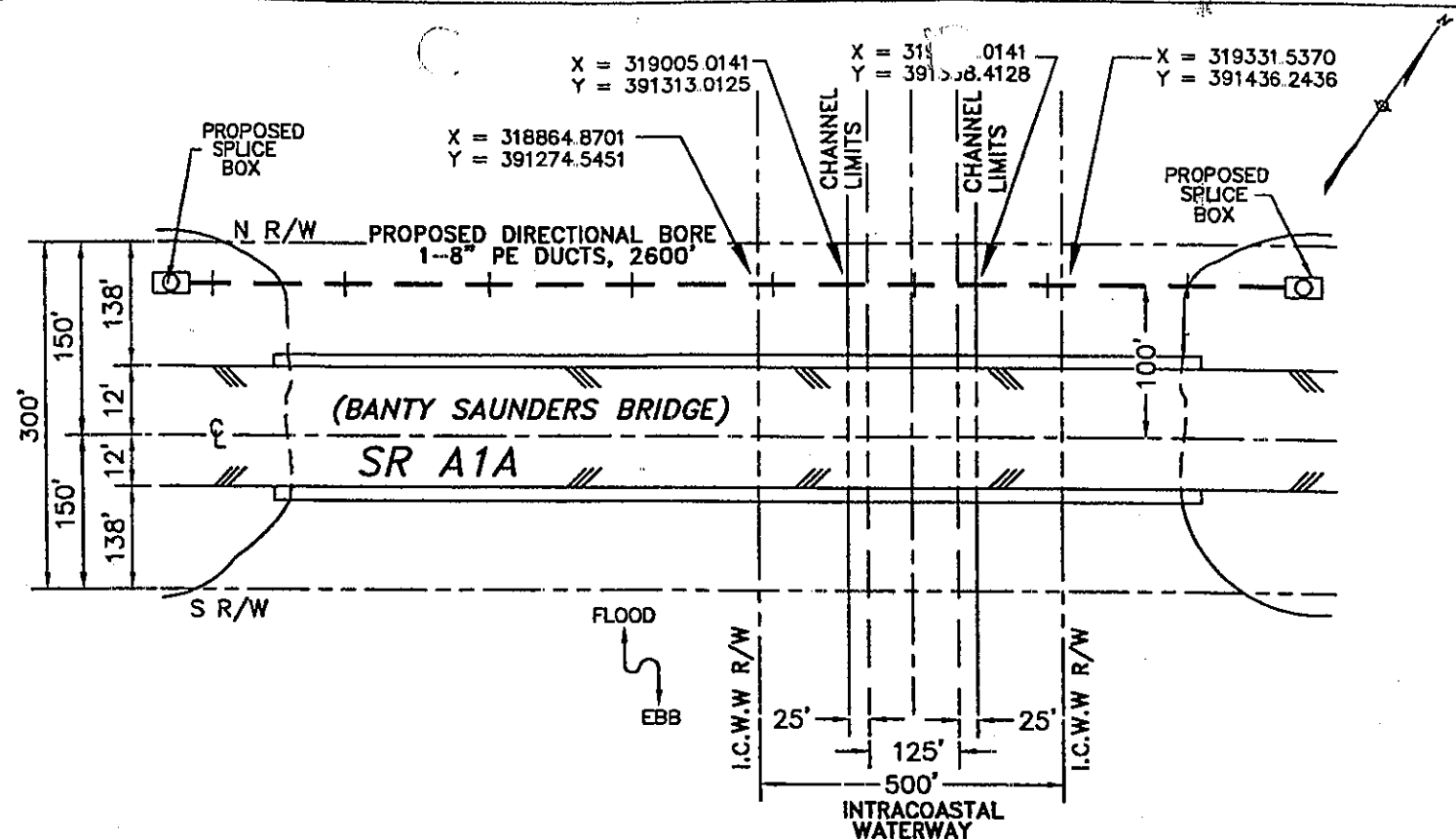
Date : 10/23/02



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100-100-100-100



MHW = 2.82
MLW = 0.21

Corps of Engineers

MAX CONDUCTOR VOLT 34KV

St. Lucie County, FL

SECTION: 34

TOWNSHIP: 34S

RANGE: 40E

LATITUDE: 27°28'21"N

LONGITUDE: 80°19'29"W

ENGINEER: WARREN TITTLE

SUBAQUEOUS CROSSING
BANTY SANDERS BRIDGE

1000' E/O OLD DIXIE HWY
ST. LUCIE COUNTY, FL



DATE 06/17/02

JOB NO. 4383-05-441

MAP NO. F29

DWG. NO. S34177

REV. NO.

1

PLOT DATE: 6/19/02

PLOT TIME: 8:27:13 AM

CAD NAME: R.DOB17

**This notice of authorization must be conspicuously
displayed at the site of work**

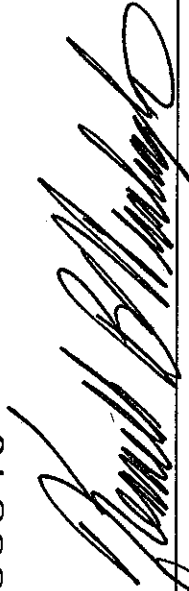
United States Army Corps of Engineers EXPIRES: 29 May 2008

A permit to install subaqueous utility lines in the Indian River
along A1A at Relief Bridge in Section 35, Township 34 South,
Range 40 East, St. Lucie County, Florida

has been issued to Mr. Warren Tittle on 29 May 2003

Address of Permittee: P.O. Box 8248
Fort Lauderdale, FL 33340

200207691 (LP-AAZ)


James G. May
Colonel, U.S. Army
District Engineer

GENERAL CONDITIONS
FOR A LETTER OF PERMISSION

NOTE: The term "you" and its derivatives, as used in this permit means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

1. The time limit for completing the work is the described in the cover letter. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit.
6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.
7. Limits of this authorization:
 - a. This permit does not obviate the need to obtain other

**GENERAL CONDITIONS
FOR A LETTER OF PERMISSION**

Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

8. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

9. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

10. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit

GENERAL CONDITIONS
FOR A LETTER OF PERMISSION

application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement producers such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

11. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit

**GENERAL CONDITIONS
FOR A LETTER OF PERMISSION**

12. Transfer of Permit: When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and condition of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFeree - SIGNATURE) _____ (DATE)

(NAME AND ADDRESS (CITY, STATE, ZIP CODE) - PRINTED/TYPED

EASEMENT

NO. 26395(3311-56)

WHEREAS, pursuant to application made by Florida Power and Light Company for a subaqueous utility easement on and across sovereignty lands held by the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, acting pursuant to its authority set forth in Section 253.03, Florida Statutes, and said Board through its lawfully designated agent, did on this 7th day of July A.D. 1983 agree to the granting of same:

THEREFORE, WITNESS THIS INDENTURE, made and entered into by and between the BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND, as GRANTOR, and FLORIDA POWER AND LIGHT COMPANY as GRANTEE. The Grantor hereby grants unto said Grantee, its successors, and assigns, subject to the conditions hereinafter set forth, a subaqueous utility easement for cable replacement/repair as shown on the attached plan and Department of Environmental Regulation permit application number 560629128 dated November 24, 1982 attached hereto as Exhibit "A" and made a part hereof, on, under and across the following described sovereignty land in St. Lucie County, Florida to-wit:

(SEE LEGAL DESCRIPTION ATTACHED HERETO AS EXHIBIT "B" AND MADE A PART HEREOF)

THIS EASEMENT IS FOR A TERM OF FIFTY (50) YEARS FROM THE EFFECTIVE DATE HEREOF. THE TERMS AND CONDITIONS UNDER WHICH THIS EASEMENT IS GRANTED ARE AS FOLLOWS:

1. The consideration for this easement will be automatically based upon the rule establishing fees for utility easements once adopted and payment shall be remitted to the Grantor according to the rule. The established easement fee shall be assessed retroactively from the effective date hereof.

2. The rights hereby conferred shall be subject to (a) any and all prior rights of the United States; and (b) any and all prior grants by the Board of Trustees of the Internal Improvement Trust Fund in and to submerged lands situated within the limits of the right-of-way hereinabove described.

3. The Easement granted to the named Grantee shall not be transferred without prior consent of the Board.

4. The Grantee agrees that upon expiration of this easement, all permission granted for cable replacement/repair upon the hereinabove described lands shall cease and terminate, the Grantee shall remove all structures and equipment occupying said lands and erected thereon at the Grantee's expense.

5. That no title to said land is conferred by this instrument.

6. That the above described parcel of land shall be used solely for the cable replacement/repair. In the event the land herein described shall cease to be used for said purposes, then the easement hereby granted covering said land shall terminate without notice from the Board of Trustees of the Internal Improvement Trust Fund.

7. That the Grantee herein will not damage said lands or unduly interfere with public or private rights therein.

8. That the Grantee herein shall save, protect, and hold harmless the State of Florida and the Board of Trustees of the Internal Improvement Trust Fund from all damages and claims arising out of the use of said easement by the Grantee or any of its agents, servants, employees, or contractors.

9. The Grantee hereby agrees that the above-described parcel of land shall be subject to inspection by the Grantor or its designated agent at any reasonable time.

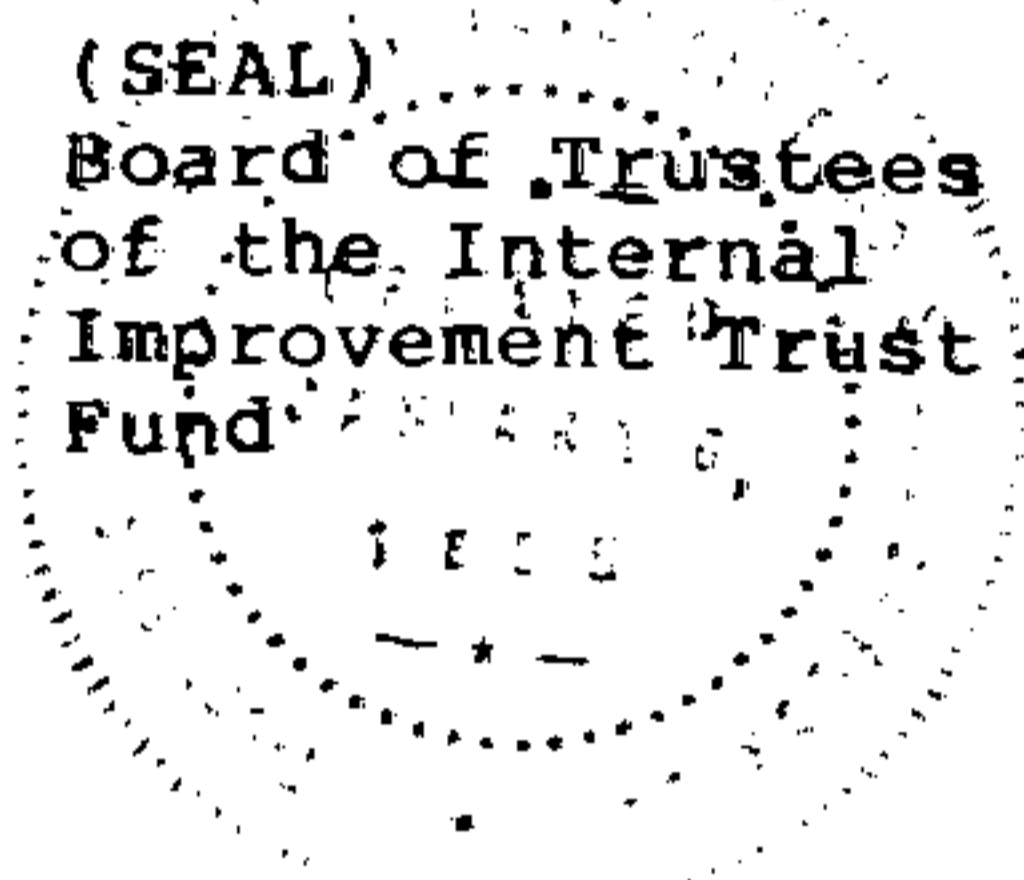
10. That the Grantee, by acceptance of this easement, binds itself, its successors and assigns, to abide by the provisions and conditions herein set forth, and said provisions and conditions shall be deemed covenants of the Grantee, its successors and assigns, running with the land. In the event the Grantee fails or refuses to comply with the provisions and conditions herein set forth, or in the event the Grantee violates any of the provisions and conditions herein, this easement may be terminated by the Grantor after notice in writing to the Grantee. Upon

receipt of such notice the Grantee shall undertake to correct such noncompliance(s) or violation(s) for which the Grantor has given notice within thirty (30) days of receipt of the notice or the Grantor, at its option, shall be entitled to terminate this easement and, if terminated, all of the above-described parcel of land shall revert to the Grantor.

11. The Administrator of the Submerged Lands Section of the Bureau of State Lands Management is designated Contract Manager for this contract and shall be responsible for ensuring performance of contract terms and conditions.

TO HAVE AND TO HOLD said easement unto said Grantee, its successors and assigns, for the purposes herein set forth.

IN TESTIMONY WHEREOF, the lawfully designated agent of the Board of Trustees of the Internal Improvement Trust Fund has hereunto subscribed his name and has caused the official seal of said Board to be hereunto affixed, in the City of Tallahassee, Florida, on this 14th day of DECEMBER A.D. 1983.



Ann M. MacKalan
DIRECTOR, DIVISION OF STATE LANDS
AGENT FOR THE BOARD OF TRUSTEES
OF THE INTERNAL IMPROVEMENT TRUST
FUND

APPROVED AS TO FORM AND LEGALITY

John D. Williams
Attorney

B. Cary Fitzgerald
Contract Manager

Blackburn
Contract Administrator

This instrument was
prepared by:
Donald H. Keirn
Department of Natural
Resources
3900 Commonwealth Blvd.
Tallahassee, Florida 32303

Page 3 of
Easement No. 26395(3311-56)

EXHIBIT "B"

LEGAL DESCRIPTION

That area below the Mean High Water line of the Indian River lying within 50 feet each side of the following described line:

Commencing at the Northwest corner of Section 3, Township 35 South, Range 40 East, run South $89^{\circ}37'30''$ East, a distance of 628.9 feet to a point which is the intersection of the township line and the East line of the Florida East Coast Railroad right-of-way; thence run along a calculated reference line North $44^{\circ}52'51''$ East, a distance of 775.69 feet to a point on the West side of the Indian River and the Point of Beginning; thence run North $65^{\circ}25'13''$ East, 1905.15 feet; thence run North $80^{\circ}40'40''$ East, 422.19 feet to the Mean High Water line at the Easterly shore of the Indian River and the end of this described line. The above lying in Section 34, Township 34 South, Range 40 East, St. Lucie County Florida, and North of A-1-A Bridge.



Department of Environmental Protection

Jeb Bush
Governor

JUN 30 2003

Southeast District
400 N. Congress Ave. Suite 200
West Palm Beach, Florida 33401

David B. Struhs
Secretary

CONSOLIDATED ENVIRONMENTAL RESOURCE PERMIT AND INTENT TO GRANT SOVEREIGN SUBMERGED LANDS AUTHORIZATION

PERMITTEE/AUTHORIZED ENTITY:

Warren A. Tittle
Florida Power & Light Company
P.O. Box 8248
Ft. Lauderdale, FL 33340

Permit / Authorization No.: 56-0206116-001

Date of Issue:

JUN 30 2003

Expiration Date of

Construction Phase: JUN 29 2008

County: St. Lucie

Project: Florida Power & Light Company -
Directional Drill

This permit is issued under the authority of Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62, Florida Administrative Code (F.A.C.). The activity is not exempt from the requirement to obtain an Environmental Resource Permit. Pursuant to Operating Agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing and taking final agency action on this activity.

ACTIVITY DESCRIPTION:

The purpose of the project is to install a new feeder cable consisting of one (1) 8-inch HDPE conduit by means of directional drill under the Indian River. The crossing under sovereign submerged land will be approximately 2,264 linear feet and will sever approximately eighty-four (84) cubic yards of sovereign submerged lands. Access and egress will be located on uplands and the applicant is responsible for obtaining all appropriate permits for the use of those areas. Turbidity screens and/or hay bales will be used to contain turbidity and sedimentation at the bore pits.

ACTIVITY LOCATION:

The project is located in the Indian River immediately north of the Banty Saunders Bridge, within the boundaries of Florida Department of Transportation Right-of-Way, Trustee's Dedication # 23008, Section 34, Township 34 South, Range 40 East, Ft. Pierce, St. Lucie County Indian River-Vero Beach to Ft. Pierce Aquatic Preserve, Outstanding Florida Waters, Class III Waters, Latitude North 27°28' 16.73" and Longitude West 80°19' 33.69"

This permit also constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Management Act.

This permit also constitutes certification of compliance with water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341.

This activity also requires a proprietary authorization, as the activity is located on sovereign submerged lands owned by the Board of Trustees of the Internal Improvement Trust Fund, pursuant to Article X, Section 11 of the Florida Constitution, and Sections 253.002 and 253.77, F.S. The activity is not exempt from the need to obtain a proprietary authorization. The Department has the responsibility to review and take final action on

"More Protection, Less Process"

Printed on recycled paper.

Permittee: Florida Power & Light Company
File No.: 56-0206116-001
Page 2

this request for proprietary authorization in accordance with Section 18-21.0051, and the Operating Agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C. In addition to the above, this proprietary authorization has been reviewed in accordance with Chapter 253 and Chapter 258, F.S., Chapter 18-18, Chapter 18-21, and Section 62-343.075, F.A.C.

As staff to the Board of Trustees, the Department has reviewed the activity described above, and has determined that the activity requires a use agreement for the use of those lands, pursuant to Chapter 253.77, F.S. The Department intends to issue the use agreement subject to the recommended fees and conditions. Severance fees have been paid in full.

The final documents required to execute the use agreement have been sent to the Division of State Lands. The Department intends to issue the use agreement upon satisfactory execution of those documents. **You may not begin construction of this activity on state-owned, sovereign submerged lands until the use agreement has been executed to the satisfaction of the Department.**

This permit constitutes a determination, pursuant to Section 380.0651(3)(e), F.S., that the facility is located so that it will not adversely impact Outstanding Florida Waters or Class II Waters, and will not contribute to boat traffic in a manner that will adversely impact the manatee.

Federal authorization for the proposed project is reviewed by DEP pursuant to an agreement between the Department and the U.S. Army Corps of Engineers (Corps). The agreement is outlined in a document titled *Coordination Agreement Between the U.S. Army Corps of Engineers and the Florida Department of Environmental Protection State Programmatic General Permit, Section 10 of the Rivers and Harbor Act of 1899 and Section 404 of the Clean Water Act*.

Your project has been reviewed for compliance with a State Programmatic General Permit (SPGP). As shown on the attached drawings, the proposed project is **not** consistent with the SPGP program. A copy of your application has been sent to the Corps who may require a separate permit. Failure to obtain their authorization prior to construction could subject you to enforcement action. For further information, contact the Corps directly.

You are hereby advised that authorizations also may be required by other federal, state, and local entities. This authorization does not relieve you from the requirements to obtain all other required permits and authorizations.

The above named permittee is hereby authorized to construct the work shown on the application and approved drawing(s), plans, and other documents attached hereto or on file with the Department and made a part hereof. **This permit is subject to the limits, conditions, and locations of work shown in the attached drawings, and is also subject to the attached 19 General Conditions and 10 Specific Conditions, which are a binding part of this permit.** You are advised to read and understand these drawings and conditions prior to commencing the authorized activities, and to ensure the work is conducted in conformance with all the terms, conditions, and drawings. If you are utilizing a contractor, the contractor also should read and understand these drawings and conditions prior to commencing the authorized activities. Failure to comply with all drawings and conditions shall constitute grounds for revocation of the permit and appropriate enforcement action.

Operation of the facility is not authorized except when determined to be in conformance with all applicable rules and with the general and specific conditions of this permit/certification, as specifically described below.

GENERAL CONDITIONS:

- (1) All activities authorized by this permit shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit and Part IV, Chapter 373, F.S.
- (2) This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by the Department staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.
- (3) Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. All practices shall be in accordance with the guidelines and specifications described in Chapter 6 of the Florida Land Development Manual; A Guide to Sound Land and Water Management (Department of Environmental Regulation, 1988), unless a project-specific erosion and sediment control plan is approved as part of the permit. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.
- (4) The permittee shall notify the Department of the anticipated construction start date within 30 days of the date that this permit is issued. **At least 48 hours prior to commencement** of activity authorized by this permit, the permittee shall submit to the Department an "Environmental Resource Permit Construction Commencement" notice (Form No. 62-343.900(3), F.A.C.) indicating the actual start date and the expected completion date.
- (5) When the duration of construction will exceed one year, the permittee shall submit construction status reports to the Department on an annual basis utilizing an "Annual Status Report Form" (Form No. 62-343.900(4), F.A.C.). Status Report Forms shall be submitted the following June of each year.
- (6) **Within 30 days after completion of construction** of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the supplied "Environmental Resource Permit As-Built Certification by a Registered Professional" (Form No. 62-343.900(5), F.A.C.). The statement of completion and certification shall be based on on-site observation of construction or review of as-built drawings for the purpose of determining if the work was completed in compliance with permitted plans and specifications. This submittal shall serve to notify the Department that the system is ready for inspection. Additionally, if deviation from the approved drawings are discovered during the certification process, the certification must be accompanied by a copy of the approved permit drawings with deviations noted. Both the original and revised specifications must be clearly shown. The plans

must be clearly labeled as "as-built" or "record" drawing. All surveyed dimensions and elevations shall be certified by a registered surveyor.

(7) The operation phase of this permit shall not become effective until the permittee has complied with the requirements of condition (6) above, has submitted a **"Request for Transfer of Environmental Resource Permit Construction Phase to Operation Phase"** (Form No. 62-343.900(7), F.A.C.); the Department determines the system to be in compliance with the permitted plans and specifications; and the entity approved by the Department in accordance with Sections 9.0 and 10.0 of the Basis of Review for Environmental Resource Permit Applications Within the South Florida Water Management District - August 1995, accepts responsibility for operation and maintenance of the system. The permit shall not be transferred to such approved operation and maintenance entity until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the Department, the permittee shall initiate transfer of the permit to the approved responsible operating entity if different from the permittee. Until the permit is transferred pursuant to Section 62-343.110(1)(d), F.A.C., the permittee shall be liable for compliance with the terms of the permit.

(8) Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the initiation of the permitted use of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of the phase or portion of the system to a local government or other responsible entity.

(9) For those systems that will be operated or maintained by an entity that will require an easement or deed restriction in order to enable that entity to operate or maintain the system in conformance with this permit, such easement or deed restriction must be recorded in the public records and submitted to the Department along with any other final operation and maintenance documents required by sections 9.0 and 10.0 of the Basis of Review for Environmental Resource Permit Applications Within the South Florida Water Management District - August 1995, prior to lot or unit sales or prior to the completion of the system, whichever occurs first. Other documents concerning the establishment and authority of the operating entity must be filed with the Secretary of State where appropriate. For those systems which are proposed to be maintained by the county or municipal entities, final operation and maintenance documents must be received by the Department when maintenance and operation of the system is accepted by the local government entity. Failure to submit the appropriate final documents will result in the permittee remaining liable for carrying out maintenance and operation of the permitted system and any other permit conditions.

(10) Should any other regulatory agency require changes to the permitted system, the permittee shall notify the Department in writing of the changes prior to implementation so that a determination can be made whether a permit modification is required.

(11) This permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any activity approved by this permit. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40E-4 or Chapter 40E-40, F.A.C.

(12) The permittee is hereby advised that Section 253.77, F.S. states that a person may not commence any excavation, construction, or other activity involving the use of sovereign or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required lease, license, easement, or other form of consent authorizing the proposed

use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on sovereignty lands or other state-owned lands.

(13) The permittee is advised that the rules of the South Florida Water Management District require the permittee to obtain a water use permit from the South Florida Water Management District prior to construction dewatering, unless the work qualifies for a general permit pursuant to subsection 40E-20.302(4), F.A.C., also known as the "No Notice" rule.

(14) The permittee shall hold and save the Department harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any system authorized by the permit.

(15) Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.

(16) The permittee shall notify the Department in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of a permitted system or the real property on which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of section 62-343.130, F.A.C. The permittee transferring the permit shall remain liable for corrective actions that may be required as a result of any violations prior to the sale, conveyance or other transfer of the system.

(17) Upon reasonable notice to the permittee, Department authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with the plans and specifications approved by the permit.

(18) If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the appropriate Department office.

(19) The permittee shall immediately notify the Department in writing of any previously submitted information that is later discovered to be inaccurate.

SPECIFIC CONDITIONS:

(1) The terms, conditions, and provisions of the required use agreement shall be met. Construction of this activity shall not commence on sovereign submerged lands, title to which is held by the Board of Trustees of the Internal Improvement Trust Fund, until all required easement documents have been executed to the satisfaction of the Department.

(2) The project drawings, sheets 1 through 6; the Permit Review Checklist; the 2-page 2003 Exotic Plant List; and DEP forms 62.343.900(3), (4), (5), and (7) are attached to and become part of this permit.

(3) If the approved permit drawings conflict with the specific conditions, then the specific conditions shall prevail.

(4) After selection of the contractor to perform the authorized activities and prior to the initiation of any work authorized by this permit, the permittee (or authorized agent) and the contractor shall attend a pre-construction conference with a representative of the Department. The permittee shall contact the Department to schedule the conference. Department of Environmental Protection, Southeast District Branch Office, Submerged Lands & Environmental Resources Program, Compliance/Enforcement Section, 1801 SE Hillmoor Drive, Suite C 204, Port St. Lucie, FL 34952, Attn: Danna Small, 772-398-2806.

(5) All HDD activities shall take place during daylight hours only.

(6) The permittee shall implement the following Best Management Practices (BMPs) to minimize the potential for adverse environmental impacts during *conduit* installations:

- A. Best management practices for erosion control within the staging area shall be implemented and maintained at all times during construction of the manhole and drilling operations to prevent siltation and turbid discharges in excess of State water quality standards pursuant to Rule 62-302, F.A.C. Methods shall include, but are not limited to, the use of staked hay bales, staked filter cloth, sodding, seeding, and mulching; staged construction; and the installation of turbidity screens around the immediate project site. Dewatering will require a permit from the South Florida Water Management District.
 - B. To provide an additional level of resource protection, the volume of bentonite in the drill string will be monitored at all times during the directional drilling operation. Should a drop in volume of bentonite occur, the following measures will be taken:
 - 1) Immediately conduct a visual inspection of both terrestrial and subaqueous portions of the HDD corridor. Notify the Southeast District Branch Office, Compliance/Enforcement Section, Attn: Danna Small, 772-398-2806 if a frac-out is detected.
 - 2) Should the release of drilling materials occur on land, a sediment fence shall be constructed around the site and the material shall be removed by vacuum truck.
 - 3) Divers shall be present during the drill operations to monitor the floor for any evidence of bentonite.
 - 4) Should the release of drilling materials occur, a cleanup vessel will be dispatched to the frac-out site within 24 hours to vacuum pump the material from the bottom into filter bags for disposal.
 - C. In order to minimize the possibility of a bentonite release during punch out, the site project manager shall consider the use of water in place of bentonite during the last 30 to 50 feet of the directional bore. The HDD operator shall stop the flow of recirculated bentonite and the bore hole shall be flushed with water to remove the bentonite. Once the drill string is clear of bentonite, drilling will continue using only water as the boring medium. The first monitoring report submitted to the Department will discuss if water was used during the final stages of drilling and if not, the reasons why it wasn't feasible.
- (7) Should a frac-out occur that causes the loss or degradation of seagrass, the applicant shall submit a mitigation plan at a ratio of 4:1 within 30 days of installation.
- (8) The use of additives to the drilling lubricant, bentonite, are prohibited.
- (9) Within 12 hours of each HDD punch out, the permittee shall perform a visual inspection of the seafloor above the subaqueous portions of the HDD corridor to inspect for bentonite releases or frac-outs. Within 30 days of the HDD punch out, the permittee shall submit a written summary to the Southeast District Branch Office, Submerged Lands & Environmental Resources Program, Compliance/Enforcement Section, 1801 SE Hillmoor Drive, Suite C 204, Port St. Lucie, FL 34952, Attn: Danna Small. The permittee shall include the following information:
- A. a timeline of the individual conduit installations
 - B. any complications encountered during conduit installations
 - C. results of conduit corridor dive inspections
 - D. details of any bentonite clean-up operation
 - E. discussion of possible causes of bentonite discharges (frac-outs)
 - F. location of bentonite discharge, amount of material discharged, amount of material recovered, and the area that was affected by the drilling discharge.

(10) Within 14 days of the conduit installation, the permittee shall fully restore the staging area to its original condition. Paved surfaces shall be repaired and unpaved surface areas will be replanted with non-exotic invasive vegetation.

RIGHTS OF AFFECTED PARTIES

This permit and intent to grant a use agreement on sovereign submerged lands is (are) hereby granted. This action is final and effective on the date filed with the Clerk of the Department unless a sufficient petition for an administrative hearing is timely filed under sections 120.569 and 120.57 of the Florida Statutes as provided below. If a sufficient petition for an administrative hearing is timely filed, this action automatically becomes only proposed agency action on the application, subject to the result of the administrative review process. Therefore, on the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. The actual terms of the use agreement will be formally executed at a later date and shall include provisions for rents and such other provisions as normally are included in such use. Because an administrative hearing may result in the reversal or substantial modification of this action, the applicant is advised not to commence construction or other activities until the deadlines noted below for filing a petition for an administrative hearing or request for an extension of time have expired and until the use agreement has been executed and delivered.

Mediation is not available.

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Under rule 62-110.106(4) of the Florida Administrative Code, a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon. If a request is filed late, the Department may still grant it upon a motion by the requesting party showing that the failure to file a request for an extension of time before the deadline was the result of excusable neglect.

If a timely and sufficient petition for an administrative hearing is filed, other persons whose substantial interests will be affected by the outcome of the administrative process have the right to petition to intervene in the proceeding. Intervention will be permitted only at the discretion of the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code.

In accordance with rules 28-106.111(2) and 62-110.106(3)(a)(4), petitions for an administrative hearing by the applicant must be filed within 14 days of receipt of this written notice. Petitions filed by

any persons other than the applicant, and other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 14 days of publication of the notice or within 14 days of receipt of the written notice, whichever occurs first. Under section 120.60(3) of the Florida Statutes, however, any person who has asked the Department for notice of agency action may file a petition within 14 days of receipt of such notice, regardless of the date of publication.

The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition for an administrative hearing within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

- (a) The name and address of each agency affected and each agency's file or identification number, if known;
- (b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
- (c) A statement of when and how the petitioner received notice of the agency decision;
- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
- (f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301.

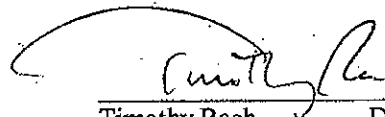
Under sections 120.569(2)(c) and (d) of the Florida Statutes, a petition for administrative hearing must be dismissed by the agency if the petition does not substantially comply with the above requirements or is untimely filed.

This permit constitutes an order of the Department. Subject to the provisions of paragraph 120.68(7)(a) of the Florida Statutes, which may require a remand for an administrative hearing, the applicant has the right to seek judicial review of the order under section 120.68 of the Florida Statutes, by the filing of a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the order is filed with the Clerk of the Department.

Permittee: Florida Power & Light Company
File No.: 56-0206116-001
Page 9

Executed in West Palm Beach, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

 6/30/03

Timothy Rach Date
Program Administrator
Submerged Lands & Environmental Resources Program

TR/jeb/km/kt

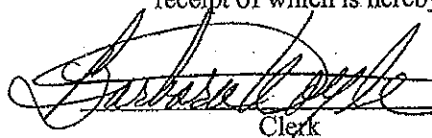
Copies furnished to: U. S. Army Corps of Engineers-Stuart

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this permit, including all copies, were mailed before the close of business on June 30th 2003, to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, under 120.52(7) of the
Florida Statutes, with the designated Department Clerk,
receipt of which is hereby acknowledged.

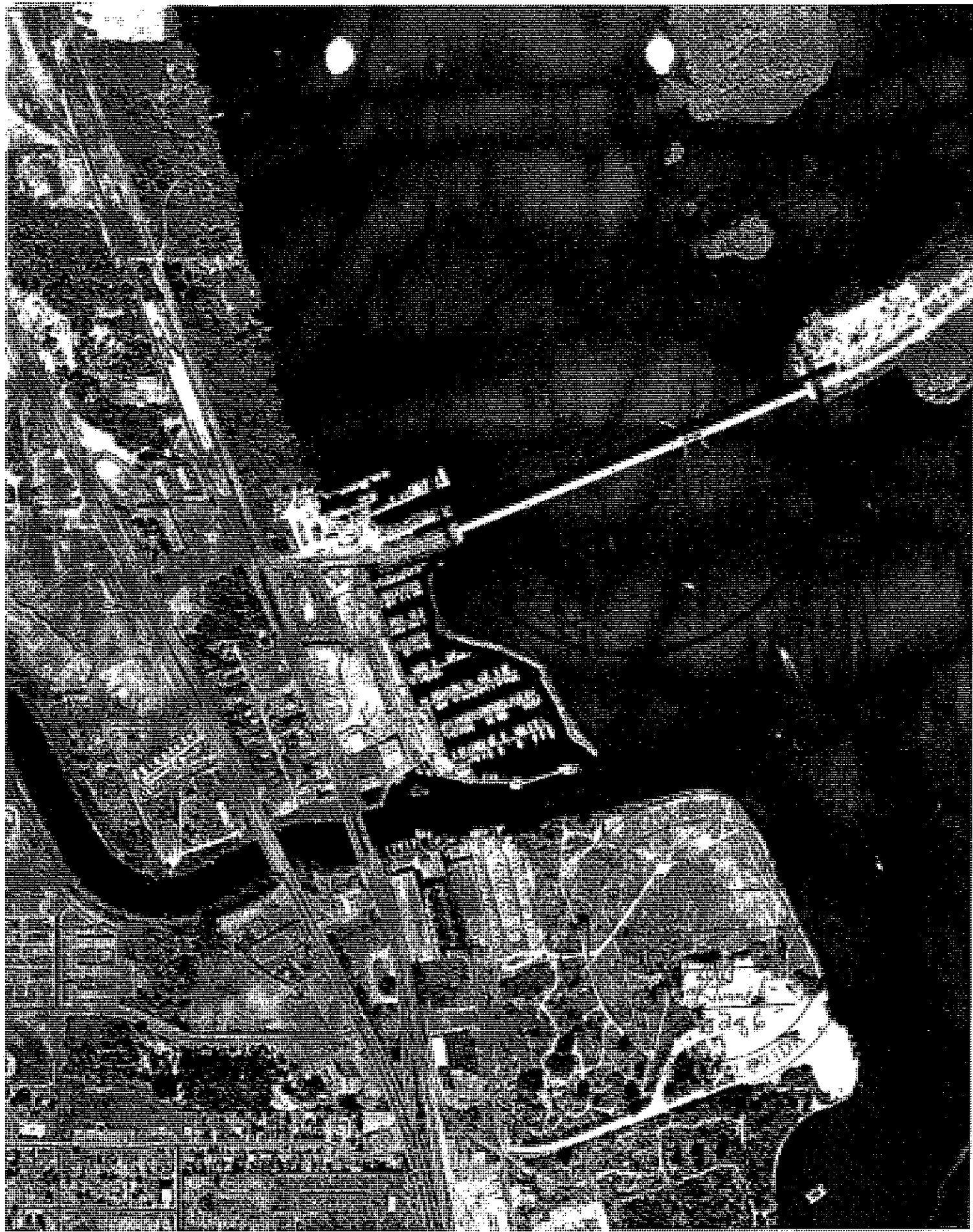
 JUN 30 2003
Clerk Date

Prepared by Kathryn Tunnell.

13 pages attached.

SEE MAP NOS. 43&44

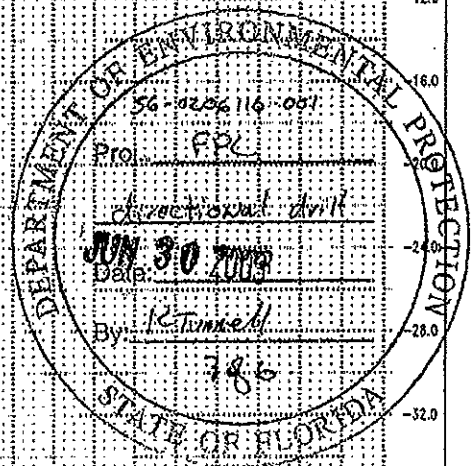
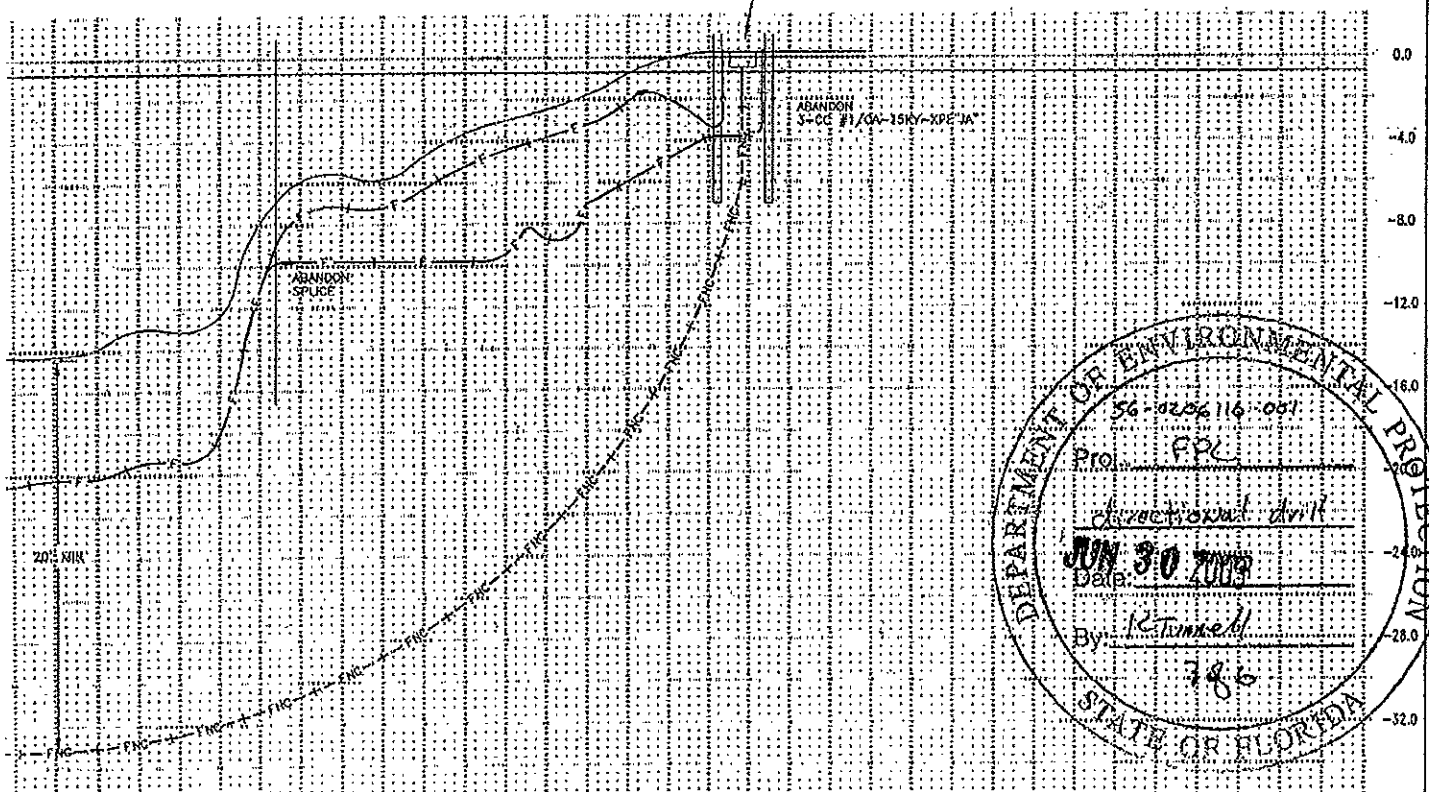
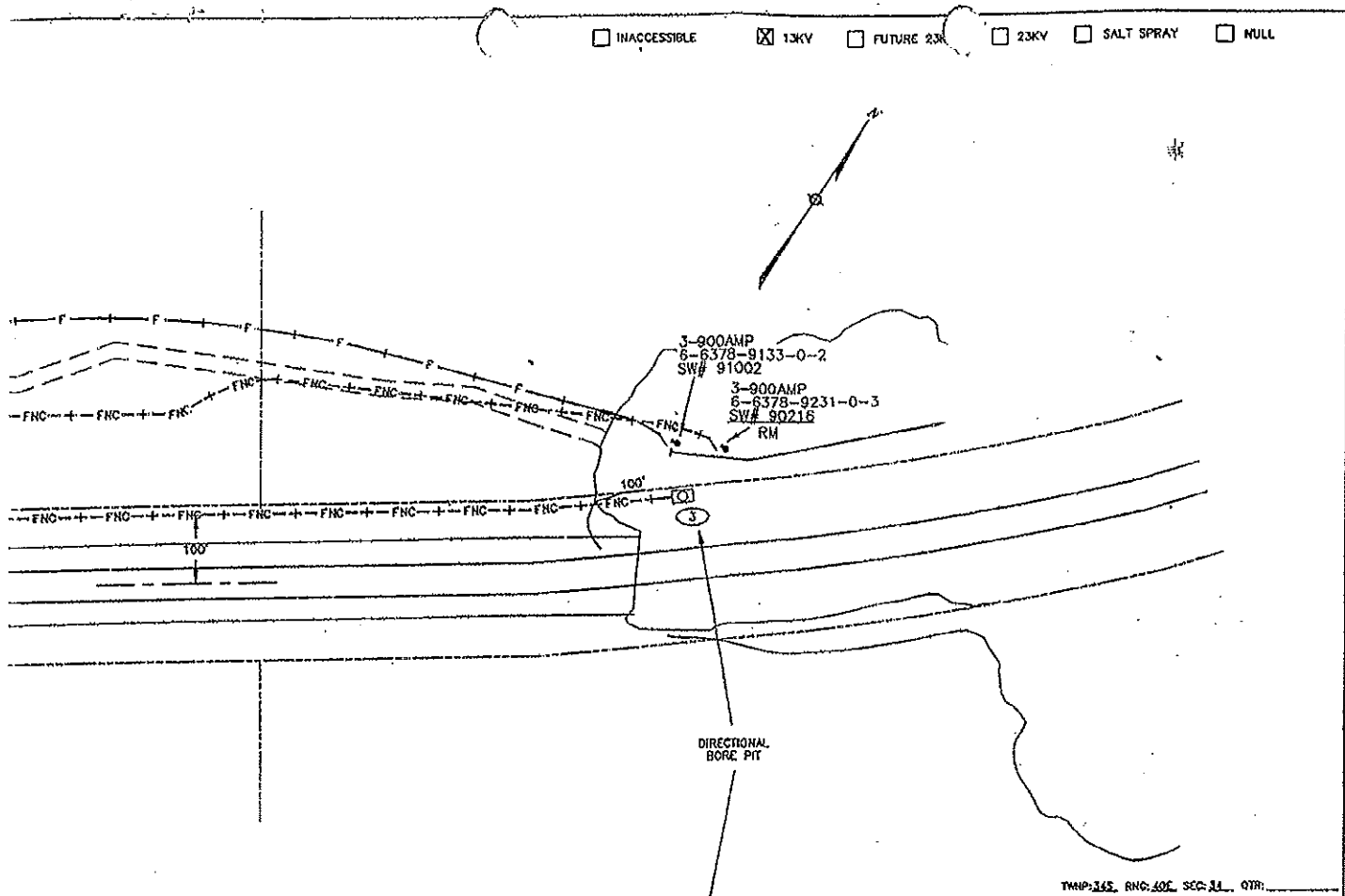




0 200M

0 200yd

Image courtesy of the US Geological Survey.



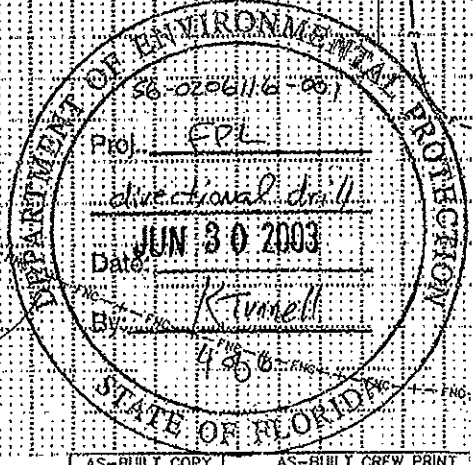
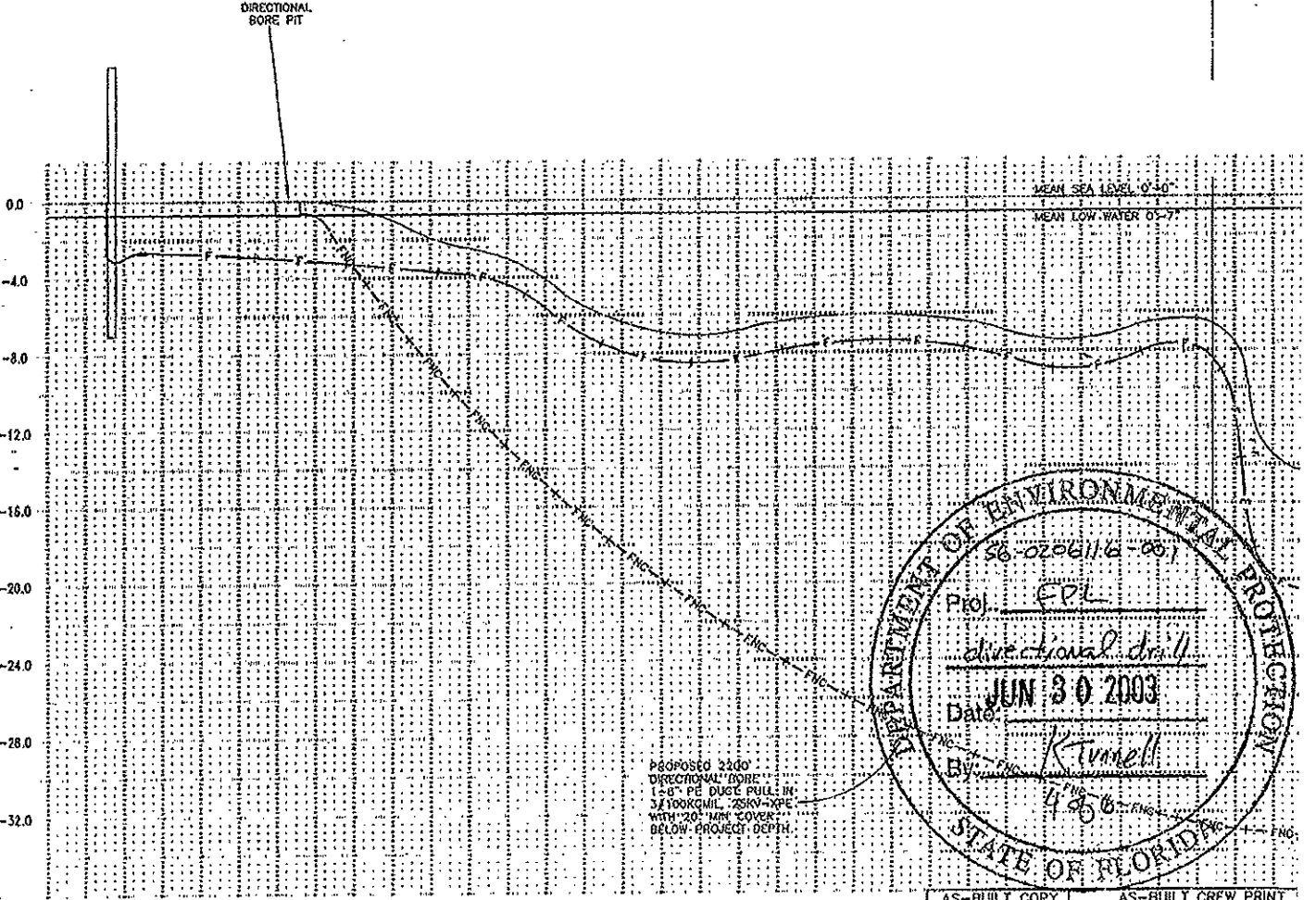
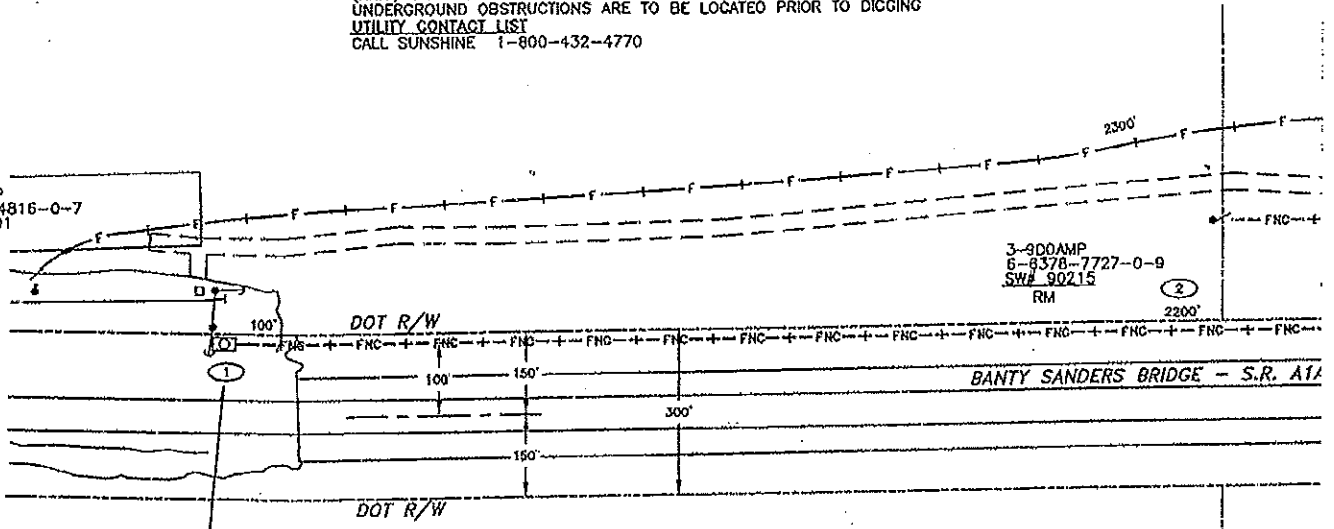
Easement? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Survey/Stake? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Work with SMO? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		DESIGNED BY	B. HESTER	W/A TC BANTY SANDERS BRIDGE ALONG A1A TO JIM ISLAND ST. LUCIE COUNTY, FL F29PP1 DWD NO. WR: 60036 IWR: 0036-40-432
Tree Work? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Designer/Stake? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	OT/Special Mt? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>		DRAWN BY	V. DEROSA	
Map Posting? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Trench Feet	Duct Bank Feet		DATE	09/20/02	
	CITY	DR. DIST.		COUNTY AIR	STATE RD X	
	W/D	RR XING	COUNTY RD.	TRANSM.		
Posted by	Telephone Request? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	CATV Request? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>				

CONSTRUCTION NOTES - WO# 0036-40-432

CABLE
FNC IS 3CC-1000CMIL AL 25KV-XPE IN 1-8 DIRECTIONAL BORE PVC WITH 20" MIN COVER (UNLESS NOTED)
STANDARD NOTES
ALL CABLE AND/OR CONDUIT ENDS ARE TO BE MARKED WITH AN ELECTRONIC MARKER
(XXX') DENOTES CABLE PULL DISTANCE
UNDERGROUND OBSTRUCTIONS ARE TO BE LOCATED PRIOR TO DIGGING
UTILITY CONTACT LIST
CALL SUNSHINE 1-800-432-4770

3-900AMP
6-6378-4816-0-7
SW# 97001

3-900AMP
6-6378-7727-0-9
SW# 90215
RM



Proposed 240'
Directional Bore
1-8" PE Duct Pull-In
3/1000CMIL 25KV-XPE
With 20" Min Cover
Below Project Depth

PLOT DATE: 10/21/02 PLOT TIME: 11:52:35 AM CAD NAME: VMOOST

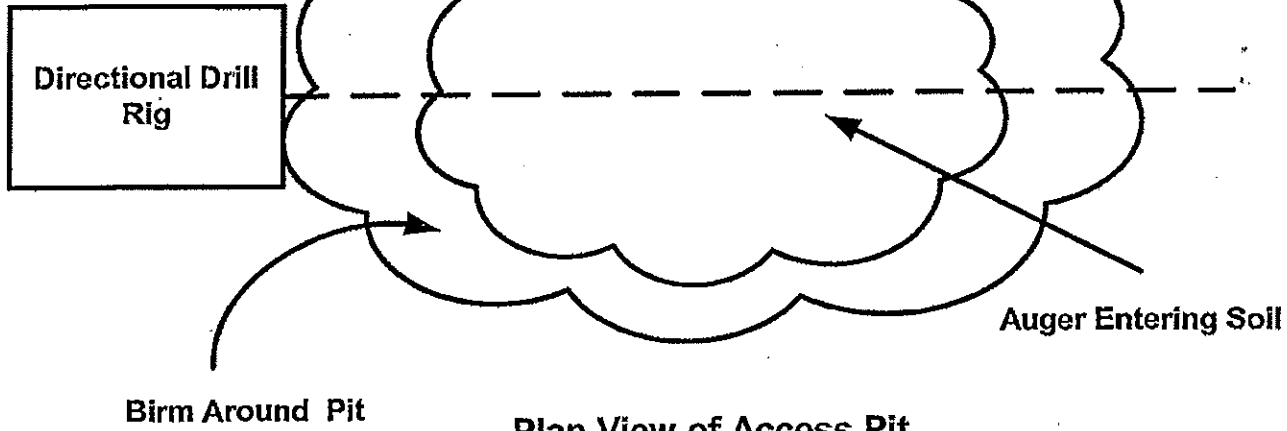
0036-40-432	1	09/20/02	SUBMARINE CABLE ACROSS INDIAN RIVER ALONG BANTY SANDERS BRIDGE
AS-BUILT	AUTH NO.	NO.	DATE
			REVISION

AS-BUILT COPY	AS-BUILT CREW PRINT
Date: _____ Job CERTIFIED COMPLETED as shown on this AS-BUILT print Material changes shown on ROS.	Foreman's Signature: _____ Date: _____ Supervisor's Signature: _____ Date: _____ All required ground rods have been driven & verified to be within FPL standards. Values are shown at all locations.

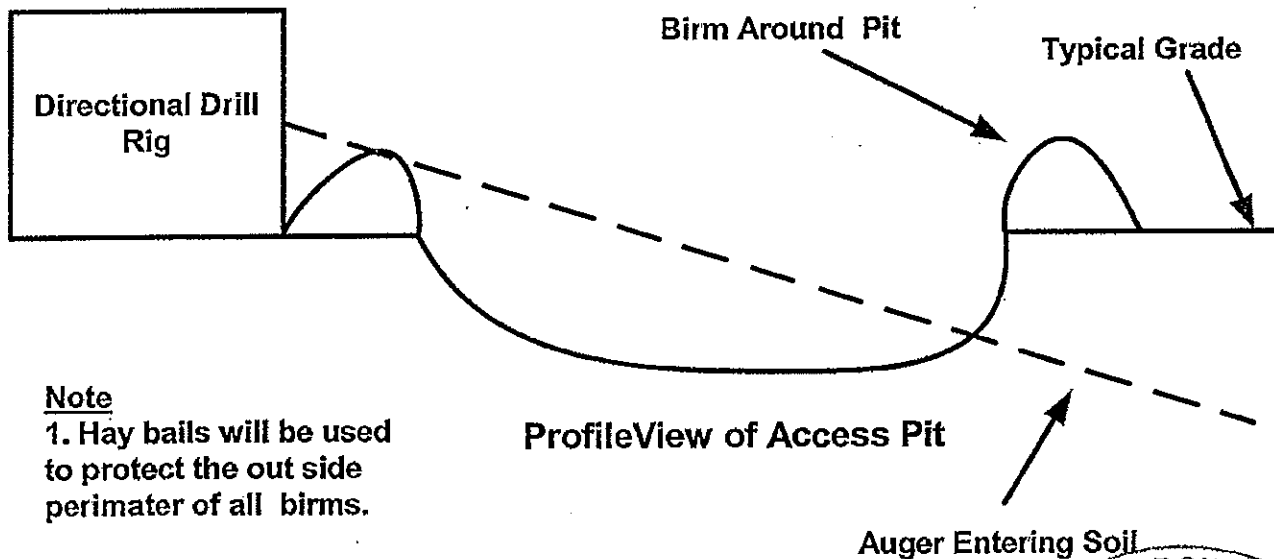
RECEIVED

APR 25 2003

DEPT OF ENV PROTECTION
WEST PALM BEACH



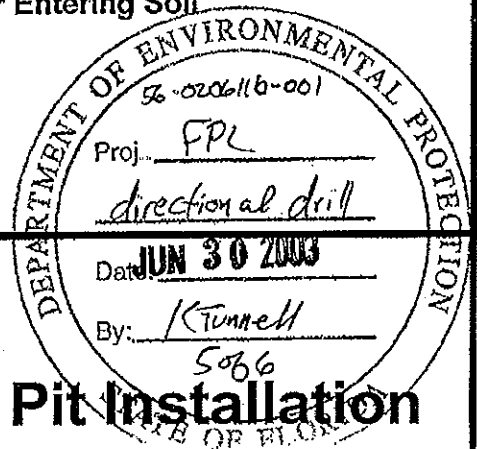
Plan View of Access Pit



Profile View of Access Pit

Note

1. Hay bails will be used to protect the out side perimater of all birms.



Typical Directional Bore Access Pit Installation

Birm Around Pit

Auger Entering Pit From Source

Plan View Receiving Pit

Birm Around Pit

Typical Grade

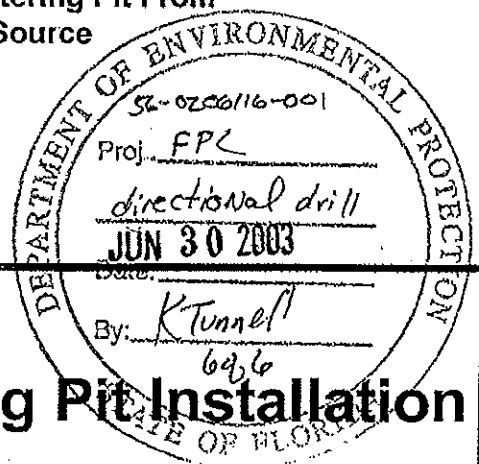
Profile View Receiving Pit

Auger Entering Pit From Source

Note

1. Hay bails will be used to protect the out side perimater of all birms.

Typical Directional Bore Receiving Pit Installation

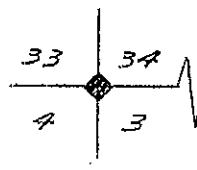
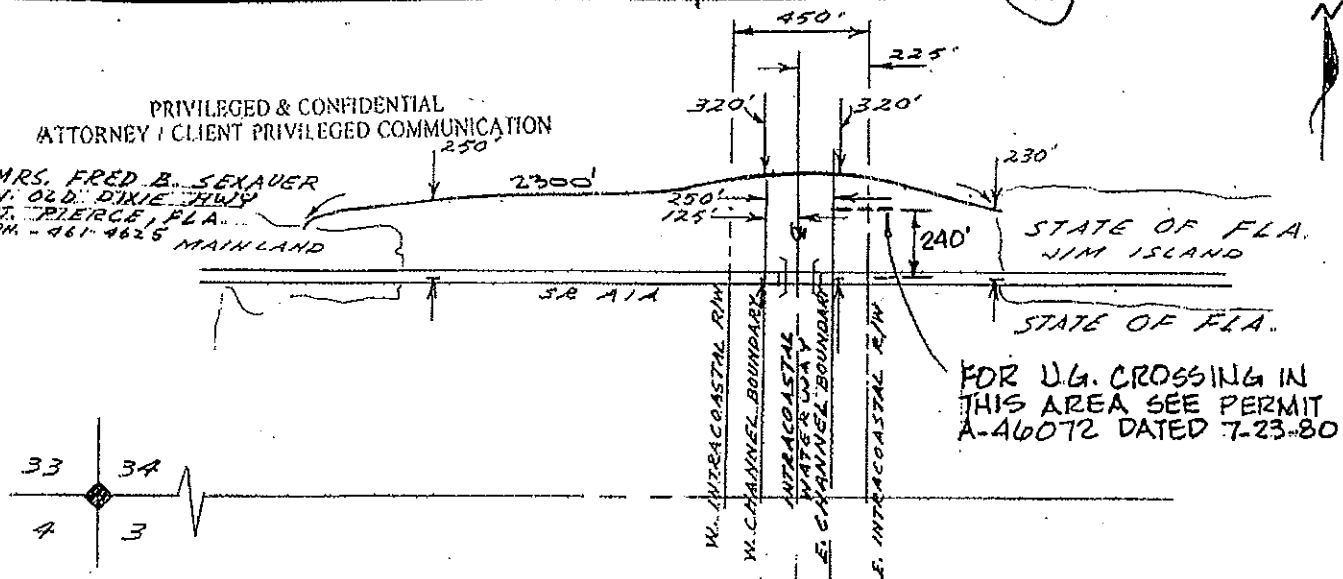


DRAWN BY	ZOPEZ	"As Built"	4/95	AL
CHECKED	CGB	REVISION	DATE	BY
CORRECT	RQW			

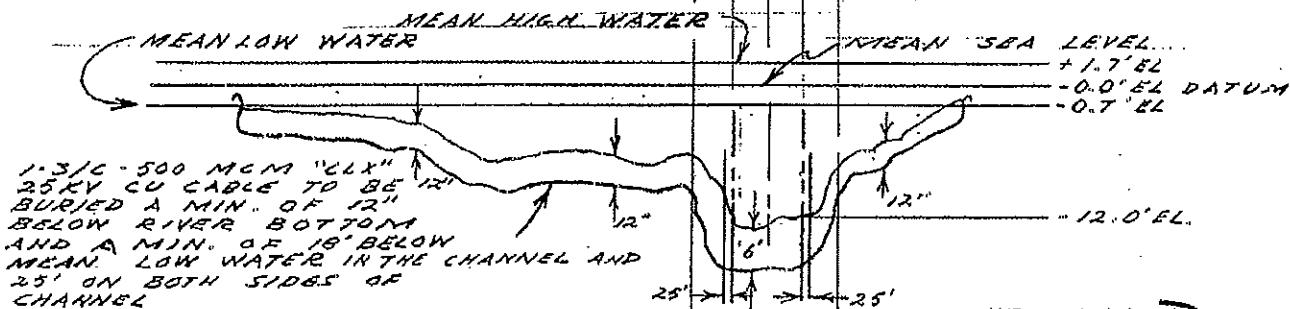
APPROVED:
J. O. Toneykoff
 REGISTERED ENGINEER NO. - 7158

PRIVILEGED & CONFIDENTIAL
 ATTORNEY / CLIENT PRIVILEGED COMMUNICATION

MRS. FRED B. SEXAUER
 N. OLD DIXIE HWY
 FT. PIERCE, FLA.
 PH. - 461-4625



PLAN
 0 600'
 SCALE IN FEET



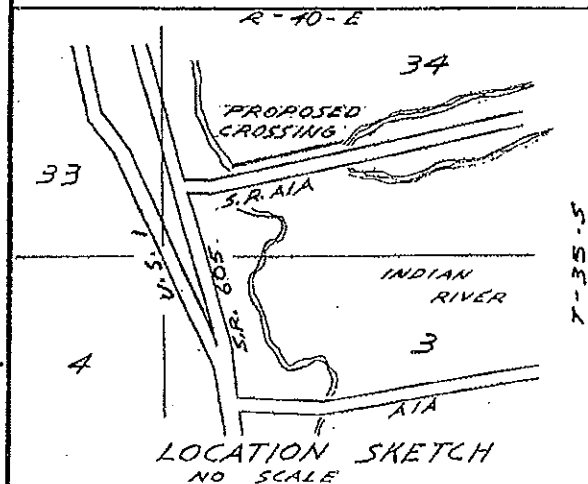
ELEVATION
 HOR. 0 600'
 VERT. 0 10' 20'
 SCALE IN FEET

COE PERMIT
 #73-0988
 TILTF

PROFILE OF EXISTING WATERWAY
 BOTTOM IS APPROX., EXACT IN-
 FORMATION WILL BE PROVIDED
 AS IT IS OBTAINED.

SUBMARINE CABLE CROSSING
 THE INTRACOASTAL WATERWAY
 320' N/O AIA. N/O FORT
 PIERCE, FLA.

APPLICATION BY
FLORIDA POWER & LIGHT COMPANY
 DATE: 7-16-73 SCALE: SHOWN
 SIO-16-5-460 A-465051

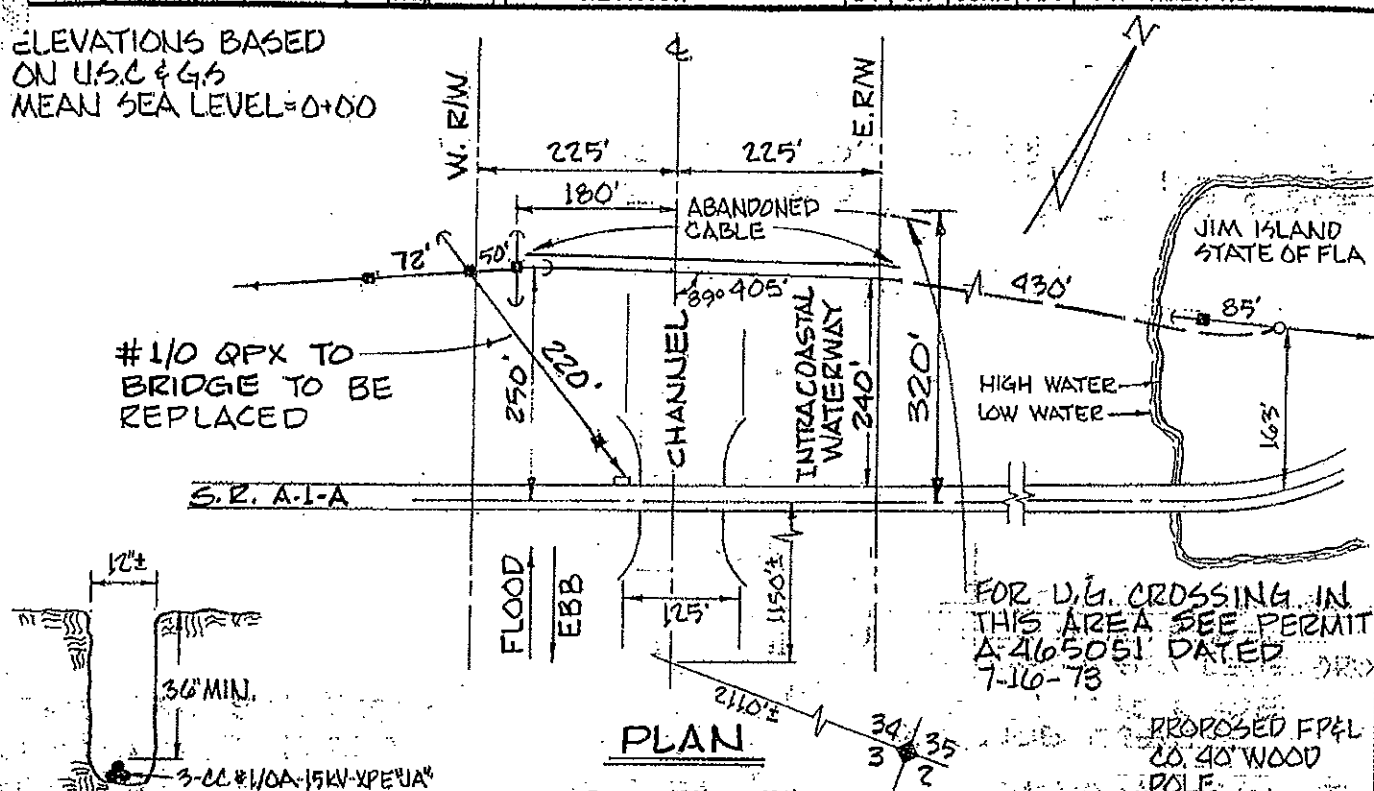


DRAWN BY	GRIMES	131-5-460	3	8	32	REPLACE OH. WITH UG.	JVP	WJC	WJC	HZZ	
CHECKED	WJC	694-3-460	2	7	80	CANCELLED	CG	WJC	HZZ	HR	
CORRECT	HZZ	374-43-440	1	11-7-66		ORIGINAL JOB	URC				
		AUTH	NO	DATE		REVISION	BY	CH	CORR	APP	

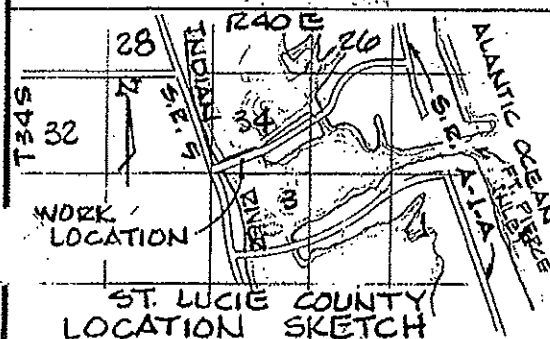
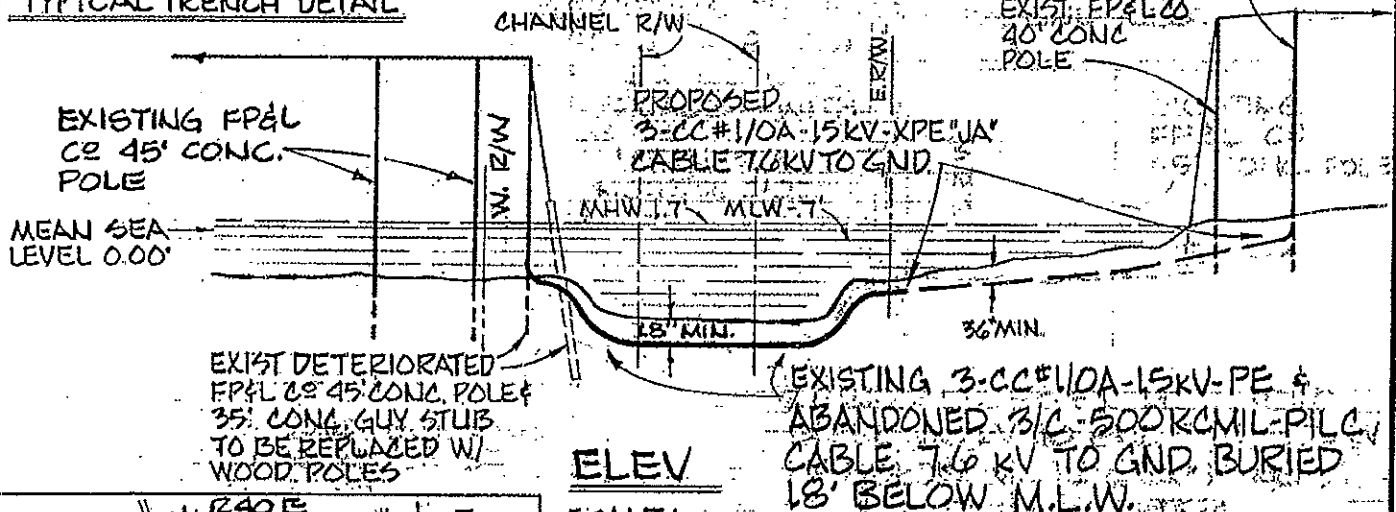
APPROVED:

H. Reimer
REGISTERED ENGINEER NO. 11474

ELEVATIONS BASED
ON U.S.C & G.S
MEAN SEA LEVEL = 0+00



TYPICAL TRENCH DETAIL



ELEV

SCALE:
0' 100' 200'
SCALE IN FEET-HOR
0' 10' 20' 30'
SCALE IN FEET VERT

THIS DWG. SUPERSEDES DWG.
A-41591 DATED 11-7-66

SUBMARINE CABLE CROSSING
THE INTRACOASTAL WATERWAY
240' N/O A-1-A FORT PIERCE FLA.

APPLICATION BY
FLORIDA POWER & LIGHT COMPANY
DATE: 7-23-80 SCALE: SHOWN
SIO: SEE REVISION A-46072



Jeb Bush
Governor

APR 21 2004

Department of Environmental Protection

Southeast District
400 N. Congress Ave. Suite 200
West Palm Beach, Florida 33401

Colleen M. Castille
Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

10020860000687813017

Warren A. Tittle
Florida Power & Light Company
P.O. Box 8248
Ft. Lauderdale, FL 33340

Re: File Name: FP&L Banty Sanders Bridge
File No.: 56-0206116-002
Modification of Permit No.: 56-0206116-001

Dear Mr. Tittle:

Your request to modify this permit has been received and reviewed by Department staff. The modifications are the following: to modify the project description to include two (2) 8-inch conduits (original permit included only one).

The project is located in the Indian River immediately north of the Banty Saunders Bridge, within the boundaries of Florida Department of Transportation Right-of-Way, Trustee's Dedication # 23008, Section 34, Township 34 South, Range 40 East, Ft. Pierce, St. Lucie County Indian River-Vero Beach to Ft. Pierce Aquatic Preserve, Outstanding Florida Waters, Class III Waters, Latitude North 27°28' 16.73" and Longitude West 80°19' 33.69"

The above changes are not expected to adversely affect water quality and are clearly in the public interest provided the following **PROJECT DESCRIPTION** is amended and added to the permit as issued; please note the additions are underlined and the deletions are ~~stricken~~:

PROJECT DESCRIPTION:

The purpose of the project is to install a new feeder cable consisting of ~~one (1)~~ two (2) 8-inch HDPE conduits by means of directional drill under the Indian River. The crossing under sovereign submerged land will be approximately 2,264 linear feet and will sever approximately ~~eighty four (84)~~ one hundred seventy five (175) cubic yards of sovereign submerged lands. Severance fees have been paid in full. Access and egress will be located on uplands and the applicant is responsible for obtaining all appropriate permits for the use of those areas. Turbidity screens and/or hay bales will be used to contain turbidity and sedimentation at the bore pits.

"More Protection, Less Process"

Printed on recycled paper.

File Name: FP&L, Banty Sanders Bridge
File No.: 56-0206116-002
Modification of Permit No.: 56-0206116-001
Page 2

Since the proposed modification with the above project description is not expected to result in any adverse environmental impact or water quality degradation, the permit is hereby modified as requested. By copy of this letter and the attached drawings, we are notifying all necessary parties of the modifications.

This letter of approval does not alter the original expiration date of June 29, 2008, General or Specific Conditions, or monitoring requirements of the permit. This letter and the accompanying drawings must be attached to the original permit.

This permit modification is hereby granted. This action is final and effective on the date filed with the Clerk of the Department unless a sufficient petition for an administrative hearing is timely filed under sections 120.569 and 120.57 of the Florida Statutes as provided below. If a sufficient petition for an administrative hearing is timely filed, this action automatically becomes only proposed agency action on the application, subject to the result of the administrative review process. Therefore, on the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because an administrative hearing may result in the reversal or substantial modification of this action, the applicant is advised not to commence construction or other activities until the deadlines noted below for filing a petition for an administrative hearing or request for an extension of time have expired.

Mediation is not available.

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Under rule 62-110.106(4) of the Florida Administrative Code, a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon. If a request is filed late, the Department may still grant it upon a motion by the requesting party showing that the failure to file a request for an extension of time before the deadline was the result of excusable neglect.

If a timely and sufficient petition for an administrative hearing is filed, other persons whose substantial interests will be affected by the outcome of the administrative process have the right to petition to intervene in the proceeding. Intervention will be permitted only at the discretion of

File Name: FP&L, Banty Sanders Bridge
File No.: 56-0206116-002
Modification of Permit No.: 56-0206116-001
Page 3

the presiding officer upon the filing of a motion in compliance with rule 28-106.205 of the Florida Administrative Code.

In accordance with rules 28-106.111(2) and 62-110.106(3)(a)(4), petitions for an administrative hearing by the applicant must be filed within 21 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within 21 days of publication of the notice or 21 days of receipt of the written notice, whichever occurs first. Under section 120.60(3) of the Florida Statutes, however, any person who has asked the Department for notice of agency action may file a petition 21 days of receipt of such notice, regardless of the date of publication.

The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition for an administrative hearing within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 of the Florida Statutes.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

- (a) The name and address of each agency affected and each agency's file or identification number, if known;
- (b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
- (c) A statement of when and how the petitioner received notice of the agency decision;
- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
- (f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

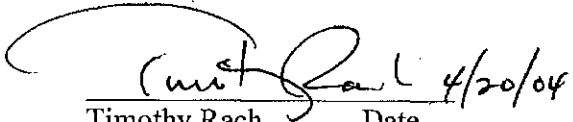
A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301.

Under sections 120.569(2)(c) and (d) of the Florida Statutes, a petition for administrative hearing must be dismissed by the agency if the petition does not substantially comply with the above requirements or is untimely filed.

File Name: FP&L, Banty Sanders Bridge
File No.: 56-0206116-002
Modification of Permit No.: 56-0206116-001
Page 4

This permit modification constitutes an order of the Department. Subject to the provisions of paragraph 120.68(7)(a) of the Florida Statutes, which may require a remand for an administrative hearing, the applicant has the right to seek judicial review of the order under section 120.68 of the Florida Statutes, by the filing of a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida, 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the order is filed with the Clerk of the Department.

Sincerely,



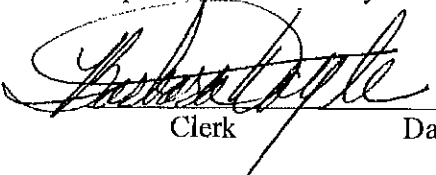
Timothy Rach Date
Program Administrator
Submerged Lands & Environmental Resources Program

Enclosures

cc: U. S. Army Corps of Engineers-Jon Soderberg

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to 120.52(7),
Florida Statutes, with the designated Department Clerk,
receipt of which is hereby acknowledged.



Clerk Date APR 21 2004

CONSTRUCTION NOTES - WO# 0036-40-432

CABLE

FNC IS 3CC-1000KCMIL AL 25KV-XPE IN 2-8" DIRECTIONAL BORE PVC WITH 20" MIN COVER (UNLESS NOTED)

STANDARD NOTES

ALL CABLE AND/OR CONDUIT ENDS ARE TO BE MARKED WITH AN ELECTRONIC MARKER

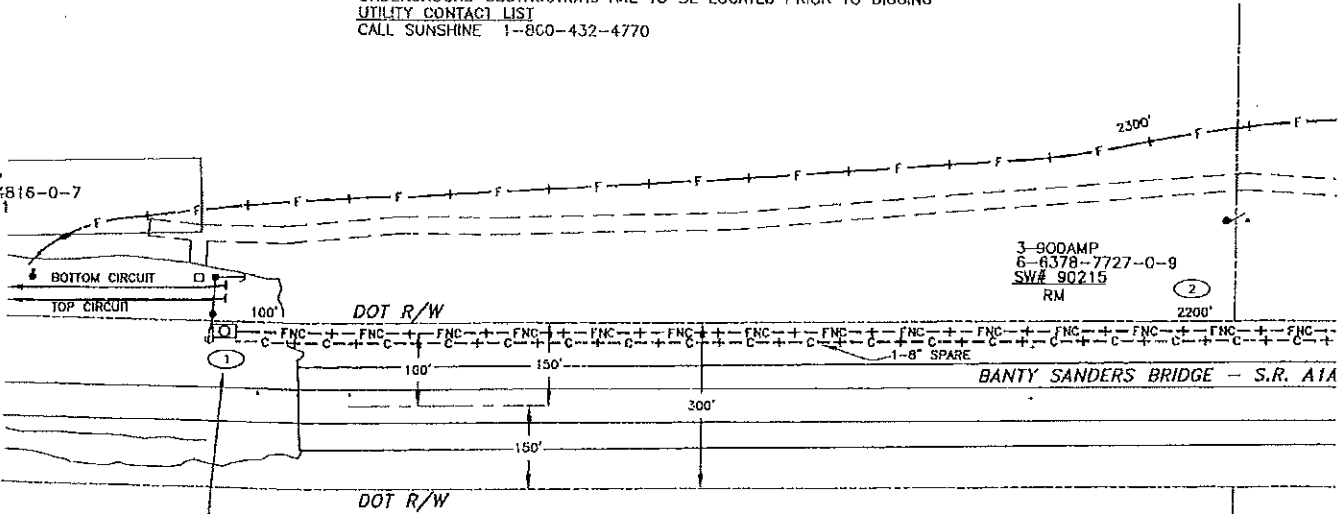
(XXX') DENOTES CABLE FULL DISTANCE

UNDERGROUND OBSTRUCTIONS ARE TO BE LOCATED PRIOR TO DIGGING

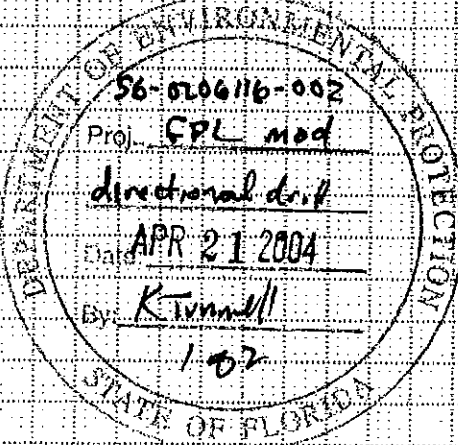
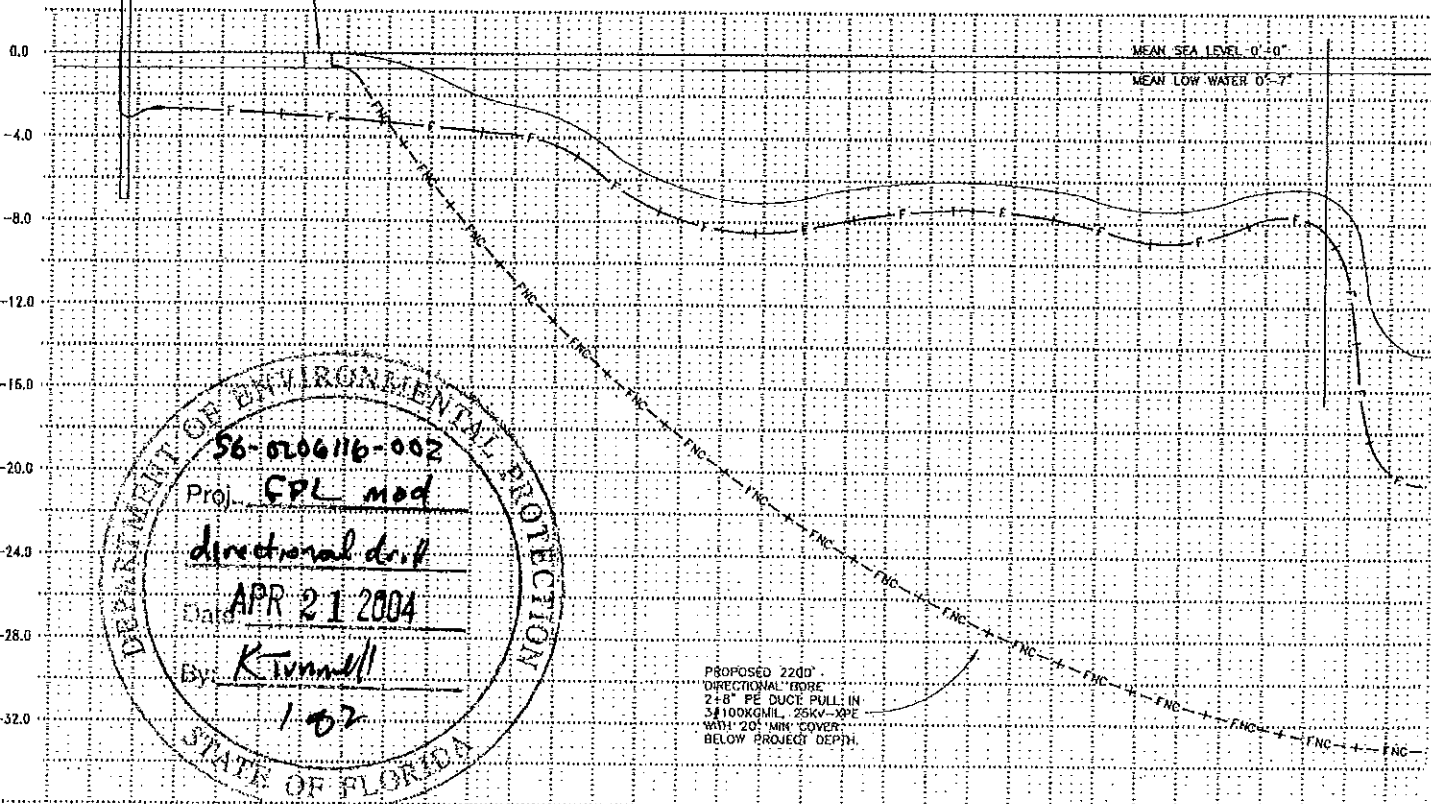
UTILITY CONTACT LIST

CALL SUNSHINE 1-800-432-4770

3-900AMP
6-6378-4816-0-7
SW# 97001



DIRECTIONAL
BORE PIT



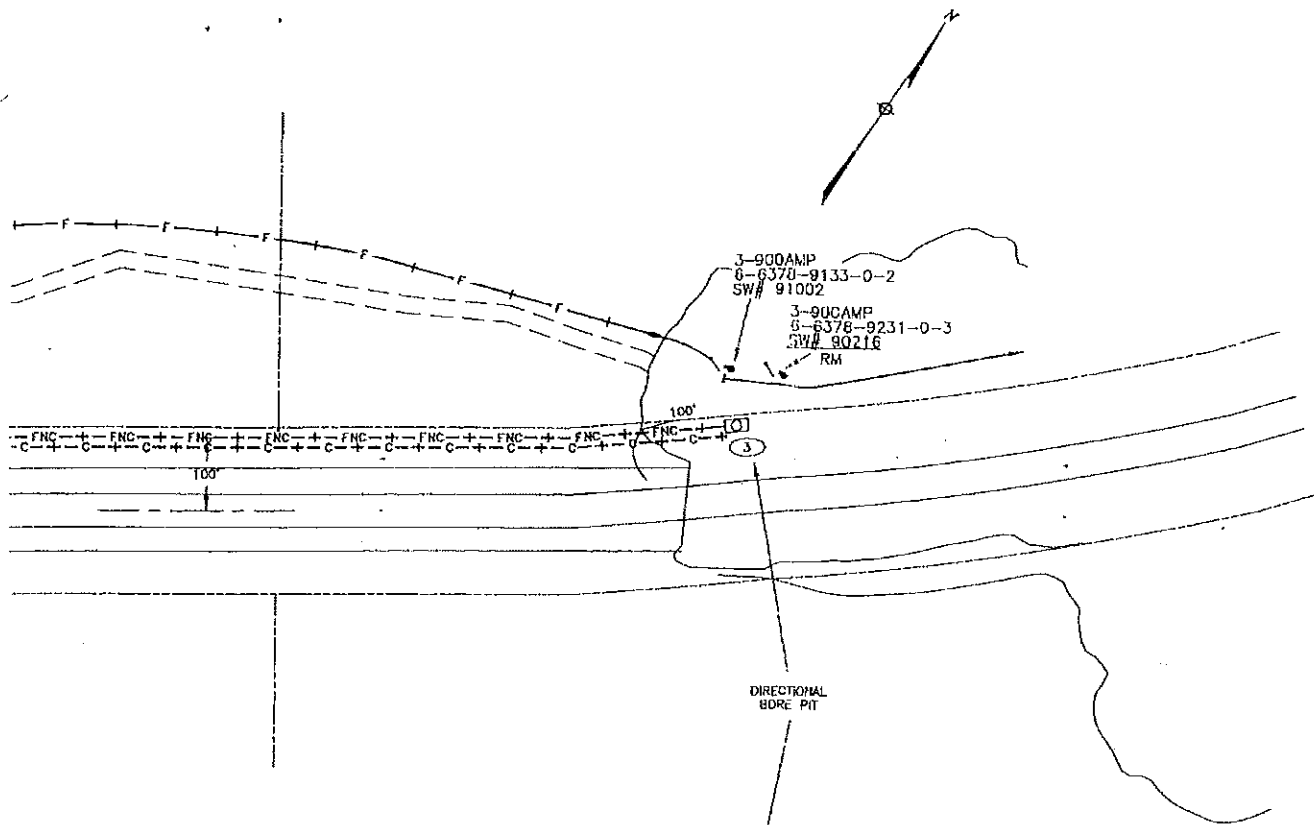
PROPOSED 2200'
DIRECTIONAL BORE
2+8" PE DUCT PULL IN
3#1000KCMIL 25KV-XPE
WITH 20" MIN COVER
BELOW PROJECT DEPTH

AS-BUILT COPY		AS-BUILT CREW PRINT	
DATE	CERT. DATE	FOREMAN'S SIGNATURE	DATE
Job CERTIFIED COMPLETED as shown on this AS-BUILT print. Material changes shown on ROS.			
SUPERVISOR'S SIGNATURE		DATE	
All required ground rods have been driven & verified to be within FPL Standards. Values are shown at all locations.			
FOREMAN'S SIGNATURE		DATE	

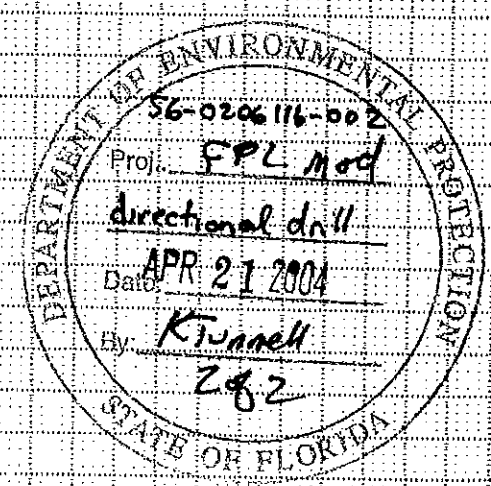
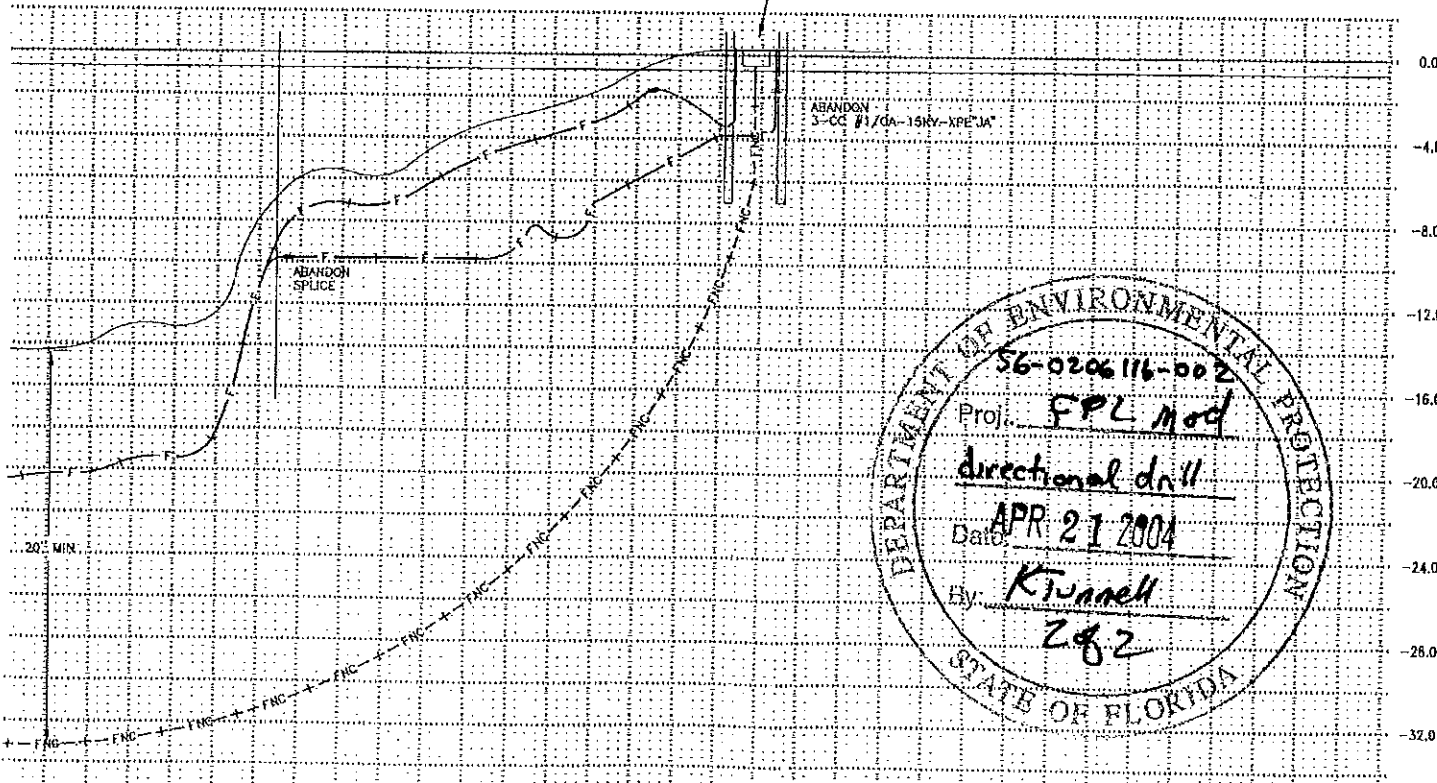
PLOT DATE: 2/19/2004 C:\D\NAME: FNC0303B

	000000	2	01/29/03
	0036-40-432	1	09/20/02
ASBUILT	AUTH NO.	NO.	DATE

REMOVED CBL BTWN 90215-90216 PER T.O.	
SUBMARINE CABLE ACROSS INDIAN RIVER ALONG BANTY SANDERS BRIDGE	
REVISION	



TWNP: 345 RING: 40E SEC: 34 QTR:



Easement?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Survey/Stake?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Work with SMO?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
Tree Work?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	Designer/Stake?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	CT/Special Mtr?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
Map Posting?	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	Trench Feet		Duct Bank Feet	
		CITY	DR. DIST.	COUNTY AIR	STATE RD X FAA
		YARD	RR XING	COUNTY RD.	TRANSM.
Posted by		Telephone Request?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	CATV Request?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>



DESIGNED BY	B. HESTER
DRAWN BY	V. DEROSA
DATE	09/20/02
MAP NO.	F29

W/A TC	
BANTY SANDERS BRIDGE	
ALONG A1A TO JIM ISLAND	
ST. LUCIE COUNTY, FL	
DWG NO.	F29PP1
WR: 60036	(WR: 0036-40-432)

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND

EASEMENT

NO. 26081(2996-56)

WHEREAS, pursuant to application made by the Southern Bell Telephone and Telegraph Company, for a right of way easement over and through sovereignty lands held by the Board of Trustees of the Internal Improvement Trust Fund and said Board did on July 2, 1980 agree to the granting of same,

THEREFORE, WITNESS, THIS INDENTURE, made and entered into by and between the Board of Trustees of the Internal Improvement Trust Fund, as grantor, and Southern Bell Telephone and Telegraph Company, as grantee, does hereby grant unto said grantee its successors and assigns, subject to the conditions hereinafter set forth, a right of way easement for subaqueous cable installation, on, under and across the following described land in St. Lucie County, Florida to-wit:

A parcel of sovereignty land, lying in the Indian River abutting Section 34, Township 34 South, Range 40 East, St. Lucie County, Florida.

An area 2003 feet long lying between the shores of the intracoastal waterway, more specifically described as follows: Beginning at a point 112.8 feet North of and 10.3 feet West of the West centerline end of the State Road A-1-A, Section 94060 North Bridge, thence N 17° W 50 feet, thence N 73° E 2003 feet, thence S 17° E 50 feet, said point being 167.8 feet North of and 79.7 feet West of the East centerline end of the State Road A-1-A, Section 94060, North Bridge, thence S 17° E 50 feet, thence S 73° W 971 feet, thence S 74°55'42" W 1033 feet, thence N 17° W 10.6 feet to the Point of Beginning. Containing 4.13, more or less, acres.

The conditions under which this easement is granted are as follows:

1. The rights hereby conferred shall be subject to (a) any and all prior rights of the United States; and (b) any and all prior grants by the Board of Trustees of the Internal Improvement Trust Fund in and to submerged lands situated within the limits of the right of way hereinabove described.

2. That no title to said land is conferred by this instrument.

3. That the above described parcel of land shall be used solely as right of way for the installation, maintenance and use of subaqueous cable. In the event the land herein described shall cease to be used for said purposes then the easement hereby granted covering said land shall terminate without notice from the Board of Trustees of the Internal Improvement Trust Fund.

4. That the grantee herein will not, in the construction and maintenance of said cable installation, damage said lands or unduly interfere with public or private rights therein.

5. That the grantee herein shall save, protect and hold harmless the State of Florida and the Board of Trustees of the Internal Improvement Trust Fund from all damages and claims arising out of the use of said easement by the grantee or any of its agents, servants, employees or contractors.

6. That the grantee by acceptance of this agreement, binds itself, its successors and assigns, to abide by the provisions and conditions herein set forth, and said provisions and conditions shall be deemed covenants of the grantee, its successors and assigns, running with the land.

TO HAVE AND TO HOLD said easement unto said grantee, its successors and assigns, for the purposes herein set forth.

IN TESTIMONY WHEREOF, by authority granted April 1, 1980, the legally designated agent of the Board of Trustees of the Internal Improvement Trust Fund has hereunto subscribed his name and has caused the official seal of the Board of Trustees of the Internal Improvement Trust Fund to be hereunto affixed, in the City of Tallahassee, Florida, on this 2nd, day of July, A.D. 19 80.

BOARD OF TRUSTEES OF THE INTERNAL
IMPROVEMENT TRUST FUND

(SEAL)

Board of Trustees
of the Internal
Improvement Trust
Fund

By

Elton J. Gumbert

EXECUTIVE DIRECTOR

DEPARTMENT OF NATURAL RESOURCES

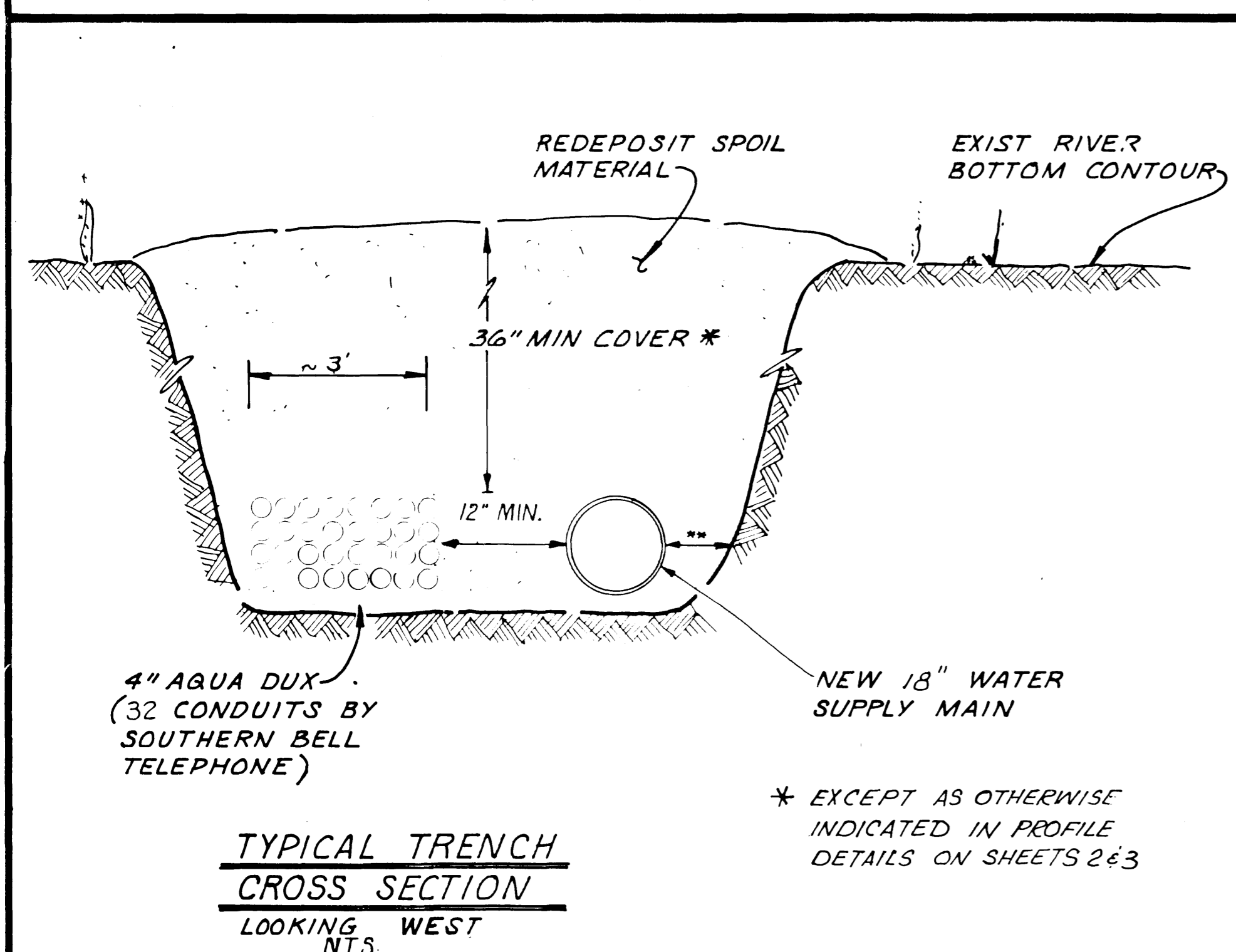
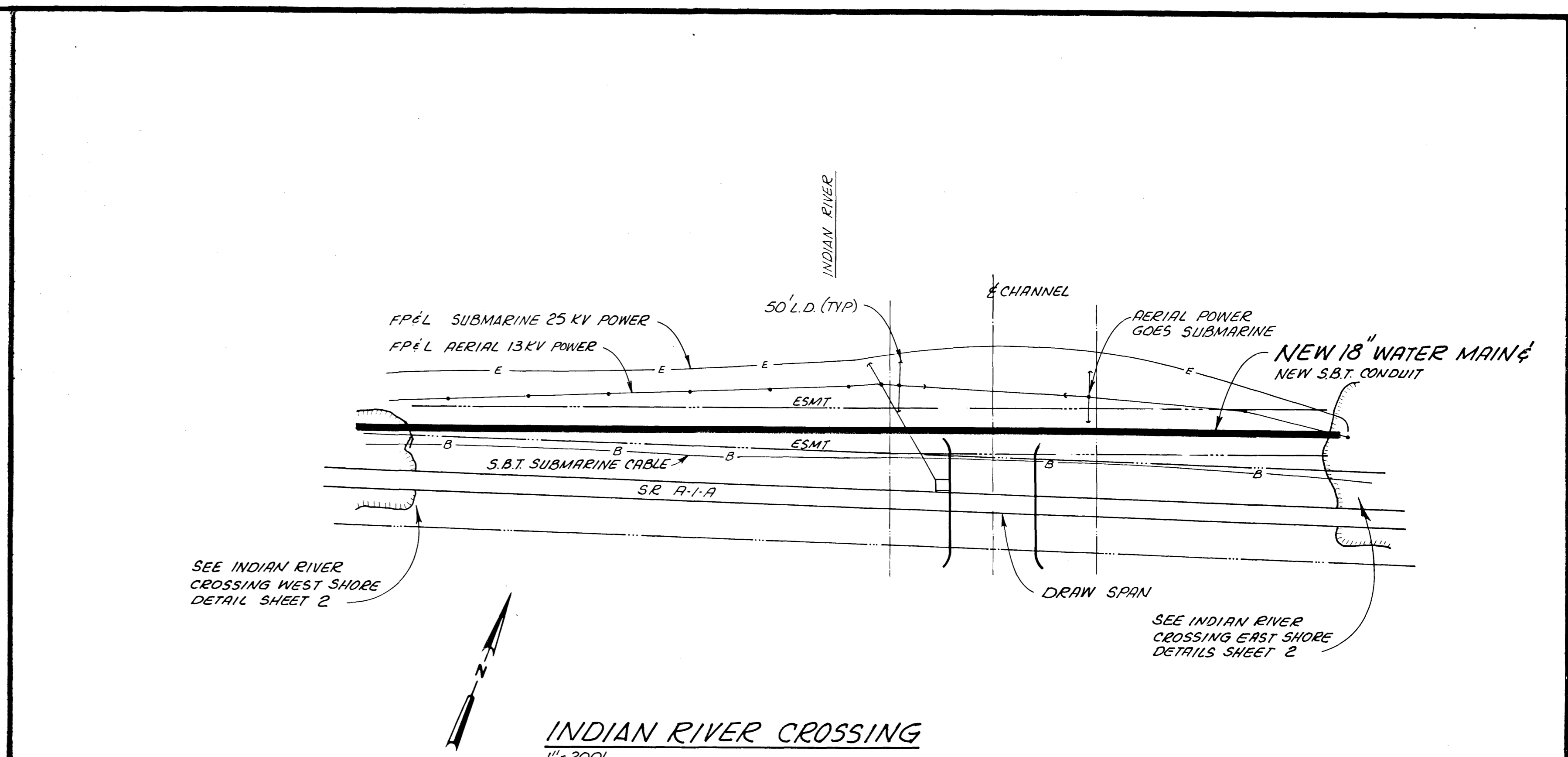
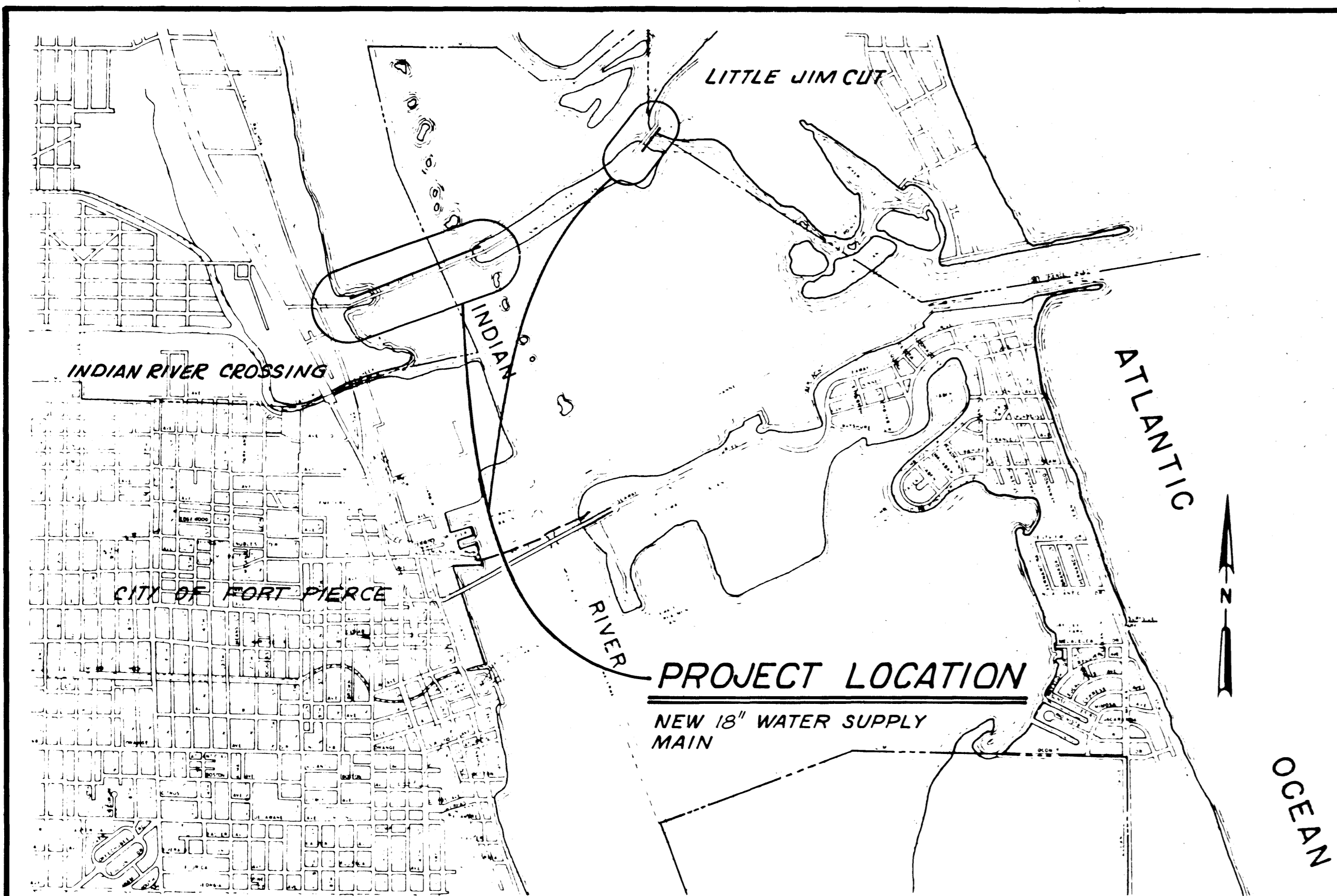
APPROVED AS TO FORM AND LEGALITY

BY

Henry O...

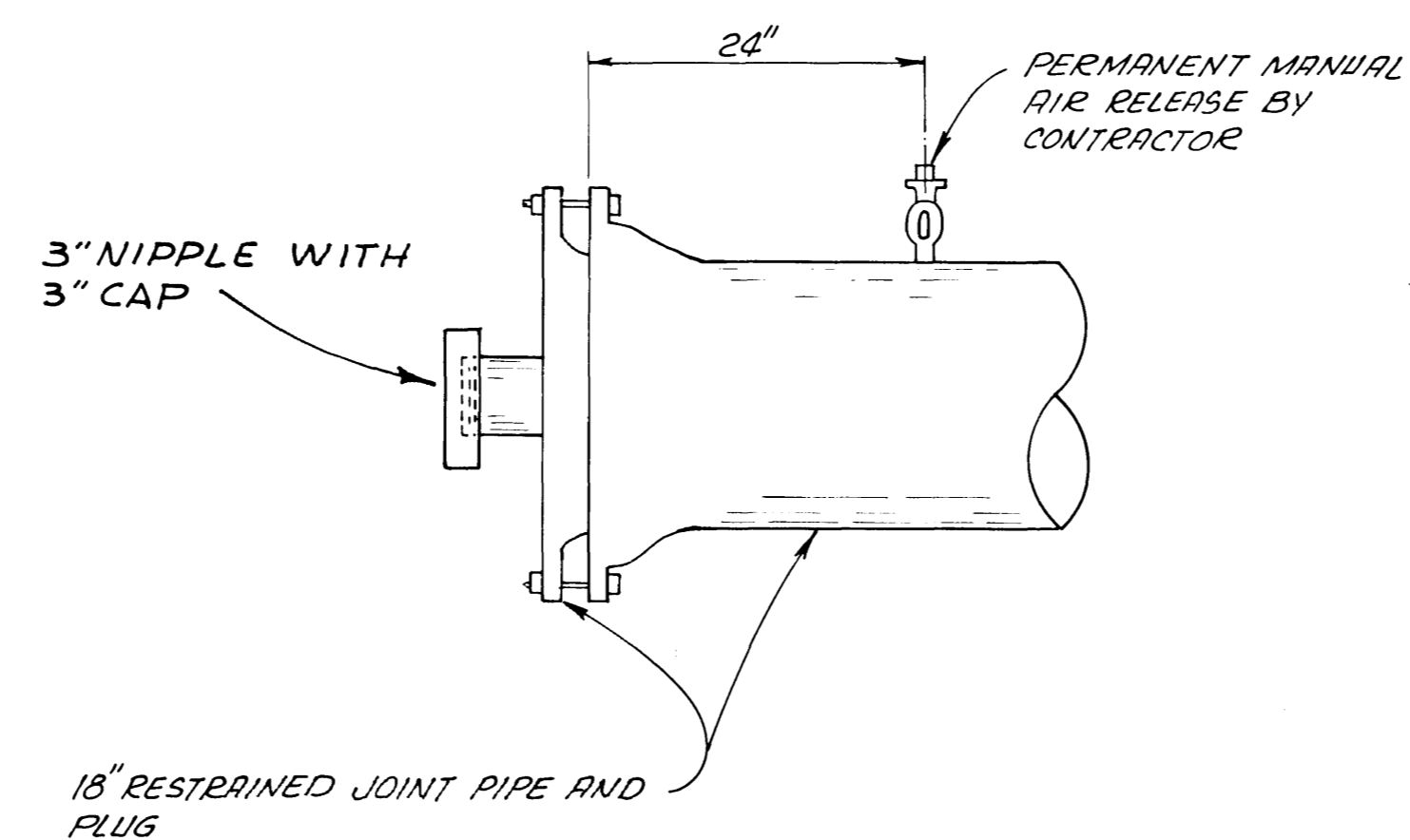
DATE

Aug 8, 1980



* EXCEPT AS OTHERWISE
INDICATED IN PROFILE
DETAILS ON SHEETS 2&3


* * WATER MAIN MAY BE LAYED
IMMEDIATELY ADJACENT TO
TRENCH SIDE.



- NOTES:

- 1) ALL 18" PIPE AND 18" PUGS COMPLETE WITH GASKETS AND BOLTS WILL BE FURNISHED BY THE FORT PIERCE UTILITIES AUTHORITY.
- 2) BALL JOINT DUCTILE IRON PIPE COMPLIES WITH ALL APPLICABLE AWWA SPECIFICATIONS AND IS MANUFACTURED TO WITHSTAND A 250 PSI WORKING PRESSURE. PIPE IS MINIMUM CLASS 58.
- 3) RESTRAINED JOINT PIPE IS CLASS 54 DUCTILE IRON ANSI A21.51 WITH PUSH-ON TYPE JOINTS WITH BOLTED RESTRAINTS.
- * 4) ~~FOUR 18-INCH IRON RESTRAINED JOINT PLUGS WILL BE FURNISHED BY THE AUTHORITY WITH 6-INCH FLANGED OUTLETS AND BLIND FLANGES. CONTRACTOR SHALL FURNISH HIS OWN FLANGED 6-INCH GATE VALVES FOR TEMPORARY USE AT THESE OUTLETS DURING CONSTRUCTION. AFTER COMPLETION OF HYDROSTATIC TESTING AND CHLORINATION, THE VALVES SHALL BE REMOVED AND 6-INCH BLIND FLANGES INSTALLED. CONTRACTOR SHALL ALSO FURNISH AND INSTALL ADDITIONAL PIPING AND APPURTENANCES AT THESE OUTLETS AS ARE REQUIRED FOR TESTING, FLUSHING AND CHLORINATING.~~
- 5) AT EACH OF THE FOUR WATER MAIN ENDS THE CONTRACTOR SHALL FURNISH AND INSTALL ONE-INCH THREADED TAP AND ONE-INCH BRONZE CORPORATION STOP AS MANUFACTURED BY MUELLER WITH INSIDE I.P. THREAD OUTLET WITH BRONZE PLUG. THESE OUTLETS SHALL BE PERMANENTLY INSTALLED AS MANUAL AIR RELEASES.
- 6) CONTRACTOR SHALL SUPPLY A PROFILE OF EXISTING RIVER BOTTOM ALONG THE TRENCH BEFORE EXCAVATION IS BEGUN. CHANGES MAY BE MADE IN PIPE PROFILE IF WARRANTED. CONTRACTOR SHALL VERIFY THE REQUIRED QUANTITY OF PIPE IMMEDIATELY AFTER NOTICE TO PROCEED AND NOTIFY OWNER OF ANY DISCREPANCIES.
- 7) PIPE PROFILE IS SHOWN WITH SOLID LINES. SOUTHERN BELL CONDUIT PROFILE IS INDICATED WITH DASHED LINES WHERE IT DEVIATES FROM THE WATER MAIN PROFILE. EXISTING BOTTOM PROFILE WAS PROVIDED BY SOUTHERN BELL AND IS THE SAME AS THAT SHOWN ON THEIR PLANS. CONTRACTOR SHALL PROVIDE AT LEAST ONE ELEVATION EVERY 100 FEET ON THE TOP OF PIPE DURING THE PIPE LAYING PROCESS TO ENSURE INSPECTOR OF PROPER INSTALLATION.
- 9) CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ALL PAVEMENT, RIPRAP, SEAWALL, SOD, ETC., DISTURBED BY THIS CONSTRUCTION, TO A CONDITION EQUAL OR BETTER THAN THAT EXISTING PRIOR TO CONSTRUCTION.
- * SEE TYPICAL WATER MAIN END
DETAIL FOR NOTE 4
- FPUA makes no warranty, representation or guarantee as to the content, sequence, accuracy, timeliness, or completeness of the geodata information provided herein. FPUA explicitly disclaims any representations and warranties, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose. FPUA shall assume no liability for: 1. Any errors, omissions, or inaccuracies in the information provided regardless of how caused; or 2. Any decision made or action taken or not taken by a person in reliance upon any information or data furnished hereunder.

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	DES. <i>SR/JDH</i>						
	DR. <i>ARR</i>						
	CHK. <i>JDH</i>						
	APPD.	NO.	DATE	REVISION			BY

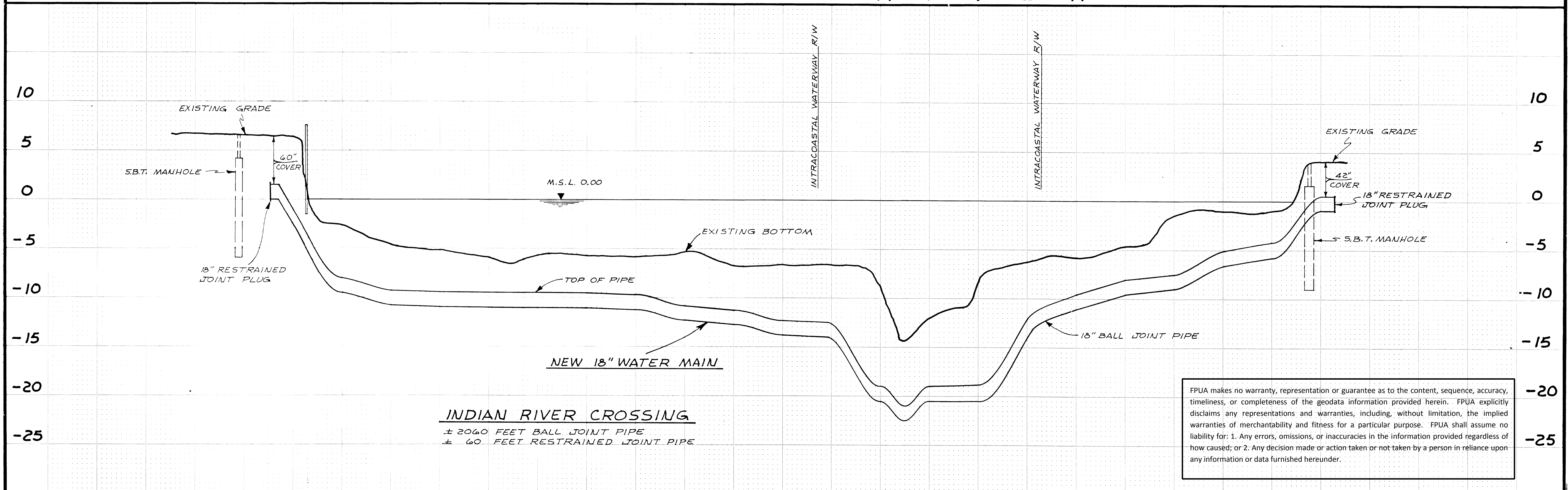
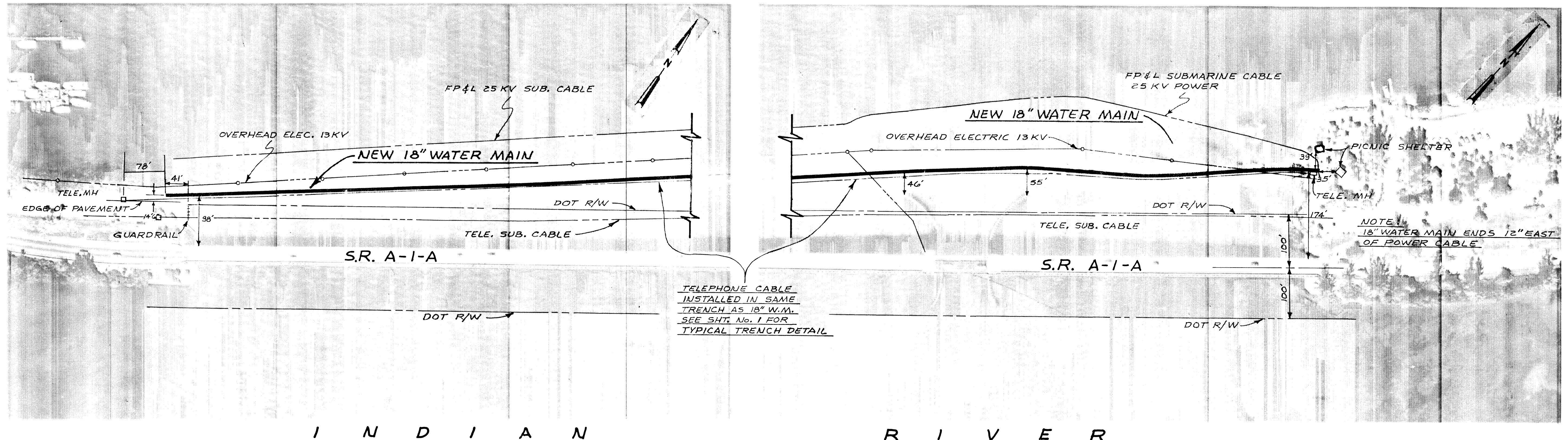
**FORT PIERCE UTILITIES AUTHORITY
NORTH BRIDGE SUBAQUEOUS WATER MAIN
ST. LUCIE COUNTY, FLORIDA**

PLANS & DETAILS

SHEET	1
OF	
DATE	Aug. 1980
DWG	
NO.	BC38100.B1

RECORD DRAWING 8/81 7-C-27

2-L-002-L



FPUA makes no warranty, representation or guarantee as to the content, sequence, accuracy, timeliness, or completeness of the geodata information provided herein. FPUA explicitly disclaims any representations and warranties, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose. FPUA shall assume no liability for: 1. Any errors, omissions, or inaccuracies in the information provided regardless of how caused; or 2. Any decision made or action taken or not taken by a person in reliance upon any information or data furnished hereunder.

CH2M HILL DES. DR. G.E.K. CHK. APPD.	NO.	DATE	REVISION	BY	APPD.	FORT PIERCE UTILITIES AUTHORITY NORTH BRIDGE SUBAQUEOUS WATER MAIN ST. LUCIE COUNTY, FLORIDA	SCALE 1" = 100' HORIZ. 1" = 5' VERT.	PLAN & PROFILE INDIAN RIVER CROSSING	SHEET OF 2
									DATE Aug. 1980
									DWG. NO. BC 38100.81

Utility Crossing No. 2 and 3
Fort Pierce Utility Authority

DISCLAIMER

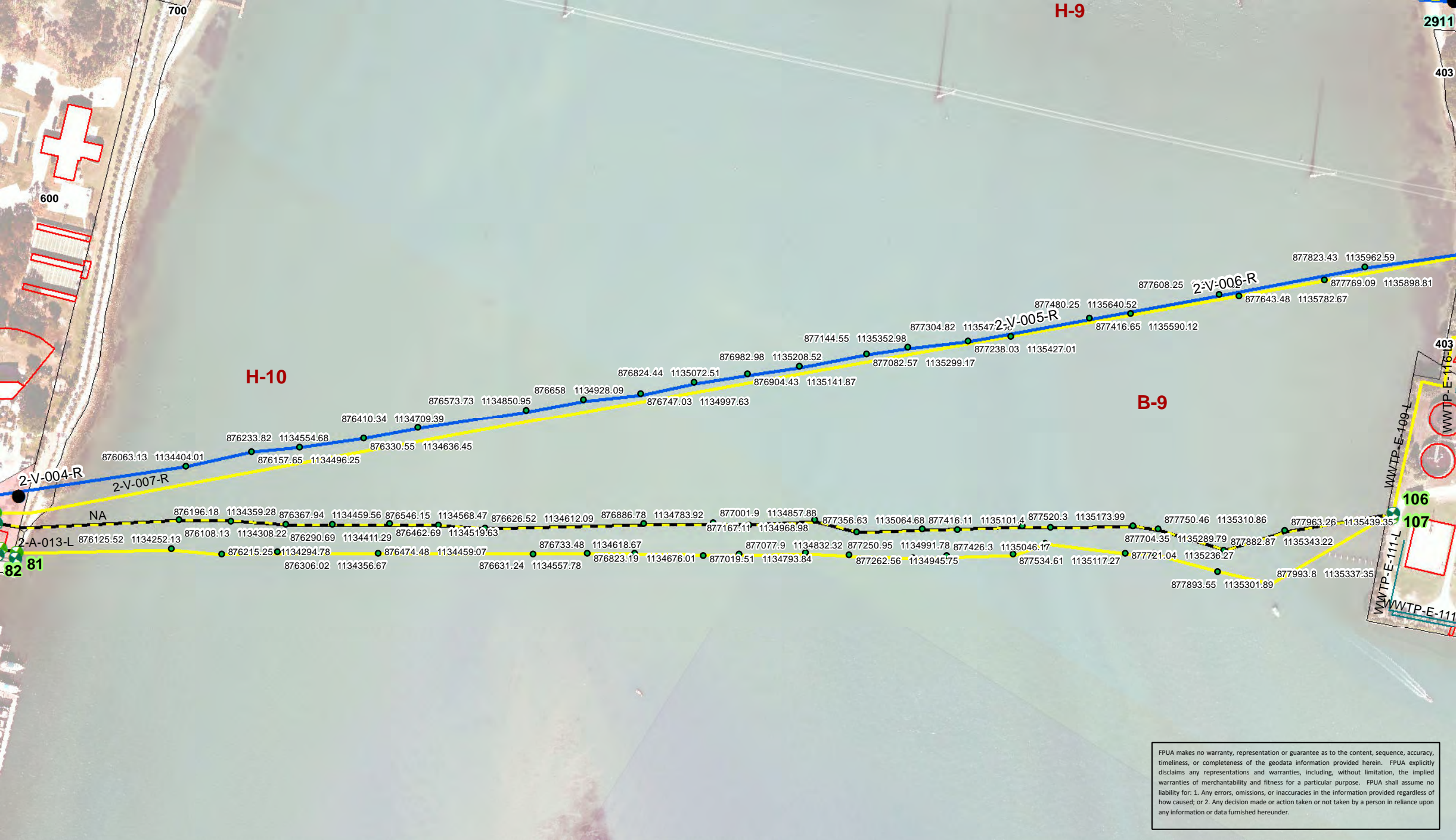
The information summarized below is for contractor information only. Per Part 1, SECTION 35 20 23 DREDGING AND DREDGED MATERIAL PLACEMENT, PARAGRAPH 1.3(J)(1), the contractor is solely responsible for investigating the location of all utility crossings via an independent and comprehensive pre-construction utility survey.

ATTACHMENTS

1. October 2015. Fort Pierce Utilities Authority Utility Map.
2. October 1993. Water Main and Reuse Main Subaqueous Crossing of The Indian River and Outfall Diffuser for the Fort Pierce Utilities Authority, Fort Pierce, Florida. Plan and Profile, Lift Station "A" and Indian River Crossing Station 14+11 to 25+00.

KNOWN UTILITY INFORMATION

IDENTIFIED UTILITIES	ELEVATION AND DATUM	ATTACHMENT NO.
16" DIP Water Main	Elevation -21.7 to -24.1 MHW.	1, 2
20" DIP Reclaimed Water Main	Elevation -21.7 to -24.1 MHW.	1, 2



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Utility Crossing No. 4 and 5
Fort Pierce Utility Authority

DISCLAIMER

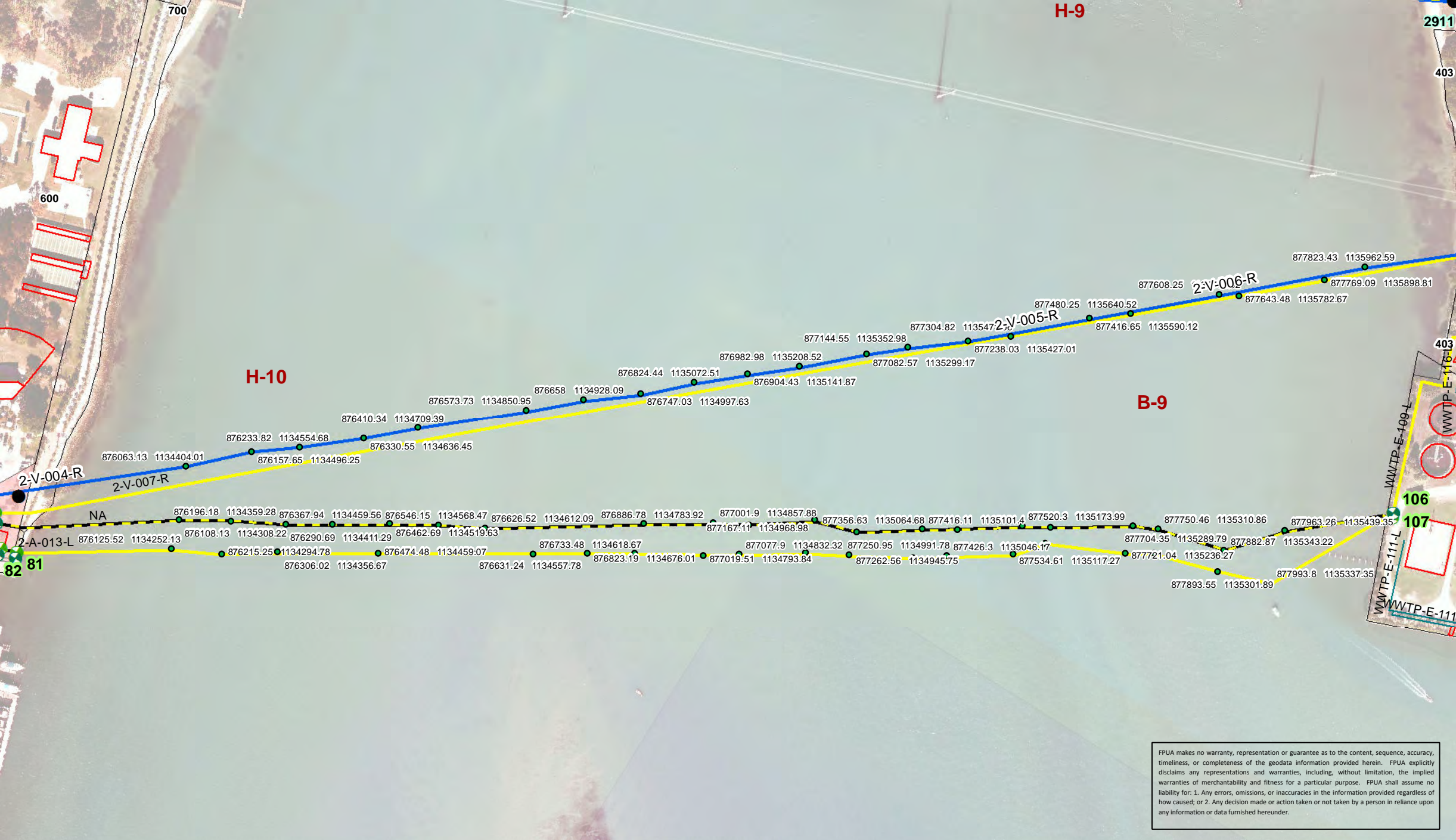
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1. October 2015. Fort Pierce Utilities Authority Utility Map.
2. October 1993. Water Main and Reuse Main Subaqueous Crossing of The Indian River and Outfall Diffuser for the Fort Pierce Utilities Authority, Fort Pierce, Florida. Indian River Crossing Station 36+00 to 45+00.

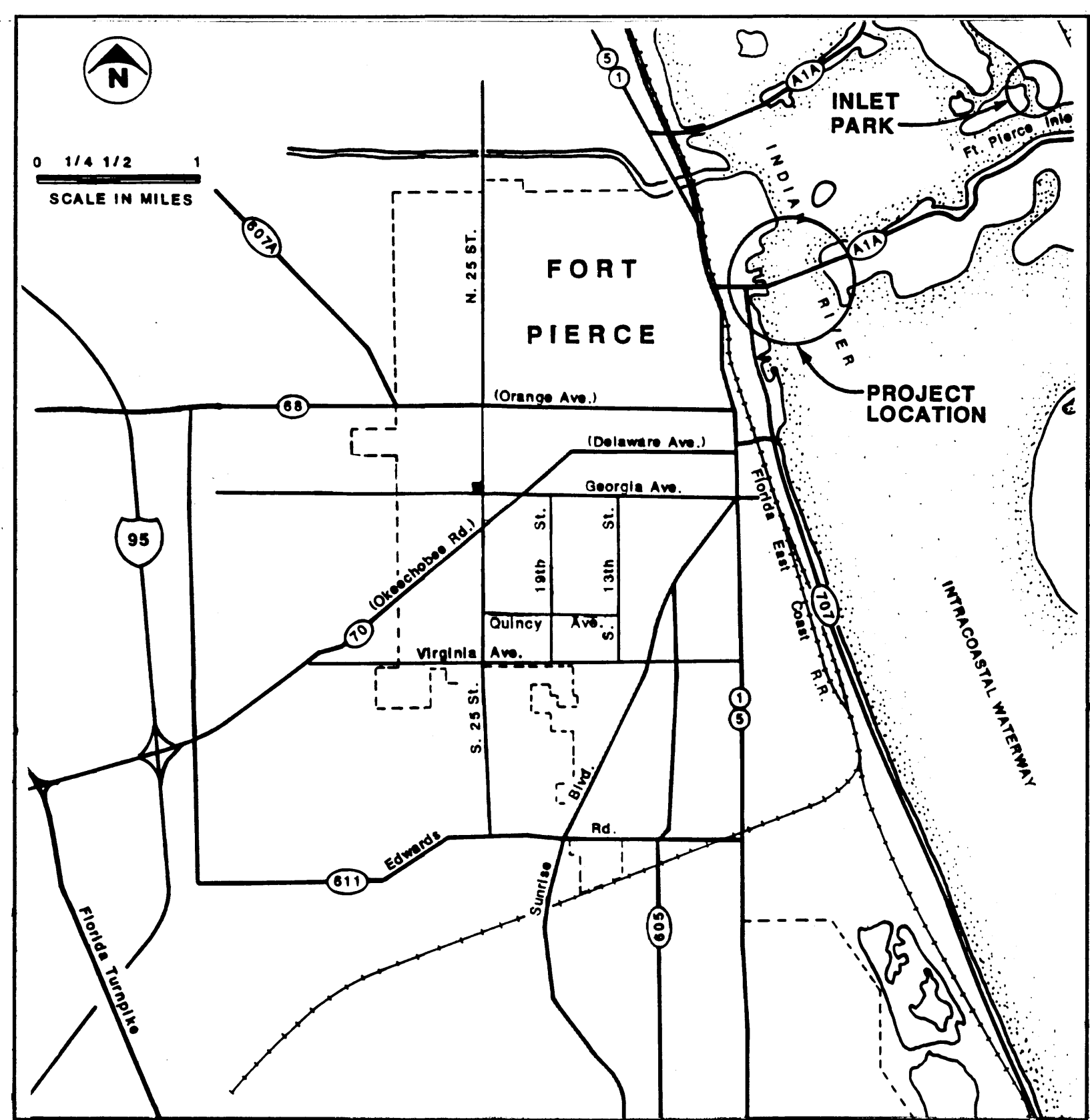
KNOWN UTILITY INFORMATION

IDENTIFIED UTILITIES	ELEVATION AND DATUM	ATTACHMENT NO.
16" DIP Water Main	Elevation -17.5 to -22 MHW.	1, 2
20" DIP Reclaimed Water Main	Elevation -17.5 to -22 MHW.	1, 2

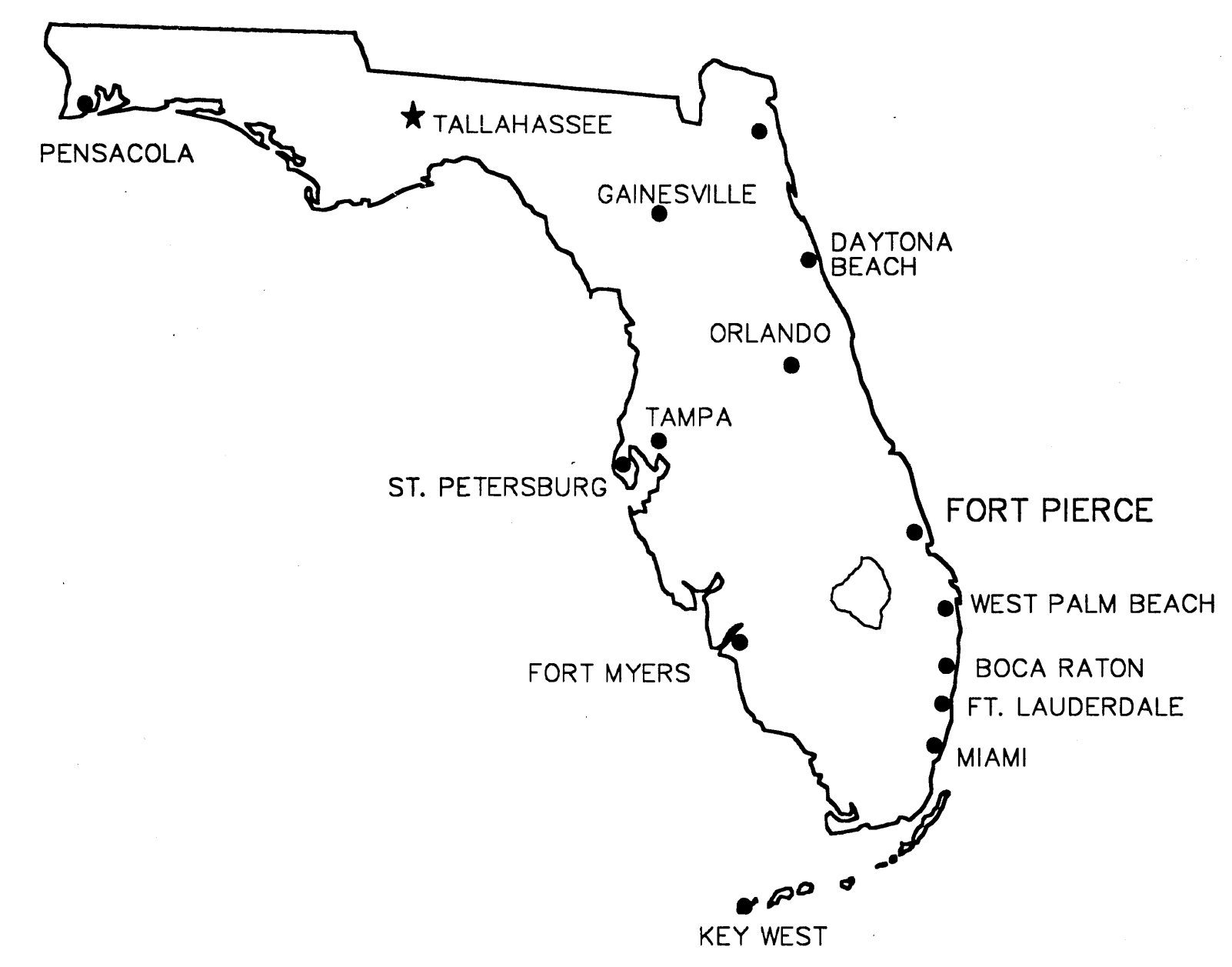


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PROJECT LOCATION MAP



LOCATION MAP



GENERAL CONSTRUCTION NOTES

1. UNDERGROUND UTILITIES SHOWN ARE TAKEN FROM FIELD INSPECTIONS AND ARE SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL CONTACT ALL UTILITY OWNERS AND CONFIRM LOCATIONS OF UTILITIES NO LESS THAN 48 HOURS BEFORE BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL ACCURATELY LOCATE AND UNCOVER ALL EXISTING UTILITIES BEFORE BEGINNING CONSTRUCTION WHERE CROSSING OF EXISTING UTILITIES OCCUR. ANY DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
2. THE CONTRACTOR SHALL LOCATE AND EXPOSE ALL UTILITIES WITHIN THE PROPOSED WORK AREAS TO CONNECT TO EXISTING PIPE AT INTERSECTIONS AND AT OTHER CRITICAL LOCATIONS. THIS IS TO VERIFY UTILITY LOCATIONS AND PIPE LAYING SCHEDULES PRIOR TO SUBMITTING SHOP DRAWINGS. THIS SHALL BE DONE WITHIN 30 DAYS AFTER NOTICE TO PROCEED. THE CONTRACTOR SHALL PROVIDE BACKFILL AND TEMPORARY RESTORATION IN KIND. THE INFORMATION OBTAINED (ELEV., DISTANCE, ETC.) SHALL BE MADE PART OF THE CONTRACTOR'S SUBMITTAL FOR PIPE.
3. SURVEY INFORMATION WAS BY: CH2M HILL AND INFORMATION RECEIVED FROM EXISTING UTILITY COMPANIES. PIPE SIZES (OUTSIDE AND INSIDE DIAMETERS) SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION. NOT ALL EXISTING PIPE WAS ACCESSIBLE FOR VERIFICATION AND ASSUMPTIONS MADE (SEE NOTE 2).
4. SEWER AND WATER SERVICE SHALL BE MAINTAINED DURING ENTIRE CONSTRUCTION PERIOD OR TEMPORARY FACILITIES PROVIDED. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
5. NO CONNECTIONS FOR THE PURPOSE OF OBTAINING WATER SUPPLY DURING CONSTRUCTION SHALL BE MADE TO ANY FIRE HYDRANT OR BLOW-OFF STRUCTURE WITHOUT FIRST OBTAINING PERMISSION AND A CONSTRUCTION METER FROM THE FORT PIERCE UTILITIES AUTHORITY.
6. THE CONTRACTOR WILL BE RESPONSIBLE FOR LOCATING, MOVING AND RELOCATING OR REPLACING ALL WATER SERVICES OR SEWER LATERALS WHICH ARE ENCOUNTERED DURING EXCAVATION. THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN FOR WATER SERVICE AND WASTEWATER SERVICE DISRUPTION FOR APPROVAL 7 (SEVEN) CALENDAR DAYS PRIOR TO THE ANTICIPATED DISRUPTION. THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNERS 48 HOURS IN ADVANCE OF ANY WORK ON THEIR SERVICES. THIS WORK SHALL BE CONSIDERED INCIDENTAL.
7. THE CONTRACTOR SHALL TEST NEW SEGMENTS OF PIPE LINE INDEPENDENT OF EXISTING SEGMENTS. THE CONTRACTOR SHALL SUBMIT A WRITTEN PLAN FOR TESTING AND CONNECTION 30 DAYS PRIOR TO TEST.
8. THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CITY, COUNTY AND STATE REGULATIONS PERTAINING TO THE CLOSING OF PUBLIC STREETS FOR USE OF TRAFFIC DURING CONSTRUCTION.
9. IF UNSATISFACTORY MATERIAL FOR ADEQUATE BEARING IS ENCOUNTERED AT THE SUBGRADE, THE UNSATISFACTORY MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE FOUNDATION STABILIZATION MATERIAL AS SPECIFIED.
10. CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE EXISTING RIGHTS-OF-WAY OR TEMPORARY CONSTRUCTION EASEMENTS.
11. IN GENERAL, EXISTING STRUCTURES AND UTILITIES ARE NOTED AS EXISTING AND SHOWN IN LIGHT LINES. NEW CONSTRUCTION IS IN HEAVY LINES AND/OR UNDERLINED.
12. THIS IS A STANDARD LEGEND DRAWING. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS DRAWING AND NOT ON THE PLANS.
13. THE CONTRACTOR SHALL PAINT NEW TRAFFIC STRIPE MARKINGS WHERE EXISTING TRAFFIC STRIPE MARKINGS ARE DAMAGED OR REMOVED DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL.
14. EXISTING TRAFFIC SIGNS TO BE RESET UPON COMPLETION PER FDOT STANDARDS. COST SHALL BE CONSIDERED INCIDENTAL.

AS-BUILTS

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DESIGN DETAIL DESIGNATION (NUMERAL)

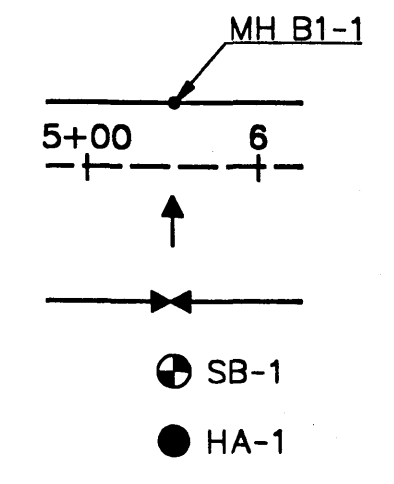
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SHOWN ON DESIGN DETAIL DRAWING(S)

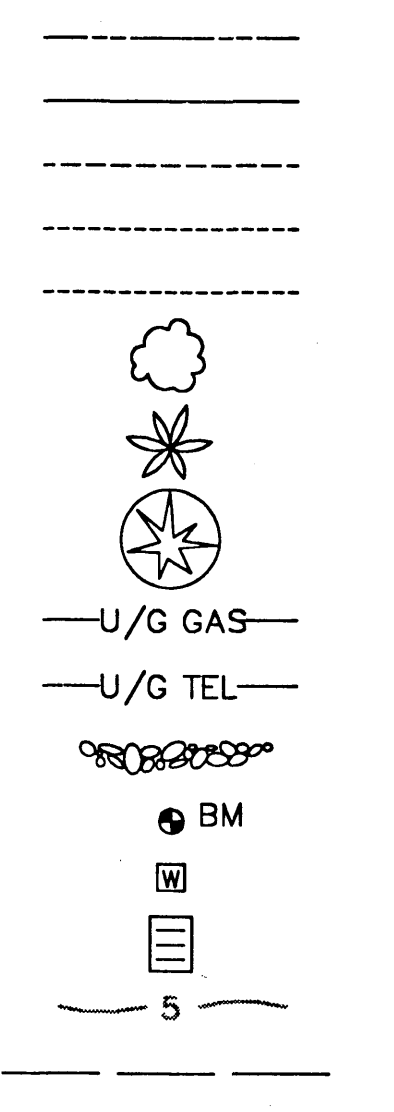
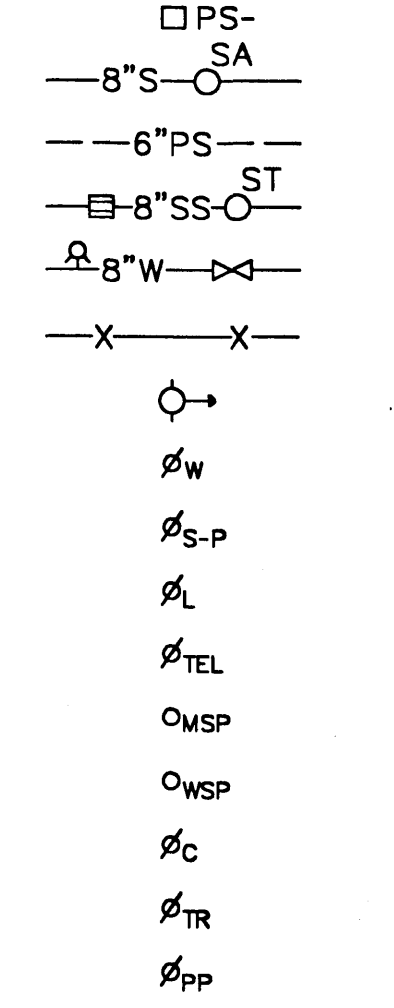
DESIGN DETAIL DESIGNATION

LEGEND

NEW



EXISTING



- MANHOLE DESIGNATION
- GRAVITY SEWER WITH MANHOLE
- WATER MAIN W/ STATIONING
- AIR AND VACUUM RELEASE VALVE
- NEW VALVE
- SOIL BORING
- HAND AUGER
- PUMP STATION
- SANITARY SEWER WITH MANHOLE
- PRESSURE SEWER
- STORM SEWER WITH CATCH BASIN AND MANHOLE
- WATER PIPELINE WITH FIRE HYDRANT AND VALVE
- FENCE LINE
- UTILITY POLE WITH GUY ANCHOR
- WOOD POLE
- SERVICE POLE
- LIGHT POLE
- TELEPHONE POLE
- METAL SIGN POST
- WOOD SIGN POST
- CONCRETE POLE
- TRAFFIC POLE
- POWER POLE
- PROP. LINE / R.O.W.
- EDGE OF PAVEMENT (ASPHALT)
- TOP OF BANK
- EDGE OF GRAVEL DRIVE (G)
- EDGE OF DIRT DRIVE (D)
- HARDWOOD TREE
- PALM TREE
- PINE TREE
- UNDERGROUND GAS
- UNDERGROUND TELEPHONE CABLE
- RIP RAP
- BENCH MARK
- WATER METER
- SMALL SIGN
- CONTOUR LINE
- PIPE BY OTHERS

ABBREVIATIONS

ALUM	ALUMINUM
ASPH	ASPHALT
AVRV	AIR AND VACUUM RELEASE VALVE
CONC	CONC
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
CI	CAST IRON
C	CENTERLINE
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FH	FIRE HYDRANT
FM	FORCE MAIN
IE	INVERT ELEVATION
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM
MJ	MECHANICAL JOINT
OD	OUTER DIAMETER
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
REQ'D	REQUIRED
RM or R	REUSE MAIN
RJ	RESTRAINED JOINT
R/W	RIGHT OF WAY
S	SANITARY SEWER
SHT	SHEET
SST	STAINLESS STEEL
SS	STORM SEWER
TYP	TYPICAL
UG ELEC	UNDERGROUND ELECTRIC
W	WATER MAIN
W/	WITH

INDEX TO DRAWINGS

SHT. No.	DWG. No.	DESCRIPTION
0	0	COVER SHEET
1	G-1	GENERAL NOTES, LEGEND, INDEX TO DRAWINGS
2	P-1	PLAN AND PROFILE/INDIAN RIVER DRIVE STATION 0+14 TO 14+11
3	P-2	PLAN AND PROFILE/LIFT STATION "A" AND INDIAN RIVER CROSSING STATION 14+11 TO 25+00
4	P-3	PLAN AND PROFILE/INDIAN RIVER CROSSING STATION 25+00 TO 36+00
5	P-4	PLAN AND PROFILE/INDIAN RIVER CROSSING STATION 36+00 TO 45+00
6	P-5	PLAN AND PROFILE/FPWA WWTP STATION 45+00 TO 51+77
7	P-6	PLAN AND PROFILE/FPWA WWTP OUTFALL DIFFUSER
8	P-7	INLET PARK MITIGATION AREA GRADING PLAN
9	P-8	INLET PARK MITIGATION AREA PLANTING SCHEME
10	D-1	STANDARD DETAILS
11	D-2	STANDARD DETAILS
12	D-3	CATHODIC PROTECTION STANDARD DETAILS
13	D-4	STANDARD DETAILS
14	D-5	STANDARD DETAILS

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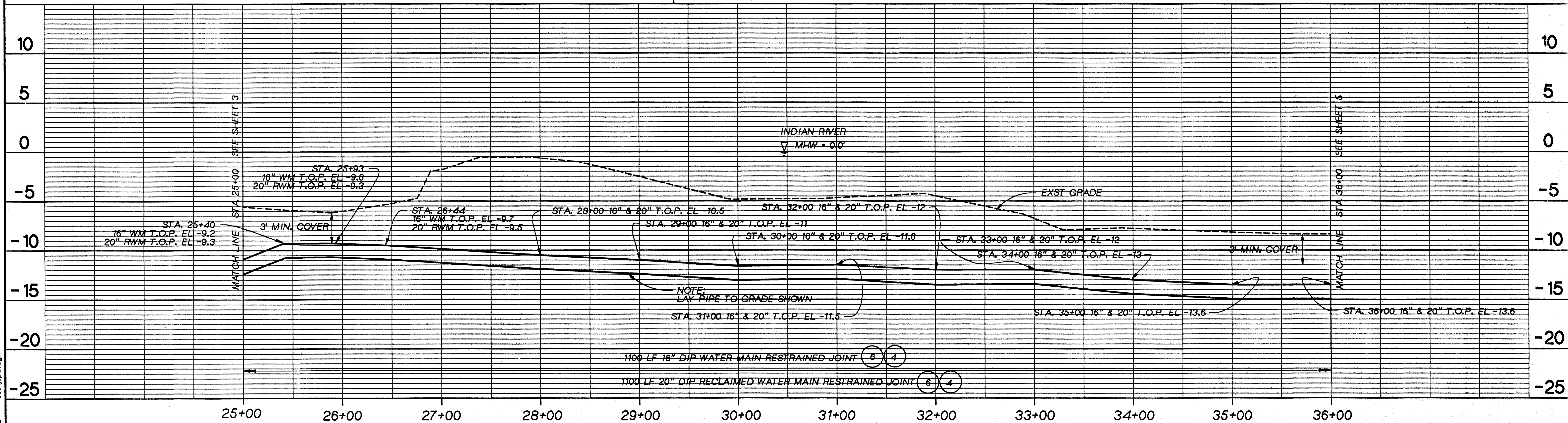
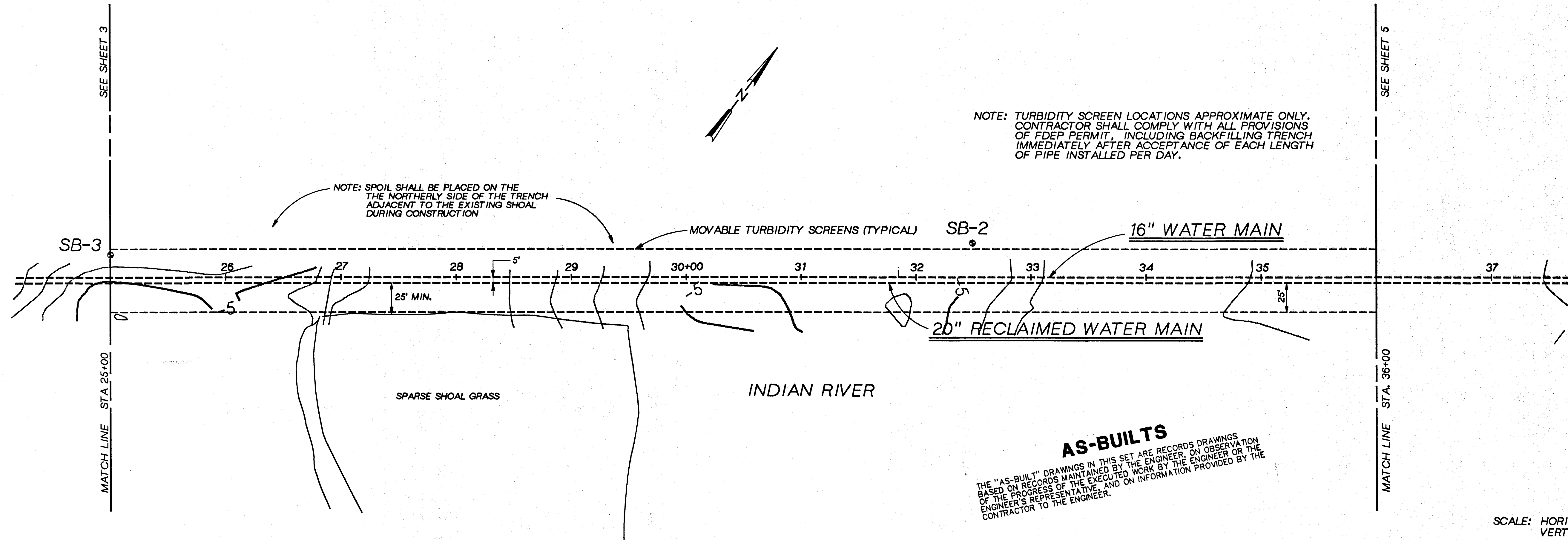
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WATER MAIN AND REUSE MAIN SUBAQUEOUS CROSSING OF THE INDIAN RIVER AND OUTFALL DIFFUSER FOR THE FORT PIERCE UTILITIES AUTHORITY FORT PIERCE, FLORIDA

GENERAL NOTES, LEGEND, INDEX TO DRAWINGS

SHEET	1
DWG. NO.	G-1
DATE	OCT. 1993
PROJ. NO.	SEF30361.J0



DSGN S. TAN
DR P. SMITH
CHK S. RILEY
APVD B. SHIELDS

3/95
NO. DATE

RECORD DRAWING
SURVEYED BY M.T. KOLODZIEJCZYK
REVISION

SCY SR
BY APVD

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SUBAQUEOUS CROSSING OF
THE INDIAN RIVER AND
OUTFALL DIFFUSER
FOR THE
FORT PIERCE UTILITIES AUTHORITY
FORT PIERCE, FLORIDA

PLAN AND PROFILE
**INDIAN RIVER CROSSING
STATION 25+00 TO 36+00**

SHEET 4
DWG NO. P-3
DATE OCT. 1993
PROJ NO. SEF30361.J0

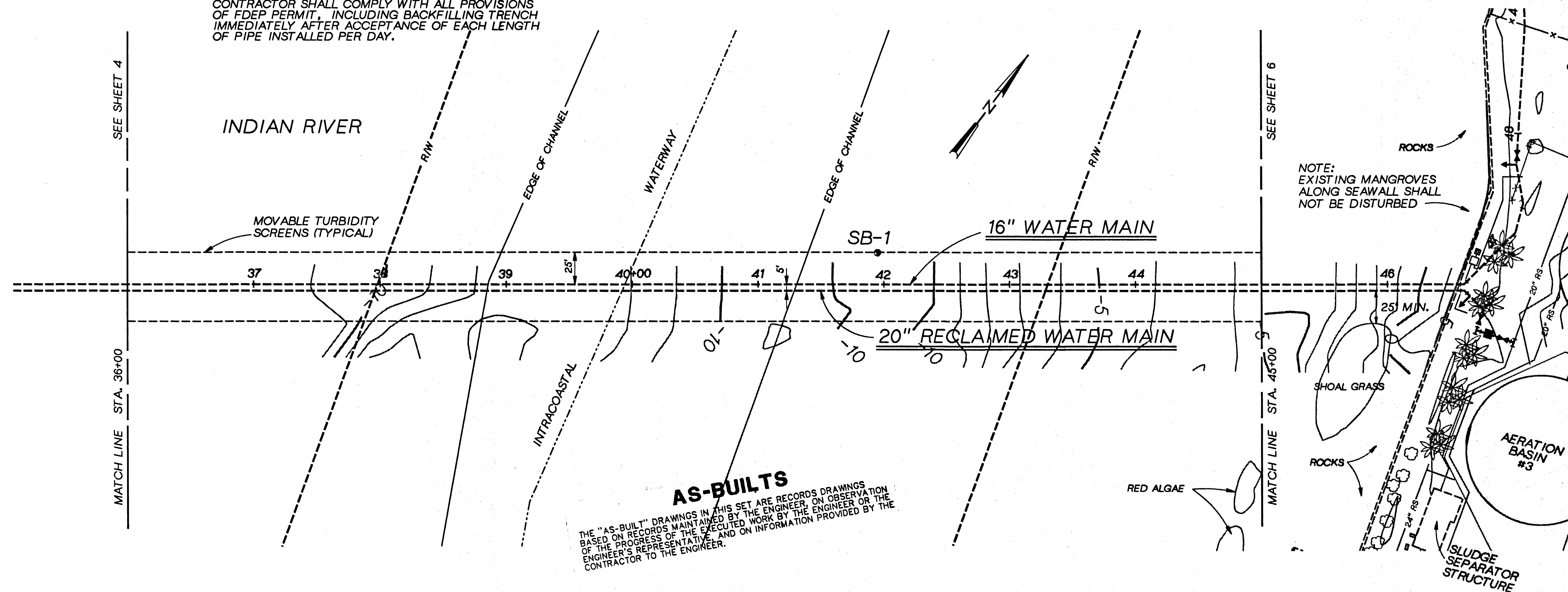
CHECKED BY
DESIGNED BY
DRAWN BY
FILE

COMPOSITE
OVERLAY
SCREEN
FILE

14-Oct-1993 09:40:24 0381004.dgn

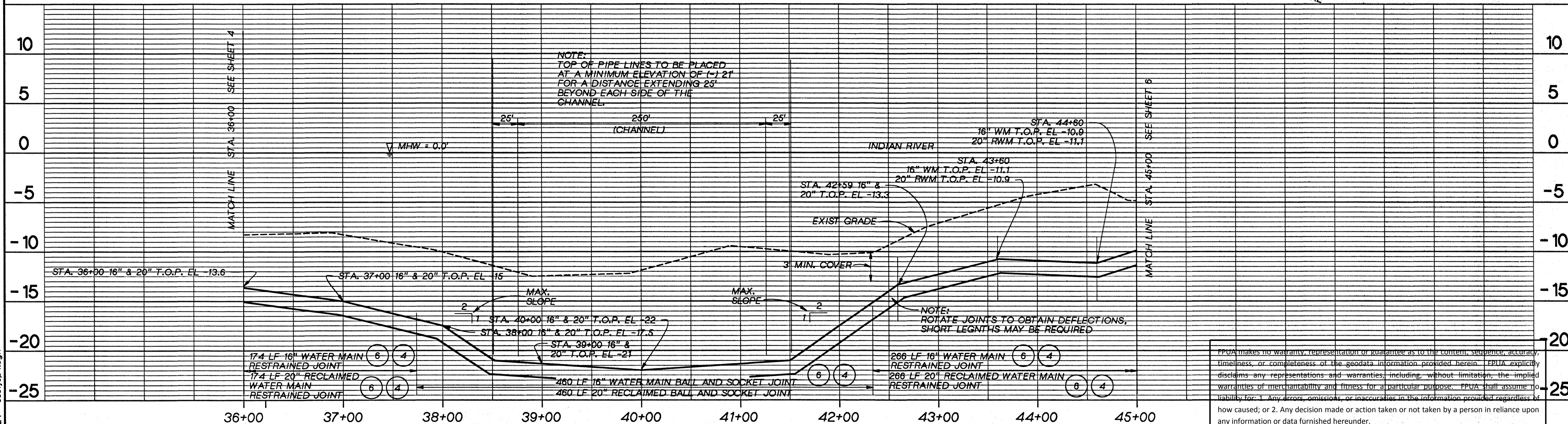
OVERLAY IDENTIFICATION
PROVID
SCREEN
FILE

NOTE: TURBIDITY SCREEN LOCATIONS APPROXIMATE ONLY.
CONTRACTOR SHALL COMPLY WITH ALL PROVISIONS
OF FDEP PERMIT, INCLUDING BACKFILLING TRENCH
IMMEDIATELY AFTER ACCEPTANCE OF EACH LENGTH
OF PIPE INSTALLED PER DAY.



AS-BUILTS
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OF THE PROGRESS OF THE EXECUTED WORK BY THE ENGINEER OR THE
ENGINEER'S REPRESENTATIVE, AND ON INFORMATION PROVIDED BY THE
CONTRACTOR TO THE ENGINEER.

NOTE:
TOP OF PIPE LINES TO BE PLACED
AT A MINIMUM ELEVATION OF (-) 21'
FOR A DISTANCE EXTENDING 25'
BEYOND EACH SIDE OF THE
CHANNEL.



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DSGN S. TAN
DR P. SMITH
CHK S. RILEY
APVD B. SHIELDS

NO. DATE

RECORD DRAWING
SURVEYED BY M.T. KOLODZIEJCZYK
REVISION

BY APVD

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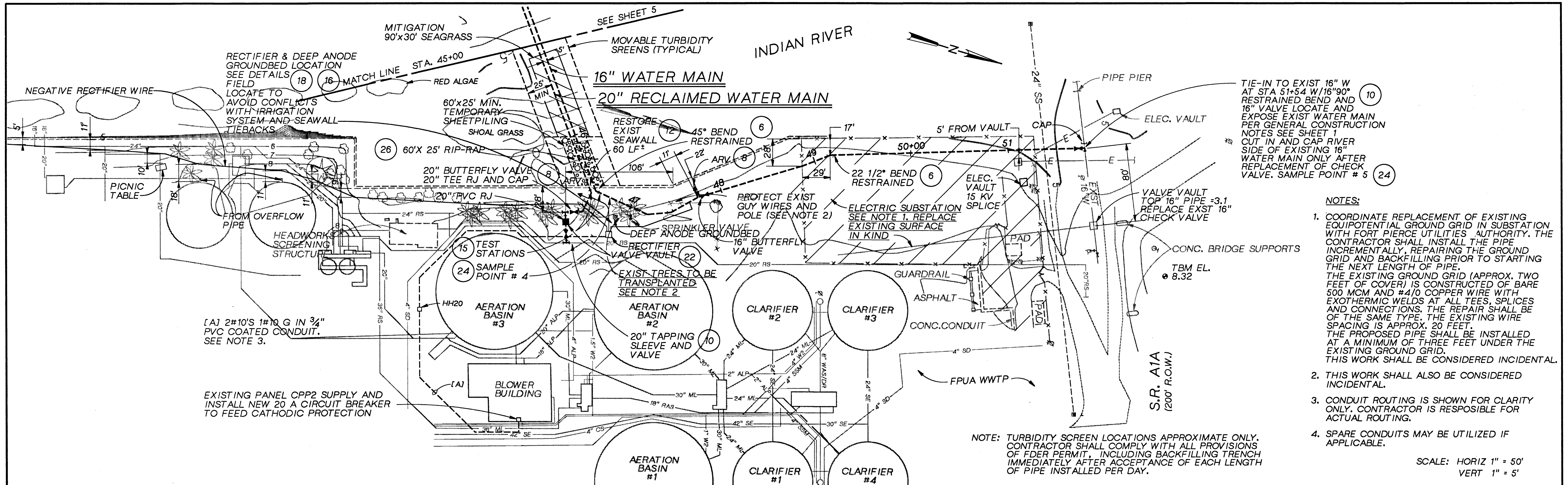
WATER MAIN AND REUSE MAIN
SUBAQUEOUS CROSSING OF
THE INDIAN RIVER AND
OUTFALL DIFFUSER
FOR THE
FORT PIERCE UTILITIES AUTHORITY
FORT PIERCE, FLORIDA

PLAN AND PROFILE

**INDIAN RIVER CROSSING
STATION 36+00 TO 45+00**

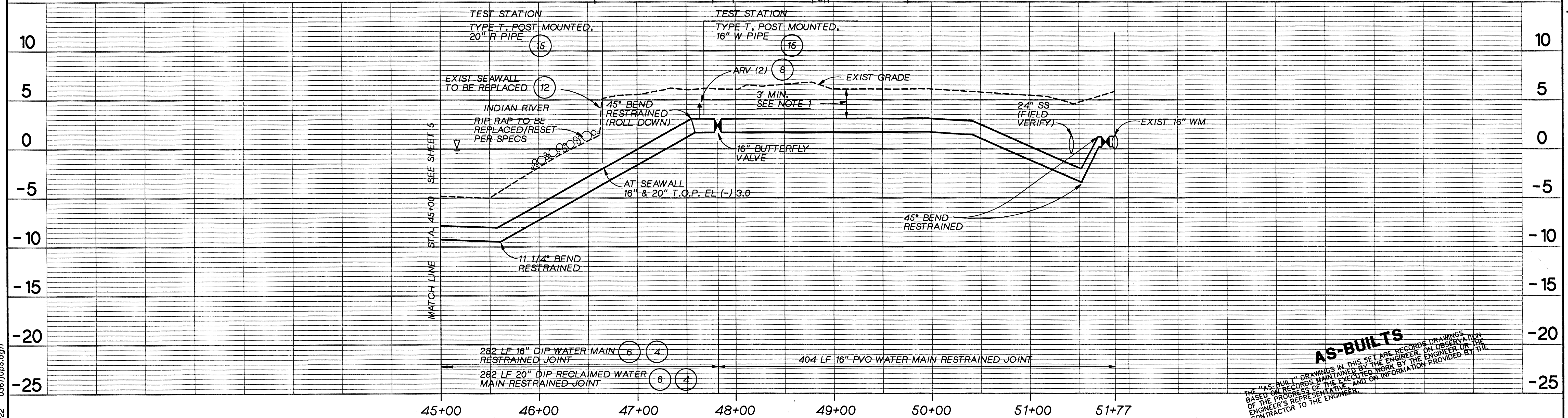
SHEET 5
DWG NO. P-4
DATE OCT. 1993
PROJ NO. SEF30361.J0

WTP-K-006-L



- NOTES:**
1. COORDINATE REPLACEMENT OF EXISTING EQUIPOTENTIAL GROUND GRID IN SUBSTATION WITH FORT PIERCE UTILITIES AUTHORITY. THE CONTRACTOR SHALL INSTALL THE PIPE INCREMENTALLY, REPAIRING THE GROUND GRID AND BACKFILLING PRIOR TO STARTING THE NEXT LENGTH OF PIPE. THE EXISTING GROUND GRID (APPROX. TWO FEET OF COVER) IS CONSTRUCTED OF BARE 500 MCM AND #4/0 COPPER WIRE WITH EXOTHERMIC WELDS AT ALL TEES, SPLICES AND CONNECTIONS. THE REPAIR SHALL BE OF THE SAME TYPE. THE EXISTING WIRE SPACING IS APPROX. 20 FEET. THE PROPOSED PIPE SHALL BE INSTALLED AT A MINIMUM OF THREE FEET UNDER THE EXISTING GROUND GRID. THIS WORK SHALL BE CONSIDERED INCIDENTAL.
 2. THIS WORK SHALL ALSO BE CONSIDERED INCIDENTAL.
 3. CONDUIT ROUTING IS SHOWN FOR CLARITY ONLY. CONTRACTOR IS RESPONSIBLE FOR ACTUAL ROUTING.
 4. SPARE CONDUITS MAY BE UTILIZED IF APPLICABLE.

SCALE: HORIZ 1" = 50'
VERT 1" = 5'



AS-BUILTS

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DSGN S. TAN
 DR P. SMITH
 CHK S. RILEY
 APVD B. SHIELDS

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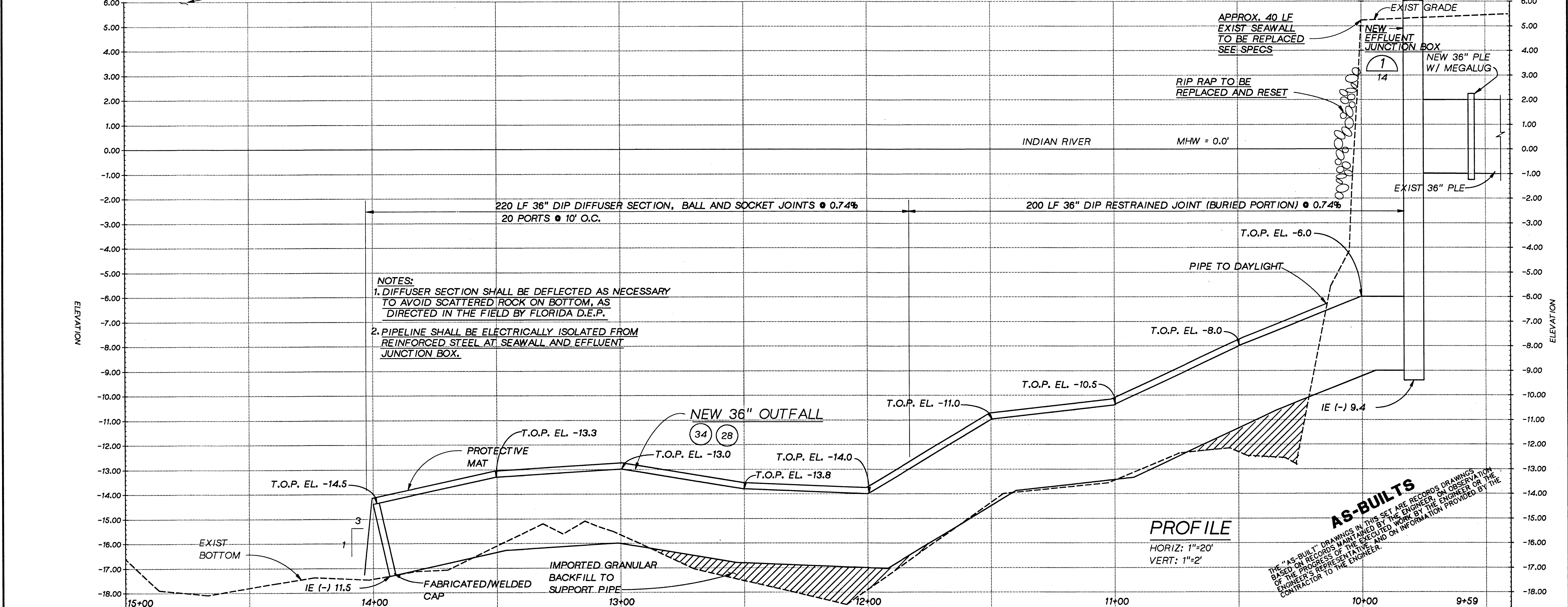
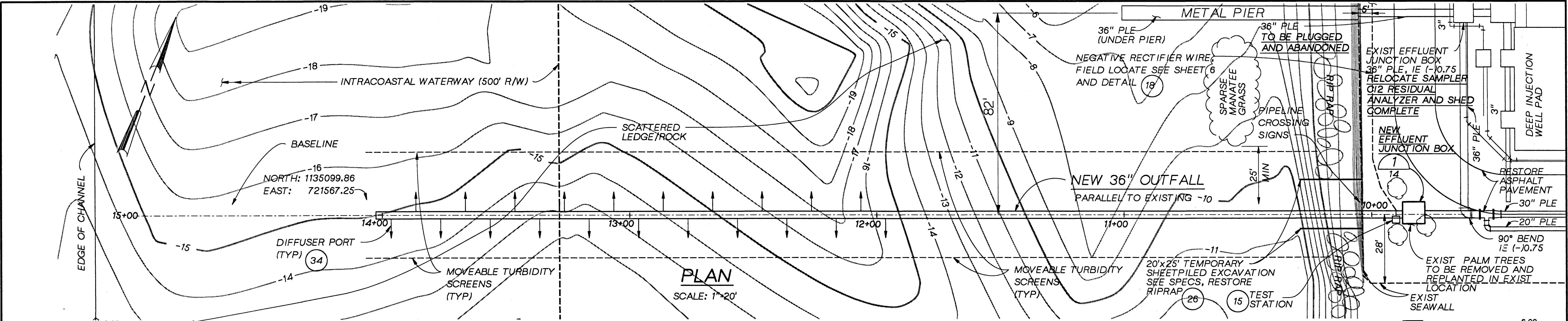
WATER MAIN AND REUSE MAIN
 SUBAQUEOUS CROSSING OF
 THE INDIAN RIVER AND
 OUTFALL DIFFUSER
 FOR THE
 FORT PIERCE UTILITIES AUTHORITY
 FORT PIERCE, FLORIDA

PLAN AND PROFILE
FPUA WWTP
STATION 45+00 TO 51+77

SHEET	6
DWG NO.	P-5
DATE	OCT. 1993
PROJ NO.	SEF30361.00

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WTP-K-007-L



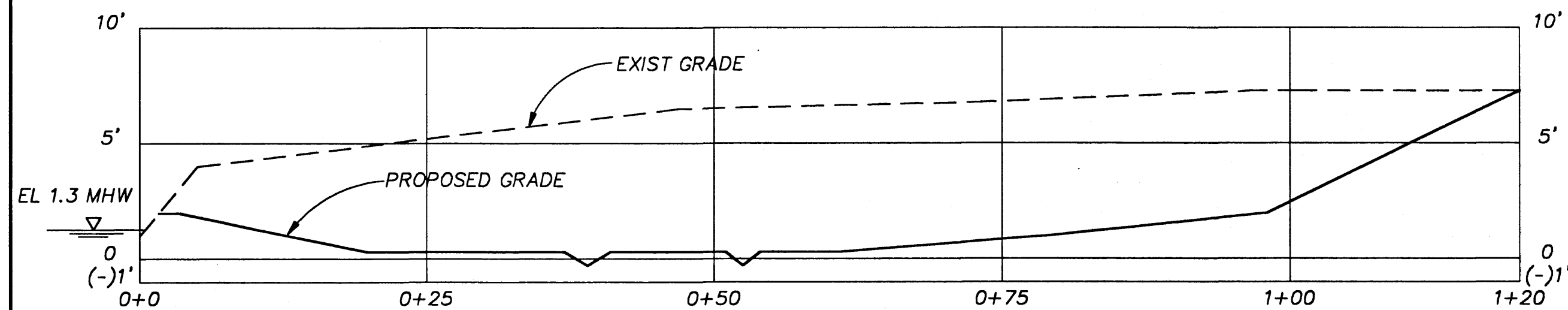
	DSGN B. SHIELDS	8/95	RECORD DRAWINGS SURVEYED BY M.T. KOLODZIEJCZYK, PSM; LAWSON, NOBLE & ASSOCIATES, INC.	LJB	SR	BY APVD	REVISION	THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.	WATER MAIN AND REUSE MAIN SUBAQUEOUS CROSSING OF THE INDIAN RIVER AND OUTFALL DIFFUSER FOR THE FORT PIERCE UTILITIES AUTHORITY FORT PIERCE, FLORIDA	PLAN AND PROFILE FPUA WWTP OUTFALL DIFFUSER	SHEET 7
	DR L. BOWER										DWG NO. P-6
	CHK R. LINDQUIST										DATE OCT. 1993
	APVD B. SHIELDS										PROJ NO. SEF30361.0

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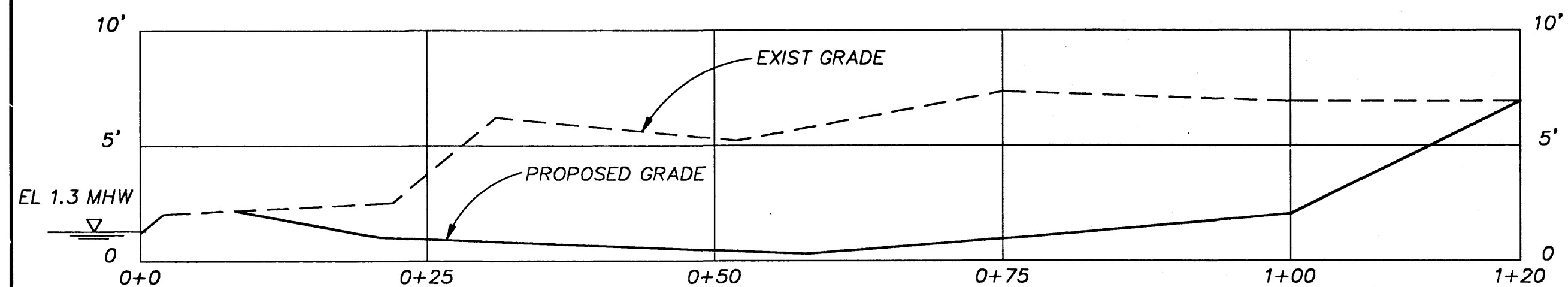
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WTP-K-008-L



SECTION A-A

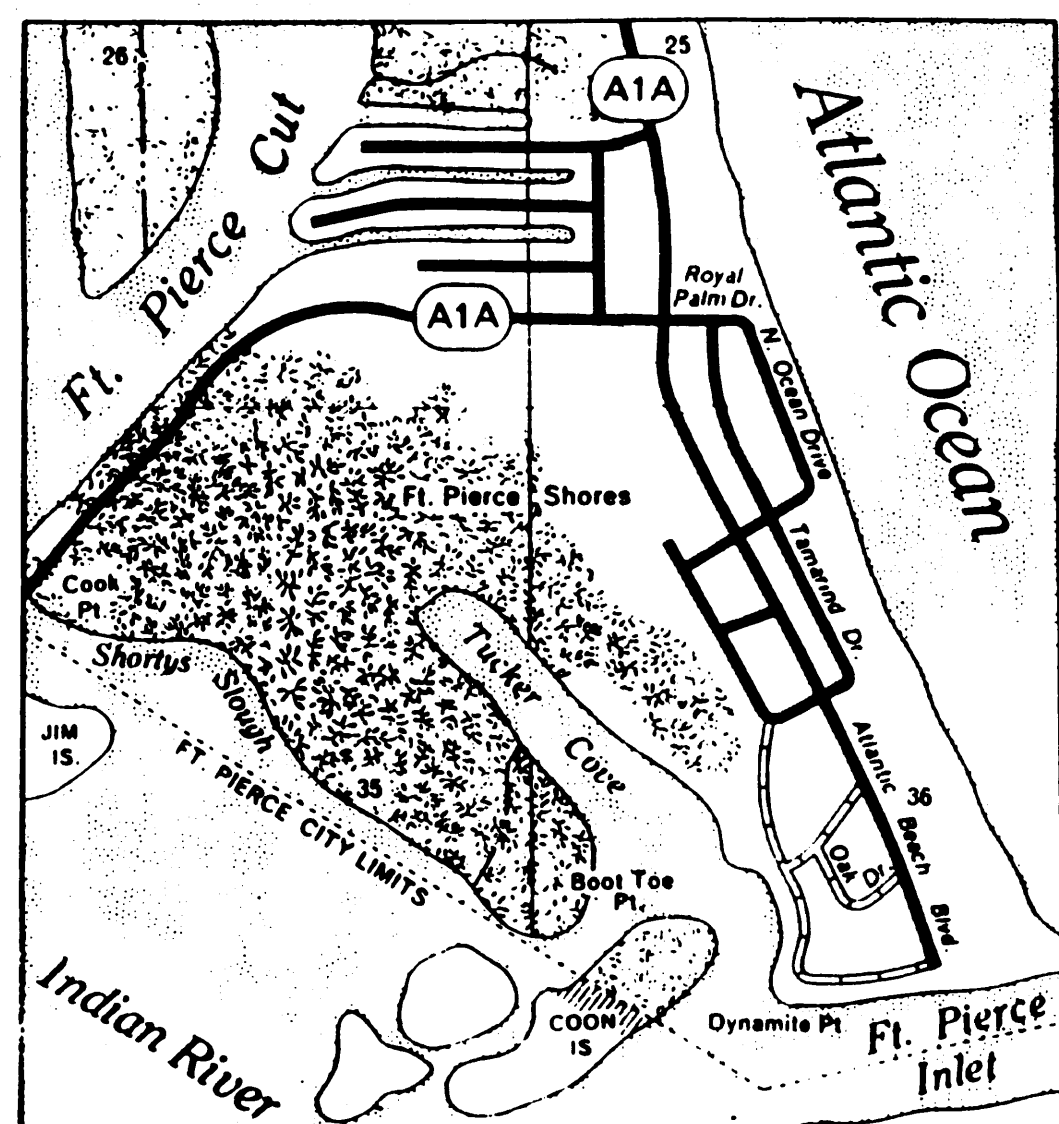


SECTION B-B

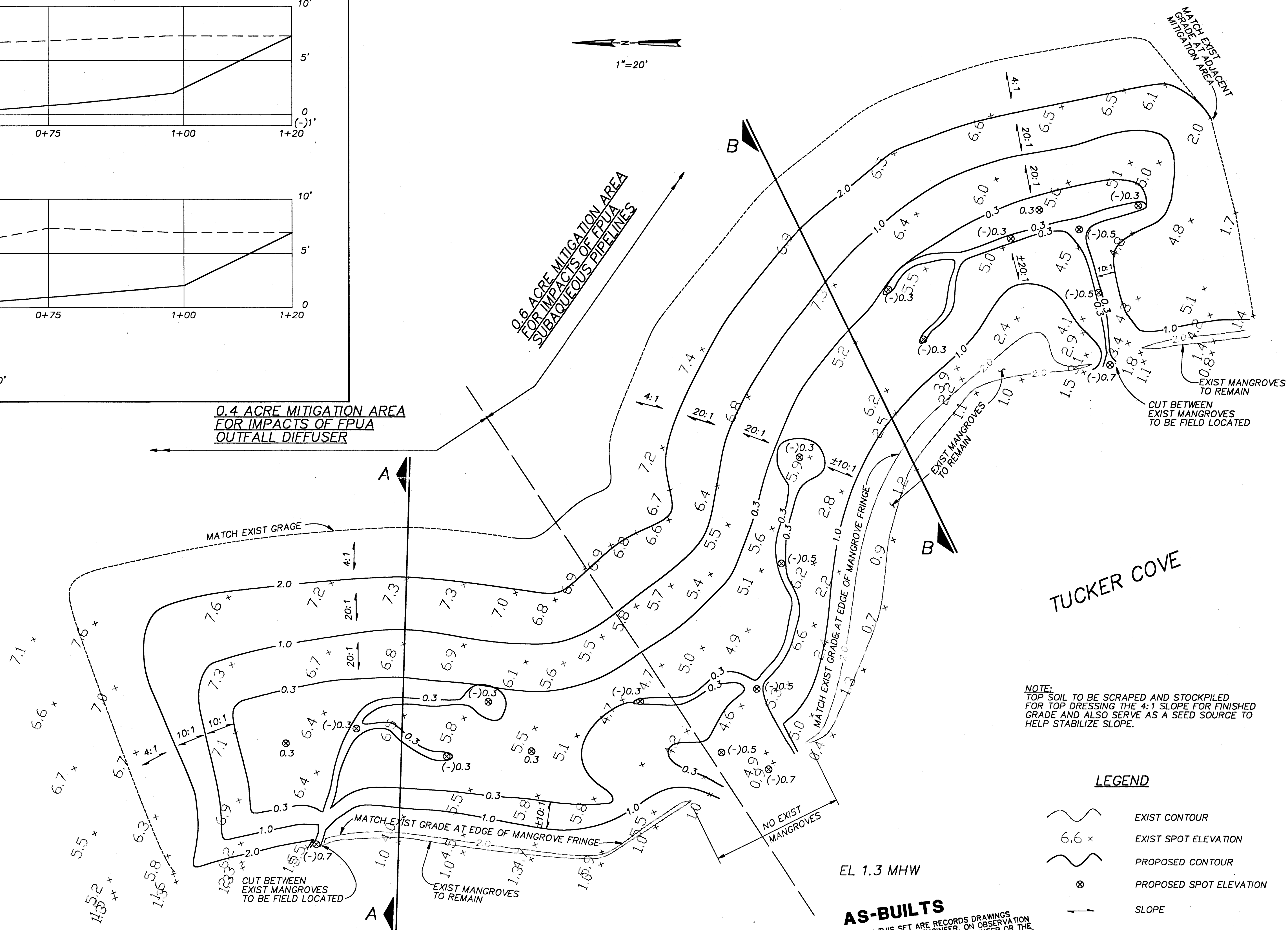
SCALE: HORIZ.: 1"=10'
VERT.: 1"=5'

0.4 ACRE MITIGATION AREA
FOR IMPACTS OF FPUA
OUTFALL DIFFUSER

0.6 ACRE MITIGATION AREA
FOR IMPACTS OF FPUA
SUBAQUEOUS PIPELINES



LOCATION MAP



NOTE:
TOP SOIL TO BE SCRAPED AND STOCKPILED
FOR TOP DRESSING THE 4:1 SLOPE FOR FINISHED
GRADE AND ALSO SERVE AS A SEED SOURCE TO
HELP STABILIZE SLOPE.

LEGEND

- EXIST CONTOUR
- EXIST SPOT ELEVATION
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- SLOPE

EL 1.3 MHW

AS-BUILTS

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DSGN
R. PRAGER
DR
L. BOWER
CHK
W. OGBURN
APVD
B. SHIELDS

NO. DATE REVISION

BY APVD

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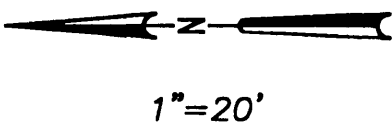
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WATER MAIN AND REUSE MAIN
SUBAQUEOUS CROSSING OF
THE INDIAN RIVER
AND OUTFALL DIFFUSER
FOR THE
FORT PIERCE UTILITIES AUTHORITY
FORT PIERCE, FLORIDA

INLET PARK
MITIGATION AREA
GRADING PLAN

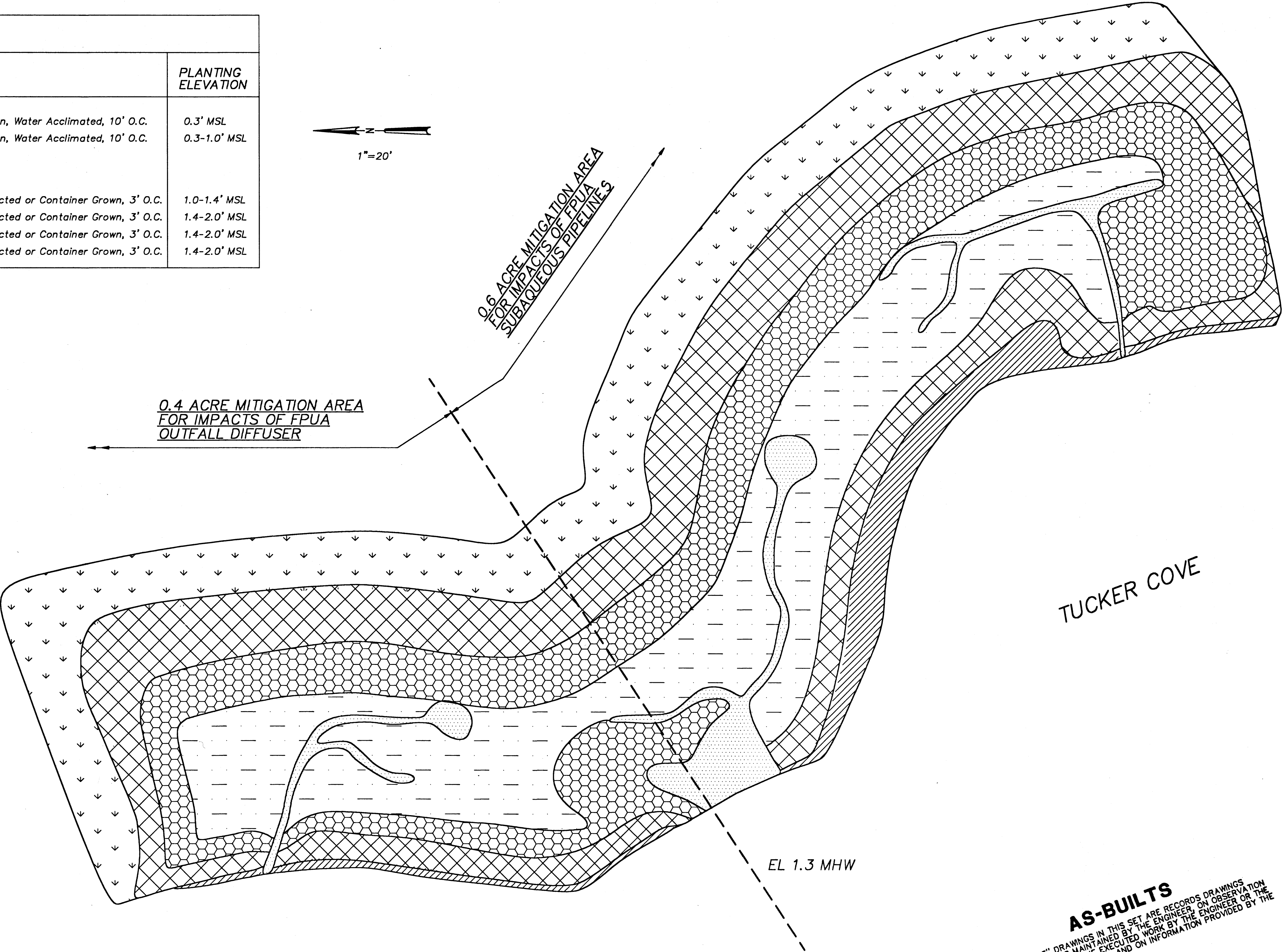
SHEET 8
DWG NO. P-7
DATE OCT 1993
PROJ NO. SEF30361.J0

PLANT LIST				
QUANTITY	SCIENTIFIC NAME	COMMON NAME	SIZE	PLANTING ELEVATION
Mangroves 130	<i>Rhizophora mangle</i>	Red Mangrove	3'-4'x2', Container Grown, Water Acclimated, 10' O.C.	0.3' MSL
	<i>Avicennia germinans</i>	Black Mangrove	3'-4'x2', Container Grown, Water Acclimated, 10' O.C.	0.3-1.0' MSL
Cordgrass Community 750 300 300 300	<i>Spartina alterniflora</i>	Smooth Cordgrass	6"-9" Full Clumps, Collected or Container Grown, 3' O.C.	1.0-1.4' MSL
	<i>Distichlis spicata</i>	Saltgrass	6"-9" Full Clumps, Collected or Container Grown, 3' O.C.	1.4-2.0' MSL
	<i>Paspalum vaginatum</i>	Salt Jointgrass	6"-9" Full Clumps, Collected or Container Grown, 3' O.C.	1.4-2.0' MSL
	<i>Spartina patens</i>	Marsh Hay Cordgrass	6"-9" Full Clumps, Collected or Container Grown, 3' O.C.	1.4-2.0' MSL



LEGEND

- INLET CHANNEL
- RED MANGROVE
- BLACK MANGROVE
- CORDGRASS COMMUNITY
- EXISTING MANGROVES TO REMAIN
- MULCH



AS-BUILTS

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DSGN R. PRAGER
DR 0361J0P7 L. BOWER
CHK W. OGBURN
APVD B. SHIELDS

NO. DATE REVISION

BY APVD

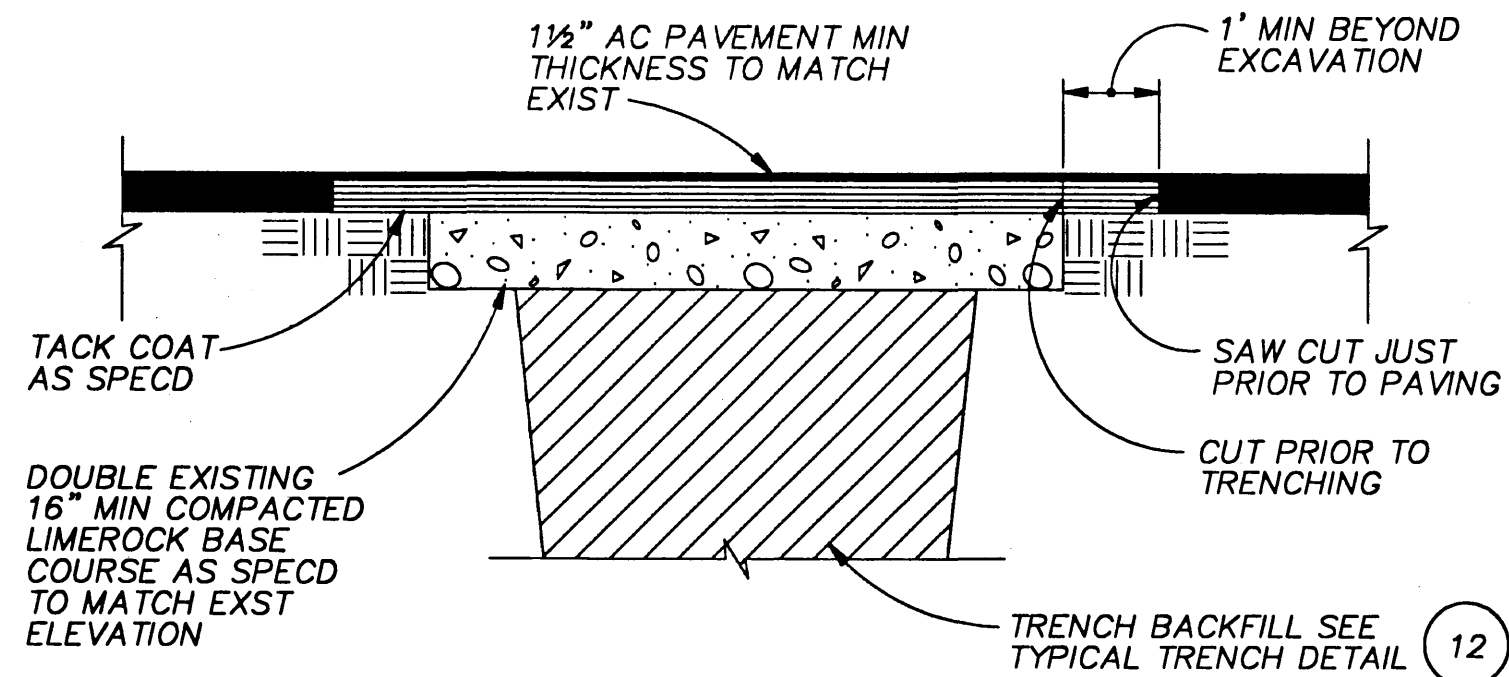
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WATER MAIN AND REUSE MAIN
SUBAQUEOUS CROSSING OF
THE INDIAN RIVER
AND OUTFALL DIFFUSER
FOR THE
FORT PIERCE UTILITIES AUTHORITY
FORT PIERCE, FLORIDA

INLET PARK
MITIGATION AREA
PLANTING SCHEME

SHEET 9
DWG NO. P-8
DATE OCT 1993
PROJ NO. SEF30361.J0

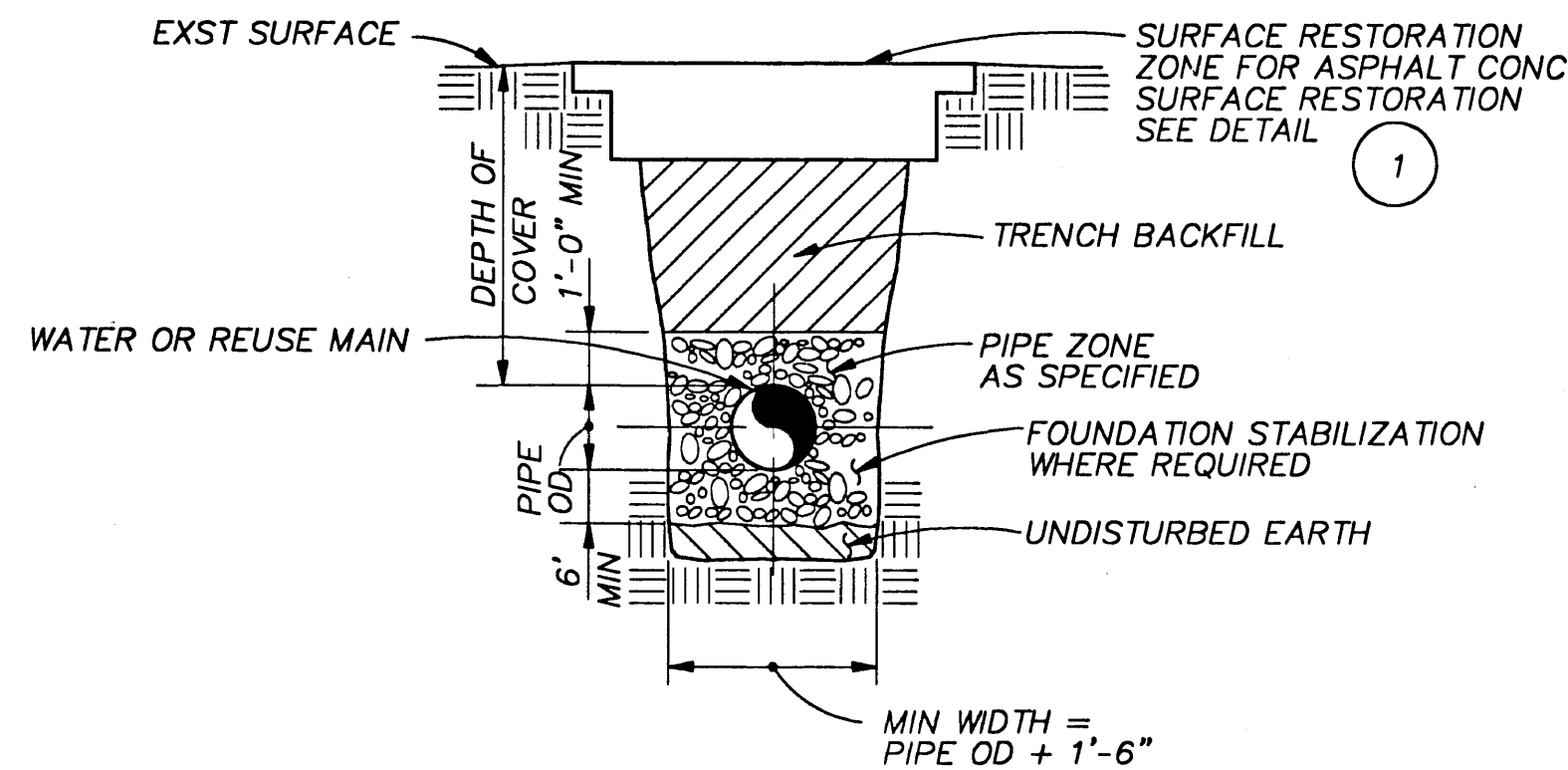


NOTE: 1-INCH AC OVERLAY WILL BE REQUIRED FOR PARKING FIELD.

SURFACE RESTORATION

NTS

1



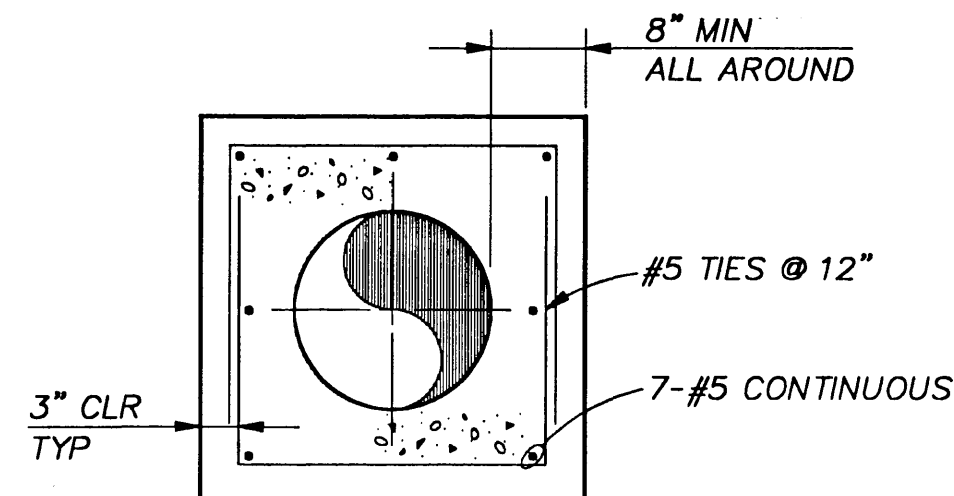
TYPICAL TRENCH - LANDSIDE

NTS

2

AS-BUILTS

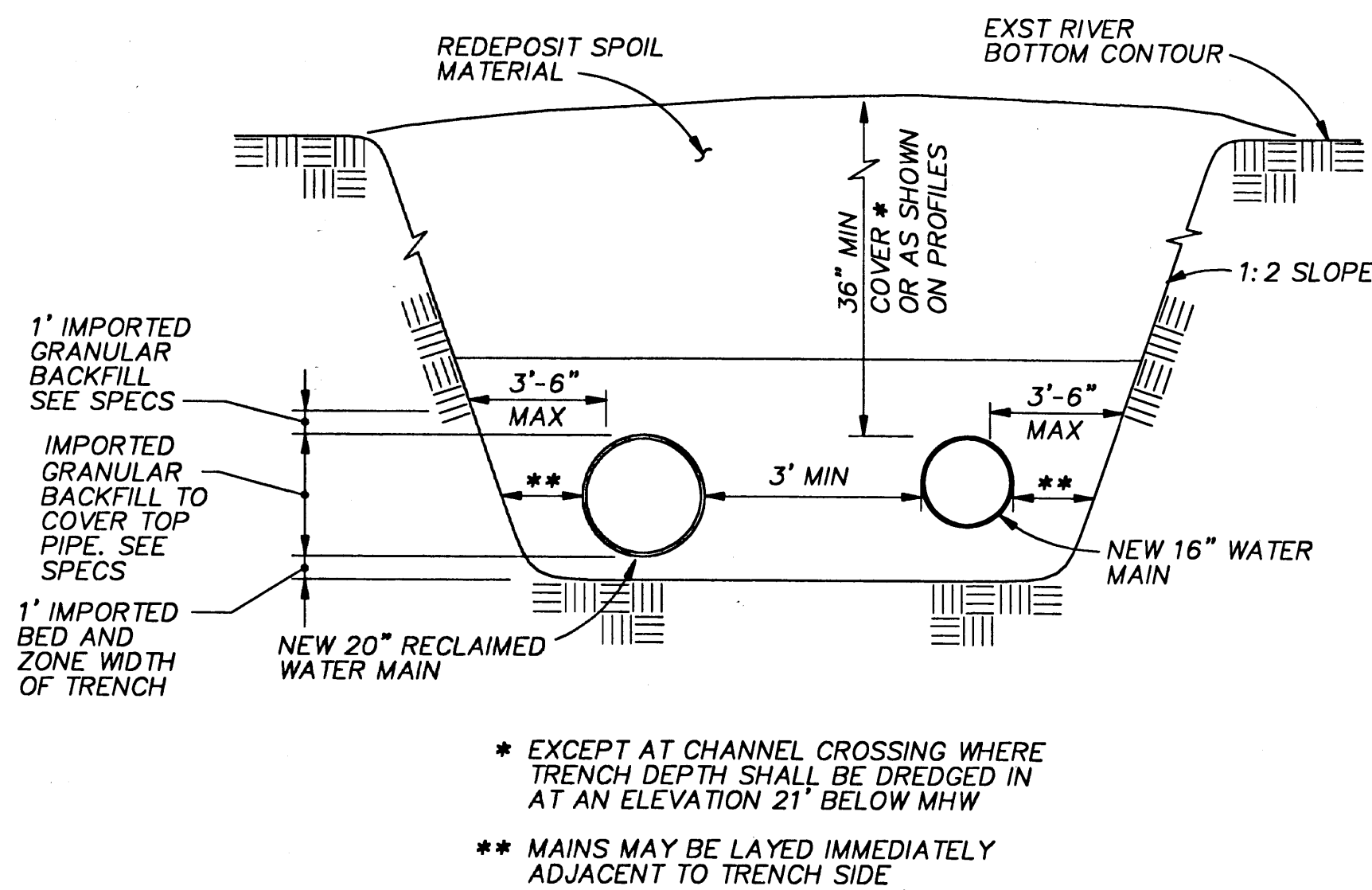
THE "AS-BUILT" DRAWINGS IN THIS SET ARE RECORDS DRAWINGS BASED ON RECORDS MAINTAINED BY THE ENGINEER, ON OBSERVATION OF THE PROGRESS OF THE EXECUTED WORK BY THE ENGINEER OR THE ENGINEER'S REPRESENTATIVE, AND ON INFORMATION PROVIDED BY THE CONTRACTOR TO THE ENGINEER.



PIPE ENCASEMENT

NTS

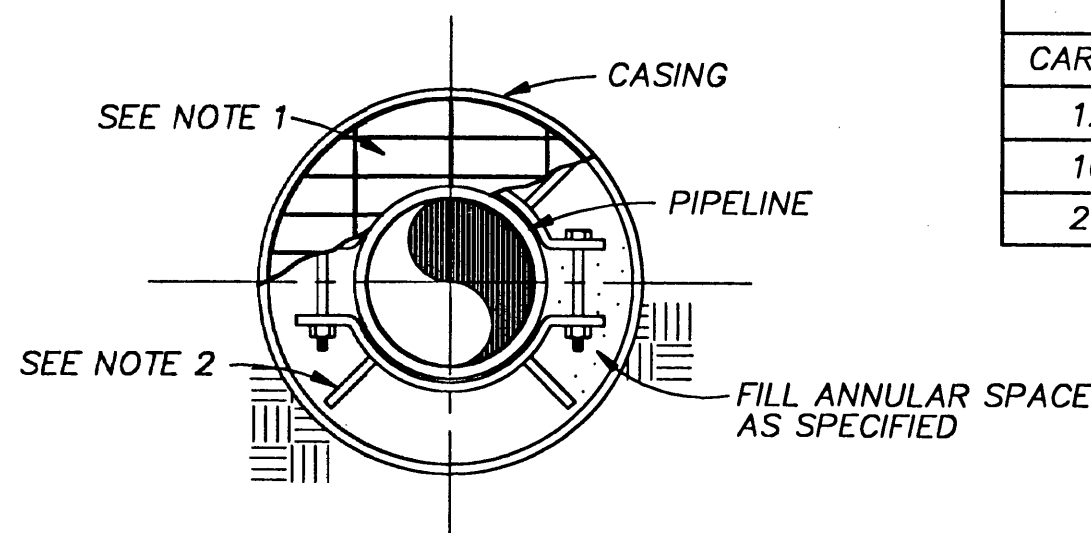
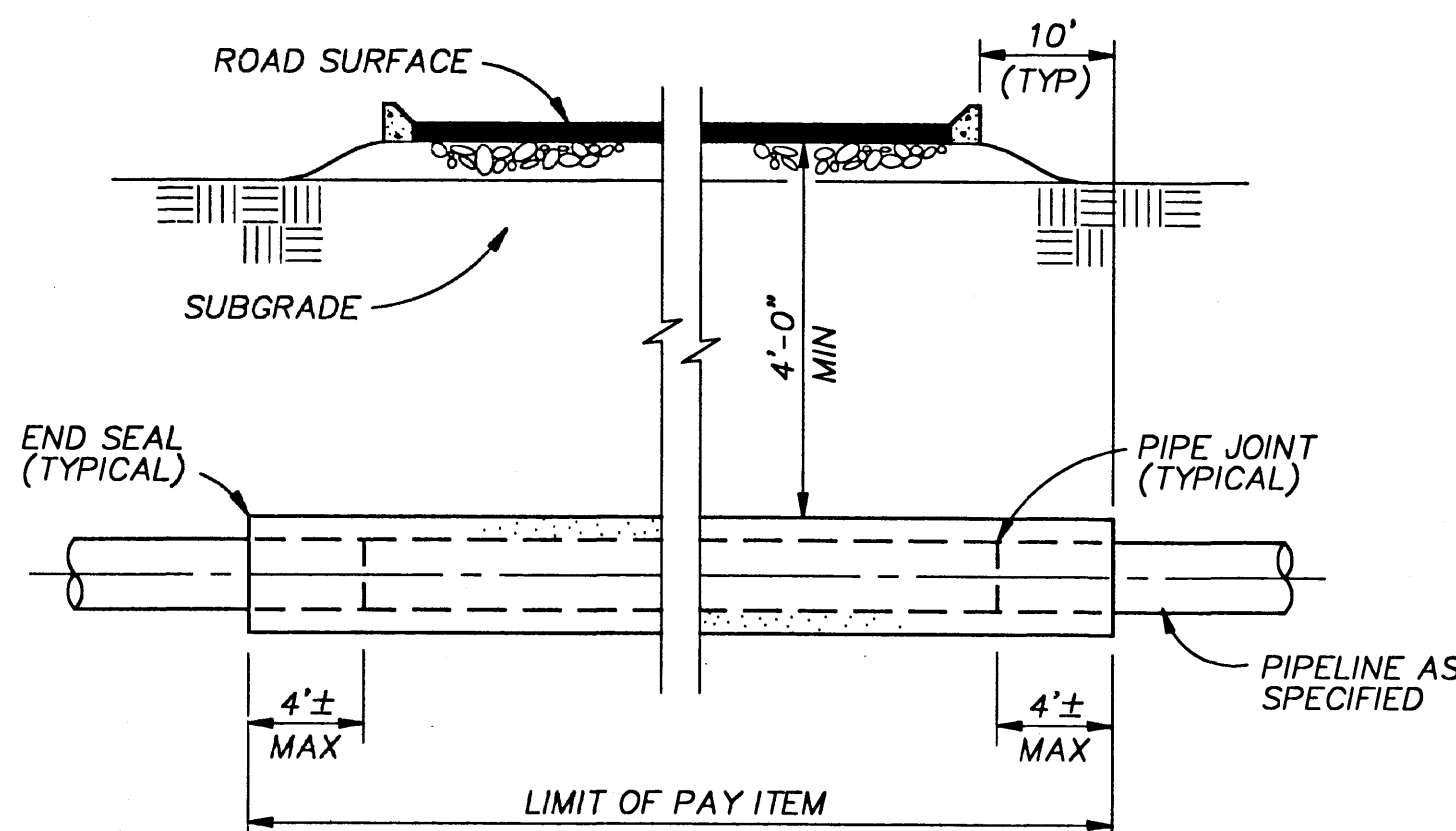
3



TYPICAL RIVER TRENCH CROSS SECTION

NTS

4



NOTES:

1. SEAL ENDS OF CASING TO MIN 1-FOOT THICKNESS WITH BRICK AND NON SHRINK GROUT OR SOLID CONCRETE PLUG 1-FOOT THICK.
2. CASING SPACER/INSULATOR AS SPECIFIED.

UNDERCROSSING DETAIL

NTS

5

RESTRAINED JOINT LENGTHS IN FEET (HORIZONTAL BENDS REDUCERS)							
FITTING SIZE (IN)	TEE OR WYE	VALVES OR PLUGS	FITTING SIZE PLUGGED CROSS	45° BEND	22.5° BEND	11.25° BEND	REDUCERS
16	244	301	262	222	147	20	Ax 1.27
20	310	366	328	288	215	69	Ax 1.00

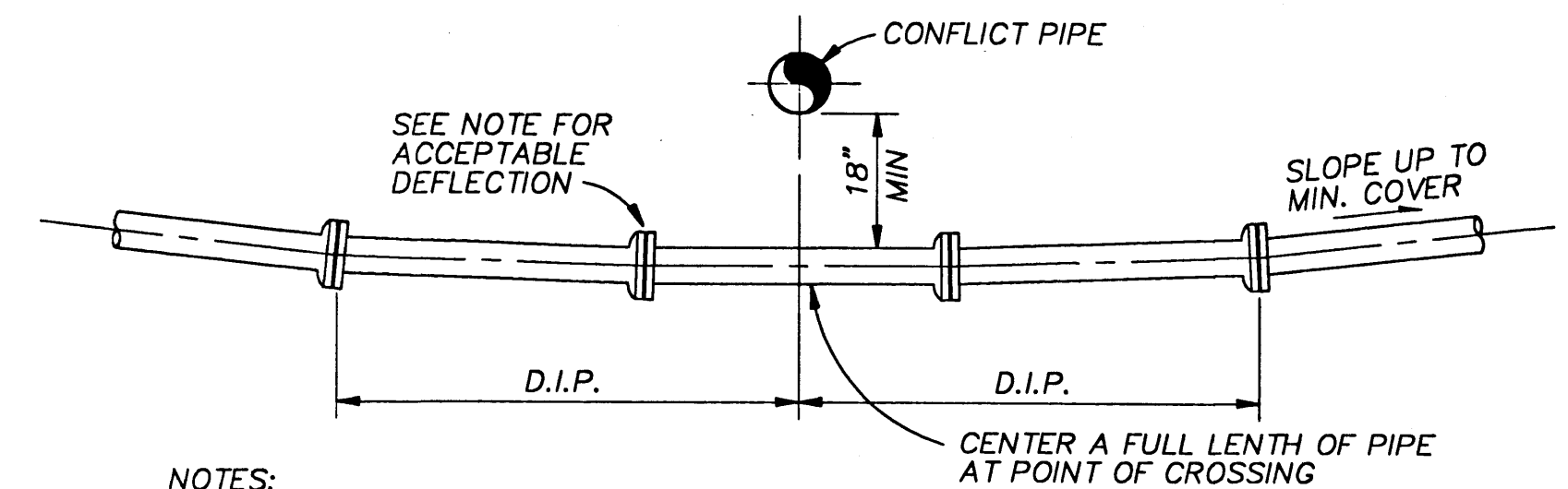
NOTES:

1. RESTRAINED JOINT LENGTHS ARE BASED ON A TEST PRESSURE OF 150 PSIG AND ARE THE MINIMUM LENGTH ALLOWED. IN THE CASE OF A DISCREPANCY WITH PLAN QUANTITIES SHOWN, THE LARGER VALUE SHALL GOVERN. CONTRACTOR SHALL ROUND UP RESTRAINED LAYING LENGTH TO THE NEXT JOINT. CONTRACTOR SHALL PROVIDE AT LEAST TWO FULL LENGTHS OF PIPE AT EACH FITTING CONNECTION.
2. PIPE SHALL BE RESTRAINED ON EACH SIDE OF BENDS TO THE LENGTH SHOWN.
3. PIPE SHALL BE RESTRAINED ON THE BRANCH OF TEES AND WYES TO THE LENGTH SHOWN.
4. PIPE SHALL BE RESTRAINED ON THE UPSTREAM SIDE OF VALVES TO THE LENGTH SHOWN.
5. PIPE SHALL BE RESTRAINED ON THE LARGE SIDE OF REDUCERS TO THE LENGTHS SHOWN WHERE "A" IS THE DIFFERENCE IN OUTSIDE AREA OF THE PIPE ON EACH SIDE OF THE REDUCER (SQUARE INCHES).

RESTRAINED JOINT PIPE TABLE

NTS

6



NOTES:

- DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION.
3" = 12" FOR 20 FOOT LAYING LENGTH.

NOTES ON WATER SEWER SEPARATION

1. SANITARY SEWERS AND FORCE MAINS SHOULD CROSS UNDER WATER MAINS WHENEVER POSSIBLE. SANITARY SEWERS AND FORCE MAINS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18-INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE WHENEVER POSSIBLE.

WHERE SANITARY SEWERS OR FORCE MAINS MUST CROSS A WATER MAIN WITH LESS THAN 18-INCHES VERTICAL DISTANCE, BOTH THE SEWER AND THE WATER MAIN SHALL BE CONSTRUCTED OF DIP AT THE CROSSING. SUFFICIENT LENGTHS OF DIP MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10-FOOT BETWEEN ANY TWO JOINTS. ALL JOINTS ON THE WATER MAIN WITHIN 20-FOET OF THE CROSSING MUST BE MECHANICALLY RESTRAINED. A MINIMUM VERTICAL CLEARANCE OF 6-INCHES MUST BE MAINTAINED AT ALL CROSSINGS.

ALL CROSSINGS SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND THE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING).

WHERE A NEW PIPE CONFLICTS WITH AN EXISTING PIPE WITH LESS THAN 18-INCHES VERTICAL CLEARANCE, THE NEW PIPE SHALL BE ARRANGED TO MEET THE CROSSING REQUIREMENTS ABOVE.

2. A MINIMUM 10-FOOT HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN ANY TYPE OF SEWER AND WATER MAIN IN PARALLEL INSTALLATIONS WHENEVER POSSIBLE.

IN CASES WHERE IT IS NOT POSSIBLE TO MAINTAIN A 10-FOOT HORIZONTAL SEPARATION, THE WATER MAIN MUST BE LAID A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER OR FORCE MAIN AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18-INCHES ABOVE THE TOP OF THE SEWER.

WHERE IT IS NOT POSSIBLE TO MAINTAIN A VERTICAL DISTANCE OF 18-INCHES IN PARALLEL INSTALLATIONS, THE WATER MAIN SHALL BE CONSTRUCTED OF DIP AND THE SANITARY SEWER OR FORCE MAIN SHALL BE CONSTRUCTED OF DIP WITH A MINIMUM VERTICAL DISTANCE OF 6-INCHES THE WATER MAIN SHOULD ALWAYS BE ABOVE THE SEWER. JOINTS ON THE WATER MAIN SHALL BE LOCATED AS FAR APART AS POSSIBLE FROM JOINTS ON THE SEWER OR FORCE MAIN (STAGGERED JOINTS).

3. A MINIMUM 5-FOOT HORIZONTAL SEPARATION (CENTER TO CENTER) OR 3-FOOT (OUTSIDE TO OUTSIDE), SHALL BE MAINTAINED BETWEEN RECLAIMED WATER LINES AND EITHER POTABLE WATER MAINS OR SEWAGE COLLECTION LINES.

PRESSURE PIPE CONFLICT DETAIL

NTS

7



DSGN
T. HASSETT
DR
P. SMITH
CHK
S. RILEY
APVD
B. SHIELDS

NO. DATE

RECORD DRAWINGS

REVISION

BY APVD

REUSE OF DOCUMENTS

THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL.

VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

WATER MAIN AND REUSE MAIN SUBAQUEOUS CROSSING OF THE INDIAN RIVER AND OUTFALL DIFFUSER FOR THE FORT PIERCE UTILITIES AUTHORITY FORT PIERCE, FLORIDA

STANDARD DETAILS

SHEET 10

DWG NO. D-1

DATE OCT 1993

PROJ NO. SEF30361.J0

WTP-K-011-L

Utility Crossing No. 6
Fort Pierce Utility Authority, Southern Bell Telephone (AT&T)

DISCLAIMER

The information summarized below is for contractor information only. Per Part 1, SECTION 35 20 23 DREDGING AND DREDGED MATERIAL PLACEMENT, PARAGRAPH 1.3(J)(1), the contractor is solely responsible for investigating the location of all utility crossings via an independent and comprehensive pre-construction utility survey.

ATTACHMENTS

1. October 2015. Fort Pierce Utilities Authority Utility Map.
2. September 1979. Fort Pierce Utilities Authority. Plans and Details, Water Supply Main.

KNOWN UTILITY INFORMATION

IDENTIFIED UTILITIES	ELEVATION AND DATUM	ATTACHMENT NO.
16" DIP Water Main active	Trenched ~36" below channel bottom	1, 2
16" DIP Water Main abandoned	Trenched ~36" below channel bottom	1, 2
32 x 4" Telephone cable conduits	Trenched ~36" below channel bottom	1, 2



Legend

Lift Station

Manhole

Sewer Valve

Force Main

Gravity Main

Gas Fitting

Gas Valve

Gas Reducer

Gas Main

Gas Service

Fire Hydrant

Water Valve

Water Meter

Water Reducer

Conflict Manhole

Water Main Casing

Water Service

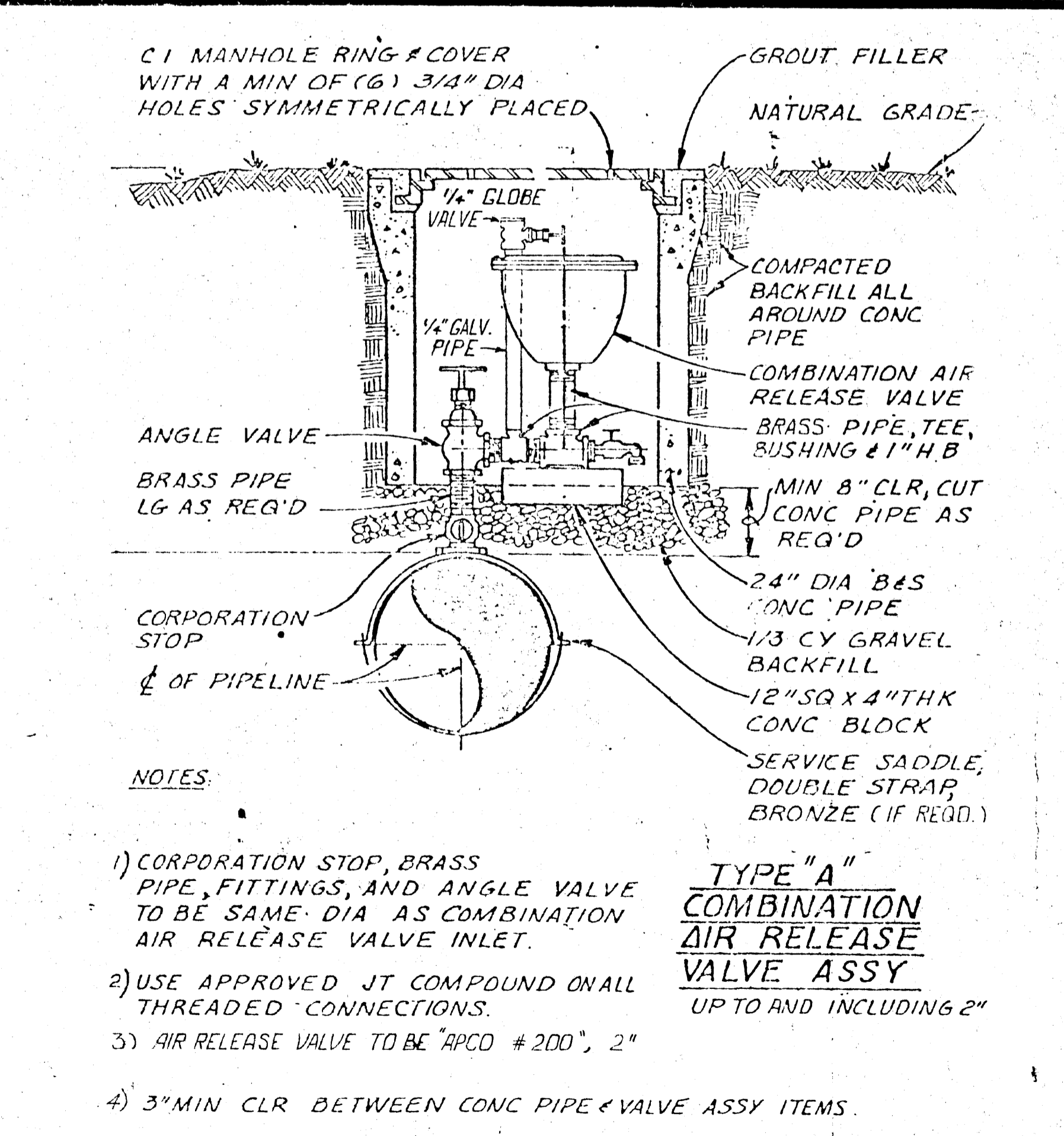
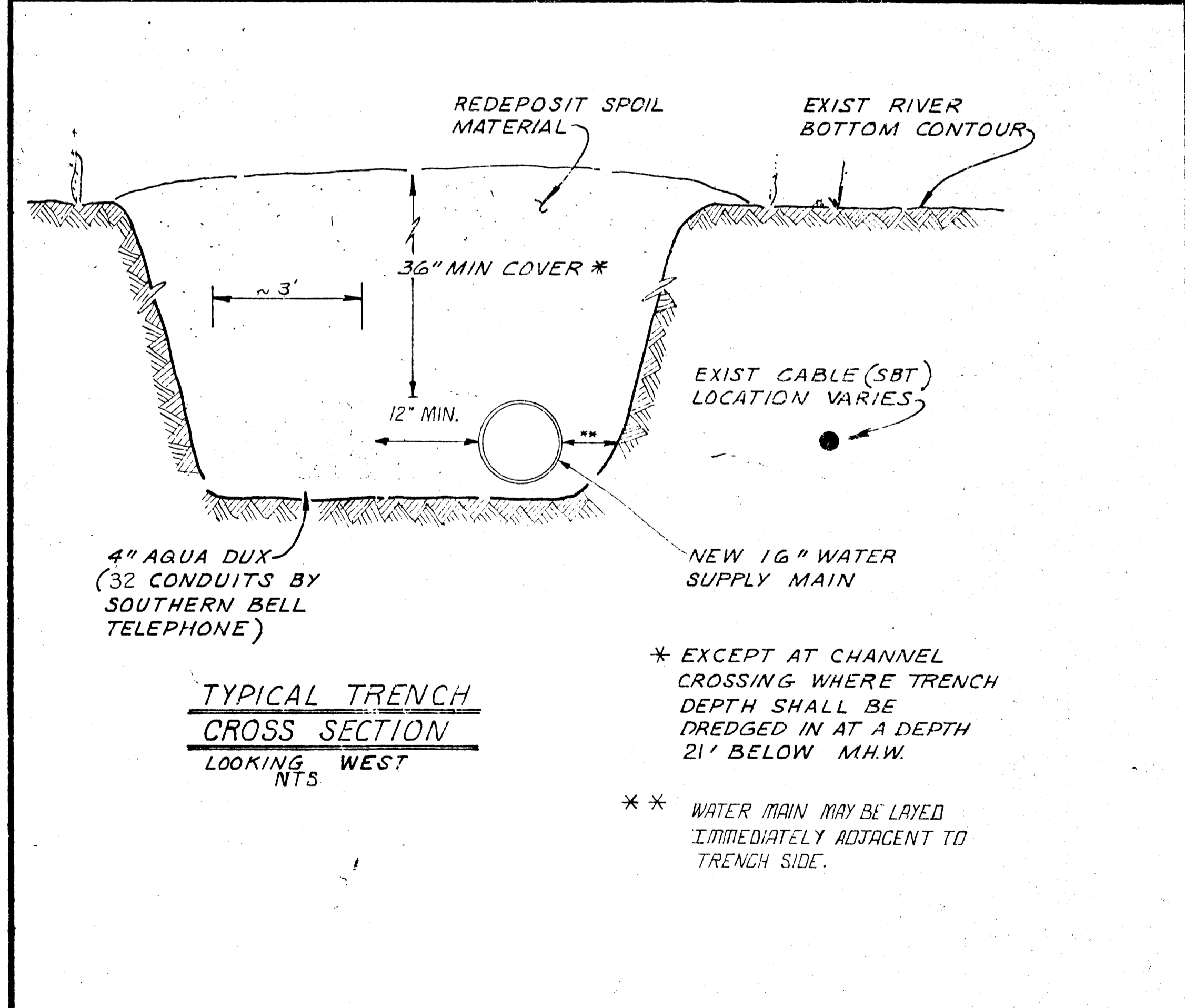
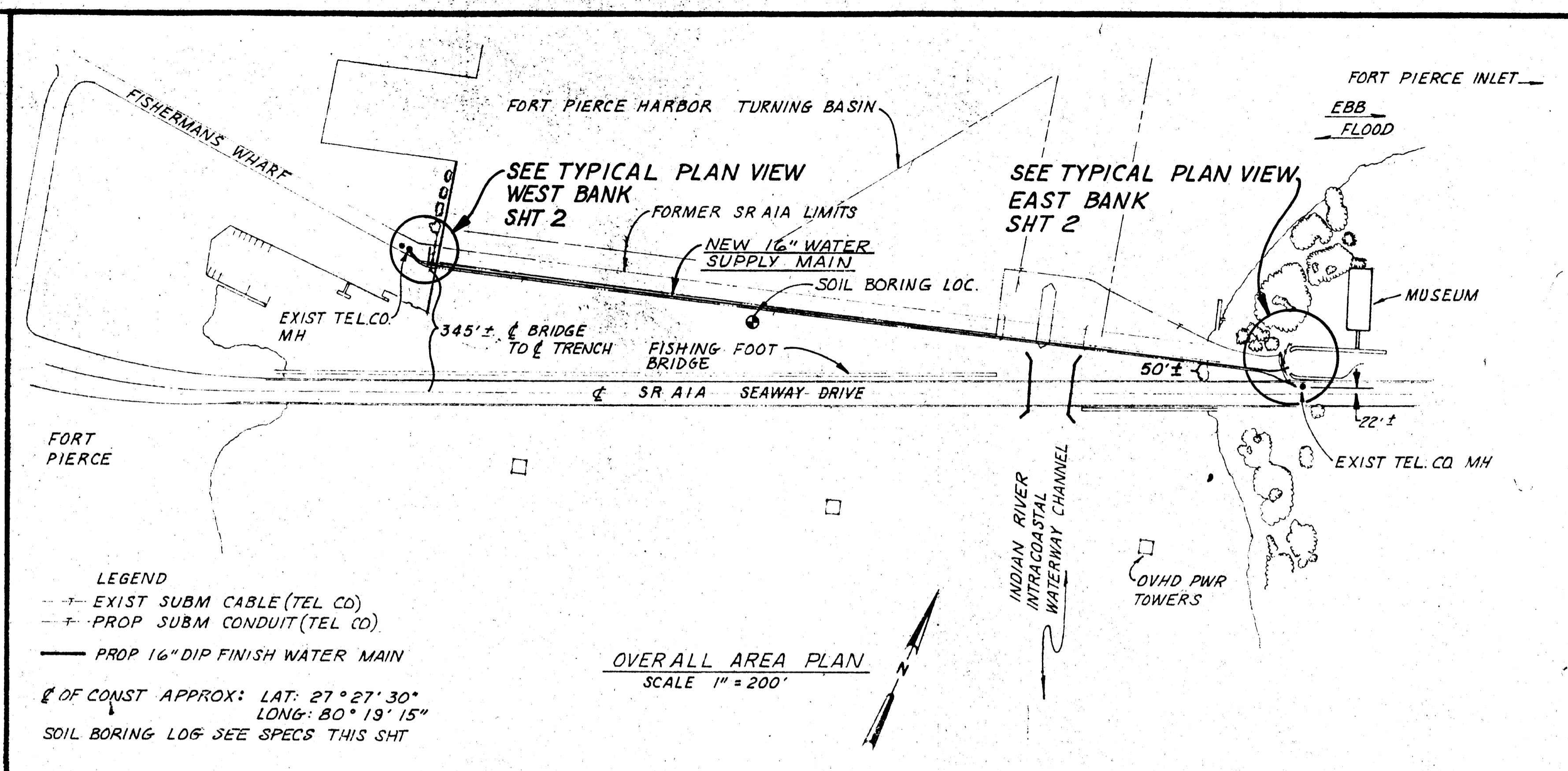
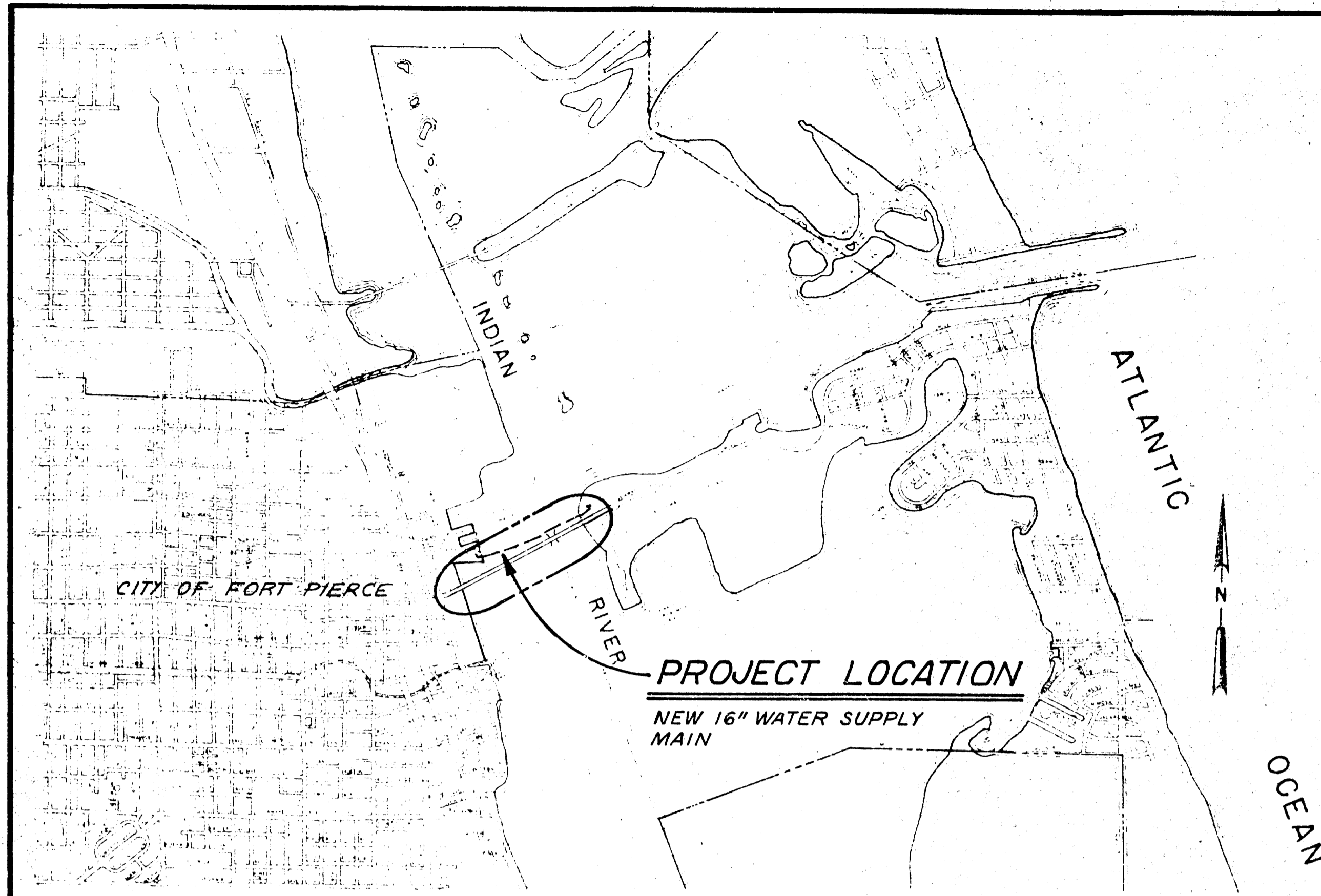
FPUA Water Mains Status

Abandoned

Active

Removed

Fort Pierce Utilities Authority
Water/Wastewater Engineering
1701 S. 37th Street
Fort Pierce, Florida 34947
Prepared by: SO
Date: 10/2/2015



NOTES:

Ball joint ductile iron pipe shall comply with all applicable AWWA specifications and shall be manufactured to withstand a 250 psi working pressure. Pipe and fittings shall be minimum class 57.

Push-on joint pipe shall be ductile iron manufactured in accordance with requirements of USA Standard A21.51. Push-on joints for such pipe shall be in accordance with Section 11-2.3 of USA Standard A21.11. Pipe and fittings shall be minimum class 51.

Fittings with joint restraint feature shall be ductile iron and shall conform to USA Standard A21.10. Restrained push-on joints for pipe and fittings shall be designed for a water working pressure of 250 psi.

Butterfly valves shall comply in all respects with the physical and performance requirements of AWWA C504, short body type. All valves shall be class 150-B. Valve components shall withstand the environmental conditions in contact, and provide continuous trouble-free service.

Buried manual operators shall comply with AWWA C504 with 2-inch square operating nut. Operators shall be fully gasketed and grease-packed to withstand an external water pressure of 10 psi. Operators shall be capable of developing torques listed in Table 1 of AWWA C504 for class 150-B valves.

Each operator shall be fitted with a valve box assembly consisting of the top section, cover, and the extension section. The top section shall be cast iron with an overall length of 15 inches, or equal. Inside diameter of the barrel shall be 6-1/4 inches. The cover shall be of cast iron and have the word 'WATER' cast in its top. The extension section shall be steel water well casing with an outside diameter of 6 inches and weighing 10.2 pounds per foot.

Soil Conditions:

A soil boring by the Army Corp. of Engineers (location shown on plan view) recorded sand from 7.5' to 10.5' below M.W. North and adjacent to the proposed crossing is the turning basin established by the Corp. Within this basin, sand has been the only material encountered to a depth of 24'.

The rods for restraining joints shall be made of stainless steel.

Bacteriological Clearance

Pipe shall be disinfected in accordance with AWWA and FDER standards and sampled and tested for bacteriological clearance as required by FDER.

Hydrostatic Testing

All pipe and fittings shall be hydrostatically tested to 150 PSI before connected to the existing system.

Existing Bottom Profile

Contractor shall supply a profile of existing river bottom along the trench centerline before excavation is begun. Changes may be made in pipe profile if warranted.

Pipe Profile

Pipe profile shown with solid lines. Southern Bell conduit profile indicated with dashed lines where it deviates from the water main profile. If the water main is installed, the conduit shall be installed at the profile shown for the water main. Existing bottom profile was provided by Southern Bell and is the same as that shown on their plans.

Provided no changes are discovered in the river bottom profile, the pipe shall be laid to the elevations and grades shown on the plans. Proceeding west to east, from STA. 2+30, no downward sloping section of the pipeline shall have an angle (measured from the horizontal) greater than 1.2°. From station 10+00 to 14+00 a deeper cut than that proposed by Southern Bell will be required in order to comply with maximum 1.5° grade.

Contractor shall provide an elevation on the top of each joint of pipe during the pipe laying process.

Contractor shall be responsible for restoring all pavement, riprap, seawall, sod, etc., disturbed by this construction, to a condition equal or better than that existing prior to construction.