



NORFOLK DREDGING C O M P A N Y

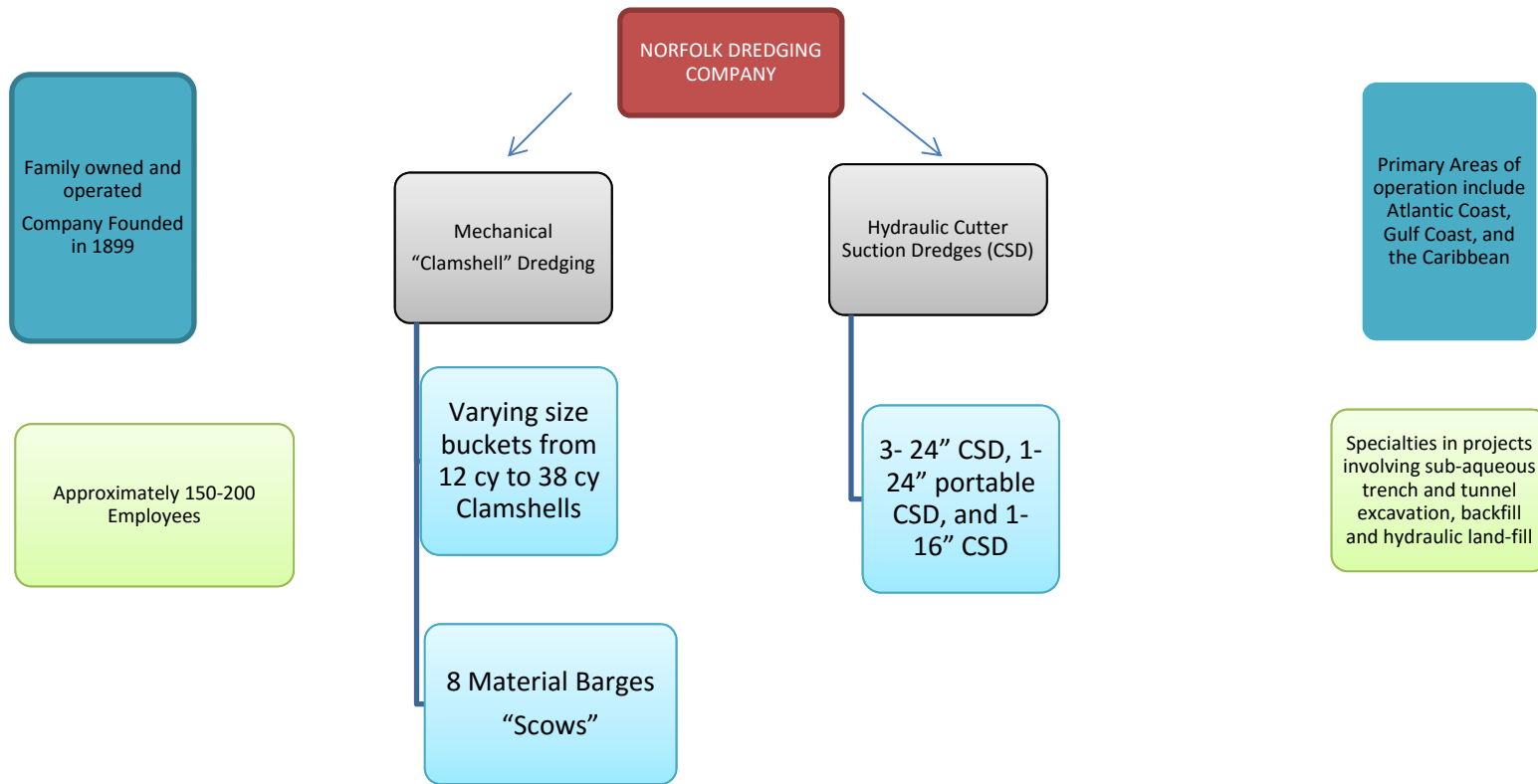
Since 1899



Website

www.norfolkdredging.com


**NORFOLK DREDGING
C O M P A N Y**
Since 1899





NORFOLK DREDGING C O M P A N Y

Since 1899

**Michael Haverty
Exec. Vice President**

25 years of Experience. Civil Engineer w/ a Background in Field Engineering and Surveying

**Steve Bassett
Contract Manager**

27 years of Experience. Background Civil Engineer, Estimating, and Project Management



Norfolk Dredging Company On-Site Key Personnel

NAME	TITLE	Area of Responsibility
Mike Bushery	Project Manager	Project Manager (10 years of Experience)
Ricky Smith	Superintendent of "Charleston"	Dredging Captain and Superintendent (40 years of Experience)
Jerry Dundlow	Superintendent	Fill-in Superintendent (35 years of Experience)
Mike Minnix	SSHO	Safety (13 years of Experience)
Bryan Miller	QC Manager	Surveying and Beach Operations (14 years of Experience)

Norfolk Dredging Company Crew and Schedule

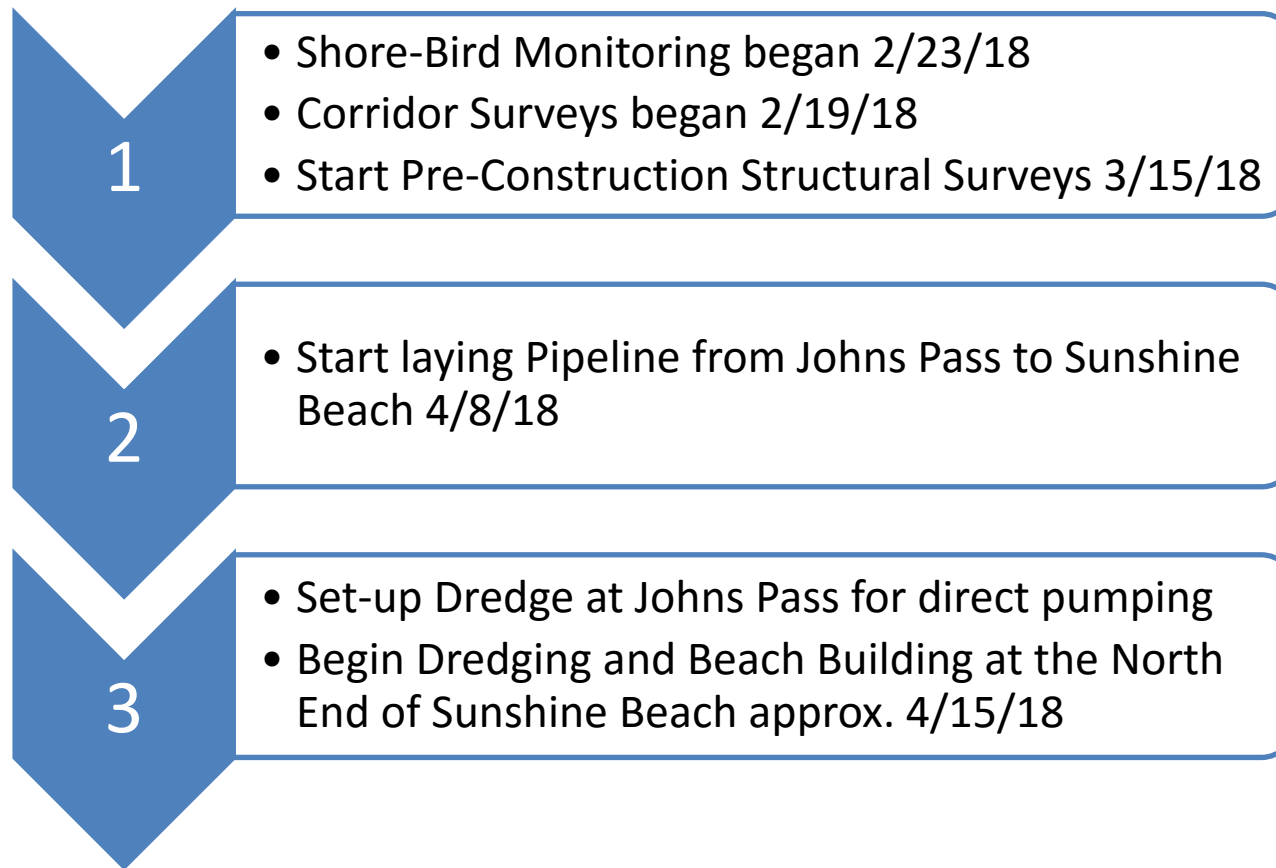
All on-site personnel will be working 2 weeks on and 1 week off.

Administrators will be working 8-10 hours per day.

2 Crew shifts will work 12 hours a day (6am-6pm and 6pm-6am).

Equipment	Approx. Personnel Count
CSD Charleston	23
Spider Barge	9
Vicksburg Pump-out	22
Shore Crew	13
Bull Gang	8
Field Engineer /Surveying	12

Order of Work



Order of Work

4

- Clear Shoal Material in Johns Pass Channel and place on Sunshine Beach with any residual material placed on Sunset Beach

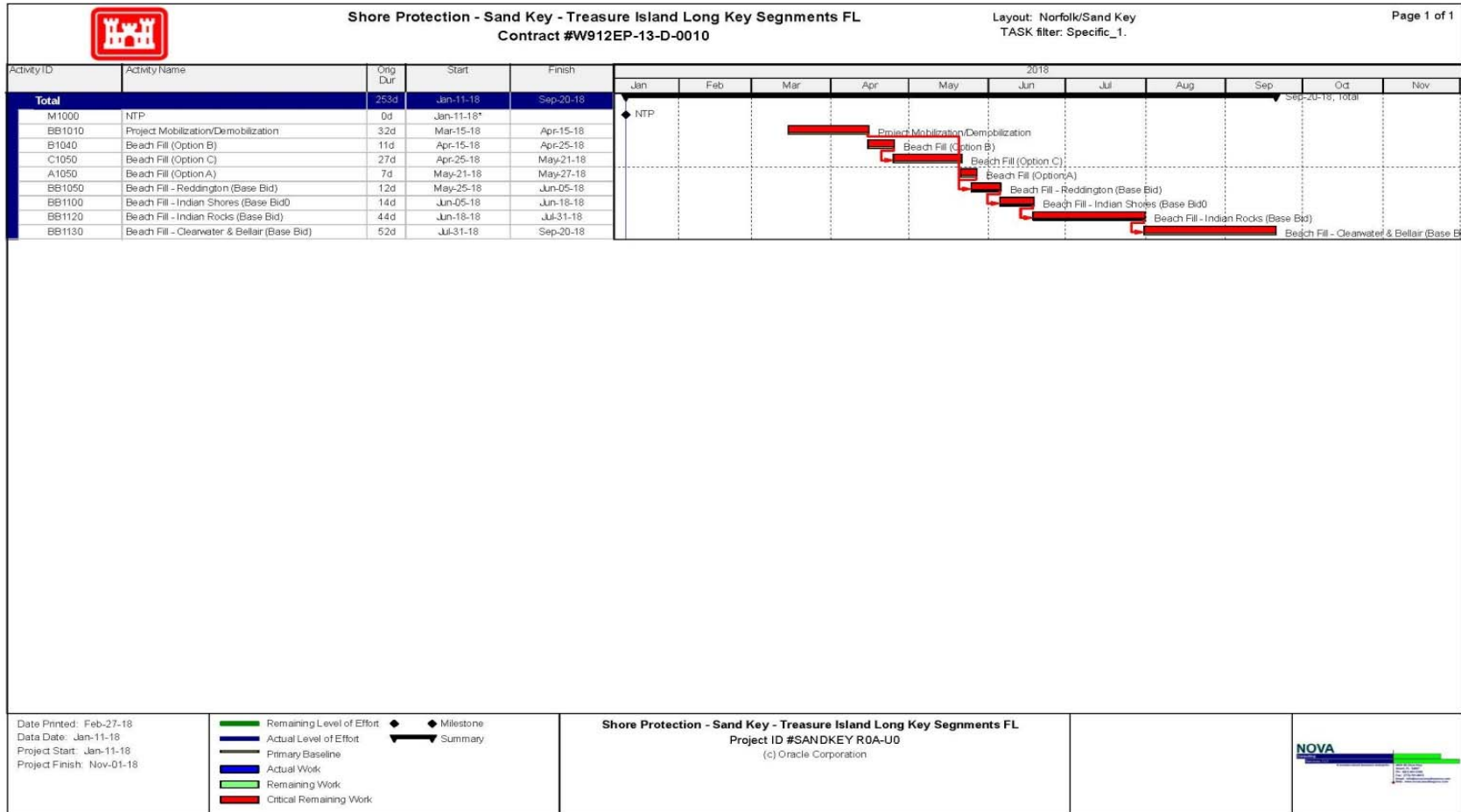
5

- Set-up Barge Unloader Vicksburg at Corridor P-7 and place beachfill at Sunset Beach

6

- Set-up Dredge at the Egmont Key Borrow Site, direct pump to the Spider Barge, and load scows for transport to the beachfill areas

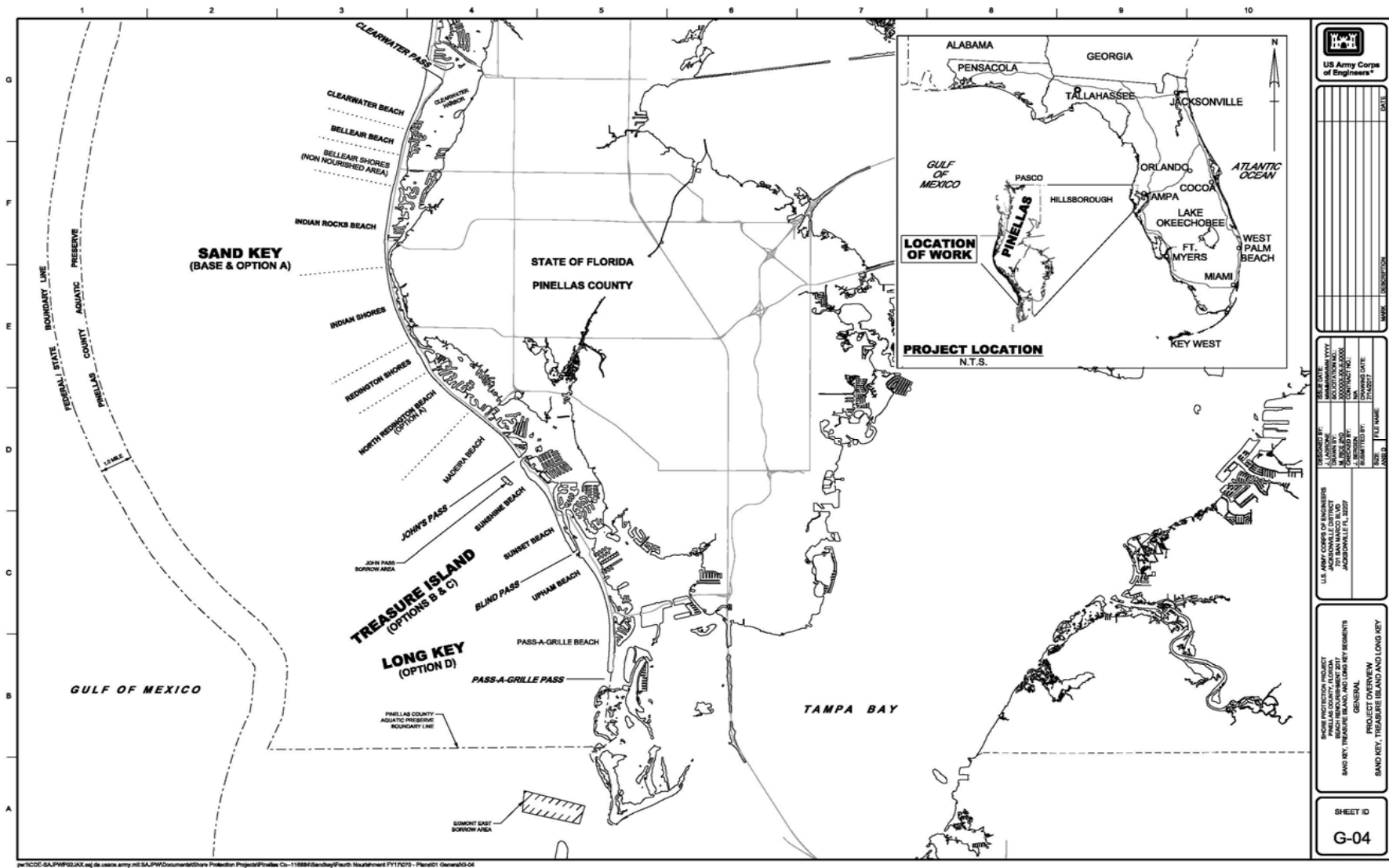
Schedule



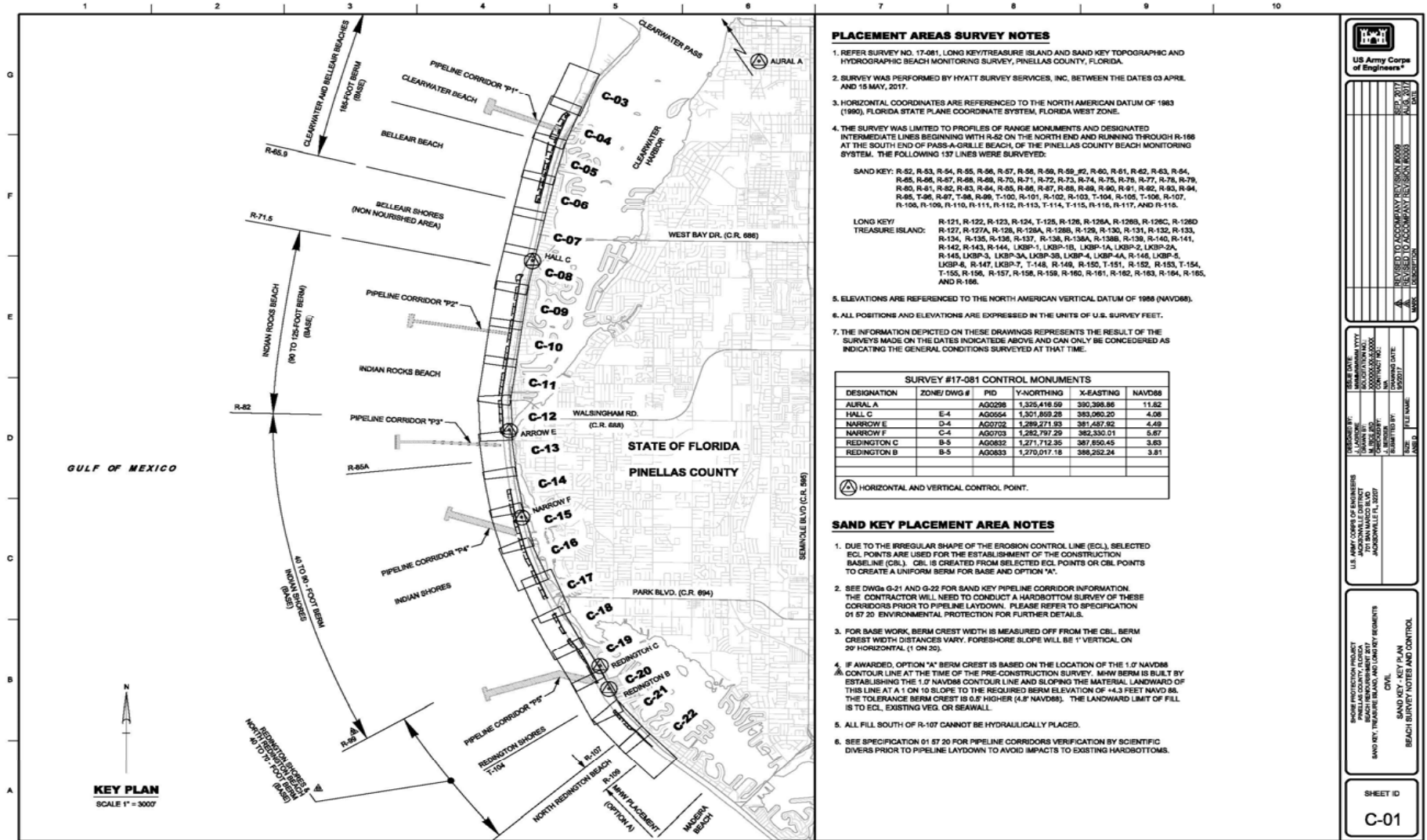
Beach Production

	Corridor	Bid Item	Beachfill Req CY	CY / HR bch	NO DAYS
Clearwater & Belleair	1	0002	476,258	800	52
Indian Rocks Beach	2	0002	368,169	730	44
Indian Shores Beach	3	0002			
Indian Shores Beach	4	0002	76,569	500	14
Redington	<u>5</u>	<u>0002</u>	<u>79,004</u>	<u>600</u>	<u>12</u>
			1,000,000		
N Redington Beach-Mech.	5	0015	7,500	500	7
Treasure Is-Sunshine Beach	Direct	0027	63,000	639	11
Treasure Is-Sunset Beach	7	0039	230,000	760	27
Long Key-Upham Beach	8	0051	150,000	800	16

Sand Key Renourishment Area



Sand Key Renourishment Area



Contractor Staging Area and Crew Change – Clearwater Pass



727.520.8181
www.aerophoto.com

Belleair Beach - Pinellas County Shore Protection

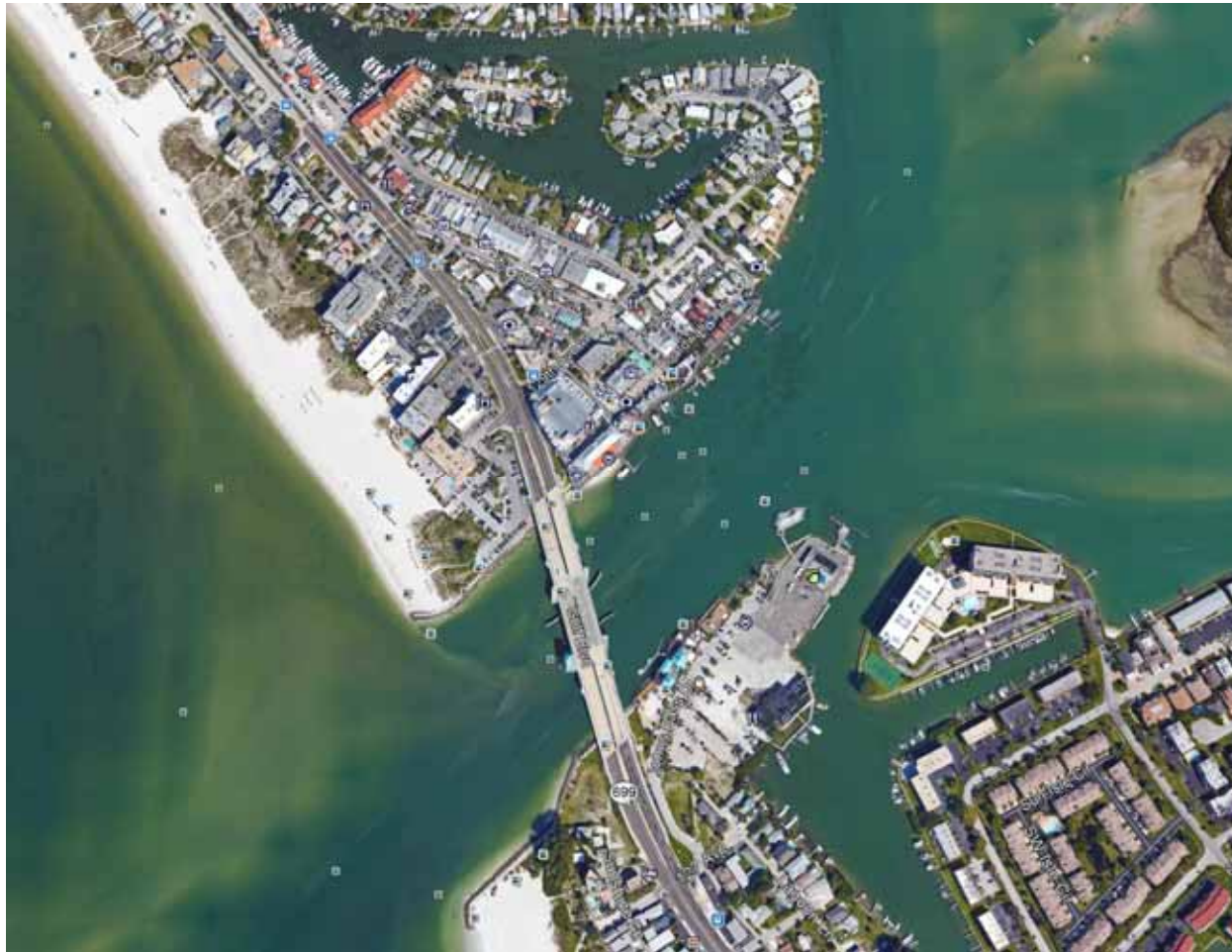
Negative # 60308 786
Date 03.08.06

3/07/2018

Sand Key Beach Renourishment 2017

12

Contractor Staging Area and Crew Change – Johns Pass



2/28/2018

Sand Key Beach Renourishment 2017

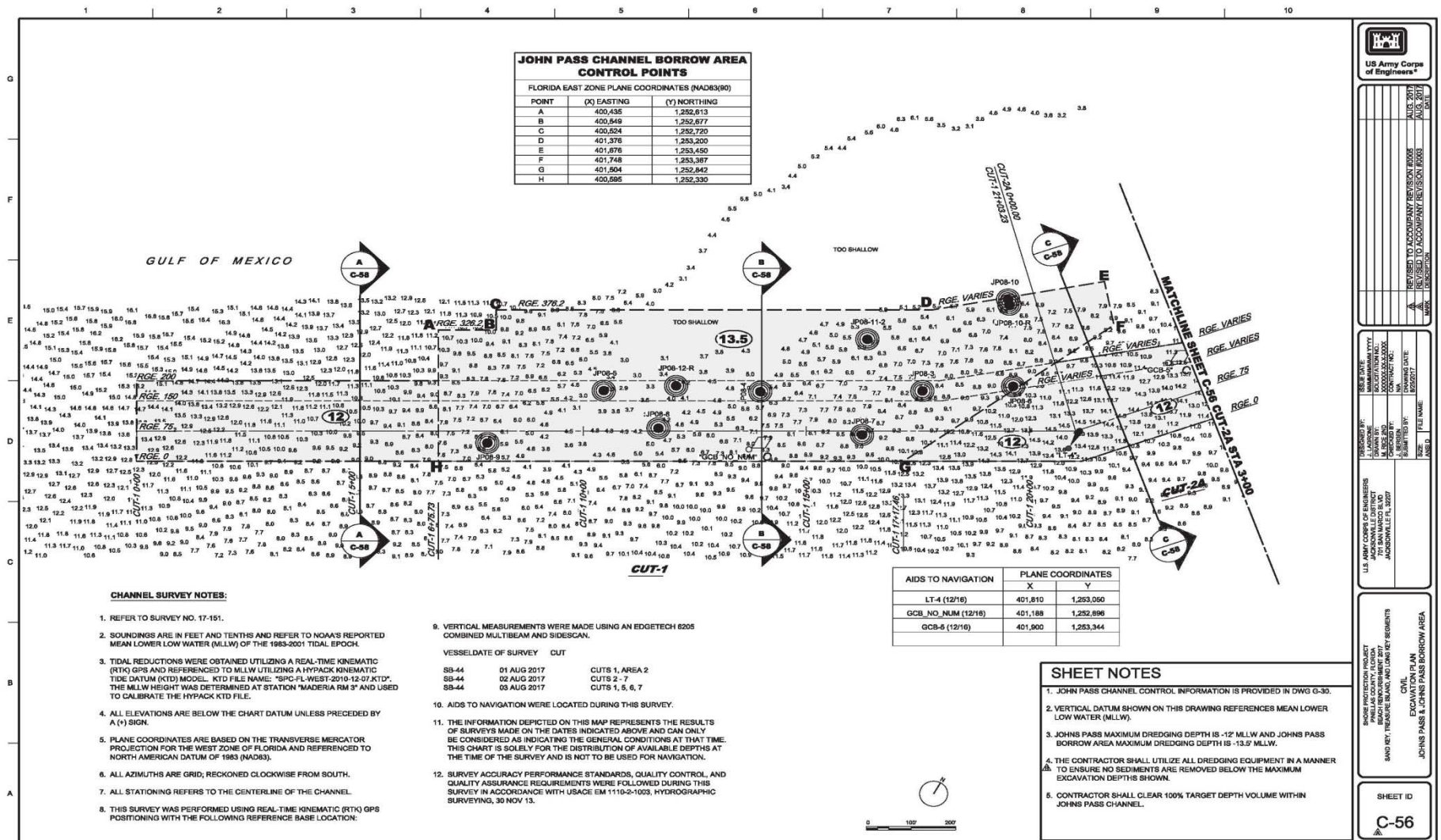
13

Beach Equipment Access Points

1. 127th Avenue Beach Access – Treasure Island
2. 77th Avenue Beach Access – Treasure Island
3. 186th Avenue West Beach Access – Indian Shores
4. 193rd Avenue West Beach Access – Indian Shores
5. Whitehurst Avenue Beach Access – Indian Shores
6. Sand Key Park Beach Access – Clearwater
7. 19th Avenue Beach Access – Indian Rocks
8. Central Avenue Beach Access – Indian Rocks

1. Beach crew will access throughout the project at the public beach access points

Johns Pass Channel



US Army Corps of Engineers

DESIGNED BY: JACOBSON, J. L. (12/16)
 DRAWN BY: JACOBSON, J. L. (12/16)
 CHECKED BY: JACOBSON, J. L. (12/16)
 DATE: 12/16/16

REVISIONS:

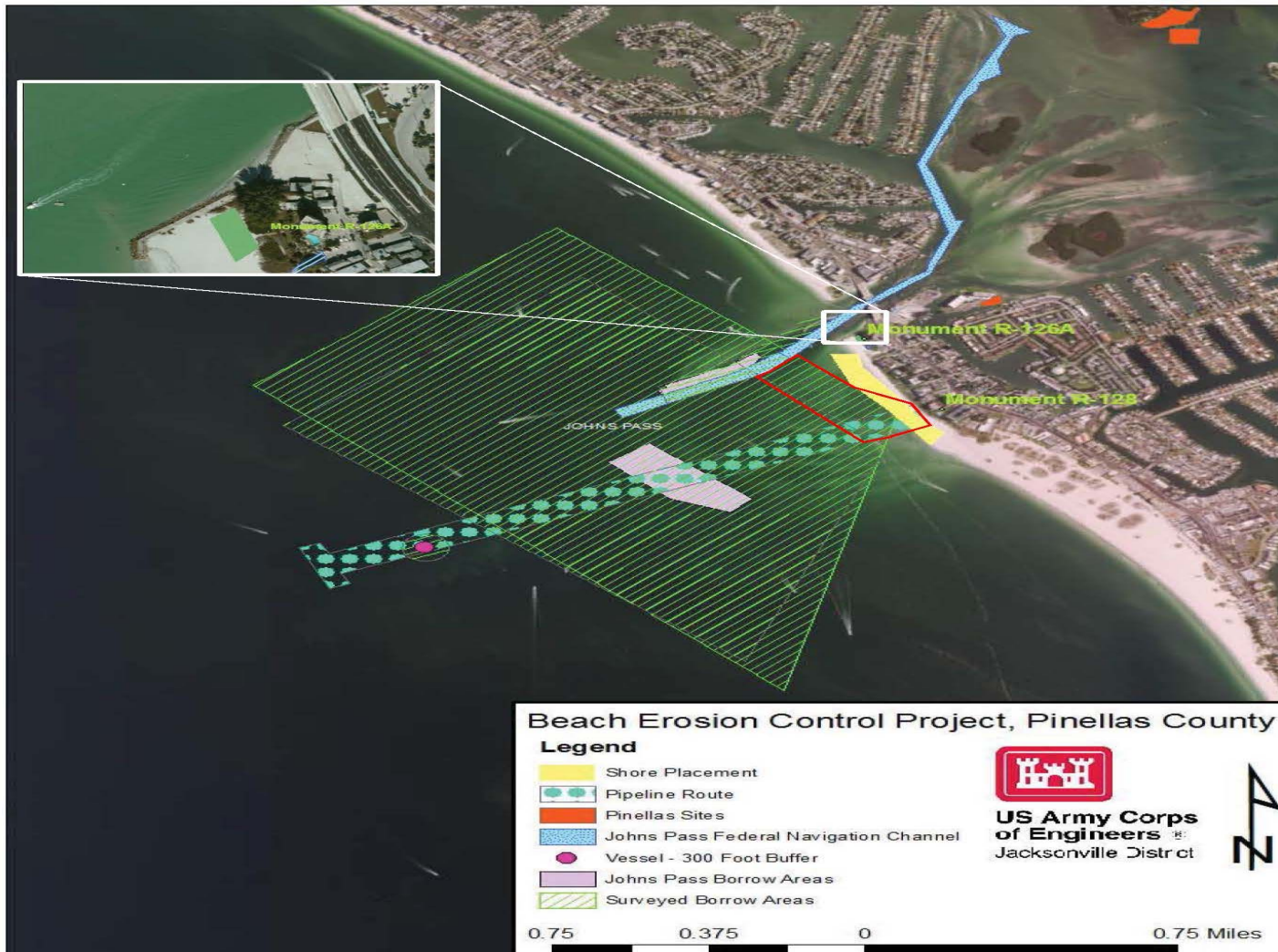
NO.	DESCRIPTION	DATE
1	ISSUED TO ACCOUNT REVISION 8005	AUG 2017
2	ISSUED TO ACCOUNT REVISION 8005	AUG 2017

U.S. ARMY CORPS OF ENGINEERS
 JACKSONVILLE DISTRICT
 CIVIL ENGINEERING
 JACKSONVILLE, FLORIDA
 PROJECT NO. 17-151
 SHEET NO. C-56

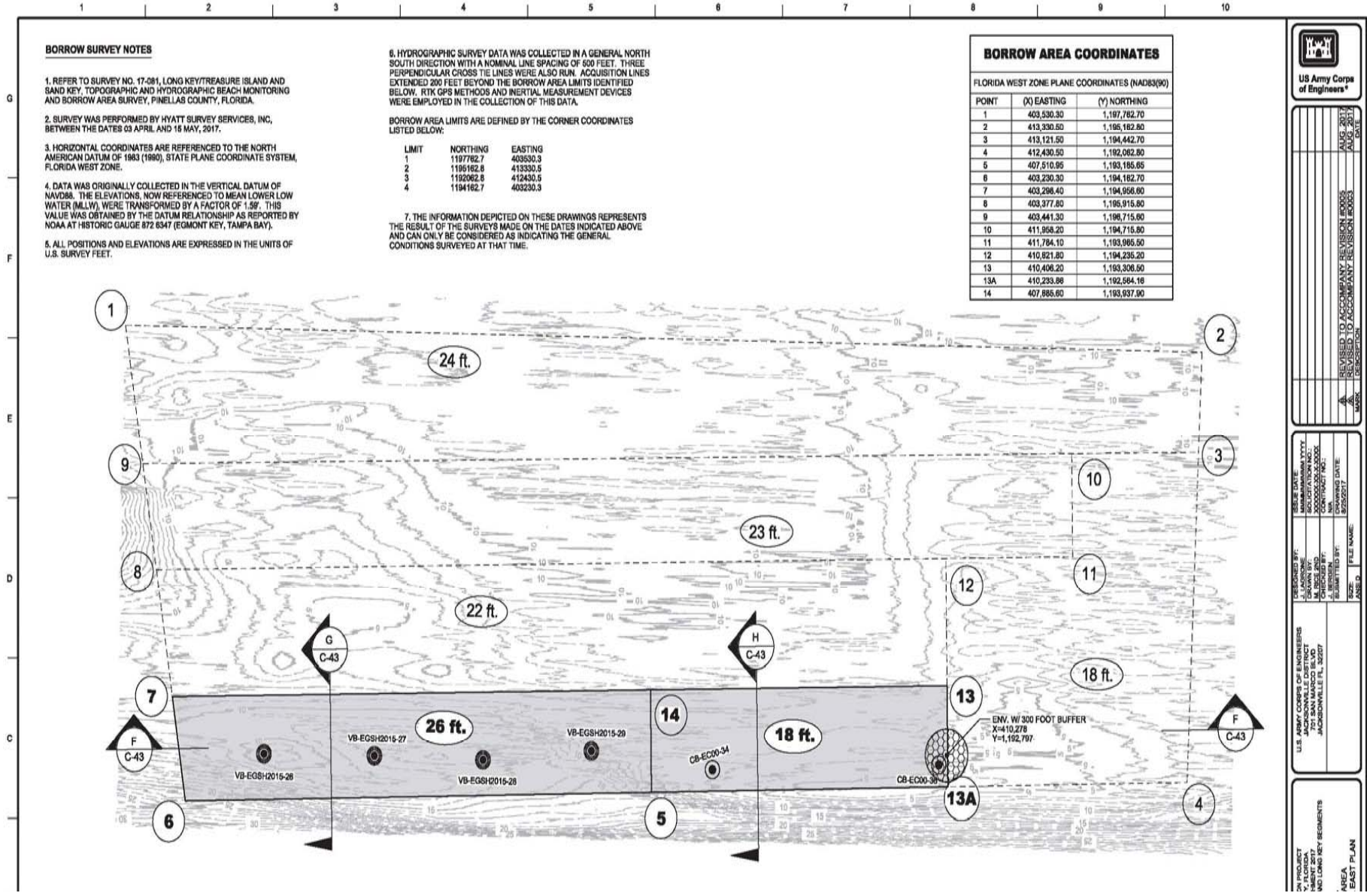
JOHN'S PASS & JOHN'S PASS BORROW AREA

SHEET ID: C-56

Johns Pass Channel



Egmont Key Borrow



BORROW SURVEY NOTES

1. REFER TO SURVEY NO. 17-081, LONG KEY/TREASURE ISLAND AND SAND KEY, TOPOGRAPHIC AND HYDROGRAPHIC BEACH MONITORING AND BORROW AREA SURVEY, PINELLAS COUNTY, FLORIDA.
2. SURVEY WAS PERFORMED BY HYATT SURVEY SERVICES, INC. BETWEEN THE DATES 03 APRIL AND 16 MAY, 2017.
3. HORIZONTAL COORDINATES ARE REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (1980), STATE PLANE COORDINATE SYSTEM, FLORIDA WEST ZONE.
4. DATA WAS ORIGINALLY COLLECTED IN THE VERTICAL DATUM OF NAVD88. THE ELEVATIONS, NOW REFERENCED TO MEAN LOWER LOW WATER (MLLW), WERE TRANSFORMED BY A FACTOR OF 1.59. THIS VALUE WAS OBTAINED BY THE DATUM RELATIONSHIP AS REPORTED BY NOAA AT HISTORIC GAUGE 872 8347 (EGMONT KEY, TAMPA BAY).
5. ALL POSITIONS AND ELEVATIONS ARE EXPRESSED IN THE UNITS OF U.S. SURVEY FEET.

6. HYDROGRAPHIC SURVEY DATA WAS COLLECTED IN A GENERAL NORTH SOUTH DIRECTION WITH A NOMINAL LINE SPACING OF 500 FEET. THREE PERPENDICULAR CROSS TIE LINES WERE ALSO RUN. ACQUISITION LINES EXTENDED 200 FEET BEYOND THE BORROW AREA LIMITS IDENTIFIED BELOW. RTK GPS METHODS AND INERTIAL MEASUREMENT DEVICES WERE EMPLOYED IN THE COLLECTION OF THIS DATA.

BORROW AREA LIMITS ARE DEFINED BY THE CORNER COORDINATES LISTED BELOW:


LIMIT	NORTHING	EASTING
1	119782.7	403530.3
2	1195162.8	413330.5
3	1192062.8	412430.5
4	1194162.7	403230.3

7. THE INFORMATION DEPICTED ON THESE DRAWINGS REPRESENTS THE RESULT OF THE SURVEYS MADE ON THE DATES INDICATED ABOVE AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS SURVEYED AT THAT TIME.

BORROW AREA COORDINATES

FLORIDA WEST ZONE PLANE COORDINATES (NAD83(90))

POINT	(X) EASTING	(Y) NORTHING
1	403,530.30	1,197,782.70
2	413,330.50	1,195,162.80
3	413,121.50	1,194,442.70
4	412,430.50	1,192,062.80
5	407,510.95	1,193,185.85
8	403,230.30	1,194,162.70
7	403,296.40	1,194,956.80
8	403,377.80	1,195,915.80
9	403,441.30	1,198,715.80
10	411,968.20	1,194,715.80
11	411,784.10	1,193,985.50
12	410,821.80	1,194,235.20
13	410,406.20	1,193,300.60
13A	410,233.88	1,192,864.18
14	407,886.60	1,193,937.90



US Army Corps of Engineers*

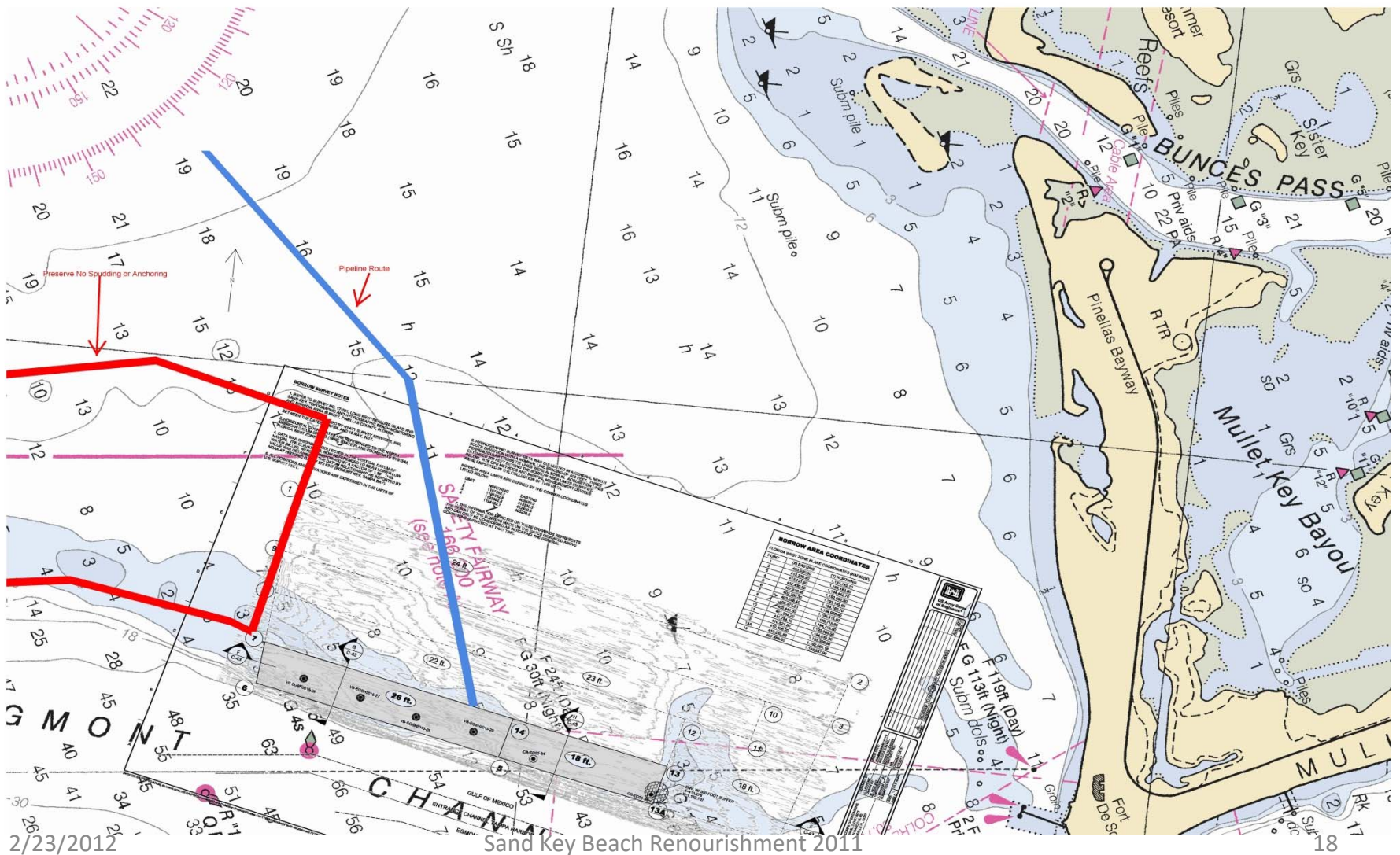
DATE: AUG 2017
 DRAWN BY: [REDACTED]
 CHECKED BY: [REDACTED]
 APPROVED BY: [REDACTED]
 FILE NAME: [REDACTED]

DESIGNED BY: [REDACTED]
 DRAWN BY: [REDACTED]
 CHECKED BY: [REDACTED]
 APPROVED BY: [REDACTED]
 FILE NAME: [REDACTED]

PROJECT: [REDACTED]
 DISTRICT: [REDACTED]
 DIVISION: [REDACTED]
 AREA: EAST PLAN

*REVISIONS TO ACCOMPANY REVISIONS TO DRAWING
 DATE: [REDACTED]
 BY: [REDACTED]
 REASON: [REDACTED]

Proposed Pipeline to Spider Barge



2/23/2012

Sand Key Beach Renourishment 2011

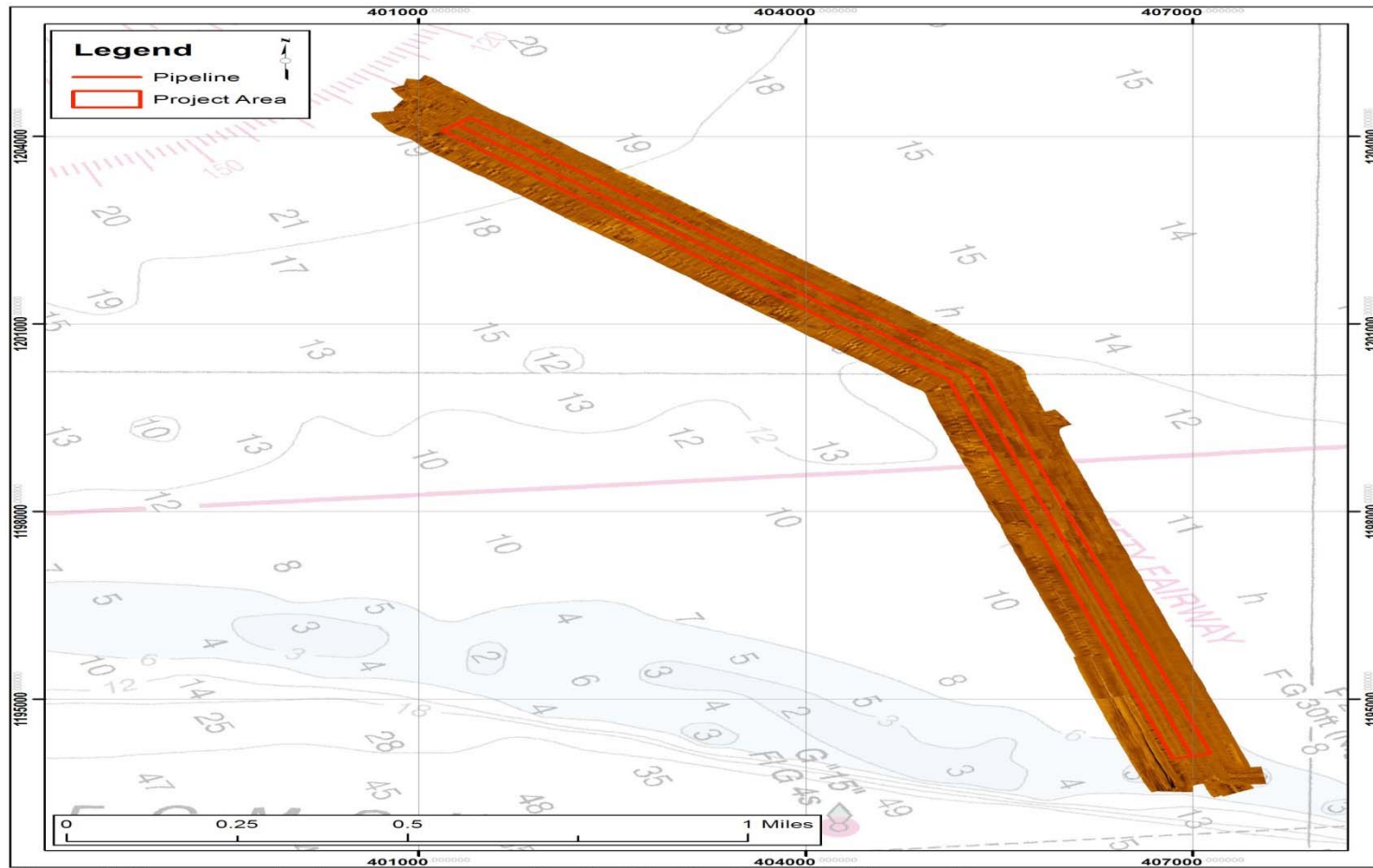
18

Subcontractors

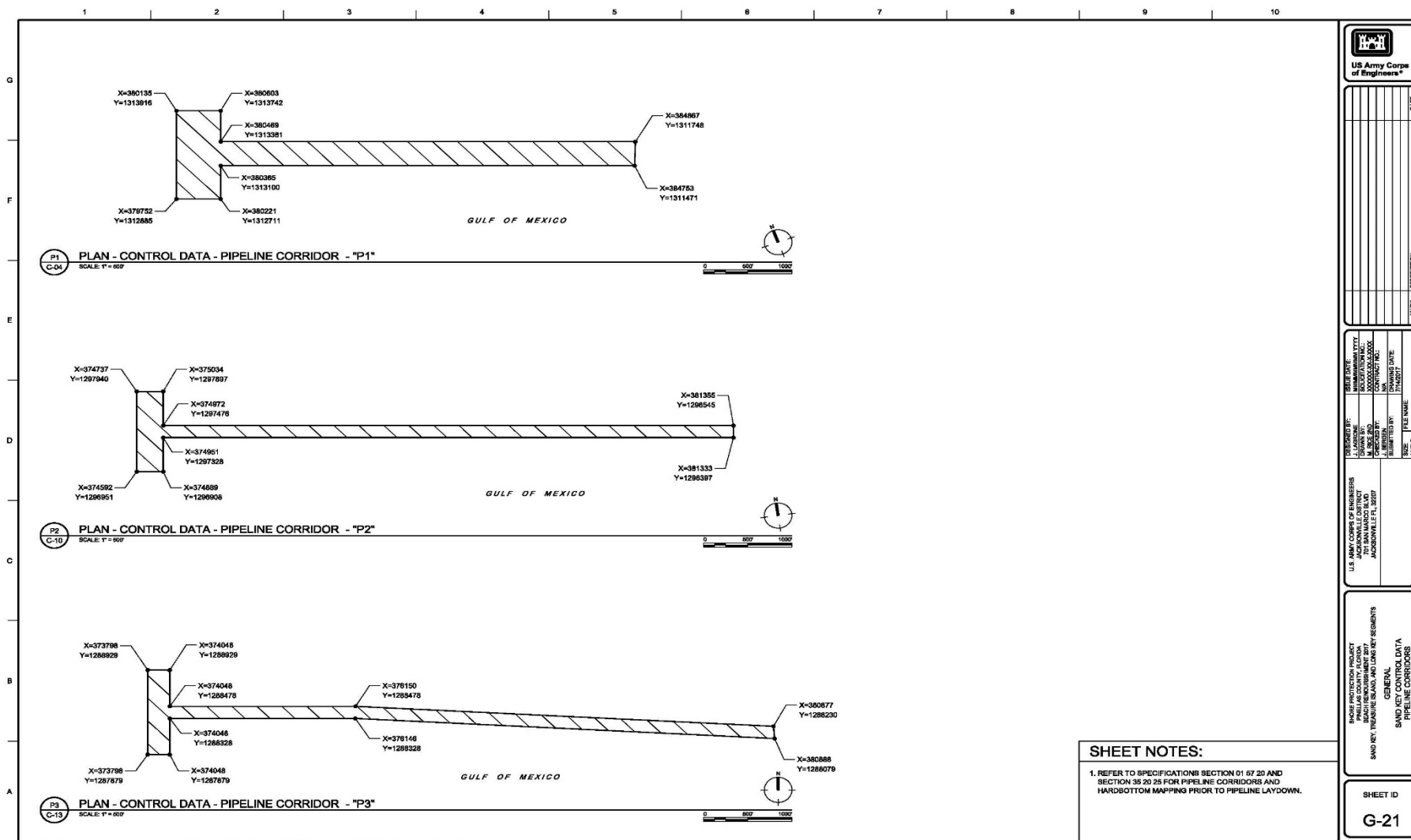
Dial Cordy – Corridor Surveys



Dial Cordy



Pipeline Corridors to the Beach



DATE	DESCRIPTION	MARK	DATE

DESIGNED BY:	DATE:
CHECKED BY:	DATE:
PROJECT NO.:	DATE:
CONTRACT NO.:	DATE:
LOCATION:	DATE:
SHEET NO.:	DATE:
DATE:	DATE:

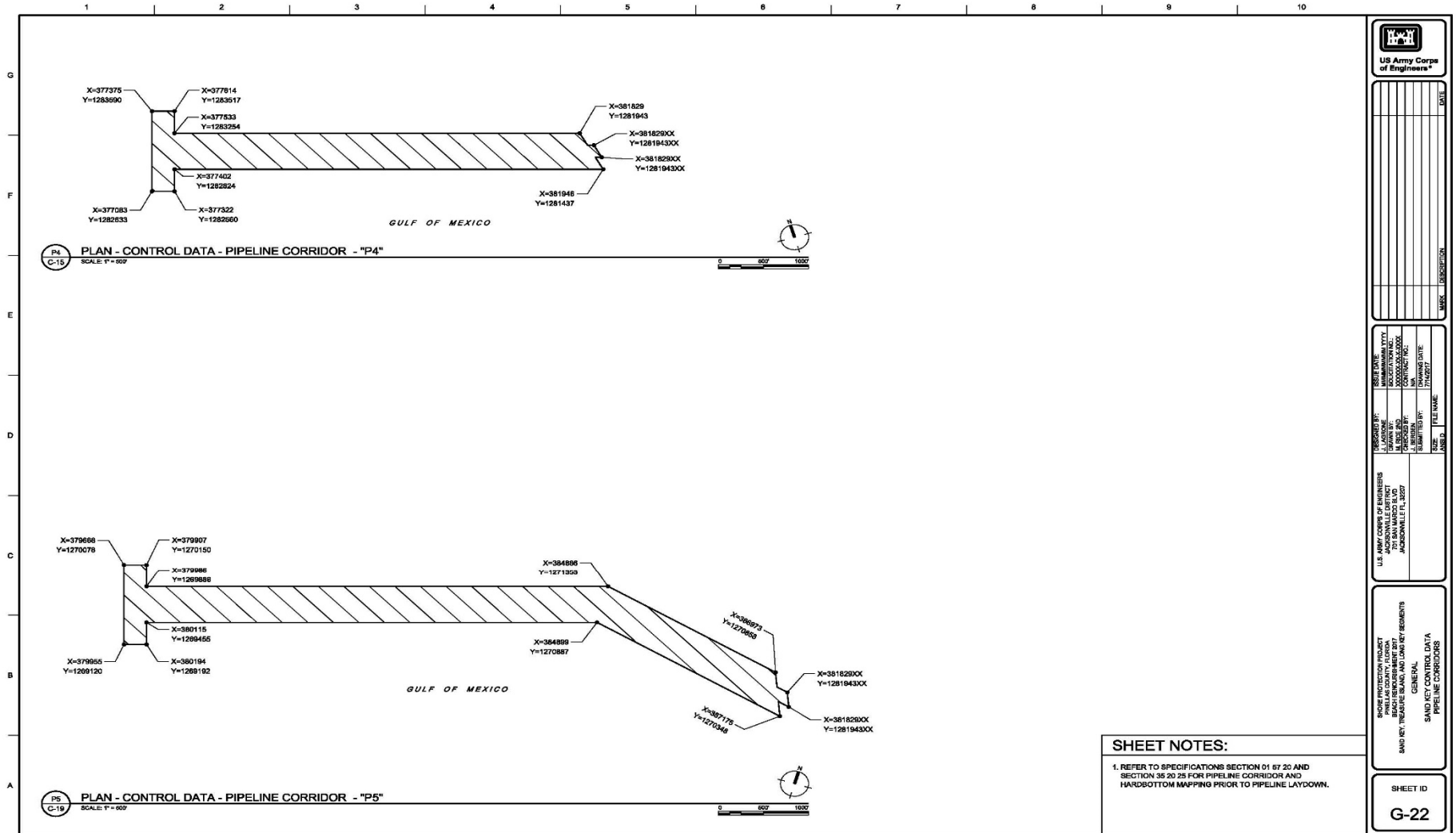
U.S. ARMY CORPS OF ENGINEERS
 JACKSONVILLE DISTRICT
 3000 MARINE AVENUE
 JACKSONVILLE, FL 32207

PROTECTIVE PROJECT
 PINELLAS COUNTY, FLORIDA
 SAND KEY, TREASURE ISLAND AND LANG KEY SEGMENTS
 GENERAL
 SAND KEY CONTROL DATA
 PIPELINE CORRIDORS

SHEET ID
G-21

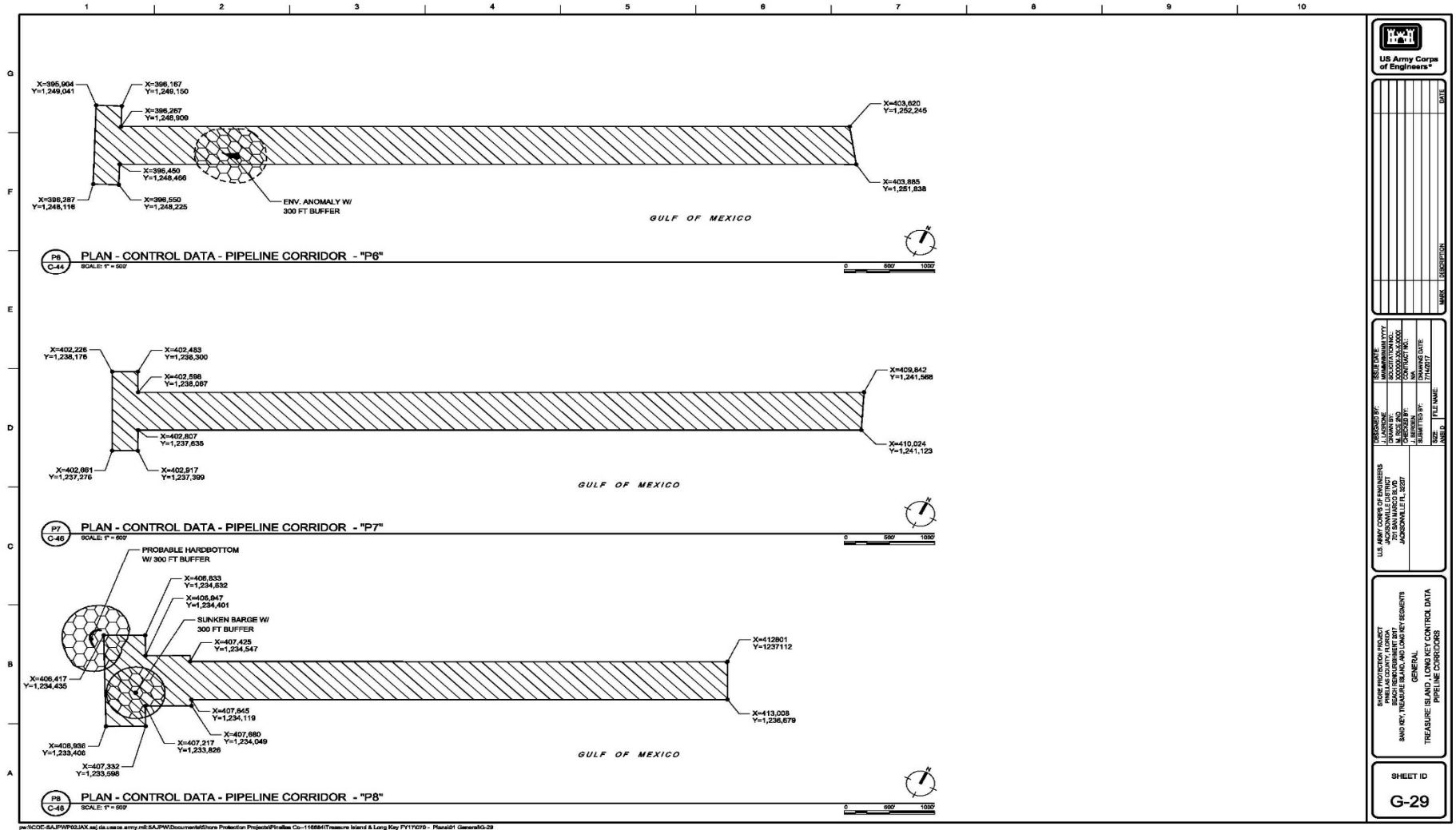
x:\nc\cc-saip\pwp3\max\aj\d\cscos.army.mil\SAJPWO\Documents\shore Protection Projects\Final Co-11896\SandKey\Fourth Nauchairment FY17\070 - Plan001 General05-21

Pipeline Corridors to the Beach



\\NOCDE-BALPWP02\JAX.sjg\as\user\army.mil\BALPWP\Document\Drawings\Protection\Project\Final\Co-119864\Sea\Bay\Fourth\Renourishment\FY17G20 - Plan\01 General\G-22

Pipeline Corridors to the Beach



US Army Corps of Engineers

DATE

DESIGNED BY: []
CHECKED BY: []
APPROVED BY: []
DATE: []

U.S. ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT
JACKSONVILLE, FL 32207

SHORE PROTECTION PROJECT
PACIFIC COUNTY, FLORIDA
SAND KEY, TREASURE ISLAND, AND LONG KEY SEGMENTS
GENERAL
TREASURE ISLAND - LONG KEY CONTROL DATA
PIPELINE CORRIDORS

SHEET ID
G-29

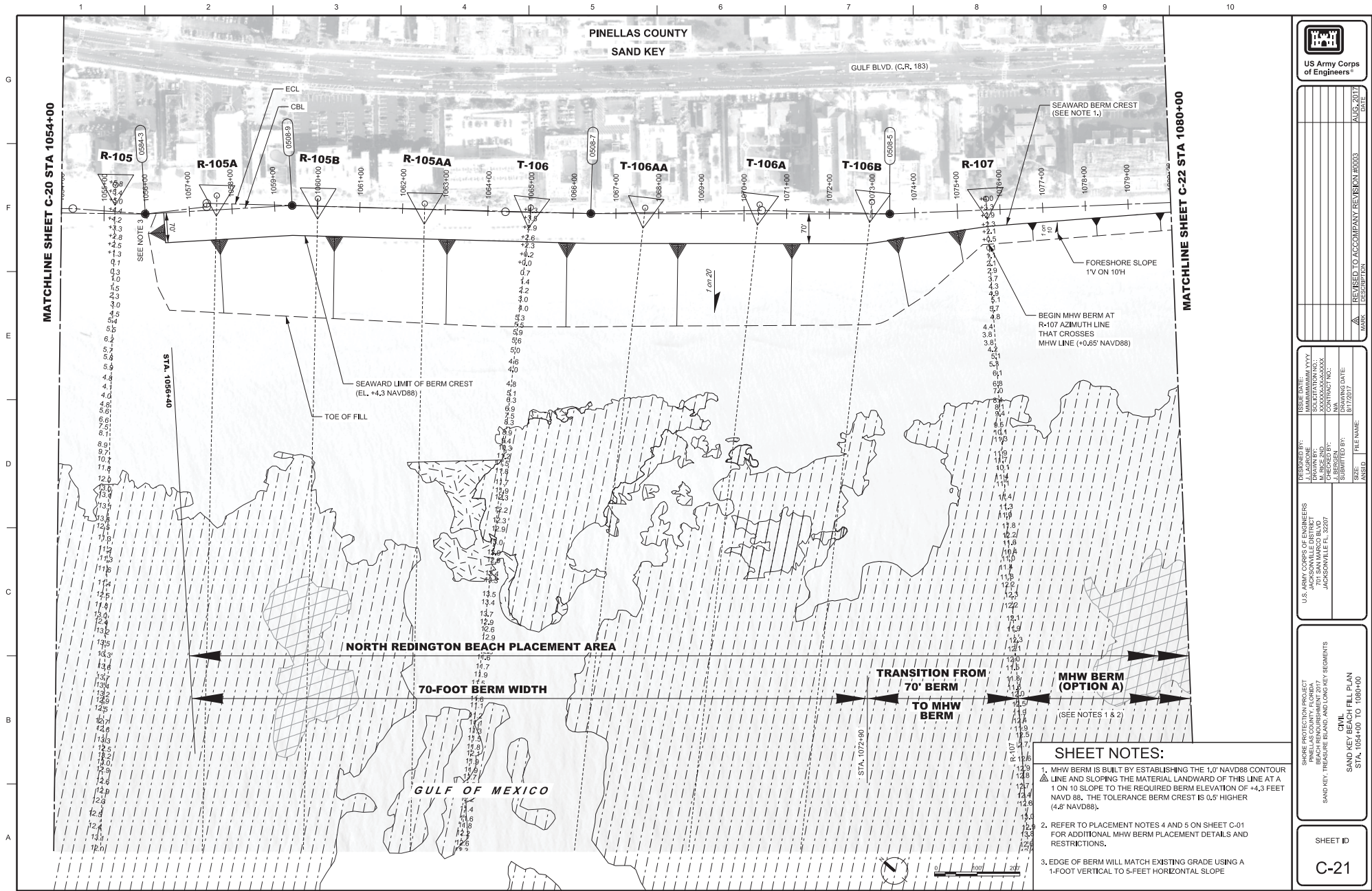
Eastman Aggregate



North Redington Beach Mechanical Re-handle Material



N. Redington Beach

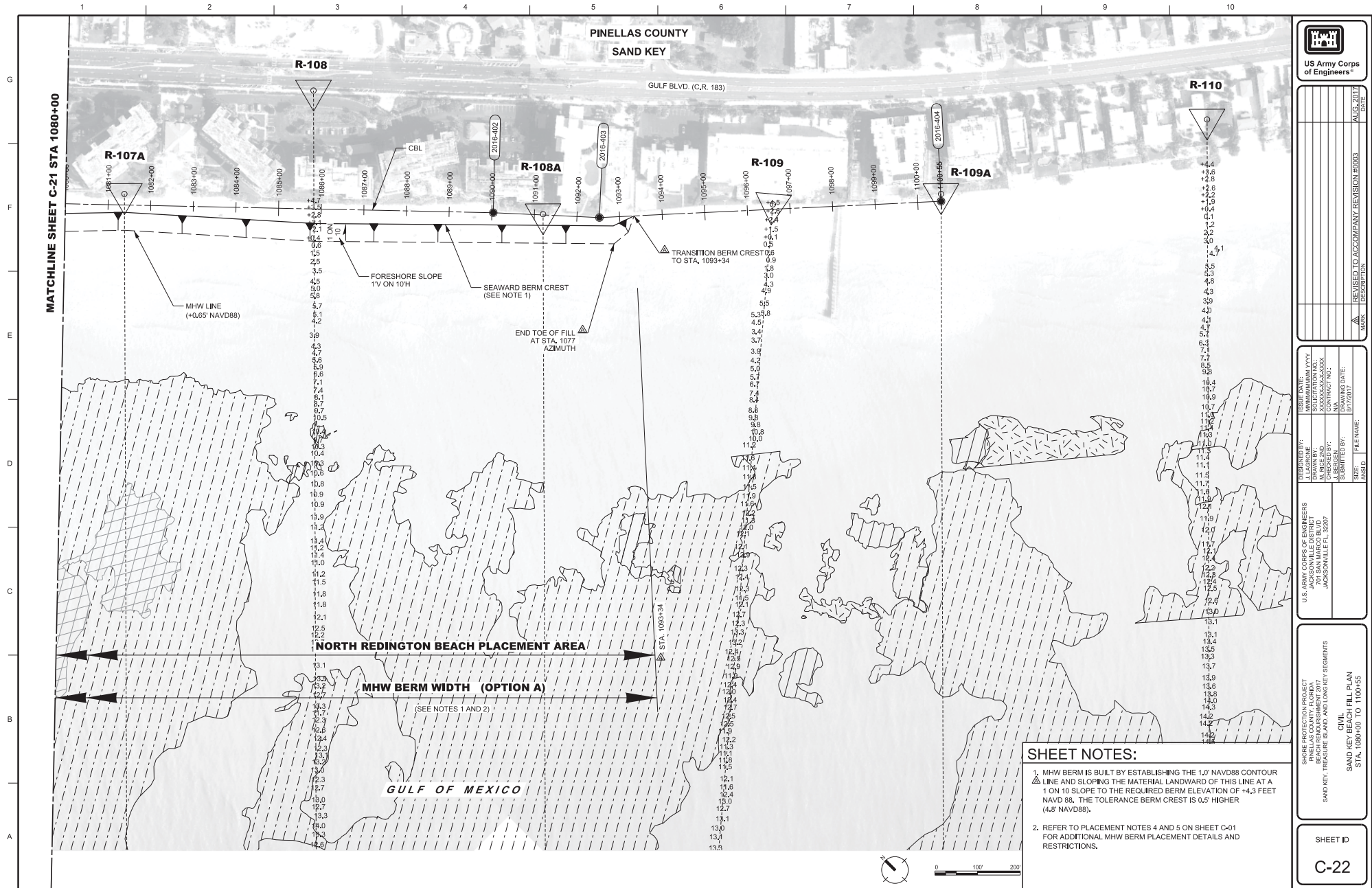


SHEET NOTES:

- MHW BERM IS BUILT BY ESTABLISHING THE 1.0' NAVD88 CONTOUR LINE AND SLOPING THE MATERIAL LANDWARD OF THIS LINE AT A 1 ON 10 SLOPE TO THE REQUIRED BERM ELEVATION OF +4.3 FEET NAVD 88. THE TOLERANCE BERM CREST IS 0.5' HIGHER (4.8' NAVD88).
- REFER TO PLACEMENT NOTES 4 AND 5 ON SHEET C-01 FOR ADDITIONAL MHW BERM PLACEMENT DETAILS AND RESTRICTIONS.
- EDGE OF BERM WILL MATCH EXISTING GRADE USING A 1-FOOT VERTICAL TO 5-FOOT HORIZONTAL SLOPE

<p>US Army Corps of Engineers®</p>	
REVISION #0003 AUG. 2017 DATE	
ISSUE DATE: 08/15/17 DRAWING NO: SUT/17/07/07 PROJECT NO: 17-07-07-01 CONTRACT NO: N/A DRAWING DATE: 07/13/17 SUBMITTED BY: J. BERGER FILE NAME: SAND KEY BEACH FILL PLAN ASSIST: STA. 1054+00 TO 1080+00	
DESIGNED BY: J. BERGER DRAWN BY: M. RICE AND J. BERGER CHECKED BY: M. RICE AND J. BERGER U.S. ARMY CORPS OF ENGINEERS JACKSONVILLE DISTRICT SAND KEY TREASURE BEACH AND LONG KEY BEACH RESTORATION PROJECT JACKSONVILLE, FL 32207	
SHEET ID <h2 style="margin: 0;">C-21</h2>	

N. Redington Beach



- SHEET NOTES:**
- MHW BERM IS BUILT BY ESTABLISHING THE 1.0' NAVD88 CONTOUR LINE AND SLOPING THE MATERIAL LANDWARD OF THIS LINE AT A 1 ON 10 SLOPE TO THE REQUIRED BERM ELEVATION OF +4.3 FEET NAVD 88. THE TOLERANCE BERM CREST IS 0.5' HIGHER (4.8' NAVD88).
 - REFER TO PLACEMENT NOTES 4 AND 5 ON SHEET C-01 FOR ADDITIONAL MHW BERM PLACEMENT DETAILS AND RESTRICTIONS.

<p>US Army Corps of Engineers</p>	
<p>ISSUE DATE: _____ DRAWING NO: _____ M. RICE AND _____ SUBMITTED BY: J. BESSER</p>	<p>REVISION #003 AUG. 2017 DATE</p>
<p>DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ IN CHARGE: _____ PROJECT NO.: _____ DRAWING DATE: _____ FILE NAME: _____ ASS'D: _____</p>	
<p>SHORE PROTECTION PROJECT PINELLAS COUNTY, FLORIDA SAND KEY, TRESHORE BEACH AND LONG KEY SEGMENTS</p>	
<p style="text-align: center;">MHW BERM FILL PLAN STA. 1080+00 TO 1100+00</p>	
<p>SHEET ID C-22</p>	

pw31COE-SAJFVW02JAX.saj.ds.usace.army.mil-SAJFVWDocuments/Shore Protection Projects/Pinellas Co-116684/Sandkey/Fourth Northmlyment F171070 - Plans/05 CIV/C-22

Bird Monitoring



Turbidity Monitoring



Hach 2100P/Q turbidity meter

Parker 2520 twin engine and Parker 2320
single engine



3/07/2018



Sand Key Beach Renourishment 2017

30

Turtle Monitoring and Relocation

Current Permit Holders

Clearwater Marine Aquarium – Lyndsey Flynn

Sand to Sea – Laura Wright

Vibration Monitoring



Vibration Monitoring Equipment



Scow Monitoring - DQM



24" CSD Dredge "Charleston"



Spider Barge (Fills Scows)



3/07/2018

Sand Key Beach Renourishment 2017

36

Spider Barge



3/07/2018

Sand Key Beach Renourishment 2017

37

Spider Barge



Scows



3/07/2018

Sand Key Beach Renourishment 2017

39

Production Data

4-5 Scows will be used with varying capacity between 2,200 and 3,000 yards

Load and Unload times are expected to vary between 2.5 and 3.0 hours

Tow Times are expected to be between 2 and 4 hours depending on the Corridor

Tow Distances will be between 8 and 29 miles

Total Scow Cycle Times are expected to be between 7 and 15 hours

Material Barges “SCOWS”



3/07/2018

Sand Key Beach Renourishment 2017

41

Tug Towing Scow



3/07/2018

Sand Key Beach Renourishment 2017

42

Barge Unloader “Vicksburg”



727.520.8181
www.aerophoto.com

Belleair Beach - Pinellas County Shore Protection

Negative # 5111 032
Date 11.11.05

3/07/2018

Sand Key Beach Renourishment 2017

43



727.520.8181
www.aerophoto.com

Belleair Beach - Pinellas County Shore Protection

Negative # 51212 090
Date 12.12.05

3/07/2018

Sand Key Beach Renourishment 2017

44



3/07/2018

Sand Key Beach Renourishment 2017

45



3/07/2018

Sand Key Beach Renourishment 2017

46



3/07/2018

Sand Key Beach Renourishment 2017

47



3/07/2018

Sand Key Beach Renourishment 2017

48



Aero
Photo

727.520.8181
www.aerophoto.com

Belleair Beach - Pinellas County Shore Protection

Negative # 60407 768
Date 04.07.06



727.520.8181
www.aerophoto.com

Belleair Beach - Pinellas County Shore Protection

Negative # 60908 026
Date 09.08.06

3/07/2018

Sand Key Beach Renourishment 2017

50



3/07/2018

Sand Key Beach Renourishment 2017

51



3/07/2018

Sand Key Beach Renourishment 2017

52

3300 Extractor



3300 Extractor





3/07/2018

Sand Key Beach Renourishment 2017

55

RTK Survey Equipment





NORFOLK DREDGING
C O M P A N Y

Since 1899

Questions ???