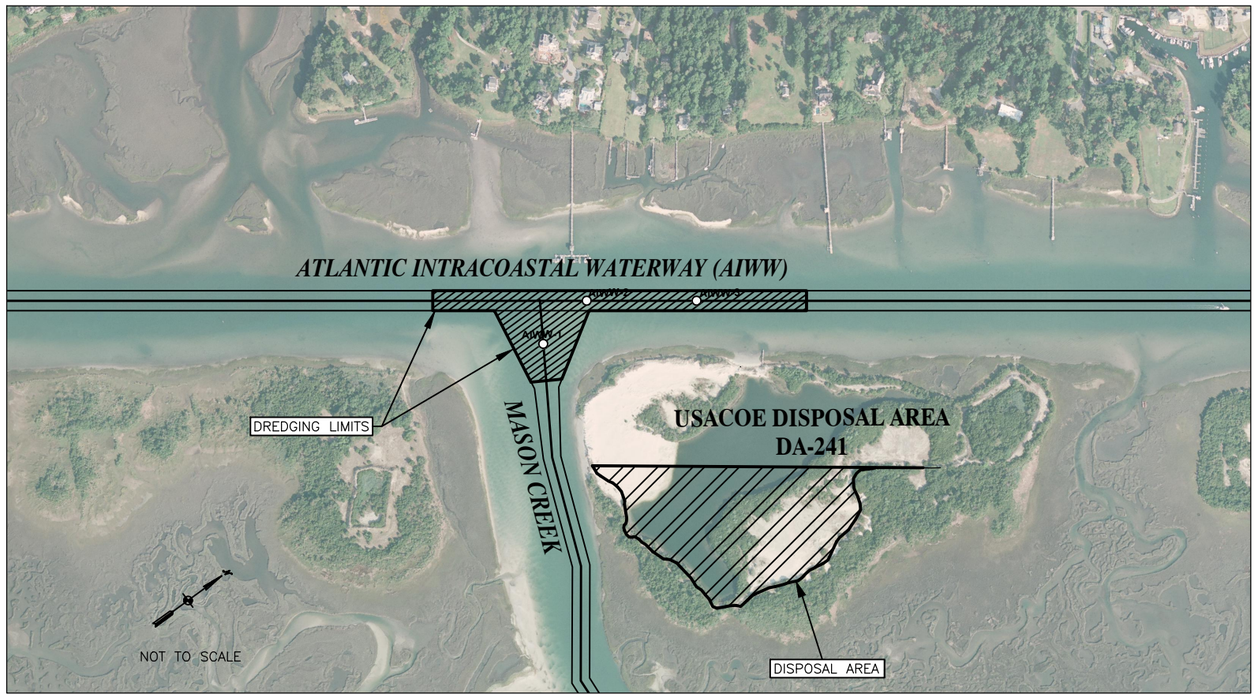
NEW HANOVER COUNTY, NC

AIWW MAINTENANCE DREDGING - MASON CREEK CROSSING

ATLANTIC INTRACOASTAL WATERWAY (AIWW)

BEAUFORT TO CAPE FEAR, SECTION 3, TANGENT 12



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TYPICAL SECTION & CONTROL POINTS	4
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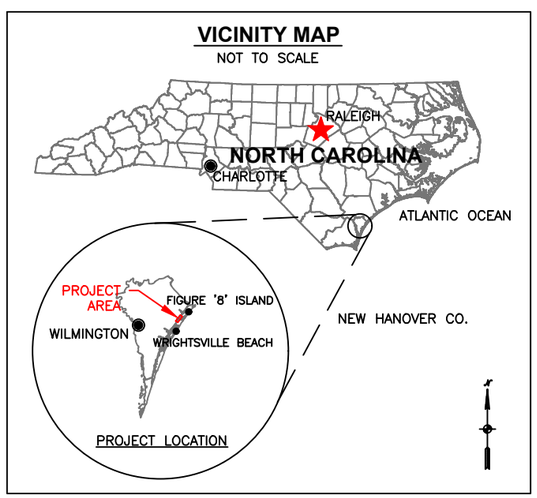
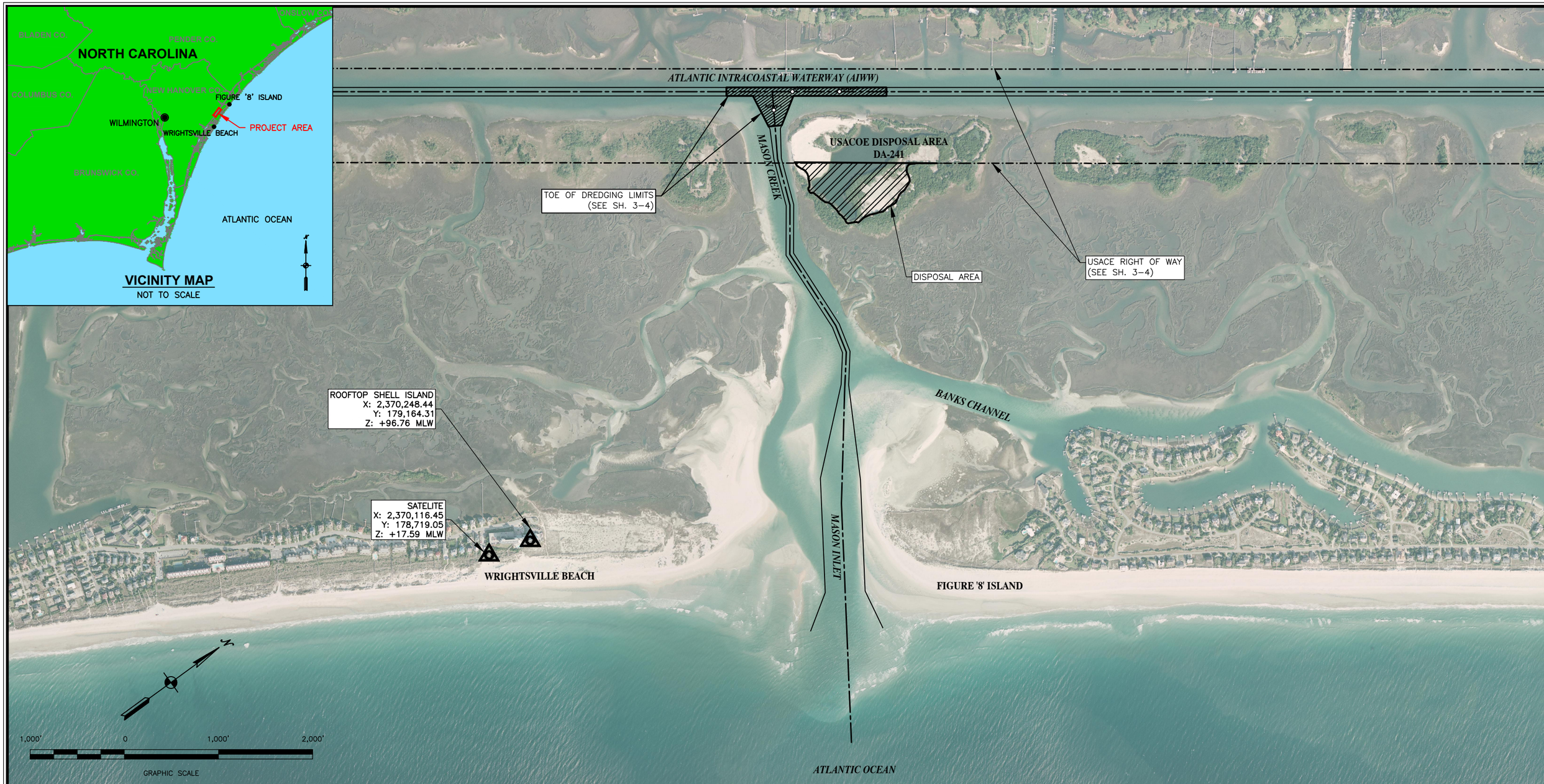
FOR BIDDING
OCTOBER 21, 2016



OCTOBER 2016

GBANC
ENGINEERS ★ SURVEYORS
GAHAGAN & BRYANT ASSOCIATES OF NC, PLLC
295-A NORTH GREEN MEADOWS DRIVE
WILMINGTON, NC 28405-3933
TEL: 910.313.3338 FAX: 910.313.6822
WWW.GBA-INC.COM

NC REGISTERED ENGINEERING FIRM P-0743



NOTES:
1. HORIZONTAL COORDINATES ARE IN U.S. SURVEY FEET AND ARE REFERENCED TO U.S. STATE PLANE NORTH CAROLINA, NAD 83.
2. SURVEY CONTROL ELEVATIONS ARE IN U.S. FEET AND ARE REFERENCED TO MLW BEAUFORT DATUM.
3. THE RELATIONSHIP BETWEEN NAVD88 AND THE PROJECT DATUM MLW IS AS SHOWN.
4. AERIAL IMAGERY WAS OBTAINED FROM TERRALINA MAPPING CONSULTANTS AND IS DATED MAY 2016.
5. SCALE IS 1" = 1,000' WHEN PLOTTED AS 17" X 11".

LEGEND

- CHANNEL ALIGNMENTS
- CHANNEL TOES
- USACE RIGHT OF WAY
- USACE SETBACK LINE
- TOE OF DREDGING LIMITS
- GREEN NAVIGATION CAN
- DREDGING AREA
- FILL AREA

RELATIONSHIP BETWEEN NAVD88 AND USACE BEAUFORT DATUM BASED ON NGS TIDAL BENCHMARK C 163 PID# EA0631

MHW
1.4 FT
NAVD88
2.5 FT
MLW
(NOT TO SCALE)

CHRISTOPHER T. MARELLO
NC P.L.S. #4983

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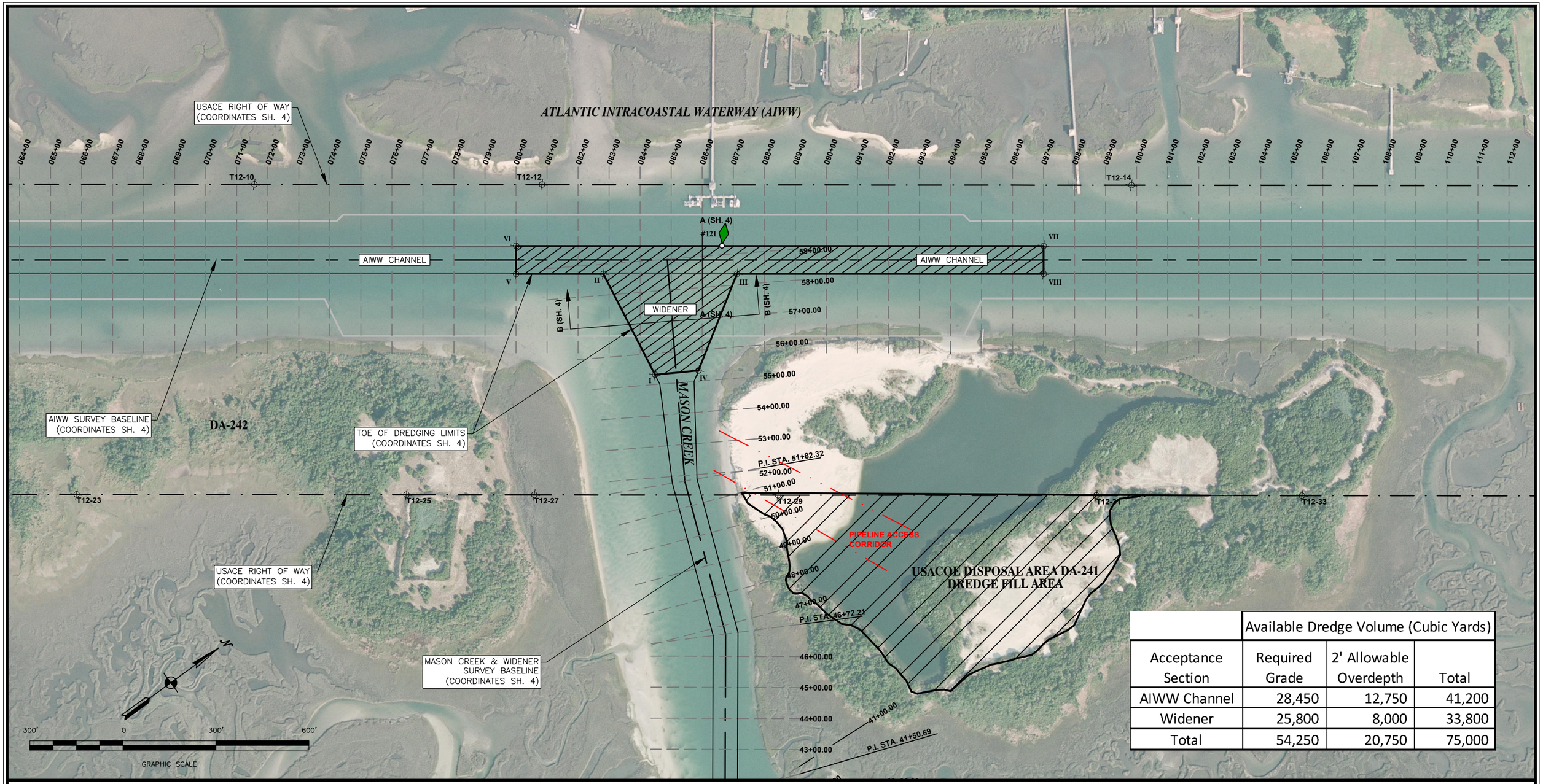
REV	REVISIONS	DATE	APP

NEW HANOVER COUNTY, NC

AIWW MAINTENANCE DREDGING PROJECT
SECT. 3, TANGENT 12
OCTOBER 2016

PROJECT OVERVIEW & CONTROL

DWG DATE: 12 OCTOBER 2016	FILE NAME: MIRP160816-AIWW-DredgingPlans.dwg	
DRAWN: J. MCCLURE	CHECKED: C. MARELLO	ENGR: C. BRYANT
SCALE: 1" = 200'	SHEET: 02 OF 11	REV: 0



	Available Dredge Volume (Cubic Yards)		
Acceptance Section	Required Grade	2' Allowable Overdepth	Total
AIWW Channel	28,450	12,750	41,200
Widener	25,800	8,000	33,800
Total	54,250	20,750	75,000

NOTES:
1. NAVIGATION AID #121 WAS LOCATED ON JULY 08, 2016.
2.AERIAL IMAGERY WAS OBTAINED FROM TERRALINA MAPPING CONSULTANTS AND IS DATED MAY 2016.
3. SCALE IS 1" = 300' WHEN PLOTTED AS 17" X 11".

LEGEND
- CHANNEL ALIGNMENTS
- CHANNEL TOES
- USACE RIGHT OF WAY
- USACE SETBACK LINE
- TOE OF DREDGING LIMITS
- SURVEY TRANSECTS
- GREEN NAVIGATION CAN
- DREDGING AREA
- FILL AREA
- PIPELINE ACCESS CORRIDOR

RELATIONSHIP BETWEEN NAVD88 AND USACE BEAUFORT DATUM BASED ON NGS TIDAL BENCHMARK C 163 PID# EA0631

MHW
1.4 FT
NAVD88
2.5 FT
MLW
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NEW HANOVER COUNTY, NC

AIWW MAINTENANCE DREDGING PROJECT
SECT. 3, TANGENT 12
OCTOBER 2016

DREDGE AND DISPOSAL AREAS

DWG DATE: 12 OCTOBER 2016	FILE NAME: MIRP160816-AIWW-DredgingPlans.dwg	
DRAWN: J. MCCLURE	CHECKED: C. MARELLO	ENGR: C. BRYANT
SCALE: 1" = 300'	SHEET: 03 OF 11	REV: 0

AIWW & DA-241 SURVEY BASELINE			
STATION	RANGE	EASTING	NORTHING
000+00	0.00	2,362,911.80	177,188.70
192+00	0.00	2,374,217.17	192,707.35

MASON CREEK & WIDENER SURVEY BASELINE			
STATION	RANGE	EASTING	NORTHING
51+82.32	0.00	2,368,518.74	183,674.27
59+00.00	0.00	2,367,907.32	184,050.07

AIWW TOE OF DREDGING LIMITS				
POINT	STATION	RANGE	EASTING	NORTHING
V	080+00	45.00	2,367,658.77	183,628.35
VI	080+00	-45.00	2,367,586.03	183,681.34
VII	097+00	-45.00	2,368,587.03	185,055.40
VIII	097+00	45.00	2,368,659.75	185,002.37

MASON CREEK & WIDENER TOE OF DREDGING LIMITS				
POINT	STATION	RANGE	EASTING	NORTHING
I	55+31.57	-68.70	2,368,185.22	183,798.62
II	58+68.87	-209.15	2,367,824.32	183,855.59
III	58+35.11	220.17	2,368,077.88	184,203.65
IV	55+34.10	72.06	2,368,256.77	183,919.86

USACE RIGHT OF WAY				
POINT	STATION	RANGE	EASTING	NORTHING
T12-10	71+56.21	-243.36	2,366,928.83	183,116.09
T12-12	80+83.10	-242.68	2,367,475.19	183,864.91
T12-14	99+82.97	-240.67	2,368,595.49	185,399.32
T12-23	65+83.25	756.10	2,367,399.31	182,064.52
T12-25	76+46.26	757.00	2,368,025.94	182,923.16
T12-27	80+58.33	757.61	2,368,269.10	183,255.90
T12-29	88+43.98	758.23	2,368,732.20	183,890.53
T12-31	98+69.88	759.25	2,369,337.06	184,719.08
T12-33	105+32.80	759.85	2,369,727.90	185,254.56

SURVEY CONTROL			
NAME	EASTING (FT)	NORTHING (FT)	ELEVATION (FT MLW)
ROOFTOP SHELL ISLAND	2,370,248.44	179,164.31	+96.76
SATELITE	2,370,116.45	178,719.05	+17.59

AIWW & DA-241 SURVEY TRANSECTS				
STATION	EASTING (FT)	NORTHING (FT)	RANGE (FT)	AZIMUTH FROM NORTH (DEG)
070+00	2,367,033.55	182,846.55	0.00	126.08
071+00	2,367,092.43	182,927.36	0.00	126.08
072+00	2,367,151.31	183,008.19	0.00	126.06
073+00	2,367,210.21	183,089.04	0.00	126.07
074+00	2,367,269.09	183,169.86	0.00	126.07
075+00	2,367,327.95	183,250.65	0.00	126.08
076+00	2,367,386.85	183,331.50	0.00	126.07
077+00	2,367,445.75	183,412.35	0.00	126.08
078+00	2,367,504.60	183,493.15	0.00	126.07
079+00	2,367,563.48	183,573.97	0.00	126.07
080+00	2,367,622.40	183,654.85	0.00	126.07
081+00	2,367,681.26	183,735.64	0.00	126.08
082+00	2,367,740.14	183,816.46	0.00	126.08
083+00	2,367,799.00	183,897.25	0.00	126.07
084+00	2,367,857.92	183,978.14	0.00	126.07
085+00	2,367,916.79	184,058.95	0.00	126.07
086+00	2,367,975.65	184,139.75	0.00	126.08
087+00	2,368,034.53	184,220.57	0.00	126.08
088+00	2,368,093.45	184,301.45	0.00	126.08
089+00	2,368,152.31	184,382.24	0.00	126.07
090+00	2,368,211.19	184,463.06	0.00	126.07
091+00	2,368,270.09	184,543.91	0.00	126.06
092+00	2,368,328.97	184,624.74	0.00	126.08
093+00	2,368,387.84	184,705.55	0.00	126.08
094+00	2,368,446.70	184,786.35	0.00	126.07
095+00	2,368,505.60	184,867.20	0.00	126.06
096+00	2,368,564.50	184,948.05	0.00	126.07
097+00	2,368,623.38	185,028.87	0.00	126.07
098+00	2,368,682.24	185,109.66	0.00	126.08
099+00	2,368,741.16	185,190.54	0.00	126.08
100+00	2,368,800.02	185,271.34	0.00	126.07

MASON CREEK & WIDENER SURVEY TRANSECTS				
STATION	EASTING (FT)	NORTHING (FT)	RANGE (FT)	AZIMUTH FROM NORTH (DEG)
51+82.32	2,368,518.74	183,674.27	0.00	26.34
52+00.00	2,368,503.68	183,683.53	0.00	31.58
53+00.00	2,368,418.48	183,735.89	0.00	31.58
54+00.00	2,368,333.29	183,788.25	0.00	31.58
55+00.00	2,368,248.09	183,840.62	0.00	31.58
56+00.00	2,368,162.90	183,892.98	0.00	31.58
57+00.00	2,368,077.70	183,945.34	0.00	31.58
58+00.00	2,367,992.51	183,997.70	0.00	31.58
58+35.11	2,367,962.59	184,016.09	0.00	31.58
58+52.43	2,367,947.84	184,025.15	0.00	31.58
58+68.87	2,367,933.83	184,033.77	0.00	31.58
59+00.00	2,367,907.31	184,050.06	0.00	31.58

CONSTRUCTION NOTES:

1. EXCAVATION OF THE REQUIRED DREDGE AREAS AND PLACEMENT IN DA-241 SHALL BE ACCOMPLISHED BY HYDRAULIC CUTTER SUCTION DREDGE.

2. ELEVATIONS ARE SHOWN IN FEET AND TENTHS AND ARE REFERENCED TO MLW. COORDINATES ARE REFERENCED TO THE NORTH CAROLINA STATE PLANE SYSTEM NAD 1983.

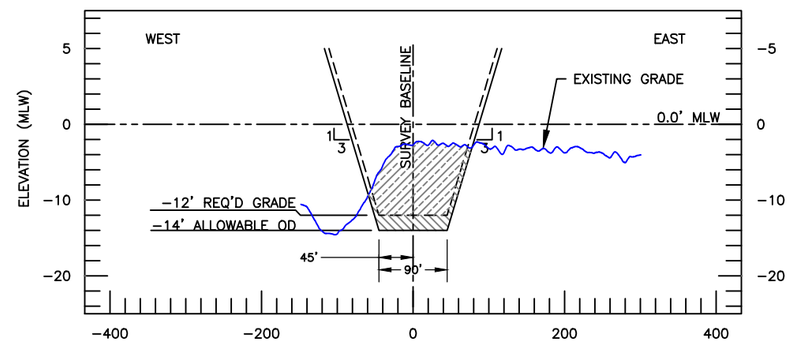
3. PROJECT AREA WAS SURVEYED BY GBANC ON JULY 8, 2016 UTILIZING RTK GPS TECHNIQUES REFERENCED TO SURVEY MONUMENT "SATELITE". THE INFORMATION DEPICTED ON THESE DRAWINGS REPRESENTS THE RESULTS OF SURVEYS MADE ON THE DATE INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING GENERAL CONDITIONS EXISTING AT THAT TIME.

4. AERIAL IMAGERY WAS OBTAINED FROM TERRALINA MAPPING CONSULTANTS AND IS DATED MAY 2016.

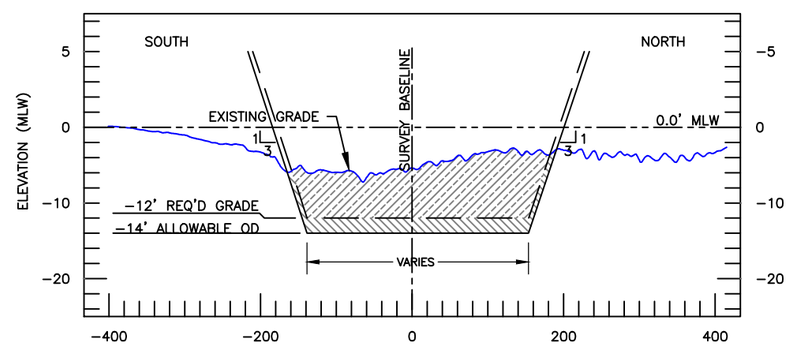
5. PREDATOR-PROOF TRASH RECEPTACLES SHALL BE UTILIZED THROUGHOUT CONSTRUCTION ACTIVITIES TO MINIMIZE THE POTENTIAL OF ATTRACTING PREDATORS OF ENDANGERED SPECIES.

6. THE PIPELINE ACCESS ROUTE TO DISPOSAL AREA IS APPROXIMATE. THE CONTRACTOR SHALL PROVIDE A PROPOSED PIPELINE ROUTE FOR APPROVAL PRIOR TO PIPELINE PLACEMENT. THE PIPELINE ROUTE SHALL BE ROUTED TO AVOID IMPACTS TO AREAS OF WETLANDS OR DUNE VEGETATION.

7. DURING FINAL CLEAN-UP AND DRESSING FOLLOWING COMPLETION OF DREDGING OPERATIONS, THE CROWN OF THE DISPOSAL FAN SHALL BE LEVELED PRIOR TO DEMOBILIZATION OF EQUIPMENT.



SECTION A-A: TYPICAL AIWW DREDGING SECTION



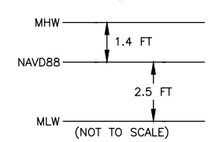
SECTION B-B: TYPICAL WIDENER DREDGING SECTION

NOTES:
1. HORIZONTAL COORDINATES ARE IN U.S. SURVEY FEET AND ARE REFERENCED TO U.S. STATE PLANE NORTH CAROLINA, NAD 83.
2. SURVEY CONTROL ELEVATIONS ARE IN U.S. SURVEY FEET AND ARE REFERENCED TO MLW BEAUFORT DATUM.
3. THE RELATIONSHIP BETWEEN NAVD88 AND THE PROJECT DATUM MLW IS AS SHOWN.
4. SCALE IS 1" = 1" WHEN PLOTTED AS 17" X 11".

LEGEND

REQUIRED DREDGING
ALLOWABLE OVERDEPTH

RELATIONSHIP BETWEEN NAVD88 AND USACE BEAUFORT DATUM BASED ON NGS TIDAL BENCHMARK C 163 PID# EA0631



(NOT TO SCALE)

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NC REGISTERED ENGINEERING FIRM P-0743

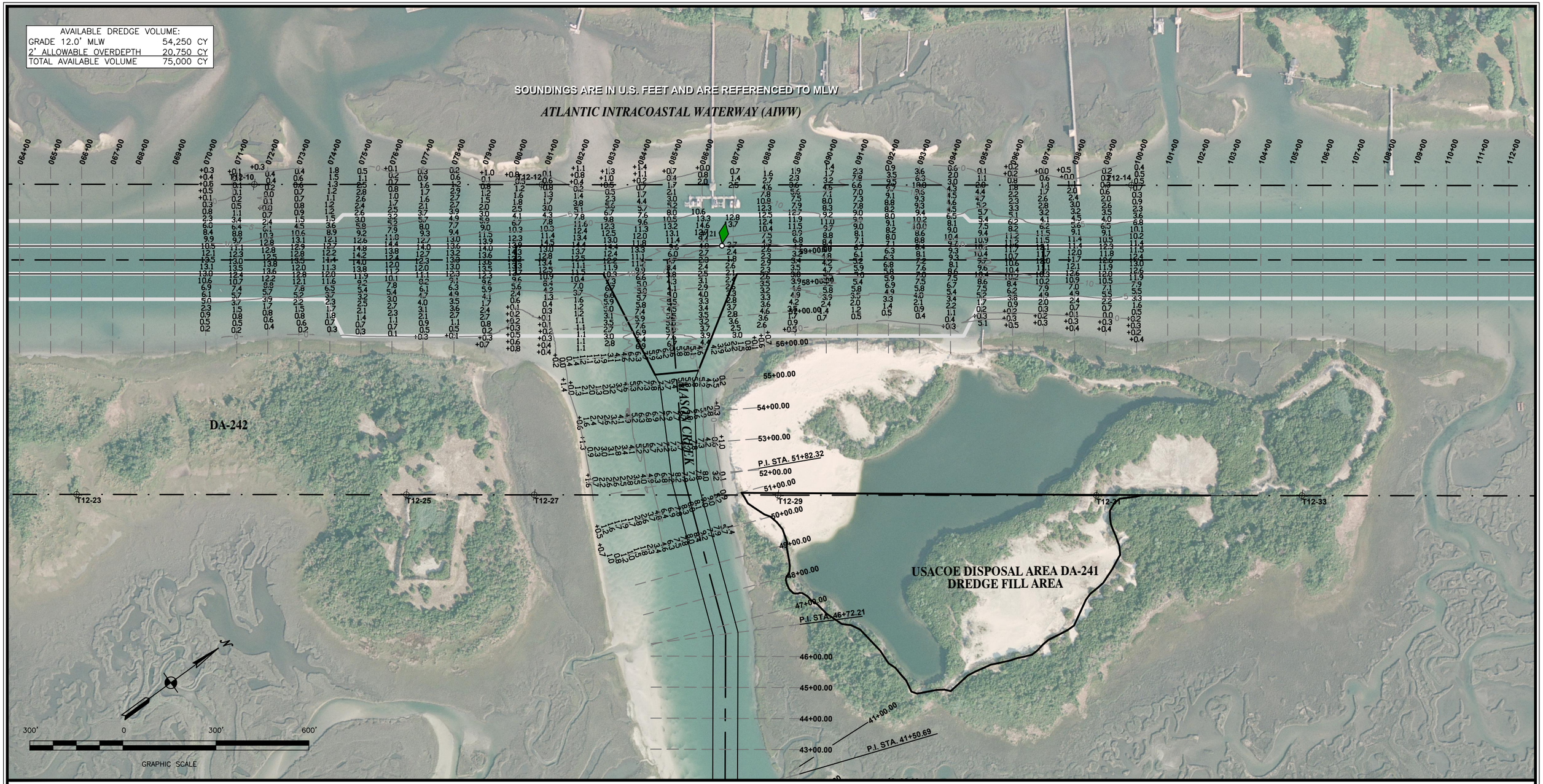
REV	REVISIONS	DATE	APP

NEW HANOVER COUNTY, NC

AIWW MAINTENANCE DREDGING PROJECT
SECT. 3, TANGENT 12
OCTOBER 2016

TYPICAL SECTION & CONTROL POINTS

DWG DATE: 12 OCTOBER 2016	FILE NAME: MIRP160816-AIWW-DredgingPlans.dwg	
DRAWN: J. MCCLURE	CHECKED: C. MARELLO	ENGR: C. BRYANT
SCALE: 1" = 1"	SHEET: 04 OF 11	REV: 0



NOTES:
1. THE INFORMATION DEPICTED HERE REPRESENTS THE RESULTS OF CONDITIONAL SURVEYS MADE ON JULY 08, 2016 AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING AT THAT TIME.
2. NAVIGATION AID #121 WAS LOCATED ON JULY 08, 2016.
3. HORIZONTAL COORDINATES ARE IN U.S. SURVEY FEET AND ARE REFERENCED TO U.S. STATE PLANE NORTH CAROLINA, NAD 83.
4. HORIZONTAL POSITIONING WAS OBTAINED USING RTK GPS REFERENCED TO SURVEY MONUMENT ROOFTOP SHELL ISLAND.
   X: 2,370,246.41
   Y: 179,165.07
   Z: +96.73 MLW
5. SOUNDINGS ARE IN U.S. FEET AND ARE REFERENCED TO MLW USING THE DATUM RELATIONSHIP SHOWN.
6. SOUNDINGS ARE BELOW THE REFERENCE PLANE UNLESS PRECEDED BY A PLUS (+) SIGN.
7. SOUNDINGS SHOWN ARE PART OF A LARGER DATASET, WHICH HAS BEEN REDUCED FOR CLARITY ON THIS MAP.
8. AERIAL IMAGERY WAS OBTAINED FROM TERRALINA MAPPING CONSULTANTS AND IS DATED MAY 2016.
9. SCALE IS 1" = 300' WHEN PLOTTED AS 17" X 11".
10. SURVEY DATE 08 JULY 2016

LEGEND
- CHANNEL ALIGNMENTS
- CHANNEL TOES
- USACE RIGHT OF WAY
- USACE SETBACK LINE
- TOE OF DREDGING LIMITS
- SURVEY TRANSECTS
- GREEN NAVIGATION CAN
- 5 — 5-FOOT CONTOURS

RELATIONSHIP BETWEEN NAVD88 AND USACE BEAUFORT DATUM BASED ON NGS TIDAL BENCHMARK C 163 PID# EA0631

MHW
1.4 FT
NAVD88
2.5 FT
MLW
(NOT TO SCALE)

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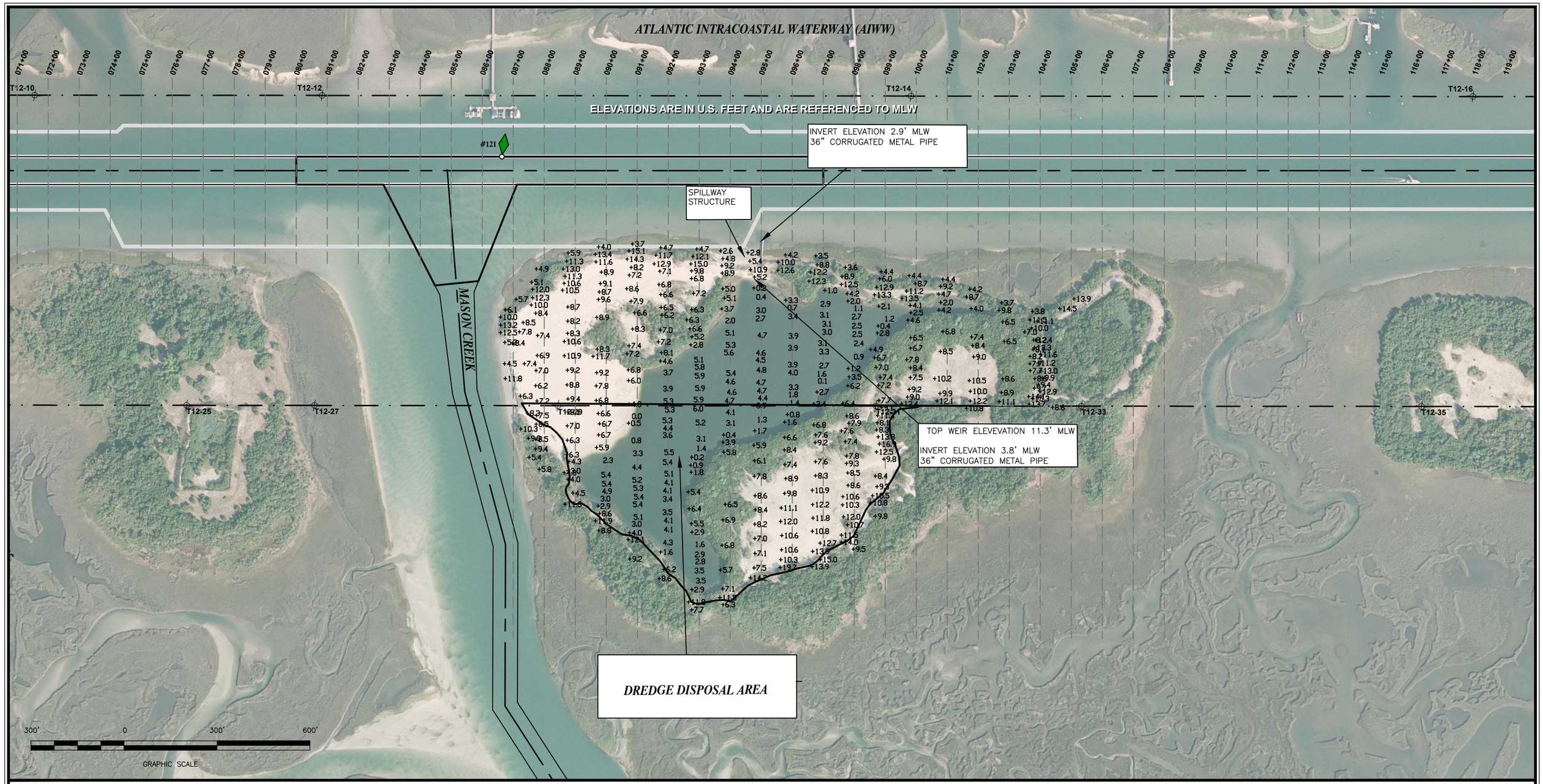
AIWW MAINTENANCE DREDGING PROJECT
SECT. 3, TANGENT 12
OCTOBER 2016

AIWW & WIDENER BATHYMETRY

DWG DATE: 12 OCTOBER 2016	FILE NAME: MIRP160816-AIWW-DredgingPlans.dwg	
DRAWN: J. MCCLURE	CHECKED: C. MARELLO	ENGR: C. BRYANT
SCALE: 1" = 300'	SHEET: 05 OF 11	REV: 0



NOTES:
1. THE INFORMATION DEPICTED HERE REPRESENTS THE RESULTS OF CONDITIONAL SURVEYS MADE ON SEPTEMBER 20 – 23, 2016 AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING AT THAT TIME.
2. NAVIGATION AID #121 WAS LOCATED ON JULY 08, 2016.
3. HORIZONTAL COORDINATES ARE IN U.S. SURVEY FEET AND ARE REFERENCED TO U.S. STATE PLANE NORTH CAROLINA, NAD 83.
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6. SOUNDINGS ARE BELOW THE REFERENCE PLANE UNLESS PRECEDED BY A PLUS (+) SIGN.
7. SOUNDINGS SHOWN ARE PART OF A LARGER DATASET, WHICH HAS BEEN REDUCED FOR CLARITY ON THIS MAP.
8. AERIAL IMAGERY WAS OBTAINED FROM TERRALINA MAPPING CONSULTANTS AND IS DATED MAY 2016.
9. SCALE IS 1" = 300' WHEN PLOTTED AS 17" X 11".
10. SURVEY DATE 08 JULY 2016

LEGEND

- CHANNEL ALIGNMENTS
- CHANNEL TOES
- USACE RIGHT OF WAY
- USACE SETBACK LINE
- TOE OF DREDGING LIMITS
- SURVEY TRANSECTS
- GREEN NAVIGATION CAN
- 5 — 5-FOOT CONTOURS

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1.4 FT
NAVD88
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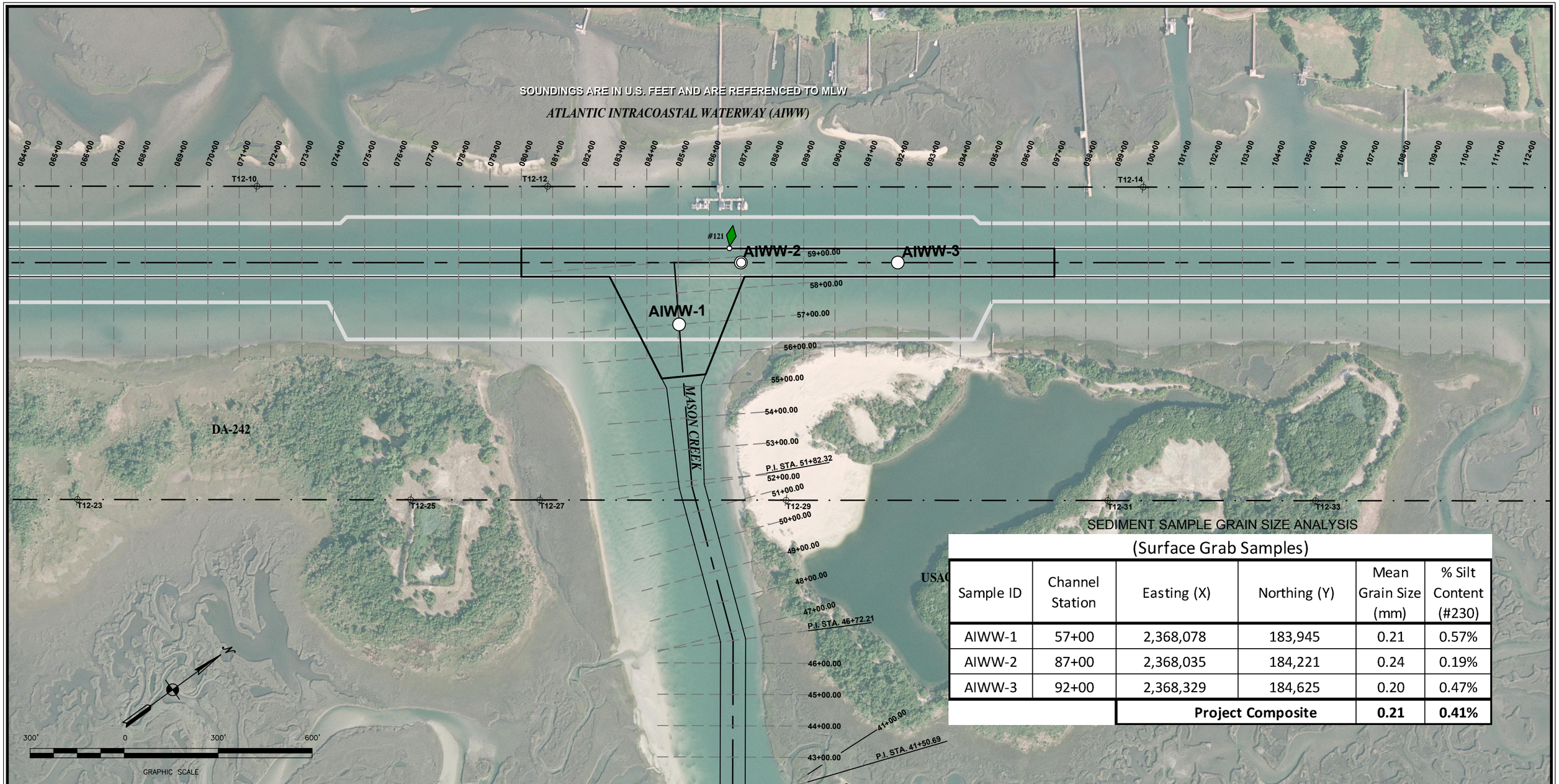
REV	REVISIONS	DATE	APP

NEW HANOVER COUNTY, NC

AIWW MAINTENANCE DREDGING PROJECT
SECT. 3, TANGENT 12
OCTOBER 2016

DISPOSAL AREA DA-241 TOPOGRAPHIC SURVEY

DWG DATE: 12 OCTOBER 2016	FILE NAME: MIRP160816-AIWW-DredgingPlans.dwg	
DRAWN: J. MCCLURE	CHECKED: C. MARELLO	ENGR: C. BRYANT
SCALE: 1" = 300'	SHEET: 06 OF 11	REV: 0



SEDIMENT SAMPLE GRAIN SIZE ANALYSIS

(Surface Grab Samples)

Sample ID	Channel Station	Easting (X)	Northing (Y)	Mean Grain Size (mm)	% Silt Content (#230)
AIWW-1	57+00	2,368,078	183,945	0.21	0.57%
AIWW-2	87+00	2,368,035	184,221	0.24	0.19%
AIWW-3	92+00	2,368,329	184,625	0.20	0.47%
		Project Composite		**0.21**	**0.41%**

NOTES:
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- USACE RIGHT OF WAY
- USACE SETBACK LINE
- TOE OF DREDGING LIMITS
- SURVEY TRANSECTS
- GREEN NAVIGATION CAN
- SEDIMENT SAMPLE LOCATIONS

RELATIONSHIP BETWEEN NAVD88 AND USACE BEAUFORT DATUM BASED ON NGS TIDAL BENCHMARK C 163 PID# EA0631

MHW
1.4 FT
NAVD88
2.5 FT
MLW
(NOT TO SCALE)

CHRISTOPHER T. MARELLO
NC P.L.S. #4983

GBA NC
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NC REGISTERED ENGINEERING FIRM P-0743

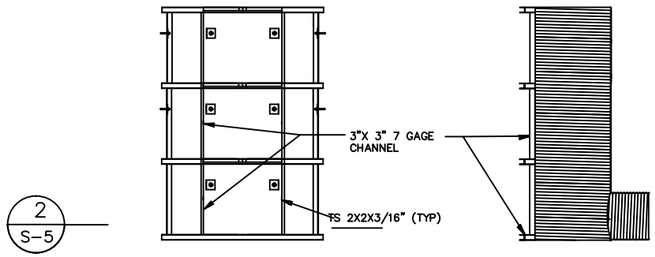
REV	REVISIONS	DATE	APP

NEW HANOVER COUNTY, NC

AIWW MAINTENANCE DREDGING PROJECT
SECT. 3, TANGENT 12
OCTOBER 2016

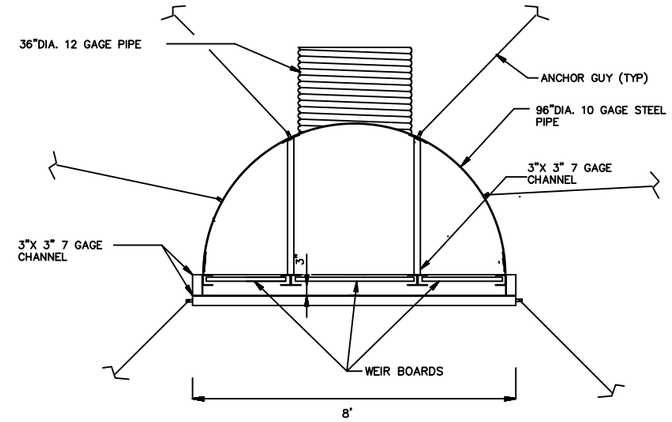
SEDIMENT SAMPLE LOCATIONS

DWG DATE: 12 OCTOBER 2016	FILE NAME: MIRP160816-AIWW-DredgingPlans.dwg	
DRAWN: J. MCCLURE	CHECKED: C. MARELLO	ENGR: C. BRYANT
SCALE: 1" = 300'	SHEET: 07 OF 11	REV: 0



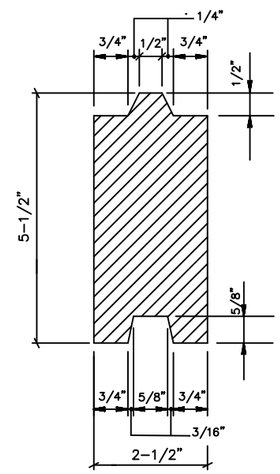
1 S-5 SPILLWAY ELEVATION

NTS



2 S-5 SPILLWAY PLAN

NTS

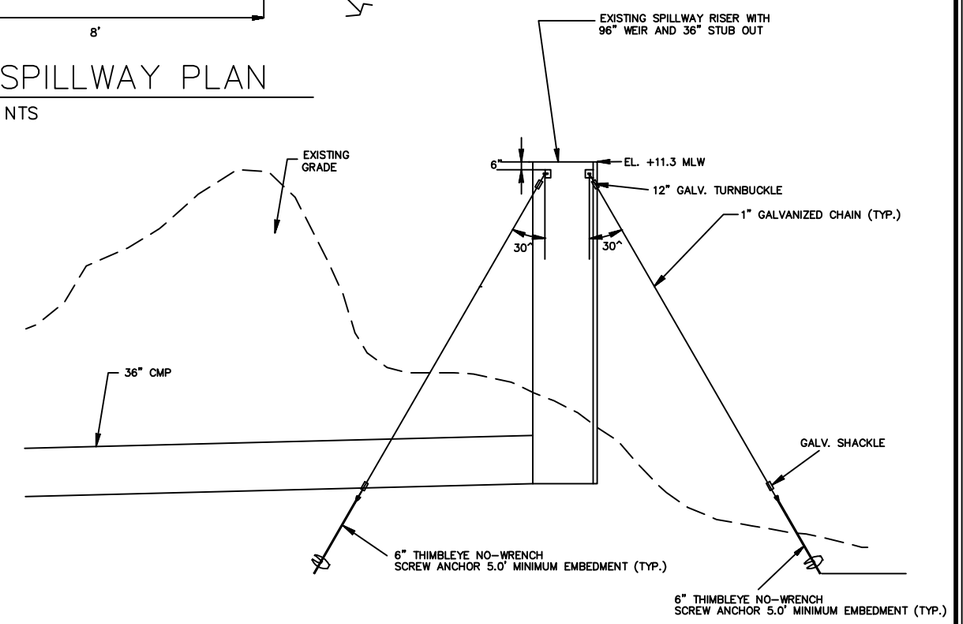


TIMBER WEIR BOARD DETAILS

N.T.S.

NOTES:

1. NEW WEIR BOARDS SHALL BE #1 DENSE SOUTHERN PINE AND SHALL BE PRESSURE TREATED IN ACCORDANCE WITH AWPA U1 (USE CATEGORY UC5 WATERBORNE PRESERVATIVE) AFTER FABRICATION. CONTRACTOR SHALL PICK UP AND INSTALL COUNTY PROVIDED WEIR BOARDS.
2. UNUSED WEIR BOARDS SHALL BE STACKED AT THE SPILLWAY OR AT A STORAGE AREA AS DIRECTED BY THE ENGINEER.
3. THE CONTRACTOR SHALL MEASURE THE CLEAR WIDTH OF EACH BAY AT AT EACH STRUCTURE (FACE OF CHANNEL WEB TO FACE OF CHANNEL WEB) AND CUT WEIR BOARDS TO FIT IF NECESSARY.
4. APPLY BRUSH-ON WOOD PRESERVATIVE TO ALL CUT ENDS.



4 S-6 SPILLWAY ANCHOR DETAIL

NTS

NOTES:

1. THE CONTRACTOR SHALL FURNISH AND INSTALL SIX (6) ANCHORS (THREE ON EACH SIDE OF RISER) AS SHOWN.
2. ANCHORS, TURNBUCKLES, AND 1" GALVANIZED STEEL CHAIN GRADE 30 SHALL BE MANUFACTURED BY A. B. CHANCE CO., CENTRALIA, MO OR APPROVED EQUAL.
3. ALL CONNECTING HARDWARE SHALL BE GALVANIZED AND APPROVED BY THE ENGINEER

Notes:

Horizontal Datum: North Carolina State Plane NAD83
Vertical Datum: Mean Low Water Beaufort Datum

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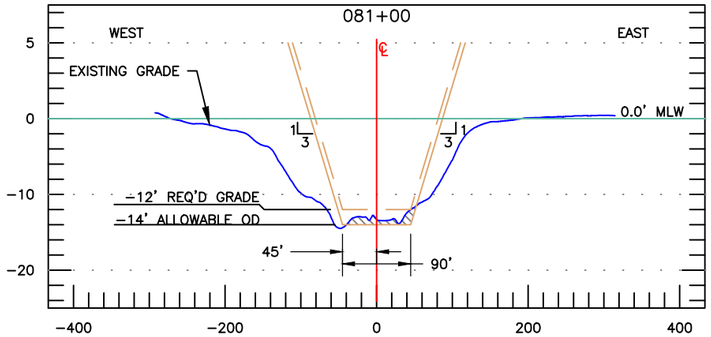
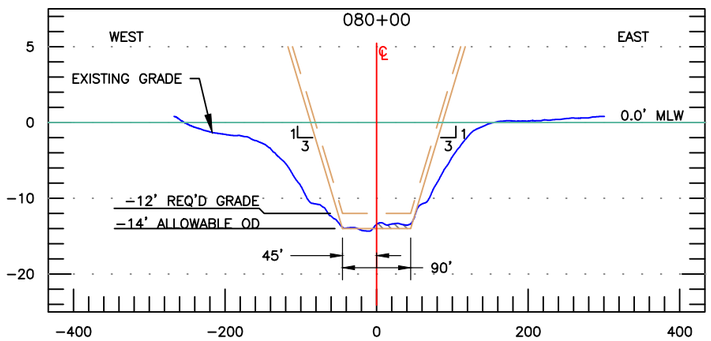
NEW HANOVER COUNTY, NC

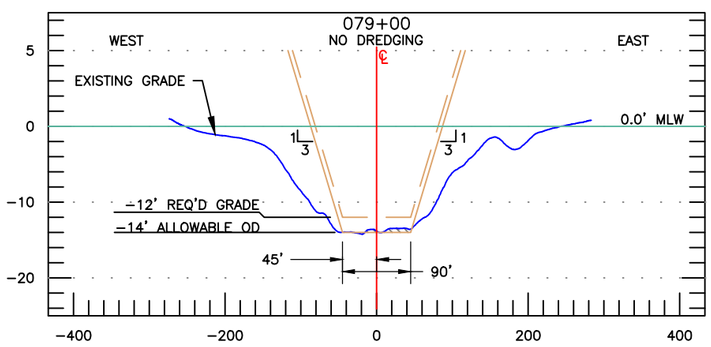
AIWW MAINTENANCE DREDGING PROJECT
SECT. 3, TANGENT 12
OCTOBER 2016

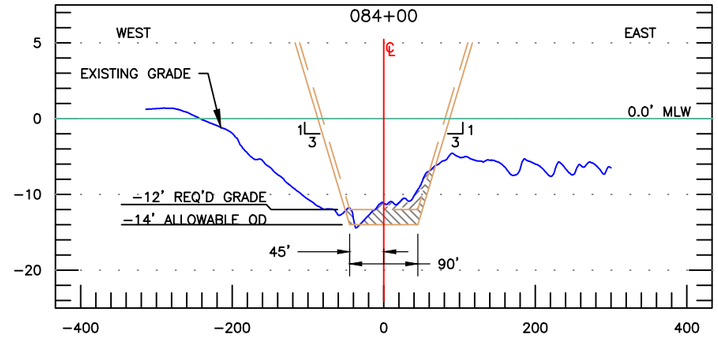
SPILLWAY DETAILS

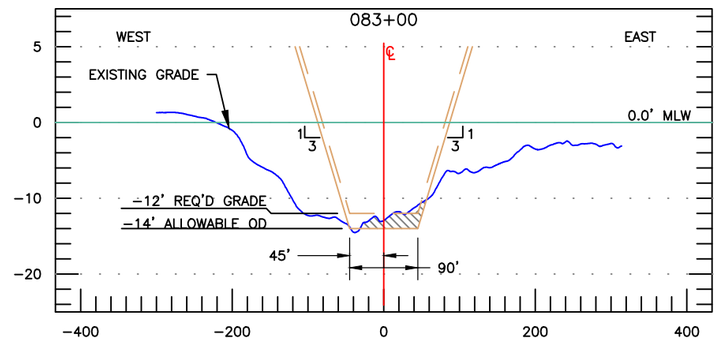
DWG DATE: 03 OCTOBER 2016	FILE NAME: MIRP160816-AIWW-DredgingPlans.dwg	
DRAWN: J. MCCLURE	CHECKED: C. MARELLO	ENGR: C. BRYANT
SCALE: AS NOTED	SHEET: 08 OF 11	REV: 0

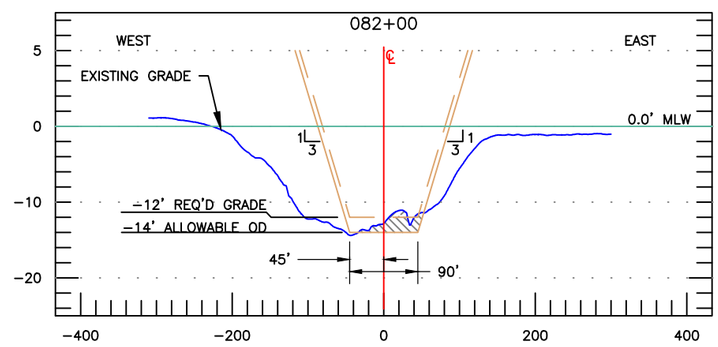


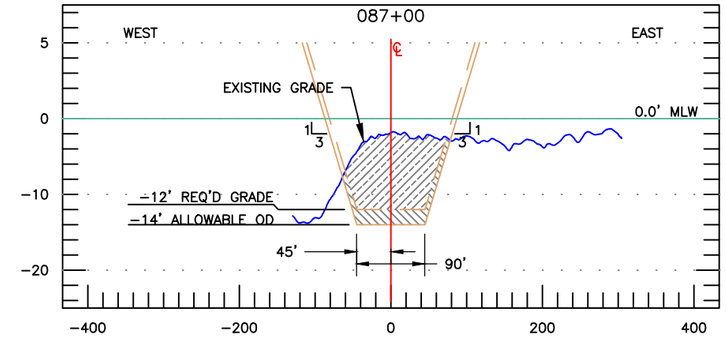


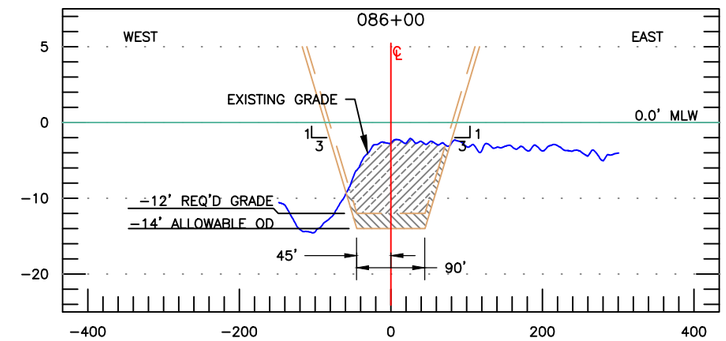


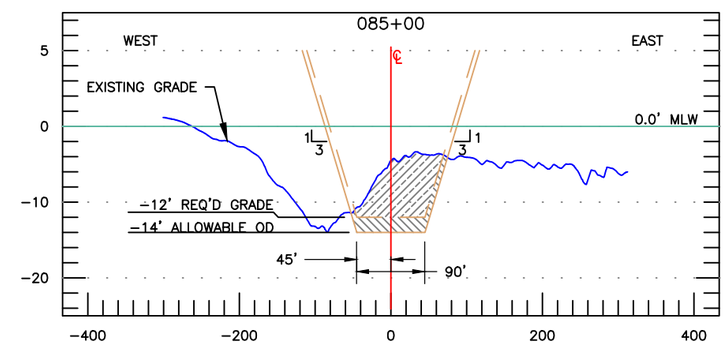












LEGEND

- REQUIRED GRADE DREDGE TEMPLATE
- ALLOWABLE OVERDEPTH DREDGE TEMPLATE
- REQUIRED GRADE
- ALLOWABLE OVERDEPTH

20' 0 20' 40'
VERTICAL GRAPHIC SCALE

200' 0 200' 400'
HORIZONTAL GRAPHIC SCALE

REV	REVISIONS	DATE	APP

NOTES:
1. THE INFORMATION DEPICTED HERE REPRESENTS THE RESULTS OF CONDITIONAL SURVEYS MADE ON 08 JULY 2016 AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITION EXISTING AT THAT TIME.
2. HORIZONTAL COORDINATES ARE IN U.S. SURVEY FEET AND ARE REFERENCED TO U.S. STATE PLANE NORTH CAROLINA, NAD 83.
3. HORIZONTAL POSITIONING WAS OBTAINED USING RTK GPS REFERENCED TO SURVEY MONUMENT ROOFTOP SHELL ISLAND.
   X: 2,370,246.41
   Y: 179,165.07
   Z: +96.73 MLW
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RELATIONSHIP BETWEEN NAVD88 AND TIDAL DATUMS AT NOAA BENCHMARK 8658163

MHW
1.4 FT
NAVD 88
2.5 FT
0.0' MLW
(NOT TO SCALE)

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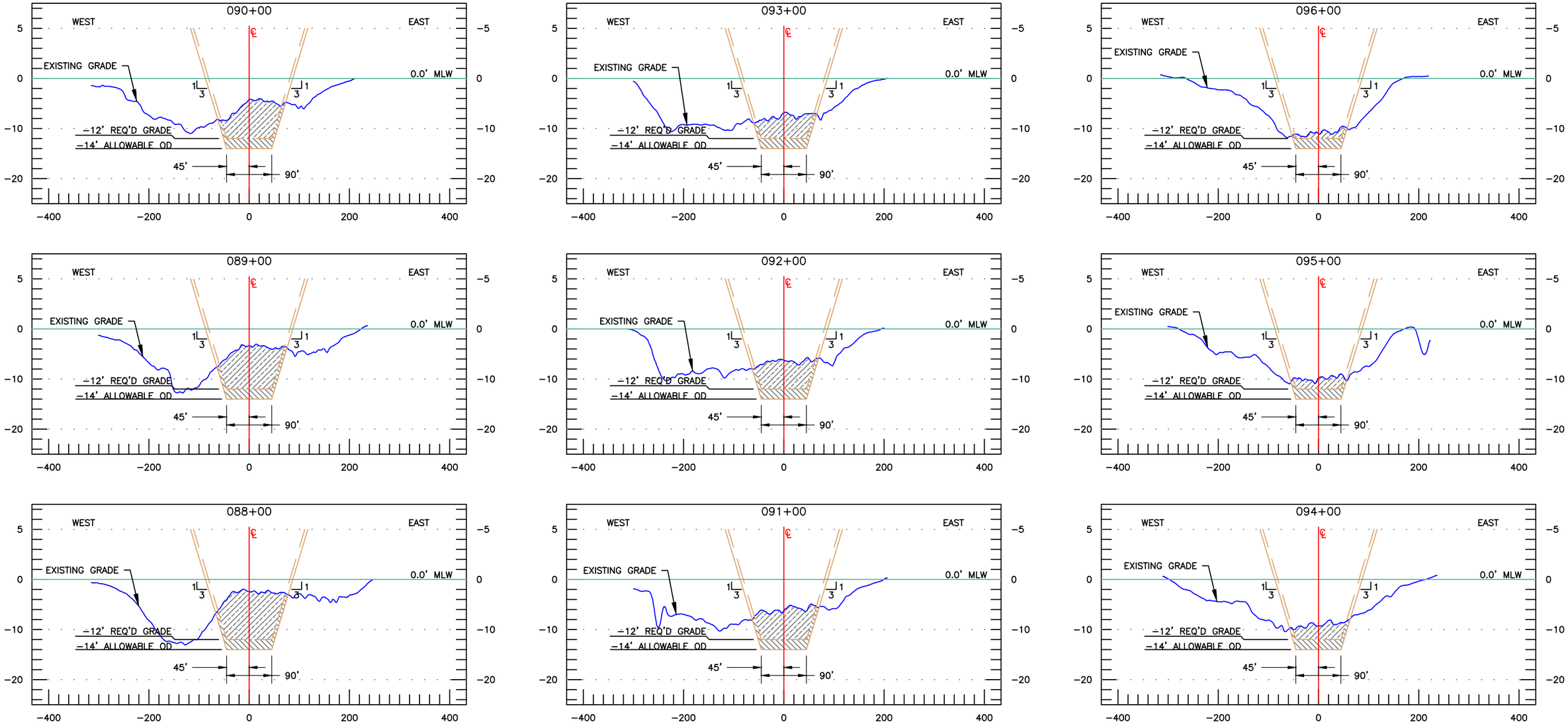
AIWW MAINTENANCE DREDGING PROJECT
TANGENT 12, SECTION 3
MASON CREEK CROSSING
NEW HANOVER COUNTY, NC

AIWW CROSS SECTIONS

DWG DATE:	12 OCTOBER 2016	DWG:	MIRP160708-AIWW-Clearance.dwg		
DRAWN:	J. MCCLURE	CHECKED:	C. MARELLO	ENGR:	C. BRYANT
SCALE:	1" = 200'	SHEET:	09 OF 11	REV:	0



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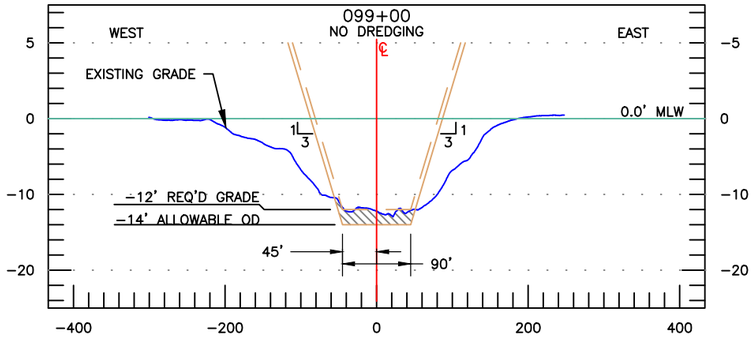
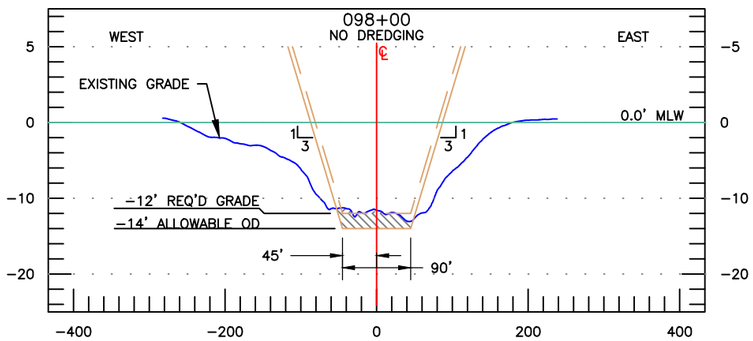
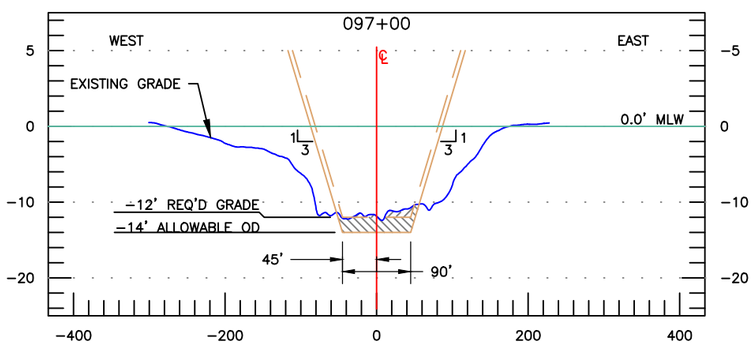
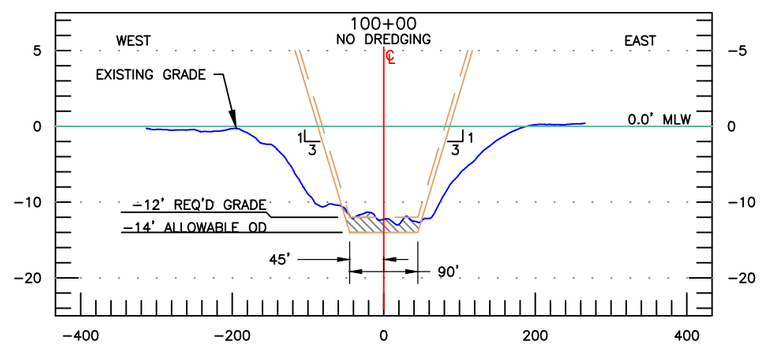
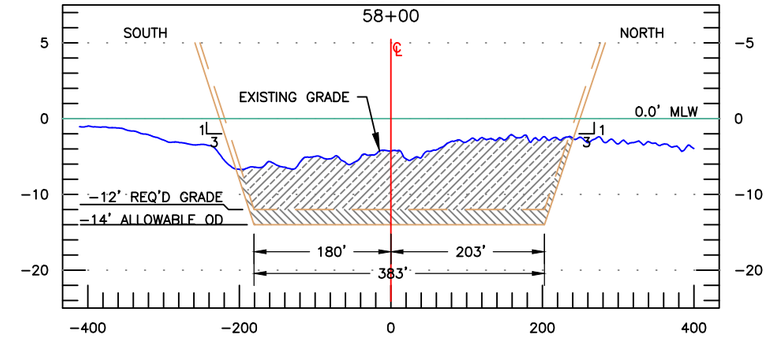


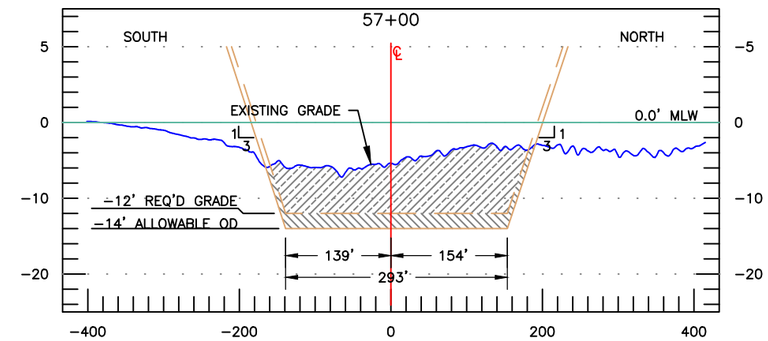


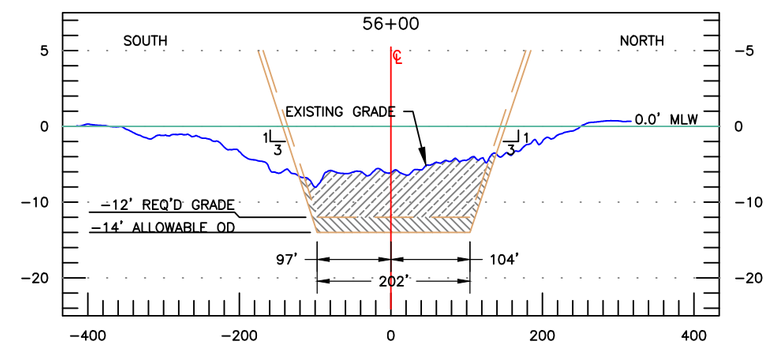




WIDENER







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SCALE: 1" = 200'	SHEET: 11 OF 11	REV: 0	