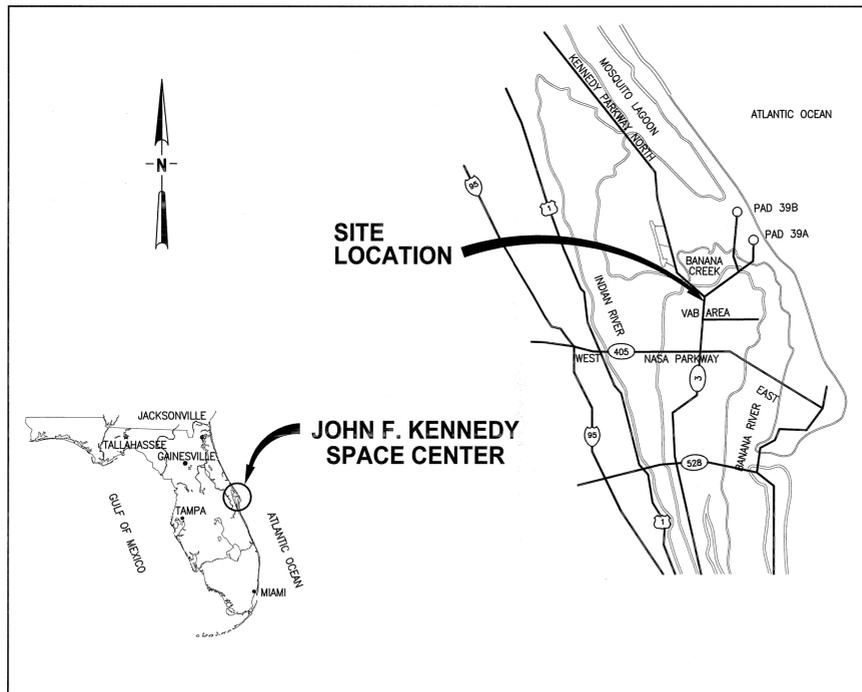
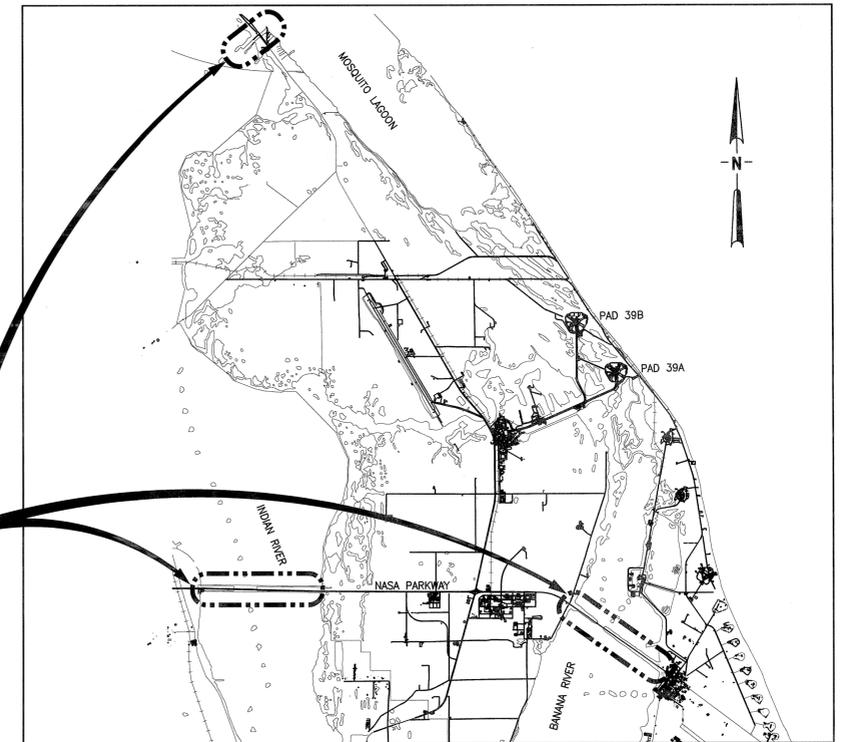


# INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES



LOCATION MAP  
NTS

## NASA JOHN F. KENNEDY SPACE CENTER



PROJECT LOCATION  
NTS

NASA KSC Export Control Office (ECO)  
Export/SBU Determination Record

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(Stamp Revision: (05-19-2009))

**OEA, Inc.**

MARK GOSSELIN, P.E., PH.D.  
FLORIDA P.E. 54594

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| SIGNATURES   |      | DATE          |      |          |
| DRAWN<br>K. PEREZ  |      | 08/19/09      |      |          |
| CHECKED<br>M. GOSSELIN   |      | 08/19/09      |      |          |
| DESIGNED<br>S. SZABO   |      | 08/19/09      |      |          |
| SUBMITTED<br>P. YU   |      | 8/21/09       |      |          |
| APPROVED<br>P. YU  |      | 8/21/09       |      |          |
| TITLE  |      | SIZE          |      |          |
| V1   |      | F             |      |          |
| DWG. NO.<br>79K38423   |      | SHEET 1 OF 16 |      |          |
| PROJ. NO. 97766  |      | COVER SHEET   |      |          |

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**GENERAL ABBREVIATIONS**

|           |  |         |  |
|-----------|--|---------|--|
| AIP       | ABANDONED IN PLACE                             | MAX     | MAXIMUM  |
| AIISI     | AMERICAN IRON AND STEEL INSTITUTE              | MFR     | MANUFACTURER   |
| ALUM      | ALUMINUM                                       | MIN     | MINIMUM  |
| APP       | APPROXIMATE                                    | MISC    | MISCELLANEOUS  |
| APPROX    | APPROXIMATE                                    | MLLW    | MEAN LOWER LOW WATER                                     |
| ASCE      | AMERICAN SOCIETY OF CIVIL ENGINEERS            | MLW     | MILES PER HOUR   |
| ASTM      | AMERICAN SOCIETY FOR TESTING AND MATERIALS     | MTL     | MATERIAL   |
| B/        | BOTTOM OF                                      | MSL     | MEAN SEA LEVEL   |
| BLD       | BLIND  | N       | NORTHING   |
| BLDNG     | BUILDING                                       | N/A     | NOT APPLICABLE   |
| BM        | BENCH MARK                                     | N/AVAIL | NOT AVAILABLE  |
| BO        | BOTTOM OF                                      | NAD     | NORTH AMERICAN DATUM                                     |
| BTM       | BOTTOM   | NAVD    | NORTH AMERICAN VERTICAL DATUM                            |
| CC        | CENTER TO CENTER                               | NIC     | NOT IN CONTRACT  |
| CIP       | CAST IN PLACE                                  | No      | NUMBER   |
| CFR       | CODE OF FEDERAL REGULATIONS                    | NONCOM  | NONCOMBUSTIBLE   |
| C         | CENTERLINE                                     | NOM     | NOMINAL  |
| CLR       | CLEAR  | NTS     | NOT TO SCALE   |
| CO        | COMPANY  | #       | NUMBER DESIGNATION                                       |
| CONC      | CONCRETE                                       | OC      | ON CENTER  |
| CONT      | CONTINUOUS                                     | OD      | OUTSIDE DIAMETER   |
| C/M       | CONSTRUCTION MONUMENT                          | OSHA    | OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION            |
| CTRD      | CENTERED                                       | PE      | PLAIN END  |
| DES       | DESIGNATION                                    | PI      | POINT OF INTERSECTION                                    |
| DET       | DETAIL   | PL      | PLATE  |
| DIA       | DIAMETER                                       | PLYWD   | PLYWOOD  |
| DN        | DOWN   | PPE     | PERSONAL PROTECTIVE EQUIPMENT                            |
| DSG       | DESIGNATION                                    | PROTEC  | PROTECTION   |
| DTL       | DETAIL   | PSF     | POUNDS PER SQUARE FOOT                                   |
| DWG       | DRAWING  | PSI     | POUNDS PER SQUARE INCH                                   |
| E         | EASTING  | PT      | PRESSURE TREATED   |
| EA        | EACH   | PVC     | POLYVINYL CHLORIDE                                       |
| EASB      | EASTBOUND                                      | PWQ     | PROCESS WASTE QUESTIONNAIRE                              |
| EHS       | EXTRA HIGH STRENGTH                            | R       | RADIUS   |
| ELEC      | ELECTRICAL                                     | REF     | REFERENCE (INFORMATION OBTAINED FROM DRAWINGS BY OTHERS) |
| ELEV      | ELEVATION                                      | REINF   | REINFORCED   |
| EQ        | EQUAL  | REQ     | REQUIRED   |
| EW        | EACH WAY                                       | R/W     | RIGHT OF WAY   |
| EXIST, EX | EXISTING                                       | S       | SLOPE  |
| FDLP      | FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION | SCH     | SCHEDULE   |
| FDN       | FOUNDATION                                     | SF      | SQUARE FEET  |
| FDOT      | FLORIDA DEPARTMENT OF TRANSPORTATION           | SHT     | SHEET  |
| FIG       | FIGURE   | SIM     | SIMILAR  |
| FIN       | FINISHED                                       | SM      | SQUARE METERS  |
| FL        | FLOOR  | SP      | SPACING, SPACED  |
| FLEX      | FLEXIBLE                                       | SPEC    | SPECIFICATIONS, SPECIFIED                                |
| FLG       | FLANGE   | SQ      | SQUARE   |
| FOM       | FACE OF MASONRY                                | SS      | STAINLESS STEEL  |
| FRP       | FIBERGLASS REINFORCED PLASTIC                  | STA     | STATION  |
| FT        | FOOT   | STAT    | STATIONARY   |
| GA        | GAUGE  | STD     | STANDARD   |
| GAL       | GALLON   | STL     | STEEL  |
| GALV      | GALVANIZED                                     | STRUCT  | STRUCTURAL, STRUCTURE                                    |
| GFE       | GOVERNMENT FURNISHED EQUIPMENT                 | T/      | TOP OF   |
| GR        | GRADE  | T&B     | TOP AND BOTTOM   |
| GS        | GALVANIZED STEEL                               | TBM     | TEMPORARY BENCH MARK                                     |
| GSP       | GALVANIZED STEEL PIPE                          | THK     | THICK  |
| HDPE      | HIGH DENSITY POLYETHYLENE                      | TP      | TYPE   |
| HK        | HOOK   | TYP     | TYPICAL  |
| HORIZ     | HORIZONTAL                                     | UL      | UNDERWRITER'S LABORATORIES                               |
| HT        | HEIGHT   | UNO     | UNLESS NOTED OTHERWISE                                   |
| HW        | HIGH WATER LEVEL                               | UG      | UNDERGROUND  |
| IE        | INVERT ELEVATION                               | UX      | UNIAXIAL   |
| IN        | INCH   | VERT    | VERTICAL   |
| JE        | JONES EDMUNDS AND ASSOCIATES                   | VIF     | VERIFY IN FIELD  |
| KB        | KNEE BRACE                                     | W       | WIDE   |
| KIP       | THOUSAND POUND                                 | WB      | WESTBOUND  |
| KSC       | KENNEDY SPACE CENTER                           | WGT     | WEIGHT   |
| L         | LINEAR   | Ø       | DIAMETER   |
| LF        | LINEAR FEET                                    |         |  |
| LG        | LONG   |         |  |

**SURVEY ABBREVIATIONS**

|      |                                 |
|------|---------------------------------|
| BD   | BRASS DISK                      |
| DNR  | DEPARTMENT OF NATURAL RESOURCES |
| MON  | MONUMENT                        |
| NAD  | NORTH AMERICAN DATUM            |
| NAVD | NORTH AMERICAN VERTICAL DATUM   |

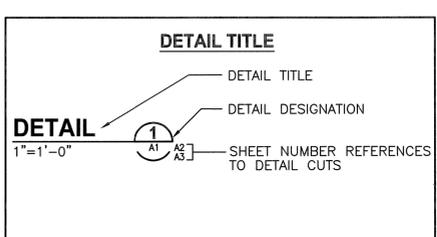
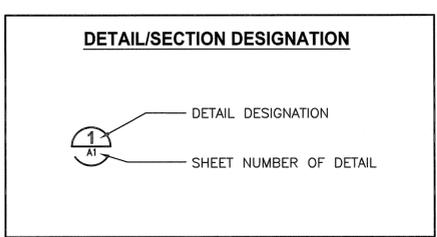
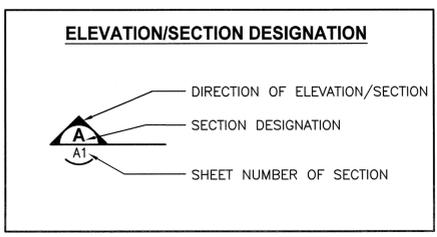
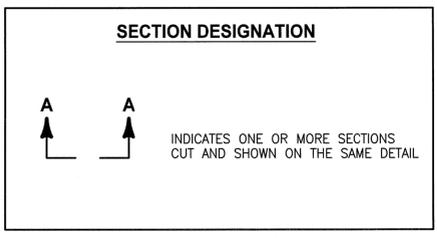
**GENERAL NOTES**

- LOCATIONS, ELEVATIONS, AND DIMENSIONS OF EXISTING STRUCTURES, UTILITIES AND OTHER FEATURES SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE DRAWINGS BUT ARE NOT PURPORTED TO BE ABSOLUTELY ACCURATE. THERE MAY BE OTHER IMPROVEMENTS WITHIN THE PROJECT AREA. CONTRACTOR SHALL VERIFY, PRIOR TO CONSTRUCTION, THE LOCATIONS, ELEVATIONS, AND DIMENSIONS OF ALL EXISTING STRUCTURES, AND OTHER FEATURES (WHETHER OR NOT SHOWN ON THE DRAWINGS) AFFECTING THE WORK.
- THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND SHALL NOT SCALE FROM DRAWINGS. THE DIMENSIONS OF SPECIFIED AND FURNISHED PRODUCTS AND MATERIALS TAKE PRECEDENCE OVER DIMENSIONS AND NOTES SHOWN ON THE DRAWINGS.
- THE CONTRACTOR SHALL FIELD VERIFY EXISTING UTILITIES (SIZE, MATERIAL OF CONSTRUCTION, ELEVATION, ETC.), ESPECIALLY AT CONNECTING POINTS, PRIOR TO SHOP DRAWING PREPARATION AND SUBMITTAL.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING OR PROPOSED UTILITIES, STRUCTURES, BRIDGE OPERATIONAL SYSTEM (AUTOMATION CONTROLS, CONTROL CONSOLE, ETC) AND OTHER IMPROVEMENTS CAUSED BY HIS/HER ACTIVITIES AT NO ADDITIONAL COST TO THE GOVERNMENT.
- THE CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER IN WRITING IMMEDIATELY IF STRUCTURE OR UTILITY CONFLICTS ARE IDENTIFIED DURING THE COURSE OF THE WORK.
- ALTHOUGH DIMENSIONS MAY BE SHOWN ON THE DRAWINGS, THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ALL MATERIAL QUANTITIES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL VERIFY THAT ALL REQUIRED CLEARANCES CAN BE MET, AND IF ANY CANNOT BE MET, CONTRACTOR SHALL NOTIFY THE CONTRACTING OFFICER IN WRITING 14 FULL WORKING DAYS PRIOR TO CONSTRUCTING ANY SUCH ITEM.
- THE CONTRACTOR IS RESPONSIBLE FOR BRACING, SHORING, OR PROVIDING OTHER MEANS NECESSARY TO PROTECT AND SUPPORT EXISTING AND PROPOSED UTILITIES AND STRUCTURES EXPOSED OR UNEXPOSED DURING CONSTRUCTION.
- UNLESS OTHERWISE NOTED, REFERENCES TO FDOT SPECIFICATIONS SHALL REFER TO THE MOST RECENT VERSION OF FLORIDA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION - 2007."
- FDOT INDICES SHALL REFER TO THE "2008 FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND TRAFFIC DESIGN STANDARDS."
- CONTRACTOR SHALL OBTAIN AN EXCAVATION PERMIT PRIOR TO DIGGING. COORDINATE WITH MISSION SUPPORT AND THE CONTRACTING OFFICER.
- THE VERTICAL DATUM USED FOR ALL BENCH MARKS IDENTIFIED ON THE DRAWINGS IS NAVD OF 1988. ALL OTHER ELEVATIONS SHOWN ON THE DRAWINGS ARE RELATIVE TO THE MEAN LOW WATER DATUM. SEE SURVEYOR'S NOTES ON THE EXISTING HYDROGRAPHIC SURVEY DRAWING.
- THE CONTRACTOR SHALL PREVENT DISTURBANCE TO AND UNDERMINING OF ADJACENT STRUCTURES, UTILITIES, PIERS, WOOD FENDERS, CONCRETE BULKHEADS, PILES, ETC. DURING CONSTRUCTION.
- THE CONTRACTOR SHALL ONLY USE LOW SODIUM LIGHTING FOR ILLUMINATION OF LAND SURFACE AREAS OR ANY OTHER ABOVE WATER SURFACE AREAS.
- THE CONTRACTOR SHALL MAINTAIN WATERWAY AND ROADWAY TRAFFIC IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.
- PRIOR TO PERFORMING ANY WORK IN THE WATER, THE CONTRACTOR SHALL NOTIFY ALL THE PARTIES/AGENCIES INDICATED IN THE CONTRACT SPECIFICATION SECTION 015720.0010, PART 1.12 NOTIFICATIONS OF THE PROJECT. SEE CONTRACT SPECIFICATIONS FOR A LISTING OF THE PARTIES/AGENCIES TO BE NOTIFIED AND SPECIFIC NOTIFICATION REQUIREMENTS.
- CONTRACTOR SHALL ABIDE BY SPECIFICATION 01 35 26 FOR HEALTH AND SAFETY REQUIREMENTS.

**ENVIRONMENTAL NOTES**

- THIS PROJECT HAS THE POTENTIAL TO IMPACT THE FLORIDA MANATEE. THE CONTRACTOR SHALL AVOID CONTACT OR IMPACT TO THE MANATEE DURING CONSTRUCTION ACTIVITIES.
- ALL EXISTING STORMWATER DRAINAGE PATTERNS AND CHANNELS ARE TO BE MAINTAINED. THE CONTRACTOR SHALL NOTIFY THE CONTRACT OFFICER IF THE WORK APPEARS TO INTERRUPT AN EXISTING STORMWATER DRAINAGE PATTERN. THE CONTRACTOR SHALL MAINTAIN A CLEAR PATH FOR ALL SURFACE WATER DRAINAGE STRUCTURES AND DITCHES DURING ALL PHASES OF CONSTRUCTION AND SHALL USE WHATEVER MEANS NECESSARY TO MANAGE STORMWATER SUCH THAT IMPACT TO CONSTRUCTION AND/OR SURROUNDING FACILITIES IS MINIMIZED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY EROSION, SEDIMENT TRANSPORT, DISTURBED FOUNDATIONS AND IMPACT TO STRUCTURES, AND ANY OTHER DAMAGE CAUSED DURING CONSTRUCTION.
- CONTRACTOR SHALL COMPLY WITH ALL PROJECT PERMIT REQUIREMENTS, INCLUDING, BUT NOT LIMITED TO, PRECAUTIONS TO BE TAKEN FOR THE PROTECTION OF WILDLIFE IN THE AREA.
- THE CONTRACTOR SHALL INFORM ALL PERSONNEL ASSOCIATED WITH THE PROJECT OF THE POTENTIAL PRESENCE OF MANATEES AND TURTLES AT THE CONSTRUCTION SITE.
- COLLISION WITH AND/OR INJURY TO MANATEES, TURTLES, AND ALL OTHER WILDLIFE SHALL BE AVOIDED.
- ALL CONSTRUCTION PERSONNEL ARE RESPONSIBLE FOR OBSERVING THE CONSTRUCTION SITE FOR THE PRESENCE OF MANATEES AND TURTLES.
- THE CONTRACTOR SHALL ADVISE ALL CONSTRUCTION PERSONNEL THAT THERE ARE CIVIL AND CRIMINAL PENALTIES FOR HARMING, HARASSING, OR KILLING MANATEES WHICH ARE PROTECTED UNDER THE MARINE MAMMAL PROTECTION ACT OF 1972, THE ENDANGERED SPECIES ACT OF 1973, AND THE FLORIDA MANATEE SANCTUARY ACT.
- SILTATION BARRIERS SHALL BE MADE OF MATERIAL IN WHICH MANATEES, TURTLES, OR OTHER WILDLIFE CANNOT BECOME ENTANGLED, ARE PROPERLY SECURED, AND ARE REGULARLY MONITORED TO AVOID MANATEE ENTRAPMENT. BARRIERS MUST NOT BLOCK MANATEE ENTRY TO OR EXIT FROM ESSENTIAL HABITAT.
- ALL VESSELS ASSOCIATED WITH THE CONSTRUCTION PROJECT SHALL OPERATE AT "NO WAKE/IDLE" SPEEDS AT ALL TIMES WHILE IN THE CONSTRUCTION AREA AND WHILE IN WATER WHERE THE DRAFT OF THE VESSEL PROVIDES LESS THAN A FOUR-FOOT CLEARANCE FROM THE BOTTOM. ALL VESSELS WILL FOLLOW ROUTES OF DEEP WATER WHENEVER POSSIBLE.
- SHOULD A MANATEE BE SEEN WITHIN 100 YARDS OF THE CONSTRUCTION SITE OR CONSTRUCTION VESSELS, ALL APPROPRIATE PRECAUTIONS TO ENSURE THE PROTECTION OF THE MANATEE(S) SHALL BE IMPLEMENTED. SHOULD A MANATEE BE SEEN WITHIN 50 FEET OF OPERATING EQUIPMENT, THE OPERATING EQUIPMENT SHALL BE SHUT DOWN IMMEDIATELY. OPERATION OF THE EQUIPMENT SHALL NOT RESUME UNTIL THE MANATEE(S) HAS DEPARTED THE CONSTRUCTION SITE OF ITS OWN VOLITION.
- ANY COLLISION WITH AND/OR INJURY TO A MANATEE SHALL BE REPORTED IMMEDIATELY TO THE FLORIDA MARINE PATROL AT 1-800-DIAL FMP (1-800-342-5367) AND THE U.S. FISH AND WILDLIFE SERVICE IN VERO BEACH AT 1-321-562-3909. IN ADDITION, ANY INJURIES TO MANATEES OR TURTLES SHALL BE REPORTED TO THE NASA ENVIRONMENTAL PROGRAM OFFICE AT 1-321-867-8448.
- THE CONTRACTOR SHALL INSTALL AND REMOVE TEMPORARY CONSTRUCTION SIGNS IN THE WATER IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. A TOTAL QUANTITY OF EIGHTEEN SIGNS IS REQUIRED. THE REQUIREMENTS FOR EACH TYPE OF SIGN ARE PRESENTED AS FOLLOWS:  
  
PUBLIC INFORMATION SIGN  
VERBIAGE PRESENTED ON SIGN: PROJECT TITLE: INSTALL PIER SCOUR PROTECTION AT INDIAN RIVER BRIDGE, BANANA RIVER BRIDGE, AND HAULOVER CANAL BRIDGE. A CONSTRUCTION PROJECT TO INSTALL A SCOUR PREVENTION MAT ON THE CHANNEL BOTTOM AT THE BRIDGE IS IN PROGRESS. PLEASE AVOID BRIDGE AREA AS MUCH AS POSSIBLE. VESSELS MUST BE OPERATED AT IDLE SPEED NEAR THE BRIDGE AS DIVERS MAY BE IN THE WATER.  
SIZE: 8 FEET WIDE BY 4 FEET TALL  
QUANTITY: 2 PER BRIDGE WITH SPECIFIC LOCATION: INSTALL SIGNS AT THE LOCATIONS DIRECTED BY THE CONTRACTING OFFICER.  
  
CAUTION SIGNS  
VERBIAGE PRESENTED ON SIGN: CAUTION: MANATEE AREA  
SIZE: 4 FEET WIDE BY 3 FEET TALL  
QUANTITY: 2 PER BRIDGE  
LOCATION: INSTALL SIGNS IN THE WATER ON EACH SIDE OF BRIDGE. SIGNS SHALL BE PROMINENTLY VISIBLE TO WATER RELATED CONSTRUCTION ACTIVITIES AND VESSEL OPERATORS.  
  
INSTRUCTION SIGNS  
VERBIAGE PRESENTED ON SIGN: CAUTION: MANATEE HABITAT. IDLE SPEED IS REQUIRED IF OPERATING A VESSEL IN THE CONSTRUCTION AREA. ALL EQUIPMENT MUST BE SHUTDOWN IF A MANATEE COMES WITHIN 50 FEET OF OPERATION. ANY COLLISION WITH AND/OR INJURY TO A MANATEE SHALL BE REPORTED IMMEDIATELY TO THE FLORIDA MARINE PATROL AT 1-800-DIAL-FMP (1-800-342-5367) AND THE U.S. FISH AND WILDLIFE SERVICE AT 1-321-562-3909.  
SIZE: 8 FEET WIDE BY 4 FEET TALL  
QUANTITY: 2 PER BRIDGE  
LOCATION: INSTALL SIGNS IN THE WATER ON EACH SIDE OF BRIDGE. SIGNS SHALL BE PROMINENTLY VISIBLE TO WATER RELATED CONSTRUCTION ACTIVITIES AND VESSEL OPERATORS.
- THE WATERS OF THE INDIAN RIVER, BANANA RIVER, AND MOSQUITO LAGOON ARE WITHIN THE BOUNDARIES OF KSC AND ARE CLASSIFIED AS OUTSTANDING FLORIDA WATERS (OFW). EXTRAORDINARY MEASURES MUST BE TAKEN TO ENSURE NO DEGRADATION OF THIS WATER. PROVIDE TYPE 2 FLOATING TURBIDITY BARRIERS BOOMS PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL MEASURE TURBIDITY AND NOT REMOVE THE BOOM UNTIL ALL WORK IS COMPLETE AND ANY SUSPENDED PARTICULATES IN THE WATER MATCH TURBIDITY BACKGROUND LEVELS/READINGS TAKEN 100 YARDS FROM THE TURBIDITY BARRIER.

**SYMBOL LEGENDS**

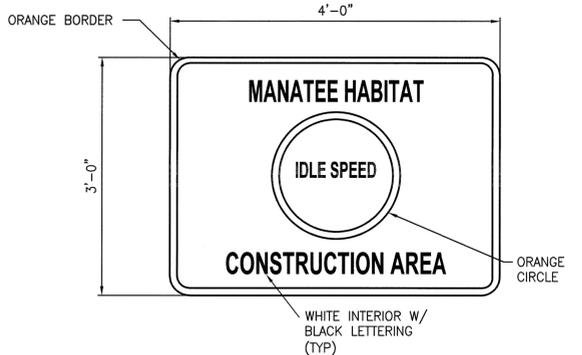


**DRAWING INDEX**

| REV# | INDEX | DRAWING | DESCRIPTION                                    |
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| 3    | V3    |         | KEY MAP  |
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| 6    | C3    |         | EXISTING CONDITIONS BANANA RIVER BRIDGE        |
| 7    | C4    |         | BANANA RIVER BRIDGE PLAN AND ELEVATION         |
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| 16   | E5    |         | PLAN VIEW INDIAN RIVER BRIDGE                  |

**CIVIL LEGEND**

|  |                                    |
|--|------------------------------------|
|  | EXISTING SPOT ELEVATION (FT, NAVD) |
|  | SPOT ELEVATION (FT, NAVD)          |
|  | MARINE MATTRESS                    |
|  | GEOTEXTILE W/ BANK & SHORE         |
|  | EXISTING RIPRAP COVERAGE BOUNDARY  |
|  | LARGE RUBBLE RIPRAP                |
|  | EXISTING RIPRAP TO REMAIN          |
|  | DRAINAGE FLOW DIRECTION            |
|  | SLOPE                              |
|  | NATURAL GAS LINE                   |
|  | SANITARY SEWER LINE                |
|  | WATER LINE                         |
|  | COMMUNICATION LINE                 |
|  | ELECTRICAL LINE                    |



**TYPICAL MANATEE CAUTION SIGN**  
NTS

**OEA, Inc.**

MARK GOSSELIN, P.E., PH.D.  
FLORIDA P.E. 54594

| SYM  | ZONE        | DESCRIPTION | DATE     | APPROVED |
|--|-------------|-------------|----------|----------|
| REVISIONS  |             |             |          |          |
| THIS DRAWING CREATED IN AUTOCAD 2007 FILE FORMAT AND WILL BE REVISED ONLY ON AN AUTOCAD SYSTEM. FILE: 14000160-V02.DWG                             |             |             |          |          |
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| SIGNATURES   |             | DATE        |          |          |
| DRAWN  | K. PEREZ    | 08/19/09    |          |          |
| CHECKED  | M. GOSSELIN | 08/19/09    |          |          |
| DESIGNED   | S. SZABO    | 08/19/09    |          |          |
| SUBMITTED  |             | DATE        |          |          |
| STEPHEN M. SZABO   |             | 08/19/09    |          |          |
| APPROVED   |             | DATE        |          |          |
| MARK GOSSELIN  |             | 08/19/09    |          |          |
| V2   |             | SIZE        | DWG. NO. | REV      |
|  |             | F           | 79K38423 |          |
| TITLE  |             | PROJ. NO.   | 97766    | SHEET 2  |

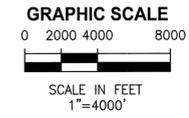
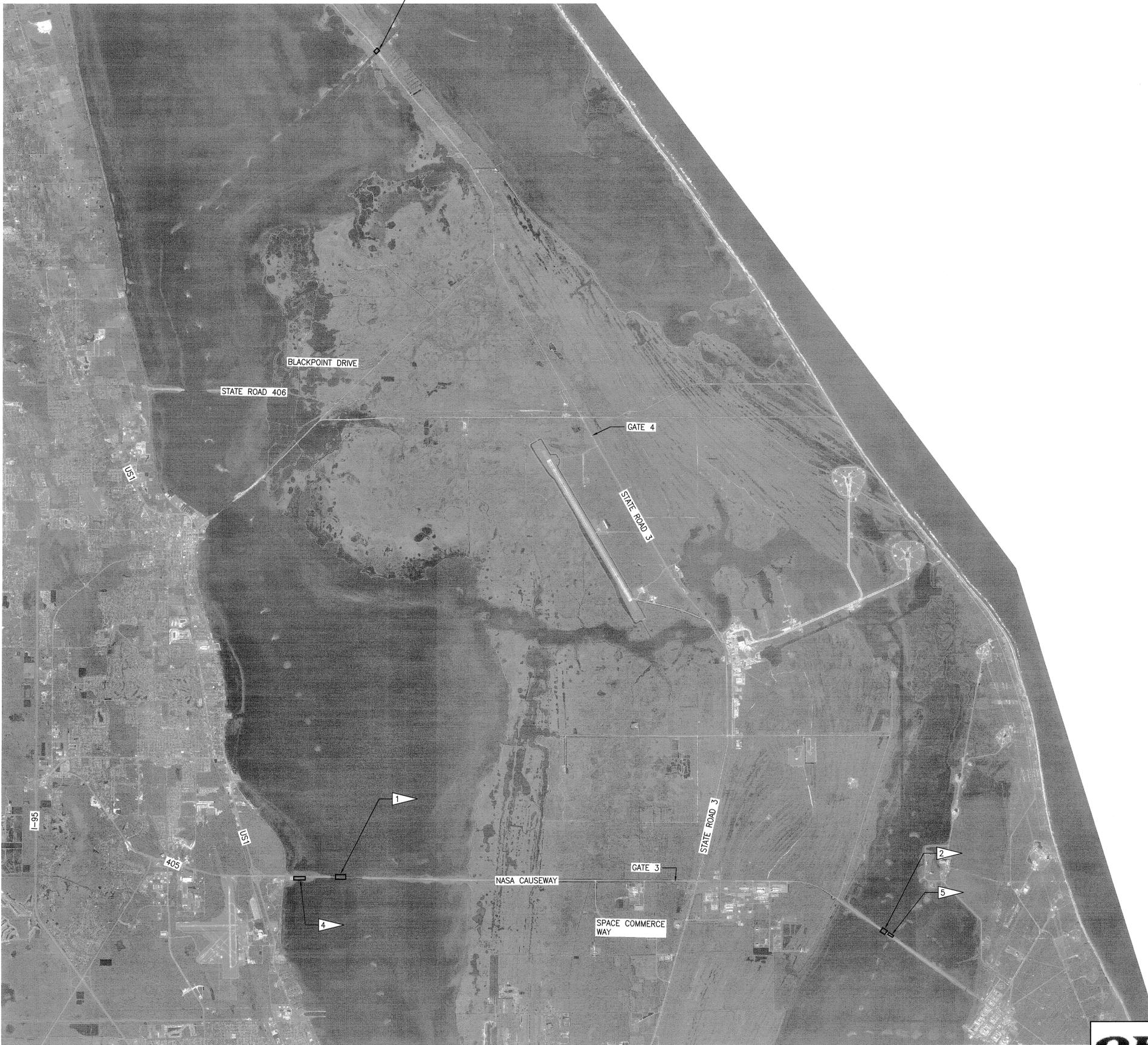
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**GENERAL NOTES**

1. CONTRACTOR MAY USE PRIVATE ACCESS FOR BARGES AT HIS OPTION.
2. CONTRACTOR TO PERFORM SITE INVESTIGATIONS PRIOR TO BID TO DETERMINE LAYDOWN, STAGING, AND BARGE ACCESS AVAILABILITY.
3. CONTRACTOR SHALL SOD ALL DISTURBED AREAS. SOD SHALL BE ARGENTINE BAHIA SPECIES AND SHALL BE INSTALLED WITHIN 48 HOURS OF HARVESTING.

**FLAG NOTES**

- 1 INDIAN RIVER BRIDGE SEE SHEET C1
- 2 BANANA RIVER BRIDGE SEE SHEET C3
- 3 HAULOVER CANAL BRIDGE SEE SHEET C5
- 4 INDIAN RIVER BRIDGE CONSTRUCTION, POTENTIAL LAYDOWN AREA (1500'x35')
- 5 BANANA RIVER BRIDGE CONSTRUCTION POTENTIAL LAYDOWN AREA (600'x50')



**OEA, Inc.**

MARK GOSSELIN, P.E., PH.D.  
FLORIDA P.E. 54594

V3

| SYM  | ZONE | DESCRIPTION   | DATE | APPROVED |
|--|------|---|------|----------|
| REVISIONS  |      |   |      |          |
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| SIGNATURES   |      | DATE  |      |          |
| DRAWN  |      | NATIONAL AERONAUTICS AND SPACE ADMINISTRATION                       |      |          |
| K. PEREZ   |      | JOHN F. KENNEDY SPACE CENTER, NASA<br>KENNEDY SPACE CENTER, FLORIDA |      |          |
| CHECKED  |      | 8/19/09   |      |          |
| M. GOSSELIN  |      | 8/19/09   |      |          |
| DESIGNED   |      | 8/19/09   |      |          |
| S. SZABO   |      | 8/19/09   |      |          |
| SUBMITTED  |      | 8/19/09   |      |          |
| APPROVED   |      | DATE  |      |          |
| Mark Goselin   |      | 8/19/09   |      |          |
| TITLE  |      | DWG. NO.  |      |          |
| V3   |      | F 79K38423  |      |          |
|  |      | REV   |      |          |
|  |      | PROJ. NO. 97766   |      |          |
|  |      | SHEET 3   |      |          |

**KEY MAP**  
1"=4000'

KEY MAP

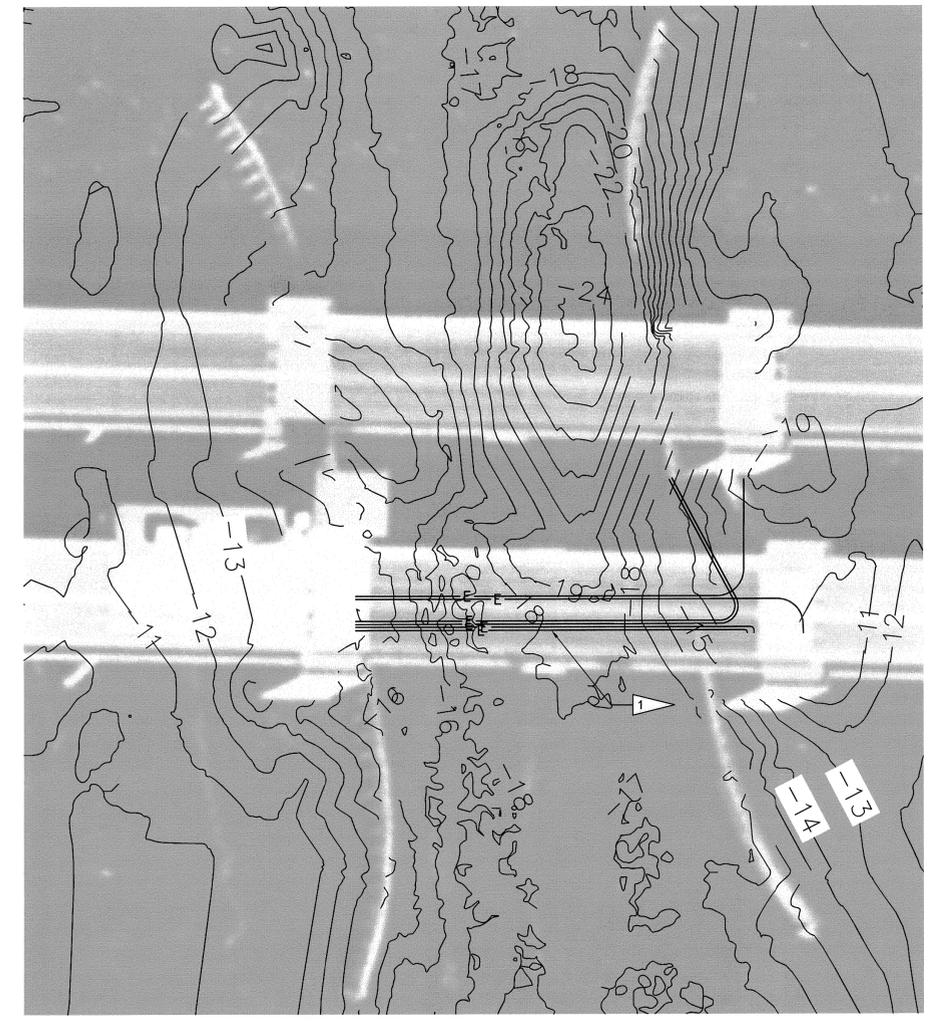
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**GENERAL NOTES**

1. DREDGING SHALL BE PERFORMED BEFORE NEW CABLE INSTALLATION IN ACCORDANCE WITH SPECIFICATION 35 20 23.
2. SUBAQUEOUS CABLE SHALL BE INSTALLED BEFORE ANY ADDITIONAL WORK CAN PROCEED.
3. COORDINATE CABLE REMOVAL AND INSTALLATION TO LEAVE ONE DIRECTION OF VEHICLE TRAVEL OPERATIONAL AT ALL TIMES.
4. EXISTING CABLE SHALL NOT BE DAMAGED DURING DREDGING ACTIVITIES.
5. CONTRACTOR SHALL VERIFY CABLE LOCATION AND ELEVATION AND DETERMINE METHOD OF DREDGING ACCORDINGLY IN ORDER TO PROTECT EXISTING CABLE.

**FLAG NOTES**

- ▲ EXISTING SUBAQUEOUS CABLES TO BE REMOVED AND REPLACED. REFER TO ELECTRICAL DRAWINGS



**CONTOURS**  
1"=20'

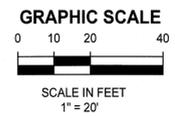
CONTOURS ARE IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (1988)

**SURVEY NOTES:**

1. SURVEY WAS CONDUCTED IN JULY OF 2008
2. ALL AZIMUTHS ARE GRID, RECKONED CLOCKWISE FROM NORTH.
3. THE COORDINATES SHOWN HEREON ARE IN FEET AND ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE (0901), TRANSVERSE MERCATOR PROJECTION, NORTH AMERICAN DATUM, 1983 (NAD83).
4. VESSEL POSITIONING WAS OBTAINED BY A TRIMBLE, REAL-TIME DIFFERENTIAL GLOBAL POSITIONING SYSTEM (DGPS). CORRECTIONS WERE OBTAINED FROM THE U.S.C.G. NAVBEACON STATION.
5. SOUNDINGS ARE IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (1988). THIS SURVEY WAS CONDUCTED USING A SURVEY GRADE SINGLE BEAM SOUNDER, WITH A 200kHz NARROW BEAM TRANSDUCER. ADDITIONALLY, DATA WAS COLLECTED WITH AN ODOM MODEL ES3 MULTIBEAM SYSTEM TO BETTER DETERMINE THE SCOURING AROUND THE BRIDGE PILING. A GYRO COMPASS AND 3-AXIS MOTION SENSOR WERE ALSO USED IN THE MULTIBEAM DATA COLLECTION. BOTH SYSTEMS WERE CALIBRATED USING MANUFACTURER'S SPECIFICATION PRIOR TO DATA COLLECTION.
6. TIDE REDUCTIONS WERE MADE FROM A TIDE STAFF SET RELATIVE TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD, 1929) AND BASED ON THE SURVEY BENCHMARK TABULATED HEREIN.
7. CONTOURS ARE SHOWN AT ONE-FOOT INTERVALS AND ARE BASED UPON A DIGITAL TERRAIN MODEL (DTM).
8. UNDERGROUND IMPROVEMENTS OR UTILITIES WERE NOT LOCATED AS PART OF THIS SURVEY AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO ANY DREDGING AND/OR CONSTRUCTION.
9. GEOGRAPHICAL FEATURES SUCH AS ROADWAYS AND SHORELINES, WERE NOT LOCATED DURING THE COURSE OF THE SURVEY AND ARE SHOWN FOR GRAPHICAL PURPOSES ONLY.
10. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF THE SURVEY ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THE TIME.
11. THIS SURVEY IS NOT VALID WITHOUT THE RAISED SEAL AND THE ORIGINAL SIGNATURE OF A FLORIDA LICENSED PROFESSIONAL SURVEYOR AND MAPPER.

| SURVEY CONTROL |               |                            |                             |                          |
|----------------|---------------|----------------------------|-----------------------------|--------------------------|
| CONTROL POINT  | EL(NAVD) FEET | EASTING NAD 83 EAST (0901) | NORTHING NAD 83 EAST (0901) | DESCRIPTION/LOCATION     |
| R 228          | 15.94         | N/A                        | N/A                         | B/D STAMPED "R 228 1964" |

1.9 MILES SOUTHERLY ALONG U.S. HIGHWAY 1 FROM THE JUNCTION OF STATE HIGHWAY 50 IN TITUSVILLE, SET VERTICALLY IN THE WEST FACE OF THE MOST SOUTHERLY OF 3 CONCRETE COLUMNS OF THE FIRST PIER WEST OF THE EAST ABUTMENT OF THE EASTBOUND STATE HIGHWAY 405 OVERPASS OF THE HIGHWAY 30.5 FEET EAST OF THE CENTERLINE OF THE NORTHBOUND LANES OF THE HIGHWAY AND 2 FEET ABOVE THE GROUND SURFACE.



**SEA DIVERSIFIED, INC.**  
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J3 Executive Centre  
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Delray Beach, Florida 33445

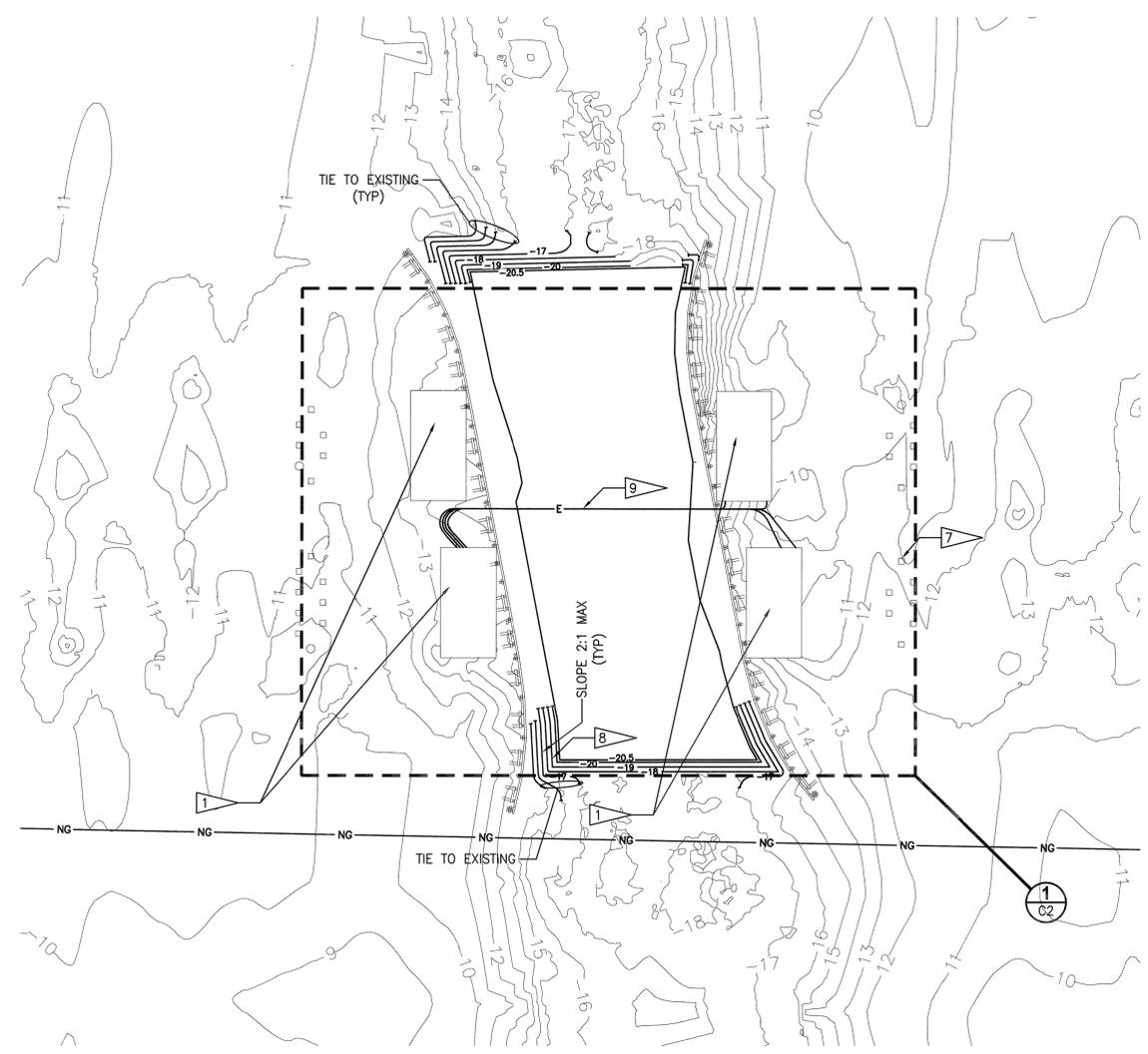
**OEA, Inc.**  
William T. Sudler, P.S.M., P.E.  
Florida Professional Surveyor and Mapper #2828  
Florida Authorization #B 7342

Kenneth C. Jackson, P.S.M., P.E.  
Florida Professional Surveyor and Mapper #4540  
Florida Authorization #B 7342

**OEA, Inc.**  
MARK GOSSELIN, P.E., PH.D.  
FLORIDA P.E. 54594

| SYM  | ZONE        | DESCRIPTION | DATE     | APPROVED |
|--|-------------|-------------|----------|----------|
| REVISIONS  |             |             |          |          |
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| <b>JONES EDMUNDS</b>   |             |             |          |          |
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| SIGNATURES   |             | DATE        |          |          |
| DRAWN  | K. PEREZ    | 08/19/09    |          |          |
| CHECKED  | M. GOSSELIN | 08/19/09    |          |          |
| DESIGNED   | S. SZABO    | 08/19/09    |          |          |
| SUBMITTED  |             | 8/19/09     |          |          |
| APPROVED   |             | DATE        |          |          |
| Mark Gossein   |             | 8/19/09     |          |          |
| TITLE  |             | SIZE        | DWG. NO. | REV      |
| INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES  |             | F           | 79K38423 |          |
| EXISTING CONDITIONS PLAN INDIAN RIVER BRIDGE   |             | PROJ. NO.   | 97766    | SHEET 4  |

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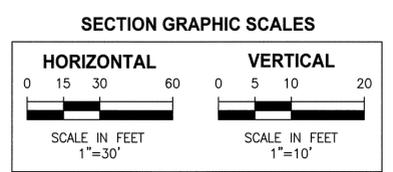
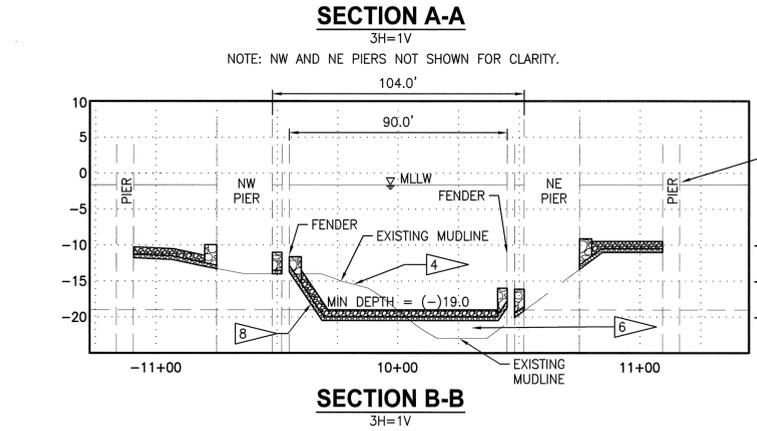
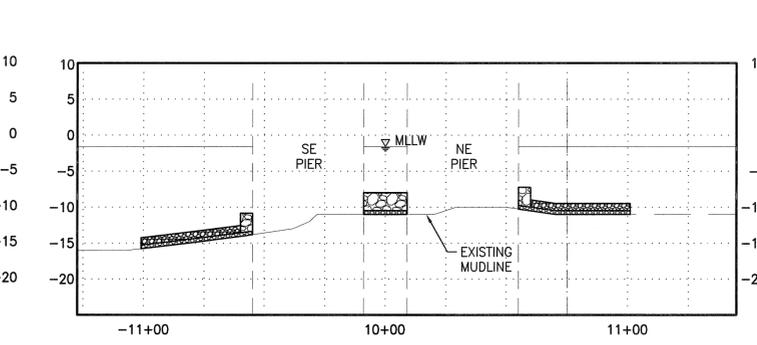
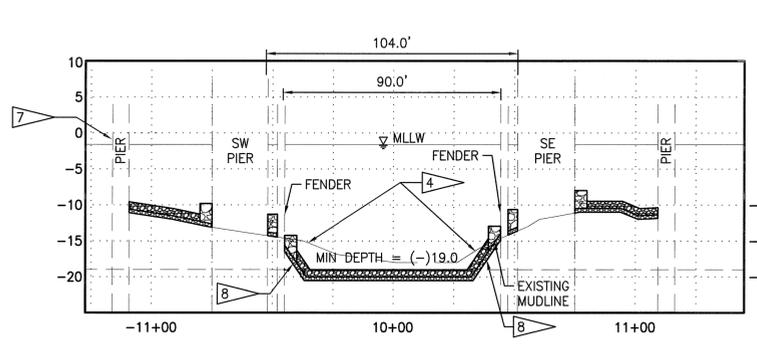
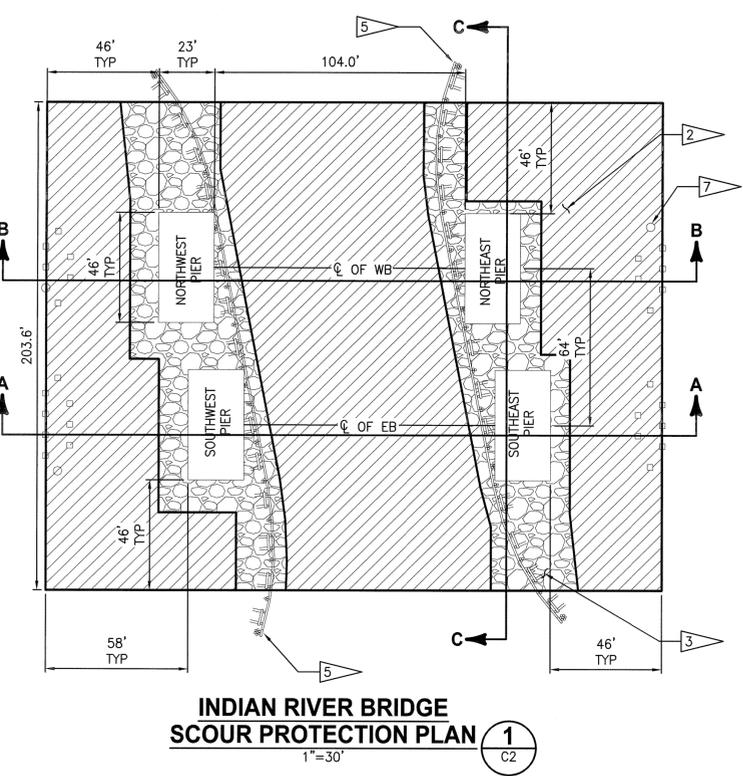
- GENERAL NOTES**
1. MLLW CONVERTED FROM NOAA LOCAL MEAN SEA LEVEL TO NAVD 1988.
  2. MINIMUM DISTANCE FROM PIERS AND FENDERS TO MARINE MATTRESS IS 5 FT.
  3. CHANNEL CLEARANCE IS 28' MINIMUM.
  4. DREDGING SHALL BE PERFORMED BEFORE NEW CABLE INSTALLATION IN ACCORDANCE WITH SPECIFICATION 35 20 23.
  5. SUBAQUEOUS CABLE SHALL BE INSTALLED BEFORE ANY ADDITIONAL WORK CAN PROCEED.
  6. OVERHEAD POWER LINE IS ±120 FEET NORTH OF WESTBOUND CENTERLINE AT UNKNOWN ELEVATION.
  7. NATURAL GAS MAIN IS APPROXIMATELY 100 FEET SOUTH OF THE EASTBOUND CENTERLINE AT UNKNOWN ELEVATION.
  8. FIBER OPTIC CABLE MAY BE PRESENT AND EXTEND ACROSS THE CHANNEL SOUTH OF THE EASTBOUND CENTERLINE AT UNKNOWN ELEVATION. CONTRACTOR SHALL COORDINATE WITH CONTRACTING OFFICER FOR LOCATION.
  9. CONTRACTOR SHALL VERIFY EXISTING UTILITY LOCATIONS AND ELEVATIONS AND DETERMINE METHOD OF DREDGING ACCORDINGLY IN ORDER TO PROTECT UTILITIES.

- FLAG NOTES**
- 1 ▷ BASCULE PIER
  - 2 ▷ TRITON MARINE MATTRESS OR APPROVED EQUAL, SEE DETAIL (4) C8
  - 3 ▷ BANK & SHORE RIPRAP, SEE DETAIL (5) C8
  - 4 ▷ DREDGE TO MIN DEPTH OF (-)20.5
  - 5 ▷ FENDER SYSTEM, SEE DETAIL (1) C7
  - 6 ▷ FILL TO LEVEL ELEVATION OF (-)20.5
  - 7 ▷ APPROACH PIERS (TYP)
  - 8 ▷ ANCHOR MATTRESSES HAVING SLOPES OF 2:1 OR GREATER. A MINIMUM OF ONE ANCHOR IS REQUIRED PER 1 TON LOADING. ANCHOR SHALL BE PLATIPUS-STYLE EARTH ANCHOR SYSTEM AND SHALL BE MANUFACTURED IN ACCORDANCE WITH ISO 9001 STANDARDS.
  - 9 ▷ CONTRACTOR SHALL VERIFY AND PERFORM DREDGING REQUIRED FOR NEW SUBAQUEOUS CABLE INSTALLATION, REFER TO E4

**SCOUR PROTECTION**

MARINE MATTRESS: 0.83 ACRES  
 GEOTEXTILE W/ BANK & SHORE: 0.25 ACRES  
 TOTAL: 1.08 ACRES

**FINISHED DREDGING ELEVATIONS**  
 1"=30'



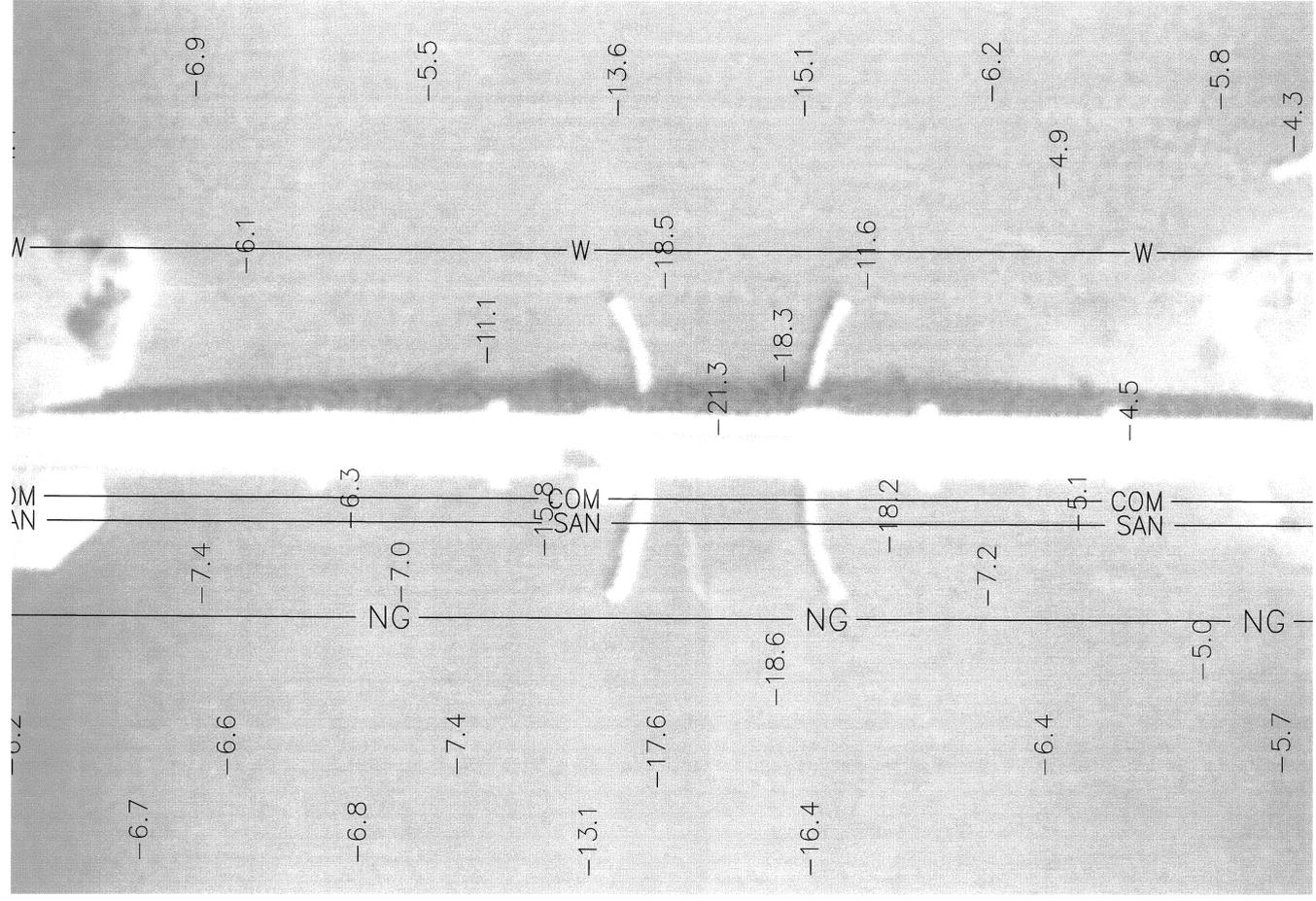
**OEA, Inc.**

MARK GOSSELIN, P.E., PH.D.  
 FLORIDA P.E. 54594

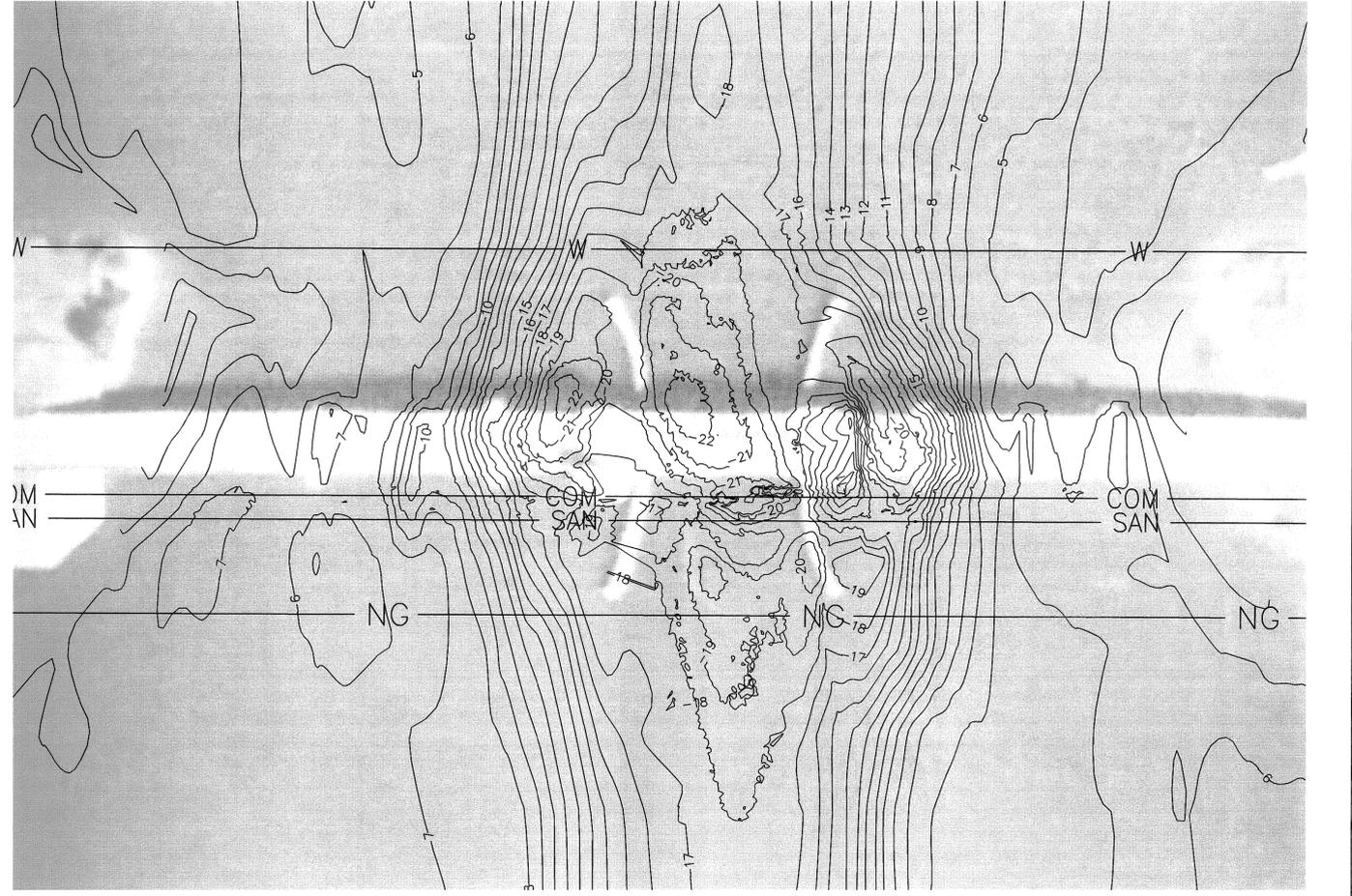
**GRAPHIC SCALE**  
 0 15 30 60  
 SCALE IN FEET  
 1"=30'

| SYM  | ZONE | DESCRIPTION     | DATE | APPROVED |
|--|------|-----------------|------|----------|
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| SIGNATURES   |      | DATE            |      |          |
| DRAWN<br>K. PEREZ  |      | 08/19/09        |      |          |
| CHECKED<br>M. GOSSELIN   |      | 08/19/09        |      |          |
| DESIGNED<br>S. SZABO   |      | 08/19/09        |      |          |
| SUBMITTED<br><i>Stephen M. Goselin</i>   |      | 8/19/09         |      |          |
| APPROVED<br><i>Mark Goselin</i>  |      | 8/19/09         |      |          |
| C2   |      | REV             |      |          |
| TITLE<br>INDIAN RIVER BRIDGE PLAN AND CROSS SECTION  |      | SIZE<br>F       |      |          |
| DWG. NO.<br>79K38423   |      | PROJ. NO. 97766 |      |          |
| SHEET 5  |      |                 |      |          |

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**ELEVATIONS**  
1"=40'



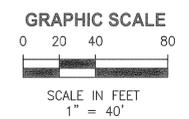
**CONTOURS**  
1"=40'

CONTOURS ARE IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (1988)

- SURVEY NOTES:**
1. THIS HYDROGRAPHIC SURVEY WAS CONDUCTED ON JUNE 27, 30 AND JULY 14-15, 2008.
  2. ALL AZIMUTHS ARE GRID, RECKONED CLOCKWISE FROM NORTH.
  3. THE COORDINATES SHOWN HEREON ARE IN FEET AND ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE (0901), TRANSVERSE MERCATOR PROJECTION, NORTH AMERICAN DATUM, 1983 (NAD83).
  4. VESSEL POSITIONING WAS OBTAINED BY A TRIMBLE, REAL-TIME DIFFERENTIAL GLOBAL POSITIONING SYSTEM (DGPS). CORRECTIONS WERE OBTAINED FROM THE U.S.C.G. NAVBEACON STATION.
  5. SOUNDINGS ARE IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (1988). THIS SURVEY WAS CONDUCTED USING A SURVEY GRADE SINGLE BEAM SOUNDER, WITH A 200KHZ NARROW BEAM TRANSDUCER. ADDITIONALLY, DATA WAS COLLECTED WITH AN ODOM MODEL E53 MULTIBEAM SYSTEM TO BETTER DETERMINE THE SCOURING AROUND THE BRIDGE PILING. A GYRO COMPASS AND 3-AXIS MOTION SENSOR WERE ALSO USED IN THE MULTIBEAM DATA COLLECTION. BOTH SYSTEMS WERE CALIBRATED USING MANUFACTURER'S SPECIFICATION PRIOR TO DATA COLLECTION.
  6. TIDE REDUCTIONS WERE MADE FROM A TIDE STAFF SET RELATIVE TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD, 1929) AND BASED ON THE SURVEY BENCHMARK TABULATED HEREIN.
  7. CONTOURS ARE SHOWN AT ONE-FOOT INTERVALS AND ARE BASED UPON A DIGITAL TERRAIN MODEL (DTM).
  8. UNDERGROUND IMPROVEMENTS OR UTILITIES WERE NOT LOCATED AS PART OF THIS SURVEY AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO ANY DREDGING AND/OR CONSTRUCTION.
  9. GEOGRAPHICAL FEATURES SUCH AS ROADWAYS AND SHORELINES, WERE NOT LOCATED DURING THE COURSE OF THE SURVEY AND ARE SHOWN FOR GRAPHICAL PURPOSES ONLY.
  10. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF THE SURVEY ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THE TIME.
  11. THIS SURVEY IS NOT VALID WITHOUT THE RAISED SEAL AND THE ORIGINAL SIGNATURE OF A FLORIDA LICENSED PROFESSIONAL SURVEYOR AND MAPPER.

| SURVEY CONTROL |               |                    |                    |                          |
|----------------|---------------|--------------------|--------------------|--------------------------|
| CONTROL POINT  | EL(NAVD) FEET | EASTING            | NORTHING           | DESCRIPTION/LOCATION     |
|                |               | NAD 83 EAST (0901) | NAD 83 EAST (0901) |                          |
| G 193          | 14.17         | N/A                | N/A                | B/D STAMPED "G 193 1964" |

AT THE NASA CAUSEWAY OVER THE BANANA RIVER, SET ON THE TOP OF THE NORTHWEST END OF THE NORTHEAST CURB OF THE CAUSEWAY, 15 FEET NORTHEAST OF THE CENTER LINE OF THE BRIDGE, 7.3 FEET SOUTHEAST OF THE NORTHWEST END OF THE CURB AND 1 FOOT ABOVE THE LEVEL OF THE CAUSEWAY.



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J3 Executive Centre  
1200 NW 17th Avenue, Suite 3  
Delray Beach, Florida 33445

**OEA, Inc.**  
Certifications:  
William T. Soder, P.S.M., P.E.  
Florida Professional Surveyor and Mapper #5809  
Florida Authorization #B 7342  
Kenneth C. Jackson, P.S.M.  
Florida Professional Surveyor and Mapper #4549  
Florida Authorization #B 7342

**MARK GOSSELIN, P.E., PH.D.**  
FLORIDA P.E. 54594

| SYM   | ZONE | DESCRIPTION | DATE | APPROVED |
|---|------|-------------|------|----------|
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| SIGNATURES  |      | DATE        |      |          |
| DRAWN<br>K. PEREZ   |      | 08/19/09    |      |          |
| CHECKED<br>M. GOSSELIN  |      | 08/19/09    |      |          |
| DESIGNED<br>S. SZABO  |      | 08/19/09    |      |          |
| SUBMITTED   |      | 3/1/10      |      |          |
| APPROVED  |      | DATE        |      |          |
| Mark Goselin  |      | 8/19/09     |      |          |
| TITLE   |      | DWG. NO.    |      |          |
| C3  |      | F 79K38423  |      |          |
| PROJECT   |      | SHEET       |      |          |
| PROJ. NO. 97766   |      | 6           |      |          |

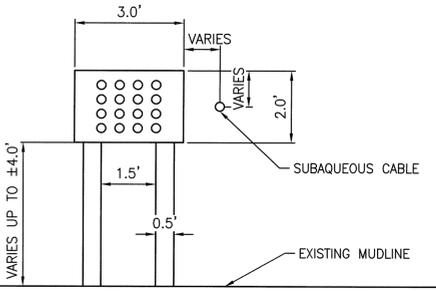
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
JOHN F. KENNEDY SPACE CENTER, NASA  
KENNEDY SPACE CENTER, FLORIDA

**INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES**

**EXISTING CONDITIONS BANANA RIVER BRIDGE**

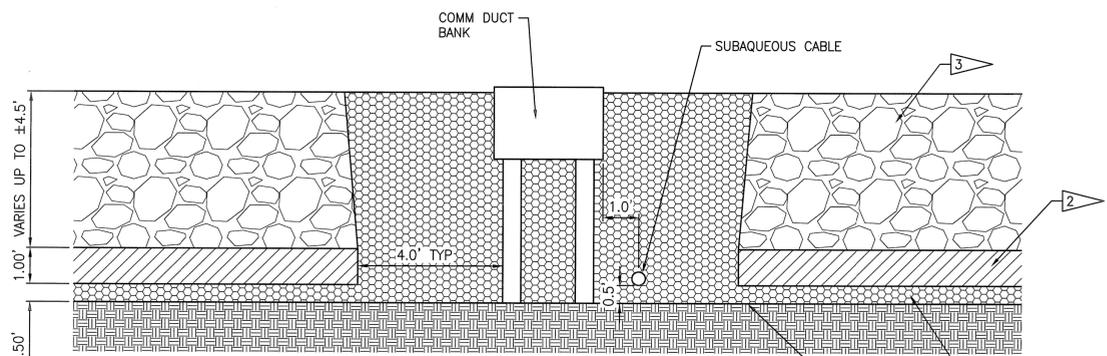
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8 7 6 5 4 3 2 1



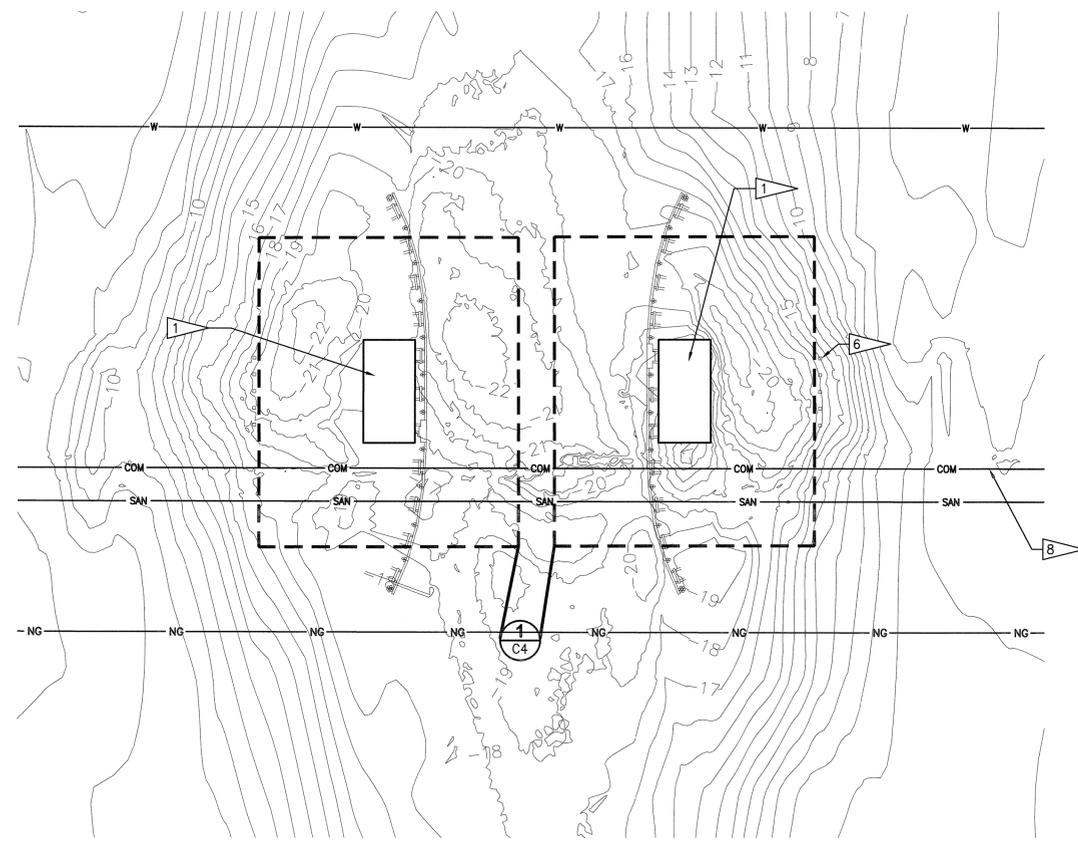
- NOTES:**
- SUBAQUEOUS CABLE CONSTRUCTED 1' OFF OF COMM DUCT BANK AT MID ELEVATION OF COMM DUCT BANK.
  - CURRENT SUBAQUEOUS CABLE LOCATION MAY VARY AND MAY DRAPE DOWN TO RIVER BOTTOM.

**EXISTING COMM DUCTBANK SECTION 2**  
1"=5' C4



- NOTES:**
- BANK AND SHORE SHALL OVERLAP MARINE MATTRESS MAX ±5 FEET.
  - THE EXISTING SUBAQUEOUS CABLE SHALL BE PLACED ON THE CHANNEL BOTTOM OR SHALL BE PLACED AS CLOSE TO THE CHANNEL BOTTOM AS CABLE WILL ALLOW.

**TYPICAL COMM DUCTBANK SCOUR PROTECTION SECTION 3**  
1"=5' C4



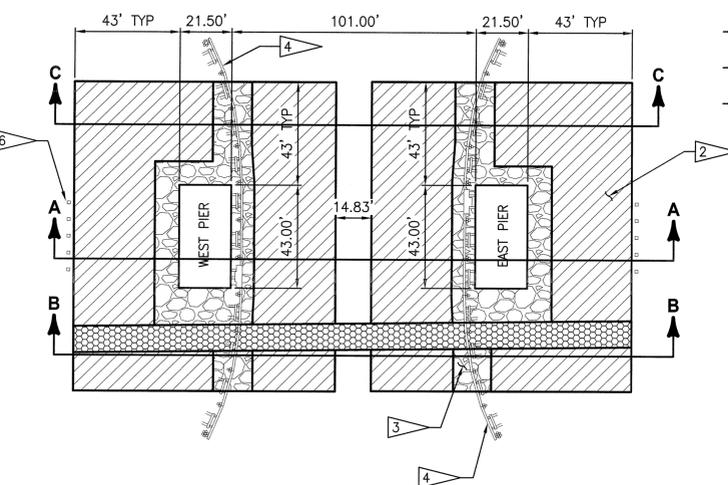
**FINISHED DREDGING ELEVATIONS**  
1"=30'

- GENERAL NOTES**
- MLLW CONVERTED FROM NOAA LOCAL MEAN SEA LEVEL TO NAVD 1988.
  - MINIMUM DISTANCE FROM PIERS AND FENDERS TO MARINE MATTRESS IS 5 FT.
  - CHANNEL CLEARANCE IS 21.1' MINIMUM.
  - EXISTING WATERLINE IS ±110 FEET NORTH OF CENTERLINE OF PIER AT UNKNOWN ELEVATION.
  - EXISTING SANITARY LINE IS ±50 FEET SOUTH OF CENTERLINE OF PIER AT UNKNOWN ELEVATION.
  - EXISTING NATURAL GAS MAIN IS ±10 FEET SOUTH OF SOUTH EDGE OF FENDER SYSTEM AT UNKNOWN ELEVATION.
  - CONTRACTOR SHALL VERIFY EXISTING UTILITY LOCATIONS AND ELEVATIONS AND DETERMINE METHOD OF DREDGING ACCORDINGLY IN ORDER TO PROTECT UTILITIES.

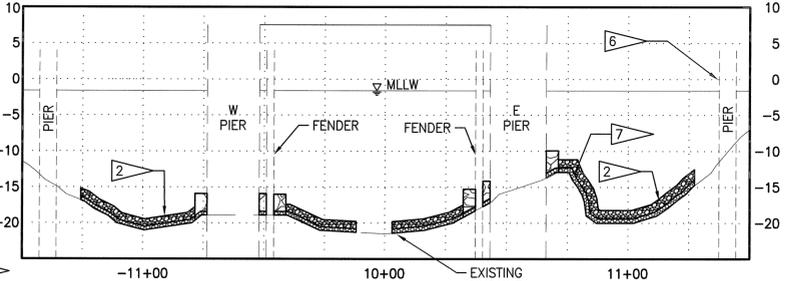
- FLAG NOTES**
- BASCULE PIER
  - TRITON MARINE MATTRESS OR APPROVED EQUAL, SEE DETAIL C4/C8
  - BANK & SHORE RIPRAP, SEE DETAIL C5/C8
  - FENDER SYSTEM, SEE DETAIL C1/C7
  - NOT USED
  - APPROACH PIERS (TYP)
  - ANCHOR MATTRESSES HAVING SLOPES OF 2:1 OR GREATER. A MINIMUM OF ONE ANCHOR IS REQUIRED PER 1 TON LOADING. ANCHOR SHALL BE PLATIPUS-STYLE EARTH ANCHOR SYSTEM AND SHALL BE MANUFACTURED IN ACCORDANCE WITH ISO 9001 STANDARDS.
  - EXISTING COMM DUCTBANK IS +/- 30 FEET WEST OF THE CENTERLINE OF PIER. EXISTING COMM DUCTBANK IS APPROXIMATELY 4 FEET ABOVE EXISTING GRADE IN THE CHANNEL. THE CONTRACTOR SHALL PERFORM AN UNDERWATER INSPECTION TO VERIFY THE CONDITION AND LOCATION OF THE COMM DUCTBANK AND SUBAQUEOUS CABLE BEFORE CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT AN INSTALLATION PLAN (WHICH WILL INCLUDE PROPOSED INSTALLATION METHODS) FOR APPROVAL BY THE CO IN ACCORDANCE WITH SPECIFICATION 35.42.35 THAT INCLUDES SAFEGUARDING THE COMM DUCTBANK AND SUBAQUEOUS CABLE DURING CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL PROTECT THE COMM DUCTBANK AND STRUCTURE, AND SUBAQUEOUS CABLE DURING CONSTRUCTION ACTIVITIES. SEE DETAILS C2/C4, C3/C4

**SCOUR PROTECTION**

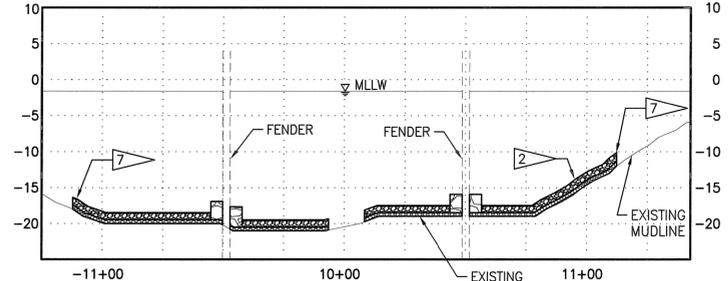
|                             |            |
|-----------------------------|------------|
| BEDDING STONE:              | 0.06 ACRES |
| MARINE MATTRESS:            | 0.42 ACRES |
| GEOTEXTILE W/ BANK & SHORE: | 0.11 ACRES |
| TOTAL:                      | 0.59 ACRES |



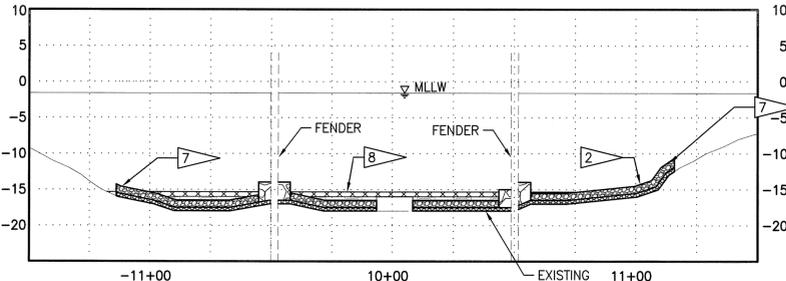
**BANANA RIVER BRIDGE SCOUR PROTECTION PLAN 1**  
1"=30' C4



**SECTION A-A**  
3H = 1V

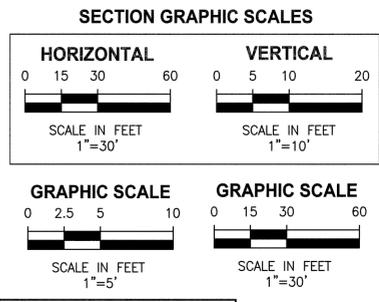


**SECTION C-C**  
3H = 1V



**SECTION B-B**  
3H = 1V

NOTE: E AND W PIERS NOT SHOWN FOR CLARITY.



**OEA, Inc.**

MARK GOSSELIN, P.E., PH.D.  
FLORIDA P.E. 54594

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| SIGNATURES  |      | DATE            |      |          |
| DRAWN<br>K. PEREZ   |      | 08/19/09        |      |          |
| CHECKED<br>M. GOSSELIN  |      | 08/19/09        |      |          |
| DESIGNED<br>S. SZABO  |      | 08/19/09        |      |          |
| SUBMITTED   |      | 8/19/09         |      |          |
| APPROVED  |      | DATE            |      |          |
| Mark Gosse  |      | 8/19/09         |      |          |
| TITLE   |      | DWG. NO.        |      |          |
| C4  |      | F 79K38423      |      |          |
|   |      | PROJ. NO. 97766 |      |          |
|   |      | SHEET 7         |      |          |

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**ELEVATIONS**  
1"=20'



**CONTOURS**  
1"=20'

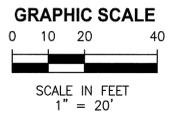
CONTOURS ARE IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (1988)

**SURVEY NOTES:**

1. THIS HYDROGRAPHIC SURVEY WAS CONDUCTED ON OCTOBER 3, 2008.
2. ALL AZIMUTHS ARE GRID, RECKONED CLOCKWISE FROM NORTH.
3. THE COORDINATES SHOWN HEREON ARE IN FEET AND ARE BASED ON THE FLORIDA STATE PLANE COORDINATE SYSTEM, EAST ZONE (0901), TRANSVERSE MERCATOR PROJECTION, NORTH AMERICAN DATUM, 1983 (NAD83).
4. VESSEL POSITIONING WAS OBTAINED BY A TRIMBLE, REAL-TIME DIFFERENTIAL GLOBAL POSITIONING SYSTEM (DGPS). CORRECTIONS WERE OBTAINED FROM THE U.S.C.G. NAVBEACON STATION.
5. SOUNDINGS ARE IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM (1988). THIS SURVEY WAS CONDUCTED USING A SURVEY GRADE SINGLE BEAM SOUNDER, WITH A 200kHz NARROW BEAM TRANSDUCER. ADDITIONALLY, DATA WAS COLLECTED WITH AN ODOM MODEL ES3 MULTIBEAM SYSTEM TO BETTER DETERMINE THE SCOURING AROUND THE BRIDGE PILINGS. A GYRO COMPASS AND 3-AXIS MOTION SENSOR WERE ALSO USED IN THE MULTIBEAM DATA COLLECTION. BOTH SYSTEMS WERE CALIBRATED USING MANUFACTURER'S SPECIFICATION PRIOR TO DATA COLLECTION.
6. TIDE REDUCTIONS WERE MADE FROM A TIDE STAFF SET RELATIVE TO THE NATIONAL GEODETIC VERTICAL DATUM (NGVD, 1929) AND BASED ON THE SURVEY BENCHMARK TABULATED HEREIN.
7. CONTOURS ARE SHOWN AT ONE-FOOT INTERVALS AND ARE BASED UPON A DIGITAL TERRAIN MODEL (DTM). CONTOURS ARE DERIVED FROM MULTIBEAM DATA AND DEPICTS THE LIMITS OF THE MULTIBEAM SURVEY.
8. UNDERGROUND IMPROVEMENTS OR UTILITIES WERE NOT LOCATED AS PART OF THIS SURVEY AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO ANY DREDGING AND/OR CONSTRUCTION.
9. GEOGRAPHICAL FEATURES SUCH AS ROADWAYS AND SHORELINES, WERE NOT LOCATED DURING THE COURSE OF THE SURVEY AND ARE SHOWN FOR GRAPHICAL PURPOSES ONLY.
10. THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF THE SURVEY ON THE DATES INDICATED AND CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THE TIME.
11. THIS SURVEY IS NOT VALID WITHOUT THE RAISED SEAL AND THE ORIGINAL SIGNATURE OF A FLORIDA LICENSED PROFESSIONAL SURVEYOR AND MAPPER.

| SURVEY CONTROL         |               |                            |                             |                             |
|------------------------|---------------|----------------------------|-----------------------------|-----------------------------|
| CONTROL POINT          | EL(NAVD) FEET | EASTING NAD 83 EAST (0901) | NORTHING NAD 83 EAST (0901) | DESCRIPTION/LOCATION        |
| 872 1374 TIDAL 1 RESET | 4.94          | N/A                        | N/A                         | DNR B/D STAMPED "NO 1 1972" |

10.9 MI SE FROM OAK HILL, BEGIN AT THE POST OFFICE IN OAK HILL, GO 0.1 MILE WEST ALONG WEST HALFAX AVENUE TO THE INTERSECTION OF U.S. HIGHWAY 1, GO 2.2 MILES SOUTH-SOUTHEAST ALONG U.S. HIGHWAY 1 TO THE JUNCTION OF KENNEDY PARKWAY, GO 8.7 MILES SOUTHEAST ALONG KENNEDY PARKWAY TO THE HAULOVER CANAL AND THE MARK. THE MARK IS SET FLUSH IN THE NORTHWEST END OF THE CONCRETE BULKHEAD, LOCATED UNDER THE NORTH END OF THE BRIDGE. THE MARK BEARS 35.4 FEET WEST OF THE WEST SIDE OF THE BRIDGE.



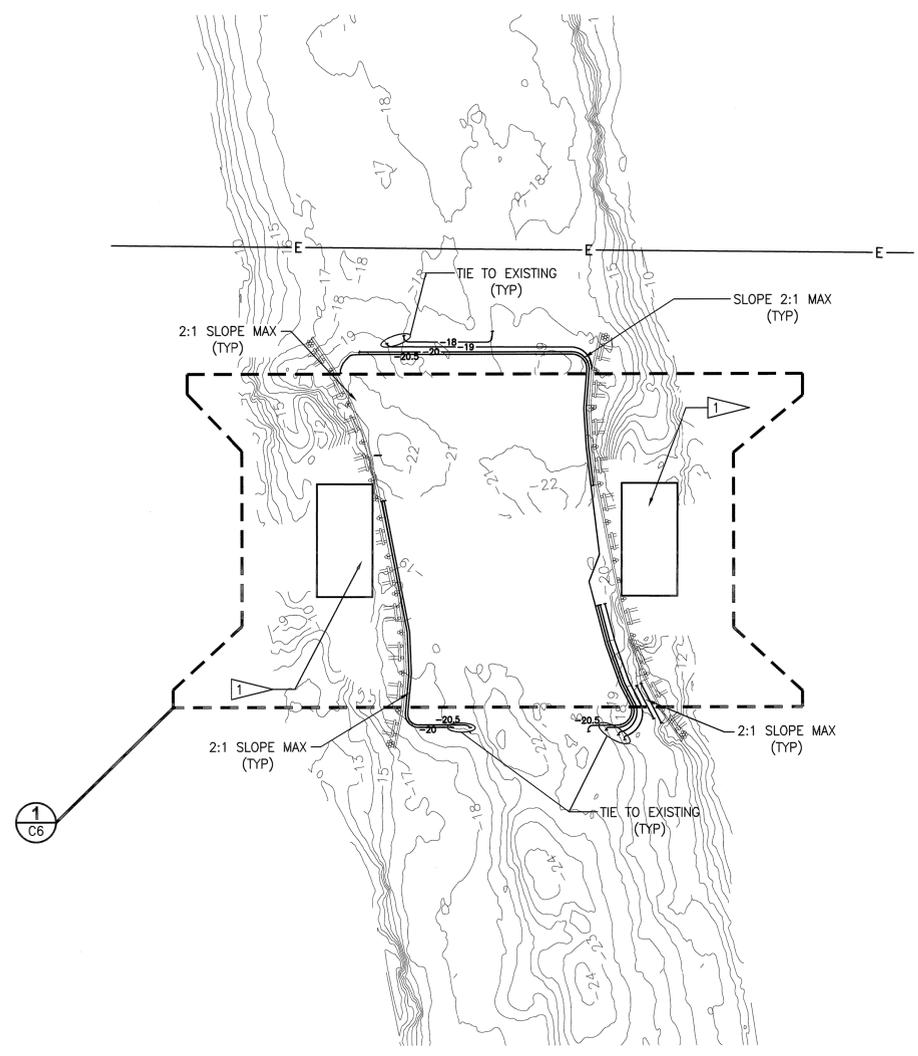
**SEA DIVERSIFIED, INC.**  
Surveying and Engineering Applications  
Tel: (561) 243-4920  
Fax: (561) 243-4957  
J3 Executive Centre  
1200 NW 17th Avenue, Suite 3  
Delray Beach, Florida 33445

**OEA, Inc.**  
Certifications:  
William T. Soder, P.S.M., P.E.  
Florida Professional Surveyor  
and Mapper #6509  
Florida Authorization #B 7342  
Kenneth C. Jackson, P.S.M., P.E.  
Florida Professional Surveyor  
and Mapper #6549  
Florida Authorization #B 7342

**MARK GOSSELIN, P.E., PH.D.**  
FLORIDA P.E. 54594

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| SIGNATURES  | DATE             | NATIONAL AERONAUTICS AND SPACE ADMINISTRATION<br>JOHN F. KENNEDY SPACE CENTER, NASA<br>KENNEDY SPACE CENTER, FLORIDA |  |          |
| DRAWN<br>K. PEREZ   | 08/19/09         | INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES                                      |  |          |
| CHECKED<br>M. GOSSELIN  | 08/19/09         |  |  |          |
| DESIGNED<br>S. SZABO  | 08/19/09         |  |  |          |
| SUBMITTED<br><i>Mark Goselin</i>  |                  | 08/19/09   | EXISTING CONDITIONS PLAN HAULOVER CANAL BRIDGE |          |
| APPROVED<br><i>Mark Goselin</i>   | DATE<br>08/19/09 | SIZE<br>F  | DWG. NO.<br>79K38423                           | REV      |
| C5  | TITLE            | PROJ. NO. 97766  | SHEET 8  |          |

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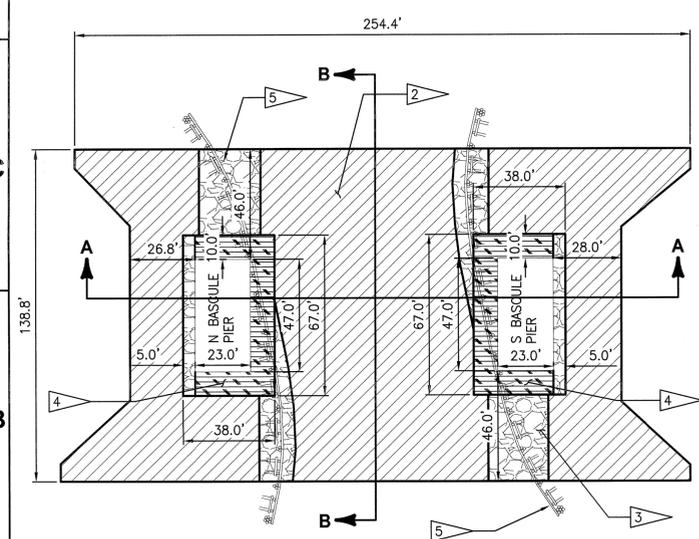
**FINISHED DREDGING ELEVATIONS**  
1"=30'

- GENERAL NOTES**
1. MLLW CONVERTED FROM NOAA LOCAL MEAN SEA LEVEL TO NAVD 1988.
  2. MINIMUM DISTANCE FROM PIERS AND FENDERS TO MARINE MATTRESS IS 5 FT.
  3. CHANNEL CLEARANCE IS 20.0' MINIMUM.
  4. ELECTRICAL LINE IS ±115' NORTHEAST OF CENTERLINE OF PIER AT UNKNOWN ELEVATION.
  5. CONTRACTOR SHALL VERIFY EXISTING UTILITY LOCATIONS AND ELEVATIONS AND DETERMINE METHOD OF DREDGING ACCORDINGLY IN ORDER TO PROTECT UTILITIES.
  6. THE CONTRACTOR SHALL PLACE ADDITIONAL BEDDING STONE OVER EXISTING RIPRAP TO CREATE A LEVEL SURFACE TO PREVENT DAMAGE TO GEOTEXTILE FABRIC AND MARINE MATTRESS SYSTEM. SEE DETAIL **6 C6**.
  7. ANY RIPRAP FOUND OUTSIDE OF EXISTING RIPRAP AREAS SHOWN SHALL BE MOVED TO BANK AND SHORE RIPRAP AREA AT PIERS.

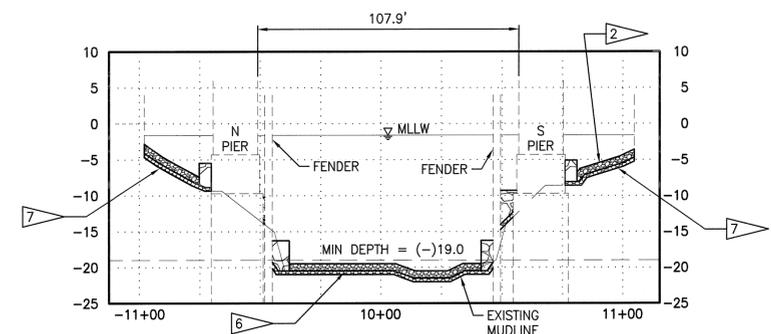
- FLAG NOTES**
1. BRIDGE PIER
  2. TRITON MARINE MATTRESS OR APPROVED EQUAL, SEE DETAIL **4 C8**
  3. BANK & SHORE RIPRAP, SEE DETAIL **5 C8**
  4. CONTRACTOR SHALL PROVIDE BANK & SHORE RIPRAP AT EACH PIER OVER EXISTING RIPRAP. SEE DETAIL **6 C8**
  5. FENDER SYSTEM, SEE DETAIL **1 C7**
  6. DREDGE TO MINIMUM DEPTH OF (-)20.5
  7. ANCHOR MATTRESSES HAVING SLOPES OF 2:1 OR GREATER. A MINIMUM OF ONE ANCHOR IS REQUIRED PER 1 TON LOADING. ANCHOR SHALL BE PLATIPUS-STYLE EARTH ANCHOR SYSTEM AND SHALL BE MANUFACTURED IN ACCORDANCE WITH ISO 9001 STANDARDS.

**SCOUR PROTECTION**

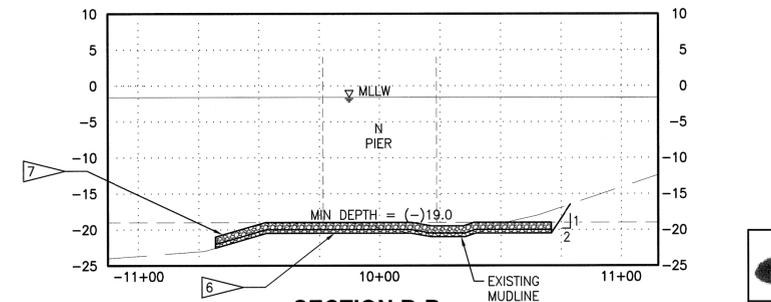
|                             |            |
|-----------------------------|------------|
| MARINE MATTRESS:            | 0.51 ACRES |
| GEOTEXTILE W/ BANK & SHORE: | 0.13 ACRES |
| TOTAL:                      | 0.64 ACRES |
| EXISTING RIPRAP:            | 0.05 ACRES |



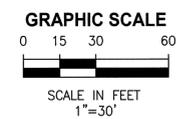
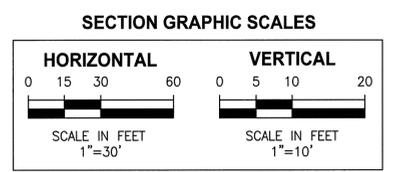
**HAULOVER CANAL BRIDGE SCOUR PROTECTION PLAN**  
1"=30' **1 C6**



**SECTION A-A**  
3H = 1V



**SECTION B-B**  
3H = 1V



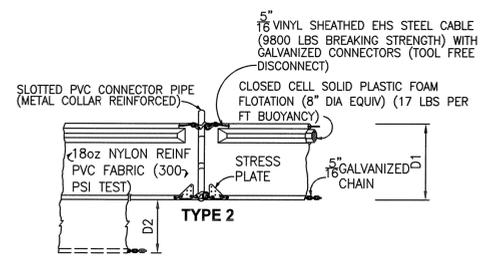
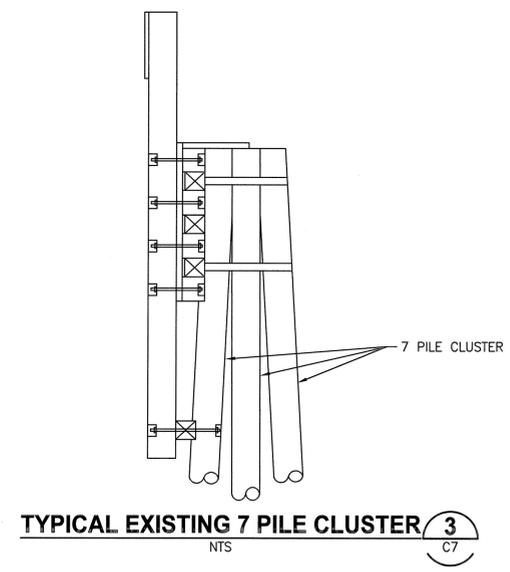
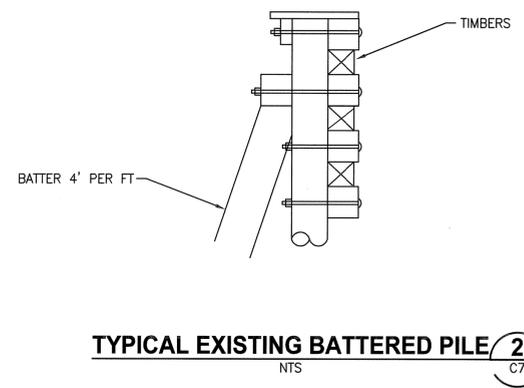
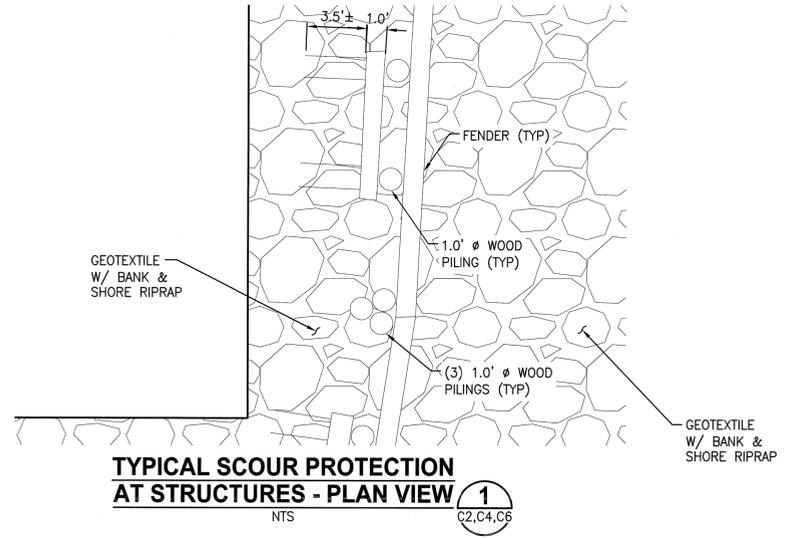
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MARK GOSSELIN, P.E., PH.D.  
FLORIDA P.E. 54594

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| DRAWN<br>K. PEREZ  |      | 08/19/09    |          |          |
| CHECKED<br>M. GOSSELIN   |      | 08/19/09    |          |          |
| DESIGNED<br>S. SZABO   |      | 08/19/09    |          |          |
| SUBMITTED<br><i>Mark Goselin</i>   |      | 8/19/09     |          |          |
| APPROVED<br><i>Mark Goselin</i>  |      | 8/19/09     |          |          |
| TITLE  |      | SIZE        | DWG. NO. | REV      |
| HAULOVER CANAL BRIDGE PLAN AND ELEVATION   |      | F           | 79K38423 |          |
| PROJECT NO. 97766  |      | SHEET 9     |          |          |

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**SEDIMENT AND EROSION CONTROL NOTES**

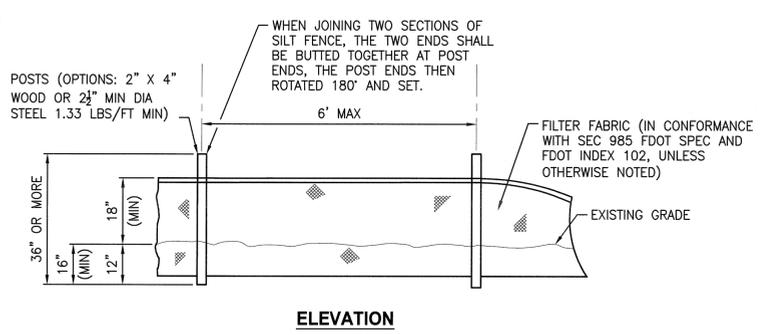
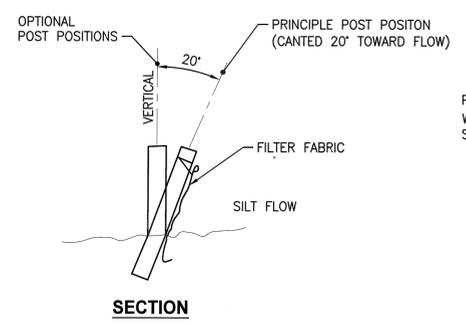
- THE SITE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED.
- ADDITIONAL PROTECTION – ON-SITE PROTECTION IN ADDITION TO THE ABOVE MUST BE PROVIDED THAT WILL NOT PERMIT SILT TO LEAVE THE PROJECT CONFINES DUE TO UNSEEN CONDITIONS OR ACCIDENTS.
- SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
- SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR SHOULD BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED IMMEDIATELY.
- THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
- THE CONTRACTOR SHALL MAINTAIN A CLEAR PATH FOR ALL SURFACE WATER DRAINAGE STRUCTURES AND SWALES AS WELL AS PROVIDE MEASURES TO PREVENT SILTATION OF STORMWATER TREATMENT SYSTEMS AND CONTROL STRUCTURES DURING ALL PHASES OF CONSTRUCTION. THE CONTRACTOR SHALL UTILIZE WHATEVER MEANS NECESSARY TO MANAGE STORMWATER SUCH THAT IMPACT TO CONSTRUCTION IS MINIMIZED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK, INCLUDING PROVIDING EQUIPMENT, LABOR, FILL, ETC. NECESSARY TO REMEDIATE AND/OR RESTORE ALL AREAS IMPACTED BY EROSION, RUNOFF, AND STORMWATER.
- FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL – A GUIDE TO SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION (F.D.E.R.) CHAPTER 6.
- THIS PLAN INDICATES THE MINIMUM EROSION AND SEDIMENT MEASURES REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL APPLICABLE RULES, REGULATIONS AND WATER QUALITY GUIDELINES AND MAY NEED TO INSTALL ADDITIONAL CONTROLS.
- THE CONTRACTOR SHALL BE REQUIRED TO RESPOND TO ALL REGULATORY AGENCY INQUIRIES, RELATIVE TO COMPLIANCE FOR EROSION AND SEDIMENTATION CONTROL. THE COST OF THIS COMPLIANCE SHALL BE PART OF THE CONTRACT.
- THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS AND SPECIFICATIONS AND THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT RULES AND REGULATIONS.
- THESE PLANS, INCLUDING THE EROSION AND SEDIMENT CONTROL PLAN, INDICATE THE MINIMUM EROSION & SEDIMENT CONTROL MEASURES REQUIRED FOR THIS PROJECT. CONTRACTOR SHALL ENSURE CONFORMANCE TO STATE AND FEDERAL WATER QUALITY STANDARDS AND MAY NEED TO INSTALL ADDITIONAL CONTROLS TO CONFORM TO AGENCIES REQUIREMENTS. IF A WATER QUALITY VIOLATION OCCURS, THE CONTRACTOR SHALL BE WHOLLY RESPONSIBLE FOR ALL DAMAGE AND ALL COSTS WHICH MAY RESULT INCLUDING LEGAL FEES, CONSULTANT FEES, CONSTRUCTION COSTS, AND FINES.



D1 = 5' STD (SINGLE PANEL FOR DEPTHS 5' OR LESS)  
 D2 = 5' STD (ADDITIONAL PANEL FOR DEPTHS 5')  
 CURTAIN TO REACH BOTTOM UP TO DEPTHS OF 12 FEET. ADDITIONAL PANELS TO BE USED FOR DEPTHS GREATER THAN 12 FEET UNLESS SPECIAL DEPTH CURTAINS SPECIFICALLY CALL FOR IN THE PLANS OR AS DETERMINED BY THE ENGINEER. THE CONTRACTOR MAY USE A CUSTOM MADE SINGLE PANEL THAT REACHES THE BOTTOM DEPTH OF THE CHANNEL.

- NOTICE:
- COMPONENTS OF TYPE 2 MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPE 2 SHALL BE AS APPROVED BY THE CONTRACTING OFFICER.
  - TURBIDITY BARRIERS ARE TO BE USED IN ALL PERMANENT BODIES OF WATER REGARDLESS OF WATER DEPTH.
  - NUMBER AND SPACING OF ANCHORS DEPENDENT ON CURRENT VELOCITIES AND SHALL BE PROVIDED AT A MAXIMUM SPACING OF EVERY 100 FT.
  - DEPLOYMENT OF BARRIER AROUND PILE LOCATIONS MAY VARY TO ACCOMMODATE CONSTRUCTION OPERATIONS.
  - NAVIGATION MAY REQUIRE SEGMENTING BARRIER DURING CONSTRUCTION OPERATIONS.

**TYPICAL FLOATING TURBIDITY BARRIER**  
 NTS



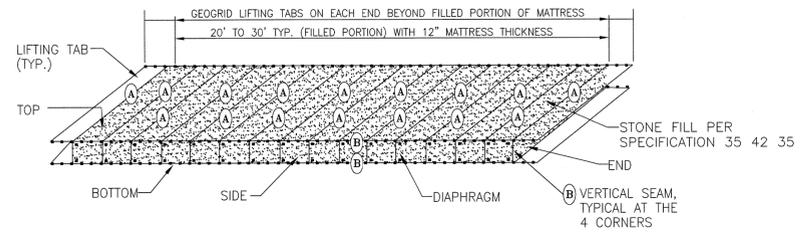
**TYPICAL SILT FENCE**  
 NTS

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| SIGNATURES  |           | DATE  |          |          |
| DRAWN   | K. PEREZ  | 08/19/09  |          |          |
| CHECKED   | K. RIVERA | 08/19/09  |          |          |
| DESIGNED  | S. SZABO  | 08/19/09  |          |          |
| SUBMITTED   |           | 9/1/09  |          |          |
| APPROVED  |           | DATE  |          |          |
| [Signature]   |           | 8/19/09   |          |          |
| NATIONAL AERONAUTICS AND SPACE ADMINISTRATION<br>JOHN F. KENNEDY SPACE CENTER, NASA<br>KENNEDY SPACE CENTER, FLORIDA  |           | INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES |          |          |
| EROSION AND SEDIMENTATION CONTROL PLAN NOTES  |           |   |          |          |
| C7  | SIZE      | DWG. NO.  | REV      |          |
|   | F         | 79K38423  |          |          |
| TITLE   |           | PROJ. NO. 97766   | SHEET 10 |          |

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NOTE: TYPICAL SPACING OF DIAPHRAGMS IS EVERY THREE APERTURE LENGTHS. A SHORTER SPACING MAY BE USED IN ORDER TO MATCH THE REQUIRED MATTRESS LENGTH. LENGTH OF END PIECES AND INTERNAL DIAPHRAGMS SHALL BE: FOR 12" (FILLED) MATTRESS THICKNESS: 2 GRID APERTURES LONG;

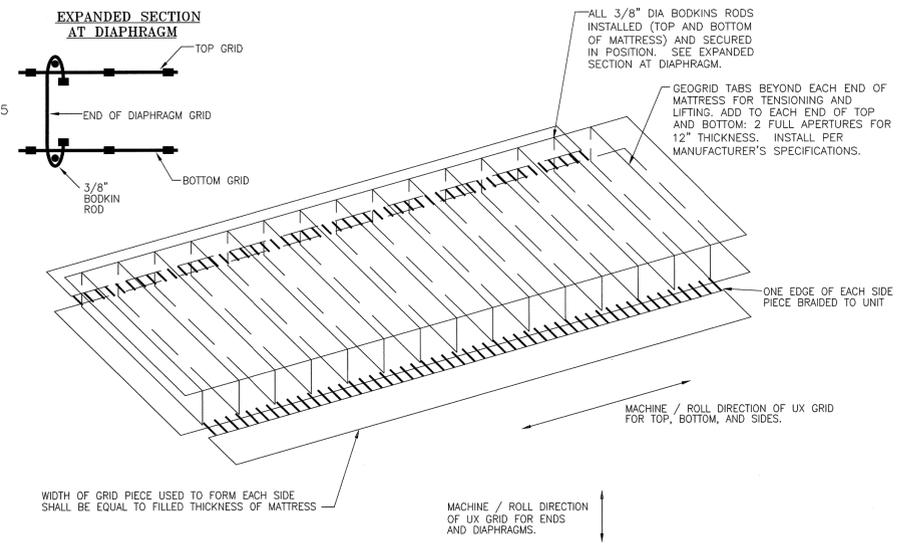
SEE TYPICAL CONFIGURATION OF FILLED MATTRESS FOR ADDITIONAL DIMENSIONS AND MATERIAL TYPES.



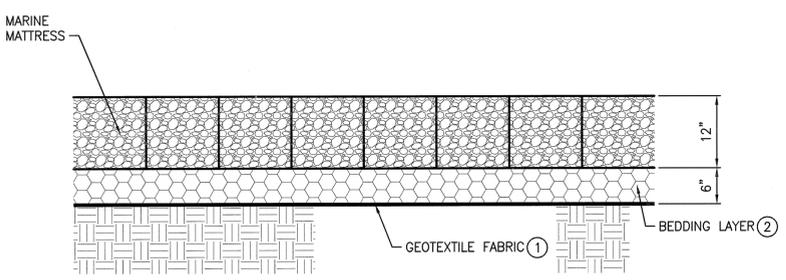
- (A) INDICATES BODKIN 3/8" DIAMETER HDPE BODKIN ROD
- (B) INDICATES BRAIDED SEAM USING 3/16" DIAMETER HIGH UV HDPE BRAID

NOTES:  
 ENDS, TOP, BOTTOM, SIDES AND ANY EXTRA LENGTH USED FOR LIFTING OR ANCHORING PURPOSES SHALL BE COMPOSED OF TENSAR UXTRITON2 GEOGRID.  
 INTERNAL DIAPHRAGMS SHALL BE COMPOSED OF TENSAR UXTRITON1 GEOGRID.  
 NOMINAL WIDTH OF UNITS: 5 FT (FILLED), 4.3 FT (UNFILLED).  
 TYPICAL THICKNESS (FILLED): 12 INCHES  
 PLASTIC CABLE TIES MAY BE USED TO SECURE BODKIN CONNECTORS IN POSITION PRIOR TO TENSIONING OR FILLING OF MATTRESS UNITS.

**TYPICAL CONFIGURATION OF FILLED MATTRESS UNITS** 1  
 NTS C8

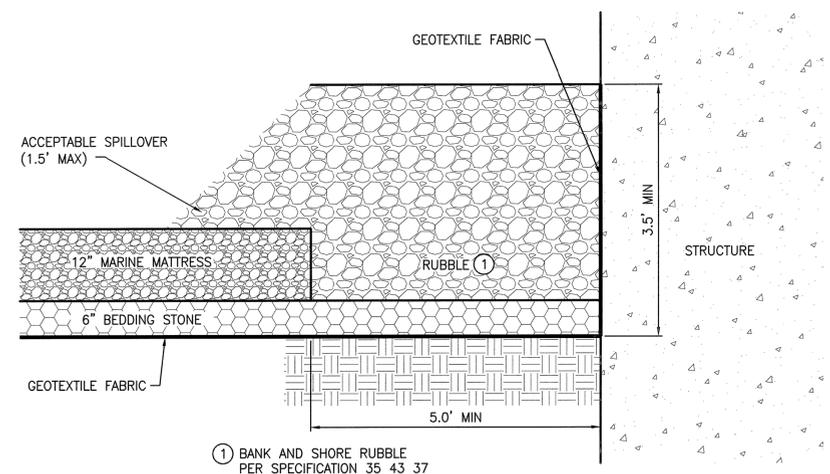


**TYPICAL CONFIGURATION OF FABRICATED MATTRESS** 2  
 NTS C8



- (1) GEOTEXTILE FABRIC PER SPECIFICATION 31 05 22
- (2) BEDDING STONE PER SPECIFICATION 35 43 37

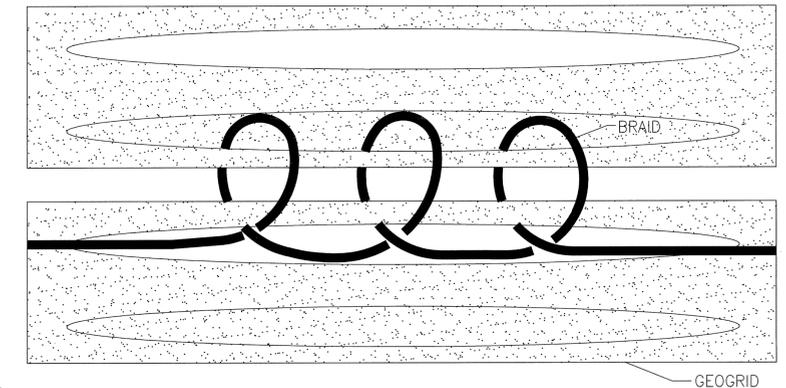
**TYPICAL MARINE MATTRESS DETAIL** 4  
 NTS C2,C4,C6



- (1) BANK AND SHORE RUBBLE PER SPECIFICATION 35 43 37

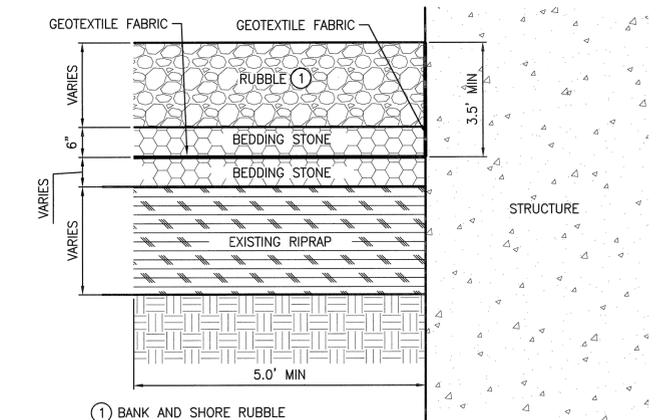
NOTE: BANK AND SHORE RIPRAP MAY EXTEND GREATER THAN 5 FEET BUT NO MORE THAN 8 FEET IN ORDER TO ENSURE CONTINUOUS SCOUR PROTECTION IS PROVIDED FOR ALL REQUIRED AREAS.

**TYPICAL SCOUR PROTECTION AT STRUCTURES** 5  
 NTS C2,C4,C6



NOTES:  
 ALL CUT ENDS OF BRAID MATERIAL SHALL BE KNOTTED WITHIN 1/2" TO 2" OF THE END TO PREVENT RAVELING OF BRAID.  
 AT ALL ENDS OF ALL BRAIDED SEAMS THE BRAID SHALL BE KNOTTED TO THE GEOGRID IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.  
 AT ALL ENDS OF ALL PIECES OF BRAID MATERIAL USED, THE BRAID SHALL BE KNOTTED TO SPLICE IT TO THE NEXT PIECE OF BRAID, OR TO SECURE IT TO THE GEOGRID. EACH BRAIDED SEAM SHALL BE CONTINUOUS, WITH SECURELY KNOTTED SPLICES ALLOWED. THE BRAID SHALL BE SECURELY KNOTTED TO THE GEOGRID AT A SPACING NOT TO EXCEED 6 FT ALONG ANY SEAM.  
 THE BRAID SHALL BE STITCHED THROUGH EACH PAIR OF APERTURES ALONG THE SEAM AT LEAST ONCE, AND THE MINIMUM NUMBER OF STITCHES PER FOOT ALONG THE SEAM SHALL BE SIX (6). THE SPACING OF STITCHES ALONG EACH SEAM SHALL BE REASONABLY UNIFORM.  
 ALL KNOTS SHALL BE TIED IN A MANNER TO PREVENT SLIPPING AND CINCHING IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.  
 THE WRAPS ALONG THE SEAM SHALL BE SUFFICIENTLY TIGHT TO CLOSE THE GAP BETWEEN THE ADJACENT PIECES OF GEOGRID, BUT SHALL NOT BE OVER-TIGHTENED SUCH THAT THE GEOGRID BINDS ALONG THE SEAM.

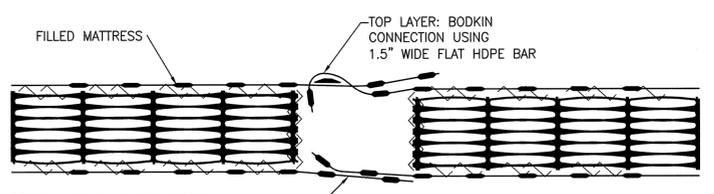
**TYPICAL STITCHED SEAM DETAILS** 3  
 NTS C8



- (1) BANK AND SHORE RUBBLE PER SPECIFICATION 35 43 37

NOTE:  
 1. THE CONTRACTOR SHALL PLACE ADDITIONAL BEDDING STONE OVER EXISTING RIPRAP TO CREATE A LEVEL SURFACE TO PREVENT DAMAGE TO GEOTEXTILE FABRIC AND MARINE MATTRESS SYSTEM.  
 2. BANK AND SHORE RIPRAP MAY EXTEND GREATER THAN 5 FEET BUT NO MORE THAN 8 FEET IN ORDER TO ENSURE CONTINUOUS SCOUR PROTECTION IS PROVIDED FOR ALL REQUIRED AREAS.

**TYPICAL SCOUR PROTECTION AT EXISTING RIPRAP** 6  
 NTS C6



NOTES:  
 1. END-TO-END MAY BE REQUIRED DEPENDING ON MATTRESS LAYOUT DESIGN.  
 2. END-TO-END DETAIL NOT SHOWN IN TIGHTENED POSITION.

**END-TO-END SPLICE OF MATTRESS** 7  
 NTS C8

**OEA, Inc.**  
 MARK GOSSELIN, P.E., PH.D.  
 FLORIDA P.E. 54594

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| <b>JONES EDMUNDS</b>   |                 |  |                      |          |
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| SIGNATURES   | DATE            | NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  |                      |          |
| DRAWN<br>K. PEREZ  | 08/19/09        | JOHN F. KENNEDY SPACE CENTER, NASA<br>KENNEDY SPACE CENTER, FLORIDA                    |                      |          |
| CHECKED<br>M. GOSSELIN   | 08/19/09        | <b>INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES</b> |                      |          |
| DESIGNED<br>S. SZABO   | 08/19/09        |  |                      |          |
| DETAILS  |                 |  |                      |          |
| APPROVED<br>Mark Gossein   | DATE<br>8/19/09 | SIZE<br>F  | DWG. NO.<br>79K38423 | REV      |
| C8   |                 |  | PROJ. NO. 97766      | SHEET 11 |

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**GENERAL NOTES**

- IT IS THE INTENT OF THESE DRAWINGS TO PROVIDE A COMPLETE AND SAFE SYSTEM.
- DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL OFFSETS. ELECTRICAL HARDWARE OR OTHER SPECIFIC ELEMENTS THAT MAY BE REQUIRED FOR PROPER INSTALLATION OF THE WORK, SUCH WORK SHALL BE VERIFIED AT THE SITE.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT EDITIONS OF THE NATIONAL ELECTRICAL SAFETY CODE AND NATIONAL ELECTRICAL CODE.
- ALL INSTALLATION SHALL BE ACCOMPLISHED BY WORKERS SKILLED IN THIS TYPE OF WORK.
- ALL MATERIAL, UNLESS NOTED AS EXISTING, IS NEW AND SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL COORDINATE REQUIRED OUTAGES. NO SYSTEM SHALL BE DE-ENERGIZED OR ENERGIZED WITHOUT APPROVAL.
- THE EXISTING CABLE SHALL BE REMOVED, CUT IN 4' LENGTHS, PLACED ON PALLETS AND TRANSPORTED TO RANSOM ROAD AS SCRAP.
- CONSTRUCTION WASTE SHALL BE COLLECTED AND DISPOSED OF PROPERLY BY THE CONTRACTOR ON A DAILY BASIS.
- ALL CONSTRUCTION EQUIPMENT MUST BE MARKED IN ACCORDANCE WITH U.S. COAST GUARD "NAVIGATIONAL RULES (CG-169)" AND BE REMOVED FROM THE CHANNEL WHEN NOT ENGAGED IN CONSTRUCTION ACTIVITIES. THE CONTRACTOR'S ACTIVITIES IN OR NEAR THE NAVIGATION CHANNEL SHALL BE GOVERNED BY RESPONSIBLE REGARD TO TRAFFIC AND APPLICABLE WATERWAY REGULATIONS. THE PROPER AUTHORITIES BEFORE COMMENTS OF WORK MUST APPROVE ANY OPERATION IN NAVIGATION CHANNEL.
- THE CONTRACTOR SHALL NOTIFY THE CO AT LEAST 45 DAYS IN ADVANCE OF ANY PERIODS IN WHICH CONSTRUCTION EQUIPMENT WILL BE IN THE CHANNEL OR AS WILL OTHERWISE AFFECT THE NAVIGATION OF THE CHANNEL.
- ALL WORK SHALL BE PERFORMED WITHOUT AFFECTING BOAT TRAFFIC MOVEMENT THROUGH THE CHANNEL.

**CABLE**

SUBAQUEOUS POWER AND CONTROL CABLE (DRAKA, OMNI, HUSTON WIRE AND CABLE, OR EQUAL, STANDARD SUBMARINE BRIDGE CABLE). CABLE WILL BE ONE CONTINUOUS LENGTH ON A REEL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOADING, TRANSPORTING, AND OFF-LOADING FROM THE INDUSTRIAL AREA OF THE KENNEDY SPACE CENTER. UNUSED CABLE SHALL BE RETURNED ON THE REEL BY THE CONTRACTOR TO A DESIGNATED LOCATION ON THE KENNEDY SPACE CENTER.

**LEGEND:**

-  FLAG NOTE REFERENCE
-  EXISTING EXPOSED
-  EXISTING HIDDEN
-  NEW EXPOSED
-  NEW HIDDEN
-  LARGE JUNCTION BOX

**ABBREVIATIONS:**

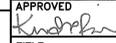
- C CONDUIT
- RMC RIGID METAL CONDUIT
- SS STAINLESS STEEL

**SCOPE:**

REMOVE THE EXISTING TWO EACH UNDERWATER DATA CABLES AND FOUR EACH POWER CABLES AND REPLACE WITH TWO EACH DATA CABLES AND TWO EACH POWER CABLES. COORDINATE CABLE REQUIREMENT AND CONNECTION TO MAINTAIN ONE DIRECTION OF VEHICLE TRAVEL OPERATIONAL AT ALL TIMES. CONTRACTOR SHALL EXPOSE SUFFICIENT LENGTH OF INDIVIDUAL CONDUCTORS FOR NORMAL TERMINATIONS. CONDUCTORS SHALL BE ROUTED IN A NEAT AND ORDERLY FASHION. CONTRACTOR SHALL PERFORM A FULL SYSTEM FUNCTION TEST. TEST SHALL BE WITNESSED BY THE CONTRACTING OFFICER AND ISC BRIDGE ENGINEER. BRIDGE SHALL BE IN FULL OPERATION DAY OR NIGHT EXCEPT DURING OUTAGE.

**SUGGESTED SEQUENCE OF WORK**

- INSTALL TEMPORARY SUPPORT FOR THE POWER TERMINAL CABINET IN PIER "A" AND REMOVE THE CABLE SUPPORT RACK. PROVIDE TEMPORARY CABLE SUPPORTS IF REQUIRED.
- DISCONNECT AND REMOVE THE TWO SPARE POWER CABLES FROM THE POWER TERMINAL CABINET IN PIER "A" TO EACH OF THE POWER TERMINAL CABINETS IN PIER "B" AND "D". COORDINATE WITH CONSTRUCTION MANAGEMENT AND CONTRACTOR.
- INSTALL THE TWO EACH POWER AND TWO EACH DATA CABLES ACROSS THE CHANNEL. COIL SUFFICIENT CABLE ABOVE THE WATER TO COMPLETE INSTALLATION BEYOND THE FENDERS AND TO REACH THE DESIGNATED POWER AND DATA TERMINAL CABINET.
- COORDINATE OUTAGE WITH THE CO TO DETERMINE BRIDGE TRAFFIC OPERATIONS. TWO-WAY TRAFFIC MAY BE ALLOWED ON SAME DRAWBRIDGE AS LONG AS RUSH-HOUR TIMES ARE NOT AFFECTED. OUTAGE AND ASSOCIATED WORK SHALL BE COORDINATED TO START ON A SATURDAY TO ENSURE NORMAL TRAFFIC OPERATIONS ARE IN EFFECT BY MONDAY.
- OBTAIN OUTAGE AND DISCONNECT POWER AND DATA CABLES SERVING THE NORTH BRIDGE. DISCONNECT AND REMOVE THE NORTH BRIDGE POWER AND DATA CABLES AND COMPLETE INSTALLATION OF NEW CABLES TO RESPECTIVE CABINETS. PERFORM CONTINUITY AND MEGGER CHECK ON EACH CONDUCTOR. CONTRACTOR TO TERMINATE CABLE ON CABINET AND EXPOSE SUFFICIENT LENGTH OF INDIVIDUAL CONDUCTOR FOR TERMINATION.
- AFTER SERVICE IS RESTORED TO THE NORTH BRIDGE OBTAIN OUTAGE TO DISCONNECT POWER AND DATA CABLES SERVING THE SOUTH BRIDGE. DISCONNECT AND REMOVE THE SOUTH BRIDGE POWER AND DATA CABLES AND COMPLETE INSTALLATION OF NEW CABLES TO RESPECTIVE CABINETS. PERFORM CONTINUITY AND MEGGER CHECK ON EACH CONDUCTOR. CONTRACTOR TO TERMINATE CABLE ON CABINET AND EXPOSE SUFFICIENT LENGTH OF INDIVIDUAL CONDUCTOR FOR TERMINATION.

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| SIGNATURES   |                 | DATE        |       |          |
| DRAWN  | M. GAITHER      | 08/19/09    |       |          |
| CHECKED  | J. KIRSCHENBAUM | 08/19/09    |       |          |
| DESIGNED   | J. KENNEDY      | 08/19/09    |       |          |
| SUBMITTED  |                 | 8-17-09     |       |          |
| APPROVED   |                 | DATE        | SIZE  | DWG. NO. |
|   |                 | 08/19/09    | F     | 79K38423 |
| TITLE  |                 | PROJ. NO.   | SHEET |          |
| E1   |                 | 97766       | 12    |          |

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 KENNEDY SPACE CENTER, FLORIDA

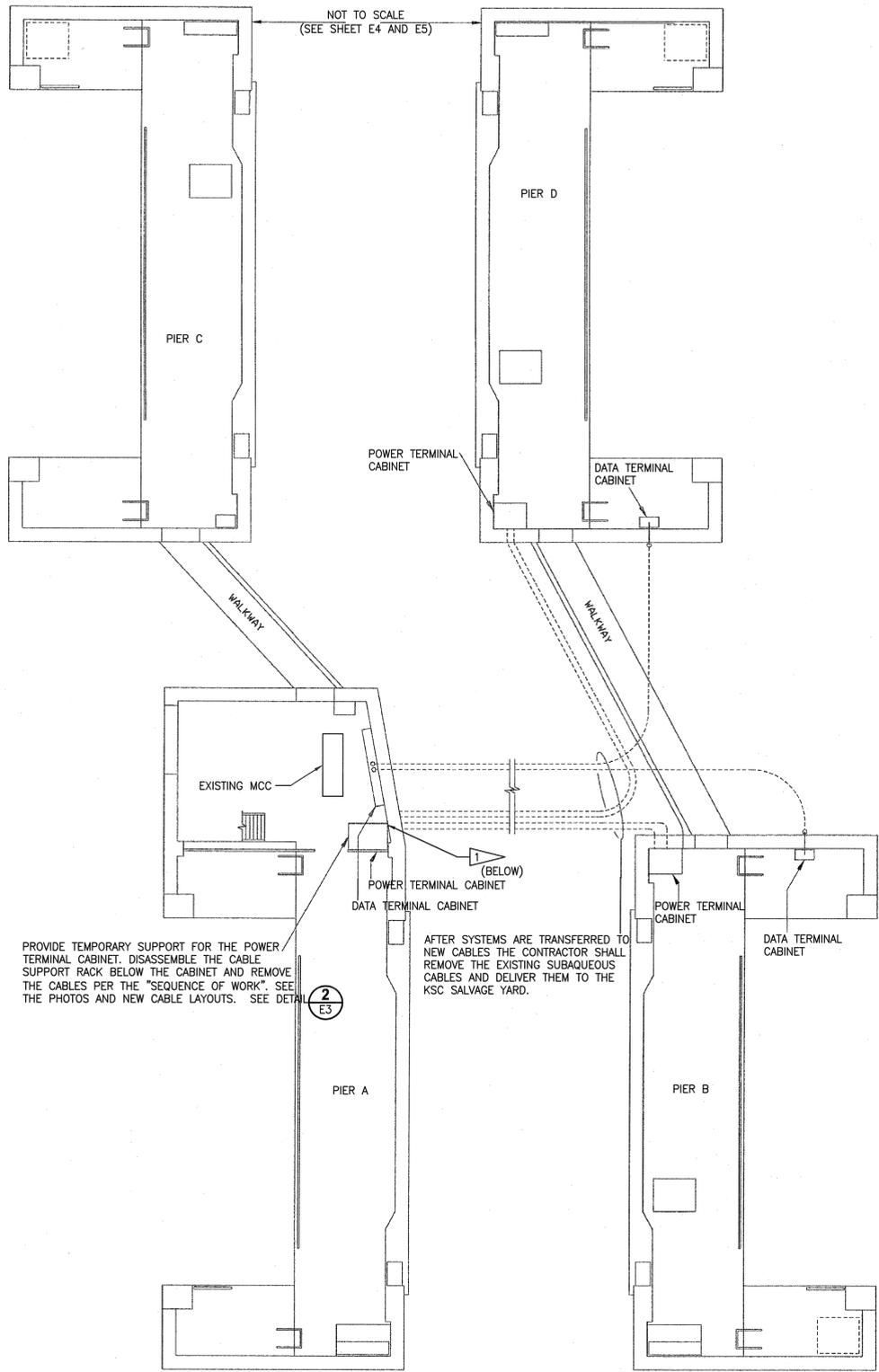
**INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES**

NOTES LEGEND PHOTOS AND ABBREVIATIONS

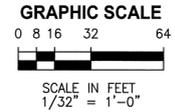
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**EXISTING CABLE SUPPORT DETAIL** 1  
NTS  
E2, E3, E5



**INDIAN RIVER BRIDGE (NASA CAUSEWAY, S.R. 405)  
EXISTING SUBAQUEOUS CABLE LAYOUT  
BAScule PIERS A, B, C AND D**  
1/32" = 1'-0"



**FLAG NOTES**

- 1 EXISTING CABLE ENTRY LOCATION AND CABLE SUPPORT  
SEE DETAIL: 1  
E2

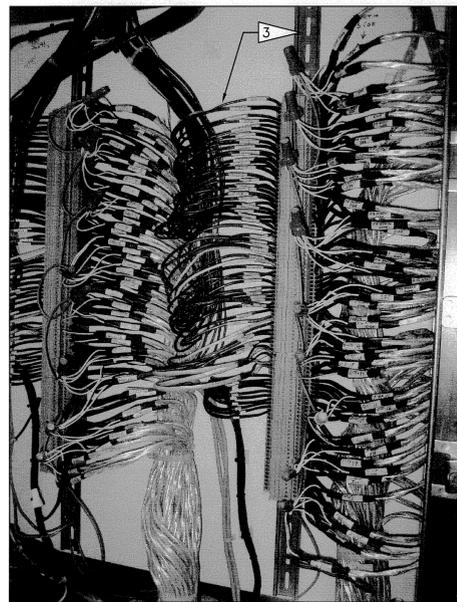
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| SIGNATURES  |                 | DATE        |          |          |
| DRAWN   | M. GAITHER      | 08/19/09    |          |          |
| CHECKED   | J. KIRSCHENBAUM | 08/19/09    |          |          |
| DESIGNED  | J. KENNEDY      | 08/19/09    |          |          |
| SUBMITTED   |                 | 8-19-09     |          |          |
| APPROVED  |                 | DATE        |          |          |
| E2  |                 | 8/19/09     |          |          |
| TITLE   |                 | SIZE        | DWG. NO. | REV      |
| INDIAN RIVER BRIDGE (NASA CAUSEWAY, S.R. 405) EXISTING SUBAQUEOUS CABLE LAYOUT BAScule PIERS A, B, C AND D  |                 | F           | 79K38423 |          |
| PROJECT   |                 | NO.         | SHEET    |          |
| INDIAN RIVER BRIDGE (NASA CAUSEWAY, S.R. 405)   |                 | 97766       | 13       |          |

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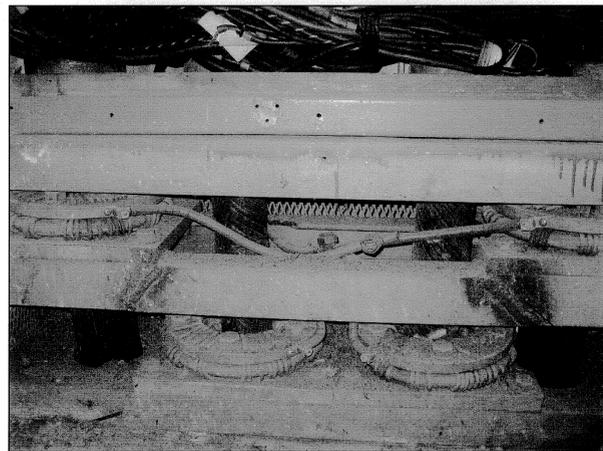
**INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES**

EXISTING LAYOUT

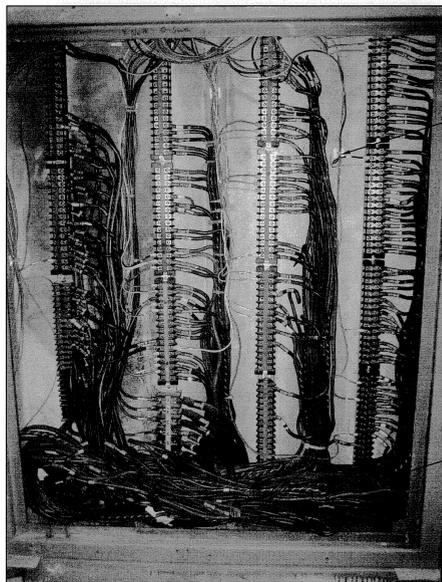
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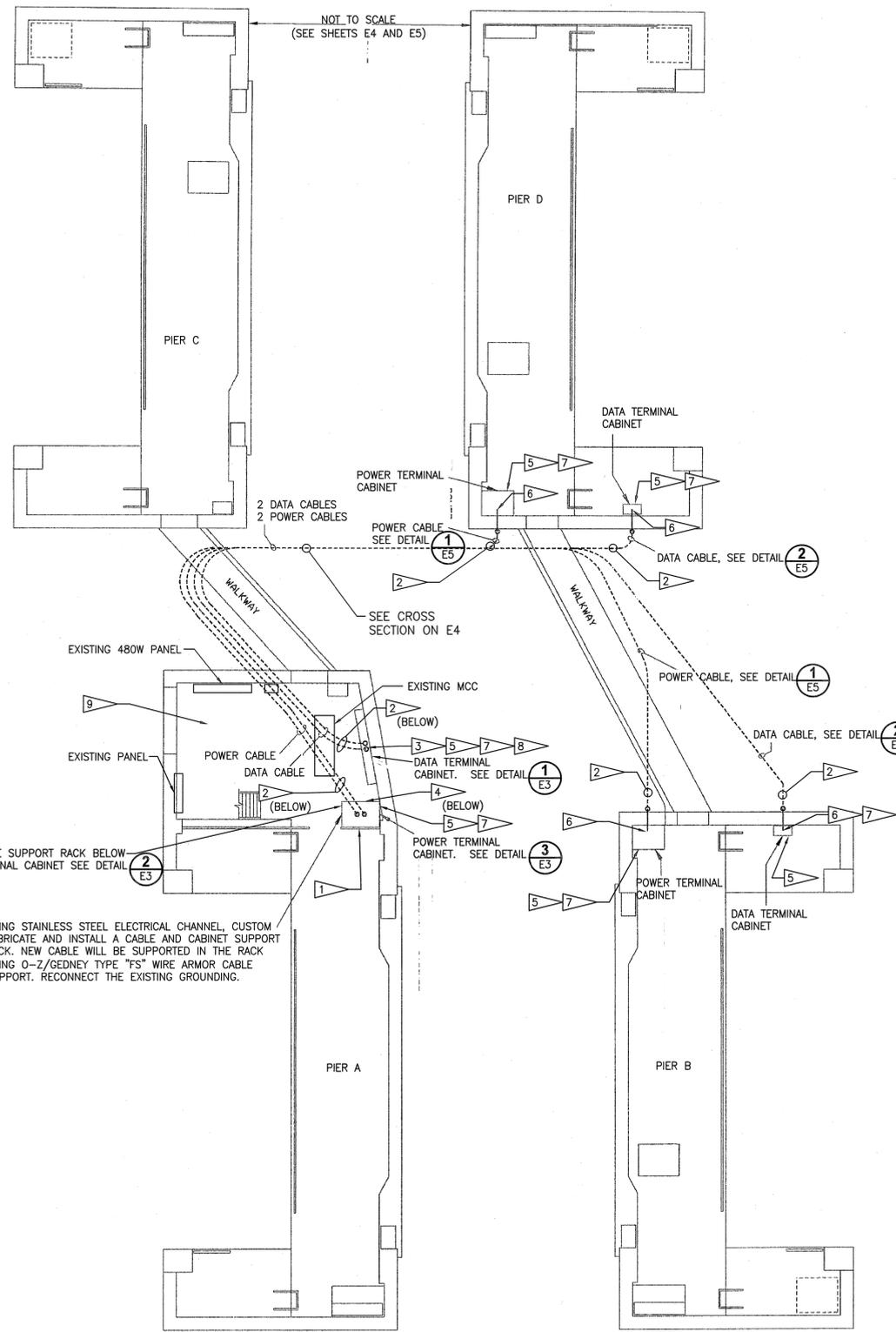
**EXISTING DATA TERMINAL CABINET** 1  
NTS E3



**EXISTING CABLE SUPPORT DETAIL** 2  
NTS E2, E3

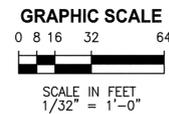


**EXISTING POWER TERMINAL CABINET** 3  
NTS E3



**INDIAN RIVER BRIDGE (NASA CAUSEWAY, S.R. 405)  
NEW SUBAQUEOUS CABLE LAYOUT  
BASCULE PIERS A, B, C AND D**

1/32" = 1'-0"



**FLAG NOTES**

- 1 CONTRACTOR SHALL DOCUMENT AND TAG ALL EXISTING NON-SUBMARINE CONDUCTORS BEFORE STARTING WORK. PROVIDE NEW SUBMARINE CABLE AND CONNECT TO EXISTING NON-SUBMARINE CONDUCTORS ON THE NEW TERMINAL STRIPS AND TAG. CONNECT AND TAG NEW SUBMARINE CABLES ON PIER B AND D. SEE DETAIL 3 E3
- 2 PROVIDE 25' COIL OF CABLE FOR SERVICING.
- 3 CONTRACTOR SHALL DOCUMENT AND TAG ALL EXISTING NON-SUBMARINE CONDUCTORS BEFORE STARTING WORK. PROVIDE NEW SUBMARINE CABLE AND CONNECT TO EXISTING NON-SUBMARINE CONDUCTORS ON THE NEW TERMINAL STRIPS AND TAG. CONNECT AND TAG NEW SUBMARINE CABLES ON PIER B AND D. SEE DETAIL 1 E3
- 4 CUSTOM DRILL NEW CABLE SUPPORTS. SEE DETAIL 1 E2
- 5 PROVIDE RING (CLOSE EYE) COMPRESSION INSULATED TERMINALS FOR EACH CONDUCTOR. ALL CONDUCTORS SHALL BE TERMINATED AND CONNECT TO NEW DEAD FRONT SCREW TERMINAL MOUNTED ON DIN RAILS. CONTRACTOR SHALL MARK THE TERMINAL STRIPS THAT FEED PIER "B" AND PIER "D" WHEN COMPLETED. COORDINATE ALL WORK WITH THE CO AND FRANKLIN WASHBURN (EG&G BRIDGE ENGINEER), PHONE (321)867-1351
- 6 PROVIDE ALL NEW CABLE SUPPORT CONNECTORS EQUAL TO 0-2/GEDNEY CGFP AND CUSTOM DRILL BUSHING IF REQUIRED. CUSTOM DRILL EXISTING CABINETS TO FIT NEW CABLE SUPPORT CONNECTORS IF REQUIRED.
- 7 ALL TERMINALS SHALL BE MARKED. ALL CABLES SHALL BE MARKED TO AVOID ROTATING CONDUCTORS.
- 8 ALL SHIELDS ON DATA CABLES SHALL BE BONDED TO THE EXISTING GROUND BAR IN THE PIER A MCC ROOM ENCLOSURE. SHIELDS FOR EACH PAIR SHALL BE TWISTED AND PROTECTED WITH SHRINK TUBING APPLIED BEFORE THEY ARE CONNECTED TO THE GROUND BAR. SHIELDS AT FAR PIERS SHALL BE CUT OFF.
- 9 ALL UNUSED OPENINGS IN PIER A MCC ROOM EQUIPMENT SHALL BE BLANKED OFF PER NEC.

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| DRAWN<br>M. GAITHER  |      | 08/19/09         |                      |          |
| CHECKED<br>J. KIRSCHENBAUM   |      | 08/19/09         |                      |          |
| DESIGNED<br>J. KENNEDY   |      | 08/19/09         |                      |          |
| SUBMITTED<br>J. KENNEDY  |      | 8-19-09          |                      |          |
| APPROVED<br>K. ROBERTSON   |      | DATE<br>08/19/09 |                      |          |
| E3   |      | SIZE<br>F        | DWG. NO.<br>79K38423 | REV      |
| TITLE  |      | PROJ. NO. 97766  |                      | SHEET 14 |

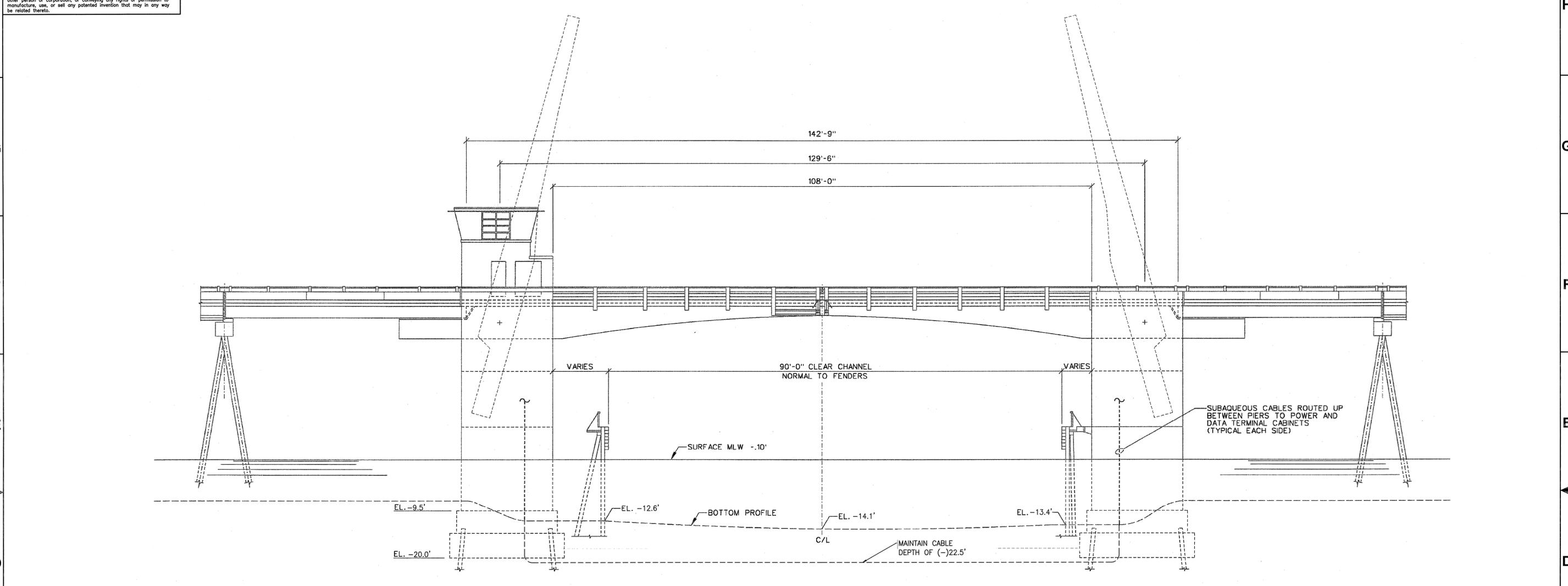
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**INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES**

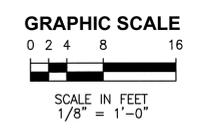
NEW LAYOUT

8 7 6 5 4 3 2 1

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**INDIAN RIVER BRIDGE (NASA CAUSEWAY, S.R. 405)**  
**CROSS SECTION, SOUTH VIEW**  
 1/8" = 1'-0"



| SYM   | ZONE | DESCRIPTION     | DATE                 | APPROVED |
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| SIGNATURES  |      | DATE            |                      |          |
| DRAWN<br>M. GAITHER   |      | 08/19/09        |                      |          |
| CHECKED<br>J. KIRSCHENBAUM  |      | 08/19/09        |                      |          |
| DESIGNED<br>J. KENNEDY  |      | 08/19/09        |                      |          |
| SUBMITTED<br><i>Josh Kern</i>   |      | 8-19-09         |                      |          |
| APPROVED<br><i>Kevin Rim</i>  |      | DATE            |                      |          |
| E4  |      | SIZE<br>F       | DWG. NO.<br>79K38423 | REV      |
| TITLE   |      | PROJ. NO. 97766 | SHEET 15             |          |

8 7 6 5 4 3 2 1

NOTICE: When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government hereby incurs no responsibility or obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

**FLAG NOTES**

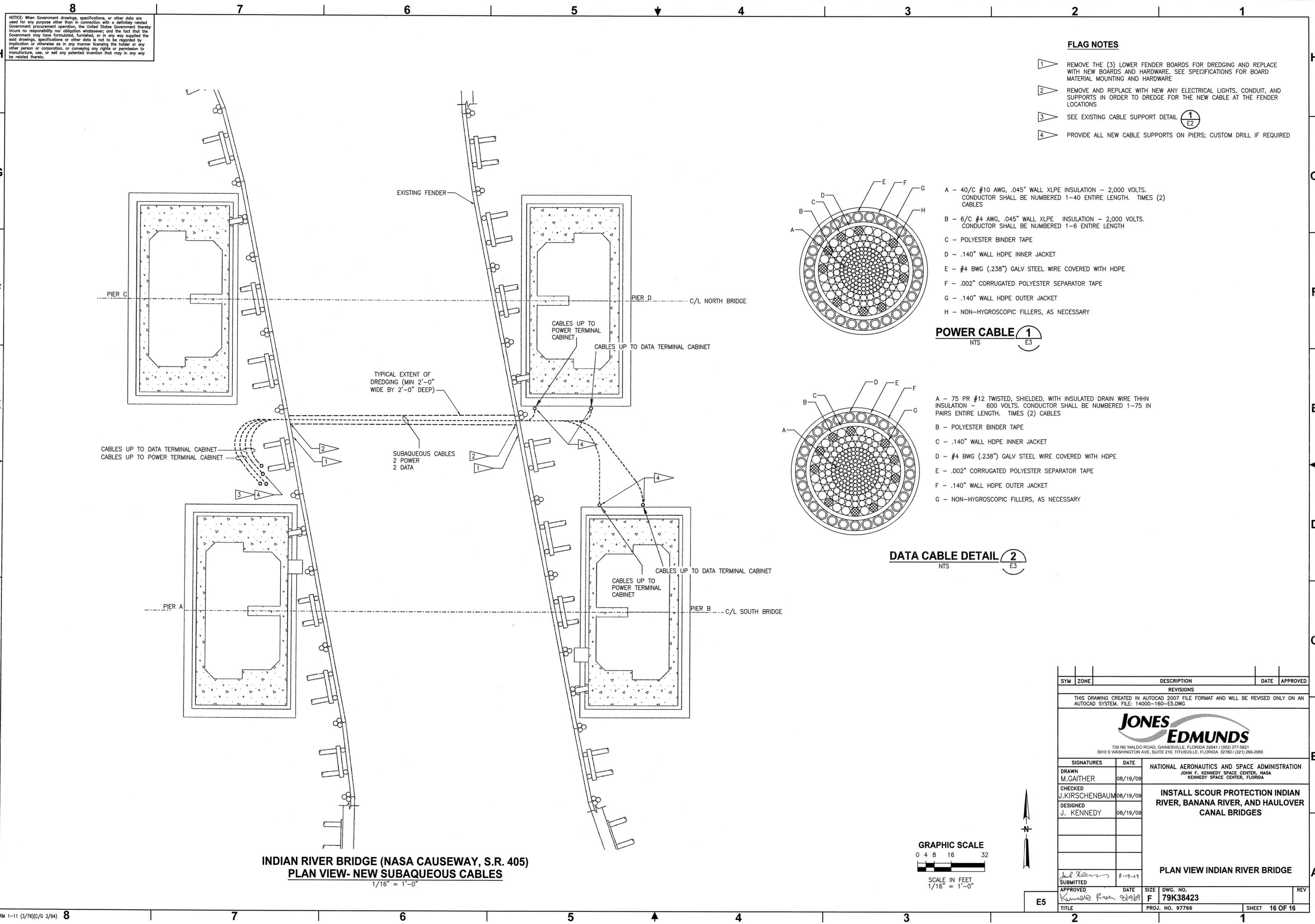
- 1 REMOVE THE (3) LOWER FENDER BOARDS FOR DREDGING AND REPLACE WITH NEW BOARDS AND HARDWARE. SEE SPECIFICATIONS FOR BOARD MATERIAL MOUNTING AND HARDWARE
- 2 REMOVE AND REPLACE WITH NEW ANY ELECTRICAL LIGHTS, CONDUIT, AND SUPPORTS IN ORDER TO DREDGE FOR THE NEW CABLE AT THE FENDER LOCATIONS
- 3 SEE EXISTING CABLE SUPPORT DETAIL (1/E2)
- 4 PROVIDE ALL NEW CABLE SUPPORTS ON PIERS; CUSTOM DRILL IF REQUIRED

- A - 40/C #10 AWG, .045" WALL XLPE INSULATION - 2,000 VOLTS. CONDUCTOR SHALL BE NUMBERED 1-40 ENTIRE LENGTH. TIMES (2) CABLES
- B - 6/C #4 AWG, .045" WALL XLPE INSULATION - 2,000 VOLTS. CONDUCTOR SHALL BE NUMBERED 1-6 ENTIRE LENGTH
- C - POLYESTER BINDER TAPE
- D - .140" WALL HDPE INNER JACKET
- E - #4 BWG (.238") GALV STEEL WIRE COVERED WITH HDPE
- F - .002" CORRUGATED POLYESTER SEPARATOR TAPE
- G - .140" WALL HDPE OUTER JACKET
- H - NON-HYGROSCOPIC FILLERS, AS NECESSARY

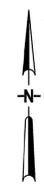
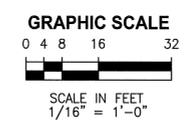
**POWER CABLE (1/E3)**  
NTS

- A - 75 PR #12 TWISTED, SHIELDED, WITH INSULATED DRAIN WIRE THHN INSULATION - 600 VOLTS. CONDUCTOR SHALL BE NUMBERED 1-75 IN PAIRS ENTIRE LENGTH. TIMES (2) CABLES
- B - POLYESTER BINDER TAPE
- C - .140" WALL HDPE INNER JACKET
- D - #4 BWG (.238") GALV STEEL WIRE COVERED WITH HDPE
- E - .002" CORRUGATED POLYESTER SEPARATOR TAPE
- F - .140" WALL HDPE OUTER JACKET
- G - NON-HYGROSCOPIC FILLERS, AS NECESSARY

**DATA CABLE DETAIL (2/E3)**  
NTS



**INDIAN RIVER BRIDGE (NASA CAUSEWAY, S.R. 405)  
PLAN VIEW- NEW SUBAQUEOUS CABLES**  
1/16" = 1'-0"



| SYM  | ZONE | DESCRIPTION     | DATE           | APPROVED |
|--|------|-----------------|----------------|----------|
| REVISIONS  |      |                 |                |          |
| THIS DRAWING CREATED IN AUTOCAD 2007 FILE FORMAT AND WILL BE REVISED ONLY ON AN AUTOCAD SYSTEM. FILE: 14000-160-E5.DWG   |      |                 |                |          |
|  |      |                 |                |          |
| <small>730 NE WALDO ROAD, GAINESVILLE, FLORIDA 32641 / (352) 377-5821<br/>3910 S WASHINGTON AVE, SUITE 210, TITUSVILLE, FLORIDA 32780 / (321) 269-2950</small> |      |                 |                |          |
| SIGNATURES   |      | DATE            |                |          |
| DRAWN<br>M. GAITHER  |      | 08/19/09        |                |          |
| CHECKED<br>J. KIRSCHENBAUM   |      | 08/19/09        |                |          |
| DESIGNED<br>J. KENNEDY   |      | 08/19/09        |                |          |
| SUBMITTED<br><i>Jack Klein</i>   |      | 8-19-09         |                |          |
| APPROVED<br><i>Keneth Poon</i>   |      | 8/19/09         |                |          |
| E5   |      | DATE            | SIZE           | DWG. NO. |
| TITLE  |      | PROJ. NO. 97766 | SHEET 16 OF 16 | REV      |

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**  
JOHN F. KENNEDY SPACE CENTER, NASA  
KENNEDY SPACE CENTER, FLORIDA

**INSTALL SCOUR PROTECTION INDIAN RIVER, BANANA RIVER, AND HAULOVER CANAL BRIDGES**

**PLAN VIEW INDIAN RIVER BRIDGE**

**79K38423**