

INFRASTRUCTURE
ALTERNATIVES



MILE POINT TRAINING WALL JACKSONVILLE, FL

Geotextile Tube Installation

PROJECT DESIGN

- Remove portion of existing training wall
- Construct new eastern and western training walls
- Deepen new flow improvement channel
- Restore Great Marsh Island

ST. JOHNS RIVER



GREAT MARSH ISLAND
beneficial use site up to
53 acres of low and high
marsh restoration

CHICOPIT
BAY

NEW FLOW
IMPROVEMENT
CHANNEL

REMOVE 3110' OF EXISTING
TRAINING WALL AND LAND

EXISTING TRAINING WALL

NEW 2050'
EASTERN
WALL

CHICOPIT
BAY

INTRACOASTAL WATERWAY

Helen Cooper Foyd Park



SAFETY & ENVIRONMENT



- Exposure hours, through Dec. 12, 2016
 - Total man hours: 181,899
 - Equipment hours: 102,618
- Endangered/Protected species:
 - Manatees and turtles
 - Observers
 - 298 endangered species sightings
 - 107 work shut downs (27 hrs, 25 min. total down time)

EAST LEG TRAINING WALL (ELTW)

- Subgrade/Foundation: mattress remediation, Station 14+25 to 17+00
- Armor stone placement, required ~35,506 tons
- Placed 27,834 tons (Reused 14,795 tons / new 12,369 tons)
- Completed Jan. 16, 2017

EQUIPMENT FOR TUBES INSTALLATION

- 40-ft. X 100-ft. shallow draft barges, (2)
- 14-ft. work boats, (2)
- 8" Toyo submersible pumps, (2)
- 32,000-lb. excavator
- Amphibious excavator
- 6-in. self-priming centrifugal pump
- 8-in. booster pump
- 6-in. HDPE dredge line, 2,500-ft.
- Portable header, (6) port
- Geotextile tubes, 6,364-lb. ft., 17 – 60-ft. circumference
- 6-in. lay-flat hose, 2,000-ft.

AREA 1 – STATIONS 0+00 TO 13+00

- 17-ft. circ. X 210-ft. long geotextile tubes
- Min. fill height: 5 ft. MLLW
- Deployed several from boats due to tides
- Tide swings, 5 – 7 feet
- Work could only be performed in daylight hrs.
- Placement of the header barge was critical; tides limited draft to move them











STATIONS 3+00 TO 5+00

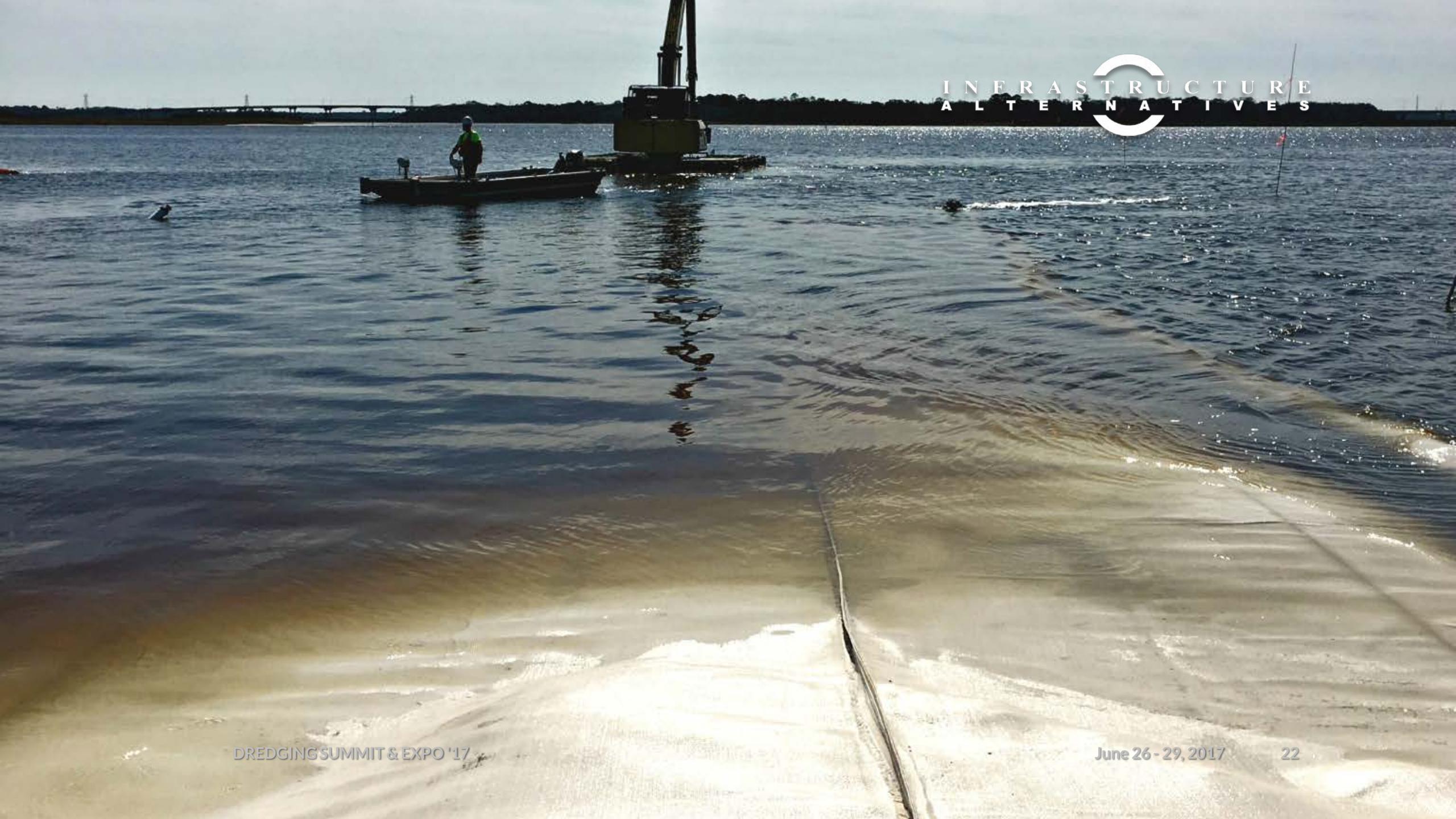
- Challenging, unstable foundation
- First 400-ft. of tubes filled quickly and were level at 4-ft. height
- Next a.m., tubes had sunk into the foundation
- Conducted surveys
- Placed sand to stabilize foundation



SCOUR APRONS

- 75-ft. wide by 210-ft. long
- Protect the foundation, where the tubes will be placed
- Prevent wash-out of the base beneath the geotextile tubes

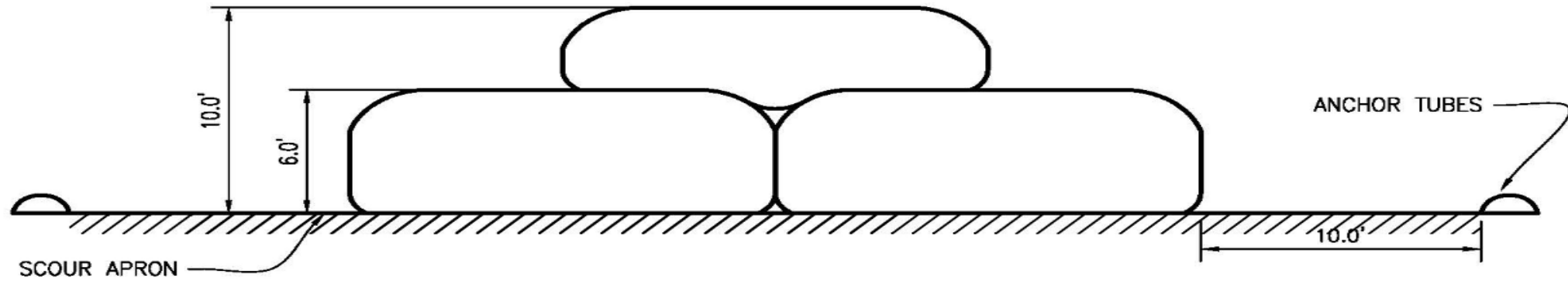






STACKED GEOTEXTILE TUBES

- In some areas, we had to stack three layers of tubes to achieve the target elevation
- Tubes ranged from 34-ft. to 60-ft. in circumference depending on the depth of water to maintain the 6-ft. MLLW
- At high tide, the top level tubes are nearly under water
- In a storm event, during high tide, the entire stack of tubes is submerged



34-F.T. CIRCUMFERENCE

PROFILE DRAWING - AREA 3

MILE POINT TRAINING WALL RECONFIGURATION
JACKSONVILLE, FLORIDA
DREDGING SUMMIT & EXPO '17

STACKED CROSS SECTION

FLOATS

- Orange floats attached to header lines as the water was up to 11 feet deep in areas
- Blue and green floats attached to loops on the scour aprons or lower layer tubes to secure the upper layer tubes in place



STATION 19+00 – 25+00

- Geotextile tube dimensions: 60-ft. circumference x 210-ft. long
- Min. fill height: 6-ft. MLLW.
- +/-1 ft. tolerance in this area
- Needed to maintain desired elevation at high tide





SEQUENCE OF OPERATIONS

- 400-ft. sections were filled at a time
- Header lines and hoses had to be flushed, rolled up & secured each night
- Frequent high winds
- Tidal cycles
- Center line of the design was followed with 1 - 2 feet.



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TEMPORARY BARRIER

- Dredged material was placed behind the geotextile tubes
- Tubes served as a barrier to prevent dredged material from entering the marsh lands
- The temporary tubes will be cut open & fabric removed, to allow the emergent wet land to function

AERIAL PHOTOS

- First set of (5) aerial photos, taken 7/5/16
- Geotextile tubes complete, barrier fill at 13+00
- Second set of (5) photos, taken 10/26/16
- Geotextile tubes complete, marsh filled in 100%

SUMMARY

- The project was a great success
- Our team adapted to new and challenging conditions, to put another “tool” in our box
- Special thanks to our client & Project GC, Manson Construction Company