

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



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-In. 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

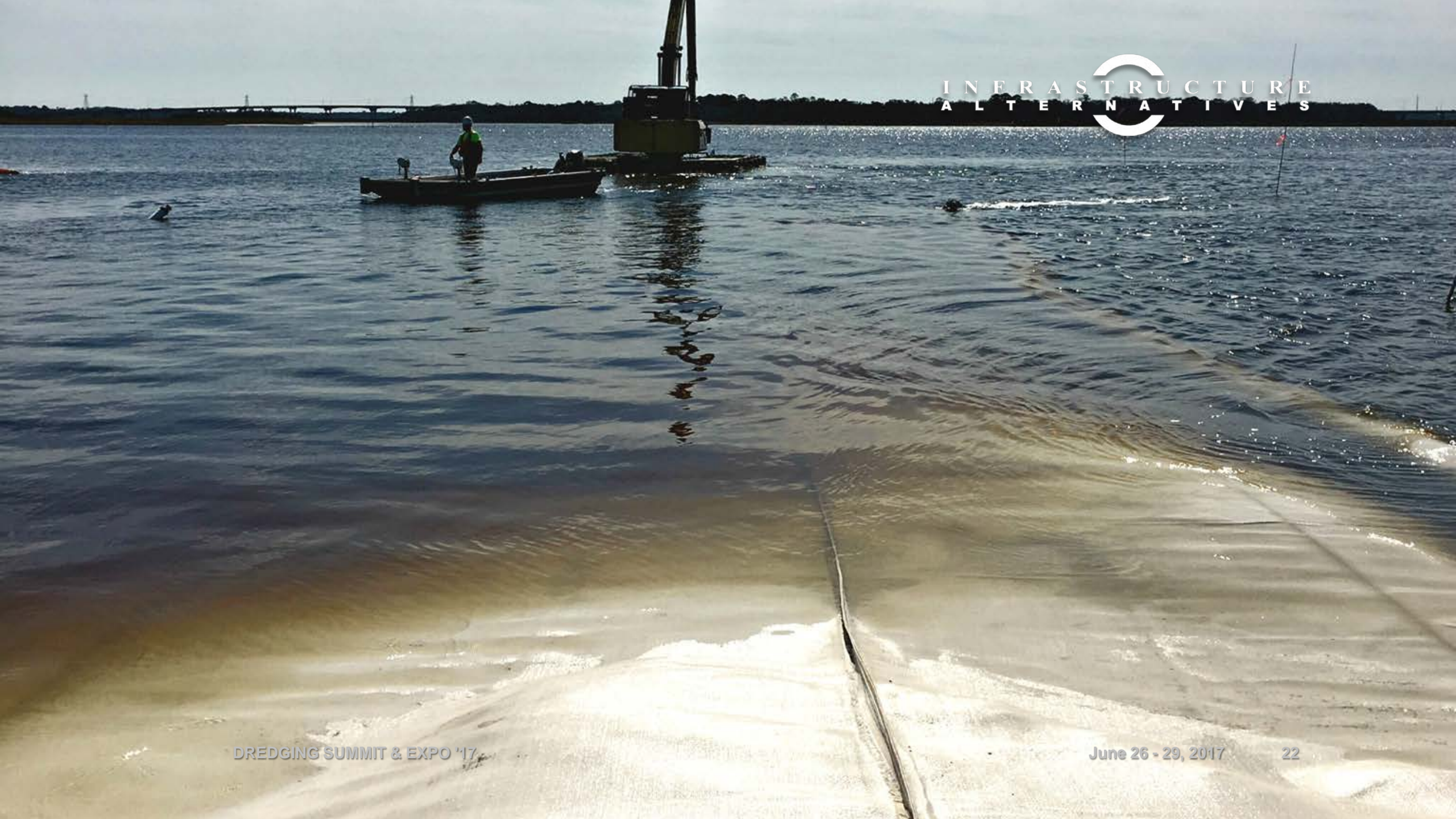


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SCOUR APRONS

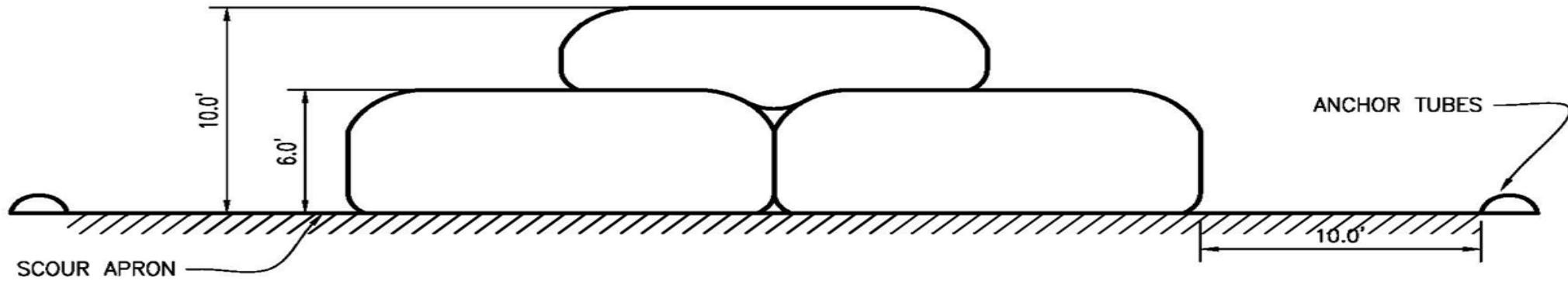
- 75-ft. wide by 210-ft. long
- Protect the foundation, where the tubes will be placed
- Prevent wash-out of the base beneath the geotextile tubes





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.





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