

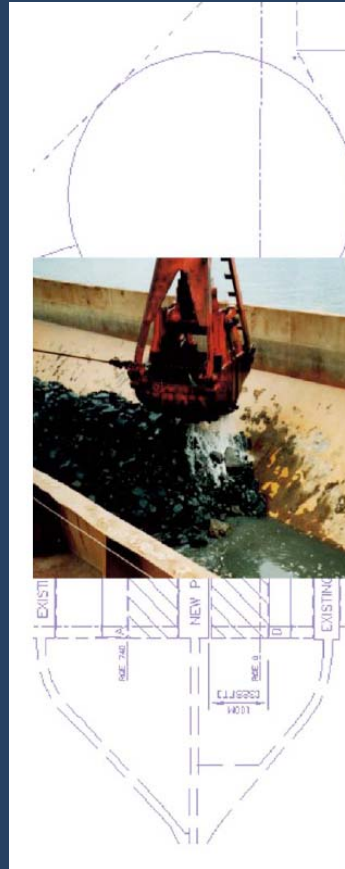


North Topsail Beach



Terminal Groin Discussion

August 9, 2011



Gahagan &
Bryant Associates, Inc.



Innovative & Practical Solutions
From Concept to Completion

GBA
ENGINEERS ★ SURVEYORS

Terminal Groins What They Are Not



They are not Jetties

They do not extend a great distance beyond the shoreline

They should not interrupt longshore flow permanently

They are not a fix, but a management tool.



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Terminal Groins

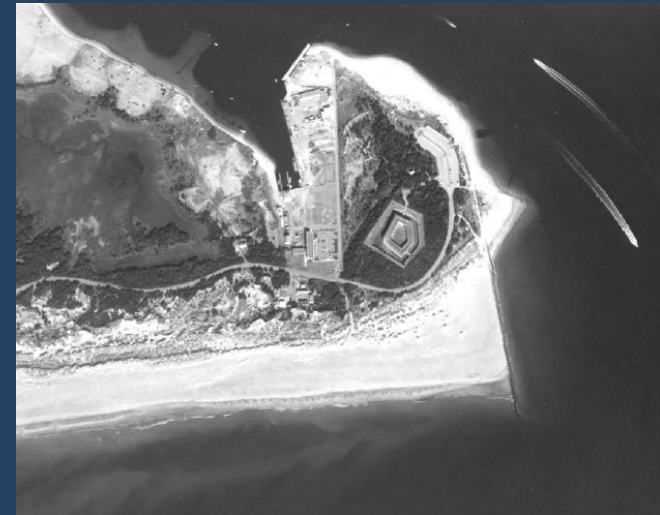
What They Are



Smaller structures placed to minimize sand losses into an inlet system.

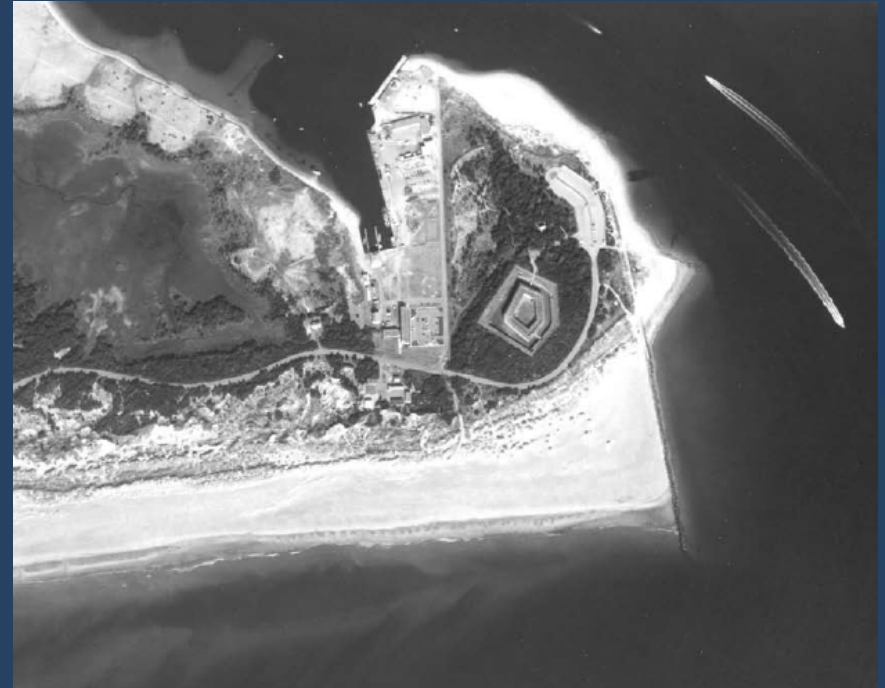
A method of managing shorelines in a highly dynamic inlet system.

On the downdrift side they reduce nourishment needs between the transport node and the inlet.



Terminal Groins

How they Work



Fort Macon – Atlantic Beach, NC

Terminal Groins

What Are the Options?



Rock

Steel

Geotextile





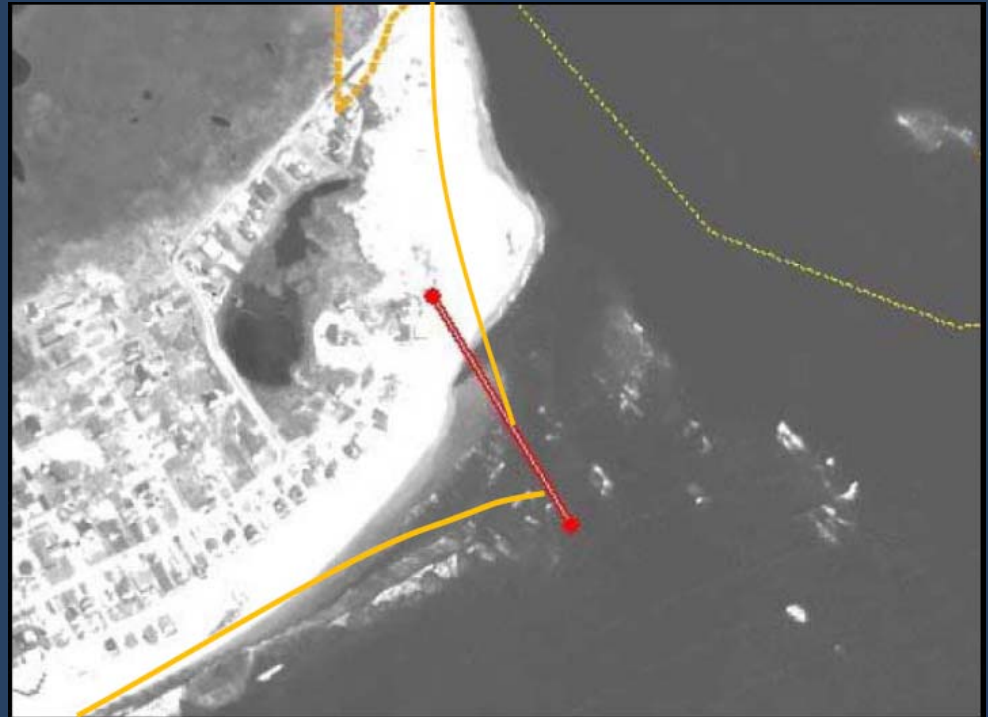
Conceptual Structure



Approximately 800 feet in length

Extends seaward +/- 500 feet

**Ties back into existing land
200 feet landward of the 6'
contour**





Nourishment with Terminal Groins



Confined Disposal Facilities, “Dredge Spoil Islands” may provide a low cost Nourishment Source

Potential Quantity at New River Crossing exceeds 3,000,000 cy



Terminal Groins

What are the Costs?



- Four cost scenarios were developed:
 - Short, smaller cross-section groin (450 feet) on a flat-sloped beach
 - Short, smaller cross-section groin (450 feet) on a steep-sloped beach
 - Long, larger cross-section groin (1500 feet) on a flat-sloped beach
 - Long, larger cross-section groin (1500 feet) on a steep-sloped beach
- Rubble-mound terminal groins could range from about \$1,230 per linear foot to \$5,180 per linear foot.
- Geotextile Tube terminal groins could range from about \$350 per linear foot to \$660 per linear foot (short groin only; not recommended for longer groin)
- Steel or Concrete Sheet Pile or Timber terminal groins could range from about \$4,000 per linear foot to \$4,800 per linear foot. (Timber only recommended for short groin scenarios)
- Initial project costs including construction of the terminal groin, initial beach nourishment and permitting and design fees may range from about \$3.5 million for a shorter groin to over \$10 million for a larger one.
- Annual project costs including structure maintenance / repair, annual beach nourishment, and monitoring could be in the range of \$0.7 million to over \$2 million.



Costs shown in the CRC Study



Terminal Groins

What are the Costs?



Geotechnical & Field Investigations	\$150,000
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Engineering Services (Concept through Build)	\$700,000
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Construction of 800' Groin	\$2,200,000
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Construction of 300,000 cy Beachfill	\$2,800,000
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TOTAL	\$5,850,000
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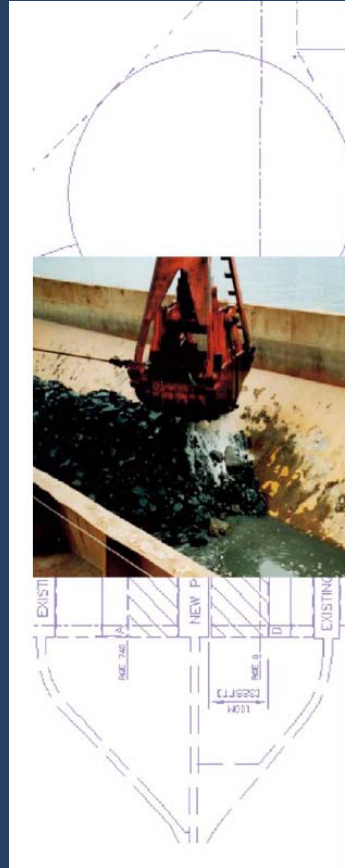


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