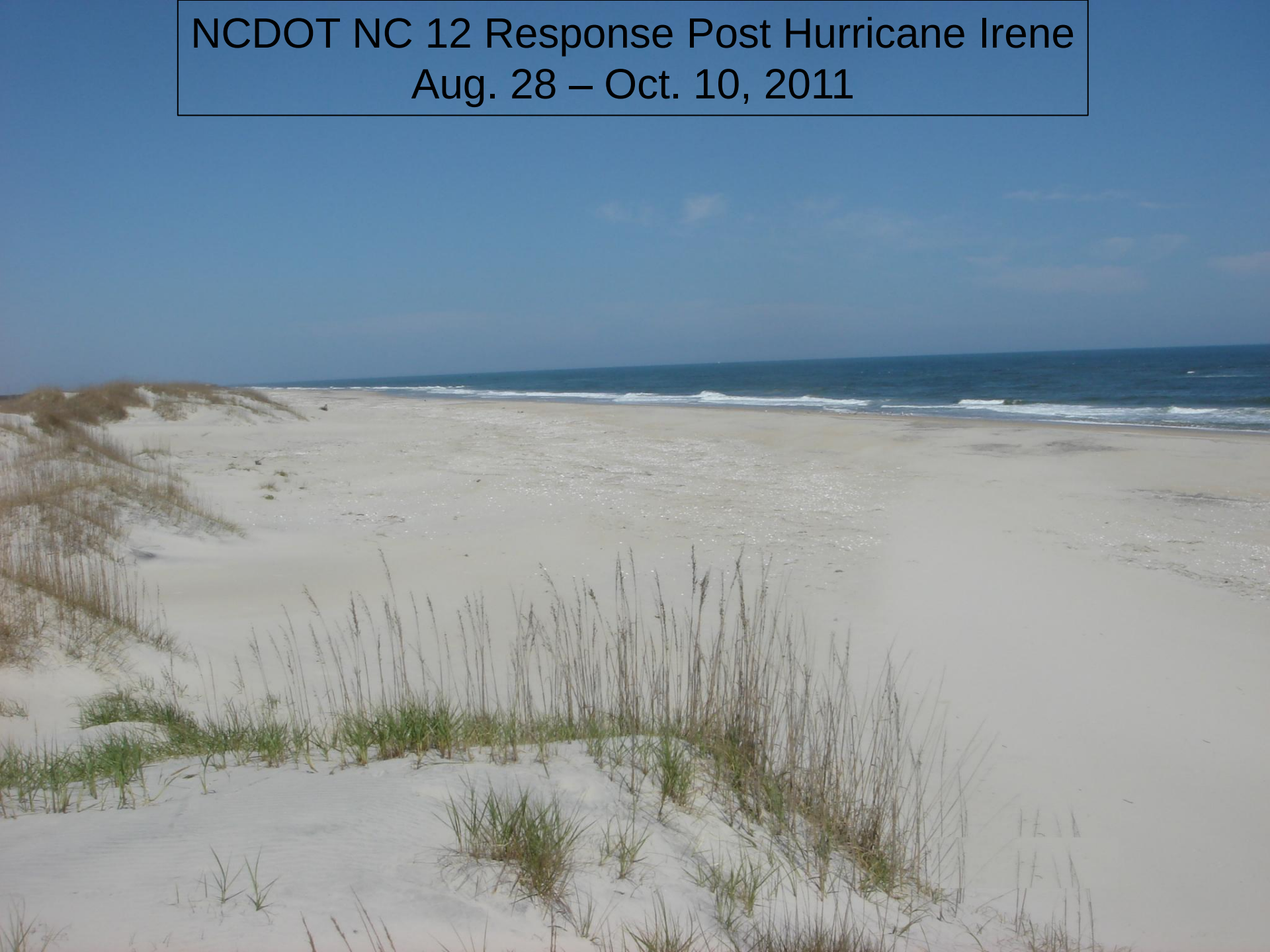
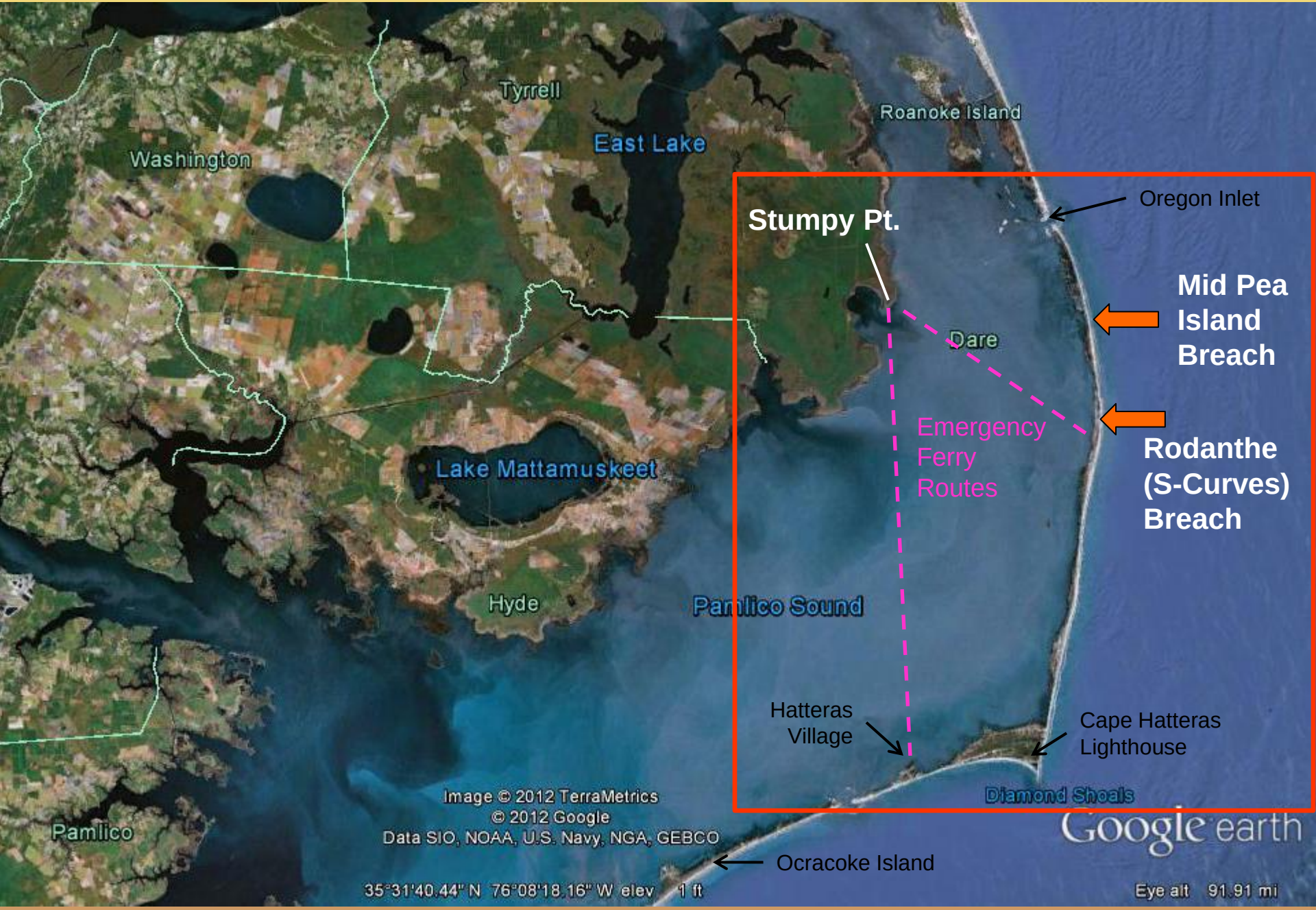
NCDOT NC 12 Response Post Hurricane Irene
Aug. 28 – Oct. 10, 2011




Rodanthe S-Curves
29 3:35PM


Roanoke
Norfolk
Greensboro
Raleigh
Charlotte
Fayetteville
Albemarle Sound
Roanoke Island
Pamlico Sound
Harkers Island
Coastal Hwy
12
Irene
South Carolina
Lake Marion
Ridge Mountains
Image © 2012 TerraMetrics
© 2012 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
35°21'52.55" N 78°59'09.82" W elev 201 ft
Google earth
Eye alt 399.01 mi


Tyrrell
Roanoke Island
East Lake
Washington
Oregon Inlet
Stumpy Pt.
Mid Pea Island Breach
Dare
Emergency Ferry Routes
Rodanthe (S-Curves) Breach
Lake Mattamuskeet
Hyde
Pamlico Sound
Hatteras Village
Cape Hatteras Lighthouse
Diamond Shoals
Pamlico
Image © 2012 TerraMetrics
© 2012 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Ocracoke Island
35°31'40.44" N 76°08'18.16" W elev 1 ft
Google earth
Eye alt 91.91 mi

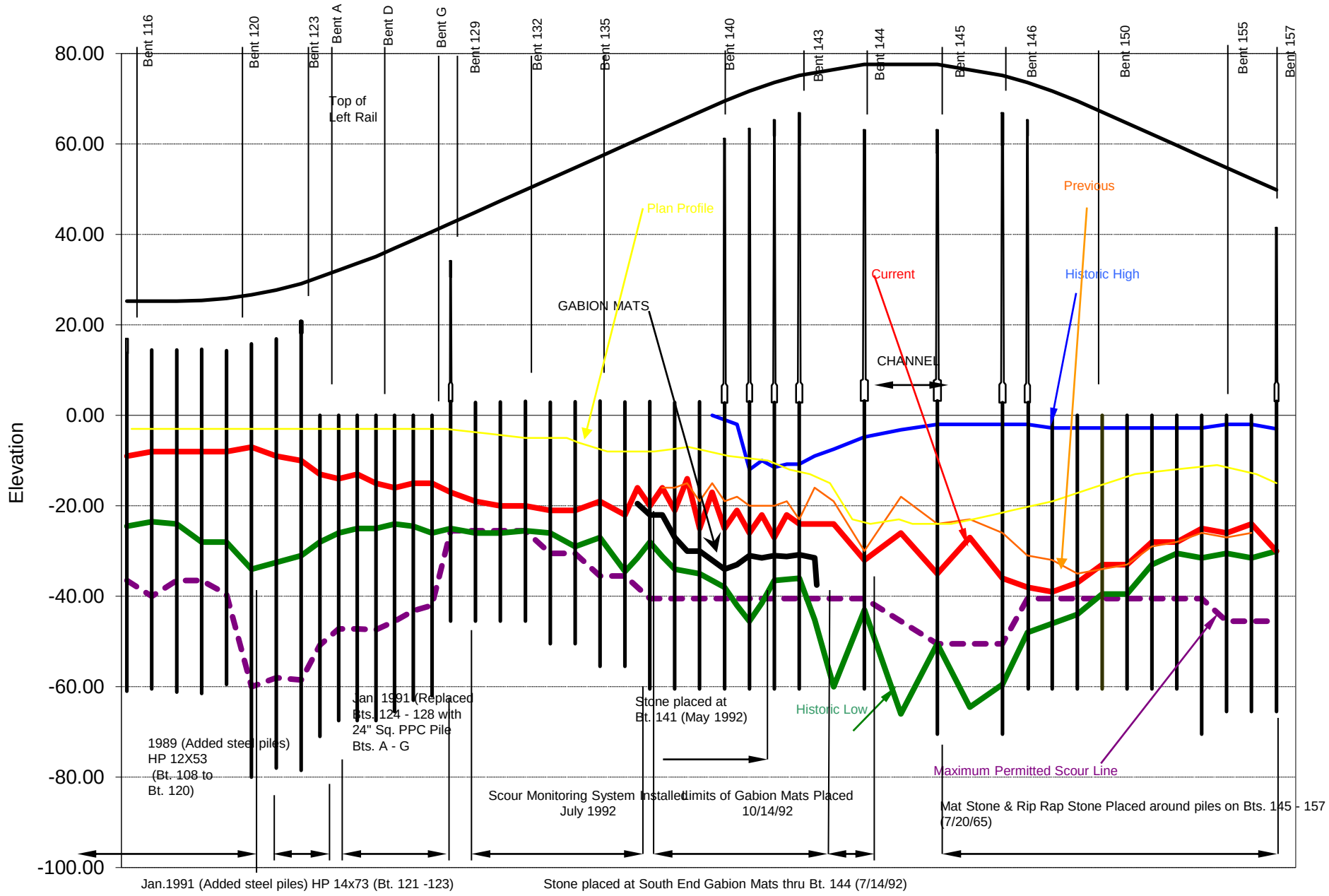
NC 12 Damage Assessment from Hurricane Irene, Aug. 27, 2011

(days 1 to 2 post storm)

- NC 12 Bonner Bridge over Oregon Inlet
- NCDOT forces on Hatteras & Ocracoke Islands.
- Confirm reports from “others” & ground truth.
- Photogrammetry – Aerial Photos

NC 12 Bonner Bridge over Oregon Inlet

OREGON INLET PROFILE BENTS 116 - 157




Rodanthe S-Curves
2,000 lf damage, 300 lf of open breach 2 to 4 ft. deep.


Mid Pea Island
2,300 lf damage, 200+ lf of open breach 6 to 12 ft. deep.

Ground Truth at Rodanthe

Ground Truth at Pea Island

Next Steps After Assessments, Aug. 29 to Sept. 2

(days 2 to 6 post storm)

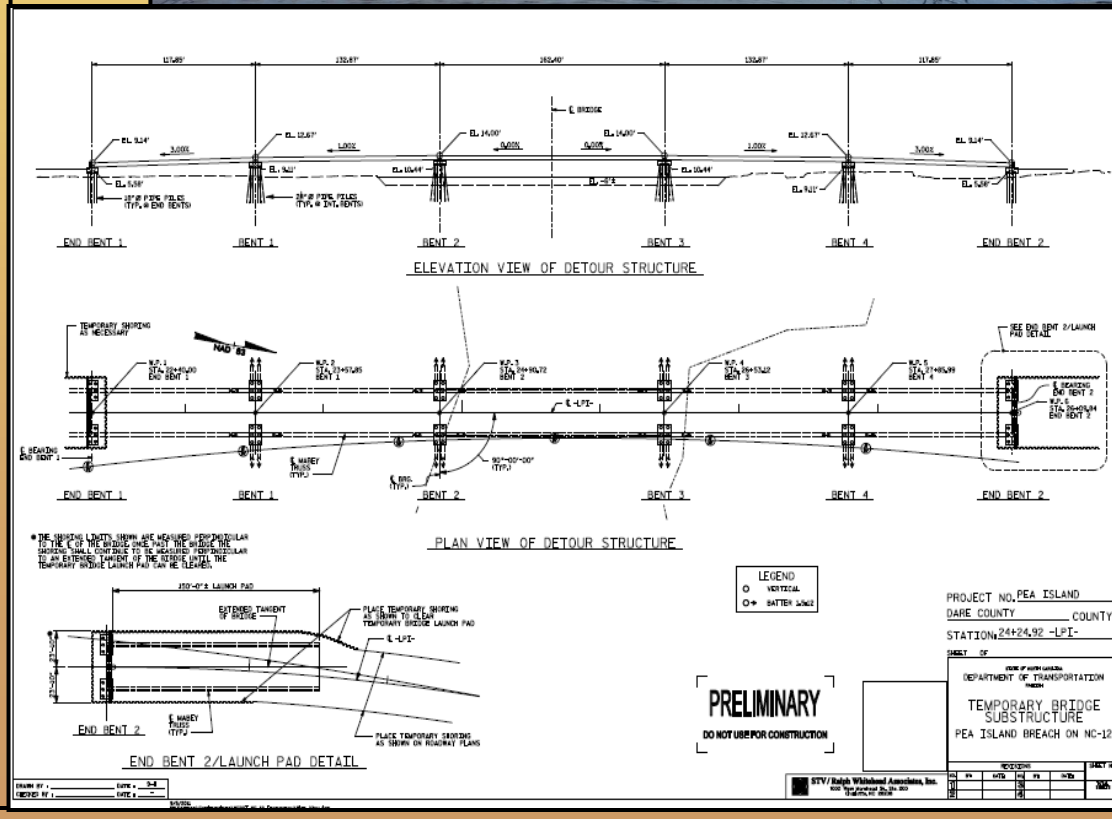
- Control Points for Detailed Survey, i.e. More Photogrammetry.
- NCDOT Internal Meetings.
- Environmental Merger Team Meeting.
- Pea Isl. Inlet Comments from Experts.
- Environmental Permits By Sept 2.

- Aug. 31, Environmental Merger Team Meeting: 70+ Attendees
- Sept. 1, Rodanthe Contract/Plan Meeting.
  - Develop plans & items of work, method of payment, timeframe, etc.
  - Conference Call with Barnhill Contracting = available resources.

- Sept. 2, Pea Island Bridge Contract/Plan Meeting.
  - Develop bridge design, items of work, method of payment, timeframe, etc.
  - Carolina Bridge Co., STV/Ralph Whitehead Assoc. , Mabey Bridge Inc.
  - 4 hours later: 5 span bridge w/ main span 162 ft.. , H-Pile foundation, Cost Plus Contract.

Pea Island Bridge
Sat Sept. 3 to Mon Sept. 5
(days 7 to 9 post storm)

- Develop Substructure Plans.
- Foundation changed from 14” H-Pile to 24” diameter Pipe Pile approx. 70 ft. long.
- Construction Unit locate pipe pile from other projects. Piling to be spliced off site.
- Contract with Carolina Bridge Co, Orangeburg SC - $3.0 million.
- Carolina Bridge moved crane to bridge site.
- Mabey Bridge 660 ft.., $2.5 million.
- NCDOT begins hauling sand to small Pea Isl. washouts.



Rodanthe
Sat Sept. 3 to Mon Sept. 5
(days 7 to 9 post storm)

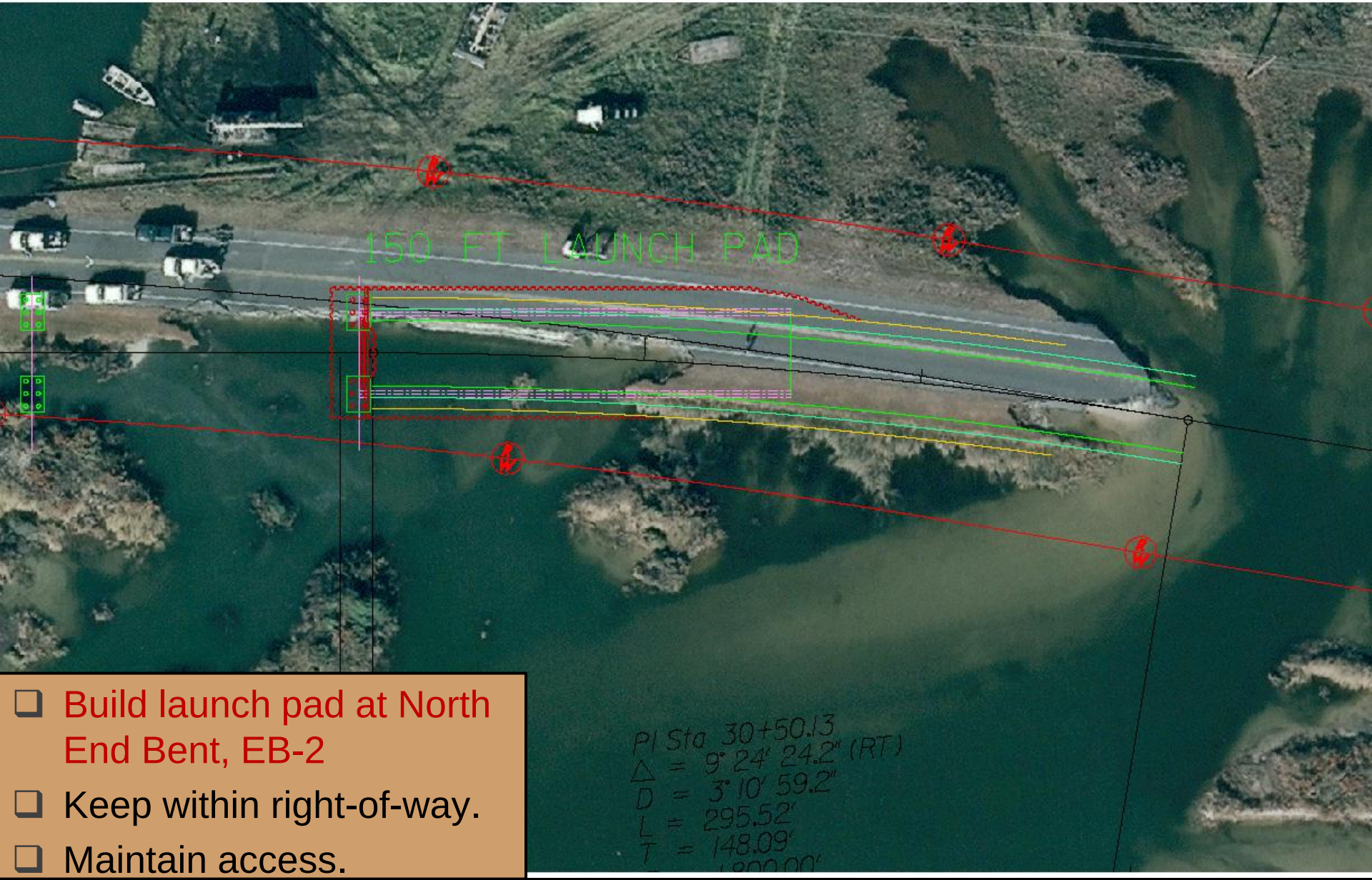
- Contract with Barnhill Contracting Co - $ 4.3 million.
- Barnhill mobilizes equipment by emergency ferry to Rodanthe.
  - 35+ for hire dump trucks.
  - 3 dozers & 2 excavators.
  - 2 front end loaders.
  - 1 roller.
  - 2 fuel trucks.
  - 3 loads of logging mats.
  - 6 light plants.
- Begin hauling sand Monday Sept 5.
- Logging Mat Road.


5 12:04PM

Logging Mat Road Building South To North

Pea Island
Tues Sept. 6 to Fri Sept. 9
(days 10 to 13 post storm)

- Continue to mobilize equip.
  - 2 crawler cranes & 2 rubber tire cranes.
  - Excavator, fork lifts, pile hammers
  - Work barges & tug boat.
  - Tools & Supplies.
- Begin construction stake out.
- NCDOT begins hauling H-Pile from inventory.
- Unload 3 to 5 truckloads of temporary bridge per day.
- Final Substructure Plans Sept. 9.
  - 7 days from bridge meeting Sept. 2.
- Begin driving sheet pile for launch pad/bridge build area at north end.



- Build launch pad at North End Bent, EB-2
- Keep within right-of-way.
- Maintain access.


8 4:18PM


8 4:49PM


9 1:27PM


9 1:58PM


9 1:26PM

Rodanthe
Tues Sept. 6 to Fri. Sept. 9
(days 10 to 13 post storm)

- Push sand across breaches at low tide.
- 25,000 CY hauled since Sept. 5.
- Pioneer logging mat road to south end of Pea Island Inlet.
- Prepare for swells from offshore Hurricane Katia.
- Mobilize for sand bag work.
- NCDOT Staff Biologists On Site.


9 2:26PM


9 3:09PM

Road Access To South End Of Pea Isl. Inlet


12 1:27PM


13 5:54PM

Move Equipment & Materials To South Pea Isl. Inlet

Sept. 10 to Oct. 10

(days 14 to 44 post storm)

Rodanthe – Sept. 10

- Continue hauling sand = 65,000 CY.
- Build dune & install sand bags.

Pea Isl. Bridge – Sept. 10

- Begin driving H-Pile at the north end bent & 24” pipe piles at interior bents.
- Mobilize materials & equipment by ferry to South of Pea Isl. Inlet.
- Begin bridge foundations south of inlet.
- Assembly of temp. bridge & launch.

- 5 Inspectors and 1 to 3 Biologists.
- Approx. 75 workers, 12 to 24 hrs/day.


10 2:57PM


10 2:58PM


11 3:29PM

11
7:21PM


12 11:12AM


13 2:59PM


13 2:59PM

Launch Pad Sheet Pile Complete

15 9:20AM

Fill Sheet Pile With 2,500 CY To Elevation +10.0

End Bent 2

- Set 400 pound temporary roller bearings on caps & launch pad.
- Alignment very critical due to launching method.


Launch Pad/Build Area 150 ft.. Long
16 4:11PM


16 4:38PM


18 11:03AM

- 14.76 ft.. truss panels.
- 2.5” diameter, 10 lb. pins with retaining rings.
- Transverse floor beams & wind bracing.
- Ideal for 24 hour work.

- Follow erection plan for counterbalance of launch.
- Push with excavator and/or front end loader.
- 825 tons total weight.


18 1:28PM

Driven Pipe Piles For 1st Interior Bent From Launch Pad – Bent 4


16 4:16PM

Substructure Built North To South

Pile Bent At North Side of Inlet – Bent 3


19 11:04AM


19 6:09PM


218
20 2:12PM

Pile Bent At North & South Sides Of Inlet, Bents 2 & 3 , 162 ft. Span


23 3:44PM

Bridge Launched To 1st Interior Bent From Launch Pad – Bent 4

Bridge Launched Near To Pile Cap At North End Of Inlet – Bent 3


24 2:26PM

Bridge Launched Across Inlet Near To Bent At South End Of Inlet – Bent 2

28 9:53AM


28 10:06AM

Drive Pile For South End Bent And Sheet Pile Retained Approach

Bridge Launched Onto Pile Cap At South End Of Inlet – Bent 2

Bridge Launched Near To Last Interior Pile Bent - Bent 1

Bridge Launched Near To Last Interior Pile Bent - Bent 1

Bridge Launched To South End Bent – EB 1

2 5:57PM


JLG
2 6:24PM


4 7:28PM

5 12:22PM


DEERE
7 11:59AM


7 10:50AM


1 9:19AM


...Meanwhile in Rodanthe
CATERPILLAR
9 2:18PM


9 2:19PM


14 3:07PM


KOBELCO
14 3:07PM


MIRLO
BEACH
DARE TO DREAM THE IMPOSSIBLE DREAM
HITACHI
25 10:53AM


30 3:18PM

- Contract with RPC Contracting - $1.4 million.
- Ferry 2,835 tons of asphalt :135 Trucks


9 5:22PM


10 3:12PM


MIRLO
BEACH
11 12:46PM


11 1:32PM

Future: 2.0 to 2.5 mile long bridges at each site. Currently in design & environmental merger team review process.

Pea Island Bridge

Rodanthe S-Curves