Flexibility in Design and Payment: The Keys to Success for the West Belle Pass Barrier Headland Project

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November 5, 2014
- Project Background
- Construction Details
- Lessons Learned
  - Pay on the Cut vs Pay on the Fill
  - Hurricane Isaac Impacts
  - Marsh Dewatering
- Summary
Project Location

A World of Solutions
- Designed and constructed under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA)

- Selected because it has one of the highest shoreline retreat rates in Louisiana and provides protection to Port Fourchon

- Project goals
  - Reestablish and increase headland longevity
  - Restore dune, shoreline, and back barrier marsh
2008

2,200 feet
Borrow Areas
March 4, 2012

Photo by AeroPhoto and courtesy of Weeks Marine
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May 1, 2012
July 16, 2012

Photo by AeroPhoto and courtesy of Weeks Marine
Non-pay Ratio = Volume excavated / Pay volume

- Difference can include:
  - Loss of silts from fill
  - Compaction of underlying soil
  - Placement of fill outside the template
  - Bulking factor
  - “Loss” of fill
- Pay on the Cut vs Pay on the Fill
  - Risk Management

- Pay on the Fill
  - Based on fill area surveys
  - Contractor builds non-pay ratio into cost and assumes risk of non-pay ratio being higher than estimated

- Pay on the cut
  - Based on borrow areas surveys
  - Client assumes risk of non-pay ratio exceeding estimated value
Non-pay ratios for other Louisiana barrier island projects
  – Holly Beach = 1.3
  – Chaland Headland = 1.4 (beach), 1.3 (marsh)
  – Bay Joe Wise = 1.6
  – East Grand Terre = 1.24 (beach), 2.1 (marsh)
  – Pelican Island = 1.5
  – **West Belle Pass = 1.0** (1.4 beach, 0.7 marsh)
Implication

- Assume 1M cy project (fill)
- Non-pay ratio of 1.25 = 1.25M cy dredged
- Non-pay ratio of 1.6 = 1.6M cy dredged
- Volume difference = 350,000 cy (35%)

- Cost = 350,000*$10/cy = $3.5M
Bid Volume = 1,758,000 cy (beach fill)
Final Pay Volume = 2,745,000cy

Beneficial Disposal From Belle Pass

Photo by AeroPhoto and courtesy of Weeks Marine
Hurricane Isaac Impact

- Made landfall at project area on August 29
- Storm surge knocked out Port Fourchon tide gauge
- Grand Isle tide gauge measured storm stage of +5.95 feet, NAVD
  - 25-year storm surge
  - Constructed dune crest elevation = +6 feet & +7 feet, NAVD
Hurricane Isaac Impact
Hurricane Isaac Impact
March 4, 2012

Photo by AeroPhoto and courtesy of Weeks Marine
Beach Fill = 2.0M cy & 183 ac
Marsh Fill = 2.0M cy & 334 ac
Cost = $31.5M
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