Diversion Structures

I. PERMITS
II. GATE TYPES
III. SLUICE GATED STRUCTURE FEATURES
IV. Tainter GATED STRUCTURE FEATURES
V. SOIL INVESTIGATIONS
VI. PILE FOUNDATIONS
VII. COFFERDAMS
VIII. DESIGN & CRITERIA
IX. INNOVATION VS CONVENTIONAL
DIVERSION STRUCTURES

• PERMIT REQUIREMENTS
• COASTAL USE STATE PERMIT
  • SECTION 10 – STRUCTURES IN NAVIGABLE WATERWAYS
  • 404 PERMIT – DREDGE OR FILL IN U.S. WATER RECEIVED BY STATE – SENT TO LDNR AND CORPS TOTAL 10 – 15 MONTH PROCESS
DIVERSION STRUCTURES

• LEVEE BOARD APPROVAL

• APPROVAL FROM CORPS AND CPRA REQUIRED IF:
  • WITHIN 300’ FROM HURRICANE PROTECTION
  • WITHIN 1500’ FROM MISSISSIPPI LEVEE

• MODIFICATION TO EXISTING FLOOD PROTECTION - 408 PERMIT
• (SECTION 10 & 404 PERMITS WILL NOT BE APPROVED W/O APPROVED 408 PERMIT)
DIVERSION STRUCTURES
GATE TYPES

Sluice vs Tainter
DIVERSION STRUCTURES

Major Project Features
MAJOR PROJECT FEATURES

• **INTAKE**
  - In-the-wet construction
  - Conc Rivetment Mats
  - Armoring
  - Protection Dolphins

• **HEADWORKS**
  - In-the-dry construction
  - Pile-supported Monolithic Concrete Control Structure
  - Steel Tainter Gates & Drive System
  - Equipment Rooms
  - Tie-in/Wing Walls
  - Access Bridge

• **DISCHARGE TRANSITION SEGMENT**
  - In-the-dry construction
  - X-sect geometry changes from U-frame to trapezoid
  - Lined with timber pile-supported concrete
  - Flaring T-walls used to create variable x-section geometry

• **CONVEYANCE CHANNEL**
  - In-the-wet construction (channel)
  - Trapezoidal cross-section
  - Armored with riprap
  - Guide levees (in-the-dry)
DIVERSION STRUCTURES

SOIL INVESTIGATION
Data Collection

- Freedom of Information Act (FOIA) Request 1-16-2014
- River Miles 35, 39.8 and 43
- Received FOIA Information 3-07-2014
Proposed Sites Soil and Geologic Profile – RM 37.5 to 10.0 A.H.P
### DIVERSION STRUCTURES

**Lower Breton Sound Sediment Diversion – Task 2 Site Selection Engineering Report**

**Confidential Information: Privileged & Confidential Work Product**

#### DIVERSION STRUCTURES

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**LOWER BRETON SOUND SEDIMENT DIVERSION**

**MARDI GRAS PASS**

**GLOBAL STABILITY ANALYSIS - BLOCK FAILURE**

**WATER @ EL. 10.0 - TOP OF COFFERDAM**

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**URS**

Lower Breton Sound Sediment Diversion – Task 2 Site Selection Engineering Report

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COFFERDAM ALTERNATIVES
Cofferdam Design Alternatives

• Earthen Cofferdam

• Combination of Earthen Cofferdam and Closed Cell Cofferdam

• Closed Cell Cofferdam

• Open Cell Cofferdam

• Brace Excavation
MAJOR PROJECT FEATURES: COFFERDAM
Open Cell Cofferdam
DESIGN & CRITERIA
OUTFALL CHANNEL
DIVERSION STRUCTURES

• OUTFALL
  • In-the-wet construction
  • Armored bottom
  • Toe sheets
  • Wing walls
MAJOR PROJECT FEATURES: ISOMETRIC VIEW
DIVERSION STRUCTURES

INNOVATION VS CONVENTIONAL CONSTRUCTION
DIVERSION STRUCTURES

- Innovations
  - Precast – Float in
  - Precast – Lift In
  - Prestressed

- Conventional
- Cast-In – Place Concrete within a cofferdam
DIVERSION STRUCTURES

QUESTIONS