2005 INFRASTRUCTURE SYSTEMS CONFERENCE

MARMET LOCKS AND DAM
LOCK REPLACEMENT PROJECT

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Marmet Locks and Dam

67.7 Miles from the Mouth of the Kanawha River
Approximately 20 Minute Drive to the State Capital in Charleston, WV

Marmet L&D
Charleston
Huntington

One Corps Serving the Army and the Nation
US Army Corps of Engineers
Marmet Locks and Dam
Existing Project

- Authorized by River and Harbors Act of 1930
- Began operations in 1934
- Twin 56 by 360 feet lock chambers
- Standard barge design vessel
- Five 110 feet roller gates
- Nine feet navigable depth
Marmet Locks and Dam
Existing Project
Marmet Locks and Dam
Existing Project
Marmet Locks Original Construction
Marmet Locks Original Construction
Marmet Locks Original Lock

Deteriorating Concrete
Marmet Lock Replacement Project

Twin 56’ by 360’ locks
13.8 million tons (95% Coal)
5 Lockages per tow
Average Delays 4.7 hours/tow

216 Tracts Real Estate
252 Relocations
New 110’ by 800’ lock
Contract Award May 02
Total Project Cost: $333 M
Marmet Lock Replacement Project

- Authorized by Water Resources Development Act of 1996
- New 110-ft by 800-ft additional lock
- Acquisition of about 250 structures
- Construction contract award May 02
- Scheduled completion June 09
- Total project cost $333 M
Traffic 2004

- 4,025 tows passed Marmet
- 13.8 million tons
- Coal, Chemical, Aggregate, Petroleum
**Marmet Lock Replacement Project**

**Project Schedule**

- Initiate Real Estate Acquisition  
  - FY 98
- Complete Plans & Specs  
  - FY 01
- Complete Phase 1 & 2 Real Estate  
  - FY 01
- Initiate Construction  
  - FY 02
- Complete Phase 3 Real Estate  
  - FY 02
- Lock Operational  
  - FY 08
- Completion  
  - FY 09
Marmet Lock Replacement Project

LEGEND
- **Yellow** EXISTING LOCKS AND DAM
- **Red** PROPOSED LOCK MODIFICATIONS
- **White** PROPOSED CULVERT ALIGNMENT
- **Blue** PROPOSED COFFER DAMS

KANAWHA RIVER FLOW

DISPOSAL AREA
Marmet Lock Replacement Project

Estimated Quantities

- Soil Excavation: 2,900,000 CY
- Rock Excavation: 110,000 CY
- Steel Sheet Piling: 145,000 LF
- Rock Anchors: 39,800 LF
- Concrete: 290,000 CY
- Concrete Reinforcement: 3,800,000 LB
- Portland Cement: 714,500 CWT
- Pozzolan (Fly Ash): 215,000 CWT
- Structural Steel: 1,800,000 LB
Marmet Lock Replacement Project

Cofferdam New Lock Tie-In
Marmet Lock Replacement Project

COFFERDAM CELL

NEW NOSE CELL
Filling and Emptying System
Through-the-Sill Filling Intake
CAST-IN-PLACE
INTAKE MANIFOLD
ALSO SERVES AS THE
UPSTREAM MITER GATE SILL
Upstream Sill Excavation
Filling and Emptying Culverts

SECTION C-C

ADDITIONAL LOCK

FLOWABLE FILL

U.P. EL. 179.832

L.P. EL. 172.517
Typical Chamber Configuration

LAND WALL

CULVERTS

RIVER WALL

MONOLITHS FOUND ON ROCK. CULVERTS RECESSION IN ROCK IN CHAMBER FLOOR
Typical Culvert Port Configuration

TWO SYMMETRIC CAST-IN-PLACE CULVERTS WITH PORTS FOR FILLING AND EMPTYING
Culvert Rock Excavation
Typical Downstream Guide Wall

L.P. EL. 172.517

11.380 DIA. CELLS

SECTION D-D
Typical Downstream Guide Wall

- Consists of cast-in-place monoliths founded on trimmie filled sheet pile cells.
Typical Downstream Guide Wall

Dec 04 – Guide Wall Construction
Typical Upstream Guide Wall
Typical Upstream Guide Wall

UPSTREAM GUIDE WALL
CONSISTS OF CAST-IN-PLACE
7 FT. DIAMETER DRILLED
SHAFTS AND CAP BEAMS
WITH PRECAST POST-TENSIONED BOX BEAMS
Typical Upstream Guide Wall

INSTALLING 7 FT. DIAMETER CASING THRU SOIL TO ROCK
DRILLING 7 FT. DIAMETER SHAFTS WITH BAER BG-40
PLACING SHAFT CONCRETE WITH TREMIE CONCRETE
Typical Upstream Guide Wall

Forming and Casting Post-Tensioned Box Beam
Lock Wall Concrete Placement
Lock Wall Concrete Placement
Proposed Finished Lock
QUESTIONS

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