NEWINGTON-DOVER
Spaulding Turnpike / Little Bay Bridge Project

WELCOME

SENH/NH-ASCE Joint Meeting
September 28, 2011

VHB, Inc.
Presentation Outline

- Introduction
- Project Overview
- Bridge Design Considerations
- Questions & Answers (following second presentation)
View of Little Bay Bridge

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Newington-Dover Selected Alternative

Reconstruct & Widens Turnpike
- 8 Lanes – Exit 3 to Exit 6
- 6 Lanes south of Exit 3 (match into 6 lanes at Exit 1)
- 6 Lanes north of Exit 6 (match into width at Toll Plaza)

Consolidates & Reconfigures the Interchanges
- Eliminate Exit 2 (Fox Run Road ramps)
- Reconstruct Exit 3 (Full service interchange with northern access into Pease)
- Maintain Exit 4 Ramps (Nimble Hill Road & Shattuck Way)
- Eliminate Exit 5 (Hilton Park & Wentworth Terrace)
- Reconstruct Exit 6 (Full service interchange with US 4 & Dover Point Road)
Construction Contract Breakouts

- Contract L – SB Little Bay Bridge - $58.0M
- Contract M – Exits 3 & 4 - $52.7M
- Contract O – Existing LBB Rehabilitation - $31.1M
- Contract Q – Exit 6, Dover Mainline & Soundwalls - $38.6M
- Contract S – GSB Rehabilitation - $26.8 M

Total Construction Cost = $207.2M (2010 Dollars)

$219.5M (with Inflation)

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### Contract Breakout & Schedule

![Map and Construction Schedule](image)

#### Construction Schedule

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**Note:** Construction schedule includes advertise, bid period, and construction duration costs are depicted in 2010 dollars.

**Total cost all contracts = $207.2 M**
Contract L - SB Little Bay Bridge Construction - $50 M

- Currently Under Construction - Cianbro
- SB Little Bay Bridge
- Spaulding Turnpike Dover Interim Roadway Connections
- Spaulding Turnpike Newington Roadway Approach
- Exit 5 Ramp Reconstruction
- Hilton Drive
- General Sullivan Bridge Dover Abutment
- Pedestrian & Bicycle Structure
Contract Completed To Date

- Pomeroy Cove Pathway
- GSB Pathway
- Building Demolitions
- Pedestrian Approach and Bridge
- Temporary Trestle
- Drilled Shafts and Piers under construction
- Dover Abutment
SB Little Bay Bridge Facts

- 9-span continuous with an overall length of 1639 feet. 275’ channel span at center.
- 72’ wide roadway
- 5.72 million pounds of structural steel (48.3 psf)
- Concrete Pier bents supported on 8’6” diameter drilled shafts
- Superstructure Cost ~ $132/sf
- Substructure Cost ~ $110/sf
EXISTING GENERAL SULLIVAN AND LITTLE BAY BRIDGE

- Mass pier foundations
- Little Bay Bridge - 2 NB & SB lanes with 2’ shoulders
- General Sullivan Bridge – pedestrian and recreational use

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• Close proximity to existing bridges – 15’ or less
• Drilled shaft foundations
• Reduced construction and environmental impacts
• 2 lanes NB & SB with 9’ outside shoulders
Visualization - After
Bridge Design Challenges

- **Project Schedule**
  - 12 months from Pre-TS&L Study to Contract Plans for Advertising.

- **Constructability**
  - Tight Site constraints
  - Strong Currents in the Bay

- **Vessel Collision Loads**
  - No specific guidance from the Owner

- **Weathering Steel and Coating Evaluation**

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Bridge Design Challenges Cont’d

- Drilled Shaft Design and Tolerances
  - Limited borings at some pier locations
  - Depth variability and redistribution of forces
  - Out-of-plumb and location and secondary moment effects

- Two Superstructure Designs
  - Post-Tensioned, Variable Depth Bulb-Tee (94 plan sheets)
  - Variable Depth Steel Plate Girder (76 sheets)

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Vessel Collision
Constructability

- Erection Methods
  - Strand Jacks
  - Barge/Trestles
  - Large marine crane(s)
  - Girder Launching
  - Phasing from new bridge

- Maintaining Traffic and Navigational Opening
Looking North toward Dover

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STEEL CAGE FOR DRILLED SHAFTS

VHB, Inc.
TEMPORARY TRESTLE WITH EXTENDED FINGER PIER FOR DRILLED SHAFTS
VHB, Inc.
CORE BARREL TO CLEAN UP
(SMOOTH OUT)
DRILLED SHAFT
INSPECTION ACCESS OF EXISTING LBB PILES FOR “O” CONTRACT

VHB, Inc.
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THANK YOU

Questions/Comments