Virginia Concrete Conference
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Piners Point Interchange Project
David D. Nuckols, P.E.
Billy R. Jenkins, P.E.

Life Of The Pinners Point Interchange Project
- Design Contract Signed
  » October 28, 1991
- Projected Construction Completion
  » June 30, 2005

Begin Project

End Project

Project Location
Project Location

Need for the Project

• To Provide Additional Capacity To The Midtown Tunnel
• To Provide A Direct Connection Via An Interchange Between The Western Freeway, The Midtown Tunnel And Martin Luther King Freeway
• To Remove Transient Western Freeway Traffic From Residential Streets In Historic Port Norfolk
• To Help Alleviate Traffic On The Other River Crossings

Historic Port Norfolk

Milestone Dates

• Plan Originated In 1965 Southeastern Regional Transportation Study
• Location And Preliminary Design Study – January 1990
• Design Contract Signed – October 28, 1991

Construction Contract Awarded On

November 15, 2001

Tidewater Skanska, Inc.
$136,000,000
MLK Freeway Over CSX Railroad

Overland Bridges

Alignments

Geometric Constraints
- Portsmouth Marine Terminal
- Titan America (Tarmac)
- Norfolk Portsmouth Beltline Railroad
Complex Geometry

- Number of Horizontal Curves: 12
- Number of Piers: 62
- Number of Spans: 62
- Number of Cont. Units: 18
- Number of Abutments: 6
Why Drilled Shafts?

- Smaller Foundation Footprint
- Higher Capacity per Element
- Minimize Vibrations on Existing Facilities
- Economy of Scale

Test Shafts

Drilled Shafts

- 42” $\Phi$ Drilled Shafts
- 60” $\Phi$ Drilled Shafts
- 72” $\Phi$ Drilled Shafts
- 84” $\Phi$ Drilled Shafts

Foundations

Drilled Shafts

Piers

- Multi-Column
- Hammerhead
- Post-Tensioned Pier Cap
Miscellaneous – Inspection Station

Miscellaneous – Temporary Traffic Control

Miscellaneous – Impact Attenuators

Concrete Factoids

• Low Permeability Concrete

Concrete Factoids

• Low Permeability Concrete
• Compressive Strengths
• Volumes
Concrete Factoids

- Low Permeability Concrete
- Compressive Strengths
- Volumes
- Post-Tensioning Grout

Panners Point Interchange

Transition from Overland Bridge to River Crossing

Billy R. Jenkins, P.E.

River Crossing Bridge

“Concrete Facts”

- P/C P/S Concrete Piles
- CIP Concrete Bent Cap
- P/C P/S Concrete I-Beams
- CIP Concrete Deck
- CIP Concrete Parapets & Median Barriers

GEOMETRICS

- Connects Interchange Bridges to Existing West Norfolk Bridge
- Length
  - Main Bridge (3600 LF)
  - EB Bikeway (563 LF)
  - WB Bikeway (640 LF)
- Width Varies from 60 to 114 Feet
- Height Varies from 25 to 40 Feet
- Spans Vary from 50 to 130 Feet
- Vertical Curve
- Horizontal Curve
- Spiral Taper in Transitions
- Varying Superelevations
  - Pile Bents are “Radial”
P/C P/S Concrete Piles

- 66” Diameter Cylinder Piles
  - Capacity: 300 to 500 T
  - Concrete: 7 KSI
  - Quantity: 33,005 LF (6.5 Miles)
- 24” Square Piles
  - Capacity: 100 T
  - Concrete: 5 KSI
  - Quantity: 11,135 LF (2.1 Miles)
- 12” Square Piles
  - Capacity: 40 T
  - Concrete: 5 KSI
  - Quantity: 725 LF
- Total Quantity: 45,885 LF (8.7 Miles)

CIP Concrete Bent Caps

- Concrete: 3 KSI Low Permeability
- Quantity: 6,236 CY

P/C P/S Concrete I-Beams

- Concrete: 8 KSI
- Quantities
  - Type II & III: 2,445 LF
  - Type V: 36,730 LF (7.4 Miles)
  - Type VIM: 16,940 LF (3.2 Miles)
- Total Quantity: 57,815 LF (11 Miles)

CIP Concrete Deck, Parapets & Median Barriers

- Concrete: 4.5 KSI Low Permeability
- Quantity:
  - Concrete: 13,169 CY
  - Reinforcing Steel: 3.2 Million Lbs
  - Parapet / Median Barrier: 12,602 LF (2.4 Miles)

River Crossing Bridge

“Concrete Facts”

- P/C P/S Concrete Piles (8.7 Miles)
- CIP Concrete Bent Cap (6,236 CY)
- P/C P/S Concrete I-Beams (11 Miles)
- CIP Concrete Deck (13,169 CY)
- CIP Concrete Parapets & Median Barrier (2.4 Miles)

Utilities

- Water Main
- Power
- Lighting
- Telephone (Verizon)
- Cable (Cox Communications)
- Traffic Maintenance System
Maintenance Of Traffic

Stage 1

Stage 2

Constructability / Innovativeness

Tunnel Support Facility

- Administration & Maintenance Building
  - P/C Concrete Wall Panels
  - 11 Service Bays
  - 17,400 Square Feet
- Emergency Vehicle Services Building
  - P/C Concrete Wall Panels
  - 3 Parking Bays
  - 3,800 Square Feet
- Salt Dome
- Spreader Racks
  - 3 Spreaders
- Fuel Service Island
- Wash Rack

Thank You

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Questions and Answers