Bridge 1-714
Chapman Road over I-95  Newark, DE
Project Location

Chapman Rd Over I-95

Bridge 1-714

DelDOT Bridge 1-714 Chapman Rd over I-95 Newark, DE
Bridge Background

- Constructed – 1963
- 6 simple spans
  - 53.75’-135’-108.5’-108.5’-122.5’-53.75’
- Steel plate girders & rolled beams
- 5 girder X-section (38’ out-to-out)
- RC multi-column bents on spread footings
- RC stub abutments on piles
Proposed Project Scope

- Bridge inspection
- Develop a rehabilitation strategy
  - Bridge deck replacement
  - Cleaning and painting of superstructure
  - **Elimination of deck joints**
  - Welded cover plate retrofit for fatigue resistance
  - Substructure repairs
Typical Condition Deck
Typical Condition Sidewalk
Typical Condition Tooth Dam at Pier
Typical Condition Superstructure
Typical Condition Superstructure under Tooth Dam
Typical Condition Pier
Typical Condition Pier Column

DelDOT Bridge 1-714 Chapman Rd over I-95 Newark, DE
Why ABC?

• Avoid Long Term Disruption to I-95

• Limited bridge closure time due to nearby high school (includes pedestrian traffic)

• Median area adjacent to the rest stop provides large and accessible staging areas adjacent to the bridge

• Additional overpasses in close proximity for detour route during summer (non-school months)
• Deck Elements
  – Precast Deck Panels
    • Partial-Depth Panels; and
    • Full-Depth Panels
Prefabricated Bridge Elements and Systems (PBES)

- Beam Elements
  - Eliminate Conventional Onsite Deck Forming
    - Adjacent Box Beams; or
    - Adjacent Bulb-tee Beams
Prefabricated Bridge Elements and Systems (PBES)

• Substructure Elements
  – Prefabricated Caps for Pile Foundations
  – Prefabricated Wall Panels
  – Prefabricated Columns
Prefabricated Bridge Elements and Systems (PBES)

- Substructure Elements
  - Modular Precast Walls
    - Mechanically Stabilized Earth Systems (MSE)
    - Modular Block Systems (T-Wall)
Conceptual Bridge Replacement Options

Three-span steel plate girder

Two single-span P/S PA bulb tee
• PBES
  – A partial or total bridge that is procured in a modular manner, such that traffic operations can be allowed to resume after placement.
  – Systems are rolled, launched, slid, lifted, or otherwise transported into place.
  – Often require innovation in planning, engineering design and construction methods.
Prefabricated Bridge Elements and Systems (PBES)

- Placement Methods
  - Self Propelled Modular Transporter (SPMT’s)
Prefabricated Bridge Elements and Systems (PBES)

• Placement Methods
  – Longitudinal Launching
Prefabricated Bridge Elements and Systems (PBES)

Placement Methods
Horizontal Skidding or Sliding
Prefabricated Bridge Elements and Systems (PBES)

- Placement Methods
  - Conventional Cranes
Conceptual Bridge Replacement Options

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Questions & Answers