I-95 Bridge Restoration Project
Project Background

- Restore 11 bridges
- Richmond I-95 Corridor
- Concrete: 9,500 cy or...17 football fields 4” deep
- Total of 234 PCUs
- Update: 157 PCUs Cast
- 99 PCUs Installed
Casting Yard

- 25-acre site
- Mi-jack gantry cranes
- Casting beds
- Actual field substructure geometry
- PCU storage
Preconstructed Composite Units (PCUs)

- LW concrete 9 inch slab
- Fabricated plate girders
- 2 or 3 girder components
- Transverse PT bars
- Cast-in-place closure pours
- Continuity bars
Concrete Challenges

- LW Concrete Aggregate Moisture
- Finishing lightweight concrete
- PT Grouting
- Work time for closure pours
- SCC wet weight and effects on formwork
- Shotcrete
Substructure Concrete Work

- Surface Repairs/Shotcrete
- Crack Injection Repairs
- Drilled Shafts
- Footing Extensions
- Abutments
- Pier Caps
- In-Fill Walls (SCC)
- Electrochemical Chloride Extraction (ECE)
- Sacrificial Cathodic Protection (CP)
Substructure: Challenges
Substructure: Drilled Shafts
Substructure: Surface Repairs
Substructure: Shotcrete
Substructure: Pedestal Repairs
Existing Bridge: Joint Repairs
Substructure: New Pier Caps
Substructure: Self-Consolidating Concrete
Substructure: Infill Walls - Lombardy
Superstructure Concrete Work

- Lightweight concrete decks
- Grout PT ducts
- Closure Pours
- Continuity Joints
- Parapets/Median Barrier
Superstructure: Test Slabs
Superstructure: Deck Pours
Superstructure: Pump or Dump
Superstructure: Moving PCUs
Superstructure: On Site
Superstructure: Closure Pours
Superstructure: Grouting Continuity Bars
Roadway Walls – RW3 CIP Wall
Roadway Walls – MSE Wall
Lessons Learned

- Non-production Test Slabs are Important!!!
- LW Concrete Aggregates – Moisture
- LW Concrete Finishing – Fogging
- LW Concrete Finishing – Bunyon Screed Speed
- Avoid unreinforced “knife edges” for skewed bridges
- Multiple Concrete Suppliers
Lessons Learned

Cones make for great temporary supports!!!
Acknowledgements

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- **CEI Consultant:** Michael Baker Jr., Inc.

- **Engineer:** URS Corporation

- **General Contractor:** Archer Western Constructors, LLC