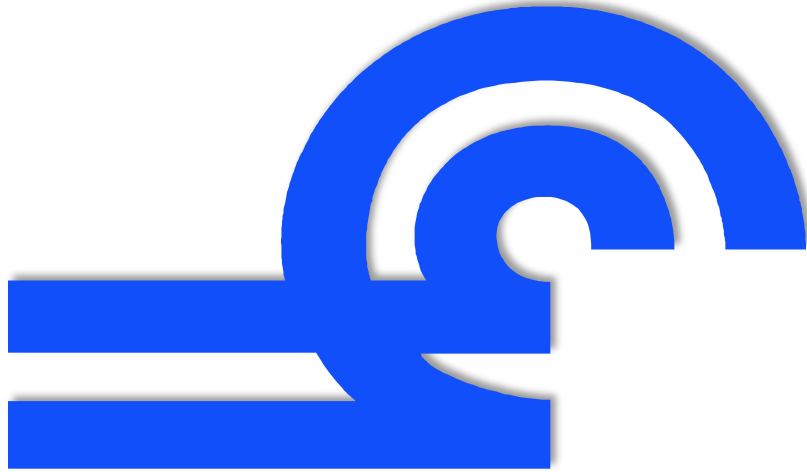


CONRAIL



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Structural Engineering Institute of ASCE

Office of Vice President/Chief Engineer



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Structural Engineering Institute of ASCE

Delair Bridge Span Replacement: Upgrading for the Future of Commerce



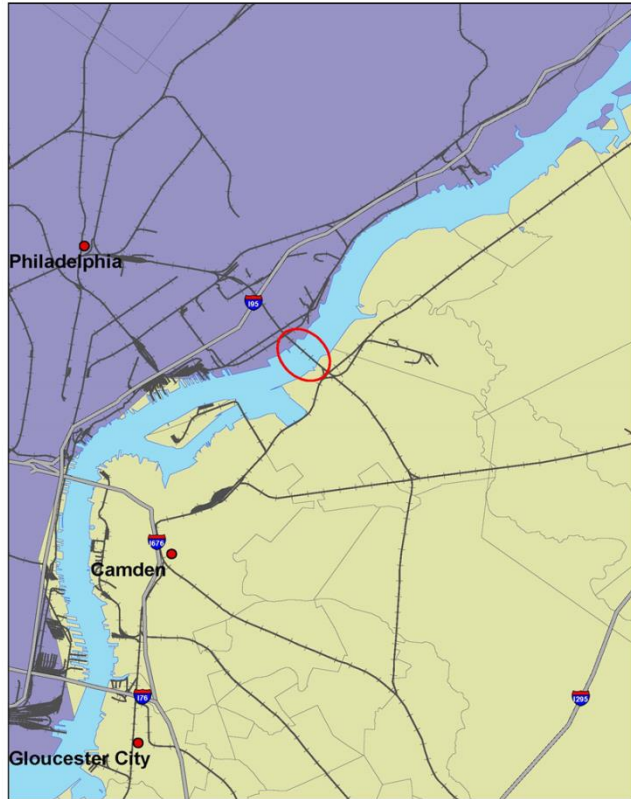
Project Overview

- **Project Method:** Accelerated Bridge Construction
- **Obstacles:**
 - Physical and Environmental Constraints
 - Federal Approval Timelines vs. Procurement Limitations
 - Operational and Shared-Use Logistics
- **Results:**
 - Project Completed 11 Months Ahead of Schedule
 - \$14M in Total Budget Savings
 - Reallocation of Federal Cost-Share to Additional Infrastructure Projects



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Project Purpose and Need



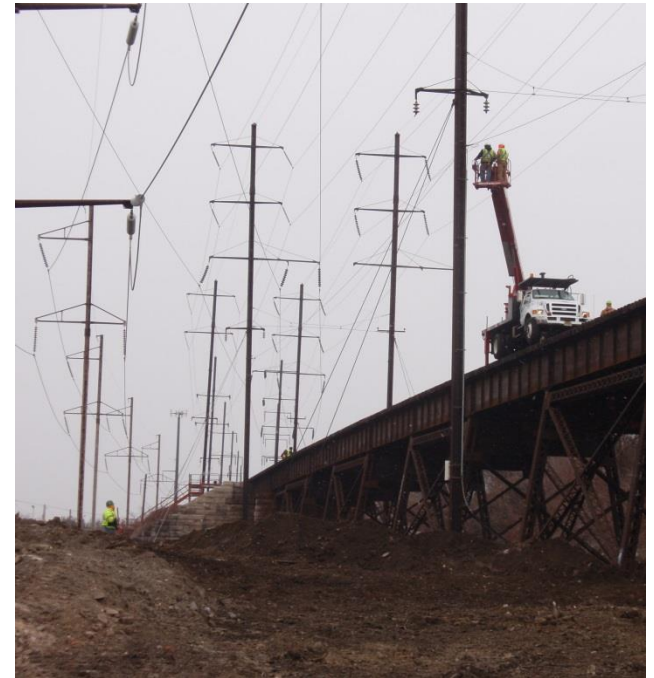
- Only freight rail access to Southern NJ
- Approach spans not rated for 286K
- Increased safety for employees



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Operational Considerations

- Shared Use of Bridge
 - Freight customer needs
 - NJ TRANSIT passenger service
 - Electric transmission service
- 72-Hour Outage Limit
- Winter Black-Out Period



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Funding Mechanism, Approvals, and Issues

- USDOT TIGER Grant: 50% Cost Share
- Notice to Proceed with Construction Contingent Upon:
 - NEPA
 - Section 106
 - Other state/federal permits and coordination
- Buy America Requirement for Steel
 - Seasonal order placement
- Two Co-Lead Agencies



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Expediting Environmental Approvals

- Facilitate Procurement to Keep Schedule
- Plan of Action:
 1. Optimize avoidance alternatives
 2. Team meetings in the field
 3. Negotiate concurrent review



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1. Optimize Avoidance Alternatives

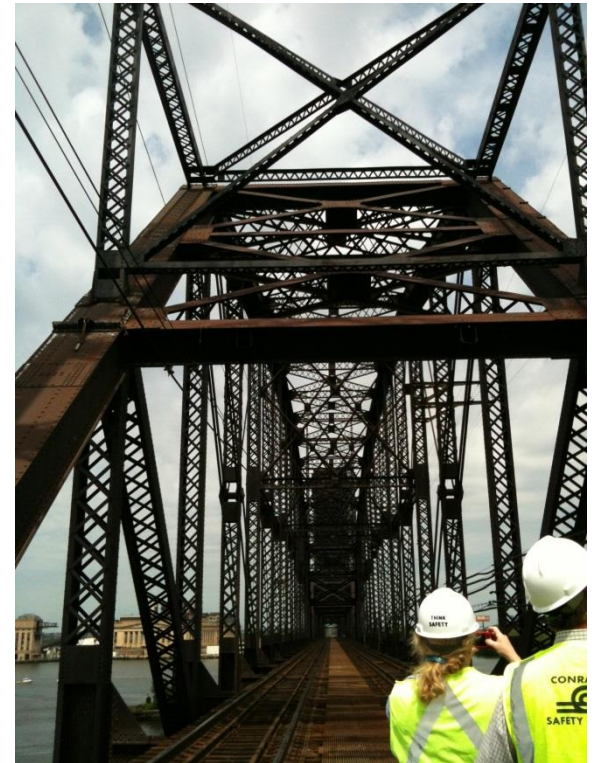
- PA Span replacement over water
- Eliminate USACE permit processing
- Use land-based approach
- Means and methods described in bid package



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2. Team Meeting in the Field

- Resolve SHPO Issues Simultaneously
- Describe Span Replacement Methods
- Identify off-site impacts



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3. Negotiate Concurrent Review

- No environmental impacts except historic architecture
 - Section 106 critical path
 - No bearing on other environmental categories
- FRA agreed to review CED while SHPO prepared Section 106



U.S. Department
Of Transportation

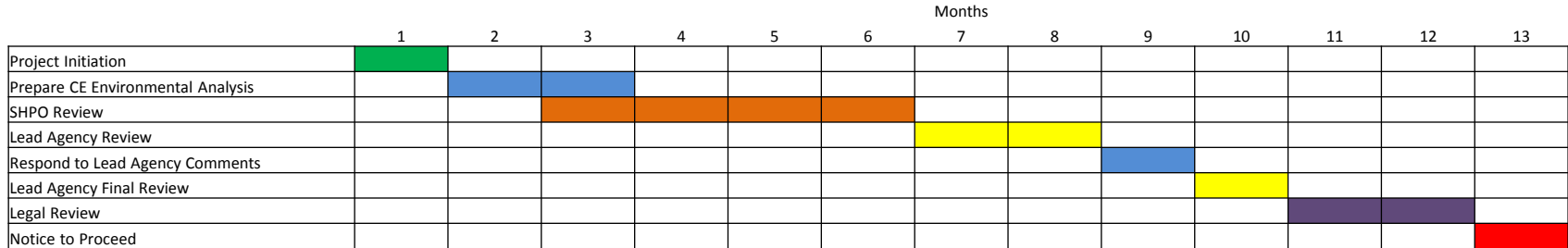
Federal Railroad
Administration



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NEPA Schedule Comparison

Typical Sequential Processing



Negotiated Concurrent Review Processing



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Engineering and Design Challenges

- 114-year-old As-Builts
- Modular Construction Required Precision
- Pre-outage Coordination
 - PECO, Amtrak, NJ TRANSIT, freight customers
 - 8 weeks between outages
 - Shortened to 4 weeks



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Span Replacement Process

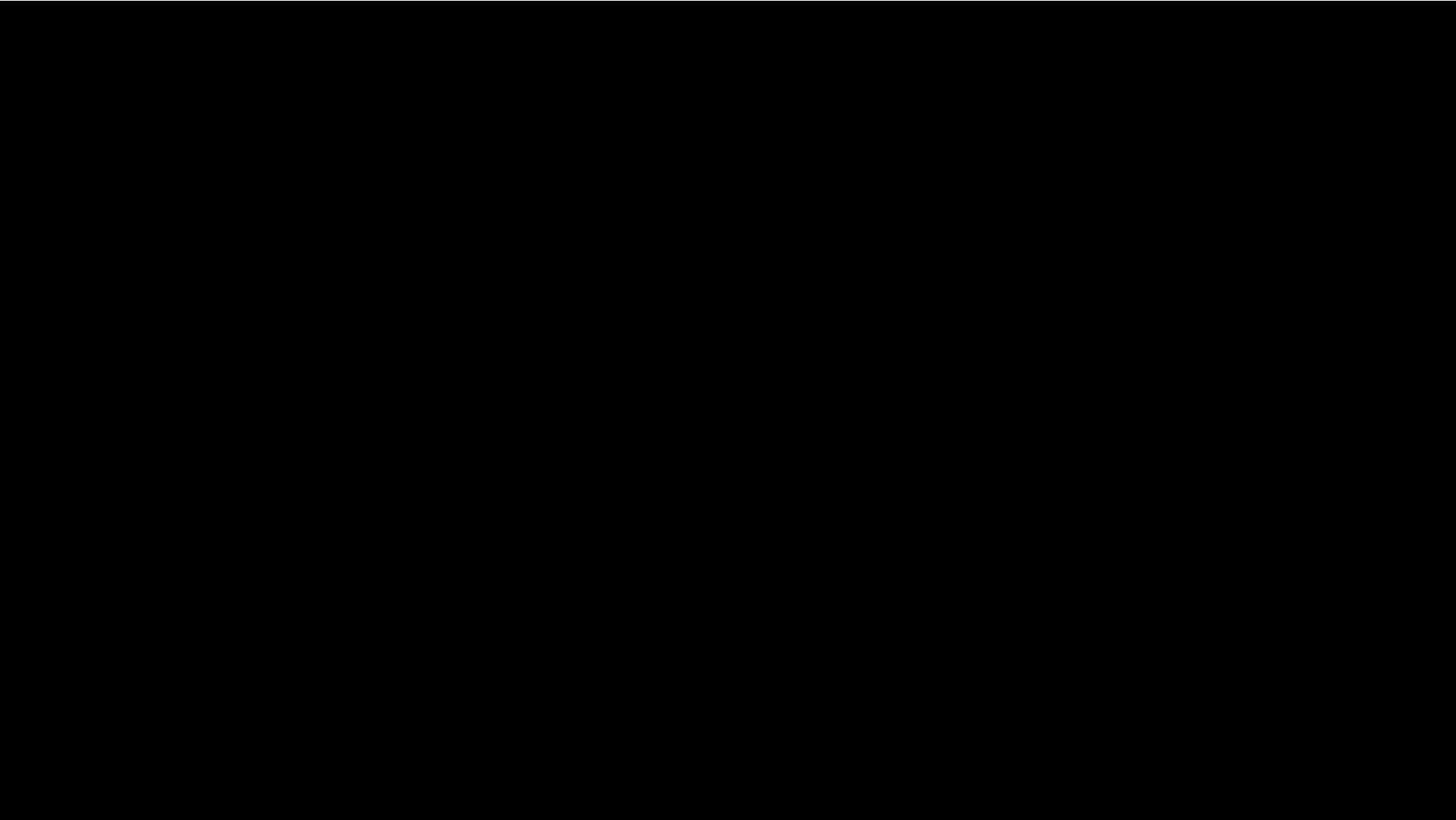
- Between Outages Replace Rivets with Bolts
- Within 72 Hours
 - Cut out old span
 - Replace with new span
 - Replace rail



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Typical Span Replacement





Span 35 Replacement

- Catenary Pole Mid-Span
- Method
 - Use Two Cranes and Flatbed Rail Car
 - Occupy NJ TRANSIT Tracks



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Span 35 Replacement



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Span 52 Replacement

- Span closest to Delaware River
- Critical C&S Platform Attached to Existing Span
- Stay upland of USACE jurisdictional boundary
- Method:
 - One 500-ton Crane, Fully Extended Boom
 - Construct Span in the Field
 - Reduce Total Spans Replaced to Six



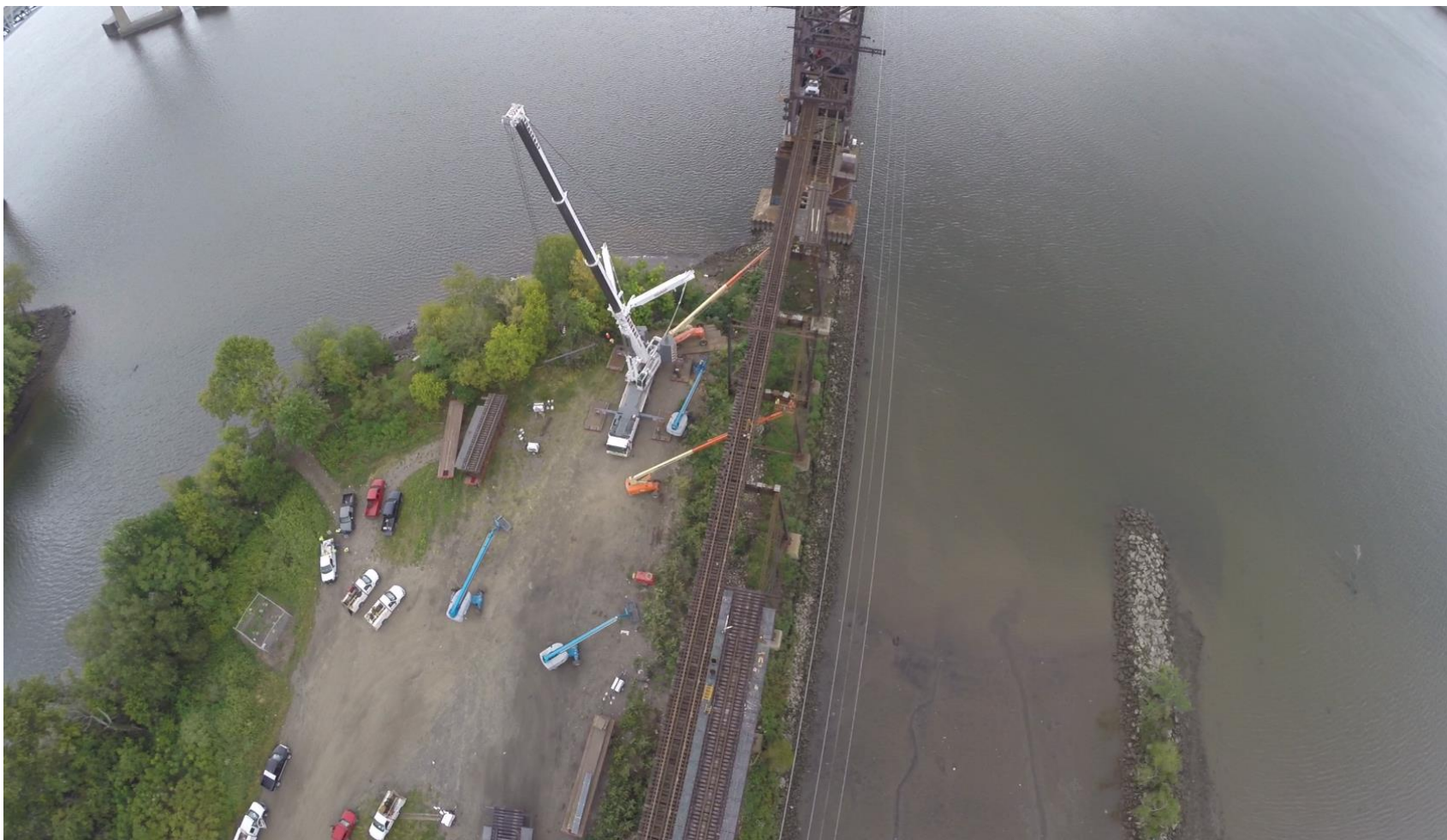
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Span 52 Replacement



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Span 52 Replacement





Project Conclusion

- Projected Completion Date: December 2015
- Substantially Complete: October 2014
- Total Budget: \$11.8M
- Federal Funds Reallocated: \$ 5.6M

Unallocated funds applied to unfunded grant projects.



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