

Rapid Bridge Replacement Project

Magnitude, Challenges & Technology



19th ANNUAL MEETING & TRADE SHOW



Presented to:



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By:

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PADOT Rapid Bridge Replacement Project (PARBRP)

- **558 bridges in ~ 2 & 1/2 years**
 - 411 single Span Bridges
 - 27 Multiple Span Bridges
 - 120 are Culverts

- **Prestressed, Culverts, Steel**
 - Average Structure is about 60' in length
 - 62 will be more than 100' long
 - 417 bridges will be constructed using 2,291 pre-stressed concrete beams
 - The beams will use 6.1 million linear feet of steel strand or 1,155 miles

- **Construct as per revised PADOT 408 Change #7**

- **Construct as per specifications as if this were a standard design bid build**



Role of the CQAF

Construction Quality Acceptance Firm :CQAF

Construction Quality Acceptance Managers: CQAM

Construction Quality Acceptance Staff



A quality acceptance inspection and material sampling/testing staff shall be employed by the CQAF and shall, under the direction of the CQAM, perform inspection and material sampling/testing of all Work performed and materials incorporated into the Project by any member of Development Entity's group.

➤ **The services of the CQAF shall be part of the Development Entity's Quality Management System.**

- ✓ perform independent quality acceptance material testing and inspection;
- ✓ perform quality acceptance inspection;
- ✓ perform audits addressing compliance with QMP;
- ✓ certify that the Work meets Development Entity's acceptance criteria;

Role of the CQAF

- TRC Engineers, is contracted to the Development Entity, Plenary Walsh Keystone Partners LLC (PWKP)
 - ✓ Acceptance breaks
 - ✓ Backfill
 - ✓ Bituminous Paving
- TRC Engineers by contract has joint and equal reporting responsibilities to both PWKP, and PADOT. TRC is the only entity contractually tied to both the owner (DOT) and the developer.
- Inspection process for CQAF is designed as a “HOLD POINTS” inspection relative to items that are defined as an acceptance test, or activity
 - ✓ Foundations
 - ✓ Test piles
 - ✓ Production piles
 - ✓ Concrete placement
- In addition to the field inspection element TRC Engineers, is also responsible for
 - ✓ SOS review
 - ✓ Full time inspection in fabrication facilities for prestressed, precast, structural steel elements 23 facilities to date.



Role of the CQAM

- The CQAM shall review, approve, authorize, examine, and confirm any methods or procedures requiring the “Engineers’ review, approval, authorization, examination, confirmation, etc.” which are contained in Publication 408. (Ex Dot: Structures control Engineer)
- *is part of the three part dispute resolution team consisting of TRC, PADOT, HDR*
- *Issue Recommendation Letter for substantial completion*
- *Issue Recommendation letter for final acceptance.*



Structure of CQAF

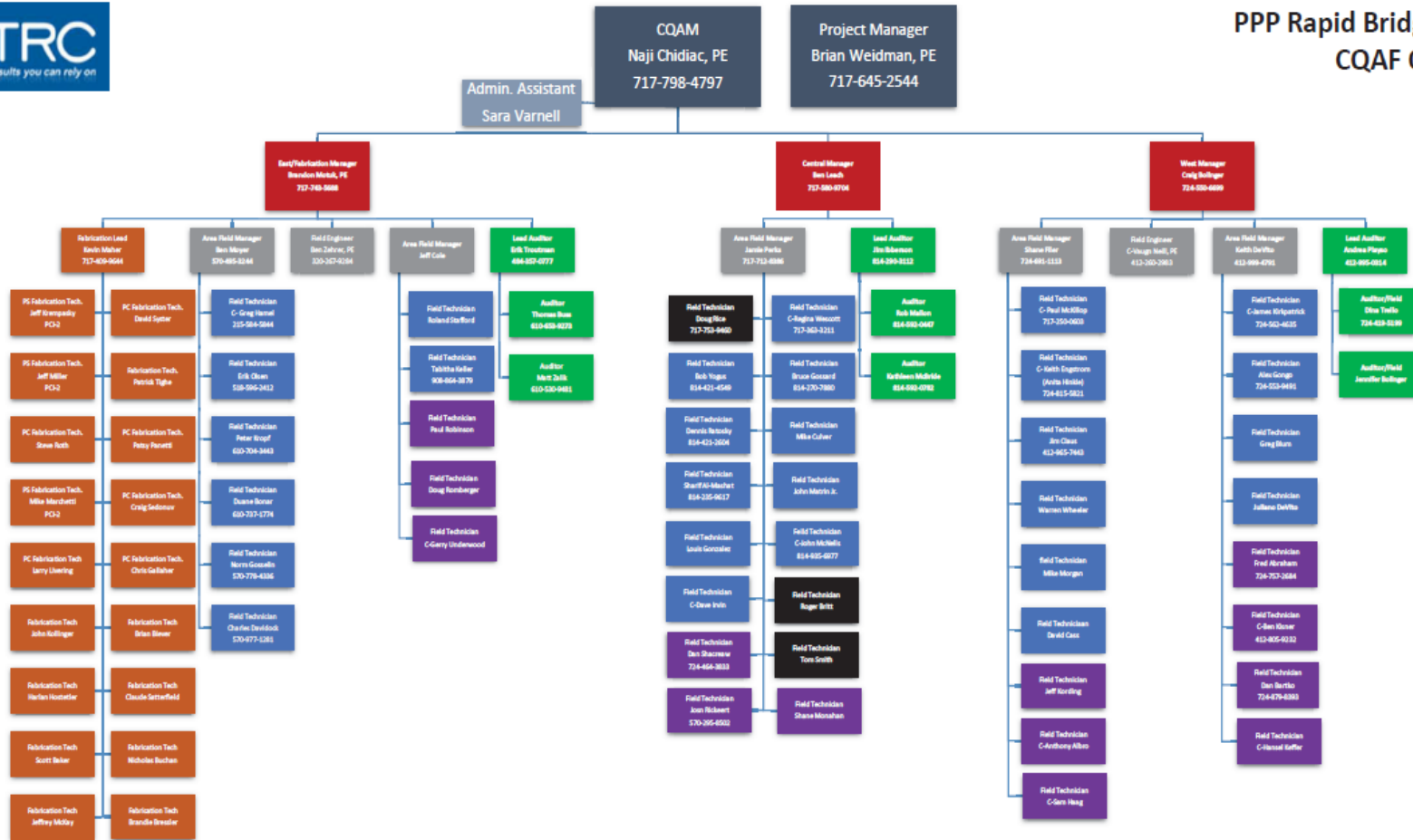
- Developed a structure in CQAF, Construction Managers, Area Field Managers and Field staff, Auditors. Parallel Unit for fabrication shop inspection.
- This structure is loosely matched on the QC side with WGCJV
- 3 regions across state typical pyramid structure
- Created a matrix of communication in quality management units and PADOT
- Intent is to push down decisions making levels, and establish escalation processes if needed.
- Final say goes to dispute resolution team



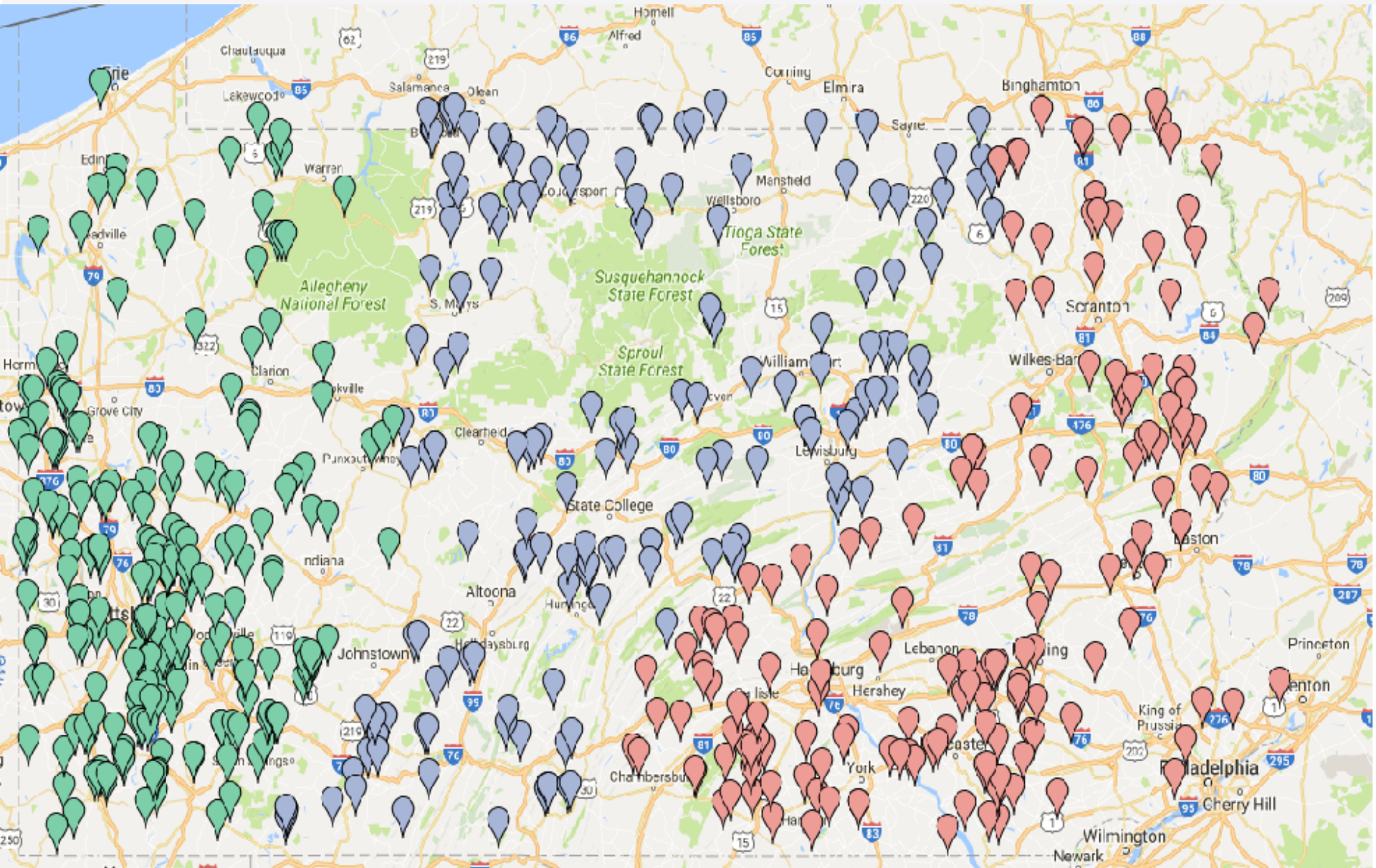
Structure of CQAF



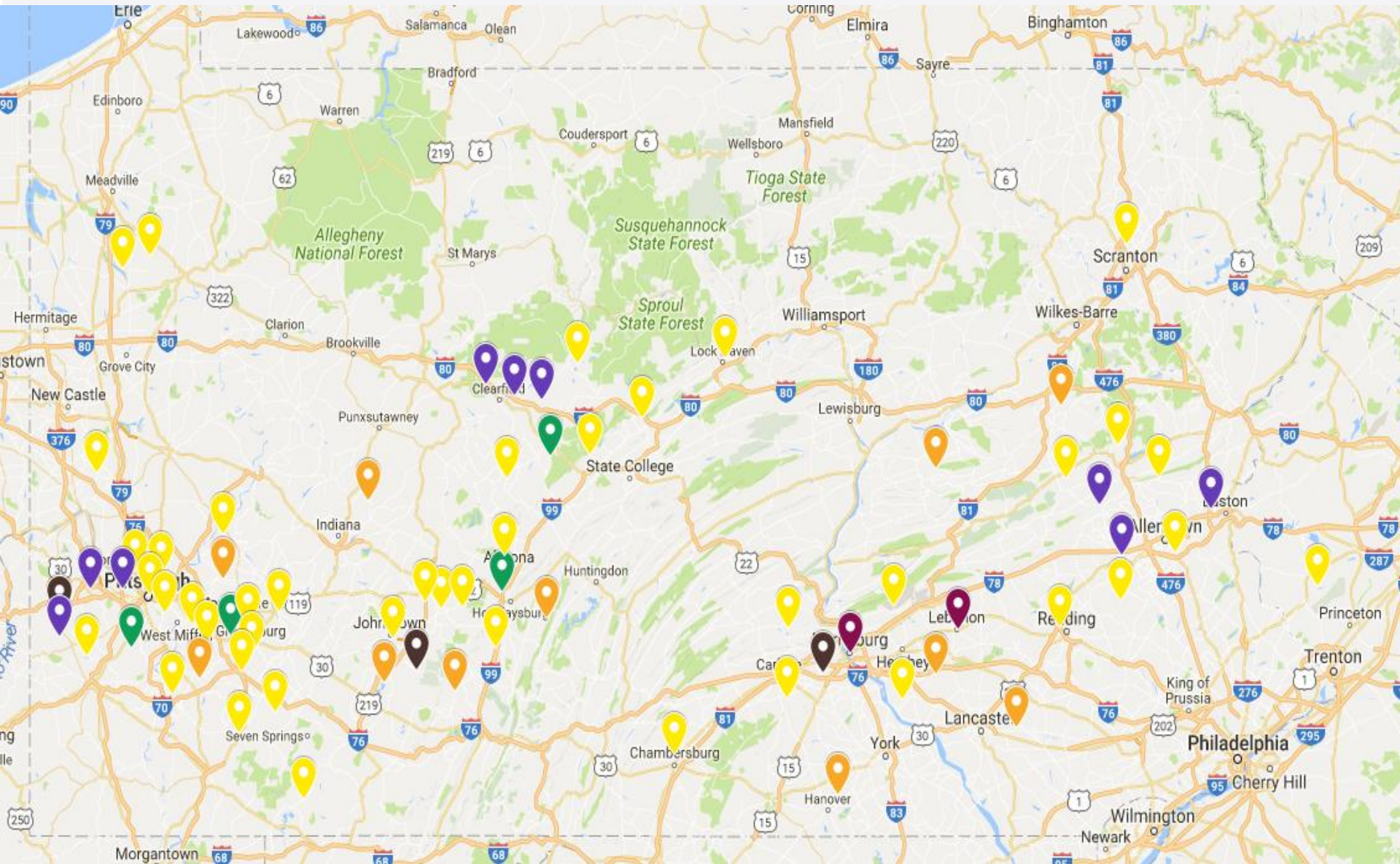
PPP Rapid Bridge Replacement CQAF Operations Staff



Challenges



Challenges



Challenges

- **Understanding the differences in roles between CQAF, Quality control, Quality assurance**
- **Qualified Inspectors**
 - ✓ Same certifications as standard delivery
 - ✓ Available resources
 - ✓ Different approach to acceptance with CQAF Hold Point inspection
 - ✓ Substantial on-boarding effort
 - ✓ Extensive winter school
 - ✓ Fully integrated sub consultants



Challenges

- **Matching manpower to Contractors schedule**
 - ✓ General schedule is on a continuous two day look ahead
 - ✓ Real schedule is hourly

- **Work force fatigue**
 - ✓ High stress job everyone is watching
 - ✓ Extensive travel – 1,783,558 miles driven thru Oct
 - ✓ OT hours, recently OT was the equivalent of 19 FTE's
 - ✓ Contractor delays

- **Paperless project**



Paperless Project



No Field Offices

Paperless Project

- Paperless project
- Shared systems
- 24 hour turn around on reports
 - ✓ Field report written
 - ✓ Supervisor approved
 - ✓ Placed in SharePoint
- Fully computerized field and audit staff
 - ✓ Dell venues, with wifi and 4g
 - ✓ Use of smart forms
 - ✓ Cross checks for all source of supply with audit staff



Paperless Project - Mobile Internet Service



Paperless Project



Dell Venue 11 Pro with External Keyboard

Paperless Project

➤ Reasons for using the Venue

- ✓ Full-sized keyboard provides a laptop-like experience
- ✓ Compatibility with Adobe Smart Forms
- ✓ Compatibility with Industry Time and Expense Software
- ✓ Embedded 4G LTE card
- ✓ Full size USB3.0

➤ Lessons Learned

- ✓ Standard Car Chargers do not work
- ✓ Don't trust internet service maps, worse than what they advertise
- ✓ Need Dedicated IT support for "How To Questions"



Thank you

Questions?

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