Get Ready, Set, Go!.... STOP!!!

The Challenges with a Simple Rail Bridge Coating Project

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Murphy’s Law…..

• Die Tücke Der Dinge ("The perverseness of things")

Murphy’s Laws
1. In any field of endeavor, anything that can go wrong, will go wrong.
2. Left to themselves, things always go from bad to worse.
3. If there is a possibility of several things going wrong, the one that will go wrong, is the one that will cause the most damage.
4. Nature always sides with the hidden flaw.
5. If everything seems to be going well, you have obviously overlooked something.

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The Project

• **Polyurea** specified for major Rail Bridge deck waterproofing  
  • 2 steel decks, ~1,600 ft$^2$ each (150 m$^2$ each)  
  • 2 concrete header decks, ~250 ft$^2$ each (24 m$^2$ each)

• Polyurea Specified at min average 120 mils (3 mm)  
  • Applied over urethane based primer (8 - 10 mils, 200 – 250 µm)

• Abrasive Blast Steel (SSPC-SP 5 / NACE No. 1)

• Concrete Headers, SSPC-SP 13 / NACE No. 6, CSP 3 to 5

• Install pre-fabricated joint sections
The Project – Material & Timing

- Polyurea specified for major Rail Bridge deck waterproofing
  - 2 steel decks, ~1,600 ft² each (150 m² each)
  - 2 concrete header decks, ~250 ft² each (24 m² each)
- Polyurea Specified at min average 120 mils (3 mm)
  - Applied over urethane based primer (8 - 10 mils, 200 – 250 µm)
- Total of ~ 3,700 ft² (345 m²)
- Material use: 318 gallon / 3 drum sets
- Theoretical production spray time: 1,600 ft² / hour (145 m² / hour)
  - Running 2 gals / min output (~ 4 liters / min)

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Location of Rail Bridge Decks

“south-bound” deck location

Bridge replacement

“north-bound” deck location

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The Challenges

• Work with the local DOT and their schedule
• Work with the Rail company, and their train schedules
• Work with the General Contractor
  • Schedules and work was very “fluid”.......  
  • Weather delays
• Work with the Polyurea Contractor
  • Mobilization: Elgin – Fort Worth – North Dallas, Texas

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First Mobilization

• First of August 2018
• One day preparing spray equipment for work
• Abrasive blasting for 2 days, < half deck done... Why????
  • Spec’ed SSPC-SP 5 ??? Weathering steel???? Adjusted to SSPC-SP 10
• Applied to “South-bound” bridge deck
  • Achieved min DFT requirements
  • Achieved min Adhesion requirements
• Application took 1.5 hours, done for this mobilization
  • Does not include waiting / standby time, that was all day (Murphy)....

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First Mobilization - Completed Log Files

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First Mobilization

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First Mobilization

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Second Mobilization

• End of August 2018

• Abrasive blasting went very well this time......
  • Adjusted to SSPC-SP 10
  • Achieved min surface profile, and cleanliness

• Applied to “North-bound” bridge deck and concrete headers
  • Achieved min DFT requirements

• Application took 2.5 hours, done for this mobilization
  • Does not include waiting / standby time, that was all day (Murphy)....

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Surface Profile Measurements

- ASTM D 4417 / SSPC-PA 17 / NACE RP 0287-2016
- DeFelsko PosiTector ADV Body, s/n 731896 / PosiTector RTR-P, s/n 247342, Testex Press-O-Film HT X-course

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Second Mobilization - Completed Log Files

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Second Mobilization

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Second Mobilization

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Third Mobilization

• First of October 2018

• To Install the “South-bound” bridge section
  • Of course, said would have it out by time ready to spray install joints
  • We were READY!
  • Spray was only to be ~ 50 ft² (4.6 m²)

• Finally told would be 2 more days, mobilization canceled!
Fourth Mobilization

• Mid November 2018
• Installed the “South-bound” side bridge section
• Modified “joint area installation” by hand
  • Spray polyurea application not “available”
  • Approved changed to spec by Rail company and supplier
• South-bound section completed, train traffic resumed
Fifth Mobilization

• Mid January 2019
• To Install the “North-bound” side Bridge section
• Arrived by noon, bridge section not in place till 8:00 pm
  • Hurry up and wait…….
• And then Murphy’s visit…
  • Whip hose plugged on ISO-side, no spare whip…
  • Removed whip, re-arranged electrical and air
  • Spray gun not working…….
  • All fixed, now ready to spray the ~ 50 ft² (4.6 m²)……..
Fifth Mobilization

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The Pre-Fab Joints did not Fit!!!

• Uncle Murphy’s last visit of the project....
• Design drawings did not match to placed bridge section
• Fabricate some special plates, wait on welders.....
• Dallas Cowboys playoff game on......
• Lot’s of tension........
• But, got it done, covered and ballast, rails set and train traffic resumed....
Fifth Mobilization

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But The Results!

Protective Solutions Span Railway Overpass

By: Stephanie Marie Clark

In 2019, the PDA Conference was held in Hilton Orange County/Costa Mesa, California. The conference was attended by many professionals from the infrastructure field.

A case study from Mobile-Atlanta, Inc. was presented, showing how their protective solutions were used on a railway overpass project. The materials and techniques used were highlighted, along with the challenges that were faced during the project.

The results of the project were favorable, with the protective solutions successfully protecting the railway overpass from potential damage. The project was completed on schedule and within budget, demonstrating the effectiveness of the chosen solutions.

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The results of the 2019 PDA Conference were quite promising. Many presentations were given, showcasing the latest advancements and solutions in the field of infrastructure. The conference was a great opportunity for professionals to network and learn from each other.

One of the main topics discussed was the importance of protective solutions in railway construction. The case study presented by Mobile-Atlanta, Inc. demonstrated the effectiveness of their protective solutions in a railway overpass project.

Overall, the conference was a success, with many attendees expressing their satisfaction with the presentations and educational opportunities provided. It is expected that the knowledge gained at the conference will be valuable in future projects.
Conclusion

• Be aware, even with proper specification, **The Best Laid Plans:**
  • the futility of making detailed plans when the ability to fully or even partially execute them is uncertain……

• Quality Contracting company adapted to a fluid situation…..
  • “Endeavor to persevere”
    • Chief Dan George (Lone Waite), The Outlaw Josey Wales
  • Experience, dedicated crew

• Spraying was the easy part....
Thank You!

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