US 14 Emergency Repairs Black Earth, Wisconsin

Brenda Schoenfeld, Supervisor Greg Brecka, Project Manager

WisDOT/ACEC Transportation Improvement Conference, March 6, 2019



Monday August 20, 2018 Western Dane County received 13–15 inches of rain in 24 hours

The National Weather Service estimated 15.33 inches of rain fell in Cross Plains, the heaviest rainfall for a 24-hour period ever recorded in Wisconsin.



Dane County rainfall

The storm severely affected the western half of the county. The most rain was reported in Cross Plains at over 15 inches.

Unofficial high rainfall reports for select areas:













Black Earth, WI



Inspection Findings

Structure inspection on 8/23 found that both the west bridge B-13-2 (Shoebox) and the east bridge B-13-3 were compromised.

Built in 1935, the bridges were constructed on spread footings. The B-2 west abutment was undermined. The B-3 center pier dropped.

Recommendation: the bridges must be replaced.

Week 1

- 8/21 Tuesday
 - US 14 is closed due to structure failure at B-2
- 8/22 Wednesday
 - Maintenance structure inspection surveys of multiple bridges throughout SW Region impacted by the 8/20 storm.
 - PDS assigned US14 B-2 Bridge project to PDS Dane 1
- 8/23 Thursday
 - US 14 is closed at B-3
 - BOS assigned structure designer and supervisor
 - PDS pulled as-builts and structure inspections
- Friday 8/24
 - Determination by BOS that both structures are beyond repair and must be replaced.

Week 2

- Monday 8/27
 - Planning assigned project IDs and funding
 - Survey contracted with JSD for full survey.
- Tuesday 8/28
 - Emergency Contracting approval by Administrators Office for multiple projects.
 - BPD Approved replacement of structures with new 40 foot clear width structure
 - Surveyor submitted streambed shots and centerline alignment shots.

Week 2 Continued

- Wednesday 8/29
 - PDS contacted 4 bridge contractors asking for availability and if they would submit bids.
 - PDS used as-builts and survey to develop alignments and vertical profiles.
 - TSS soil borings at each structure
- Thursday 8/30
 - Utilities ordered a mandatory utility coordination meeting requiring attendance and system maps on 9/5.
 - Additional survey information for BOS submitted and processed. Tied existing structure to alignment.

Week 2 Continued

- Friday 8/31
 - Coordination with BOS on vertical profile needs based on raising the deck 1.5 feet and creating 0.5% vertical grade from the existing flat profile.
- Saturday 9/1 and Sunday 9/2
 - Development of alignment and profiles for the 2 bridges by PDS. BOS worked on hydraulic analysis. Coordination between the two sections to meet hydraulic needs and use concrete girders.



Week 3

- Monday 9/3, Labor Day Holiday
 - BOS and PDS staff continue to work on the preliminary layout.
- Tuesday 9/4
 - BOS continued to design the structure.
 - Plats pulled the existing RW for the area.
 - Environmental coordinated with DNR for their concurrence.

Week 3 Continued

- Wednesday 9/5 Friday 9/7
 - Consultant contract for inspection was estimated and requested for approval.
 - Plans specials and miscellaneous quantities were assembled.
- 9/7 BPD developed proposal packet with wage rates, ASPs
- Final Survey processed on Friday 9/7 afternoon
- 3:54 pm Friday 9/7 Bidding packet was sent to 4 contractors requesting bids by Wednesday 9/12

Week 3 Continued

• 9/7 Plan set sent to contractors included key items:

- Structure plans were mostly complete, piling size and quantity, girder size and quantity. General bid items and quantities. Final detailed sheets completed later.
- Roadway plan set included plan view, with quantities. No cross sections were completed. Determined volumes off old as-built and Access Dane website 2 foot contours. Pencil drawings. Final cross sections completed later.



- Tuesaday 9/11 Addenda
 - Structure plans added temporary shoring, bill of bars not completed until later in the week.
 - Roadway plan updated quantities. Found bust in HMA quantities.
- Wednesday 9/12, 3 pm bids submitted by contractors

Contracting Steps

- We requested three bids, each bridge by itself and then one for both bridges together. We requested price and completion date.
- Three contractors bid. The most cost effective had the longest completion date. We chose the second low bid for the best combination of price and schedule.
- We requested approval from the AO office to move forward with the second low bid. Approval granted later that day.
- We contacted Kraemer NA on Thursday 9/13; met at the DOT Southwest Region. We signed an agreement that day.



New Bridge Designs

- The new bridges designed to be longer and wider.
- B-2 34.5 ' wide B-3 32.5' wide both will now be 40' wide.
- B-2 was 65 'long, the new bridge is 90'.
- B-3 was 83' long , the new bridge is 94', single span.
- The bridges are now both 1.5' higher.
- Both bridges are now on piling.

Week 5

Work began Monday 9/17









Week 10 Deck Pour

K. @m





Weeks 11-13 Oct 22- Nov 16

- Roadway Construction
- Raise profile approximately 1.5 FT
- Fight more weather
 - Heavy rain Nov 4
 - Hard freeze Nov 6-8
 - Frost 6-8 inches deep

Week 13 Friday Nov 16 Open to traffic 2 pm



2019 Work

- Punchlist Restoration
 - Topsoil froze before it could be prepped and seeded
- Complete design documentation
 - Environmental Document
 - Design Study Report





US 14 B-13-329 Mazomanie

Supervisor Karla Knorr Project Manager Alex Hagen

Investigation showed 5 feet of exposed pile under east pier footing.

Large 15 foot scour hole where trail had been adjacent to pier.



- Wolf Run Trail sponsors requested to raise trail elevation.
- Discussion with DNR we can protect the pier footings and fill in scour to replace trail in kind.
 - No extra fill in floodway, no raising of the trail.
- Flood funding only for work within the public right of way.





Restored to previous condition



I-94 Slope Failures Jefferson County Supervisor Jim Oettinger, PM Craig Hardy, PL Jeremy White

Project included 3 locations where saturated slopes failed following heavy rains August 17 (approximately 10" of rain recorded in the area)









The Fix: Remove all waste material, place a 5' layer of shot rock over geo-grid. Then fill slope with Select Crushed Material. Construction started October 8.

Estimated 2700 CY Ex Common / 1640 Tons Shot Rock / 10670 Tons Select Crushed



November 12: Construction Mostly complete – removal of waste material located off of right of way to be removed once ground is frozen on local farmers field.



US 12, Juneau County





WIS 71 Monroe County



WIS 162, Vernon County





US 14, Vernon County





US 14, Vernon County



Summer 2018 Flooding

Southwest Region

Thank you to our staff who worked long hours, holidays and weekends to ensure the safety of the traveling public.

Thank you to our contractors who stepped up and completed work timely, making these repairs a priority in their schedules.

August 2018

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