

IOWA | DOT

Stony Creek Bridge Spencer, Iowa

August 26, 2026

Outline

Preliminary Design, Hydrologic and Hydraulic Review

Historic Flood and IADOT response

Final Bridge Design

Right of Way & Permitting

Bridge Construction



Preliminary Design, Hydrologic and Hydraulic Review

Started out as a Typical Bridge Replacement Project in the Iowa DOT's 5-year Plan

Anticipated Replacement in FY 2026 – AECOM under Preliminary Design in 2023 (TS&L Development)

Existing Str. – 76' x 30' Steel I-Beam Bridge with High Abutments Const. in 1915 and modified in 1958

Concept Plan Recommended 140' x 44' CCS Bridge

Project Located Approx. 5 miles West of Spencer

H&H Analysis and TS&L Began in Summer 2023



Hydrologic and Hydraulic Review

Estimated Drainage Area of 78.1 Square Miles, Zone A (Approximate Floodplain)

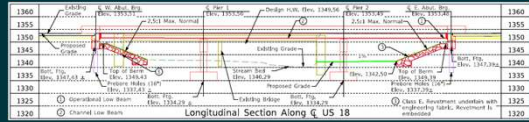
Q100 – 5,640 cfs, Q50- 4,730 cfs

HEC-RAS 1D Completed verifying Concept Recommendation. Ex. Brg. Velocities > 10 fps, > 4' of BW

Scour potential noted based on Ex. Velocities, BW and Location of Ex. Center Pier and E. Abutment

Proposed Design Recommended Bridge shift 22' East for Improved Pier and Abutment Placement

Proposed Design Decreased Velocities 3-5 fps, Increased Flow Area Approx. 42% over existing



Hydrologic and Hydraulic Review

Preliminary Design Completed in Fall of 2023, Scheduled for Final Design to Begin in 2024

Significant Flooding Event in June of 2024

Bridge was Closed to Traffic and Coordination with the Iowa DOT on Repair/Replacement Recommendations Began



Nov. 2020 Google Imagery



Sept. 2024 Google Imagery





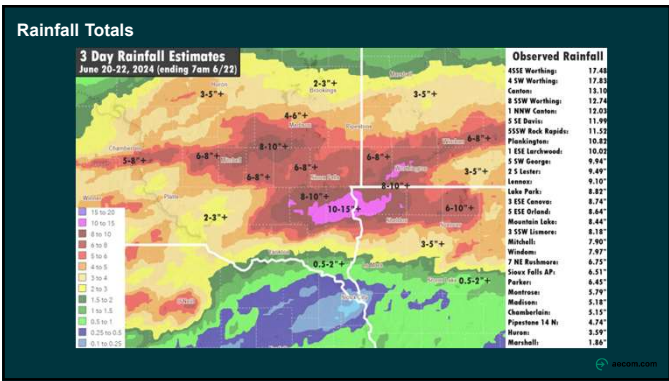
Historic Flood Event in June 2024

- A multi-day heavy rainfall event led to widespread heavy rain across Northwest Iowa.
- In pockets of southeastern South Dakota and northwest Iowa, rain totals between 10 and 20" were reported.
- These rainfall amounts exceed the 0.2-0.1% (500-1000 year) Annual Exceedance Probability in some areas.

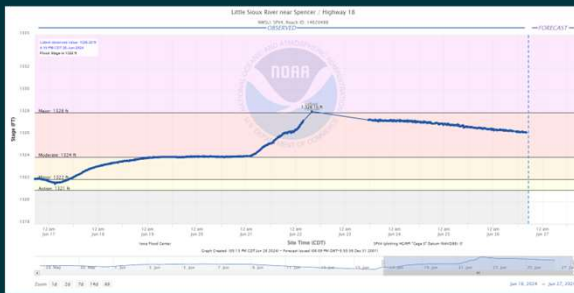
Damage to Local Communities

- The flooding resulted in over 500 homes and businesses being destroyed and thousands more receiving damage.
- 3 known fatalities also occurred from the flooding.

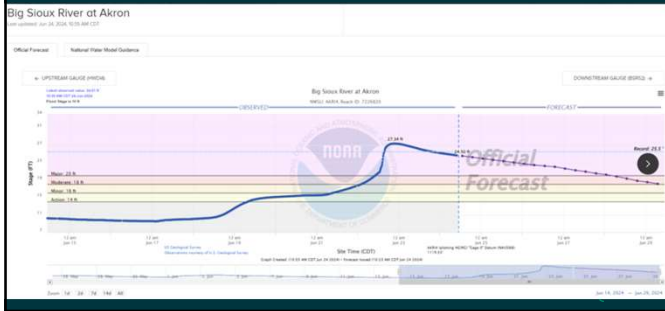
accu.com



Flood Stage at US Highway 18



Flood Stage at Akron



Historic Flooding Across NW Iowa

Historic Flood Levels on Every Major River in NW Iowa

- o Big Sioux
- o Floyd
- o West Branch Floyd
- o Rock
- o West Branch of Des Moines
- o Little Sioux
- o Ocheyedan

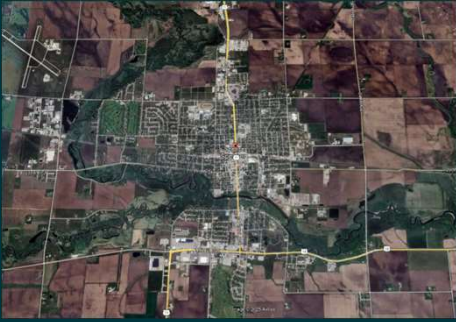
Multiple Communities Impacted with Loss of Service and Housing

- o Akron
- o Hawarden
- o Spencer
- o Cherokee
- o Correctionville
- o Sioux Rapids
- o Rock Valley
- o Emmetsburg
- o Smithland
- o Rock Rapids
- o Le Mars
- o And Many Others

- #### Impact on State Highways & Recovery
- o Over 100 Road Closures on State Routes in NW Iowa
 - o 6 Emergency Projects
 - o 53 Permanent Repair Projects
 - o 12 FEMA Projects



Spencer Iowa – Split by Little Sioux River



Spencer Iowa – Split by Little Sioux River



Spencer Iowa – Split by Little Sioux River



Spencer, IA Flooding – US 71



Spencer Iowa – Split by Little Sioux River



Record Flood Comparison

New River Records Set (June 2024)

(HWM) Crest Estimated via High Water Mark Survey

Floyd River Basin		
Floyd River at Alton	Observed: 26.81'	Record: 22.0' (Sept. 20, 2018)
Floyd River at Struble	Observed: 18.47'	Record: 16.41' (March 14, 2019)
Floyd River at Le Mars	Observed: 27.97'	Record: 26.4' (June 8, 1953)
Floyd River at Merrill	Observed: 20.19'	Record: 20.0' (Sept 18, 1926)
Floyd River at James	Observed: 32.39'	Record: 31.5' (March 15, 2019)
Little Sioux River Basin		
W Fork Little Sioux near Lake Park	Observed: 1400.01'	Record: 1399.4' (June 24, 2018)
Little Sioux River near Milford	Observed: 20.40'	Record: 20.1' (June 25, 2018)
Little Sioux near Spencer/Hwy 18	Observed: 1326.17'	Record: 1326.60' (June 25, 2018)
Little Sioux River at Spencer	Observed: 22.2' (HWM)	Record: 20.2' (June 8, 1953)
Little Sioux River at Linn Grove	Observed: 29.98'	Record: 24.1' (March 16, 2019)
Little Sioux River at Cherokee	Observed: 32.98' (HWM)	Record: 28.4' (March 14, 2019)
Little Sioux River at Correctionville	Observed: 30.92'	Record: 29.3' (June 23, 1891)
Ocheyedan River near Spencer	Observed: 17.20'	Record: 12.9' (June 18, 1953)
Des Moines River Basin		
Des Moines River above Windsor	Observed: 25.01'	Record: 24.7' (April 10, 1969)

All data preliminary and subject to change after coordination with gauge owner and local officials

Spencer, Iowa Flooding



Gov. Kim Reynolds talked to Spencer residents on June 27, 2024, days after the town was hit with historic flooding. *Cyle Horner/The Register*

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Existing Stony Creek Bridge

•Bridge Approaches Spanning Washout



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Existing Stony Creek Bridge

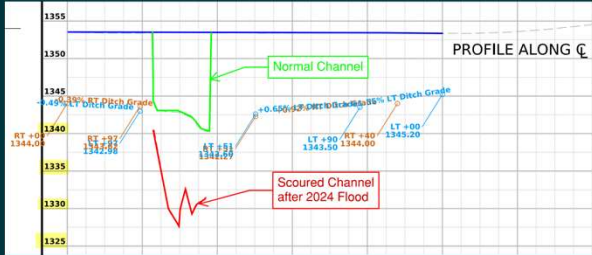
•Bridge Deck Condition



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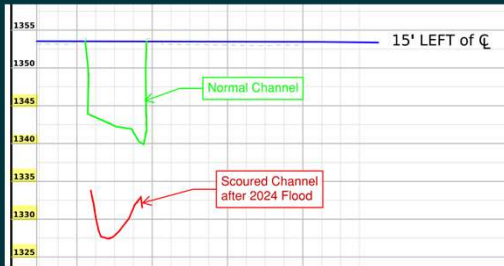
Existing Stony Creek Bridge

•Bridge Scour at CL US 18



Existing Stony Creek Bridge

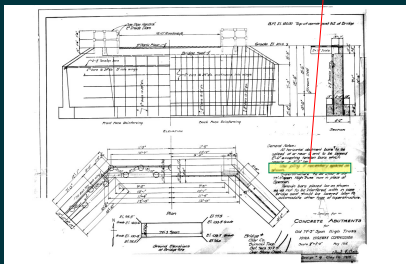
•Bridge Scour 15' Left of CL



Existing Stony Creek Bridge

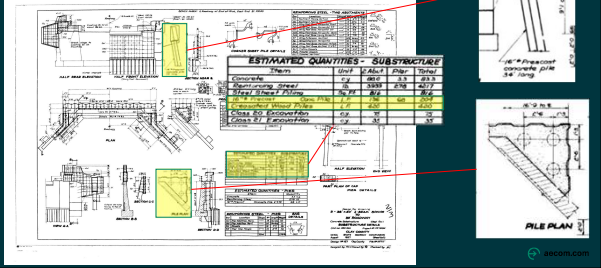
•Original Bridge Plans – 1915
•Likely no piles

Use piling if necessary spaced as shown.



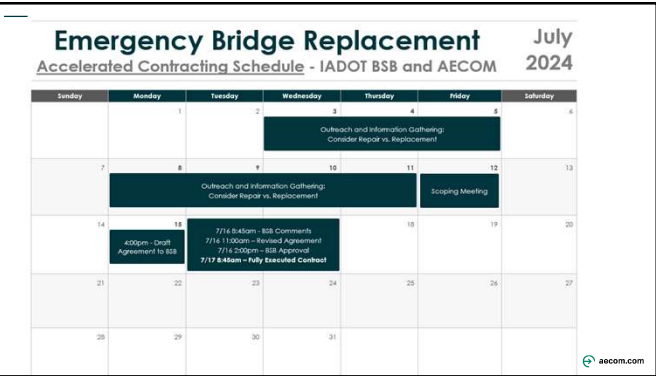
Existing Stony Creek Bridge

- Bridge Widening Plans – 1958
- Entire Bridge supported by 18 Piles

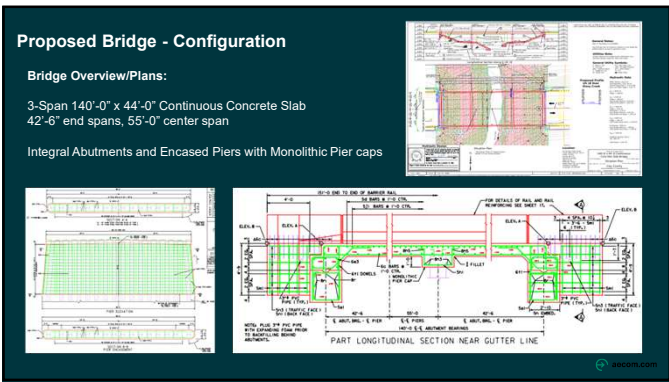


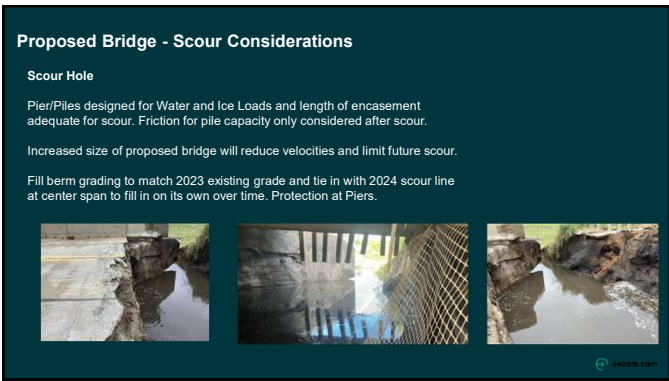
Funding & FHWA Coordination – Replacement





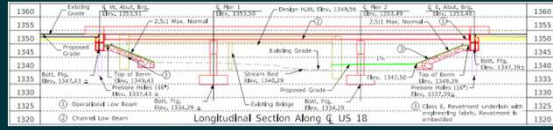




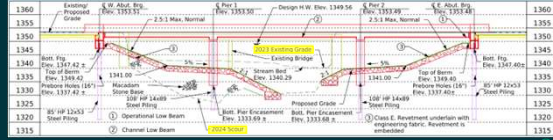


Proposed Bridge - Scour Considerations

TSL Plan Revetment Layout

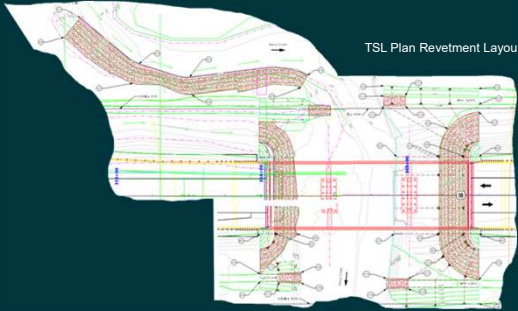


Final Plan Revetment after 2024 Scour



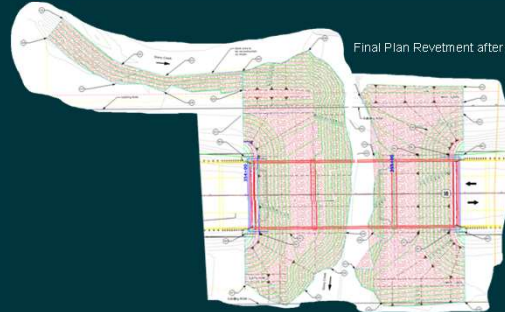
Proposed Bridge - Scour Considerations

TSL Plan Revetment Layout



Proposed Bridge - Scour Considerations

Final Plan Revetment after 2024 Scour



Proposed Bridge – Overhead Electric

Potential conflict with electric line at east end of bridge

Considered relocation or de-energizing

District 3 worked with Mid-American to have powerlines to not interfere with pile installation

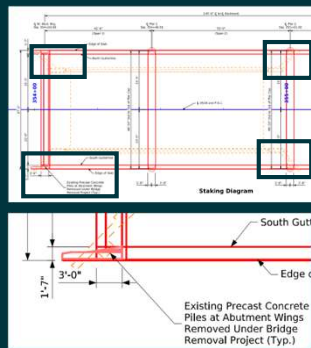
Lines de-energized with grounds installed 9/30 and removed 11/1



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Proposed Bridge – Pile Conflicts

Removal of Existing Wing Wall Piles



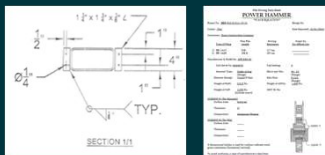
Shop Drawing Reviews & Construction Coordination

Shop Drawings:

Drains
Submitted 10/11/2024
Reviewed by AECOM 10/11/2024

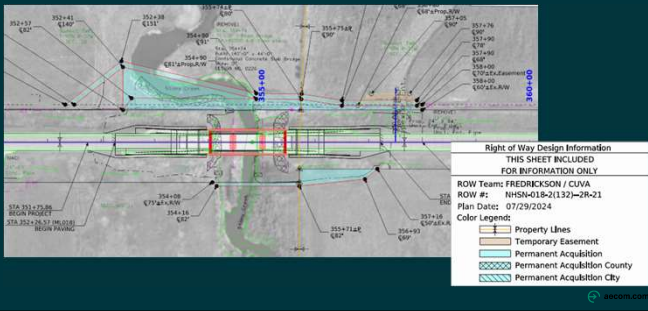
Pile Driving Data
Submitted 9/26, 10/01, 10/04

Falsework Plans and Calculations
Submitted 10/18/24
Reviewed by AECOM 10/22/24



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Right of Way



What Else? - Environmental and Permitting

- Site Identified for needing a Mussel Survey in Initial Project Development
- Multiple Meetings with DNR
- DNR Eventually Waived the Mussel Survey



How Else to Accelerate – Bridge Removal



Bid Letting & Motivating Contractor

Schedule and Incentives

- Letting Sept 24 and contractor has 30 days to sign contract
- Free Time up to October 28
- \$10,000 per day incentive/disincentive
- 54 days - \$540,000 potential

Contractor Response

- Dixon Construction
- Signed Contract and had preon the week of the letting.
- On site working next week
- Opened November 27
- Completed project 26 days early and earned \$260,000

Success!!!

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Contracts and Specifications Bureau

9/30/2024 10:44 AM

Contract Time

Proposal ID: 21-0162-131 Call Order: 001 Letting Date: September 24, 2024

Site ID	Site Details		Liquidated Damages	
00	Late Start Date	10/29/2024	40 WORK DAYS	\$1,200.00
See Site ID 00 description in the Notes.				
01	Late Start Date	10/28/2024	54 CALENDAR DAYS	\$10,000.00
See Site ID 01 description in the Notes.				
02	Approximate Start Date	09/08/2025	40 WORK DAYS	\$1,200.00
See Site ID 02 description in the Notes.				

(*) - Indicates Cost Plus Time Site. See Schedule of Items for Cost Per Unit

A time-lapse video of a construction site at Stony Creek. The video shows heavy machinery, including cranes and excavators, working on a large structure near a body of water. The scene is captured from an elevated perspective, showing the progress of the construction over time.

A weather forecast segment featuring a male meteorologist with grey hair and glasses, wearing a dark suit and a red tie. He is standing in front of a large screen displaying a cityscape at night. The screen shows a weather map with various weather icons and temperatures. The text "70 YEARS" is visible on the screen, indicating a 70th anniversary celebration.

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Job Well Done



Thanks to all Involved!!!!

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District 3
Bridges and Structures
Design
Location and Environment
Office of Right of Way

AECOM



CORRECTIONVILLE, IA



IOWA DEPARTMENT OF
NATURAL RESOURCES



U.S. Department of Transportation
**Federal Highway
Administration**



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Thank you.

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