

MDOT GRAND
REGION

BRIDGE
MAINTENANCE

Chad Roberts

Kevin Brecker



- Increased Costs
- Decreased Budgets
- 500 Year Design Life
- Plugged Deck Drains





MDOT Grand Region Bridge Maintenance Highlights

12 Mile Rd over US-131



Grand Region

13 Counties

977 MDOT Structures

Region Bridge Crew

- Grand Rapids

Direct Forces

- Allegan
- Barry
- Osceola

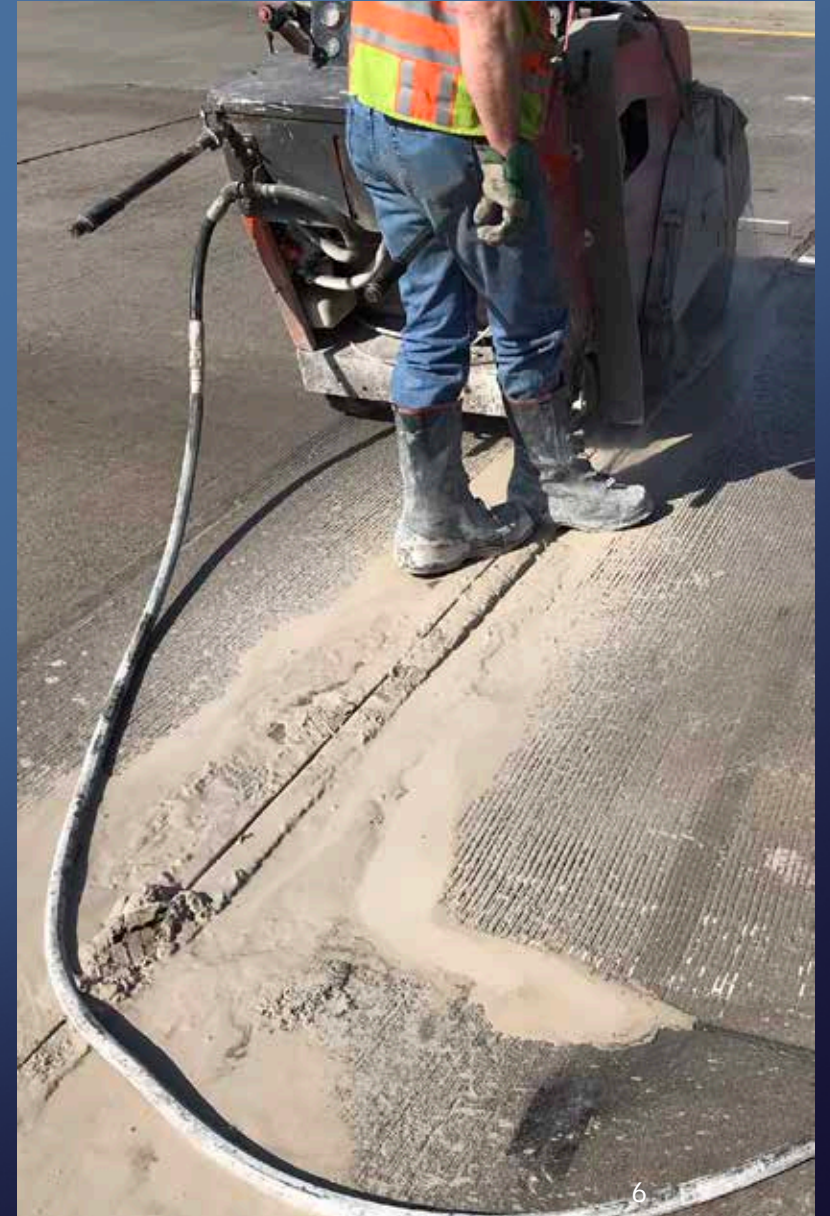
Statewide Region Bridge Support

Deck Patch

- RediMix Concrete
- Master Builders 1060 Rapid Set Concrete Repair
- Transpo Industries T-17 Polymer Concrete



Pressure Relief Joints (PRJ's)



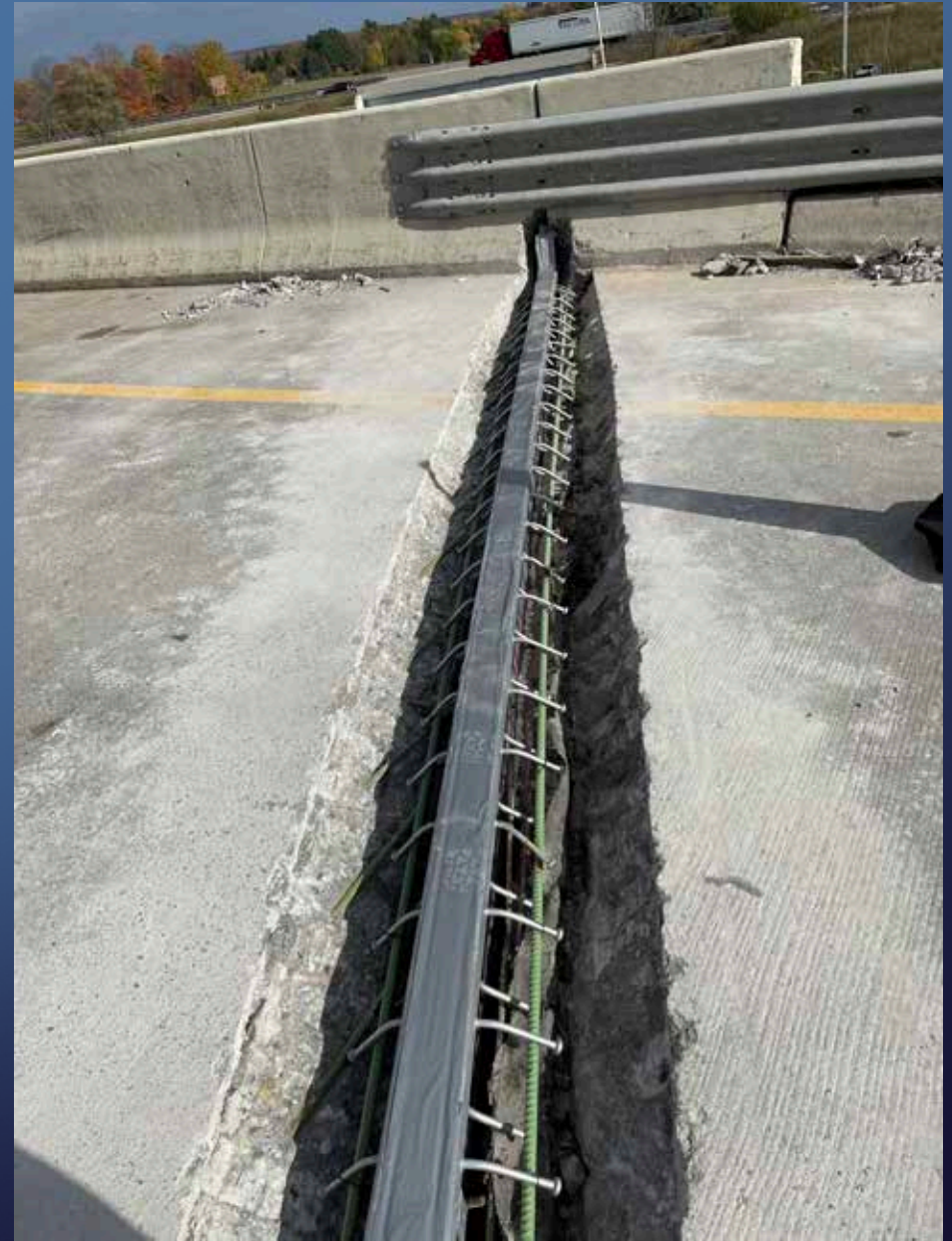
Healer / Sealer



Epoxy Overlay



Expansion Joints



Barrier Wall



Slope Protection



Box Culvert



SAMPLE FOOTER TEXT



Temporary Support Base

Aggregate Pad





Bridge Seat



Brush Block



Approach Slabs



	2021	2022	2023
Deck Patch	8	11	10
PRJ's	6	3	1
Scaling	49	10	18
Flood Coat	16	0	12
Joints	9	2	2
Misc.	5	10	11
Total	93	36	54



12 Mile Rd over US-131

STR # 4994

41132-S09

An aerial photograph of a multi-lane highway bridge deck. The asphalt surface is heavily damaged with numerous dark, irregular patches and large areas of missing material. Red chalk or paint markings are drawn across the deck, outlining the damaged areas and some specific spots. Orange traffic cones are placed along the centerline and edges of the bridge. In the background, construction equipment like a yellow forklift and stacks of materials are visible on the ground. Two workers in high-visibility vests are standing on the right side of the bridge deck.

2018

- § Deck Sounding
- § 24% Delamination/Spalls
- § Programmed for Deep Overlay



2023

Phase 1

- Concrete Deck Patch

Phase 2

- Mill Deck Surface
- 1060 Deck Patch
- T-17 Deck Patch

Phase 3

- Epoxy Deck Injection
- Epoxy Overlay

Local Agency Permit



KENT COUNTY ROAD COMMISSION APPLICATION FOR USE OF COUNTY ROADS TO DETOUR STATE TRUNLINE

Application Date July 25th/ revised Sept 6, 20 23

Highway Being Closed 12 Mile Rd over US131

Project Limits From West of Wolven Blvd to East of Edgerton Ave

Project Date From 1st-August 7th, 7am, 2023 2nd-Sept 11, 7am, 2023 to 1st-August 14, 3pm, 2023 2nd-Sept 22, 3pm, 2023

Proposed Detour Route _____

EB 12 Mile Detour - SB Algoma Ave to EB 10 Mile to NB Wolven Blvd

WB 12 Mile Detour - SB Wolven Blvd to WB 10 Mile to NB Algoma Ave

Conditions _____

Two closures for bridge deck repairs over US131. PCMS will be used 5 day prior to the closure for advance notification. The detour will be posted per the attached detour plan. PCMS messaging will be utilized during the closure with the expected open to traffic date. If work concludes early, the road will be open to traffic. 1st Closure-Deck Patching / 2nd Closure-Epoxy injection/Epoxy overlay

Each party to this Contract will remain responsible for any and all claims arising out of its own acts and/or omissions during the performance of the Contract, as provided by this contract or by law. This Contract is not intended to increase or decrease either party's liability for or immunity from tort claims. This Contract is not intended to nor will it be interpreted as giving either party a right of indemnification, either by contract or by law, for claims arising out of the performance of this Contract.

Signature of MDOT Contact Jason Gulker

Printed Name Jason Gulker - Sr. Operation Tech

Approved by Wayne C. Hull of Engineering Department Date 9/5/23

Approved by JJB of Maintenance Department Date 9/5/23

Approved by [Signature] of Traffic Department Date 9/6/23

Phase 1



Day 1 -3

- Hand chip

Day 4

- Full Depth Patches

Phase 1

Day 5

- 18 Cyd's of concrete Grade-D



Caution
Wet Concrete!!



Phase 2

Day 1

- Mill Deck Surface to remove Mastic

Hastings Garage

Statewide Region
Bridge Support



Phase 2

Day 2

- Hand Chip

Day 3

- 4 Cyds 1060 Rapids Set with portable Batch Plant
- 15 Cft T-17 Polymer Concrete

Statewide Region Bridge Support

- T-17

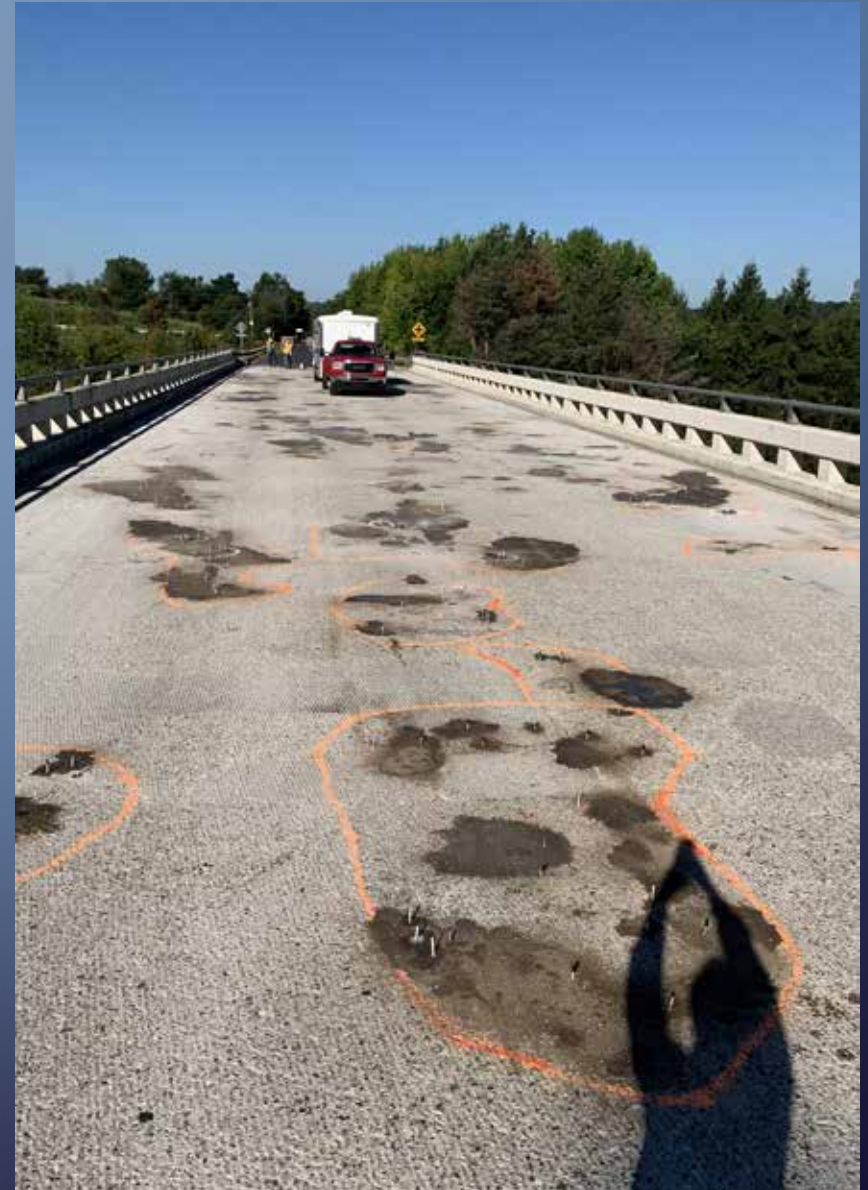


Phase 3

Day 1 - 5

- Epoxy Deck Injection

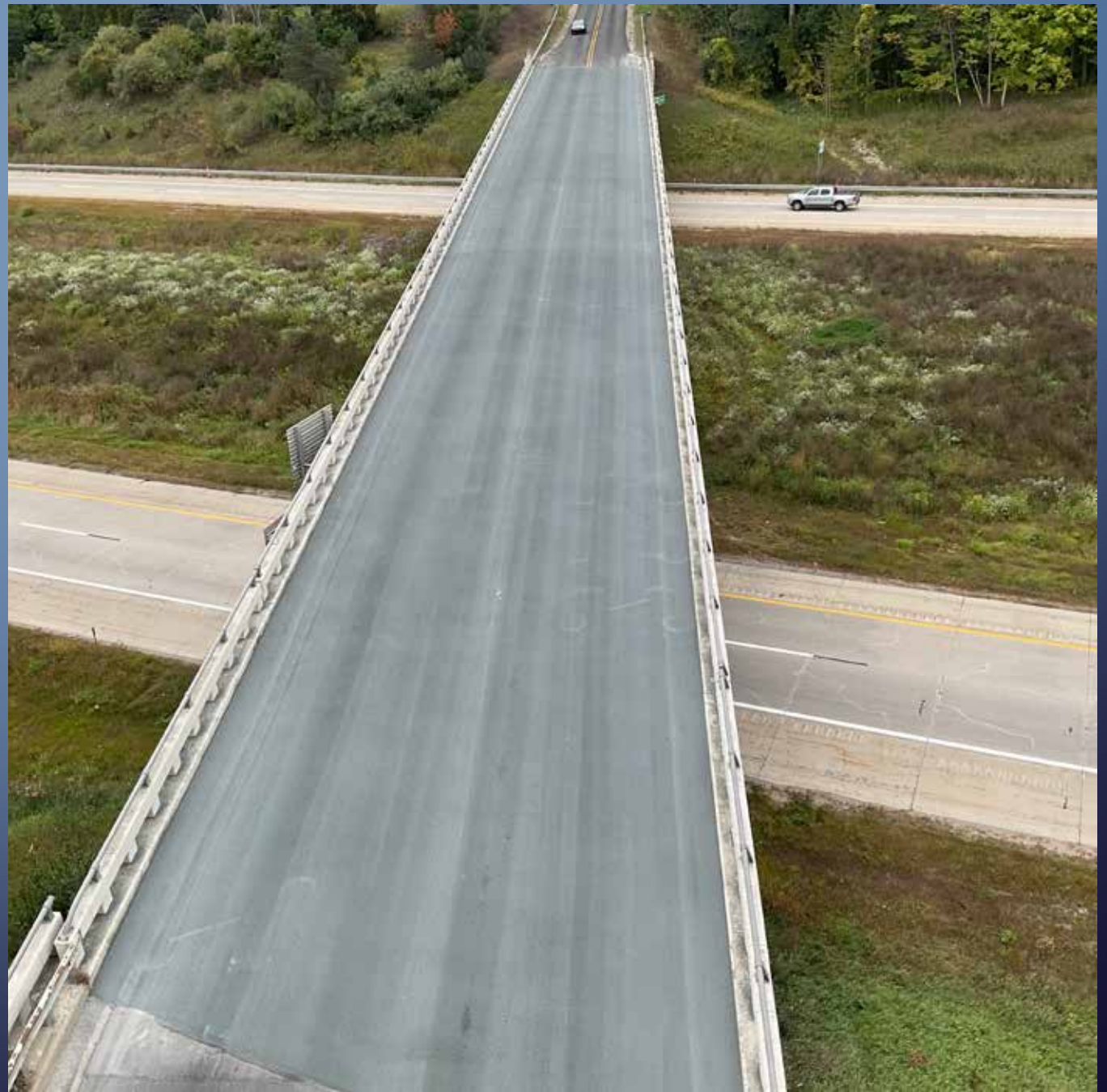
Statewide Region
Bridge Support



Phase 3

Day 6 - 7

- Epoxy Overlay Wearing Surface



2023

BRIDGE COST ESTIMATE WORKSHEET

REV. 01/21/2023

- CPM, REHAB, REPLACE -

OWNER: MDOT FISCAL YEAR: Out to Out Curb to Curb DATE: 2/26/2024
 REGION: Grand LENGTH WIDTH WIDTH ENGINEER: C. Roberts
 TSC: Grand Rapids PR: 410203 MP: 28.019 389.1 40.3 37.7 STRUCTURE ID: 4994
 BRIDGE ID: 41132-S09
 LOCATION: 12 MI RD over US-131
 PRIMARY WORK ACTIVITY Deck Patching DECK AREA: 15,681 SFT STR. TYPE: Steel
 OTHER WORK: Epoxy Deck Injection, Epoxy Overlay CLEAR ROADWAY: 14,669 SFT Multi-Stringer, Plate Girde

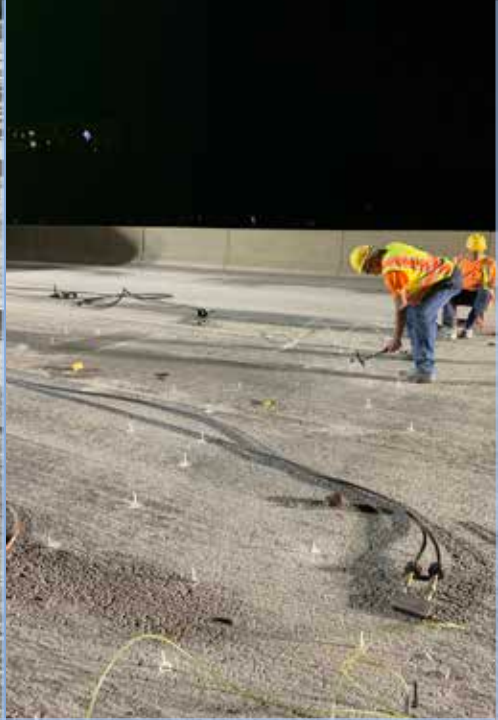
NEW BRIDGE	WORK ACTIVITY	MDOT Bridge Design Guides (Increase deck area based on design standards and hydraulic requirements)	QUANTITY	UNIT	UNIT COST	TOTAL
	Single or Multiple Spans, Grade Separation	(add demo, approach, MOT)		SFT	\$415.00 /SFT	
	Single Span, Over Water	Length < 100ft (add demo, approach, MOT)		SFT	\$500.00 /SFT	
	Multiple Spans, Over Water	Length > 100ft (add demo, approach, MOT)		SFT	\$450.00 /SFT	
	Precast Culvert	Length < 40ft (add demo, approach, MOT)		SFT	\$540.00 /SFT	
NEW SUPERSTRUCTURE						
	New Superstructure, Grade Separation	(incl. remove exist deck/super; add MOT & approach)		SFT	\$295.00 /SFT	
	New Superstructure, Over Water	(incl. remove exist deck/super; add MOT & approach)		SFT	\$300.00 /SFT	
WIDENING						
	Structure Widening, ft	(incl. deck/super/sub widening, add approach transition)		SFT	\$630.00 /SFT	
NEW DECK						
	New Bridge Deck & Barrier	(incl. remove exist deck/railing, add approach, MOT)		SFT	\$150.00 /SFT	
DEMOLITION						
	Entire Structure, Grade Separation			SFT	\$75.00 /SFT	
	Entire Structure, Over Water			SFT	\$95.00 /SFT	
DECK REPAIR / TREATMENTS						
	Bridge Railing Replacement	(incl. removal and replacement)		FT	\$750.00 /FT	
	Concrete Brush Block / Curb Patch	(incl. hand chipping and formwork)		FT	\$29.00 /FT	
	Concrete Barrier Patch	(incl. hand chipping and formwork)		SFT	\$85.00 /SFT	
	Concrete Deck Patch	(incl. hand chipping)		SFT	\$68.00 /SFT	
	Deep Overlay	(incl. joint repl & hydro)	14,669.0	SFT	\$46.00 /SFT	\$674,774.00
	Epoxy Overlay	(incl. warranty)		SYD	\$48.00 /SYD	
	Expansion Joint Gland Replacement	(remove and replace elastomeric gland)		FT	\$125.00 /FT	
	Expansion Joint Replacement	(incl. removal)		FT	\$860.00 /FT	
	Full Depth Patch			SFT	\$140.00 /SFT	
	Healer / Sealer	(penetrates cracks in bridge deck)		SYD	\$30.00 /SYD	
	HMA Overlay with WP membrane			SYD	\$60.00 /SYD	
	Overlay Removal (Mastic)	(Epoxy: \$22/syd Latex: \$26/syd HMA: \$7/syd)				
	Reseal Bridge Joints					
	Shallow Overlay	(incl. joint repl & hydro)				
SUPERSTRUCTURE REPAIR						
	Bearing Realignment / Replacement	(incl. temporary supports)				
	Heat Straightening	(incl. clean and coat)				
	Pack Rust Repair	(greater than 3/8" separation)				
	Paint - Complete	(incl. clean & coat)				
	Paint - Partial / Spot / Zone	(incl. clean & coat - \$20k minimum)				
	PCI Beam End Blockout	(incl. temporary supports)				
	Pin & Hanger Replacement	(incl. temporary supports)				
	Structural Steel Repair	(based on 6ft repair length)				
	Structural Steel Repair - Stiffener	(includes each side of beam)				
SUBSTRUCTURE REPAIR						
	Substructure Patching	(measured x 2) replace if repair area > 30%				
	Substructure Replacement	(incl. temporary supports, excavation)				
	Substructure Horizontal Surface Sealer			SYD	\$75.00 /SYD	
	Temporary Supports	(add Structural Steel Repair - Stiffener for ea steel beam)		EA	\$4,000.00 EA	
MISCELLANEOUS						
	Articulating Concrete Block System (ACB)			SYD	\$320.00 /SYD	
	Concrete Surface Coating			SYD	\$47.00 /SYD	
	Culvert Cleanout			FT	\$125.00 /FT	
	Epoxy Crack Injection	(structural crack repair)		FT	\$70.00 /FT	
	Metal Mesh Panels	(48" width, max 6'-6" length)		SFT	\$28.00 /SFT	
	Pressure Relief Joint	(use when approach concrete roadway exceeds 1,000ft)		FT	\$110.00 /FT	
	Riprap	(assume 10ft distance around perimeter of substructure)		SYD	\$275.00 /SYD	
	Silane Treatment	(penetrating sealer for concrete surfaces)		SFT	\$7.00 /SFT	
	Slope Protection Repairs			SYD	\$150.00 /SYD	
	Other (Epoxy Deck Injection)			EA	\$20,000.00 EA	
STRUCTURE CONSTRUCTION BUDGET						\$674,774

\$854,000



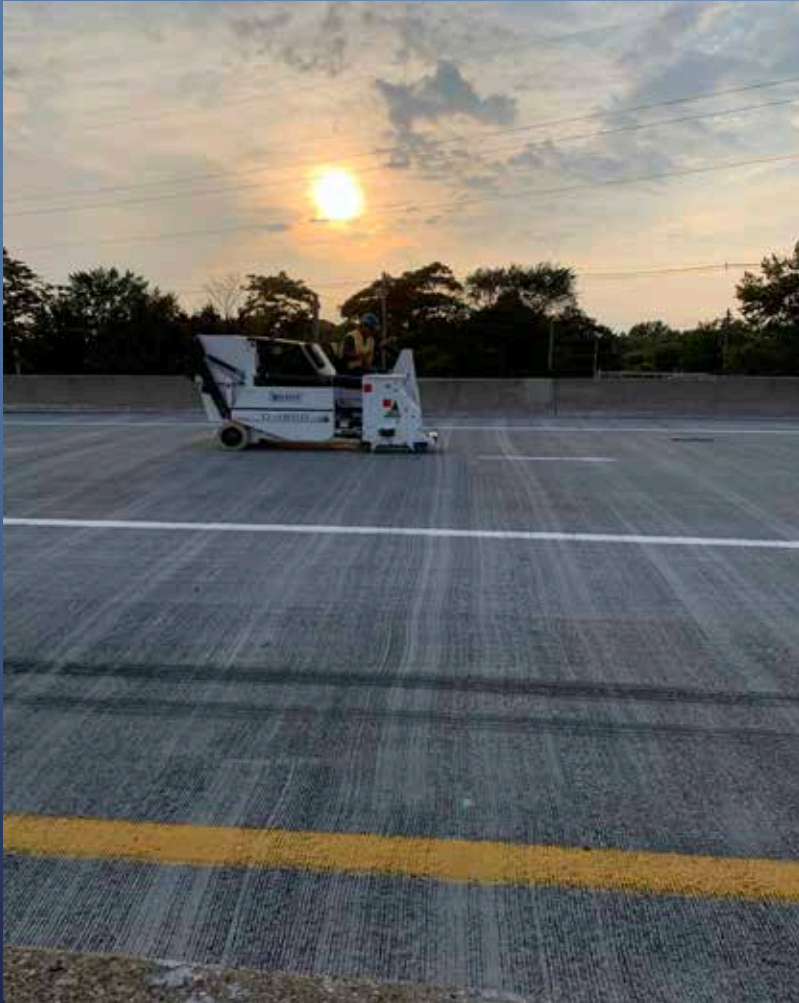
Sherman Road over US-31

- Mill Existing HMA Overlay
- Deck Patch
- Deck Injection
- HMA Overlay



Sherman Road over US-31

US-31 over 3rd Street



US-31 over M-104 & GTW RR





Thank You