

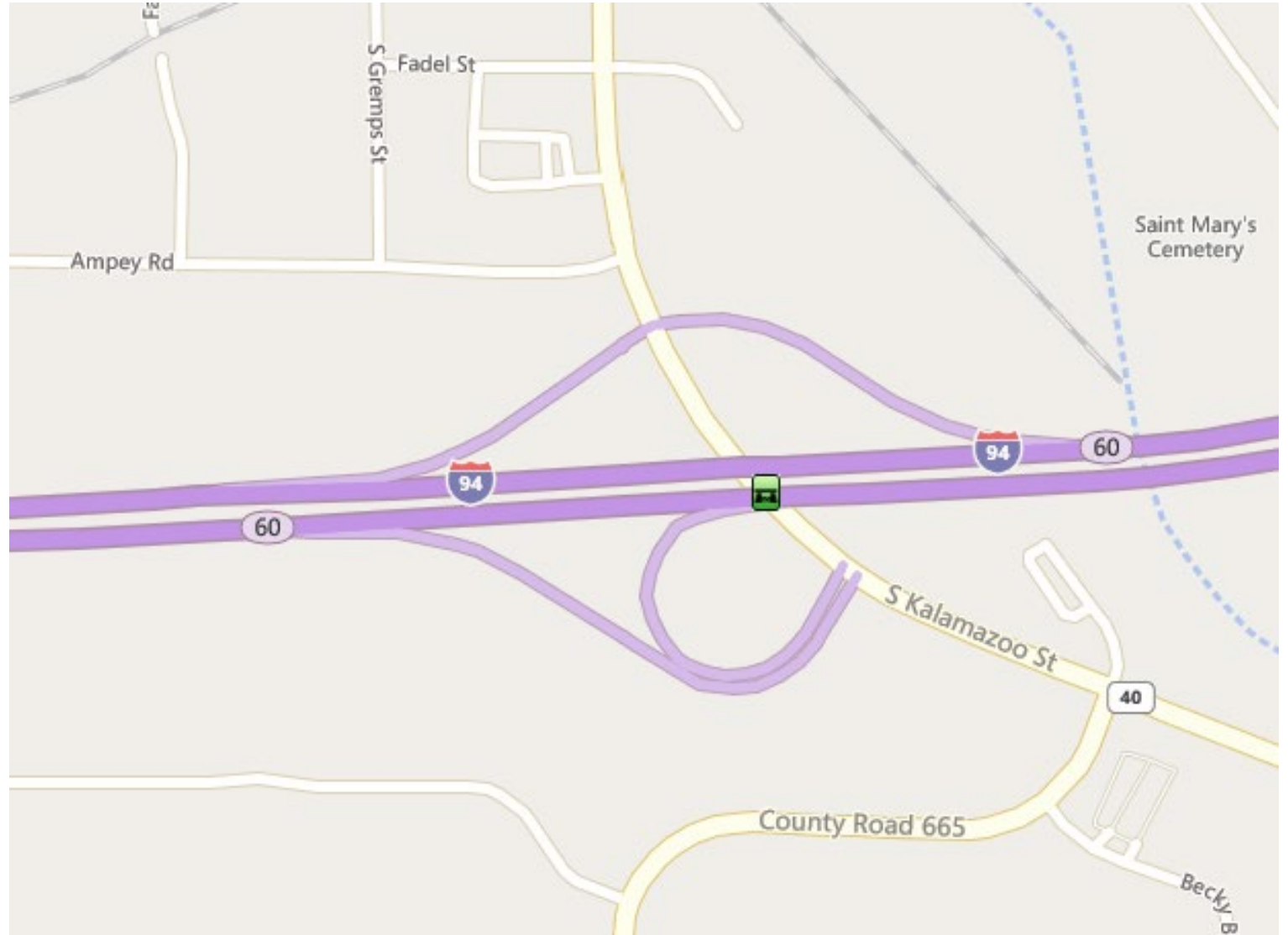
M-40 Over I-94 Deck Deterioration

Statewide Region Support Bridge Preservation



Location

- Originally Built in 1960
- Reconstructed in 1981
- CPM work in 2006
- Structure is rated a 4
- (10) Variable depth continuous concrete tee beams integral with the bridge deck

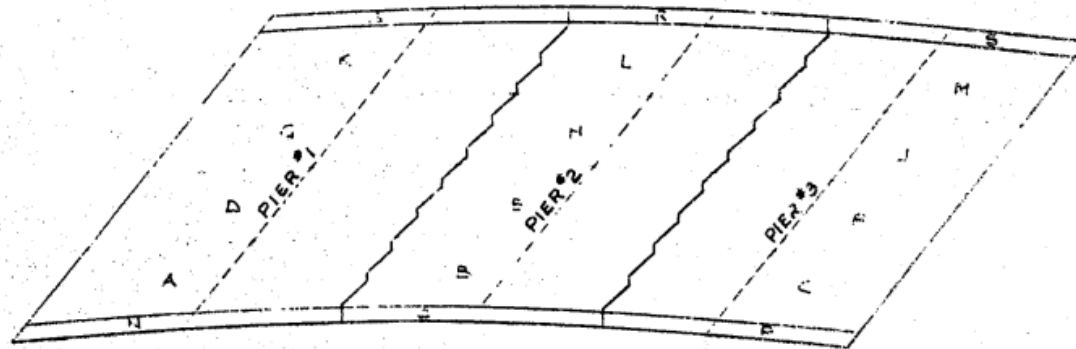


Inventory

- Structure Length is 316 ft
- Structure Width is 51.5 ft
- Skew angle is 40 degrees
- Deck bottom and joints are in poor condition
- Abutments / Piers/ Railings / Bearings are in fair condition
- In 1981, shallow Latex modified concrete overlay

[illegible]

Original Plans in 1960



POUR DIAGRAM

CONC. QUANTITIES	
POUR	CU. YDS. GRADE A (6B)
A	176
B	148
C	145
D	121
E	101
F	98
G	121
H	98
I	97
J	174
K	144
L	142
M	14
N	12
O	11
P	14
Q	12
R	11
TOTAL	1641
	CU. YDS.

* DOES NOT INCLUDE
10.5 CU. YDS. IN
BRIDGE RAILING

MISCELLANEOUS QUANTITIES			
ITEMS	UNIT	QUANTITY	
COTTER	L.F.S.	250	
ALUMINUM BRIDGE PAILING- FABRICATION & ERECTION	LIN. FT.	621.4	
HOT POURED RUBBER ASPHALT TYPE FILLER	LIN. FT.	170	

JOINT FILLER INCLUDED IN ABUTMENT QUANTITIES.
SEE SHEET 106

NOTE:

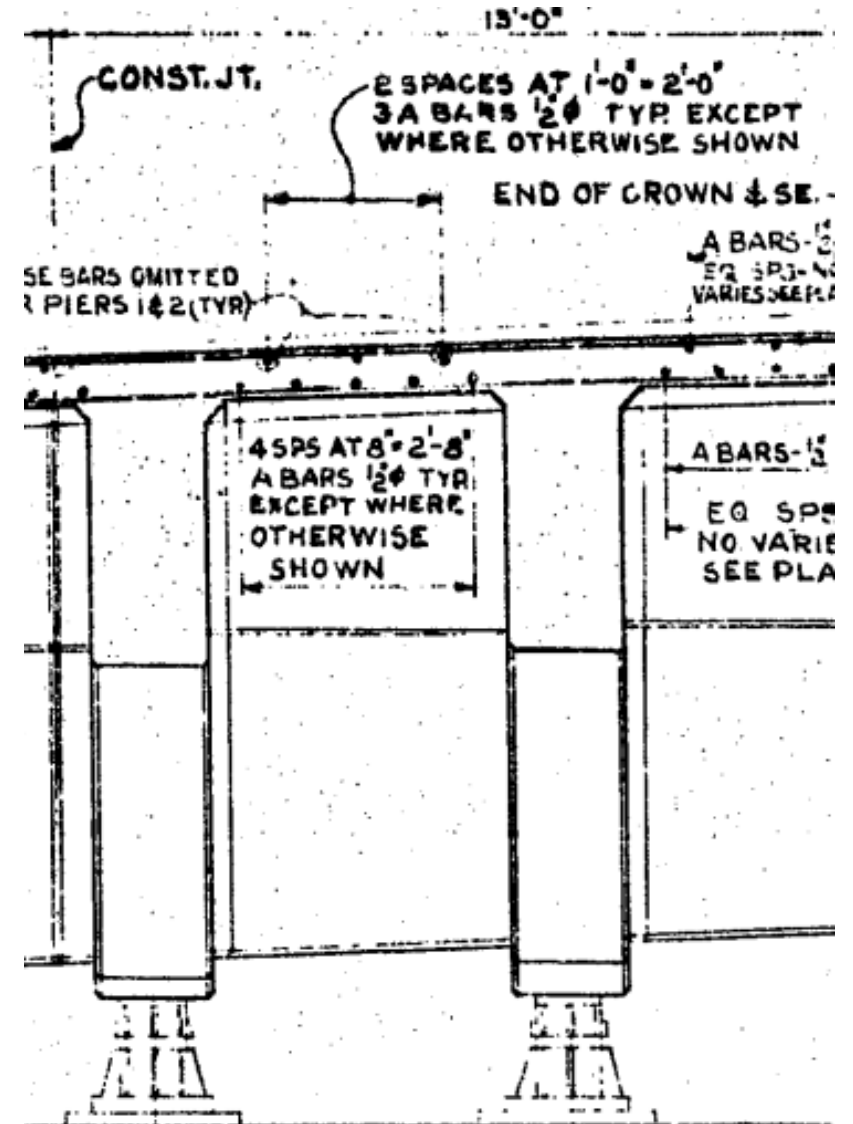
WORK THIS SHEET WITH SHEETS 110-113

MICHIGAN STATE HIGHWAY DEPARTMENT

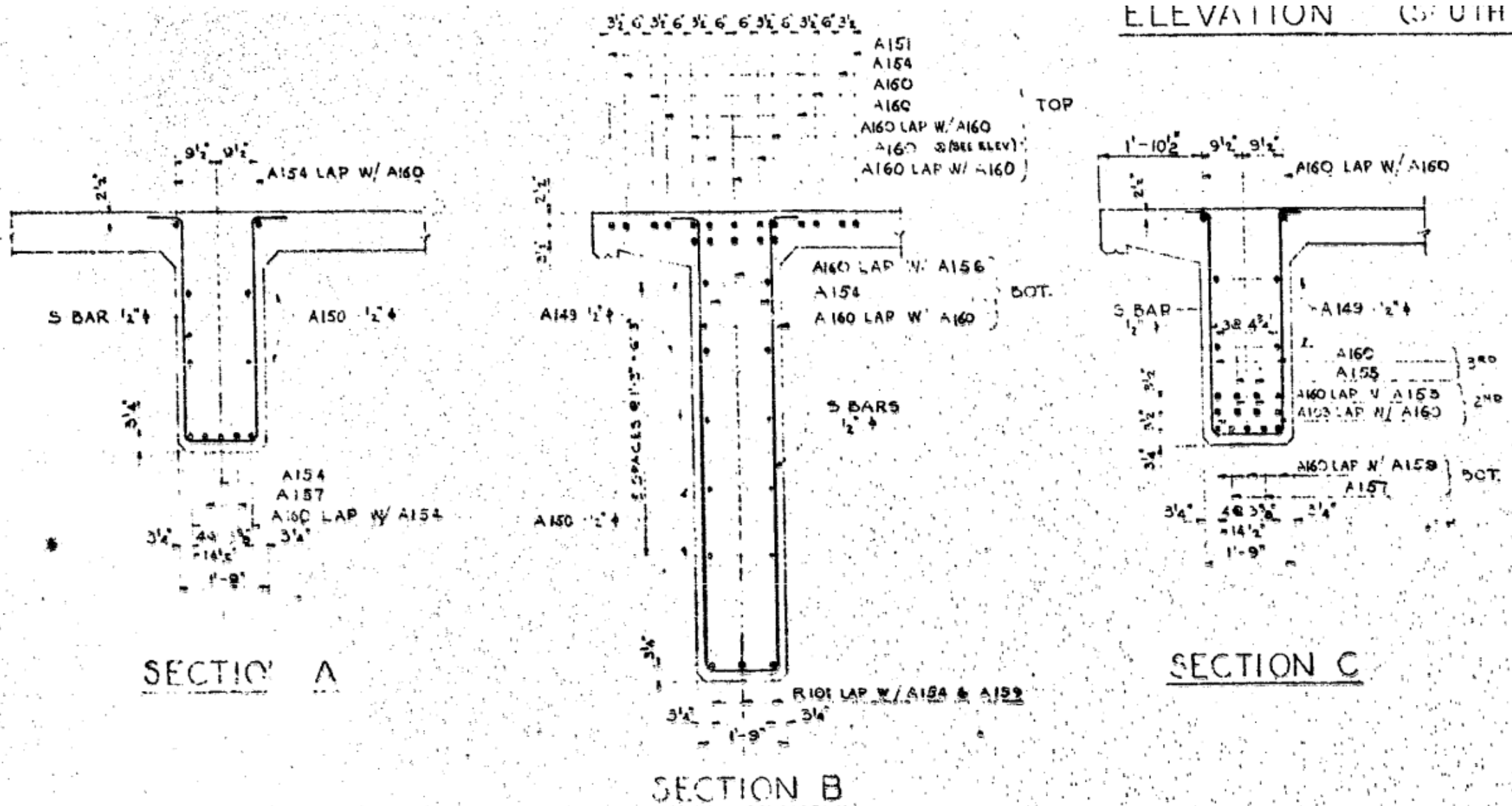
U.S. 12 (RELOC.) CROSSING M-119 (RELOC.) 0.5 MI. SOUTH OF PAW PAW

SUPERSTRUCTURE DETAILS

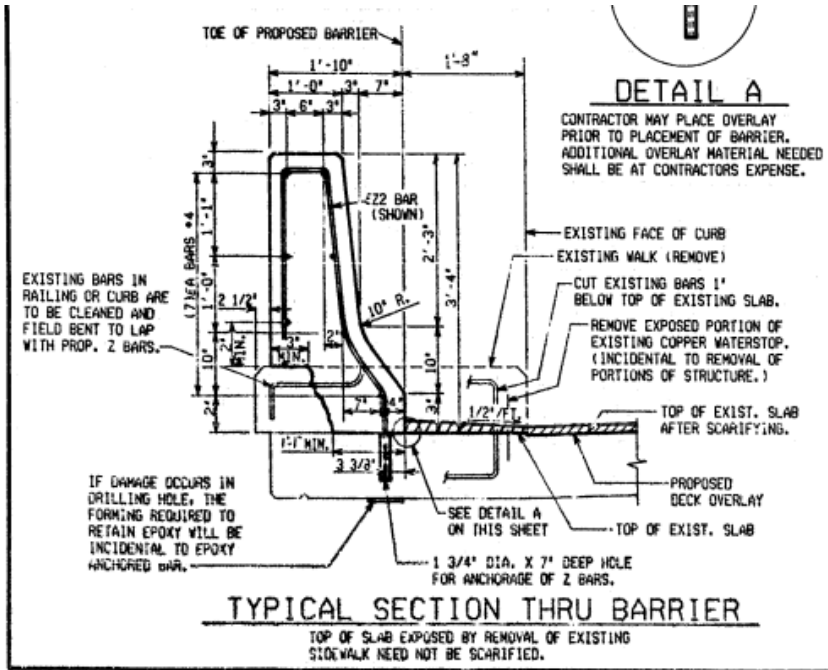
DE LEUW, CATHY & CO. ENGINEERS, CHICAGO



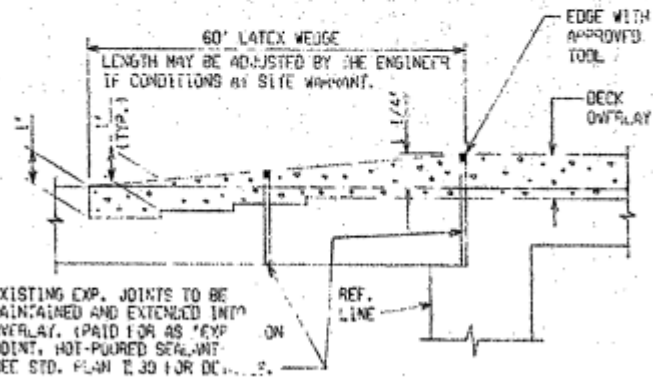
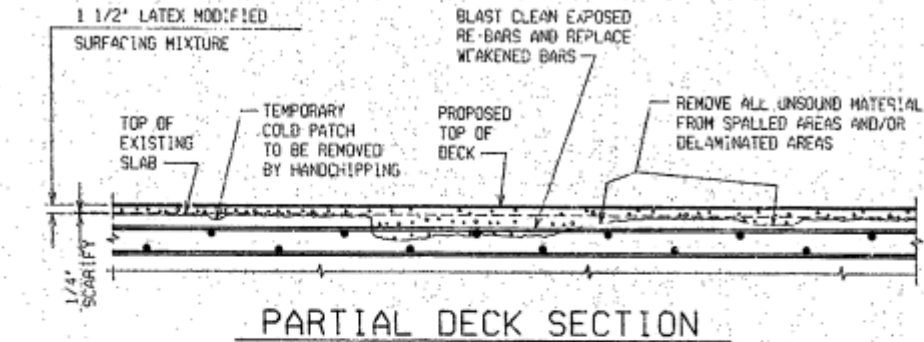
Original Plans in 1960



Rehabilitation in 1981

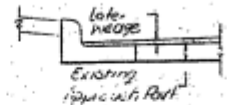


MISCELLANEOUS QUANTITIES		
ITEM	UNIT	AMOUNT
REMOVAL OF PORTIONS OF STRUCTURES	LUMP SUM	LUMP SUM
CONCRETE BARRIER-BRIDGE TYPE 3 (MODIFIED)	LIN. FT.	632
3/4 IN. EPOXY ANCHORED BARS	EACH	427
TEMPORARY CONCRETE BARRIER	LIN. FT.	550
BRIDGE APPROACH CURBS AND GUTTER, DETAIL 5 (MODIFIED)	LIN. FT.	55
DRAINAGE STRUCTURE COVERS	LBS.	910
REMOVING CURB AND GUTTER	LIN. FT.	118
RECONSTRUCTED BEAM GUARD RAIL	LIN. FT.	150
4" Conduit - Placed	LIN. FT.	1372
Bridge Approach Curb & Gutter-Conduit Type	LIN. FT.	34



APPROACH WEDGE DETAIL

FORMING, FINISHING AND CURING OF THE LATEX WEDGE WILL BE PAID FOR AS "CONSTRUCTING BRIDGE DECK SURFACE".



CROSS SECTIONS OF
WEDGE AT CURB

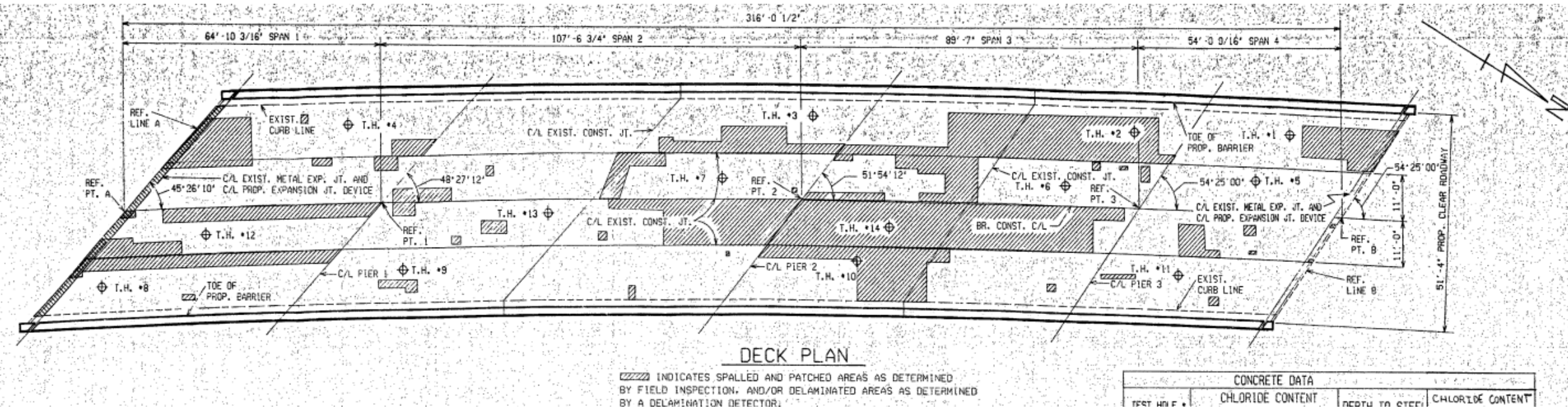
PLANE-OF-WEARNESS JOINTS IN
EXISTING CURB ARE TO BE EXTENDED
THRU THE OVERLAY BY EMBEDDING
1/2" MASONITE. (INCIDENTAL)

MISCELLANEOUS QUANTITIES		
ITEM	UNIT	AMOUNT
SCAFFOLDING	SQ. YDS.	3775
HAND CHIPPING - SHALLOW	SQ. YDS.	397
REMOVAL OF METAL EXPANSION JOINT	LUMP SUM	LUMP SUM
STEEL REINFORCEMENT	LBS.	100
LATEX-MODIFIED SURFACING MIXTURE	CY. YDS.	325
CONSTRUCTING BRIDGE DECK SURFACE	SQ. YDS.	2442
Aggregate Base - Bituminous (9" In Place)	Sq. Yds.	6
EXPANSION JOINT , HOT-POURED SEALANT	LIN. FT.	222
HAND CHIPPING - DEEP	SQ. YDS.	126

* Steel reinforcement for deck repair.

THE ACTUAL QUANTITY OF LATEX-MODIFIED SURFACING MIXTURE PLACED ON THE DECK WAS 73.0 CUBIC YARDS.
(THIS INFORMATION IS TO BE FILLED IN BY THE ENGINEER WHEN SUBMITTING AS CONSTRUCTED PLANS.)

Rehabilitation in 1981



Scope of Work consist of:

- Removal of existing brush block and place new barrier
- Deck Patching as shown above (Did they do this much patching – not sure)
- Remove existing expansion joint device and placed a new expansion joint
- They ¼" scarified the deck and placed 1.5 " Latex modified concrete overlay
- Approach work
- Maintaining Traffic

Rehabilitation in 2006

Scope of Work consist of:

- Deck Patching
- Remove existing expansion joint device and placed a new expansion joint
- Epoxy Overlay
- Maintaining Traffic

MISCELLANEOUS QUANTITIES

145 Ft	Deck Joint, Rem
30 Ea	Clean and Coat Steel Bearing
14 Cyd	Conc. Grade D
1803 Syd	Epoxy Overlay
25 Syd	+ Hand Chipping, Shallow
17 Syd	+ Hand Chipping, Deep
11 Cyd **	Patching Conc. C-L
891 Sft	* Patch, Forming
297 Cft	+ Hand Chipping, Other Than Deck
1 LS	Substructure Horizontal Surface Sealer (S03 of 80024)
1 LS	Conc Surface Coating (S03 of 80024)
2100 Lb	Reinforcement, Steel, Epoxy Coated
10 Syd **	Slope Paving, Conc
30 Ft ***	Structural Crack, Repr

* TO BE USED FOR SUBSTRUCTURE AND BARRIER REPAIR AS DIRECTED BY THE ENGINEER.

** 5 Cyd TO BE USED FOR DECK PATCHING AS DIRECTED BY THE ENGINEER.

1 Cyd TO BE USED FOR BARRIER PATCHING AS DIRECTED BY THE ENGINEER.

5 Cyd TO BE USED FOR SUBSTRUCTURE REPAIR AS DIRECTED BY THE ENGINEER.

*** TO BE USED FOR BEAM REPAIR AS DIRECTED BY THE ENGINEER.

+ TO BE USED FOR DECK PATCHING AS DIRECTED BY THE ENGINEER.

++ TO BE USED FOR SLOPE PROTECTION REPAIRS AS DIRECTED BY THE ENGINEER.

SLOPE PROTECTION SHALL BE REPLACED IN KIND, BUT WILL BE PAID FOR AS

Slope Paving, Conc. ANY STRUCTURAL BACKFILL MATERIAL AND GRADING

REQUIRED FOR REPLACEMENT SHALL ALSO BE INCLUDED IN THE THE BID ITEM

Slope Paving, Conc.

Rehabilitation in 2024

- This photo was taken in 2023

Latest Inspection Report Finding (2023)
consist of:

- Deck Patching (500 sft) – **deck is full of water**
- Replace approaches
- Replace end headers and reseal joints
- Replace expansion joints
- Patch Piers
- Patch Spalls on beams

**Bridge is now 64 years old – Overall rating
is Poor Condition (4)**

Bridge Replacement is now 2030 / 2031



Rehabilitation in 2024

Scope of Work consist of:

- **Deck Patching (Full depth) by MDOT Special crews prior to project begin**
- Remove Existing Epoxy Overlay
- Deck Patching
- HMA Overlay with waterproofing membrane
- Asphaltic Plug Expansion Joint
- Roadway Approach Work
- Maintaining Traffic

APPROXIMATED ESTIMATED COST FOR IT:

- Structure = \$217,540
- Road = \$ 289,000 (including MOT)
- Contingency = \$500,000
- TOTAL = \$1,160,000.00

DECK REPAIR / TREATMENTS					
Bridge Railing Replacement	(incl. removal and replacement)		FT	\$600.00 /FT	
Concrete Brush Block / Curb Patch	(incl. hand chipping and formwork)		FT	\$25.00 /FT	
Concrete Barrier Patch	(incl. hand chipping and formwork)		SFT	\$76.00 /SFT	
Concrete Deck Patch	(incl. hand chipping)	900.0	SFT	\$90.00 /SFT	\$81,000
Deep Overlay	(incl. joint repl & hydro)		SFT	\$43.00 /SFT	
Epoxy Overlay	(incl. warranty)		SYD	\$39.00 /SYD	
Expansion Joint Gland Replacement	(remove and replace elastomeric gland)		FT	\$115.00 /FT	
Expansion Joint Replacement	(incl. removal)		FT	\$740.00 /FT	
Full Depth Patch			SFT	\$130.00 /SFT	
Healer / Sealer	(penetrates cracks in bridge deck)		SYD	\$16.00 /SYD	
HMA Overlay with WP membrane		1,809.0	SYD	\$60.00 /SYD	\$108,540
Overlay Removal	(Epoxy: \$22/syd Latex: \$26/syd HMA: \$7/syd)		SYD	\$22.00 /SYD	
Reseal Bridge Joints			FT	\$25.00 /FT	
Asphaltic Plug Expansion Joint		46.7	CFT	\$600.00 /CFT	\$28,000
SUPERSTRUCTURE REPAIR					
Bearing Realignment / Replacement	(incl. temporary supports)		EA	\$5,700.00 /EA	
Heat Straightening	(incl. clean and coat)		EA	\$45,000.00 /EA	
Pack Rust Repair	(greater than 3/8" separation)		FT	\$850.00 /FT	
Paint - Complete	(incl. clean & coat)		SFT	\$19.00 /SFT	
Paint - Partial / Spot / Zone	(incl. clean & coat - \$20k minimum)		SFT	\$30.00 /SFT	
PCI Beam End Blockout	(incl. temporary supports)		EA	\$7,200.00 /EA	
Pin & Hanger Replacement	(incl. temporary supports)		EA	\$13,000.00 /EA	
Structural Steel Repair	(based on 6ft repair length)		EA	\$3,400.00 /EA	
Structural Steel Repair - Stiffener	(includes each side of beam)		EA	\$1,350.00 /EA	
SUBSTRUCTURE REPAIR					
Substructure Patching	(measured x 2) replace if repair area > 30%		CFT	\$330.00 /CFT	
Substructure Replacement	(incl. temporary supports, excavation)		CFT	\$375.00 /CFT	
Substructure Horizontal Surface Sealer			SYD	\$75.00 /SYD	
Temporary Supports	(add Structural Steel Repair - Stiffener for ea steel beam)		EA	\$3,000.00 /EA	
MISCELLANEOUS					
Articulating Concrete Block System (ACB)			SYD	\$280.00 /SYD	
Concrete Surface Coating			SYD	\$32.00 /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	\$26.00 /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	\$223.00 /SYD	
Silane Treatment	(penetrating sealer for concrete surfaces)		SFT	\$7.00 /SFT	
Slope Protection Repairs			SYD	\$145.00 /SYD	
Other					
STRUCTURE CONSTRUCTION BUDGET					\$217,540
ROAD WORK					
Approach Pavement, 12" RC	(incl. removal; add curb, gutter, guardrail) 40' ea. end		SYD	\$200.00 /SYD	
Approach Curb & Gutter	(incl. removal) 40' ea. quadrant		FT	\$57.00 /FT	
Guardrail Anchorage to Bridge	(each quadrant)		EA	\$2,320.00 /EA	
Guardrail Height Adjust		336.0	FT	\$8.00 /FT	\$2,688
Guardrail Terminal	(each quadrant)		EA	\$3,900.00 /EA	
Roadway Approach Work	(beyond approach pavement)	1.0	LSUM	\$37,012.00 /LSUM	\$37,012
Utilities			LSUM		
TRAFFIC CONTROL <i>Unit Cost to be determined by Region or TSC Traffic & Safety</i>					
Part Width Construction		1.0	LSUM	\$250,000.00 /LSUM	\$250,000
Crossovers			EA		
Temporary Traffic Signals			set	/set	
RR Flagging			LSUM		
Detour			LSUM		
RELATED ROAD/TRAFFIC CONSTRUCTION BUDGET					\$289,700
CONTINGENCY Expedited Schedule - Late Letting Factor					
MOBILIZATION (estimate at 10%)		100	%	\$507,000.00	\$507,000
INFLATION (assume 4% per year, beginning in 2023)		10	%	\$1,014,000.00	\$101,000
		4	%	\$1,115,000.00	\$45,000

(Does not include PE or CE)

TOTAL CONSTRUCTION BUDGET **\$1,160,000**

Rehabilitation in 2024

Scope of Work consist of:

- **Deck Patching (Full depth) by MDOT Special crews prior to project begin**
- Remove Existing Epoxy Overlay
- Deck Patching
- ~~HMA Overlay with waterproofing membrane~~
- ~~Asphaltic Plug Expansion Joint~~
- ~~Roadway Approach Work~~
- Epoxy Overlay
- Maintaining Traffic

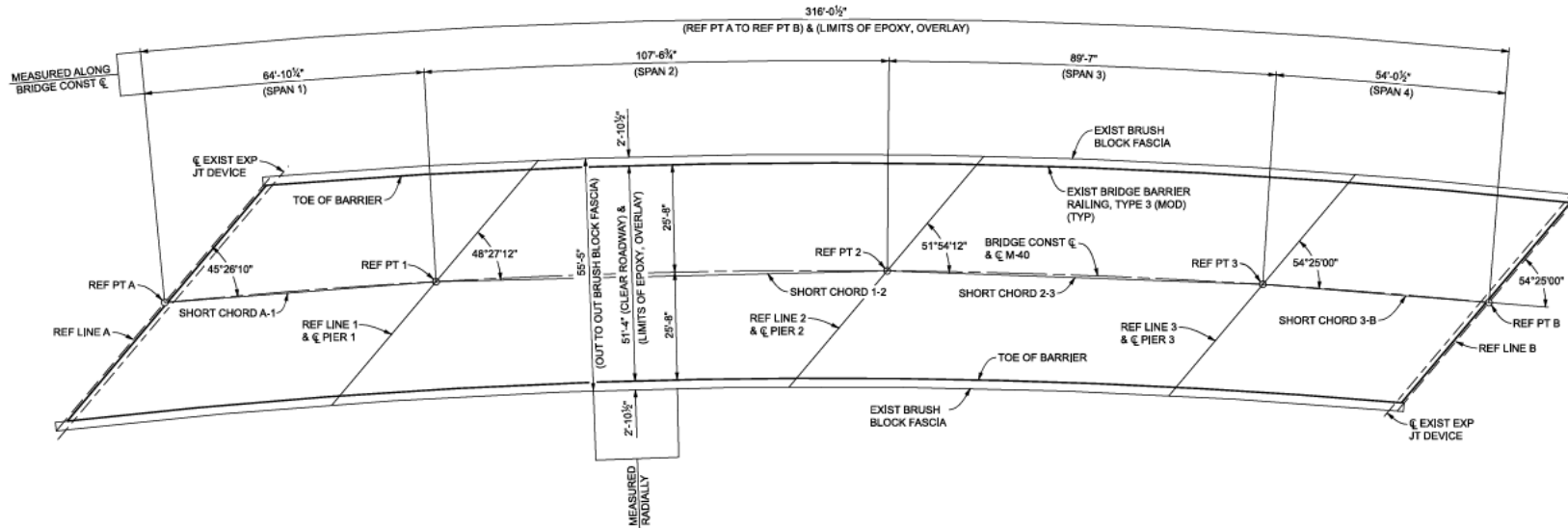
Epoxy Overlay is not a structural fix and will not work if the substrate is bad
Substrate = Deck

DECK REPAIR / TREATMENTS					
Bridge Railing Replacement	(incl. removal and replacement)		FT	\$600.00 /FT	
Concrete Brush Block / Curb Patch	(incl. hand chipping and formwork)		FT	\$25.00 /FT	
Concrete Barrier Patch	(incl. hand chipping and formwork)		SFT	\$76.00 /SFT	
Concrete Deck Patch	(incl. hand chipping)	900.0	SFT	\$90.00 /SFT	\$81,000
Deep Overlay	(incl. joint repl & hydro)		SFT	\$43.00 /SFT	
Epoxy Overlay	(incl. warranty)		SYD	\$39.00 /SYD	
Expansion Joint Gland Replacement	(remove and replace elastomeric gland)		FT	\$115.00 /FT	
Expansion Joint Replacement	(incl. removal)		FT	\$740.00 /FT	
Full Depth Patch			SFT	\$130.00 /SFT	
Healer / Sealer	(penetrates cracks in bridge deck)		SYD	\$16.00 /SYD	
HMA Overlay with WP membrane		1,809.0	SYD	\$60.00 /SYD	\$108,540
Overlay Removal	(Epoxy: \$22/syd Latex: \$26/syd HMA: \$7/syd)		SYD	\$22.00 /SYD	
Reseal Bridge Joints			FT	\$25.00 /FT	
Asphaltic Plug Expansion Joint		46.7	CFT	\$600.00 /CFT	\$28,000
SUPERSTRUCTURE REPAIR					
Bearing Realignment / Replacement	(incl. temporary supports)		EA	\$5,700.00 /EA	
Heat Straightening	(incl. clean and coat)		EA	\$45,000.00 /EA	
Pack Rust Repair	(greater than 3/8" separation)		FT	\$850.00 /FT	
Paint - Complete	(incl. clean & coat)		SFT	\$19.00 /SFT	
Paint - Partial / Spot / Zone	(incl. clean & coat - \$20k minimum)		SFT	\$30.00 /SFT	
PCI Beam End Blockout	(incl. temporary supports)		EA	\$7,200.00 /EA	
Pin & Hanger Replacement	(incl. temporary supports)		EA	\$13,000.00 /EA	
Structural Steel Repair	(based on 6ft repair length)		EA	\$3,400.00 /EA	
Structural Steel Repair - Stiffener	(includes each side of beam)		EA	\$1,350.00 /EA	
SUBSTRUCTURE REPAIR					
Substructure Patching	(measured x 2) replace if repair area > 30%		CFT	\$330.00 /CFT	
Substructure Replacement	(incl. temporary supports, excavation)		CFT	\$375.00 /CFT	
Substructure Horizontal Surface Sealer			SYD	\$75.00 /SYD	
Temporary Supports	(add Structural Steel Repair - Stiffener for ea steel beam)		EA	\$3,000.00 /EA	
MISCELLANEOUS					
Articulating Concrete Block System (ACB)			SYD	\$280.00 /SYD	
Concrete Surface Coating			SYD	\$32.00 /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	\$26.00 /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	\$223.00 /SYD	
Silane Treatment	(penetrating sealer for concrete surfaces)		SFT	\$7.00 /SFT	
Slope Protection Repairs			SYD	\$145.00 /SYD	
Other					
STRUCTURE CONSTRUCTION BUDGET					\$217,540
ROAD WORK					
Approach Pavement, 12" RC	(incl. removal; add curb, gutter, guardrail) 40' ea. end		SYD	\$200.00 /SYD	
Approach Curb & Gutter	(incl. removal) 40' ea. quadrant		FT	\$57.00 /FT	
Guardrail Anchorage to Bridge	(each quadrant)		EA	\$2,320.00 /EA	
Guardrail Height Adjust		336.0	FT	\$8.00 /FT	\$2,688
Guardrail Terminal	(each quadrant)		EA	\$3,900.00 /EA	
Roadway Approach Work	(beyond approach pavement)	1.0	LSUM	\$37,012.00 /LSUM	\$37,012
Utilities			LSUM		LSUM
TRAFFIC CONTROL Unit Cost to be determined by Region or TSC Traffic & Safety					
Part Width Construction		1.0	LSUM	\$250,000.00 /LSUM	\$250,000
Crossovers			EA		/EA
Temporary Traffic Signals			set		/set
RR Flagging			LSUM		LSUM
Detour			LSUM		LSUM
RELATED ROAD/TRAFFIC CONSTRUCTION BUDGET					\$289,700
CONTINGENCY Expedited Schedule - Late Letting Factor					
MOBILIZATION (estimate at 10%)		100	%	\$507,000.00	\$507,000
INFLATION (assume 4% per year, beginning in 2023)		10	%	\$1,014,000.00	\$101,000
		4	%	\$1,115,000.00	\$45,000
TOTAL CONSTRUCTION BUDGET					\$1,160,000

(Does not include PE or CE)

FPC Plans – Contract Project

N



PLAN OF DECK

PROJECT SCOPE

- Epoxy Removal
- Deck Patching
- Epoxy Overlay
- Maintaining Traffic

MISCELLANEOUS QUANTITIES			
150	Syd	Hand Chipping, Deep	
300	Lb	Reinforcement, Steel, Epoxy Coated *	
270	Ea	Embedded Galvanic Anode	
20	Cyd	Patching Conc, C-1	
1803	Syd	Epoxy Only	
1803	Syd	Epoxy Only, Rem	

* FOR REPLACING STEEL REINFORCEMENT WITH GREATER THAN 25% SECTION LOSS FOUND DURING DECK CONSTRUCTION, AS DIRECTED BY THE ENGINEER.

NOTES:

THE WORK COVERED BY THESE PLANS INCLUDES DECK PATCHING, EPOXY OVERLAY, AND MAINTAINING TRAFFIC.

LOCATE ALL ACTIVE UNDERGROUND UTILITIES PRIOR TO STARTING WORK AND CONDUCT OPERATIONS IN SUCH A MANNER AS TO ENSURE THAT THOSE UTILITIES NOT REQUIRING RELOCATION WILL NOT BE DISTURBED.

M-40 TRAFFIC IS TO BE MAINTAINED OVER THE BRIDGE BY PART-WIDTH CONSTRUCTION.

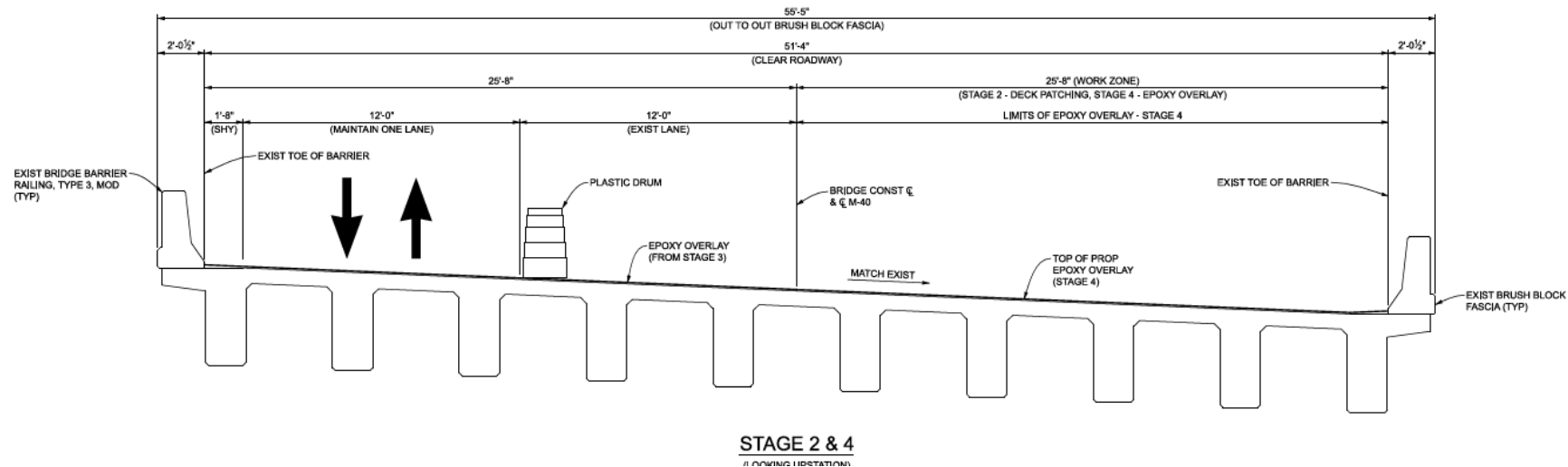
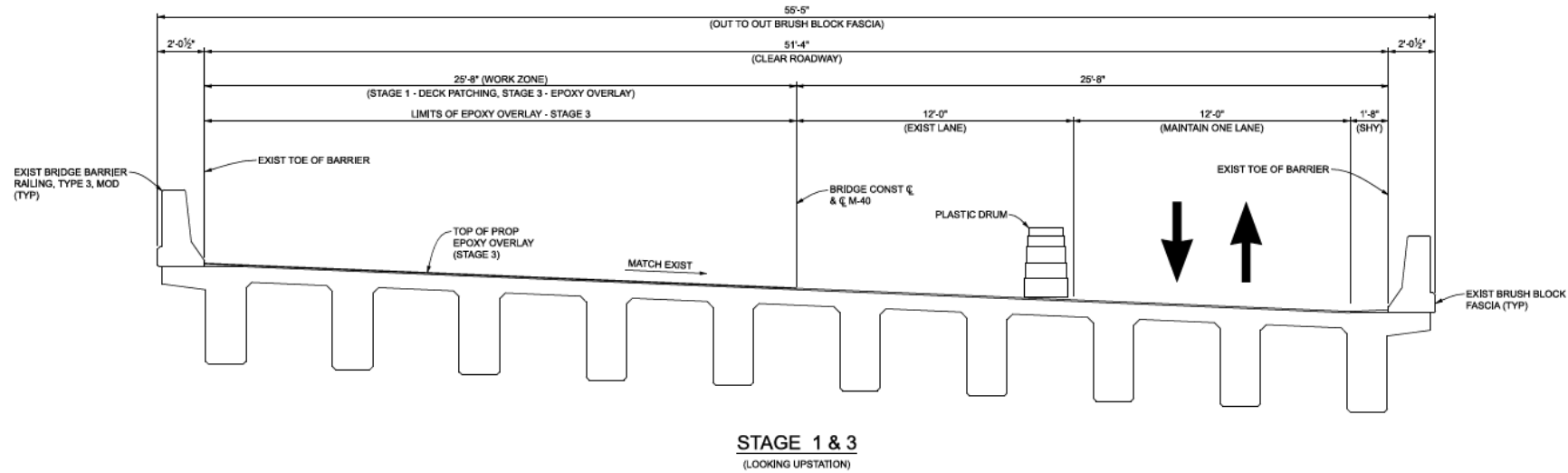
I-94 TRAFFIC IS TO BE MAINTAINED UTILIZING LANE AND SHOULDER CLOSURES.

APPLY LOW TEMPERATURE PROTECTION OF CONCRETE ACCORDING TO SECTION 706.03 J. OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. LOW TEMPERATURE PROTECTION OF CONCRETE IS INCLUDED IN THE RELATED ITEMS OF WORK.

IMPLEMENT MEASURES TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURE.

THE BRIDGE DECK SURFACE HAS AN HMA OVERLAY, HMA CAP OR HMA PATCHES. REMOVAL OF HMA AS A RESULT OF REMOVAL OF OTHER SUPERSTRUCTURE ITEMS IS INCLUDED IN THE REMOVAL OF THOSE ITEMS.

FPC Plans – Contract Project



FPC Plans – Contract Project

- One month to finish the job
- Engineers Estimate
 - Road Cost - \$141,637.15
 - Bridge Cost - \$178,336.05
 - Total Cost – \$319,973.20
- 10% over would be about \$350,0000

After award, start work on the date approved by the Engineer, which must be no earlier than July 8, 2024. In no case may any work be commenced prior to award by the Department.

No work will be allowed on Saturdays or Sundays unless approved by the Engineer.

The entire project must be completed by the final completion date of August 2, 2024.

Section 1 Total: \$141,637.15

Section Information

Section ID	Section Description	Section Total	Alternate Set ID	Alternate Member ID
2	Structure Work	\$178,336.05		

Item Prices

Line Num	Alt Set	Alt Mmbr	Item ID - Description	Quantity	Units	Unit Price	Extended Amount	SP, SS or Plan Note Req.
0150			7060092 - Reinforcement, Steel, Epoxy Coated	300.000	Lb	\$3.92	\$1,176.00	
0155			7120004 - Hand Chipping, Deep	150.000	Syd	\$347.43	\$52,114.50	
0160			7120020 - Epoxy Ovly	1,803.000	Syd	\$34.84	\$62,816.52	712B
0165			7120021 - Epoxy Ovly, Rem	1,803.000	Syd	\$13.21	\$23,817.63	712D
0170			7120112 - Patching Conc, C-L	20.000	Cyd	\$1,696.74	\$33,934.80	1003A or B
0175			7120120 - Embedded Galvanic Anode	270.000	Ea	\$16.58	\$4,476.60	

Section 2 Total: \$178,336.05
Total Bid: \$319,973.20

M-40 over I-94

- Trying to seal cracks with Mastic

- This photo was taken in 2024



Fine Tooth Milling

- We have a Statewide Region Support Service Contract
 - Epoxy Overlay Removal Services

NEW PROJECT SCOPE

- Stage 1 - Epoxy Removal – Our Subcontractor
- Stage 2 - Deck Patching – Special Crews
- Stage 3 - Deck Injection – Statewide Region Support
- Stage 4 - Healer Sealer Deck – Special Crews & Statewide Region Support
- Maintaining Traffic – Special Crews

Smiths Waterproofing LLC

3821 Van Dyke Road
Almont, MI 48003

Office: 810-798-2371
Fax: 810-798-2544
Toll Free: 800-669-LEAK
www.smithswaterproofing.com

Bill To:

Michigan Department
of Transportation
425 West Ottawa
Lansing, MI 48913

Job Location:

SWP Job # 21-45 - Vendor ID CV0009778
Contract # 210000001045
Removal of Thin Epoxy Polymer
Bridge Deck Overlay, As-Needed
Statewide

Invoice

Date	Invoice #
7/11/2024	37516

P.O. No.	Terms	Due Date
	Net 45	8/25/2024

Item	Address	Description	Qty	Rate	Amount
Mobilization		Mobilization - Southwest Region	1	3,050.00	3,050.00
Removal of Thin...		Removal of Thin Epoxy Polymer Bridge Deck Overlay	1,582.33	9.50	15,032.14
		Location: M-40 over I-94 (Paw Paw)			
		Completed 7/9/2024			

Thank you for your business.	Total	\$18,082.14
	Payments/Credits	\$0.00
	Balance Due	\$18,082.14

New Scope of Work

Project Schedule:

- **July 8th** after rush hour (full closure of deck) throughout the night – Removal of mastic /deck
- **July 9th thru July 12th** – Concrete deck patching with a fast set mortar during the day –one lane of traffic in each direction
- **July 15th & 16th** – Deck Injection (lower side of super / half the bridge) – One lane of traffic in each direction on the high side / mild one lane closures on I-94
- **July 17th** - Healer sealed the bridge by halves. Nothing on I-94 traffic
- **July 17th around 9 pm** – Open for traffic all lanes

After Fine Tooth Milling



After Fine Tooth Milling



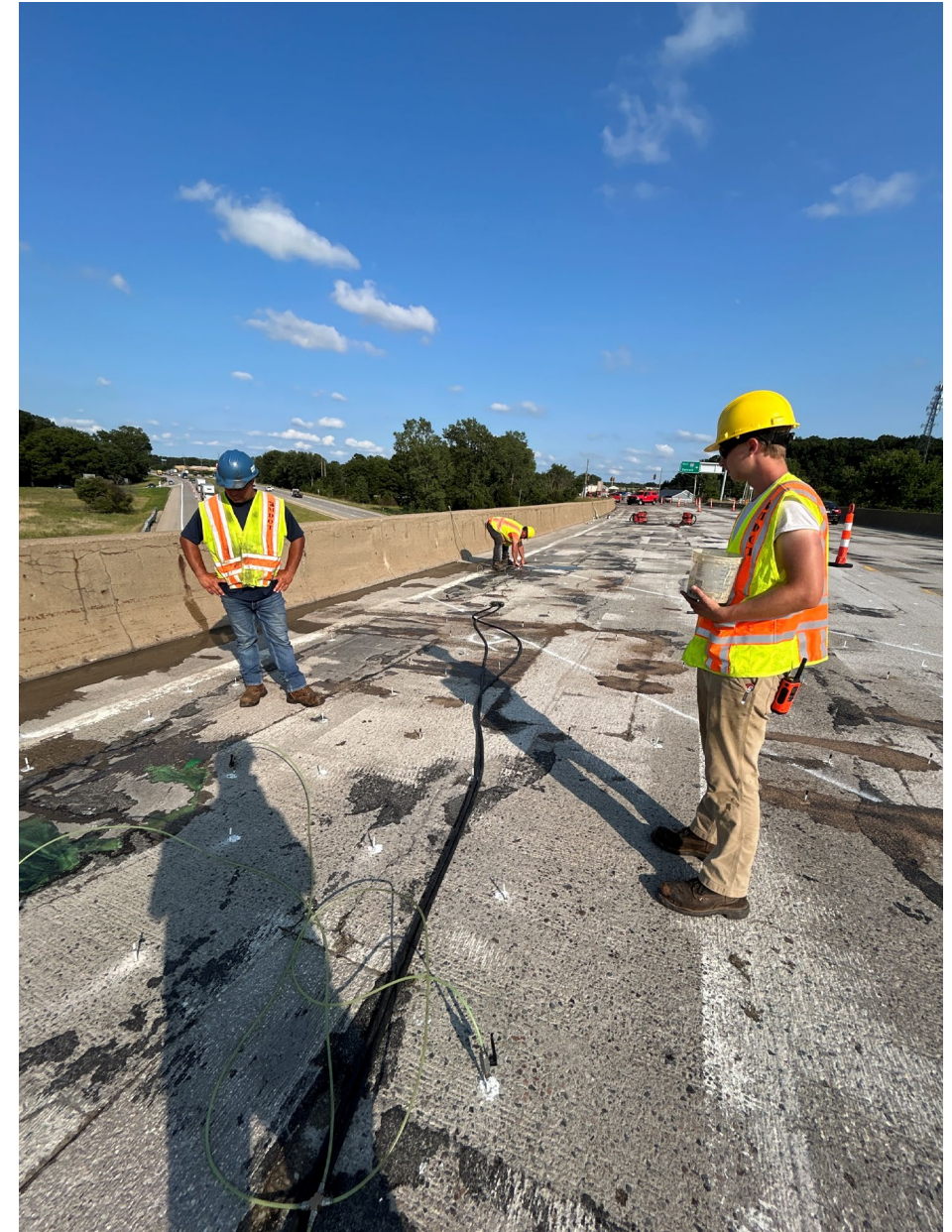
Patch Work



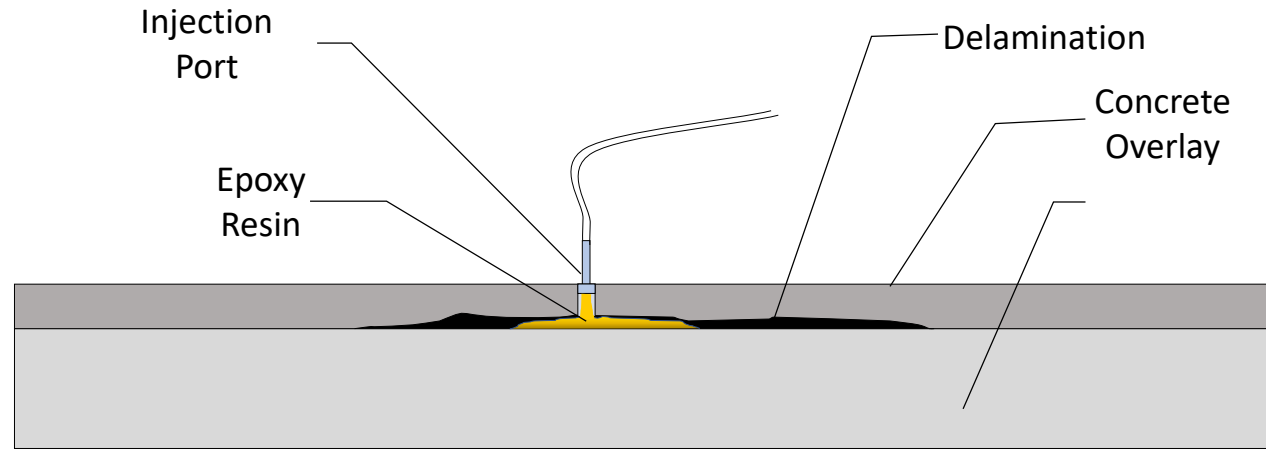
Patch Work



Deck Injection



Deck Injection



Deck Injection



Akabond 818

Technical Data Sheet
100% Solids Hi-Mod Injection Grout

Description

Akabond 818 is a 100%, solids, low viscosity epoxy adhesive. It can be used with pressure injection systems or by gravity feed.

Applications

Designed to restore cracked structural concrete by use of a pressure injection system. Akabond 818 can also be used to grout cracks in a horizontal plane by gravity grouting applications.

Advantages

- Low viscosity
- Moisture insensitive
- Exceptional flow characteristics
- High modulus for superior strength

Specifications

Certified ASTM C-881 Types I, II, IV, and V. Grade 1, Classes B and C

Physical Properties				
		Akabond 818 Resin Part A	Akabond 818 Hardener Part B	Mixed
Composition		Epoxy	Amine	
Mix Ratio, by weight		100	43	
By volume		100	50	
Appearance		Liquid	Liquid	Liquid
Color		Yellow	Blue	Green
Viscosity @ 77°F (25°C) (cPs)	ASTM D-2393	700	35	200
Density @ 77°F (25°C) g/cc (lb/gal)	ASTM D-792	1.13 (9.4)	0.96 (8.05)	
Pot life @ 77°F (25°C) 229g (min)	ASTM D-2471			20



Akabond 818

Technical Data Sheet
100% Solids Hi-Mod Injection Grout

Cured Properties at 74°F (23°C) ¹			
Hardness	ASTM D-2240	Shore D	82
Tensile Strength	ASTM D-638	psi (MPa)	10,100 (70)
Tensile Modulus	ASTM D-638	psi (MPa)	472,000 (3,250)
Flexural Strength	ASTM D-790	psi (MPa)	14,500 (100)
Flexural Modulus	ASTM D-790	psi (MPa)	511,000 (3,520)
Compressive Strength	ASTM D-695	psi (MPa)	14,700 (101)
Compressive Modulus	ASTM D-695	psi (MPa)	353,000 (2,430)
Glass Transition Temperature (Tg)	DMA	°F (°C)	141 (61)
Application temperature		°F (°C)	>40 (4)
Final cure		days	7
Water absorption	24 hour immersion	%	0.27

Limitations:

- Do not thin product. Solvents may prevent proper curing
- Substrate temperature should be 40°F (4°C) minimum and rising.
- For best results, materials should be maintained between 65°-75°F during application.
- Do not apply through standing water.
- Material becomes a vapor barrier after cure.
- Concrete or masonry must be tested for water-vapor transmission prior to application.
- Do not use in expansion joints (moving joints).

Deck Injection - The Process

- Locate Delaminations in the deck by sounding with chains, rod, or sounding hammer.
- Mark off areas to drill holes in the deck
- Placement of Ports on the deck
- Epoxy Inject into the ports
- Check the repair by sounding the deck again
- Let it Cure (preferably overnight)
- Removal of the ports

Deck Injection - The Process



Healer Sealer Time



Healer Sealer Time



Healer Sealer Time

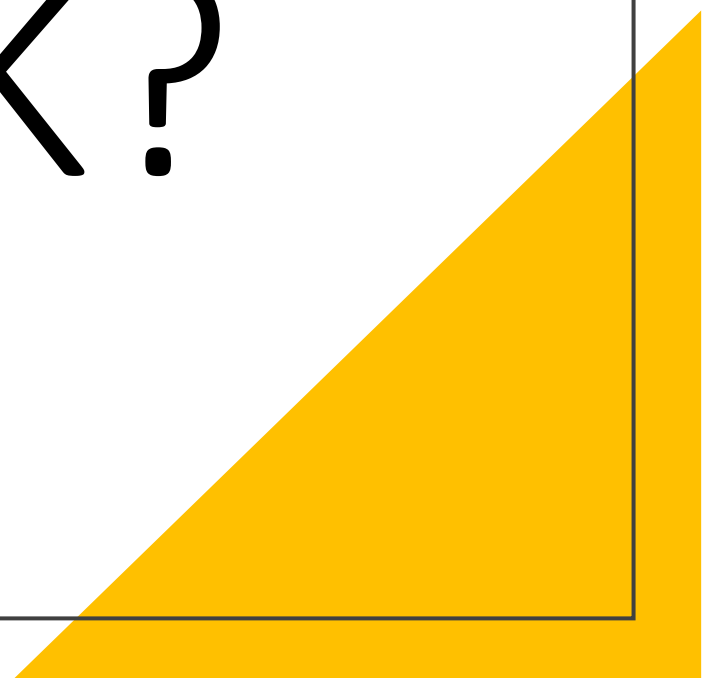


Approximate Cost of Project

NEW PROJECT SCOPE

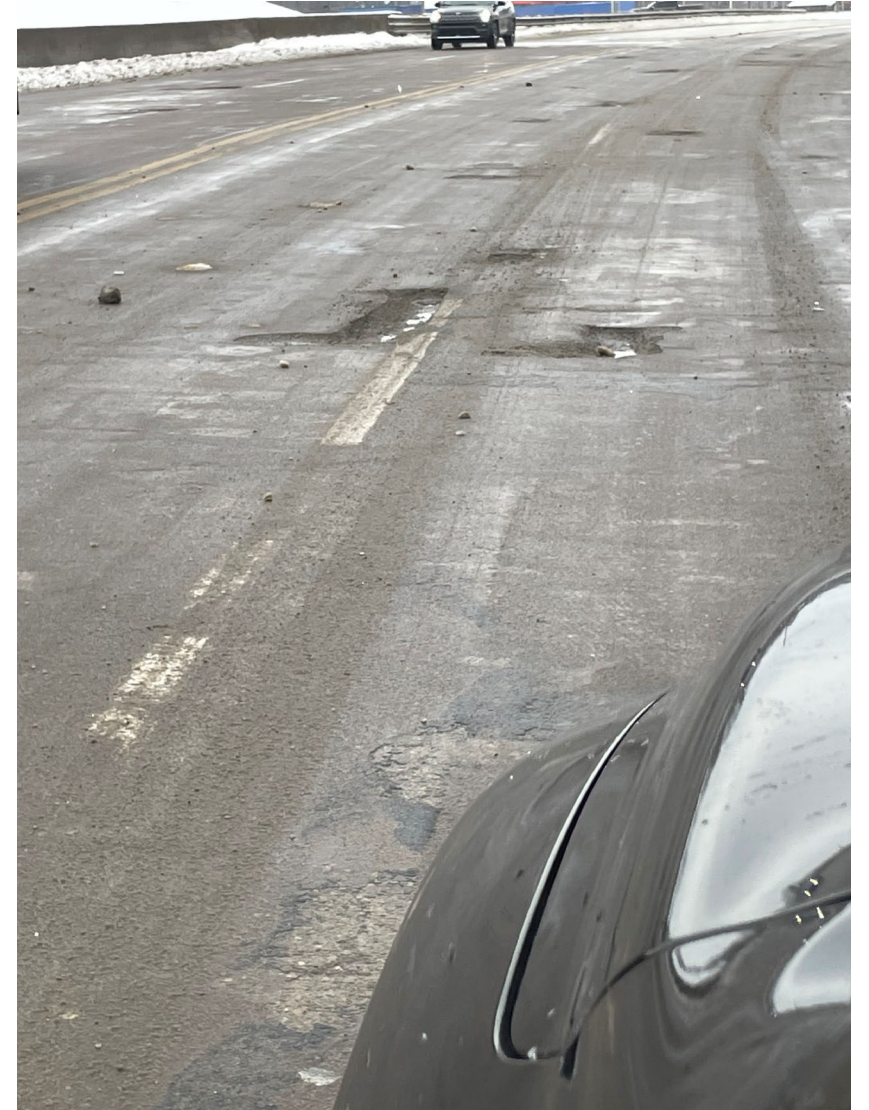
- Stage 1 - Epoxy Removal – \$18,000
- Stage 2 - Deck Patching – \$10,000
- Stage 3 - Deck Injection – \$32,500 (515 gallons)
- Stage 4 - Healer Sealer Deck – \$18,000 (410 gallons)
- Maintaining Traffic – \$20,000

DID IT WORK?



Winter Situation NB

- Patches are blowing up
- Lower end of the deck.



Winter Situation SB

- Patches are blowing up
- High side of the deck.



Winter Situation





NOW WHAT