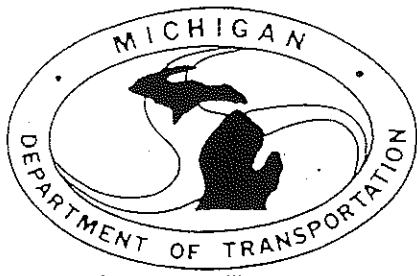


MICHIGAN DEPARTMENT OF TRANSPORTATION
MDOT
EVALUATION OF GALVANIZED PEDESTRIAN BRIDGES



MATERIALS and TECHNOLOGY
DIVISION

MICHIGAN DEPARTMENT OF TRANSPORTATION
MDOT

EVALUATION OF GALVANIZED PEDESTRIAN BRIDGES

D. C. Long
E. M. Phifer

A State Planning and Research Project by the
Michigan Department of Transportation
in Cooperation With the
Federal Highway Administration

Research and Technology Section
Materials and Technology Division
Research Projects 73 G-197
Research Report No. R-1335

Michigan Transportation Commission
Barton W. LaBelle, Chairman;
Richard T. White, Vice-Chairman;
Robert M. Andrews, Jack L. Gingrass
John C. Kennedy, Irving J. Rubin
Patrick M. Nowak, Director
Lansing, May 1995



ACTION PLAN

1. Engineering Operations Committee
 - A. Approve this report.
2. R. A. Welke, Deputy Director, Bureau of Highways
 - A. Transmit to FHWA.
3. Materials and Technology Division
 - A. Project complete; no action.

Executive Summary

This final report compares the performance of galvanized structural T's in a truss-type pedestrian bridge to other structural shapes and types of coating. In 1973, the department developed a work plan to determine whether galvanized structural T's on a test bridge in Harvey would perform better than welded pipe trusses on pedestrian bridges. This project has the ambitious purpose of comparing structural differences, protection methods and assembly procedures using only five control structures.

Based on the meager data available, the researchers concluded that the type of protective coating is more important than the structural design or fabrication procedure in providing extended corrosion control. The use of galvanizing and the other experimental features did not increase the cost of the project as expected, and the actual cost was 15 percent under the \$50,000 estimate. Our current view on galvanizing as a protective coating is that it functions like a zinc primer and requires two additional coats of "paint" on top of it to provide satisfactory, long-term performance.

Introduction

This final report compares the performance of galvanized structural T's in a truss-type pedestrian bridge to other structural shapes and types of coating. Two similar experimental structures were compared to five control bridges (Table 1) for cost, construction ease and corrosion resistance. The experiment compared structural T's to other shapes, galvanizing to painting, and galvanized preassembled sections to individual panels.

In 1973, the department developed a work plan to determine whether galvanized structural T's on a test bridge in Harvey would perform better than welded pipe trusses on pedestrian bridges. A similar structure erected north of Detroit is a secondary test structure, with other pedestrian bridges in the Lower Peninsula serving as controls. The first progress report published in 1974 contains the work plan, initial inspection reports and details of the construction phase.

Structure No.	Location	Coating	Design
P01 of 52042 Experimental	Over US-41 in Harvey, District 1	Galvanized	Structural T's galvanized in preassembled sections.
P01 of 50031 Control	Over M-97 at Rose Lake in Mt. Clemens, Metro	Galvanized	Structural L's and T's with truss-panel walls, floors and roof.
P02 of 33043 Control	Over M-78 at Harrison Rd. in East Lansing, District 8	Galvanized; epoxy and urethane added in 1986	Square tubing
P02 of 63101 Control	Over I-696 East of Orchard Lake Rd. in Farmington, Metro	Alkyd	Round tubing
P02 of 33032 Control	Over I-96 BL at Mason St. in Lansing District 8	Alkyd	Square tubing
P01 of 24011 Control	Over US-31 in E. Petoskey, District 4	Alkyd	Square tubing
P02 of 50031 Experimental	Over M-97 in Fraser, Metro District	Galvanized	Same design as the test bridge.

Discussion

Maintenance inspected the welded and bolted connections, on all structures in the study, for structural integrity as part of its annual inspection program, but there is limited information from these inspections on how the coating performed. Between 1991 and 1993, Research Laboratory personnel conducted final inspections, concentrating on the condition of the protective coating. Selected maintenance inspection reports from the last 10 years and the final research inspection reports are in Appendix A.

This project has the ambitious purpose of comparing structural differences, protection methods and assembly procedures using only five control structures. With the limited amount of data available for each variable, the researchers could only arrive at general conclusions. By reviewing old inspection reports and conducting a final inspection themselves, the researchers attempted to determine the effectiveness of galvanizing and to compare structural shapes and fabrication procedures.

Both experimental structures are still serviceable after 20 years of exposure, suffering mostly superficial rusting around the connection bolts. Galvanizing provided more protection on these structures than the alkyd coating used on the control structures in Farmington and Petoskey. The galvanized structure in East Lansing, worse than both experimental bridges, required recoating in 1986. The Mt. Clemens bridge is the only control structure that performed as well or better than the experimental bridges.

Experimental Structures

P01 of 52042 - Over US-41 in Harvey

The truss, stairs and platforms came in assembled sections, with holes pre-drilled for field connections. The structure was then disassembled, galvanized and re-assembled in the field using galvanized bolts. The bridge opened to pedestrian traffic in December 1971, and the initial inspection in 1973 showed that the experimental features had performed satisfactorily. Maintenance inspection reports dating from 1984 do not mention the condition of the galvanizing. Research personnel inspected the structure in 1991 and found corrosion on bolted connections, previously damaged areas, fencing connections and edges of T and L members.

P02 of 50031 - Over M-97 in Fraser

Constructed in 1972, this bridge, the same design as the bridge in Harvey, is the secondary standard for this project. Researchers could not locate any inspection reports for this structure prior to 1993. In 1993, inspectors found

rust staining on the fascia beam and rusty connection bolts over the roadway, similar to the other experimental structure in Harvey.

Control Structures

P01 of 50031 - Over M-97 at Rose Lake in Mt. Clemens

This structure was built in 1966 using galvanized structural L's and T's. The truss-panel floor, walls and roof were galvanized and assembled into panels, which were then combined into sections. The 1993 research field inspection report noted that the T and L members were rusting where there was abrasion from the attached fencing. The grating was completely rusted, and the only other structural rusting was at the bolted connections. This structure had less corrosion than the Harvey experimental structure; therefore, galvanizing after fabrication did not provide additional corrosion resistance.

P02 of 33043 - Over M-78 at Harrison Road in East Lansing

This structure, built in 1970, used square tubing which was assembled into sections and then galvanized. The 1984 Maintenance inspection report mentions 50-60 percent rust on the main portion. The coating was updated with a two-coat system of epoxy and urethane in 1986 and is now in good condition with 5 percent or less rust noted during the 1993 inspection.

P02 of 63101 - Over I-696 east of Orchard Lake Road in Farmington

The bridge is built with round tubing which was coated in 1971 with alkyd paint by Maintenance forces. The 1985 Maintenance inspection documented that the end columns were 50 percent rusty, and the stairway, rail posts, and pipes had 80 percent rust. The inspector recommended cleaning and recoating the structure at that time, but there is no indication that it was done.

The September 1993 inspection report revealed that the painted areas were 80 percent rusted with handrails up to 90 percent rusted. The galvanized treads are beginning to show some areas of rust. Even though its appearance is poor, the bridge does not have any serious structural problems or severe section loss. Inspectors found considerably more corrosion on this structure than on the galvanized structure in Harvey. The non-sacrificial coating used in 1971 is the primary cause of the increased rusting.

P02 of 33032 - Over I-96 BL at Mason Street in Lansing

This structure was removed in 1990 during the reconstruction of Cedar Street. It was built of square tubing and originally alkyd coated, but it did not have any inspection reports and will not be discussed further.

P01 of 24011 - Over US-31 in East Petoskey

The truss portion of this bridge was constructed of painted square tubing in 1967. As late as 1987, this structure had only 5 percent rust, but by 1989 it had increased to 10 percent, and Maintenance recommended cleaning and recoating. The 1993 inspection report showed more than 50 percent flash rust on the exterior portions of the truss and less than 20 percent on the interior portions. The north ramp and support trusses had been replaced with painted galvanized members. Because a non-sacrificial coating was used, there was considerably more corrosion on this bridge than on the test bridges. During the May 1994 inspection, we found the entire structure recoated with an unknown system which appeared to have been brushed or rolled on, an unacceptable, non-standard practice. This was done without the department's knowledge, and we do not know who performed the work.

Costs

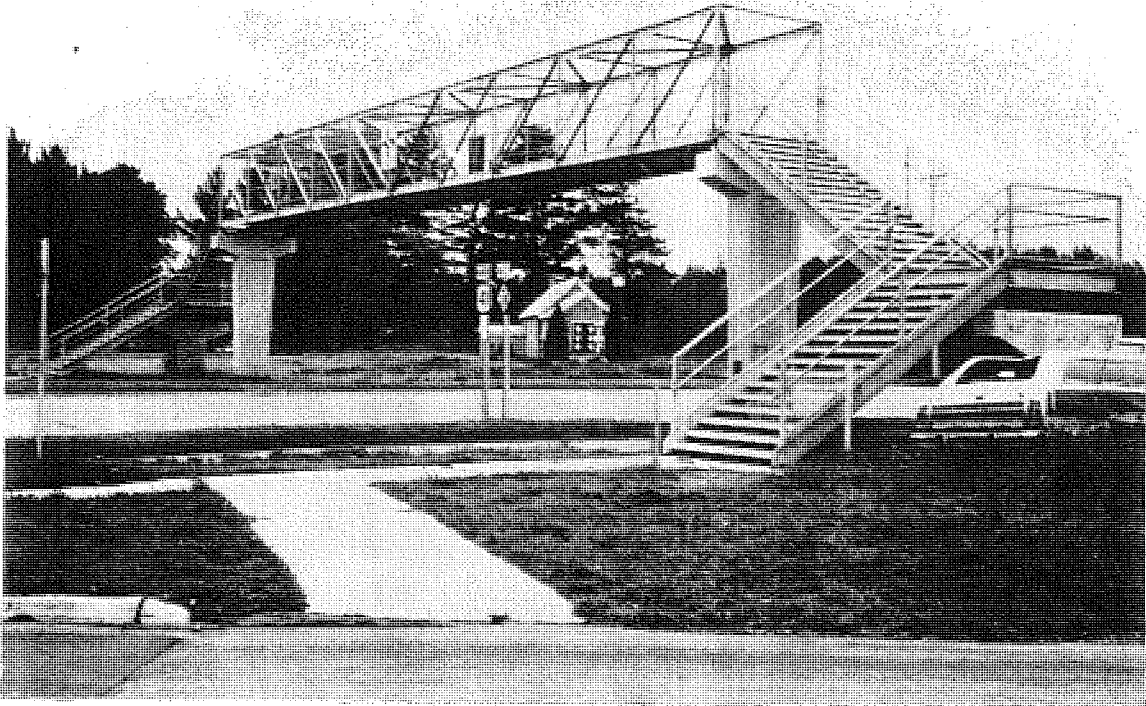
In 1971, our bid estimators anticipated an increase of \$1000 per galvanized structure over an identical painted structure. However, the use of galvanizing and the other experimental features did not increase the cost of the project as expected, and the actual cost was 15 percent under the \$50,000 estimate.

Conclusions and Recommendations

Based on the meager data available, the researchers concluded that the type of protective coating is more important than the structural design or fabrication procedure in providing extended corrosion control. Our current view on galvanizing as a protective coating is that it functions like a zinc primer and requires two additional coats of "paint" on top of it to provide satisfactory, long-term performance. A zinc-rich organic primer accomplishes the same purpose as galvanizing, and since 1984, we have recommended coating all structural steel with a three-coat epoxy zinc-rich system for maximum cost-effective protection. If a structure is galvanized, we recommend adding a tie coat with intermediate and top coats for maximum protection and performance.

APPENDIX A

P01 52042 US-41, M-28



PEDESTRIAN OVERPASS

FIELD INSPECTION REPORT

PROJECT #: 52042	STRUCTURE #: P01	DATE INSPECTED: 10/15/91
LOCATION: US-41 @ Harvey/Marquette	INSPECTORS: L. Senko/E. Phifer	
PROJECT ENGINEER OR REPRESENTATIVE:		
SUPPLIER OF COATING SYSTEM: Galvanizing		
PURPOSE: 73 G-197 Inspection		
FAILURE TYPES:	NO	YES
FADING	<u> X </u>	<u> </u>
PEELING	<u> X </u>	<u> </u>
BLISTERING	<u> X </u>	<u> </u>
RUNS AND SAGS	<u> X </u>	<u> </u>
PINPOINT RUST	<u> </u>	<u> X </u>
PACK RUST	<u> X </u>	<u> </u>
DAMAGED COATING	<u> </u>	<u> X </u>
PAINT OVER DEBRIS	<u> X </u>	<u> </u>
DEFICIENT PRIMER	<u> X </u>	<u> </u>
DEFICIENT TOPCOAT	<u> X </u>	<u> </u>
Location: <u>Rusted areas limited to bolted areas, previously damaged areas, areas where the fencing rubbed on the galvanizing and some edges of the T's and L's.</u>		
Location: <u>Few, random throughout bridge.</u>		
EVALUATION: <u>Areas rusting are typical bad spots on most bridges.</u>		
FOLLOW UP NEEDED: <u>Any additional inspections needed to complete the project.</u>		
FINAL COMMENTS: <u>This report was prepared for sole use in the G-197 report. The information was compiled from inspection notes taken during the original inspection.</u>		
SIGNATURE: <u><i>E. M. Phifer</i></u>	DATE: 6 / 9 / 94	

cc: J. W. Reincke (73 G-197)
 R. E. Nordlund
 E. M. Phifer

BRIDGE INSPECTION REPORT

P2502 (9/89)

DATE INSPECTED: 10/7/93
 INSPECTED BY: CKJ

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BRIDGE NO. **P01-52042** ROUTE **US-41** UNDER PEDESTRIAN X-OUR COUNTY **MARQUETTE**
 LOCATION **IN HARVEY** DISTRICT **1**
 DESCRIPTION: SPANS **1 = 173** RDWY. WIDTH **0.0 - 5** BUILT **1971**
 TYPE **STL TRUSS THROUGH** DESIGN LOAD **PED** FOUNDATION:

- | | |
|--|--|
| 1. REPAIRS MADE _____ | 9 - - - - NEW
7-8 - - - - GOOD
5-6 - - - - FAIR
4 - - - - POOR
3 - - - - SERIOUS
2 OR LESS - CRITICAL |
| 2. ADDITIONAL INSPECTION EQUIPMENT _____ | |
| 3. CRITICAL INSPECTION FEATURE _____ | |
| 4. PAINT CLASS: _____ YEAR/COLOR _____ | |
| 5. POSTING: _____ | |

	UNIT	RATING	EXPLANATION OF CONDITIONS
		93	MATERIAL SURFACE <u>NA</u> DECK <u>Gal. Exp Meta</u> APPROACH <u>NA</u> EXP. JOINT TYPE _____ MIN. OPENING _____ " @ _____ °
STRUCTURE	1. SURFACE YR. OVERLAY _____	NA	
	2. DECK	8	
	3. EXPANSION JOINTS	-	
	4. OTHER JOINTS	-	
	5. SIDEWALK & CURBS	-	
	6. RAILINGS	8	
	7. UTILITIES	-	
	8. BEARING DEVICES	8	
	9. DRAINAGE SYSTEM # _____	-	
	10. STRINGERS P.&H. # _____	8	
	11. PAINT	-	#6 4" x 3" galv. "T" beam posts on crossover and 2-1/2" sq. galv. posts on stairs. Galv. chain link fencing on entire structure. Some fence ties missing, remainder of ties rusty.
	12. SECTION LOSS	-	
SUB-STRUCTURE	13. ABUTMENTS	-	
	14. PIERS	7	#11 Entire structure galvanized steel.
	15. SLOPE PROTECTION	-	
APPROACHES	16. PAVEMENT	-	#14 Piers on east side show light map cracking.
	17. SHOULDERS SIDEWALKS	-	
	18. SLOPES	-	
	19. GUARD RAIL	-	
UTILITIES	20. UNDERWATER INSP. (DESCRIBE)	-	
	21. CHANNEL PROTECT. #61	-	RECOMMENDATIONS: _____
HY	22. CULVERT (OVER 20') #82	-	
	SI & A # 87	7	
	#58 ()	8	
	#59 ()	8	
	#60 ()	7	

BRIDGE INSPECTION REPORT

P2502 (9/89)

DATE INSPECTED: 11/20/91
INSPECTED BY: CKJ

BRIDGE NO. P01-52042 ROUTE US-41
LOCATION IN HARVEY
DESCRIPTION: SPANS 1 = 173
TYPE STL TRUSS THROUGH

UNDER PEDESTRIAN X-OUR

ROWY. WIDTH 0.0 - 5
DESIGN LOAD PED

COUNTY MARQUETTE
DISTRICT 1
BUILT 1971
FOUNDATION:

1. REPAIRS MADE _____
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____
4. PAINT CLASS: _____ YEAR/COLOR _____
5. POSTING: _____

9 - - - - NEW
7-8 - - - - GOOD
5-6 - - - - FAIR
4 - - - - POOR
3 - - - - SERIOUS
2 OR LESS - CRITICAL

		UNIT	RATING	EXPLANATION OF CONDITIONS
			91	MATERIAL SURFACE N/A DECK Gal. EXP Meta APPROACH N/A EXP. JOINT TYPE _____ MIN. OPENING _____
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY _____	NA		
	2. DECK	8		
	3. EXPANSION JOINTS	-		
	4. OTHER JOINTS	-		
	5. SIDEWALK & CURBS	-		
	6. RAILINGS	8		#6 4" x 3" galv. "T" beam posts on crossover and 2-1/2" sq. galv. posts on stairs. Galv. chain link fencing on entire structure. Some fence ties missing, remainder of ties rusty.
	7. UTILITIES	-		
	8. BEARING DEVICES	8		
	9. ORAINAGE SYSTEM # _____	-		
	10. STRINGERS P.&H. # _____	8		
	11. PAINT	-		#11 Entire structure galvanized steel.
	12. SECTION LOSS	-		
SUB-STRUCTURE	13. ABUTMENTS	-		
	14. PIERS	7		#14 Piers on east side show light map cracking.
	15. SLOPE PROTECTION	-		
APPROACHES	16. PAVEMENT	-		
	17. SHOULDERS SIDEWALKS	-		
	18. SLOPES	-		
	19. GUARD RAIL	-		
HYDRAULICS	20. UNDERWATER INSP. (DESCRIBE)	-		
	21. CHANNEL PROTECT. #61	-		RECOMMENDATIONS: _____
	22. CULVERT (OVER 20') #62	-		
	S1 & A # 67	7		
	#58 (-)	8		
#59 (-)	8			
#60 (-)	7			

BRIDGE INSPECTION REPORT

P2502 (3/87)

DATE INSPECTED: 10-89
 INSPECTED BY: R. Kamarski

BRIDGE NO. PO1-52042
 LOCATION IN HARVEY
 DESCRIPTION: SPANS 1 = 173

ROUTE US-41

UNDER PEDESTRIAN X-OUR

COUNTY MARQUETTE
 DISTRICT 1
 BUILT 1971

TYPE STL TRUSS THROUGH

RDWY. WIDTH 0.0 - 5
 DESIGN LOAD PED

1. REPAIRS MADE _____
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____

L E G E N D	9 - - - -	NEW
	7-8 - - -	GOOD
	5-6 - - -	FAIR
	4 - - - -	MARGINAL
	3 - - - -	POOR
	2 OR LESS -	CRITICAL

UNIT		RATING				EXPLANATION OF CONDITIONS	
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY <u>N.A.</u>					MATERIAL: SURFACE <u>N.A.</u> DECK <u>Galv. Grate</u> APPROACH <u>N.A.</u> EXP. JOINT TYPE <u>N.A.</u> MIN. OPENING " @ _____	
	2. DECK	7					
	3. EXPANSION JOINTS <u>N.A.</u>	-					
	4. END JOINTS	7					
	5. CONSTRUCTION JOINTS	7					
	6. SIDEWALK & CURBS <u>N.A.</u>	-					
	7. FASCIAS <u>N.A.</u>	-					
	8. RAILING POSTS	8				<u>8. & 9. 3"x4" Galv. T Beam Posts on Walkover & 2 1/2" Sq. Galv. Posts on Stairway Galv. Chain Link Fencing on Structure Some Fence ties missing and Remainder of Ties Rusty.</u>	
	9. RAILING PANELS	7					
	10. DRAINAGE SYSTEM <u>N.A.</u>	-					
	11. STRINGERS <u>P. & H.</u>	8				<u>suppt</u>	
	12. PAINT YEAR <u>None</u>	-				<u>12. Entire Structure is Galv. Steel</u>	
SUBSTRUCTURE	13. ABUTMENTS <u>N.A.</u>	-					
	14. PIERS	7				<u>14. Light map cracking & Incipient Cracking on Piers.</u>	
	15. SLOPE PROTECTION	-					
APPROACHES	16. PAVEMENT	-					
	17. SHOULDERS SIDEWALKS	-					
	18. SLOPES	-					
	19. GUARD RAIL	-					
	20. CURB & GUTTER	-					
	21. WATERWAY	-				RECOMMENDATIONS: _____	
	22. UTILITIES	-				<u>1. Replace Wire Ties</u>	
23. SI & A NO. 67	7						
24. #58 (0)	7						
25. 59 (0)	8						
26. 60 (0)	7						



BRIDGE INSPECTION REPORT

Date	Made by
11-11-85	Konover

497A (11/84)

Bridge No. POI 52042 Route US-41 ~~Over~~ Under Pedestrian St. County Marquette District Built: 19
 Location In Harvey
 Description Spans - 1=Main; Type - STT; Rd Width - None; Design Load - PED;
 Horz Cl - 90.5R; Vert Clear - 18'1"

Legend	Rating
9	New
7-8	Good
5-6	Fair
4	Marginal
3	Poor
2 or Less	Critical

- Repairs Made
- Additional Inspection Equipment
- Critical Inspection Feature

UNIT	RATING	EXPLANATION OF CONDITIONS	
SUPERSTRUCTURE	1. Surface	Material: Surface Deck Galv. Expanded Metal Approach	
	Yr. Overlay	Expansion Joint Type Minimum Opening " @ °	
	2. Deck	B	
	3. Expansion Joints	N.A.	
	4. End Joints	B	
	5. Construction Joints	B	
	6. Sidewalks & Curbs	-	
	7. Fascias	-	8' x 9' 4"x3" Galv. T Beam posts on Crossover & 2 1/2" SQ Galv. Posts on Stairs Galv. Chain Link Fascias Throughout.
	8. Railing posts	B	Some Fence-Ties are Missing, Remainder of Ties Rusty.
	9. Railing panels	7	
	10. Drainage system	-	
	11. Stringers	B	
P.&H.	-		
12. Paint	-	12. Galvanized steel	
Year	-		
SUBSTRUCTURE	13. Abutments	-	
	14. Piers	7	14. East End Piers have light Map Cracking
	15. Slope Protection	-	
APPROACHES	16. Pavement	-	
	17. Shoulders Sidewalks	-	
	18. Slopes	-	
	19. Guard Rail	-	
	20. Curb & Gutter	-	
	21. Waterway	-	
22. Utilities	-		

MAINTENANCE RECOMMENDATIONS 1. Up Grade wire Ties
 SI & A NO. 67 7



BRIDGE INSPECTION REPORT

Date	Made by
10-18-84	CRB

497A (2/83)

Bridge No. P01 52042 Route US-41 Over Under US-41 (0.48) County Marquette District 1
 Location In Harvey
 Description Spans - 1=Main; Type - STT; Rd Width - None; Design Load - PED;
 Horz CL - 90.5R; Vert Clear - 18'1" 10 93'

Legend	
9	New
7-8	Good
5-6	Fair
4	Marginal
3	Poor
2 or Less	Critical

- Repairs Made
- Revised Dimensions

UNIT	RATING	EXPLANATION OF CONDITIONS
SUPERSTRUCTURE	1. Wearing Surface	-
	2. Deck	8
	3. Expansion Joints	-
	4. End Joints	8
	5. Construction Joints	8
	6. Sidewalks	-
	7. Curbs	-
	8. Fascias	-
	9. Railing posts	8
	10. Railing Panels	7
	11. Stringers	8
	12. Point Year	-
SUBSTRUCTURE	13. Abutments	-
	14. Piers	7
	15. Slope Protection	-
APPROACHES	16. Pavement	-
	17. Shoulders	-
	18. Slopes	-
	19. Guard Rail	-
	20. Curb and Gutter	-
	21. Waterway	-

Materials: Surface Dec. EXPANDED METAL (GALV.) Approach
 Expansion Joint Type Minimum Opening 40"

9, & 10. 2" x 3" GALV. T MEMBER POSTS ON MAIN SPAN & 2 1/2" SQ. GALV. POSTS ON STAIRS. GALV. CHAIN LINK FENCING. ONE EAST END HAND RAIL SUPPORT IS BROKEN. FEW CHAIN LINK FENCE TIES ARE BROKEN. MANY RUSTY TIES.
 12. GALVANIZED STEEL.

14. BOTH EAST END PIERS HAVE FINE HAIRLINE MAP CRACKING.

MAINTENANCE RECOMMENDATIONS REPAIR BROKEN HAND RAIL SUPPORT. REPLACE RUSTY WIRE TIES w/ GALV. TIES.
 ITEM #07 = 7

P01-52042



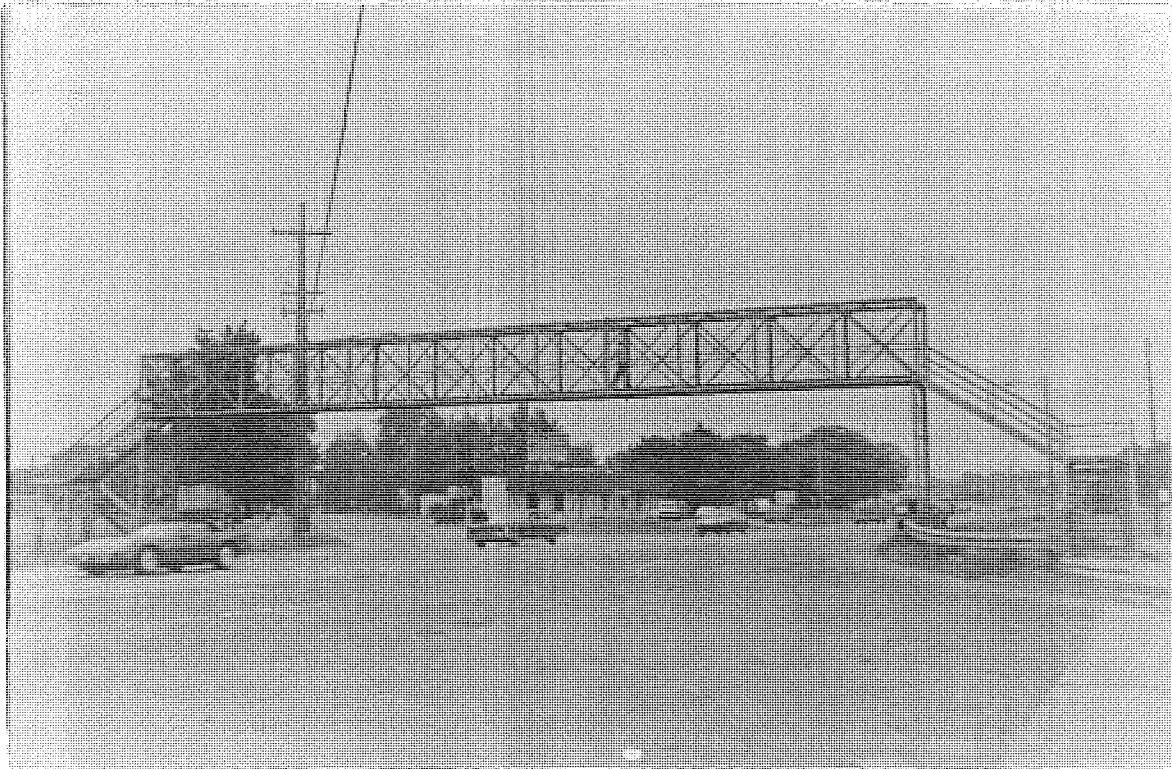
PO1 - 50031, 8-6-86



PO1 - 50031, 8-6-86



PO1 - 50031, 8-6-86



PO1 - 50031, 8-6-86

FIELD INSPECTION REPORT

PROJECT #: 50031	STRUCTURE #: P02	DATE INSPECTED: 08/31/93	
LOCATION: M-97 @ Masonic Blvd Fraser	INSPECTORS: B. Beck/A. Grisdale		
PROJECT ENGINEER OR REPRESENTATIVE:			
SUPPLIER OF COATING SYSTEM: Galvanizing			
PURPOSE: <u>Research Project 73 G-197 Annual Inspection</u>			
FAILURE TYPES:	NO	YES	LOCATION
FADING	_____	<u>X</u>	_____
PEELING	<u>X</u>	_____	_____
BLISTERING	<u>X</u>	_____	_____
RUNS AND SAGS	<u>X</u>	_____	_____
PINPOINT RUST	_____	<u>X</u>	_____
DAMAGED COATING	_____	<u>X</u>	<u>Some small chips.</u>
PAINT OVER DEBRIS	_____	_____	_____
DEFICIENT PRIMER	_____	_____	_____
DEFICIENT TOPCOAT	_____	_____	_____
EVALUATION: <u>Overall appearance is good. Rust staining of facia beam, and ALL connection bolts over roadway are rusted.</u>			
FOLLOW UP NEEDED: <u>Annual inspection until project is closed.</u>			
FINAL COMMENTS: _____			
SIGNATURE: <u>Bryan D. Beck</u>		DATE: 09 / 01 / 93	

cc: J. W. Reincke (73 G-197)
D. C. Long

BRIDGE INSPECTION REPORT

P2502 (9/89)

DATE INSPECTED: 10-13-92
INSPECTED BY: KT

BRIDGE NO. PO1-50031 ROUTE M-97
LOCATION IN MT CLEMENS
DESCRIPTION: SPANS 1 = 180
TYPE STL TRUSS THROUGH

UNDER @ ROSE AVE WALKOVE

COUNTY MACOMB
DISTRICT 9
BUILT 1966
FOUNDATION:

RDWY. WIDTH 6.0 - 4
DESIGN LOAD PED

1. REPAIRS MADE _____
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____
4. PAINT CLASS: ____ YEAR/COLOR _____
5. POSTING: _____

9 - - - - NEW
7-8 - - - - GOOD
5-6 - - - - FAIR
4 - - - - POOR
3 - - - - SERIOUS
2 OR LESS - CRITICAL

		UNIT	RATING	EXPLANATION OF CONDITIONS
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY	-	92	MATERIAL: SURFACE _____ DECK _____ APPROACH _____ EXP. JOINT TYPE _____ MIN. OPENING _____ " @ _____ "
	2. DECK	-	7	
	3. EXPANSION JOINTS	-		
	4. OTHER JOINTS	-		
	5. SIDEWALK & CURBS	-		
	6. RAILINGS	-	7	6. Chain link fence
	7. UTILITIES	-		
	8. BEARING DEVICES	-	7	
	9. DRAINAGE SYSTEM #	-		
	10. STRINGERS P.&H. #	-	6	10 Galvanized truss
	11. PAINT	-		
	12. SECTION LOSS	-		
SUB-STRUCTURE	13. ABUTMENTS	-		
	14. PIERS	-	6	14 Small spalls, some exposed rebar
	15. SLOPE PROTECTION	-		
APPROACHES	16. PAVEMENT	-		
	17. SHOULDERS SIDEWALKS	-		17. Second step east end has been bent.
	18. SLOPES	-		
HYDRAULICS	19. GUARD RAIL	-		19. True beam connect west pier on filler wall
	20. UNDERWATER INSP. (DESCRIBE)			
	21. CHANNEL PROTECT. #61			
	22. CULVERT (OVER 20') #62			
	SI & A # 67			
#58 ()				
#59 ()				
#60 ()				

RECOMMENDATIONS:
Creeps: change 2nd step on east end

BRIDGE INSPECTION REPORT

P2502 (3/87)

DATE INSPECTED:
INSPECTED BY:

7-6-88
MEL

10-8-90
MLW

BRIDGE NO. P01-50031
LOCATION IN MT CLEMENS
DESCRIPTION: SPANS 1 = 180
TYPE STL TRUSS THROUGH

ROUTE M-97

UNDER @ ROSE AVE WALKOVE

COUNTY MACOMB
DISTRICT 9
BUILT 1966

RDWY. WIDTH 0.0 - 4
DESIGN LOAD PED

1. REPAIRS MADE _____
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____

L	9	---	NEW
E	7-8	---	GODD
G	5-6	---	FAIR
E	4	---	MARGINAL
N	3	---	POOR
D	2 OR LESS	---	CRITICAL

UNIT		RATING	EXPLANATION OF CONDITIONS
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY	88 8 7	MATERIAL SURFACE <u>Steel grid</u> DECK <u>Steel Grid</u> APPROACH <u>Steel grid stairs</u> EXP. JOINT TYPE _____ MIN. OPENING _____
	2. DECK	7 7	
	3. EXPANSION JOINTS	- -	
	4. END JOINTS	- -	
	5. CONSTRUCTION JOINTS	- -	
	6. SIDEWALK & CURBS	- -	
	7. FASCIAS	- -	
	8. RAILING POSTS	- 7	
	9. RAILING PANELS	7 7 <i>Chain Link Fence</i>	
	10. DRAINAGE SYSTEM	- -	
	11. STRINGERS	6 6 <i>galv. truss</i>	11. 70% rust
SUBSTRUCTURE	12. PAINT YEAR	- -	
	13. ABUTMENTS	- -	
	14. PIERS	6 6	14. Small spalls, some exposed rebar
APPROACHES	15. SLOPE PROTECTION	- -	
	16. PAVEMENT	- -	
	17. SHOULDERS SIDEWALKS	- -	
	18. SLOPES	- -	
	19. GUARD RAIL	- -	P. R = N, N, N, N
	20. CURB & GUTTER	- -	
	21. WATERWAY	- -	RECOMMENDATIONS: _____
22. UTILITIES	- -		
23. SI & A NO. 67	6 6		

58(0) 7
59(0) 6
60(A) 6



BRIDGE INSPECTION REPORT

Date	Made by
12-5-84	MEI
8-6-86	MEI

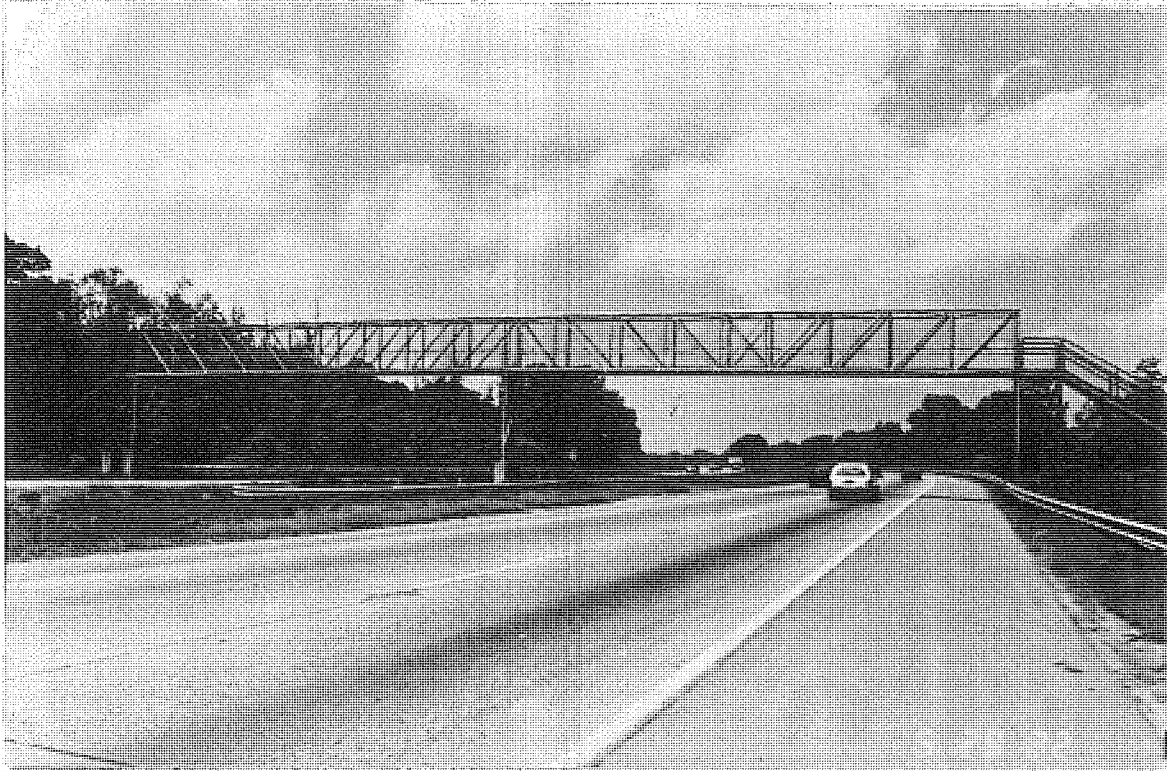
Bridge No. Pol 50031 Route M-097 Over Under Rose Ave County Macomb District M
 Location In Mt: Clemens
 Description Spans - 1=Main; Type - STT; Rd Width - None; Design Load - PED;
 Horz CL - 90R; Vert Clear - 16'3"

9	New
7-8	Good
5-6	Fair
4	Marginal
3	Poor
2 or Less	Critical

- Repairs Made
- Revised Dimensions

UNIT	RATING	EXPLANATION OF CONDITIONS	
SUPERSTRUCTURE	1. Wearing Surface	8	Materials: Surface <u>Steel grid Deck steel grid</u> Approach <u>steel grid</u> Expansion Joint Type _____ Minimum Opening _____
	2. Deck	7	
	3. Expansion Joints	-	
	4. End Joints	-	
	5. Construction Joints	-	
	6. Sidewalks	-	
	7. Curbs	-	
	8. Fencelot	-	
	9. Chain Link Railing posts	7	
	10. fence Railing Panels cage	7	
	11. steel stringers truss	6	<u>11 70% rust</u>
	12. galv. Paint Year	-	
SUBSTRUCTURE	13. Abutments	-	<u>13 small spalls</u>
	14. Piers	6	
	15. Slope Protection	-	
APPROACHES	16. Pavement	-	
	17. Shoulders	-	
	18. Slopes	-	
	19. Guard Rail	7	
	20. Curb and Gutter	-	
21. Waterway	-		

MAINTENANCE RECOMMENDATIONS
 Item # 67 = 7



EAST SIDE ELEVATION



NORTH END OF DECK

FIELD INSPECTION REPORT

PROJECT #: 63101	STRUCTURE #: PO2	DATE INSPECTED: 09/13/93																																								
LOCATION: I-696 @ E of Orchard Lake	INSPECTORS: B. Beck																																									
PROJECT ENGINEER OR REPRESENTATIVE:																																										
SUPPLIER OF COATING SYSTEM: Treads are Galvanized - 4 Coat																																										
PURPOSE: 73 G-197 Annual Inspection																																										
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:35%;">FAILURE TYPES:</th> <th style="width:10%;">NO</th> <th style="width:10%;">YES</th> <th style="width:45%;">LOCATION</th> </tr> </thead> <tbody> <tr> <td>FADING</td> <td align="center">_____</td> <td align="center">X</td> <td>_____</td> </tr> <tr> <td>PEELING</td> <td align="center">_____</td> <td align="center">X</td> <td>_____</td> </tr> <tr> <td>BLISTERING</td> <td align="center">_____</td> <td align="center">X</td> <td>_____</td> </tr> <tr> <td>RUNS AND SAGS</td> <td align="center">_____</td> <td align="center">_____</td> <td>_____</td> </tr> <tr> <td>PINPOINT RUST</td> <td align="center">_____</td> <td align="center">_____</td> <td>_____</td> </tr> <tr> <td>DAMAGED COATING</td> <td align="center">_____</td> <td align="center">X</td> <td>_____</td> </tr> <tr> <td>PAINT OVER DEBRIS</td> <td align="center">_____</td> <td align="center">_____</td> <td>_____</td> </tr> <tr> <td>DEFICIENT PRIMER</td> <td align="center">_____</td> <td align="center">_____</td> <td>_____</td> </tr> <tr> <td>DEFICIENT TOPCOAT</td> <td align="center">_____</td> <td align="center">_____</td> <td>_____</td> </tr> </tbody> </table>			FAILURE TYPES:	NO	YES	LOCATION	FADING	_____	X	_____	PEELING	_____	X	_____	BLISTERING	_____	X	_____	RUNS AND SAGS	_____	_____	_____	PINPOINT RUST	_____	_____	_____	DAMAGED COATING	_____	X	_____	PAINT OVER DEBRIS	_____	_____	_____	DEFICIENT PRIMER	_____	_____	_____	DEFICIENT TOPCOAT	_____	_____	_____
FAILURE TYPES:	NO	YES	LOCATION																																							
FADING	_____	X	_____																																							
PEELING	_____	X	_____																																							
BLISTERING	_____	X	_____																																							
RUNS AND SAGS	_____	_____	_____																																							
PINPOINT RUST	_____	_____	_____																																							
DAMAGED COATING	_____	X	_____																																							
PAINT OVER DEBRIS	_____	_____	_____																																							
DEFICIENT PRIMER	_____	_____	_____																																							
DEFICIENT TOPCOAT	_____	_____	_____																																							
EVALUATION: Areas of structure that are 4-Coat system 80% rusted. Hand-rail 90% rusted. Treads are starting to show areas of rust. Structure has a poor appearance. No real structural problems visible.																																										
FOLLOW UP NEEDED: Next year's inspection.																																										
FINAL COMMENTS: Worse looking of the structures in this project.																																										
SIGNATURE: <u>Bryon D. Beck</u> DATE: 11 / 9 / 93																																										

cc: J. W. Reincke (73 G-197)
R. E. Nordlund
D. C. Long
E. M. Phiifer

BRIDGE INSPECTION REPORT

P2502 (9/89)

DATE INSPECTED: 5-13-91
INSPECTED BY: FLB

8-26-93
CAI

UNDER E OF ORCHARD LAKE

COUNTY OAKLAND
DISTRICT 9
BUILT 1962
FOUNDATION:

BRIDGE NO. PO2-63101 ROUTE I-696
LOCATION 5.2 MI E OF I-96
DESCRIPTION: SPANS 2 = 226
TYPE STL TRUSS THROUGH

RDWY. WIDTH 0.0 - 4
DESIGN LOAD PED

1. REPAIRS MADE (87) REPLACED CRADLES

2. ADDITIONAL INSPECTION EQUIPMENT _____

3. CRITICAL INSPECTION FEATURE _____

4. PAINT CLASS: _____ YEAR/COLOR _____

5. POSTING: _____

9 - - - - NEW
7-8 - - - - GOOD
5-6 - - - - FAIR
4 - - - - POOR
3 - - - - SERIOUS
2 OR LESS - CRITICAL

		UNIT	RATING		EXPLANATION OF CONDITIONS
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY	-	-		MATERIAL: SURFACE _____ DECK <u>OPEN STEEL</u> APPROACH _____ EXP. JOINT TYPE _____ MIN. OPENING <u>GRID</u> " @ _____
	2. DECK	7	7		
	3. EXPANSION JOINTS	8	7		<u>2. SOME DECK PLATES BENT. BROKEN WELDS</u>
	4. OTHER JOINTS	-	-		
	5. SIDEWALK & CURBS	-	-		
	6. RAILINGS	6	6		
	7. UTILITIES	-	-		<u>6. METAL FRAME W/ CHAIN LINK FENCE</u>
	8. BEARING DEVICES	-	-		
	9. DRAINAGE SYSTEM # _____	-	-		
	10. STRINGERS P.&H. # <u>0</u>	7	7		<u>10. RUST 30% OVERALL</u>
	11. PAINT	4	4		<u>11. (SEE 10#)</u>
	12. SECTION LOSS	-	-		
SUB-STRUCTURE	13. ABUTMENTS	-	-		
	14. PIERS	8	8		
	15. SLOPE PROTECTION	-	-		
APPROACHES	16. PAVEMENT	-	-		<u>16. SOME STEPS HAVE INDENTATIONS</u>
	17. SHOULDERS SIDEWALKS	-	-		
	18. SLOPES	-	-		
	19. GUARD RAIL	-	-		
DRAULICS	20. UNDERWATER INSP. (DESCRIBE)	-	-		<u>19. R = N, N, N, N</u>
	21. CHANNEL PROTECT. #51	-	-		RECOMMENDATIONS: _____
	22. CULVERT (OVER 20') #62	-	-		<u>(90) CREW - CONNECT TOP FENCING W/ EXISTING TIE WIRES</u> <u>94 CREW - WELD BROKEN WELDS</u>
	SI & A # 87	7	7		
#58 (0)	7	7			
#59 (0)	7	7			
#60 (0)	8	8			

BRIDGE INSPECTION REPORT

P2502 (3/87)

DATE INSPECTED:
INSPECTED BY:

6-5-87
MLW

12-7-89
MLW

BRIDGE NO. P02-63101

ROUTE I-696

UNDER E OF ORCHARD LAKE

COUNTY OAKLAND

LOCATION 5.2 MI E OF I-96

DISTRICT 9

DESCRIPTION: SPANS 2 = 226

RDWY WIDTH 0.0 - 4

BUILT 1982

TYPE STL TRUSS THROUGH

DESIGN LOAD PED

1. REPAIRS MADE (97) REPLACED CRADLES
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____

L E G E N D	9 - - - - NEW
	7-8 - - - - GOOD
	5-6 - - - - FAIR
	4 - - - - MARGINAL
	3 - - - - POOR
	2 OR LESS - CRITICAL

UNIT		RATING		EXPLANATION OF CONDITIONS
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY	-	-	MATERIAL SURFACE _____ DECK <u>OPEN GRID</u> APPROACH _____ EXP. JOINT TYPE _____ MIN. OPENING _____ @ _____
	2. DECK	8	7	
	3. EXPANSION JOINTS	8	8	<u>7. SOME DECK PLATES BENT</u>
	4. END JOINTS	-	-	
	5. CONSTRUCTION JOINTS	-	-	
	6. SIDEWALK & CURBS	-	-	
	7. FASCIAS	-	-	
	8. RAILING POSTS	8	6	<u>8,9. METAL FRAME W/ CHAIN LINK FENCE NUMEROUS TOP FENCING TIE WIRES NOT CONNECTED</u>
	9. RAILING PANELS	8	6	
	10. DRAINAGE SYSTEM	-	-	
	11. STRINGERS P. & H.	0	7	
	12. PAINT ALUM YEAR	4/4	4/4	<u>12. RUST 30% OVERALL</u>
SUBSTRUCTURE	13. ABUTMENTS	-	-	
	14. PIERS	8	8	
	15. SLOPE PROTECTION	-	-	
APPROACHES	16. PAVEMENT	-	-	
	17. SHOULDERS SIDEWALKS	-	-	
	18. SLOPES	-	-	
	19. GUARD RAIL	-	-	<u>19. R = 4,4,1 = 4,4,1</u>
	20. CURB & GUTTER	-	-	
	21. WATERWAY	-	-	RECOMMENDATIONS: _____
	22. UTILITIES	-	-	<u>(90) CREW - CONNECT TOP FENCING W/ EXISTING TIE WIRES</u>
	23. SI & A NO. 67	7	7	

58(0) 7
59(0) 7
60(0) 8



BRIDGE INSPECTION REPORT

Date	Made by
1-6-87	FH
7-12-85	MEL

497A (1/83)

Bridge No. P02 63101 Route I-696 ~~Under I-696~~ E. of Orchard Lake Rd. County Oakland District Built 19 62

Location 5.2 miles E of I-96

Description Spans - 2=Main; Type - STT; Rd Width - None; Design Load - PED; Horz CL - 69L69R; Vert Clear - 16'4"

Legend	
9	New
7-8	Good
5-6	Fair
4	Marginal
3	Poor
2 or Less	Critical

- Repairs Made
- Revised Dimensions

UNIT 85	RATING	EXPLANATION OF CONDITIONS
1. Wearing Surface	—	Material: Surface <u>Steel Grating</u> Deck <u>Corrugated</u> Approach
2. Deck	8	Expansion Joint Type <u>Steel Grid</u> Minimum Opening
3. Expansion Joints	8	
4. End Joints	—	
5. Construction Joints	—	
6. Sidewalks	—	
7. Curbs	—	
8. Fascias	—	
9. Railing posts	8	
10. Railing Panels	7	10) Top chain link fence is loose from grate beams in the line of No side
11. Stringers	5	11) Heavy rust on saddles
12. Paint Year	4	12) Stairway, rail posts, and pipes 80% rusty. Main structure light End columns 50% rusty
13. Abutments	—	
14. Piers	8	
15. Slope Protection	—	
16. Pavement	—	
17. Shoulders	—	
18. Slopes	—	
19. Guard Rail	—	
20. Curb and Gutter	—	
21. Waterway	—	

MAINTENANCE RECOMMENDATIONS

Item #67 = 4 Clean & Paint

Tighten upper chain link fence

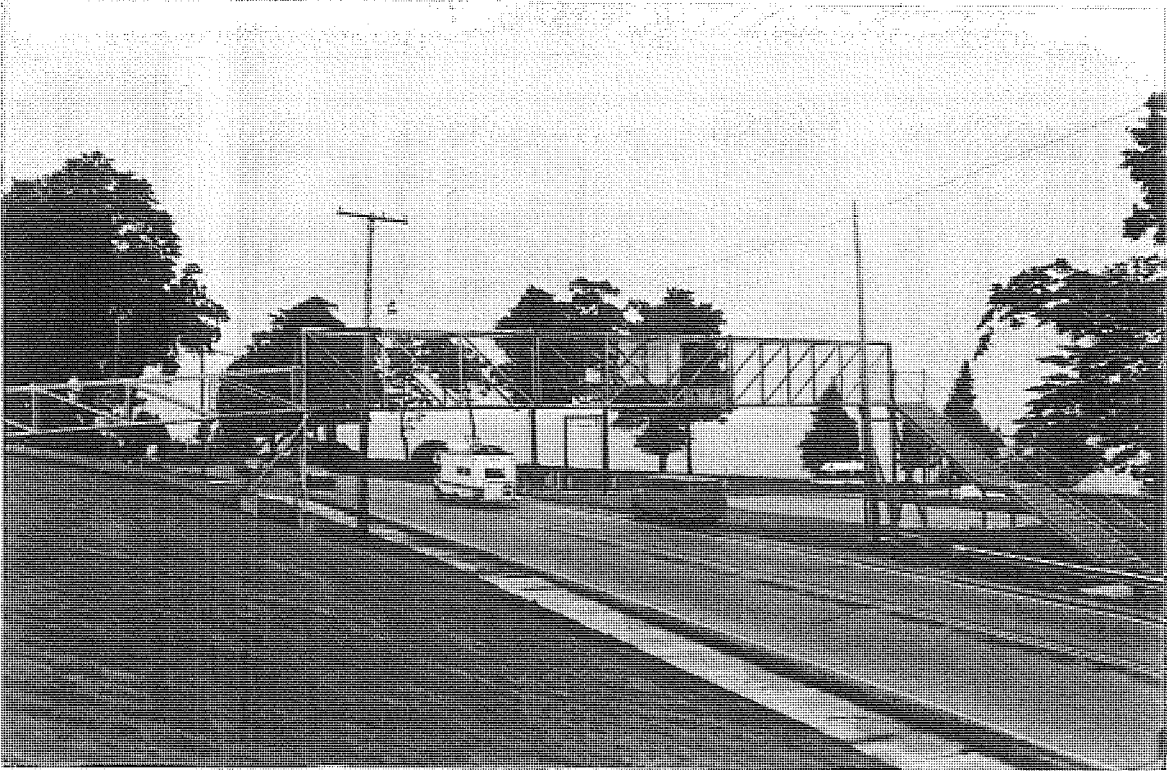
FIELD INSPECTION REPORT

PROJECT #: 33032	STRUCTURE #: P02	DATE INSPECTED: 08/06/93	
LOCATION: Over Cedar @ Mason Street	INSPECTORS: B. Beck/A. Grisdale		
PROJECT ENGINEER OR REPRESENTATIVE:			
SUPPLIER OF COATING SYSTEM: 4 Coat			
PURPOSE: <u>Research Project 73 G-197 Annual Inspection</u>			
FAILURE TYPES:	NO	YES	LOCATION
FADING	_____	_____	_____
PEELING	_____	_____	_____
BLISTERING	_____	_____	_____
RUNS AND SAGS	_____	_____	_____
PINPOINT RUST	_____	_____	_____
DAMAGED COATING	_____	_____	_____
PAINT OVER DEBRIS	_____	_____	_____
DEFICIENT PRIMER	_____	_____	_____
DEFICIENT TOPCOAT	_____	_____	_____
EVALUATION: <u>Structure removed summer of 1990, during reconstruction of Cedar Street.</u>			
FOLLOW UP NEEDED: <u>Annual inspection until project is closed.</u>			
FINAL COMMENTS: _____			
SIGNATURE: <u>Bryon D. Beck</u>		DATE: 09 / 01 / 93	

cc: J. W. Reincke (73 G-197)
D. C. Long

PO1 - 24011

8-6-86



EAST ELEVATION

REVISED
FIELD INSPECTION REPORT

PROJECT #: 24011	STRUCTURE #: P01	DATE INSPECTED: 04/27/94
LOCATION: Pedestrian Bridge, Petoskey		INSPECTORS: E. Phifer & J. Gallihugh
PROJECT ENGINEER OR REPRESENTATIVE:		
SUPPLIER OF COATING SYSTEM: Unknown		
PURPOSE: <u>Inspection of control bridge for G-197.</u>		
FAILURE TYPES:	NO	YES
FADING	<u> X </u>	<u> </u>
PEELING	<u> </u>	<u> X </u>
		<u>On north ramp where it was painted over galvanizing, it is now without a topcoat.</u>
BLISTERING	<u> X </u>	<u> </u>
RUNS AND SAGS	<u> X </u>	<u> </u>
PINPOINT RUST	<u> X </u>	<u> </u>
PACK RUST	<u> X </u>	<u> </u>
DAMAGED COATING	<u> X </u>	<u> </u>
PAINT OVER DEBRIS	<u> X </u>	<u> </u>
DEFICIENT PRIMER	<u> X </u>	<u> </u>
DEFICIENT TOPCOAT	<u> X </u>	<u> </u>
EVALUATION: <u>The bridge was recently repainted with an unknown coating system. There was no noticeable rust on the truss or ramps.</u>		
FOLLOW UP NEEDED: _____		
FINAL COMMENTS: <u>Since it has been repainted since October 1993, we will not be able to use this inspection report for the final report.</u>		
SIGNATURE: <u><i>E. M. Phifer</i></u> DATE: 05 / 18 / 94		

cc: J. W. Reincke (73 G-197)
R. E. Nordlund
E. M. Phifer

FIELD INSPECTION REPORT

PROJECT #: 24011	STRUCTURE #: P01	DATE INSPECTED: 08/04/93
LOCATION: Over US-31 East Petoskey	INSPECTORS: B. Beck & J. Beck	
PROJECT ENGINEER OR REPRESENTATIVE:		
SUPPLIER OF COATING SYSTEM: 4 Coat Alkyd		
PURPOSE: Annual Inspection		
FAILURE TYPES:	NO	YES
		LOCATION
FADING	_____	X
PEELING	_____	X
BLISTERING	_____	X
RUNS AND SAGS	X	_____
PINPOINT RUST	_____	X
DAMAGED COATING	_____	_____
PAINT OVER DEBRIS	_____	_____
DEFICIENT PRIMER	_____	_____
DEFICIENT TOPCOAT	_____	_____
EVALUATION: Truss work >50 percent flash rust on exterior, interior <20 percent flash rust. Ten to fifteen percent of grating is rusted. North ramp and support trusses have been recoated.		
FOLLOW UP NEEDED: Evaluate again in '94.		
FINAL COMMENTS: Twenty-six year old paint job is typical for 4-Coat alkyd system.		
SIGNATURE: <u>Ervin D. Beck</u> DATE: 08 / 09 / 93		

cc: J. W. Reincke (G-197)
R. E. Nordlund
E. M. Phifer

BRIDGE INSPECTION REPORT

P2502 (9/89)

DATE INSPECTED:
INSPECTED BY:

4-17-91
MOR

7-14-93
AD

BRIDGE NO. P01-24011 ROUTE US-31 & M-68
LOCATION E LITS OF PETOSKEY
DESCRIPTION: SPANS 1 = 136
TYPE STL TRUSS THROUGH

UNDER PEDESTRIAN STRUCT
RDWY. WIDTH 5.5 - 2
DESIGN LOAD PED

COUNTY EMMET
DISTRICT 4
BUILT 1967
FOUNDATION:

1. REPAIRS MADE _____
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____
4. PAINT CLASS: _____ YEAR/COLOR 67 / Alum.
5. POSTING: _____

9 - - - - NEW
7-8 - - - - GOOD
5-6 - - - - FAIR
4 - - - - POOR
3 - - - - SERIOUS
2 OR LESS - CRITICAL

		UNIT	RATING	EXPLANATION OF CONDITIONS
			93	MATERIAL: SURFACE _____ DECK <u>Expanded</u> APPROACH _____ EXP. JOINT TYPE _____ MIN. OPENING _____ " @ _____
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY	-	-	
	2. DECK	7	7	
	3. EXPANSION JOINTS	-	-	2. 9 Floor panels. Rusty. Other areas have some rust
	4. OTHER JOINTS	-	-	
	5. SIDEWALK & CURBS	-	-	
	6. RAILINGS	7	7	
	7. UTILITIES	-	-	6. Chain link fence w/ 3"x3" Box Sect. for vert. & Diag. members. Hand rail on steps painted Red.
	8. BEARING DEVICES	-	-	
	9. DRAINAGE SYSTEM #	-	-	
	10. STRINGERS P.&H. #	0	7	10. 4"x4" Box sect. members some bolted conn. has some paint rust. (ONE TOP BAR SWELLING (CRACKS/TRAFFIC))
	11. PAINT	5	5	11. 10-15% overall rust.
	12. SECTION LOSS	-	-	
SUB-STRUCTURE	13. ABUTMENTS	-	-	
	14. PIERS	8	4	14. 4"x4" Box Sect. members on CONC. BASE: N PIER BOTH E COLUMNS RUSTED THROUGH ON S FACE W/ (ANY WERE LOOSE (BRACKET SLIP DOWN))
	15. SLOPE PROTECTION	-	-	
APPROACHES	16. PAVEMENT	-	-	
	17. SHOULDERS SIDEWALKS	-	-	
	18. SLOPES	-	-	
	19. GUARD RAIL	-	-	
HYDRAULICS	20. UNDERWATER INSP. (DESCRIBE)	-	-	
	21. CHANNEL PROTECT. #61	-	-	
	22. CULVERT (OVER 20') #62	-	-	
	SI & A # 67	7	5	
#58 (0)	7	7		
#59 (0)	7	7		
#60 (0)	7	5		
				RECOMMENDATIONS: <u>Clean & Repaint.</u> <u>FIX PIER SEE #14</u>

BRIDGE INSPECTION REPORT

P2502 (3/87)

DATE INSPECTED: 9-11-87
INSPECTED BY: CRB

6-8-89
JB

BRIDGE NO. P01-24011
LOCATION E LTS OF PETOSKEY
DESCRIPTION: SPANS 1 = 136
TYPE STL TRUSS THROUGH

ROUTE US-31 & M-68

UNDER PEDESTRIAN STRUCT

COUNTY EMMET
DISTRICT 4
BUILT 1967

RDWY. WIDTH 5.5 - 2
DESIGN LOAD PED

1. REPAIRS MADE _____
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____

LEGEND	9 - - - -	NEW
	7-8 - - -	GOOD
	5-6 - - -	FAIR
	4 - - - -	MARGINAL
	3 - - - -	POOR
	2 OR LESS	CRITICAL

UNIT		RATING	EXPLANATION OF CONDITIONS
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY	<u>8 7 89</u>	MATERIAL SURFACE <u> </u> DECK <u>EXPANDED</u> APPROACH <u> </u> EXP. JOINT TYPE <u> </u> MIN. OPENING <u> </u> @ <u>60°</u>
	2. DECK	<u>8 7</u>	<u>2. 9 Floor Panels very Rusty, Numerous other have some light Rust</u>
	3. EXPANSION JOINTS	<u>- -</u>	
	4. END JOINTS	<u>- -</u>	
	5. CONSTRUCTION JOINTS	<u>8 -</u>	
	6. SIDEWALK & CURBS	<u>- -</u>	
	7. FASCIAS	<u>8 7</u>	
	8. RAILING POSTS	<u>8 7</u>	<u>8. 89. CHAIN LINK FENCING w/ 3" x 3" Box MEMBERS FOR VERTICALS & DIAGONALS. "89" Hand Rail on Steps is 10% Rusted.</u>
	9. RAILING PANELS	<u>8 7</u>	
	10. DRAINAGE SYSTEM	<u>- -</u>	
	11. STRINGERS P. & H. <u>None</u>	<u>8 7</u>	<u>11. 4" x 4" Box MEMBERS. "89" One Bolted Connection has Some Pack Rust</u>
	12. PAINT YEAR <u>9/5/</u>	<u>9/5/</u>	<u>12. 5% OVERALL LIGHT RUST. 10 TREAD PANELS ARE RUSTY. "89" 10%</u>
SUBSTRUCTURE	13. ABUTMENTS	<u>- -</u>	
	14. PIERS	<u>8 8</u>	<u>14. 4" x 4" Box MEMBERS ON CONG. BASES.</u>
	15. SLOPE PROTECTION	<u>- -</u>	
APPROACHES	16. PAVEMENT	<u>- -</u>	
	17. SHOULDERS SIDEWALKS	<u>- -</u>	
	18. SLOPES	<u>- -</u>	
	19. GUARD RAIL	<u>- -</u>	
	20. CURB & GUTTER	<u>- -</u>	
	21. WATERWAY	<u>- -</u>	
	22. UTILITIES	<u>- -</u>	
	23. SI & A NO. 57	<u>8 7</u>	

RECOMMENDATIONS: Clean & Repaint

58 0 7
39 0 7
60 0 8



BRIDGE INSPECTION REPORT

Date	Made by
6-16-83	CRB
5-29-85	CRB

497A (3/83)

PEDESTRIAN STR.

Bridge No. POI 24011 Route US-31 ~~4468~~ Under ~~US-31 and M-68~~ County Emmet District 4
 Location East LTS of Petoskey Built ~~67~~ 67
 Description Spans - 1=Main; Type - STT; Rd Width - None; Design Load - PED;
 Horz CL - 71R; Vert Clear - 14'6"

Legend	
9	New
7-8	Good
5-6	Fair
4	Marginal
3	Poor
2 or Less	Critical

1. Repairs Made _____

2. Revised Dimensions _____

	UNIT	RATING	EXPLANATION OF CONDITIONS
SUPERSTRUCTURE	1. Wearing Surface	-	Material: Surface _____ Deck <u>EXPANDED METAL</u> Approach <u>STAIR STEPS</u> Expansion Joint Type <u>END</u> Minimum Opening _____ <u>ALSO EXPANDED METAL @ 60°</u>
	2. Deck	8	
	3. Expansion Joints	-	
	4. End Joints	-	
	5. Construction Joints	8	
	6. Sidewalks	-	
	7. Curbs	-	
	8. Fascias	8	
	9. Railing posts	8	<u>9. 10. CHAIN LINK FENCING WITH 3" x 3" BOX MEMBERS FOR VERTICALS & DIAGONALS.</u>
	10. Railing Panels	8	
	11. Stringers	8	<u>11. 4" x 4" BOX MEMBERS</u>
	12. Point Year	<u>6</u> / -	<u>12. 0-5% OVERALL LIGHT RUST</u> <u>SOME TRED PANELS ARE RUTTY. (9 TRED PANELS)</u>
SUBSTRUCTURE	13. Abutments	-	
	14. Piers	8	<u>14. 4" x 4" BOX MEMBERS ON CONCRETE BASES.</u>
	15. Slope Protection	-	
APPROACHES	16. Pavement	-	
	17. Shoulders	-	
	18. Slopes	-	
	19. Guard Rail	-	
	20. Curb and Gutter	-	
	21. Waterway	-	

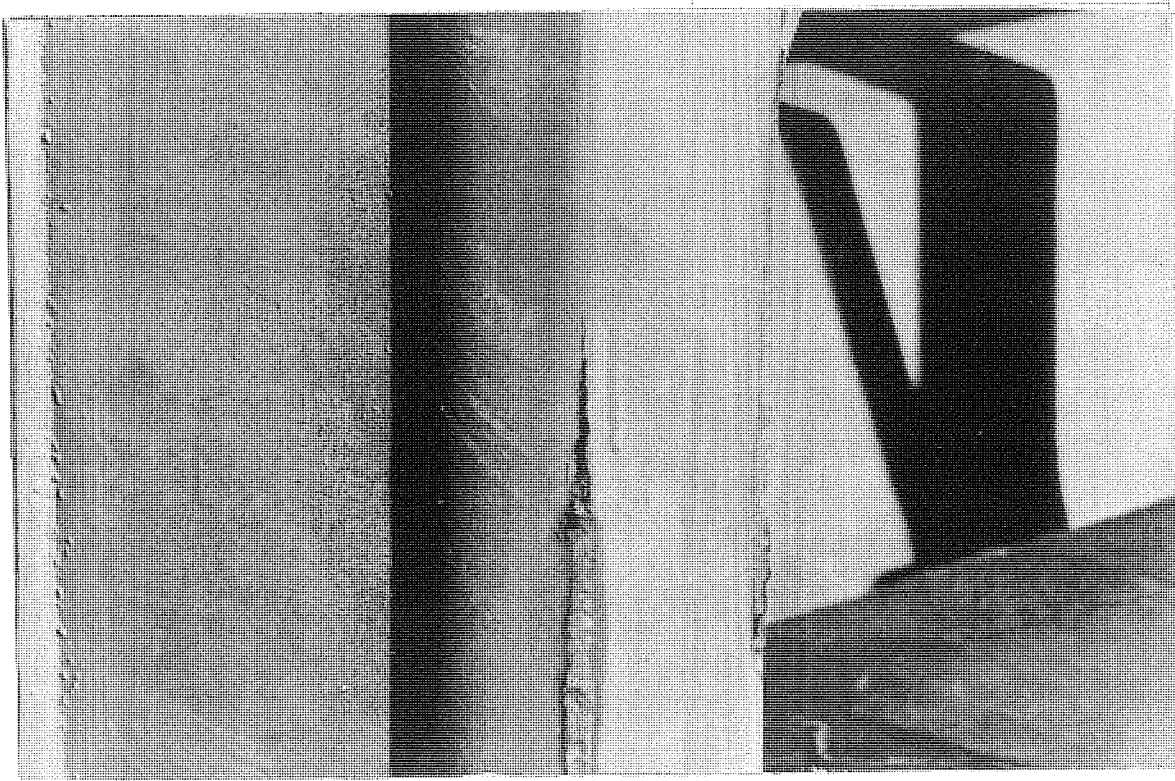
MAINTENANCE RECOMMENDATIONS

5.1. # A. #67 = B NONE

PO2 - 33043, M-43 PEDESTRIAN AT HARRISON

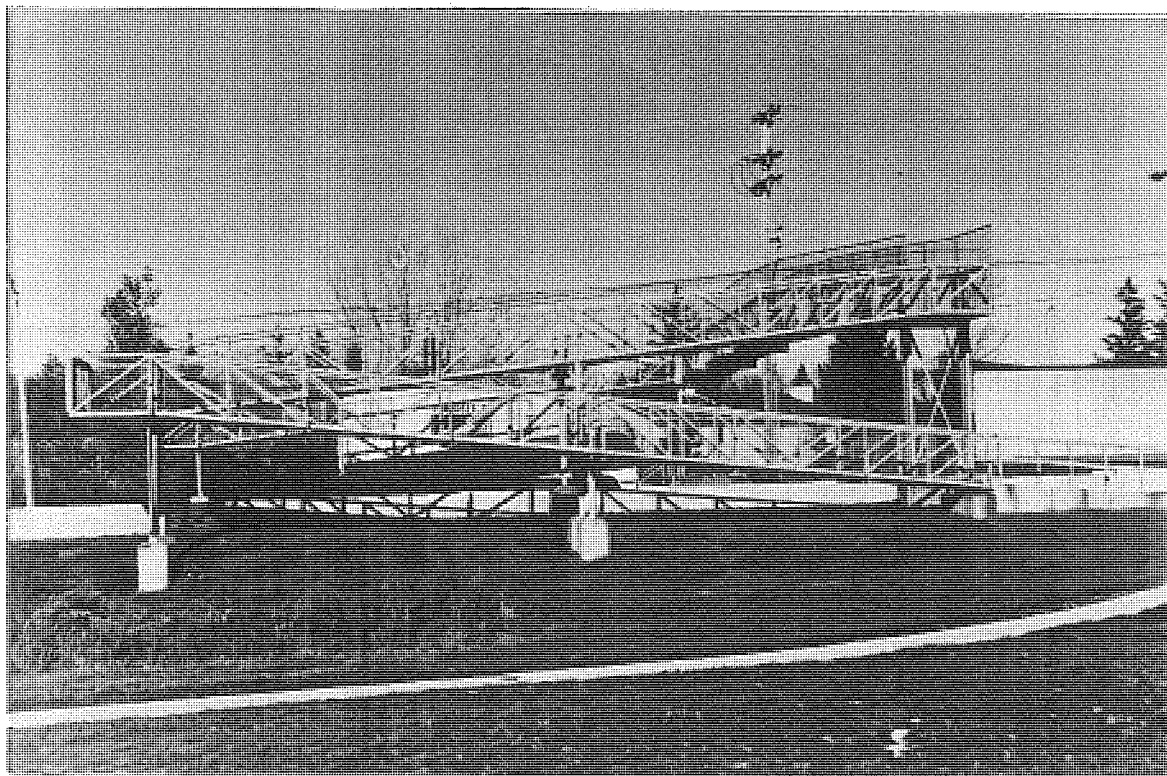


EAST ELEVATION

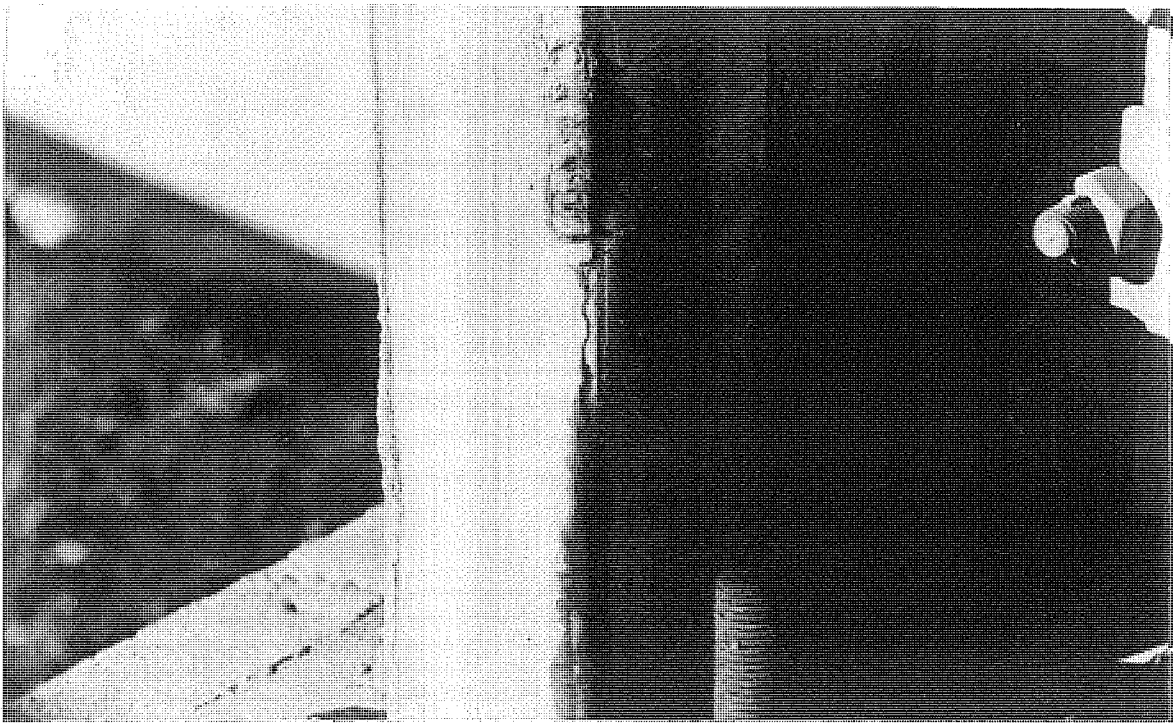


S.W. CORNER, WEST SUPPORT, SOUTH PIER

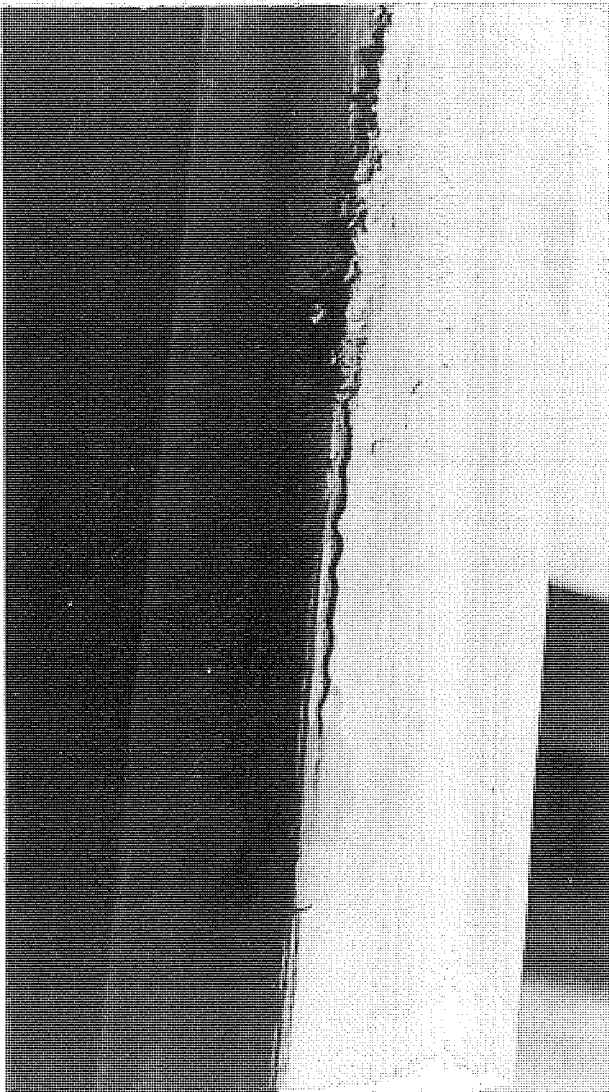
PO2 - 33043, M-43, PEDESTRIAN AT CLEMENS



LOOKING NORTH



▲ S.E. CORNER,
WEST SUPPORT,
SOUTH PIER



PO2 - 33043, M-43
PEDESTRIAN AT CLEMENS

FIELD INSPECTION REPORT

PROJECT #: 33043	STRUCTURE #: P02	DATE INSPECTED: 08/06/93
LOCATION: Over Saginaw @ Harrison	INSPECTORS: B. Beck/A. Grisdale	
PROJECT ENGINEER OR REPRESENTATIVE:		
SUPPLIER OF COATING SYSTEM: Topcoated w/Epoxy & Urethane Galvanized		
PURPOSE: <u>Research Project 73 G-197 Annual Inspection</u>		
FAILURE TYPES:	NO	YES
		LOCATION
FADING	_____	_____
PEELING	_____	_____
BLISTERING	_____	_____
RUNS AND SAGS	_____	_____
PINPOINT RUST	_____	_____
DAMAGED COATING	_____	X
PAINOT OVER DEBRIS	_____	_____
DEFICIENT PRIMER	_____	_____
DEFICIENT TOPCOAT	_____	_____
EVALUATION: <u>The galvanized structure was coated with epoxy and urethane in the summer of 1988.</u>		
FOLLOW UP NEEDED: <u>Annual inspection until project is closed.</u>		
FINAL COMMENTS: _____		
SIGNATURE: _____ DATE: 09 / 01 / 93		

cc: J. W. Reincke (73 G-197)
D. C. Long

BRIDGE INSPECTION REPORT

P2502 (9/89)

DATE INSPECTED: 10-5-92
 INSPECTED BY: SBC

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BRIDGE NO. PO2-33043 ROUTE TEMP I-69
 LOCATION IN EAST LANSING
 DESCRIPTION: SPANS 1 = 354
 TYPE STL TRUSS THROUGH

UNDER HARRISON ST
 RDWY. WIDTH 0.0 - 4
 DESIGN LOAD PED

COUNTY INGHAM
 DISTRICT 8
 BUILT 1970
 FOUNDATION:

1. REPAIRS MADE _____
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____
4. PAINT CLASS: _____ YEAR/COLOR 1986/Gray
5. POSTING: _____

9 - - - - NEW
 7-8 - - - GOOD
 5-6 - - - FAIR
 4 - - - - POOR
 3 - - - - SERIOUS
 2 OR LESS - CRITICAL

		UNIT	RATING	EXPLANATION OF CONDITIONS
			<u>92</u>	MATERIAL: SURFACE <u>Expanded</u> DECK <u>Steel</u> APPROACH _____ EXP. JOINT TYPE _____ MIN. OPENING " @ _____ °
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY _____	-		
	2. DECK	<u>7</u>		<u>2) Square Tube truss with expanded steel floor</u>
	3. EXPANSION JOINTS	-		
	4. OTHER JOINTS	-		
	5. SIDEWALK & CURBS	-		
	6. RAILINGS	<u>8</u>		<u>6) Square tube at Truss on main part with 1 1/4" φ pipe on top of panels on ramps, (Rusty Bolts)</u> <u>Serves as handrail</u>
	7. UTILITIES	-		
	8. BEARING DEVICES	<u>7</u>		
	9. DRAINAGE SYSTEM # _____	-		
	10. STRINGERS P.&H. # _____	<u>7</u>		<u>10) Rusty Bolts</u>
	11. PAINT <u>Gray 1986</u>	<u>7</u>		<u>11) 5% or less Rust</u>
	12. SECTION LOSS	<u>1</u>		
SUB-STRUCTURE	13. ABUTMENTS	-		
	14. PIERS	<u>6</u>		<u>14) W. Column of South Pier supporting main span is cracked along & extending into previous welded repair, 6" Above weld & 3" below @ SE corner & 3 1/2" Above SW corner South Ramp column N & S severe map cracking same tearing, North Ramp column 1F & 2E</u>
	15. SLOPE PROTECTION			<u>MAP Cracking</u>
APPROACHES	16. PAVEMENT	-		<u>Columns are welded steel posts & I-sections on concrete bases</u>
	17. SHOULDERS SIDEWALKS	<u>7</u>		
	18. SLOPES	-		<u>17) some spalling of CONC Ramp edges at steel posts</u>
	19. GUARD RAIL	-		
DRAULICS	20. UNDERWATER INSP. (DESCRIBE)	-		
	21. CHANNEL PROTECT. #61	-		
	22. CULVERT (OVER 20') #62	-		
	SI & A # 67	<u>6</u>		
	#58 (0)	<u>7</u>		
	#59 (0)	<u>7</u>		
#60 (0)	<u>6</u>			
				RECOMMENDATIONS: _____

BRIDGE INSPECTION REPORT

P2502 (3/87)

DATE INSPECTED: 10-6-88
INSPECTED BY: MEL

10-5-90
MLW

BRIDGE NO. PO2-33043
LOCATION IN EAST LANSING
DESCRIPTION: SPANS 1 = 354
TYPE STL TRUSS THROUGH

ROUTE TEMP I-89

UNDER HARRISON ST

COUNTY INGHAM
DISTRICT 8
BUILT 1970

ROWY. WIDTH 0.0 - 4
DESIGN LOAD PED

1. REPAIRS MADE _____
2. ADDITIONAL INSPECTION EQUIPMENT _____
3. CRITICAL INSPECTION FEATURE _____

LEGEND

9	---	NEW
7-8	---	GOOD
5-6	---	FAIR
4	---	MARGINAL
3	---	POOR
2 OR LESS	---	CRITICAL

UNIT		RATING	EXPLANATION OF CONDITIONS
SUPERSTRUCTURE	1. SURFACE YR. OVERLAY	<u>88</u>	MATERIAL: SURFACE <u>Expanded</u> DECK <u>Steel</u> APPROACH _____ EXP. JOINT TYPE _____ MIN. OPENING _____" @ _____"
	2. DECK	<u>88</u>	<u>2. Sq tube truss with expanded steel floor</u>
	3. EXPANSION JOINTS	-	
	4. END JOINTS	-	
	5. CONSTRUCTION JOINTS	-	
	6. SIDEWALK & CURBS	-	
	7. FASCIAS	-	
	8. RAILING POSTS	-	
	9. RAILING PANELS	<u>88</u>	<u>9. Sq. tube of truss serves as handrail on main part with 1 1/2" Ø pipe on top of panels on ramps</u>
	10. DRAINAGE SYSTEM	-	
	11. STRINGERS P. & H.	<u>88</u>	
	12. PAINT YEAR <u>Gray 1986</u>	<u>7/7</u>	
SUBSTRUCTURE	13. ABUTMENTS	-	
	14. PIERS	<u>66</u>	<u>14. W. Col of S. Pier supporting main span is cracked along and extending into previous weld repair 6" above weld and 3" below weld at SE corner 3 1/2" above at S.W. Corner</u>
	15. SLOPE PROTECTION	-	
APPROACHES	16. PAVEMENT	-	<u>Columns are welded steel posts and J sections on conc bases</u>
	17. SHOULDERS SIDEWALKS	-	
	18. SLOPES	-	
	19. GUARD RAIL	-	
	20. CURB & GUTTER	-	
	21. WATERWAY	-	RECOMMENDATIONS: _____
	22. UTILITIES	-	
	23. SI & A NO. 67	<u>76</u>	

58(0)
59(0)
60(0)



BRIDGE INSPECTION REPORT

Date	11-13-84	By	SC
Date	8-28-86	By	MJH

Bridge No. P02 33043 Route ~~128~~ ~~69 TEMP~~ Under ~~69~~ ~~RED @ HARRISON~~ County Ingham District 8
 Location In East Lansing
 Description Spans - 1=Main; Type - STT; Rd Width - None; Design Load - PED;
 Horz CL -.72R; Vert Clear - 17'1"

- Repairs Made PAINTED, CURB, BASE REPAIR & NEW CHAIN LINK FENCE
- Revised Dimensions

9	New
7-8	Good
5-6	Fair
4	Marginal
3	Poor
2 or Less	Critical

UNIT	RATING	EXPLANATION OF CONDITIONS	
SUPERSTRUCTURE	1. Wearing Surface	-	
	2. Deck	8	2. SA. TUBE TRUSS W/ EXPANDED METAL FLOOR
	3. Expansion Joints	-	ALL JOINTS ON MAIN SPAN & RAMP
	4. End Joints	-	
	5. Construction Joints	-	
	6. Sidewalks	-	
	7. Curbs	-	
	8. Fascias	-	
	9. Railing posts	8	9, 10. SA. TUBE OF TRUSS SERVES AS HANDRAIL
	10. Railing Panels	6	ON MAIN PART 1 1/4" Ø PIPE ON TOP OF PANELS ON RAMP.
	11. Stringers	-	W/ 1 1/2" Ø PIPE SPACING 12" ON MAIN SPAN & RAMP
	12. Point Year	8	1986
SUBSTRUCTURE	13. Abutments	-	
	14. Piers	6	14. COLUMNS ARE WELDED STEEL POSTS & I SECTIONS ON CONG. BASES.
	15. Slope Protection	-	W/ COLUMN OF S. PIER SUPPORTING MAIN SPAN IS CRACKED ALONG & EXTENDING INTO PREVIOUS WELD REPAIR.
APPROACHES	16. Pavement	-	
	17. Shoulders	-	
	18. Slopes	-	
	19. Guard Rail	-	
	20. Curb and Gutter	7	6" ABOVE WELD & 3" BELOW WELD AT SE CORNER & 3 1/2" ABOVE AT SW CORNER.
	21. Waterway	-	

MAINTENANCE RECOMMENDATIONS
 ITEM 67-167 REPAIR CURB & GUTTER (SCHOOL DISTRICT RESPONSIBILITY)