CITY OF ANN ARBOR, MICHIGAN

100 North Fifth Avenue, P.O. Box 8647, Ann Arbor, Michigan 48107-8647
http://www.a2gov.org

Administration (734) 994-2704
Community Development Services (734) 622-9025
Parks & Recreation Services (734) 994-2780
Planning & Development Services (734) 994-2674

Community Services Area

February 19, 2009

Glenn Thompson
gwhitthomp@sbcglobal.net

Subject: Freedom of Information Act Request dated February 19, 2009
09-042 Thompson

Dear Mr. Thompson:

I am responding to your request under the Michigan Freedom of Information Act, dated February 19, 2009. Your request for "the most recent E. Stadium bridge inspection forms or reports submitted to MDOT" and "the most recent report or similar document from Northwest Consultants Inc. on the condition of the E. Stadium bridges" is granted.

The City does not warrant or guarantee the accuracy of the information provided. Rather, it provides the documents only to comply in good faith with the Michigan Freedom of Information Act, and not for any other purpose.

If you receive written notice that your request has been denied, in whole or in part, under Section 10 of the Act, you may, at your option either: (1) submit to the City Administrator a written appeal that specifically states the word "appeal" and identifies the reason(s) for reversal of the disclosure denial; or (2) file a lawsuit in the circuit court to compel the City's disclosure of the record. If after judicial review, the circuit court determines that the City has not complied with the Act, you may be awarded reasonable attorneys' fees and damages as specified under the Act.

If you have any questions concerning this response, please contact Steve Bartha, City FOIA Coordinator, (734)794-6000, extension 42198.

Sincerely,

Jayne S. Miller
Community Services Administrator

NCI NORTHWEST CONSULTANTS, INC.
CIVIL - STRUCTURAL - ENVIRONMENTAL
3220 Central Park West
Toledo, Ohio 43617
(419) 841-4704
Fax (419) 841-2979

February 12, 2009

Michael Nearing, P.E.
City of Ann Arbor – Project Management Unit
100 N. Fifth Ave.
Ann Arbor, MI 48104

Re: **Stadium Blvd. over State St. Bridge Condition**

Dear Mr. Nearing:

On February 10, 2009 I met with the City's maintenance crew and you at the East Stadium Boulevard Bridge over South State Street. You had expressed concerns over the condition of the 5th beam in from the southern side of the bridge. This beam has been under close observation since January of 2008 when a large chunk of concrete broke loose, exposing/breaking 7 prestressing strands. Your specific concern at this time was that you felt the beam was sagging lower than the adjacent beams. Once we were able to get up close and use a tape measurer with a straight edge we were able to see that the beam has indeed deflected 7/8" more than the adjacent beams.

On October 22, 2008 NCI completed a bridge safety inspection of this structure. As part of this inspection we brought in a manlift to get close access to the bottom of the beams. Special attention was given to beam #5 due to the large chunk of missing concrete and damaged prestressing strands. At that time we did not observe any deflection of this beam relative to the adjacent beams. Thus, I am of the opinion that this is a relatively recent development.

The 7/8" of additional deflection found on this beam is a significant problem which will require precautionary measures to be taken. Excessive deflection is one of the primary warnings of impending beam failure. Of additional concern is how fast this deflection has developed. If traffic continues to drive over this beam I would expect the deflection to continue to grow, eventually leading to beam failure. Therefore, my recommendation to you is that traffic be removed from over top of this beam. This can be accomplished by reducing Stadium Boulevard to 2 lanes over the bridge, and shifting these lanes to the north side of the road. I've attached a sketch showing how this can be accomplished.

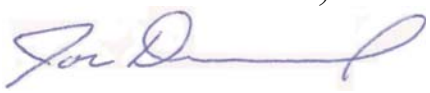
The Load Factor Rating (LFR) Method utilizes live load distribution factors from the AASHTO Standard Specifications for Highway Bridges. According to Section 3.23.4.2, "In calculating bending moments in multi-beam precast concrete bridges, conventional or pre-stressed, no longitudinal distribution of wheel load shall be assumed." AASHTO is telling us that a live load placed directly above a box beam will be carried by that beam alone, without assistance from the adjacent beams. Therefore in theory, by removing the traffic loads from directly above Beam #5

we should be able to keep the condition from getting worse. In reality though, I believe that Beam #5 will still see some load (albeit a significantly reduced load) from traffic over other beams. In recognition of the differences between theory and reality I would recommend that your maintenance crews continue to measure the relative deflection of Beam #5 as often as possible to ensure that the condition doesn't get any worse. If the beam continues to sag or deteriorate please let me know and we can discuss further safety measures.

If I can be of any other assistance, or if you have any additional questions please let me know.

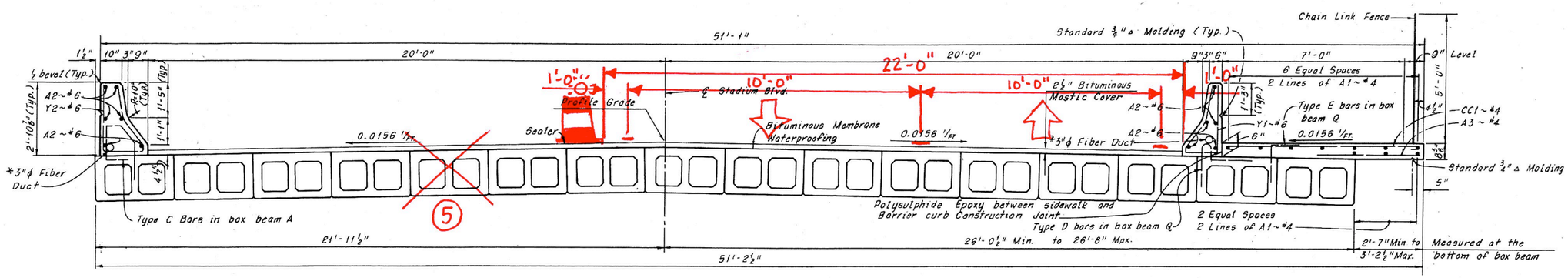
Sincerely,

NORTHWEST CONSULTANTS, INC.



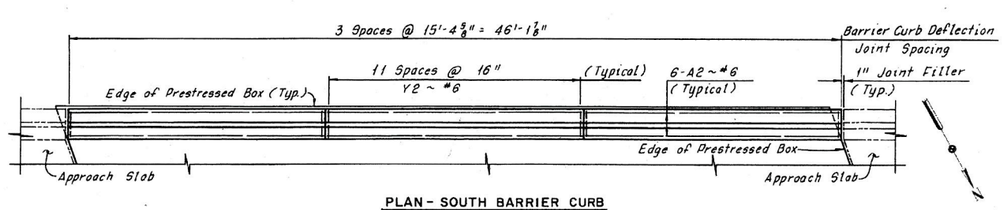
Jonathan Drummond, P.E.
Bridge Project Manager

cc: File

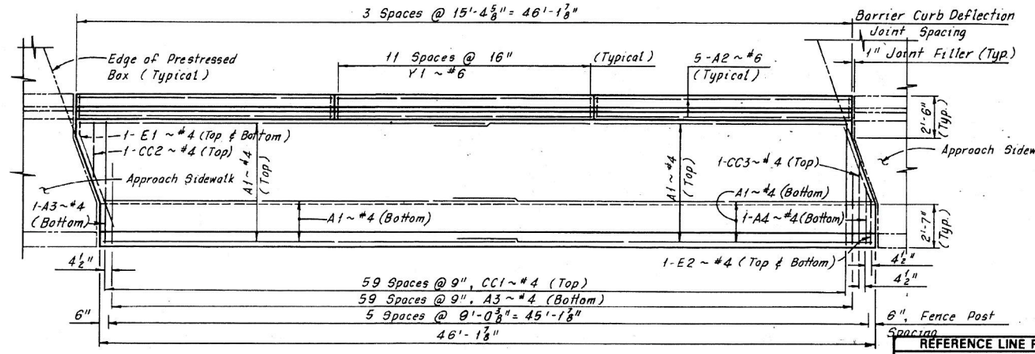


TYPICAL CROSS SECTION
Scale: ½"= 1'-0"

*Fiber duct, including caps and expansion couplings at the Abutments, will be furnished by the Detroit Edison Company and shall be installed by the contractor. Installation shall be included with Concrete Barrier for payment.

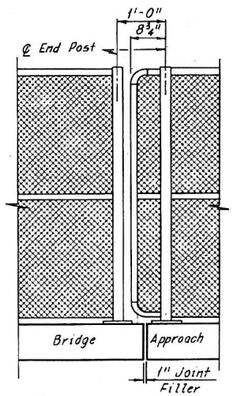


PLAN - SOUTH BARRIER CURB
Scale: ½"= 1'-0"

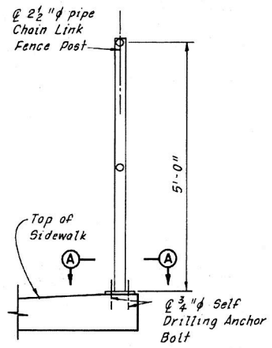


PLAN - NORTH BARRIER CURB
Scale: ½"= 1'-0"

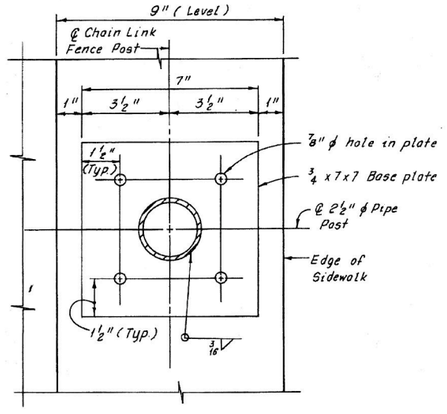
REFERENCE LINE FOR TWO INCHES
0 1 2
PHOTOGRAPHED DRAWINGS



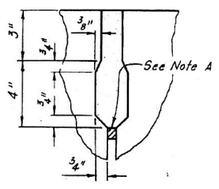
END POST DETAIL
Scale: ¾"= 1'-0"



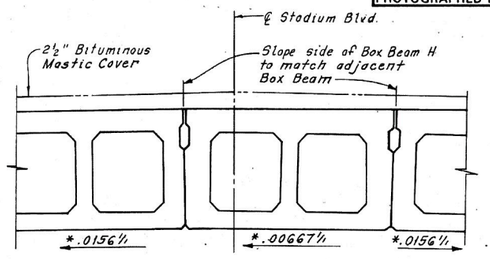
ELEVATION
Scale: ¾"= 1'-0"



SECTION A - A
Scale: ⅜"= 1'-0"



SHEAR KEY DETAIL
Scale: ½"= 1'-0"



CROWN DETAIL
Scale: 1"= 1'-0"
*Measured normal to ℄ Box Beam.

Notes:
For Deck Plan see Dwg. No. 13.
For Box Beam Details see Dwg. No. 14.
For Steel Reinforcement Details see Dwg. No. 28.
For Barrier Curb Details at Deflection Joints see Dwg. No. 22.
1" Joint Filler is " 1" Premolded Fiber Joint Filler".

CHAIN LINK FENCE POST ANCHORAGE DETAIL
(Fence Anchorage included with 60" Chain Link Fence, for payment)

NOTE:
Data contained on this page was drawn from City records. No guarantee is made as to its accuracy or completeness.

Digital Status
Scanned On: 2-06
By: DUMJ BLUE

Note A:
Seal with jute rove, foamed polyethylene or butyl rod having a diameter at least ¼" larger than the maximum space between beams before filling shear key with polysulphide epoxy adhesive.

	DATE	SHEET NO.
DR BY		INDEX NO. 7603
TR BY		SHELF NO.
CH BY		10-C-698
REVISIONS		SCALE: HORIZONTAL VERTICAL

TYPICAL CROSS SECTION
BARRIER CURB, SIDEWALK
AND CHAIN LINK FENCE DETAILS
STADIUM BOULEVARD OVER SOUTH STATE STREET

FREDRICK A. MAMMEL — SUPERINTENDENT OF PUBLIC WORKS

PUBLIC WORKS DEPARTMENT — ANN ARBOR, MICHIGAN

JOB	DIST.		DRAWN AHS	TRACED AJT	CHECKED DHS	REVIEWED C.A.B.
JOB	DIST.		DATE 3-19-74	DATE 3-27-74	DATE 3-29-74	DATE 5-6-74
JOB	DIST.					
JOB	DIST.					

DWG. NO. 15

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS | HNTB

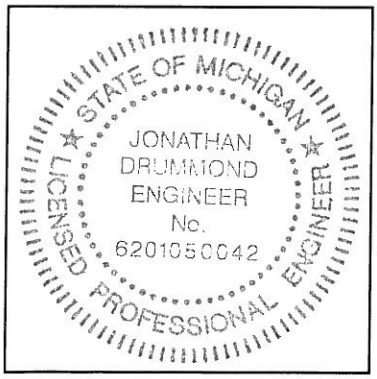
2008
BRIDGE INSPECTION PROGRAM

STADIUM BOULEVARD OVER STATE STREET

ANN ARBOR, MICHIGAN

NOVEMBER, 2008

TABLE OF CONTENTS



Approved By: _____

Jonathan Drummond
P.E. # 6201050042

Stadium Blvd. over State Street

Background

This bridge carries Stadium Boulevard over State Street in the city of Ann Arbor, Michigan. The bridge was originally constructed in 1928. It is a single span bridge with a total span of 45.28' and a width of 48' out to out. The bridge has four lanes, two eastbound, and two westbound. There is also a sidewalk on the north side of the bridge. The superstructure consists of 16 prestressed cellular box beams with an HMA overlay. The substructure consists of stub abutments supported on spread footings. The bridge was rehabilitated in 1975. The rehabilitation included abutment repair and superstructure replacement.

Inspection Findings

The bridge was inspected on October 22, 2008. The bridge was found to be in critical condition. The top of beams could not be inspected due to the HMA surface on top of them. The HMA is in poor condition with many defects. The superstructure was found in critical condition. The southern fascia beam has been hit by traffic and was patched in January of 2003. Several of the box beams have cracks, spalls, and exposed reinforcing strands with some of them broken (See Photos 9-14). Exposed prestressing strands in box beams are causes for concern as they may no longer carry the prestressing forces used to design the beams. Additional strands adjacent to the exposed ones may also have a reduced compression force on the concrete. The bridge abutments were found to be in fair condition with some spalling and delaminations. For more specific bridge conditions see the BSIR in Appendix A. The following details of the structure were noted:

- The HMA surface has cracks, holes, rutting, and patches (See Photos 1,2, & 16).
- The 4th beam from the south has 2 strands exposed. The 5th beam from the south is in the worst condition with a large spall in the middle of the beam that goes completely through the bottom flange and 7 strands exposed (See Photo 14). The 6th beam from the south has 2 strands exposed. The 7th beam from the south has 1 strand exposed. The 8th beam from the south has 2 strands exposed. The 9th beam from the south has 1 strand exposed. The 11th beam from the south has 3 strands exposed.
- The superstructure vibrates excessively when any traffic crosses over the structure.
- Water is leaking from the joints and there is a visible hole through the abutment joint in the northwest corner of the bridge.
- Spalled and delaminated areas were found on the abutments and wingwalls (See Photos 5-8). Vertical cracks between the wingwalls and abutments were also present.
- Spalled and delaminated areas were found on the concrete bridge barrier (See Photo 16).

Bridge Compliance with Current Standards

This bridge has several features which do not comply with current standards. The bridge does not meet the required minimum vertical clearance and has been hit by high-load trucks on State Street. The horizontal clearance, bridge width, and bridge railing also do not comply with AASHTO or MDOT standards.

Bridge Load Capacity Rating

The existing structure was analyzed using the Load Factor Rating (LFR) Method. Both inventory and operating ratings were determined for the structure in its current condition. The current condition of this structure factored significantly into its rating values. The rating values are reduced because the worst beam was modeled in the structure by reducing the number of prestressing strands by 7 to account for the strands that were exposed, corroded, and broken.

The inventory rating is the live load that the bridge can support repeatedly over a long period of time. This value is expressed as a fraction of current live load design requirements. The inventory rating of this bridge is expressed in terms of the current live load requirement (HS-20-44) is HS-9. **This indicates that the bridges can support less than half the current design live loading.**

The operating rating is considered the absolute maximum live load that the bridge can support. The operating rating is calculated for individual trucks. 28 different trucks were analyzed, 25 trucks were Michigan Legal Loads and 3 trucks were AASHTO Standard Trucks. Analysis loads can be separated into 1 unit, 2 unit, and 3 unit trucks. The operating ratings are summarized in the chart found in Appendix B. The lowest operating rating was for Michigan Legal Load Truck 17 which produced a value of 0.53. This provides a bridge capacity of only 53% of a Michigan Legal Load Truck 17. Analysis input and output for this truck can be found in Appendix B. The bridge cannot support the Michigan Legal Loads and therefore must be posted for reduced capacity. The bridge can be posted for a 25 ton 1 unit truck, 28 ton 2 unit truck, and 36 ton 3 unit truck. The existing posting for reduced loads is 19 ton 1 unit truck, 24 ton 2 unit truck, and 26 ton 3 unit truck. Due to the critical condition of the superstructure and the observed excessive bridge vibrations we believe that the existing posting should remain the same and should not be increased based on our analysis.

Repair Recommendations

There are some repairs that should be done to improve safety and to help increase the lifespan of this bridge. Below is a list of recommended work to be done with the repair priority listed as low, medium, or high:

- Remove and replace the 5 beams on the south side of the bridge. These 5 beams include the facia beam that has been damaged and repaired and the 5th beam that has seven strands exposed. Replacing these beams will increase the load capacity of the structure and therefore the bridge rating (High).
- Chip and patch the spalls, delaminations, cracks in the abutments and wingwalls. The bad concrete should be chipped away until solid concrete is encountered on

all sides. Rebar should be cleaned and replaced as required. A latex modified concrete patching mixture should then be used to repair the abutments and wingwalls (High).

- Replace the concrete barrier with Type 4 MDOT Bridge Barrier Railing. The southern barrier will be replaced as a result of the beam replacements, and the spalling on the northern barrier has progressed to the point that replacement is more economical than patching (High).

Due to the critical condition of this bridge these recommendations are intended to extend the life of the bridge until it can be replaced. It does not address any of the bridge compliance issues such as the required vertical or horizontal clearances, or the insufficient bridge roadway width. The low vertical clearance still allows for the possibility that the new beams will be hit and damaged, which is how the existing beams got to be in their current condition. The allowable loads and posting can increase if the bridge repairs are completed.

Summary of Repair Costs

A detailed breakdown of estimated construction and engineering cost has been included in Appendix C. In summary, the cost associated with doing all of the recommended repairs is estimated to be $401,000.

Photo 1: Stadium Boulevard over State Street looking East.

Photo 2: Stadium Boulevard over State Street looking West.

Photo 3: Elevation View looking North.

Photo 4: Elevation View looking South.

Photo 5: Picture showing north half of east abutment with delaminated areas and cracks.

Photo 6: Picture showing south half of east abutment with delaminated areas and cracks.

Photo 7: Picture showing north half of west abutment with delaminated areas and cracks.

Photo 8: Picture showing south half of west abutment with spalled concrete, exposed rebar, delaminated areas, and cracks.

Photo 9: Picture showing east side of bottom of beams with spalled concrete and exposed reinforcing strands on north side of bridge.

Photo 10: Picture showing east side of bottom of beams with spalled concrete and exposed reinforcing strands on south side of bridge.

Photo 11: Picture showing west side of bottom of beams with spalled concrete and exposed reinforcing strands on south side of bridge.

Photo 12: Picture showing west side of bottom of beams with spalled concrete and exposed reinforcing strands at center of bridge.

Photo 13: Picture showing west side of bottom of beams with spalled concrete and exposed reinforcing strands on north side of bridge.

Photo 14: Picture showing bottom of beam with spalled concrete, multiple reinforcing strands exposed, and a hole to the center of the box.

Photo 15: Picture showing bearing pad on east abutment in good condition.

Photo 16: Picture showing spalled concrete and exposed rebar on north barrier.

APPENDIX A

UPDATED SIA & BIR FORMS

Facility	Federal Structure ID	Inspector Name	Agency/Consultant	Inspection Date
STADIUM BOULEVARD	814021200016S01	Jon Drummond	Northwest Consultant..	10/26/2008

Feature	Latitude	Longitude	Struc Num	Insp Freq	Insp Key
SOUTH STATE STREET	42 15' 45.69"	83 44' 25.44"	11067	12	SRSN

Location	Length	Width	Year Built	Year Recon	Br Type	Scour Eval	No.Pins
0.5 MI E OF MAIN ST	46.9	53.15	1928	1975	5	05 N	

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

NBI INSPECTION

	05	07	08	
				DECK
1. Surface SIA-58A	5	5	4	Bit overlay has many cracks, holes, rutting, and patches. (08) Many cracks and patches in bit overlay. (07) Many cracks in bit overlay. (05)
2. Expansion Jts	N	N	N	(08) (07) (05)
3. Other Joints	5	5	5	Can see through abutment joint in NW corner of bridge. (08) Joints in sidewalk are missing filler. Cracks in joints over abutment (07) Cracks in joints over abutment (05)
4. Railings	6	5	4	Bottom half of traffic side of barrier is either delaminated or spalled w/ exposed rebar. (08) Scaling and shallow spalled areas in concrete barrier. (07) Scaling and shallow spalled areas in concrete barrier. New chain link fence (05)
5. Sidewalks or curbs	6	6	6	Few spalled areas & cracks (08) Few spalled areas & cracks (07) Few spalled areas & cracks (05)
6. Deck Bottom Surface SIA-58B		N	N	(08) (07) (05)
7. Deck SIA-58	5	5	4	(08) (07) (05)
8. Drainage				(08) (07) (05)
				SUPERSTRUCTURE
9. Superstructure SIA-59	4	3	2	Southern fascia beam has been hit and patched; 4th beam in has 2 strands exposed; 5th beam has a large spall at mid-span completely thru the bottom flange with 7 strands exposed and/or broken; 6th beam has 2 strands exposed; 7th beam has 1 strand exposed; 8th beam has 2 strands exposed; 9th beam has 1 strand exposed; and 11th beam has 3 strands exposed. Superstructure vibrates excessively when any size vehicle crosses over. Bridge is currently load restricted. (08) Superstructure continue to deteriorate. Long cracks and delamination at bottom of beam #5 from south. Spall and exposed strands at bot of beam #6 from north. Leaking joints. South fascia beam was patched. 01/10/08 portions of concrete spalled from the bottom of the beam 5 (from south fascia). There is a hole in the bottom of beam. The strands are exposed. The section loss in strands is about 10%-20%. Two strands are broken at east end of the beam. (07) Long cracks and delamination at bottom of beam #5 from south. Spall and exposed strands at bot of beam #6 from north. Leaking joints. South fascia beam was patched. Part of patched area was hit by truck and spalled. (05)
10. Paint SIA-59A	N	N	N	(08) (07) (05)

Facility	Federal Structure ID	Inspector Name	Agency/Consultant	Inspection Date
STADIUM BOULEVARD	814021200016S01	Jon Drummond	Northwest Consultant..	10/26/2008

Feature	Latitude	Longitude	Struc Num	Insp Freq	Insp Key
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Location	Length	Width	Year Built	Year Recon	Br Type	Scour Eval	No.Pins
0.5 MI E OF MAIN ST	46.9	53.15	1928	1975	5	N	

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

	05	07	08	NBI INSPECTION
11. Section Loss		N	N	(08) (07) (05)
12. Bearings	6	6	6	(08) (07) (05)
				SUBSTRUCTURE
13. Abutments SIA-60	5	5	5	Spalling and delaminated areas. Vert cracks between wingwalls and abutment, and some leaching. (08) Spalling and delaminated areas. Vert cracks between wingwalls and abutment, and some leaching. (07) The east abutment was partially patched. Spalling and delaminated areas. Vert cracks between wingwalls and abutment, and some leaching. (05)
14. Piers SIA-60	N	N	N	(08) (07) (05)
15. Slope Protection		N	N	(08) (07) (05)
				APPROACH
16. Approach Pavt	5	5	4	Approach pavement has many cracks, holes, rutting, and patches. (08) Many cracks, patches & rutting in bit on both approaches (07) Many cracks & rutting in bit on both sides. (05)
17. Approach Shldrs Swalks	5	5	5	Settlement and cracking (08) Settlement and cracking (07) Settlement and cracking (05)
18. Approach Slopes				(08) (07) (05)
19. Utilities				(08) (07) (05)
20. Channel SIA-61	N	N	N	(08) (07) (05)
21. Drainage Culverts				(08) (07) (05)

Facility	Federal Structure ID	Inspector Name	Agency/Consultant	Inspection Date
STADIUM BOULEVARD	814021200016S01	Jon Drummond	Northwest Consultant..	10/26/2008

Feature	Latitude	Longitude	Struc Num	Insp Freq	Insp Key
SOUTH STATE STREET	42 15' 45.69"	83 44' 25.44"	11067	12	SRSN

Location	Length	Width	Year Built	Year Recon	Br Type	Scour Eval	No.Pins
0.5 MI E OF MAIN ST	46.9	53.15	1928	1975	5	N	

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

05 07 08

NBI INSPECTION

Guard Rail	
36A	1
36B	1
36C	1
36D	1

Crit Feat Insp(SIA-92)	Freq	Date
92A Frac Crit		
92B Und. Watr		
92C Spl.Insp		
Fatg Sntv.Insp	0	-

71 Watr Adeq	N
72 Appr Align	8
Temp Supp	
Hi Ld Hit (M)	
Special Insp Equip.	

General Notes

Michigan Department of Transportation
Structure Inventory and Appraisal

MDOT Bridge ID	Control Section
8102124 0001600S01	8102124 0..

NBI Bridge ID	Struct Num	Region	TSC	County	City Resp	City Location	7- Facility Carried
814021200016S01	11067	06	6B	81	212	212	STADIUM BOULEVAR..

6- Feature Intersected	9- Location	Latitude	Longitude	Owner	Maint Resp
SOUTH STATE STREET	0.5 MI E OF MAIN ST	42 15' 45.69"	83 44' 25.44"	4	4

Bridge History, Type, Materials

27 - Year Built	1928	
106 - Year Reconstructed	1975	
202 - Year Painted		
203 - Year Overlay	1975	
43 - Main Span Bridge Type	5	05
44 - Appr Span Bridge Type		
77 - Steel Type	0	
78 - Paint Type	0	
79 - Rail Type	8	
80 - Post Type	0	
107 - Deck Type	2	
108A - Wearing Surface	6	
108B - Membrane	8	
108C - Deck Protection	0	

Structure Dimensions

34 - Skew	20
35 - Struct Flared	0
45 - Num Main Spans	1
46 - Num Apprs Spans	0
48 - Max Span Length	44.9
49 - Structure Length	46.9
50A - Width Left Curb/SW	7.87
50B - Width Right Curb/SW	0
33 - Median	0
51 - Width Curb to Curb	40.03
52 - Width Out to Out	53.15
112 - NBIS Length	Y

Inspection Data

90 - Inspection Date	10/26/2008	
91 - Inspection Freq	12	
92A - Frac Crit Req/Freq	N	
93A - Frac Crit Insp Date		
92B - Und Water Req/Freq	N	
93B - Und Water Insp Date		
92C - Oth Spec Insp Req/F..	N	
93C - Oth Spec Insp Date		
176A - Und Water Insp Met..	0	
58 - Deck Rating	4	
58A - Deck Surface Rtg	4	
59 - Superstructure Rating	2	
59A - Paint Rating	N	
60 - Substructure Rating	5	
61 - Channel Rating	N	
62 - Culvert Rating	N	

Navigation Data

38 - Navigation Control	N
39 - Vertical Clearance	0
40 - Horizontal Clearance	0
111 - Pier Protection	
116 - Lift Brdg Vert Clear	0

Route Carried By Structure(ON Record)

5A - Record Type	1	
5B - Route Signing	5	
5C - Level of Service	0	
5D - Route Number	02006	
5E - Direction Suffix	0	
10L - Best 3m Unclr-Lt	0	0
10R- Best 3m Unclr- Rt	99	99
PR Number		
Control Section		
11- Mile Point		
12- Base Highway Network	1	
13- LRS Route-Subroute	000..	-
19- Detour Length	1	
20- Toll Facility	3	
26- Functional Class	14	
28A - Lanes On	4	
29 - ADT	28948	
30 - Year of ADT	1998	
32- Appr Roadway Width	40.03	
32A/B - Ap Pvt Type/Width	5	40.03
42A- Service Type On	5	
47L - Left Horizontal Clear	0.0	
47R- Right Horizontal Clear	40.0	
53- Min Vert Clr Ov Deck	99	99
100- STRAHNET	0	
102 - Traffic Direct	2	
109 - Truck %	5	
110 - Truck Network	0	
114 - Future ADT	45000	
115 - Year Future ADT	2020	
Freeway	0	

Structure Appraisal

36A- Bridge Railing	1
36B-Rail Transition	1
36C- Approach Rail	1
36D- Rail Termination	1
67- Structure Evaluation	2
68- Deck Geometry	2
69- Underclearance	2
71- Waterway Adequacy	N
72- Approach Alignment	8
103- Temporary Structure	
113- Scour Criticality	N

Miscellaneous

37- Historical Significance	5
98A- Border Bridge State	
98B- Border Bridge %	
101- Parallel Structure	N
EPA ID	
Stay in Place Forms	

Route Under Structure(UNDER Record)

5A - Record Type	2	
5B - Route Signing	5	
5C - Level of Service	0	
5D - Route Number	02006	
5E - Direction Suffix	0	
10L - Best 3m Unclr-Lt	0	0
10R- Best 3m Unclr- Rt	13	7
PR Number		
Control Section		
11- Mile Point		
12- Base Highway Network	1	
13- LRS Route-Subroute		
19- Detour Length	1	
20- Toll Facility	3	
26- Functional Class	14	
28A - Lanes Under	2	
29 - ADT	8000	
30 - Year of ADT		
42B- Service Type Under	1	
47L - Left Horizontal Clear	0	
47R- Right Horizontal Clear	33.79	
54A - Left Feature	H	
54B- Left Underclearance	13	6
54C- RIght Feature	H	
54D- Right Underclearance	13	6
Under Clearance Year		
55A - Reference Feature	H	
55B- Right Horiz Clearance	2	
56- Left Horiz Clearance	0	
100- STRAHNET	0	
102 - Traffic Direct	2	
109 - Truck %		
110 - Truck Network	0	
114 - Future ADT	999999	
115 - Year Future ADT		
Freeway	0	

Proposed Improvments

75 - Type of Work	31	1
76- Length of Improvement	58	
94- Bridge Cost	594	
95- Roadway Cost	690	
96- Total Cost	1284	
97- Year of Cost Estimate	2007	

Load Rating and Posting

31- Design Load	5	
41- Open, Posted, Closed	P	
63- Oper Rtg Method	1	
64F- Fed Rtg Method	17	
64M- Mich Oper Rtg	9	24
65- Inv Rtg Method	1	
66- Inventory Load	9	
70- Posting	1	
141- Posted Loading	384854	
195- Analysis ID		
193- Overload Class		

APPENDIX B

LOAD RATING SUMMARY

STADIUM BLVD. LOAD RATING

TRUCK # OF UNITS	MICHIGAN LEGAL LOAD	WEIGHT OF TRUCK (Kips)	OPERATING RATING FACTOR	LOAD RESTRICTIONS (TONS)
1	1	33.4	1.42	NA
1	2	41.4	1.16	NA
1	**3**	**54.4**	**0.92**	**25.02**
1	**4**	**67.4**	**0.76**	**25.61**
1	5	78.0	0.80	31.20
1	26 (AASHTO 3)	50.0	1.06	NA
2	6	95.4	0.82	39.11
2	7	113.4	0.82	46.49
2	8	85.4	0.84	35.87
2	9	51.4	1.01	NA
2	**10**	**59.4**	**0.95**	**28.22**
2	11	77.4	0.85	32.90
2	12	111.4	0.68	37.88
2	13	119.4	0.67	40.00
2	14	132.4	0.60	39.72
2	15	137.4	0.67	46.03
2	16	132.4	0.55	36.41
2	**17**	**145.4**	**0.53**	**38.53**
2	18	148.0	0.53	39.22
2	27 (AASHTO 3S2)	72.0	1.16	NA
3	19	111.4	0.81	45.12
3	**20**	**87.4**	**0.83**	**36.27**
3	21	145.4	0.71	51.62
3	22	155.4	0.66	51.28
3	**23**	**148.0**	**0.59**	**43.66**
3	24	116.0	0.82	47.56
3	25	158.0	0.61	48.19
3	28 (AASHTO 3-3)	80.0	1.28	NA

2	**HS20**	**72.0**	**INVENTORY RATING FACTOR = 0.49**

POSTED WEIGHT LIMITS

TRUCK # OF UNITS	WEIGHT LIMIT (TONS)
1	25
2	28
3	36

GEOMETRY DATA

BRIDGE LAYOUT

Overall Width (ft)	48.000
Left curb (ft)	2.000
Right curb (ft)	6.000
curb-to-curb width (ft)	40.000
Number of spans	1
Number of lanes	3
Lane width (ft)	12.000
Topping thickness (in)	0.000
Haunch thickness (in)	0.000
Haunch width (in)	0.000
Bridge c/s,MI(Ixx) (in4)	350448.00

SPAN DATA

Precast length,	ft =	46.160
Bearing-to-bearing,	ft =	45.280
Release span,	ft =	46.160

BEAM DATA

No	ID	Loc-prev ft	Area in2	MI(Ixx) in4	Height in	Yb in	B-topg in	B-trib ft
1	36-21	1.500	406.0	21903.0	21.00	10.93	36.00	3.000
2	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
3	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
4	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
5	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
6	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
7	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
8	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
9	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
10	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
11	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
12	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
13	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
14	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
15	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000
16	36-21	3.000	406.0	21903.0	21.00	10.93	36.00	3.000

MATERIAL DATA

CONCRETE PROPERTIES

	Precast	C.I.P
f'c (ksi)	5000.000	3000.000
Wc (pcf)	150.000	150.000
Ec (ksi)	4286.830	3320.560
f'ci (psi)	4000.000	
Eci (ksi)	3834.250	

STRAND AND REBAR PROPERTIES

PRESTRESSED STEEL:

3/8-270K, Stress relieved strands
Straight Pattern
Strand Diameter = 0.375
Ult. Strength(f's) = 270.0 ksi
Strand Area = 0.080 in2
Use transformed strand and rebar: No

REINFORCING STEEL:

Tension/Shear steel: fy = 60.0 ksi Es = 29000 ksi fs = 24.0 ksi

LOADS DATA

LOADS ON PRECAST

UNITS: (Point: kips, Location: ft, Line: klf)

Span	Beam	DL/ADL	Type	Mag.	Loc.	Description
1	1	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	2	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	3	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	4	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	5	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	6	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	7	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	8	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	9	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	10	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	11	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	12	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	13	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	14	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	15	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE
1	16	DL	Line	0.185	-	SACRIFICIAL WEARING SURFACE

DIAPHRAGM LOADS

(kips, ft)

Span	Beam	Mag.	Loc.
1	1	0.820	15.385
1	1	0.820	30.770
1	2	0.820	15.385
1	2	0.820	30.770
1	3	0.820	15.385
1	3	0.820	30.770
1	4	0.820	15.385
1	4	0.820	30.770
1	5	0.820	15.385
1	5	0.820	30.770
1	6	0.820	15.385
1	6	0.820	30.770
1	7	0.820	15.385
1	7	0.820	30.770
1	8	0.820	15.385
1	8	0.820	30.770
1	9	0.820	15.385
1	9	0.820	30.770
1	10	0.820	15.385
1	10	0.820	30.770
1	11	0.820	15.385
1	11	0.820	30.770
1	12	0.820	15.385
1	12	0.820	30.770
1	13	0.820	15.385
1	13	0.820	30.770
1	14	0.820	15.385
1	14	0.820	30.770

Span	Beam	Mag.	Loc.
1	15	0.820	15.385
1	15	0.820	30.770
1	16	0.820	15.385
1	16	0.820	30.770

LOADS ON COMPOSITE

UNITS: (Point: kips, Location: ft, Line: klf, Area: ksf, Width: ft)

Span	DL/ADL	Type	Mag.	Loc.	Description
1	DL	Line	0.500	-	LEFT SIDE BARRIER
1	DL	Line	1.312	-	RIGHT SIDE BARRIER AND SIDEWAL

LIVE LOADS

Live load deflection: not included.

ID: HS20 Truck	(Type: Truck Load)

ANALYSIS DATA

ANALYSIS PARAMETERS DATA

Beam#	Moment impact	Shear impact
1	1.294	Calculated (AASHTO 3.8.2.2)
2	1.294	Calculated (AASHTO 3.8.2.2)
3	1.294	Calculated (AASHTO 3.8.2.2)
4	1.294	Calculated (AASHTO 3.8.2.2)
5	1.294	Calculated (AASHTO 3.8.2.2)
6	1.294	Calculated (AASHTO 3.8.2.2)
7	1.294	Calculated (AASHTO 3.8.2.2)
8	1.294	Calculated (AASHTO 3.8.2.2)
9	1.294	Calculated (AASHTO 3.8.2.2)
10	1.294	Calculated (AASHTO 3.8.2.2)
11	1.294	Calculated (AASHTO 3.8.2.2)
12	1.294	Calculated (AASHTO 3.8.2.2)
13	1.294	Calculated (AASHTO 3.8.2.2)
14	1.294	Calculated (AASHTO 3.8.2.2)
15	1.294	Calculated (AASHTO 3.8.2.2)
16	1.294	Calculated (AASHTO 3.8.2.2)

NOTE: Beam specific dead and live load DFs are printed in beam level reports.

GAMMA/BETA FACTORS: (Table 3.22.1A)

	Service		Factored	
Gamma:	1.00		1.30	
Beta-D:	1.00		1.00	
Beta-L:	1.00	(Group 1)	1.67	(Group 1)

RATING PARAMETERS

Concrete

	Factor	Allowable Stress, psi
Tension	6.00	424.26
Compression 1	0.60	3000.00
Compression 2	0.40	2000.00

Prestressing Tendons

Tension	Factor	Allowable Stress, psi
Inventory	0.80	183600
Operating	0.90	206550

INVENTORY AND OPERATING RATING LEVEL

Load Rating of Prestressed Concrete Girder Bridges (Manual for Condition Evaluation of Bridges, 2nd Edition 1994, with interims up to & incl. 2003)

Span:1, Beam:5

Rating Summary - Inventory

Load Type	Weight(tons)	Controlling Location	Inventory RF	Based on	Inventory (tons)
HS20 Truck	36.00	0.5L : 22.6	0.49*	Moment	17.65

Rating Summary - Operating

Load Type	Weight(tons)	Controlling Location	Operating RF	Based on	Operating (tons)
MI-17NL	72.70	0.5L : 22.6	0.53*	+ve Moment	38.19

(*) Rating Factors < 1 (the structure might be posted for the respective truck load)

Inventory Rating Level (Art. 6.6.3.3)

HS20 Truck	Positive Live Load		
Location, ft	Moment	(K)	Moment-k
Bearing : 0.0	N. A.	N. A.	N. A.
Transfer : 1.1	2.70	0.75	1.89
H/2 : 0.9	2.94	0.75	2.07
0.1L : 4.2	2.13	1.00	2.13
0.2L : 8.8	1.05	1.00	1.05
0.3L : 13.4	0.67*	1.00	0.67*
0.4L : 18.0	0.52*	1.00	0.52*
0.5L : 22.6	0.49*	1.00	0.49*
0.6L : 27.3	0.52*	1.00	0.52*
0.7L : 31.9	0.67*	1.00	0.67*
0.8L : 36.5	1.04	1.00	1.04
0.9L : 41.1	2.13	1.00	2.13
H/2 : 44.4	2.94	0.75	2.07
Transfer : 44.2	2.70	0.75	1.89
Bearing : 45.3	N. A.	N. A.	N. A.

Operating Rating Level (Art. 6.6.3.3)

MI-17NL			
Location, ft	+ve Mom	(K)	+ve Mom-k

Location, ft	+ve Mom	(K)	+ve Mom-k
Bearing : 0.0	N. A.	N. A.	N. A.
Transfer : 1.1	3.29	0.75	2.30
H/2 : 0.9	3.59	0.75	2.53
0.1L : 4.2	2.56	1.00	2.56
0.2L : 8.8	1.22	1.00	1.22
0.3L : 13.4	**0.75***	1.00	**0.75***
0.4L : 18.0	**0.57***	1.00	**0.57***
0.5L : 22.6	**0.53***	1.00	**0.53***
0.6L : 27.3	**0.57***	1.00	**0.57***
0.7L : 31.9	**0.75***	1.00	**0.75***
0.8L : 36.5	1.22	1.00	1.22
0.9L : 41.1	2.56	1.00	2.56
H/2 : 44.4	3.59	0.75	2.53
Transfer : 44.2	3.29	0.75	2.30
Bearing : 45.3	N. A.	N. A.	N. A.

Allowable Stresses

Concrete

	Factor	Allowable Stress, psi
Tension	6.00	424.26
Compression 1	0.60	3000.00
Compression 2	0.40	2000.00

Prestressing Tendons

Tension	Factor	Allowable Stress, psi
Inventory	0.80	183600
Operating	0.90	206550

Notation:
CC1-T/ CC1-B - Concrete Compression 1 at Top/Bottom;
CC2-T/ CC2-B - Concrete Compression 2 at Top/Bottom;
CTens-T/ CTens-B - Concrete Tension at Top/Bottom;
PSStT - Prestress Steel Tension.

APPENDIX C

REPAIR COST ESTIMATE

2008

2011 CALL FOR PROJECTS
BRIDGE REPAIR COST ESTIMATE

REV. 6/24/08

ENGINEER: EDA DATE: 12/16/2008 DECK AREA: 2,216.0 SFT STRUCTURE ID: Stadium Blvd. Bridge
LOCATION: Ann Arbor, MI Stadium Blvd Over State St. DECK DIM: 48' Wide x 46.16' Long
PRIMARY REPAIR STRATEGY: **Beam Replacement and Abutment Patching** STR. TYPE: **Prestress Cellular Box**

	WORK ITEM	QUANTITY	DIMENSIO	UNIT COST	TOTAL
NEW BRIDGE					
	Multiple spans, Concrete (add demo. & road approach & traffic control)		SFT	$149.00 /SFT	
	Multiple spans, Steel (as above)		SFT	$171.00 /SFT	
	Single span (or multi span over water), Concrete (as above)		SFT	$176.00 /SFT	
	Single span (or multi span over water), Steel (as above)		SFT	$198.00 /SFT	
	Pedestrian Bridge (includes removal, add traffic control)		SFT	$264.00 /SFT	
	Other				
NEW SUPERSTRUCTURE					
	Concrete (includes removal of old super & new railing, add traffic	693.0	SFT	$121.00 /SFT	$83,853.00
	Steel (as above)		SFT	$149.00 /SFT	
	Over Water (add to new superstructure cost)		SFT	$28.00 /SFT	
	Other - Complex Post Tensioning		LSUM	$11,000.00 LSUM	$11,000.00
WIDENING					
	Added portion only. _____ ft of width (add road approach widening)		SFT	$193.00 /SFT	
	Other				
NEW DECK					
	Includes removal of old deck & new railing (add traffic control & approach)		SFT	$77.00 /SFT	
	Other				
DEMOLITION					
	Entire bridge, grade separation		SFT	$30.00 /SFT	
	Entire bridge, over water		SFT	$39.00 /SFT	
	Other				
SUPERSTRUCTURE REPAIR					
	Concrete Deck Patch (includes hand chipping)		SFT	$43.00 /SFT	
	HMA Cap (no membrane - add bridge rail if req'd)		SFT	$2.00 /SFT	
	HMA Overlay with WP membrane (add bridge rail if req'd)		SFT	$5.00 /SFT	
	Removal of Concrete Wearing Course (latex) or Epoxy Overlay		SFT	$3.00 /SFT	
	Removal of HMA Overlay		SFT	$1.00 /SFT	
	Epoxy Overlay		SYD	$35.00 /SYD	
	Shallow Overlay (includes joint replmt & hydro, add bridge rail if req'd)		SFT	$28.00 /SFT	
	Deep Overlay (includes joint replmt & hydro, add bridge rail if req'd)		SFT	$32.00 /SFT	
	PCI Beam End Repair ($2000-$4000 per beam end)		EA	$3,300.00 EA	
	Repair Structural Steel ($2400 bolted, $6200 welded)		EA	$5,500.00 EA	
	High Load Hit Repair (PCI Beam)		SFT	$231.00 /SFT	
	Paint Structural Steel		SFT	$19.00 /SFT	
	Partial Painting		SFT	$20.00 /SFT	
	Pin & Hanger replacement (includes temporary supports)		EA	$8,415.00 EA	
	Other				
SUBSTRUCTURE REPAIR					
	Pier repair (measured x 2) Replace unit if spalled area > 30%		CFT	$330.00 /CFT	
	Pier repair over water (measured x 2)		CFT	$385.00 /CFT	
	Pier replacement		CFT	$75.00 /CFT	
	Abutment repair (measured x 2)	135.0	CFT	$330.00 /CFT	$44,550.00
	Temporary Supports for Substructure Repair		EA	$2,035.00 EA	
	Slope Protection repairs		SYD	$72.00 /SYD	
	Other		LSUM	LSUM	
MISCELLANEOUS					
	Expansion or Construction Joints (includes removal)		FT	$528.00 /FT	
	Bridge Railing, remove and replace	50.0	FT	$248.00 /FT	$12,400.00
	Thrie Beam Railing retrofit		FT	$35.00 /FT	
	Deck Drain Extensions		EA	$660.00 EA	
	Scour Countermeasures		LSUM	LSUM	
	Other		LSUM	LSUM	
ROAD WORK					
	Approach Pavement, 91/2" RC (add C & G, GR, Slope, Shldr.) 4(	300.0	SFT	$9.00 /SFT	$2,700.00
	Approach Curb & Gutter (18' ea. quad.)	36.0	FT	$42.00 /FT	$1,512.00
	Guardrail Anchorage to Bridge (<40')	2.0	quads	$1,540.00 /quad	$3,080.00
	Guardrail, Type B or T (beyond GR anchorage to bridge, <200')		FT	$23.00 /FT	
	Guardrail Ending (end section)		EA	$1,980.00 /EA	
	Roadway Approach work (beyond approach pavement)		LSUM	LSUM	
	Utilities		LSUM	LSUM	
	Other				
TRAFFIC CONTROL - Unit Cost to be determined by Region or TSC T&S					
	Part Width Construction	1.0	LSUM	$55,000.00 LSUM	$55,000.00
	Crossovers		EA	$165,000.00 EA	
	Temporary Traffic Signals		set	$19,800.00 /set	
	RR Flagging		LSUM	LSUM	
	Detour	1.0	LSUM	$11,000.00 LSUM	$11,000.00
	Other				
CONTINGENCY (10% - 20%) (use higher contingency for small projects)		20.0	%	$225,000.00	$45,000
MOBILIZATION (10% max)		10.0	%	$270,000.00	$27,000
INFLATION (assume 4% per year, beginning in 2009)		8.0	%	$297,000.00	$24,000

CONSTRUCTION TOTAL	**$321,000**
PRELIMINARY ENGINEERING (10%)	**$32,000**
CONSTRUCTION ENGINEERING (15%)	**$48,000**
PROJECT TOTAL	**$401,000**

Form 1717A-01/2002

Michigan Department of Transportation
Structure Inventory and Appraisal

MDOT Bridge ID	Control Section
8102124 0001500R01	8102124 0..

NBI Bridge ID	Struct Num	Region	TSC	County	City Resp	City Location	7- Facility Carried
814021200015R01	11066	06	6B	81	212	212	STADIUM BOULEVAR..

6- Feature Intersected	9- Location	Latitude	Longitude	Owner	Maint Resp
ANN ARBOR RAILROAD	0.5 MI E OF MAIN ST	42 15' 46.88"	83 44' 30.56"	4	4

Bridge History, Type, Materials

27 - Year Built	1928	
106 - Year Reconstructed	1975	
202 - Year Painted	1975	
203 - Year Overlay	1975	
43 - Main Span Bridge Type	3	82
44 - Appr Span Bridge Type		
77 - Steel Type	1	
78 - Paint Type	9	
79 - Rail Type	8	
80 - Post Type	0	
107 - Deck Type	1	
108A - Wearing Surface	6	
108B - Membrane	9	
108C - Deck Protection	0	

Structure Dimensions

34 - Skew	42	
35 - Struct Flared	0	
45 - Num Main Spans	1	
46 - Num Apprs Spans	0	
48 - Max Span Length	85	
49 - Structure Length	87.9	
50A - Width Left Curb/SW	7.87	
50B - Width Right Curb/SW	0	
33 - Median	0	
51 - Width Curb to Curb	40.0	
52 - Width Out to Out	53.81	
112 - NBIS Length	Y	

Inspection Data

90 - Inspection Date	11/06/2007	
91 - Inspection Freq	24	
92A - Frac Crit Req/Freq	N	
93A - Frac Crit Insp Date		
92B - Und Water Req/Freq	N	
93B - Und Water Insp Date		
92C - Oth Spec Insp Req/F..	N	
93C - Oth Spec Insp Date		
176A - Und Water Insp Met..	0	
58 - Deck Rating	5	
58A - Deck Surface Rtg	5	
59 - Superstructure Rating	6	
59A - Paint Rating	4	
60 - Substructure Rating	5	
61 - Channel Rating	N	
62 - Culvert Rating	N	

Navigation Data

38 - Navigation Control	N	
39 - Vertical Clearance	0	
40 - Horizontal Clearance	0	
111 - Pier Protection		
116 - Lift Brdg Vert Clear	0	

Route Carried By Structure(ON Record)

5A - Record Type	1	
5B - Route Signing	5	
5C - Level of Service	0	
5D - Route Number	02006	
5E - Direction Suffix	0	
10L - Best 3m Unclr-Lt	0	0
10R- Best 3m Unclr- Rt	99	99
PR Number		
Control Section	0	
11- Mile Point	0.0	
12- Base Highway Network	1	
13- LRS Route-Subroute	000..	-
19- Detour Length	2	
20- Toll Facility	3	
26- Functional Class	14	
28A - Lanes On	4	
29 - ADT	28948	
30 - Year of ADT	1998	
32- Appr Roadway Width	40.0	
32A/B - Ap Pvt Type/Width	5	40.0
42A- Service Type On	5	
47L - Left Horizontal Clear	0.0	
47R- Right Horizontal Clear	40.0	
53- Min Vert Clr Ov Deck	99	99
100- STRAHNET	0	
102 - Traffic Direct	2	
109 - Truck %	5	
110 - Truck Network	0	
114 - Future ADT	45000	
115 - Year Future ADT	2020	
Freeway	0	

Structure Appraisal

36A- Bridge Railing	1
36B-Rail Transition	1
36C- Approach Rail	0
36D- Rail Termination	1
67- Structure Evaluation	5
68- Deck Geometry	
69- Underclearance	
71- Waterway Adequacy	N
72- Approach Alignment	6
103- Temporary Structure	
113- Scour Criticality	N

Miscellaneous

37- Historical Significance	5
98A- Border Bridge State	
98B- Border Bridge %	
101- Parallel Structure	N
EPA ID	
Stay in Place Forms	

Route Under Structure(UNDER Record)

5A - Record Type		
5B - Route Signing		
5C - Level of Service		
5D - Route Number		
5E - Direction Suffix		
10L - Best 3m Unclr-Lt		
10R- Best 3m Unclr- Rt		
PR Number		
Control Section		
11- Mile Point		
12- Base Highway Network		
13- LRS Route-Subroute		
19- Detour Length		
20- Toll Facility		
26- Functional Class		
28A - Lanes Under		
29 - ADT		
30 - Year of ADT		
42B- Service Type Under	2	
47L - Left Horizontal Clear		
47R- Right Horizontal Clear		
54A - Left Feature	R	
54B- Left Underclearance	99	99
54C- RIght Feature	R	
54D- Right Underclearance	22.0	0.0
Under Clearance Year		
55A - Reference Feature	R	
55B- Right Horiz Clearance	11.8	
56- Left Horiz Clearance	0	
100- STRAHNET		
102 - Traffic Direct		
109 - Truck %		
110 - Truck Network		
114 - Future ADT		
115 - Year Future ADT		
Freeway		

Proposed Improvments

75 - Type of Work	31	1
76- Length of Improvement	88	
94- Bridge Cost	886	
95- Roadway Cost	622	
96- Total Cost	1508	
97- Year of Cost Estimate	2007	

Load Rating and Posting

31- Design Load	6	
41- Open, Posted, Closed	A	
63- Oper Rtg Method	1	
64F- Fed Rtg Method	99.9	
64M- Mich Oper Rtg	9	103
65- Inv Rtg Method	1	
66- Inventory Load	88.3	
70- Posting	5	
141- Posted Loading		
195- Analysis ID		
193- Overload Class		

Bridge Safety Inspection Report

8102124 0001500R01

Facility	Federal Structure ID	Inspector Name	Agency/Consultant	Inspection Date
STADIUM BOULEVARD	814021200015R01	Alexander Shtey..	spalding dedecker as..	11/06/2007

Feature	Latitude	Longitude	Struc Num	Insp Freq	Insp Key
ANN ARBOR RAILROAD	42 15' 46.88"	83 44' 30.56"	11066	24	BTYK

Location	Length	Width	Year Built	Year Recon	Br Type	Scour Eval	No.Pins
0.5 MI E OF MAIN ST	87.9	53.81	1928	1975	3 82	N	

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

03 05 07

NBI INSPECTION

DECK

1. Surface SIA-58A	5	5	5	Multiple cracking on bit surface (07) Multiple cracking on bit surface (05) Many cracks in bit and rutting in wheel paths (03)
2. Expansion Jts	5	N	N	(07) (05) Leaking below (03)
3. Other Joints	5	5	5	Cracking along the joints at both reference lines (07) Cracking along the joints at both ends of the bridge (05) (03)
4. Railings	7	7	7	Few vertical cracks at concrete barriers. (07) Few vertical cracks at concrete barriers. New chain link fence at sidewalk. (05) Type 4 w/ few rust spots (03)
5. Sidewalks or curbs	6	6	6	Ponding water on sidewalk. Surface is spalled and delaminated. Many rust spots. Bit curb crumbling on S. Side (07) Surface is spalled and delaminated. Many rust spots. Ponding water on sidewalk. Bit curb crumbling on S. Side (05) Ponding water on sidewalk. Bit curb crumbling on S. Side (03)
6. Deck Bottom Surface SIA-58B			5	Multiple rust spots Delamination and spalling at both fascias (07) (05) (03)
7. Deck SIA-58	5	5	5	(07) Spalling and rust stains @ long. jt. Both fascias are spalled and delaminated. (05) Spalling and rust stains @ long. jt. Small areas of rust staining in other places. Cracking throughout. (03)
8. Drainage				(07) (05) (03)

SUPERSTRUCTURE

9. Superstructure SIA-59	6	6	6	Bottom flanges continue to rust. No section loss. (07) Bottom flanges started to rust. No section loss. (05) Partial conc encased steel girders. Bottom flanges starting to rust. Fascia conc crumbling. (03)
10. Paint SIA-59A	4	4	4	Rust spots at bot. flanges. Paint is deteriorated at the bottom flanges. (07) Paint is deteriorated at the bottom flanges. (05) Rust spots on bottom flanges. Rusting at edges. (03)
11. Section Loss		3	3	Surface rust only, no section loss (07) (05) (03)
12. Bearings	7	7	7	(07) (05) (03)

Facility	Federal Structure ID	Inspector Name	Agency/Consultant	Inspection Date
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Location	Length	Width	Year Built	Year Recon	Br Type	Scour Eval	No.Pins
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Legend	
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7-8	Good
5-6	Fair
3-4	Poor
2 or Less	Critical

03 05 07

NBI INSPECTION

SUBSTRUCTURE

13. Abutments SIA-60	5	5	5	East abut, S corner has deep spall. Small spalls under many beams. Vertical cracks are sealed. (07) Vertical cracks were sealed. East abut, S corner has deep spall. Small spalls under many beams. (05) East abut, S corner has deep spall. Small spalls under many beams. Vert cracks and leaching on both abutments. (03)
14. Piers SIA-60		N	N	(07) (05) (03)
15. Slope Protection				(07) (05) (03)

APPROACH

16. Approach Pavt	5	5	5	Many patched areas, cracking and rutting with few spalled areas. (07) Cracking and rutting with a few spalled areas. Many patched areas. (05) Cracking and rutting with a few spalled areas (03)
17. Approach Shldrs Swalks	6	6	6	Cracks in existing sidewalk. (07) Cracks in existing sidewalk. No settlement was detected. A portion of the sidewalk was replaced. (05) 3-4' of settlement. (03)
18. Approach Slopes				(07) Steep slopes (05) (03)
19. Utilities				(07) (05) (03)
20. Channel SIA-61	N	N	N	(07) (05) (03)
21. Drainage Culverts				(07) (05) (03)

Guard Rail	
36A	1
36B	1
36C	0
36D	1

Crit Feat Insp(SIA-92)	Freq	Date
92A Frac Crit		
92B Und. Watr		
92C Spl.Insp		

71 Watr Adeq	N
72 Appr Align	6
Temp Supp	
Hi Ld Hit (M)	
Special Insp Equip.	

General Notes

Apparoach guardrail located noth of the sidewalk has 12.5 ft. post spacing. Place new guardrail with appropriate post spacing.