500 West Big Beaver
Troy, MI 48084
troymi.gov

CITY COUNCIL AGENDA ITEM

Date: April 7, 2025

To: Frank Nastasi, City Manager

From: Robert J. Bruner, Deputy City Manager
Robert C. Maleszyk, Chief Financial Officer
Kyle Vieth, Controller
Kurt Bovensiep, Public Works Director
G. Scott Finlay, City Engineer

Subject: Authorization for Grant Submittal – Local Bridge Program

History

In 2019, the federal government used the general fund to supplement highway infrastructure funding. Michigan received $93.5 million of the $2.5 billion, from the Highway Infrastructure Program. The Michigan Department of Transportation (MDOT) has established a Local Bridge Bundling Program, utilizing the local share of the Fiscal Year Highway Infrastructure Program (HIP) to improve critical bridges in Michigan.

This is an opportunity to fund some bridges that might not otherwise find funding. Over the last decade, local agencies have been able to maintain the percentage of bridges in good or fair condition. However, recently, conditions have started to decline, and local agencies have not been able to make a significant reduction in the number of bridges in serious or critical condition. At the current condition level, Michigan lags behind its neighboring Great Lakes States and the national average in the percentage of good or fair bridges. Without increased funding, statistical forecasts predict bridge conditions will continue to decline.

The City of Troy engages OHM Advisors, a current Engineering Consultant, to perform all of the City's annual bridge inspections. The Beach Road mill and overlay project in 2023 revealed significant top deck delamination, which was repaired as part of the project. The repairs are a temporary measure until funding can be secured to replace the beams and top deck

Attached is the application prepared by OHM Advisors and reviewed by City Staff for the pursuit of Local Bridge Funding.

Financial

The Local Bridge Program requires a 5% match from the submitting agency. Currently, there is no requirement to obligate the necessary funds. City Staff will include funding during the appropriate budget year. Based on the bridge cost estimate worksheet, the total cost is $925,000, and the City's share would be $46,250.

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Recommendation

City Staff recommends authorization to submit a grant application through the Michigan Department of Transportation Local Bridge Program to pursue funding for the replacement of the beams and top deck, at an estimated cost of $925,000. The City of Troy will be responsible for 5% of this amount, or $46,250.

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 13611 BRIDGE SAFETY INSPECTION REPORT

Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition
BEACH ROAD	42.581 / -83.1976	634679200079B01	Fair Condition(5)
Feature	**Length / Width / Spans**	**Owner**	
ROUGE RIVER	24 / 39.9 / 1	City: TROY(6792)	
Location	**Built / Recon. / Paint / Ovly.**	**TSC**	**Operational Status**
0.3 MI N OF WATTLES	1981 / / / 2012	Oakland(23)	A Open, no restriction(A)
Region / County	**Material / Design**	**Last NBI Inspection**	**Scour Evaluation**
Metro(7) / Oakland(63)	5 Prestressed Concrete / 05 Box Bm/Gird- Multiple	04/20/2023 / O85G	5 Stable w/in footing

NBI INSPECTION O85G

Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Adam Rychwalski	Orchard, Hiltz & McCliment Inc	24	04/20/2023

GENERAL NOTES

2023 inspection assisted by Nick Aukerman.

Concrete Box Beam w/ Timber Railings retrofitted with Concrete Barrier on the east side with Sidewalk and guardrail along the west side. Road construction happening at time of 2023 inspection. HMA milled through bridge, approaches, and beyond.

Repairs made to top of beams during road construction project in spring 2023 while road was closed. Approximately 75% of the top flanges were repaired. repairs included chipping deteriorated concrete and re-casting the top flanges of the adjacent box beams. Roadway was repaved after beam repairs. Recommend applying for superstructure replacement at next call for projects.

DECK

	04/19	04/21	04/23	
1. Surface (SIA-58A)	6	6	6	Transverse crack at both the north and south abutments. Cracks partially sealed. Longitudinal crack at centerline at cold joint partially sealed with 2'x1' pothole at midspan filled with cold patch. Spider web cracking in northwest quadrant mostly unsealed. Some random cracking at isolated locations. HMA surface milled at time of 2023 inspection. Potholes appear to be from deck deterioration. See deck comments for more detail. (EDIT 8-31-23 - see general comments on repairs made after inspection, surface repaved after repairs) (04/23) Transverse crack at both the north and south abutments. Cracks partially sealed. Longitudinal crack at centerline at cold joint partially sealed with 2'x1' pothole at midspan filled with cold patch. Spider web cracking in northwest quadrant mostly unsealed. Some random cracking at isolated locations. (04/21) Transverse crack at both the north and south abutments. Cracks sealed. Longitudinal crack at centerline at cold joint partially sealed with 2'x1' pothole at midspan. Spider web cracking in northwest quadrant mostly unsealed (04/19)
2. Expansion Joints	N	N	N	(04/23) (04/21) (04/19)
3. Other Joints	N	N	N	(04/23) (04/21) (04/19)
4. Railings	7	7	6	Jersey barrier on east side with vertical cracks. Guardrail on west side with no issues. West concrete barrier posts cracking with exposed rebar on north end. (04/23) Jersey barrier on east side with vertical cracks. Guardrail on west side with no issues. (04/21) Jersey barrier on east side with vertical cracks. Guardrail on west side with no issues. (04/19)
5. Sidewalks or Curbs	7	7		Minor cracking. Some settling at ends in approaches. (04/23) Minor cracking. Some settling at ends in approaches creating potential trip hazard. (04/21) Minor cracking. Some settling at ends in approaches creating potential trip hazard. (04/19)
6. Deck Bottom Surface (SIA-58B)	N	N		Side-by-side box beams. See deck and stringer comments. (04/23) Side-by-side box beams. See deck and superstructure comments. (04/21) Side-by-side box beams. See deck and superstructure comments. (04/19)

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7. Deck (SIA-58)	6	6	5	Surface in fair condition and stringers in fair condition. No deck on side-by-side box beams see surface and stringer comments. Large spalls in top of beams at midspan of west curbline and at north reference line. Rebar exposed in tops of beams 3 & 4 west. (EDIT 8-31-23 - see general comments on repairs made after inspection, surface repaved after repairs. Deck rating remains at fair due to beam condition at the time of inspection and construction) (04/23) Surface in fair condition and stringers in fair condition. No deck on side-by-side box beams see surface and superstructure comments. (04/21) Surface in fair condition and stringers in good condition. No deck on side-by-side box beams see surface and superstructure comments. (04/19)
8. Drainage				Positive drainage present. Road crowns on bridge and slopes away on north and south side. Two catch basins along south approach. (04/23) Positive drainage present. Road crowns on bridge and slopes away on north and south side. Two catch basins along south approach. (04/21) Positive drainage present. Road crowns on bridge and slopes away on north and south side. Two catch basins along south approach. (04/19)

SUPERSTRUCTURE

	04/19	04/21	04/23	
9. Stringer (SIA-59)	6	6	5	13 adjacent box beams. Evidence of previous drainage from box weep holes and from between boxes. East fascia post tensioning duct grout pocket is spalled and has vegetation growing from it. Beam 7W has delamination 3/4 length along the north end 1' wide. Beam 5W middle half delaminated 1' wide. Beams 5W & 7W have 2 broken strands at delamination areas. Leaking with stalactites at most joints. For details on top of beams see deck comments. (EDIT 8-31-23 - see general comments on repairs made after inspection. No change to bottom flange condition) (04/23) 13 adjacent box beams. Evidence of previous drainage from box weep holes and from between boxes. Fascia post tensioning duct grout pocket is spalled and has vegetation growing from it. Beam 7W has delamination 5' long by 1' wide at mid span of joint 6W and delamination at north end. Beam 5W middle third delaminated 1' wide. Leaking with stalactites at most joints (04/21) Evidence of previous drainage from box weep holes and from between boxes. North fascia post tensioning duct grout pocket is spalled and has vegetation growing from it. Beam 7W has delamination 5' long by 1' wide at mid span of joint 6W and delamination at north end. Beam 5W middle third delaminated 1' wide. Leaking with stalactites at most joints (04/19)
10. Paint (SIA-59A)	N	N	N	(04/23) (04/21) (04/19)
11. Section Loss	N	N	N	(04/23) (04/21) (04/19)
12. Bearings	7	7	7	Functioning as intended. Some debris and leaching (at curb lines) and staining. (04/23) Functioning as intended. Some debris and leaching (at curb lines) and staining. (04/21) Functioning as intended. Some debris and leaching (at curb lines) and staining. (04/19)

SUBSTRUCTURE

	04/19	04/21	04/23	
13. Abutments (SIA-60)	7	7	7	Some leaching stains from leakage from backwall. A few minor hairline cracks. Separate ~2" at all abutment/wingwall interfaces and no joint sealer in place. Tree growing between abutment and wingwall on SW quadrant trimmed but not removed. Cracking south abutment beam 7W bearing area. (04/23) Some leaching stains from leakage from backwall. A few minor hairline cracks. Separate ~2" at all abutment/wingwall interfaces and no joint sealer in place. Tree growing between abutment and wingwall on SW quadrant trimmed but not removed. (04/21) Some leaching stains from leakage from backwall. Area was dry at the time of inspections. A few minor hairline cracks. Separate ~2" at all abutment/wingwall interfaces and no joint sealer in place. Tree growing between abutment and wingwall on SW quadrant trimmed but not removed. (04/19)

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14. Piers (SIA-60)	N	N	N	(04/23) (04/21) (04/19)
15. Slope Protection	N	N	N	(04/23) (04/21) (04/19)
16. Channel (SIA-61)	4	4	4	Channel meanders with several grass/mud islands on the east. Several fallen trees/branches on east side have dammed the direct flow through the channel and creating new paths for the water flow. Channel turns sharply south on west side of bridge. Poor alignment. (04/23) Channel meanders with several grass/mud islands on the east. Several fallen trees/branches on east side have dammed the direct flow through the channel and creating new paths for the water flow. Channel turns sharply south on west side of bridge. Poor alignment. (04/21) Channel meanders with several grass/mud islands on the east. Several fallen trees/branches on east side have dammed the direct flow through the channel and creating new paths for the water flow. Channel turns sharply south on west side of bridge. Poor alignment. (04/19)
17. Scour Inspection	5	5	5	Flow is deeper along south abutment down to riparap. Material buildup along north abutment. No scour noted noted but uneven channel. Steel sheet piling along north banks both east and west sides. Silted in riprap along south abutment (04/23) Flow is deeper along south abutment down to riparap. Material buildup along north abutment. No scour noted noted but uneven channel. Steel sheet piling along north banks both east and west sides. Silted in riprap along south abutment (04/21) Flow is deeper along south abutment down to riparap. Material buildup along north abutment. No scour noted noted but uneven channel. Steel sheet piling along north banks both east and west sides. Silted in riprap along south abutment (04/19)

APPROACH

	04/19	04/21	04/23	
18. Approach Pavement	7	7	7	HMA approaches milled at time of inspection. (04/23) HMA Approaches with hairline cracks. Most cracks are sealed. (04/21) HMA Approaches with hairline cracks. Most cracks are sealed (04/19)
19. Approach Shoulders Sidewalks	7	7	7	Sidewalk approach slabs have heaved on one side and settled on the other, creating a trip hazard. Sidewalk has a few cracks. HMA shoulders milled at time of inspection. (04/23) Sidewalk approach slabs have heaved on one side and settled on the other, creating a trip hazard. Sidewalk has a few cracks. HMA shoulders are in condition. (04/21) Sidewalk approach slabs have heaved on one side and settled on the other, creating a trip hazard. Sidewalk has a few cracks. HMA shoulders are in condition (04/19)
20. Approach Slopes				Steel sheet piling on north bank, but has heavy pack rust and some holes in the sheets. South bank is stable. (04/23) Steel sheet piling on north bank, but has heavy pack rust and some holes in the sheets. South bank is stable. (04/21) Steel sheet piling on north bank, but has heavy pack rust and some holes in the sheets. South bank is stable. (04/19)
21. Utilities				Two storm catch basins on south side approach. Utility poles/lines running north/south along west side and cross (east/west) just south of bridge. Water main running along east side of road. (04/23) Two storm catch basins on south side approach. Utility poles/lines running north/south along west side and cross (east/west) just south of bridge. Water main running along east side of road. (04/21) Two storm catch basins on south side approach. Utility poles/lines running north/south along west side and cross (east/west) just south of bridge. Water main running along east side of road. (04/19)

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22. Drainage Culverts

12" outlet pipe in SW wingwall w/ some sediment build up right at outlet. Invert at waterline. 36" outlet pipe in NW wingwall w/ stones (debris on bottom of pipe). Invert approx. halfway below water line. Welded rebar screen on 36" outlet, steel is severely corroded (thin and broken off in some spots) at water line. (04/23)
12" outlet pipe in SW wingwall w/ some sediment build up right at outlet. Invert at waterline. 36" outlet pipe in NW wingwall w/ stones (debris on bottom of pipe). Invert approx. halfway below water line. Welded rebar screen on 36" outlet, steel is severely corroded (thin and broken off in some spots) at water line. (04/21)
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MISCELLANEOUS

Guard Rail

Item	Rating
36A. Bridge Railings	1
36B. Transitions	1
36C. Approach Guardrail	1
36D. Approach Guardrail Ends	0

Other Items

Item	Rating
71. Water Adequacy	7
72. Approach Alignment	7
Temporary Support	0 No Temporary Supports
High Load Hit (M)	No
Special Insp. Equipment	2
Underwater Insp. Method	1

False Decking (Timber) Removed to Complete Inspection N/A - No False Decking

Critical Feature Inspections (SIA-92)

	Freq	Date
92A. Fracture Critical		
92B. Underwater		
92C. Other Special		
92D. Fatigue Sensitive		

MICHIGAN DEPARTMENT OF TRANSPORTATION

STR 13611 — **STRUCTURE INVENTORY AND APPRAISAL**

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Bridge History, Type, Materials

27 - Year Built	1981	
106 - Year Reconstructed		
202 - Year Painted		
203 - Year Overlay	2012	
43 - Main Span Bridge Type	5	05
44 - Appr Span Bridge Type		
77 - Steel Type	0	
78 - Paint Type	0	
79 - Rail Type	1	
80 - Post Type	1	
107 - Deck Type	2	
108A - Wearing Surface	6	
108B - Membrane	2	
108C - Deck Protection	0	

Structure Dimensions

34 - Skew	0
35 - Struct Flared	N
45 - Num Main Spans	1
46 - Num Apprs Spans	0
48 - Max Span Length	22
49 - Structure Length	24
50A - Width Left Curb/SW	4.8
50B - Width Right Curb/SW	7.8
33 - Median	0
51 - Width Curb to Curb	24
52 - Width Out to Out	39.9
112 - NBIS Length	Y

Inspection Data

90 - Inspection Date	04/20/2023	
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/Freq	N	
93C - Oth Spec Insp Date		
92D - Fatigue Req/Freq	N	
93D - Fatigue Insp Date		
176A - Und Water Insp Method	1	
58 - Deck Rating	5	
58A/B - Deck Surface/Bottom	6	
59 - Superstructure Rating	5	
59A - Paint Rating	N	
60 - Substructure Rating	7	
61 - Channel Rating	4	
62 - Culvert Rating	N	

Navigation Data

38 - Navigation Control	0
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	1	
5D - Route Number	00000	
5E - Direction Suffix	0	
10L - Best 3m Unclr-Lt		
10R - Best 3m Unclr-Rt	99	99
PR Number		
Control Section		
11 - Mile Point	1.14	
12 - Base Highway Network	0	
13 - LRS Route-Subroute	0000006263 01	
19 - Detour Length	1	
20 - Toll Facility	3	
26 - Functional Class	19	
28A - Lanes On	2	
29 - ADT	3500	
30 - Year of ADT	1981	
32 - Appr Roadway Width	24	
32A/B - Ap Pvt Type/Width	5	24.02
42A - Service Type On	5	
47L - Left Horizontal Clear	0	
47R - Right Horizontal Clear	24.0	
53 - Min Vert Clr Ov Deck	99	99
100 - STRAHNET	0	
102 - Traffic Direct	2	
109 - Truck %	0	
110 - Truck Network	0	
114 - Future ADT	4025	
115 - Year Future ADT	2001	
Freeway	0	

Structure Appraisal

36A - Bridge Railing	1
36B - Rail Transition	1
36C - Approach Rail	1
36D - Rail Termination	0
67 - Structure Evaluation	5
68 - Deck Geometry	2
69 - Underclearance	N
71 - Waterway Adequacy	7
72 - Approach Alignment	7
103 - Temporary Structure	
113 - Scour Criticality	5

Miscellaneous

37 - Historical Significance	5
98A - Border Bridge State	
98B - Border Bridge %	
101 - Parallel Structure	N
EPA ID	
Stay in Place Forms	
143 - Pin & Hanger Code	
148 - No. of Pin & Hangers	

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		
28B - Lanes Under		
29 - ADT		
30 - Year of ADT		
42B - Service Type Under	5	
47L - Left Horizontal Clear		
47R - Right Horizontal Clear		
54A - Left Feature		
54B - Left Underclearance	99	99
54C - Right Feature		
54D - Right Clearance	99	99
Under Clearance Year		
55A - Reference Feature	N	
55B - Right Horiz Clearance		
56 - Left Horiz Clearance		
100 - STRAHNET		
102 - Traffic Direct		
109 - Truck %		
110 - Truck Network		
114 - Future ADT		
115 - Year Future ADT		
Freeway		

Proposed Improvements

75 - Type of Work		
76 - Length of Improvement		
94 - Bridge Cost		
95 - Roadway Cost		
96 - Total Cost		
97 - Year of Cost Estimate		

Load Rating and Posting

31 - Design Load	6
41 - Open, Posted, Closed	A
63 - Fed Oper Rtg Method	6
64F - Fed Oper Rtg Load	3.09
64MA - Mich Oper Rtg Method	6
64MB - Mich Oper Rtg	3.04
64MC - Mich Oper Truck	18
65 - Inv Rtg Method	6
66 - Inventory Load	1.85
70 - Posting	5
141 - Posted Loading	
193 - Overload Class	

STR 13611 WORK RECOMMENDATIONS

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Adam Rychwalski	Orchard, Hiltz & McCliment Inc	24	04/20/2023

RECOMMENDATIONS & ACTION ITEMS

Recommendation Type	Priority	Description
Super Repl.	M	Superstructure deteriorating. Replacement in the next few years recommended.

1a. Situation Map

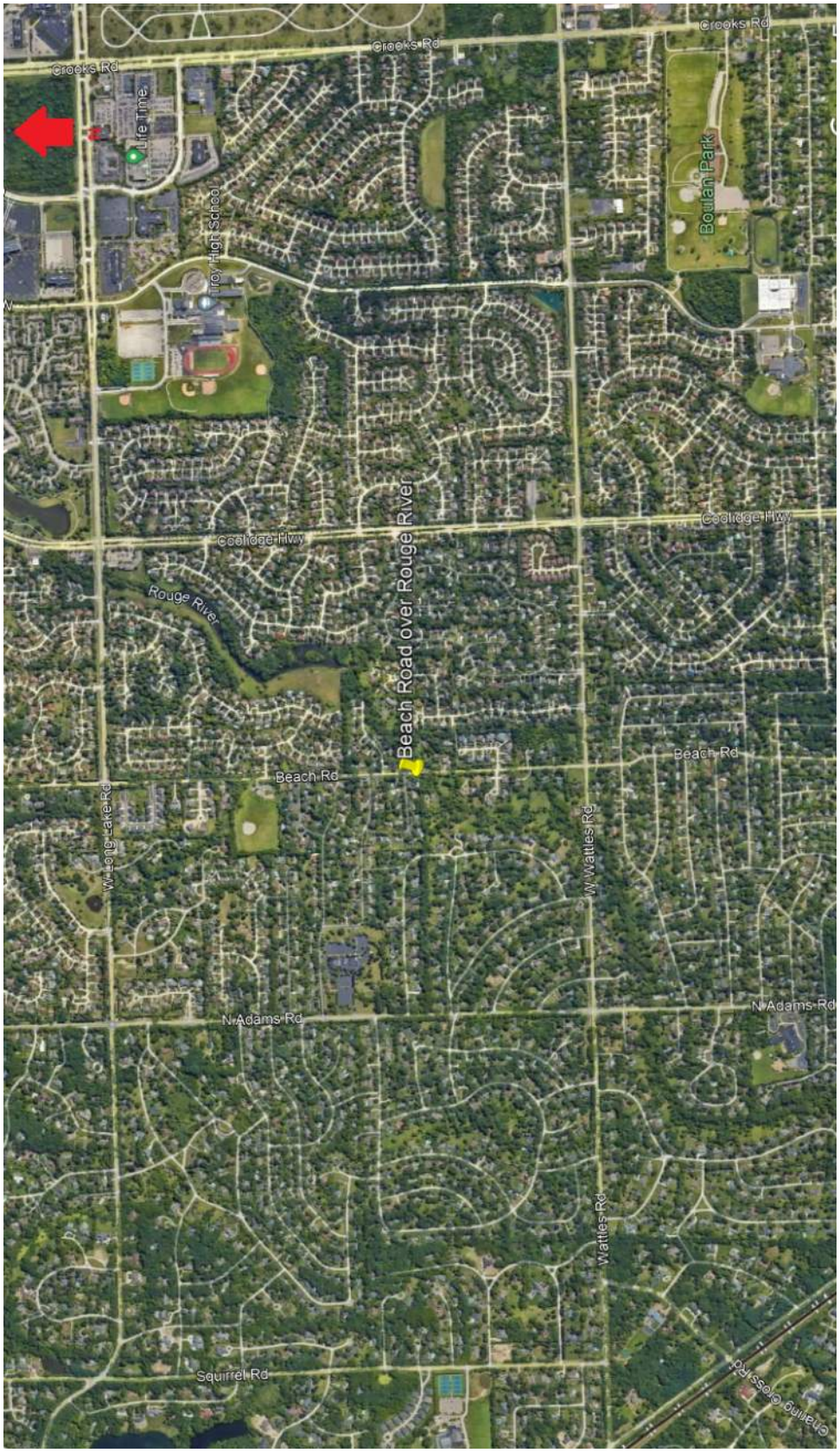


Image taken from Google Earth

2b. Detour Map

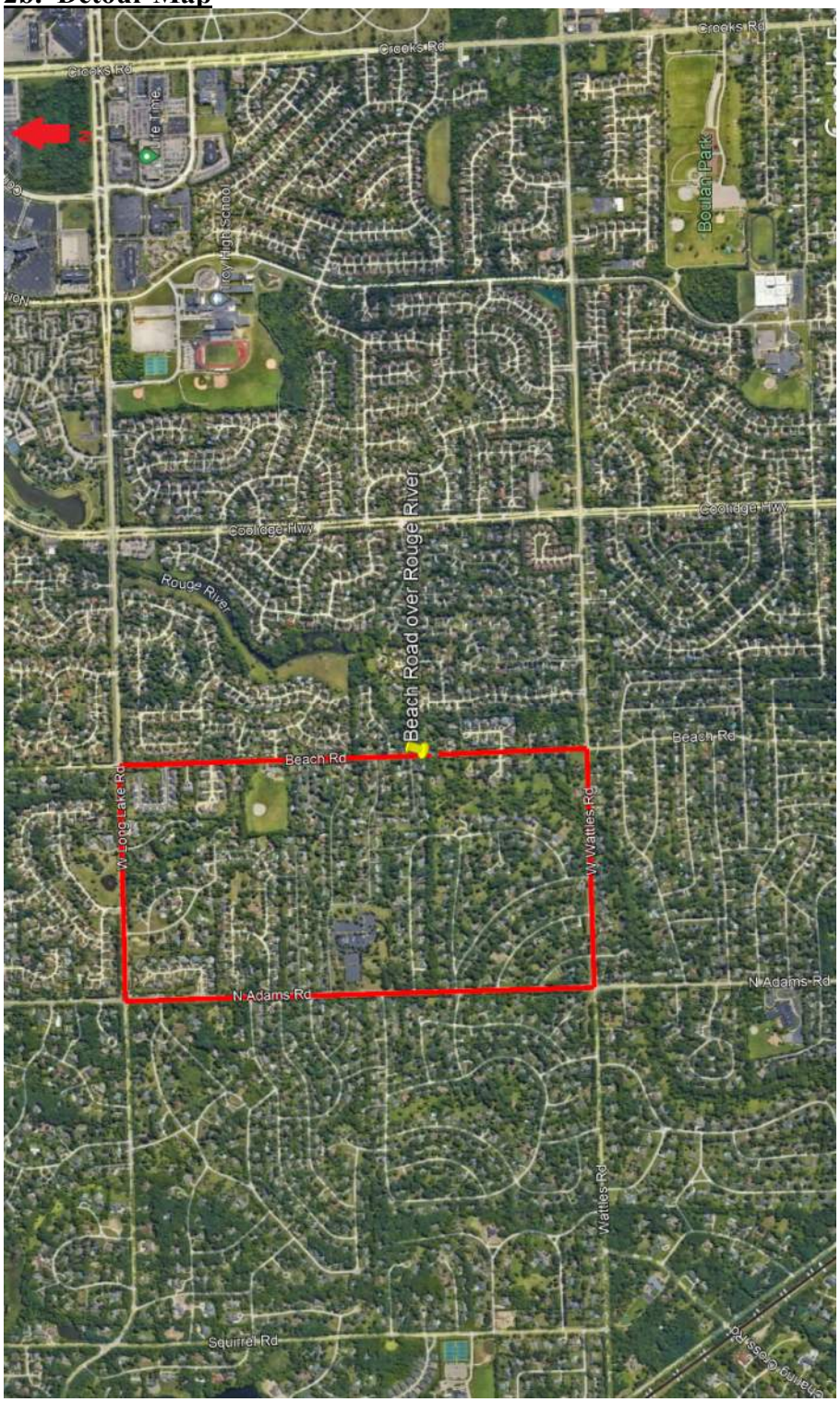


Image taken from Google Earth

Beach Rd to Long Lake Rd
To N Adams Rd
To Wattles Rd
To Beach Rd
Detour: 3.0 miles (Note: Beach Rd is a NFC major collector and detour utilizes NFC major collector or greater road classifications.)

3. Photographs

Typical Approach

Typical Surface

Typical Elevation

Typical Abutment

Top Flange of Box Beam Deterioration

Top Flange of Box Beam Deterioration

Top Flange of Box Beam Deterioration

Top Flange of Box Beam Deterioration

Typical Leaching Joint Between Box Beams

Beam 5W Cracking

Beam 7W Delamination and Broken Strand

4. Application Requirements for Beach Rd over Rouge River

A. Local Agency Contact Person

Scott Finlay - City Engineer
City of Troy
500 W. Big Beaver Rd
Troy, MI 48084

B. The purpose of this application is for the rehabilitation of the bridge carrying Beach Road over Rouge River. Funding requested for a superstructure replacement, approach roadway and guardrail, and maintenance of traffic.

C. Economic Importance of the Structure

This structure is located in a residential area of Troy 0.33 miles north of Wattles Road. Beach Road Park is 0.33 miles north of the bridge.

Although there are no schools in the immediate area of the bridge, Beach Road is utilized by the school district for bussing purposes. If bus traffic is not able to cross the bridge it will put a financial burden on the already tight school budgets because of increased length of bus routes. Emergency vehicles would also be impacted by the closing as well, increasing response times. The bridge is also used by local residents to access Beach Road Park and the main roads of the area.

The structure is an adjacent prestressed concrete box beam structure with 1 24’ span. The bridge is overall in fair condition and rated a 5. During a road rehabilitation in 2023 where the HMA surface was replaced, it was found that 75% of the top flanges of the beams had deteriorated and crumbled away. The unsound concrete was removed and recast. However, this is considered a temporary fix and only providing cover to the existing rebar in the beams. Additionally, beam 7W has a delamination ¾ of the length along the north end that is 1’ wide. Beams 5W and 7W have 2 broken strands at delaminated areas. There is no structural deck, and the surface is newly paved HMA. The abutments are in good condition and rated a 7. There are small hairline cracks, cracking at south abutment beam 7W bearing area, some leaching stains, and a 2” gap between all abutment and wingwall interfaces with no joint sealer.

The recommended repair for the bridge is a superstructure replacement. The condition of the box beams warrants replacement due to the broken strands and deteriorated top flanges of the beams. Broken strands compromise the structural integrity and load carrying capacity of the beams. The deteriorated top flange of the beams has a temporary concrete patch with an unknown service life. The only way to repair the structure is to replace the beams. The substructure is in good condition, so a full replacement is not needed. The approaches should be replaced as well to provide a smooth transition to the

bridge deck from the approach. A smooth transition is important as it will prevent excess impact loads, which can result in damage to the superstructure of the bridge.

D. If there is a current detour, what does it affect?

Currently the bridge is open to traffic and there is no detour.

E. If the structure were to be closed, what would the detour affect?

If the structure were to be closed, the detour would affect the residents in the area. The school system, with its already tight budget, will have cost increases because of the need to reroute its buses and extend routes. Emergency vehicles would have to take a longer route to reach emergencies in the area. As seconds matters in an emergency, this could become a public safety issue. Access to Beach Road Park would be impacted as well by the closure of the bridge.

F. The structure is not currently closed.

G. Maintenance of the Structure

The HMA surface was replaced in 2023 as part of a road rehabilitation job. During the job, 75% of the top flanges of the box beams were found to have deteriorated. The deteriorated concrete was removed and the top flanges were recast.

5. Estimated Rehabilitation Costs

Superstructure Replacement and Approach Work		
A.	Approach Construction	$ 401,000.00
B.	Structure Construction	$ 524,000.00
	Total (A & B)	$ 925,000.00

For a breakdown of construction costs see Appendix A.

6. Priority List

1. **Beach Rd over Rouge River**

7. Resolution

The resolution is attached in Appendix B.

8. Previous Applications

It is understood that all previous applications have been discarded and that this application will be used to select funding.

APPENDIX A

Exhibit 4 - Cost Estimating Worksheet

2025

BRIDGE COST ESTIMATE WORKSHEET

- CPM, REHAB, REPLACE -

REV. 02/6/2024

OWNER: TROY | FISCAL YEAR: 2028 | DATE: 3/6/2025
REGION: Metro | ENGINEER: AJR
TSC: Oakland | PR: 626301 | MP: 1.138

	LENGTH	Out to Out WIDTH	Curb to Curb WIDTH
	24.0	39.9	24.0

STRUCTURE ID: 13611
BRIDGE ID: N/A

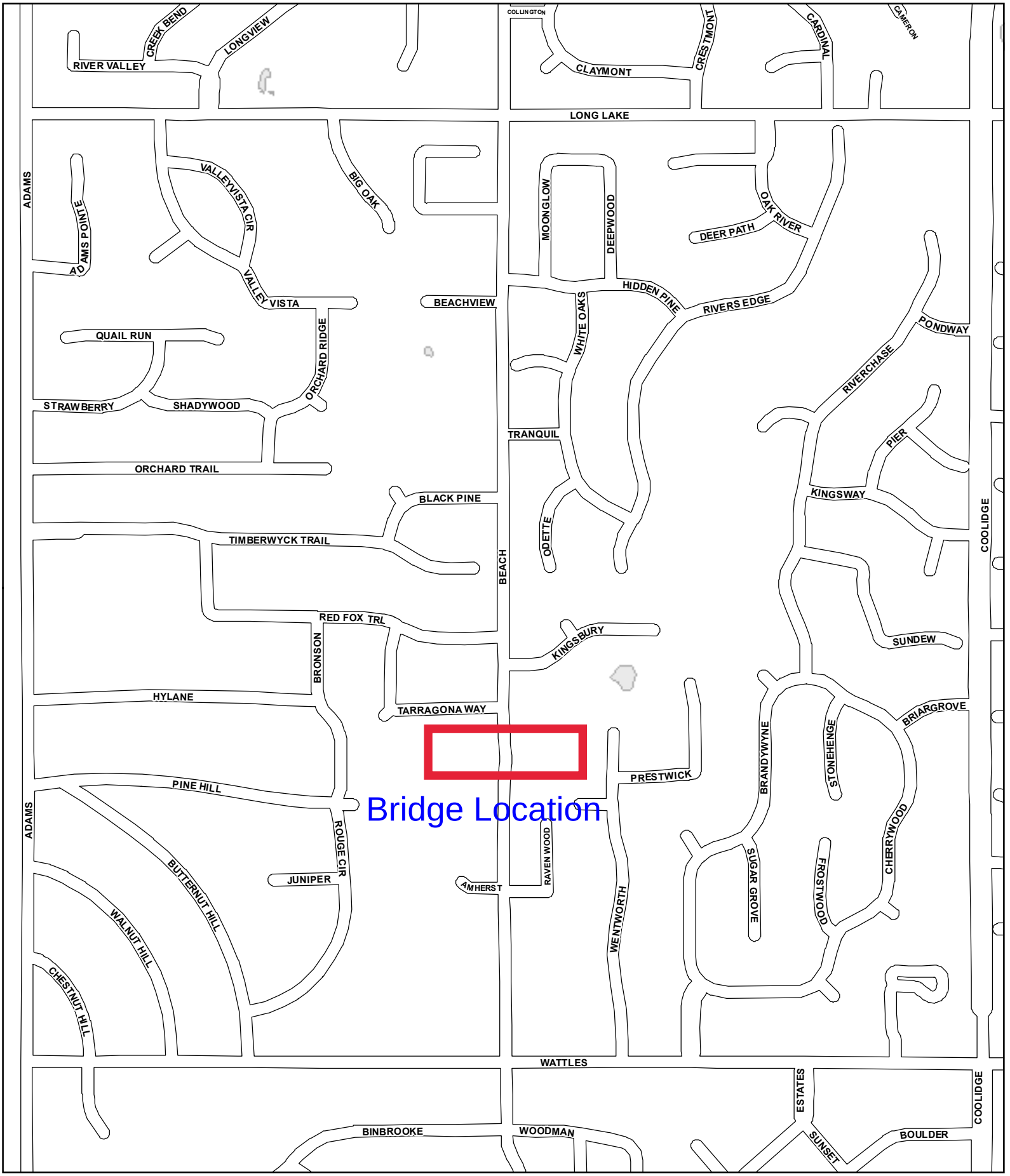
LOCATION: BEACH ROAD over ROUGE RIVER
PRIMARY WORK ACTIVITY: Superstructure Replacement
OTHER WORK:

DECK AREA: 958 SFT
CLEAR ROADWAY: 576 SFT

STR. TYPE: Prestressed Concrete Box Beam or Girders - Mul

WORK ACTIVITY		MDOT Bridge Design Guides	QUANTITY	UNIT	UNIT COST	TOTAL
NEW BRIDGE		(increase deck area based on design standards and hydraulic requirements)				
Single or Multiple Spans, Grade Separation		(add demo, approach, MOT)		SFT	$435.00 /SFT	
Single Span, Over Water	Length < 100ft	(add demo, approach, MOT)		SFT	$525.00 /SFT	
Multiple Spans, Over Water	Length > 100ft	(add demo, approach, MOT)		SFT	$470.00 /SFT	
Precast Culvert	Length < 40ft	(add demo, approach, MOT)		SFT	$565.00 /SFT	
NEW SUPERSTRUCTURE						
New Superstructure, Grade Separation		(incl. remove exist deck/super; add MOT & approach)		SFT	$310.00 /SFT	
New Superstructure, Over Water		(incl. remove exist deck/super; add MOT & approach)	1,008.0	SFT	$315.00 /SFT	$317,520.00
WIDENING						
Structure Widening, _____ ft		(incl. deck/super/sub widening, add approach transition)		SFT	$630.00 /SFT	
NEW DECK						
New Bridge Deck & Barrier		(incl. remove exist deck/railing, add approach, MOT)		SFT	$150.00 /SFT	
DEMOLITION						
Entire Structure, Grade Separation				SFT	$75.00 /SFT	
Entire Structure, Over Water				SFT	$95.00 /SFT	
DECK REPAIR / TREATMENTS						
Bridge Railing Replacement		(incl. removal and replacement)		FT	$750.00 /FT	
Concrete Brush Block / Curb Patch		(incl. hand chipping and formwork)		FT	$29.00 /FT	
Concrete Barrier Patch		(incl. hand chipping and formwork)		SFT	$85.00 /SFT	
Concrete Deck Patch		(incl. hand chipping)		SFT	$68.00 /SFT	
Deep Overlay		(incl. joint repl & hydro)		SFT	$46.00 /SFT	
Epoxy Overlay		(incl. warranty)		SYD	$48.00 /SYD	
Expansion Joint Gland Replacement		(remove and replace elastomeric gland)		FT	$125.00 /FT	
Expansion Joint Replacement		(incl. removal)		FT	$860.00 /FT	
Full Depth Patch				SFT	$140.00 /SFT	
Healer / Sealer		(penetrates cracks in bridge deck)		SYD	$30.00 /SYD	
HMA Overlay with WP membrane				SYD	$60.00 /SYD	
Overlay Removal		(Epoxy: $22/syd | Latex: $26/syd | HMA: $7/syd)		SYD	$22.00 /SYD	
Reseal Bridge Joints				FT	$28.00 /FT	
Shallow Overlay		(incl. joint repl & hydro)		SFT	$46.00 /SFT	
SUPERSTRUCTURE REPAIR						
Bearing Realignment / Replacement		(incl. temporary supports)		EA	$6,450.00 EA	
Heat Straightening		(incl. clean and coat)		EA	$57,000.00 EA	
Pack Rust Repair		(greater than 3/8" separation)		FT	$1,150.00 /FT	
Paint - Complete		(incl. clean & coat)		SFT	$30.00 /SFT	
Paint - Partial / Spot / Zone		(incl. clean & coat - $20k minimum)		SFT	$60.00 /SFT	
PCI Beam End Blockout		(incl. temporary supports)		EA	$7,200.00 EA	
Pin & Hanger Replacement		(incl. temporary supports)		EA	$17,000.00 EA	
Structural Steel Repair		(based on 6ft repair length)		EA	$4,000.00 EA	
Structural Steel Repair - Stiffener		(includes each side of beam)		EA	$1,500.00 EA	
SUBSTRUCTURE REPAIR						
Substructure Patching		(measured x 2) replace if repair area > 30%		CFT	$360.00 /CFT	
Substructure Replacement		(incl. temporary supports, excavation)		CFT	$375.00 /CFT	
Substructure Horizontal Surface Sealer				SYD	$75.00 /SYD	
Temporary Supports		(add Structural Steel Repair - Stiffener for ea steel beam)		EA	$4,000.00 EA	
MISCELLANEOUS						
Articulating Concrete Block System (ACB)				SYD	$320.00 /SYD	
Concrete Surface Coating				SYD	$47.00 /SYD	
Culvert Cleanout				FT	$125.00 /FT	
Epoxy Crack Injection		(structural crack repair)		FT	$70.00 /FT	
Metal Mesh Panels		(48" width, max 6'-6" length)		SFT	$28.00 /SFT	
Pressure Relief Joint		(use when approach concrete roadway exceeds 1,000ft)		FT	$110.00 /FT	
Riprap		(assume 10ft distance around perimeter of substructure)	133.3	SYD	$275.00 /SYD	$36,666.67
Silane Treatment		(penetrating sealer for concrete surfaces)		SFT	$7.00 /SFT	
Slope Protection Repairs				SYD	$150.00 /SYD	
Other						
					STRUCTURE CONSTRUCTION BUDGET	$354,187
ROAD WORK						
Approach Pavement, 12" RC		(incl. removal; add curb, gutter, guardrail) 40' ea. end	142.2	SYD	$230.00 /SYD	$32,711.11
Approach Curb & Gutter		(incl. removal) 40' ea. quadrant	80.0	FT	$57.00 /FT	$4,560.00
Guardrail Anchorage to Bridge		(each quadrant)	4.0	EA	$2,540.00 /EA	$10,160.00
Guardrail		(incl. removal) < 200ft beyond reference line	100.0	FT	$41.00 /FT	$4,100.00
Guardrail Terminal		(each quadrant)	4.0	EA	$3,900.00 /EA	$15,600.00
Roadway Approach Work		(beyond approach pavement)	1.0	LSUM	$150,000.00 LSUM	$150,000.00
Utilities			1.0	LSUM	$25,000.00 LSUM	$25,000.00
TRAFFIC CONTROL	*Unit Cost to be determined by Region or TSC Traffic & Safety*					
Part Width Construction				LSUM	LSUM	
Crossovers				EA	/EA	
Temporary Traffic Signals				set	/set	
RR Flagging				LSUM	LSUM	
Detour			1.0	LSUM	$30,000.00 LSUM	$30,000.00
					RELATED ROAD/TRAFFIC CONSTRUCTION BUDGET	$272,131
CONTINGENCY	(10% - 20%) (use higher contingency for small projects)		20	%	$626,000.00	$125,000
MOBILIZATION	(estimate at 10%)		10	%	$751,000.00	$75,000
INFLATION	(assume 4% per year, beginning in 2025)		12	%	$826,000.00	$99,000
					(Does not include PE or CE) **TOTAL CONSTRUCTION BUDGET**	**$925,000**

APPENDIX B



City of Troy

Section 18

Date: 7/13/2022