EXISTING MAIN ACCCESS BRIDGE

Existing Construction

The existing main access bridge substructure consists of concrete abutments at both ends of the bridge and two concrete solid shaft piers below the superstructure. The abutments and piers extend from the bottom of the superstructure to the bottom of the channel. At this point in time the abutment and pier foundation systems are unknown.

The existing main access bridge superstructure consists of cast-in-place concrete fascia beams spanning between the abutments and piers along with a cast-in-place concrete flat slab deck over the full width and length of the bridge. There are cast-in-place concrete railings along both sides of the bridge. Currently there is a wood framed deck, which was added at some point in time, covering the entire concrete deck. See the photos below and video of inspection.

Existing Condition

During the inspection of the existing main access bridge, the top surface of the wood deck wearing surface, the railings and the exterior fascias of the bridge were observed be Northwest Design Group personnel. A dive team from Underwater Construction Corporation observed the exposed portions of the abutments, piers and the bottom side of the concrete deck. An engineer from Northwest Design Group was present and watching the live video stream from the diver's helmet mounted video camera during the underwater inspections. In general, the wood deck wearing surface is in good condition (Rating = 7). The concrete railings appeared to be in fair condition (Rating = 5). The wood deck wearing surface appears to have been installed to span over the large holes in the original concrete bridge deck. The concrete bridge deck contains a large hole through the deck in the North span (approx. 6' x 8' hole) (see 7:31:10 on video) and in the South span (approx. 4' x 4' hole) (see 7:27:45 on video) with exposed corroded and missing steel reinforcement along with efflorescence, spalling and exposed reinforcement in all three deck spans (see 7:25:18 and 7:30:27 on video) and is considered to be in critical condition (Rating = 2) with the wood framed wearing surface acting as a an emergency repair. Portions of the sides and bottoms of the fascia beams have spalled off exposing the steel reinforcement (see 7:22:00 and 7:23:12 on video) and can be considered to be in critical condition (Rating = 2) and will not support their original design loads. The abutments and piers are in fair condition (Rating = 6) with minor spalling and abrasion present primarily near the waterline. The concrete sidewalk approaching the bridge from the North is in good condition (Rating = 7) with scattered pop-outs present while the HMA sidewalk approaching the bridge from the South is in fair condition (Rating = 5) with some cracking and settlement present. The South approach also contains a steel plate covered depression which creates an uneven walking surface in that area. The channel spanned by the bridge has a relatively slow moving current, which resulted in no scour being observed at the abutments or piers, and is considered to be in good condition (Rating = 8).

Conclusions

Based on our initial inspection, it is our opinion that the condition of the existing bridge superstructure is so poor that it can't support the original design loads and should be replaced. Alternatively, if a superstructure replacement is not feasible (due to financial, historical or other reasons), the existing concrete deck and fascia beams should be repaired.

Recommendations

1. We recommend that the entire superstructure be replaced.

2. If funding, historical concerns or other reasons won't allow a total superstructure replacement we recommend partial deck and fascia beam repairs to enhance the capacity of the existing structure.

3. Repair spalls in the abutment and pier sections that are to remain.

4. Determine what's under the steel plate at the Southeast quadrant of the bridge. Modify or remove the steel plate covered depression and/or modify the adjacent grade at the Southeast quadrant where the existing condition presents a tripping hazard.

PHOTOS

Main Access Bridge South Approach (Looking North)

Main Access Bridge North Approach (Looking South)

Main Access Bridge West Elevation (Looking East)

Main Access Bridge East Elevation (Looking West)

Bridge Safety Inspection Report

Facility	Federal Structure ID	Insp. Agency	Insp. Name	Insp. Date	Insp. Freq.
Main Access Bridge at Detroit Boat Club Building		NDG, LLC	J. Rintala	9/8/2016	

Feature	Struc. No.
Canal off of Detroit River	

Location	Length	Width	Year Built	Year Recon	Bridge Type	Scour Eval

LEGEND

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

NBI INSPECTION

1.	Surface SIA-58A	7	Rating applies to the wood deck wearing surface. Minor surface abrasion and weathering/checking.
2.	Expansion Joints	N	
3.	Other Joints	N	
4.	Railings	5	Cast-in-place concrete railing. Shallow scaling and a few spalls.
5.	Sidewalks Or Curbs	N	
6.	Deck Bottom Surface SIA-58B	2	Rating applies to the cast-in-place concrete deck. 100% section loss (approx. 6'x8' area in North span and approx. 4'x4' area in South span) along with spalling and exposed reinforcement in all three spans. Wood framed deck wearing surface spans over holes in concrete deck.
7.	Deck SIA-58	2	Rating applies to the cast-in-place concrete deck. 100% section loss (approx. 6'x8' area in North span and approx. 4'x4' area in South span) along with spalling and exposed reinforcement in all three spans. Wood framed deck wearing surface spans over holes in concrete deck.
8.	Drainage		No problems noted.
9.	Superstructure SIA-59	2	Rating applies to fascia beams. Fascia beams have sections with significant concrete loss along bottom of beams with exposed loose longitudinal reinforcement and exposed corroded transverse reinforcement.
10.	Paint SIA-59A	N	
11.	Section Loss	N	
12.	Bearings	N	
13.	Abutments SIA-60	6	Rating applies to the concrete abutment walls at both ends of the bridge. Walls appear stable. Minor spalling and abrasion present.
14.	Piers SIA-60	6	Rating applies to the concrete solid shaft piers of the bridge. Piers appear stable. Minor spalling and abrasion present.
15.	Slope Protection	N	
16.	Approach Pavement	N	
17.	Approach Shldrs Swalks	6	Rating applies to the approach sidewalks at both end of the bridge. Concrete slab with some pop-outs at North appraoch (Rating = 7). Weathered and cracked HMA at South approach with some settlement and a steel plate covered depression at the East side of the approach (Rating = 5).

18. Approach Slopes

19. Utilities

20. Channel SIA-61 — 8 — Channel appears stable . Canal flow is low velocity, both banks are protected by concrete walls and no scour was observed.

21. Drainage Culverts

SPECIAL INSPECTIONS

Brg Rail		(36A)		Insp Date	Freq	Watr Adq		(71)
Rail Tr		(36B)	Frac Crit			Appr Align		(72)
Appr Rl		(36C)	Underwater			Hi Load Hit		
Rl Term		(36D)	Oth Spec			Temp Supp		
						Insp. Equip		

GENERAL NOTES

1. Ratings are based on photos and video of bridge.
2. Recommend total replacement of the bridge superstructure.
3. If superstructure replacement is not possible, recommend replacement of section of north concrete deck and section of south concrete deck in addition to spall patching in all spans and repairs to fascia beams.
4. Recommend minor patching of concrete spalls at abutments and piers.
5. Investigate the purpose of and then modify or remove the steel plate covered depression East side of the South approach.