



2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION
REPORT
BRIDGE INSPECTION REPORT

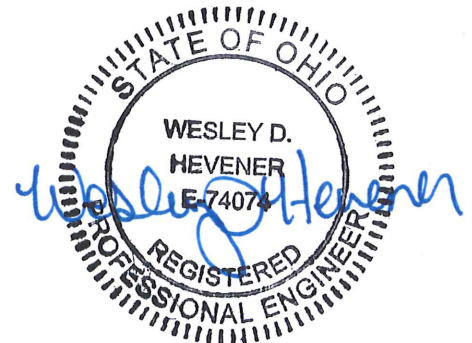
Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

I-280,RAMP D over CHAMPLAIN NSRR.

Inspection Type: Routine

Inspection Date: 08/31/2017



District: 02

County: LUCAS

Place Code (FIPS): TOLEDO

Bridge Type: CONCRETE

Type of Service: HIGHWAY

Owner: OHIO STATE TRANSPORTATION DEPARTMENT

Inspection Responsibility: OHIO STATE TRANSPORTATION
DEPARTMENT

Maintenance Responsibility: OHIO STATE TRANSPORTATION
DEPARTMENT

Lead Inspector: Hevener, Wesley

Reviewed By: Hevener, Wesley

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

LOCATION MAP

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 -
CONTINUOUS

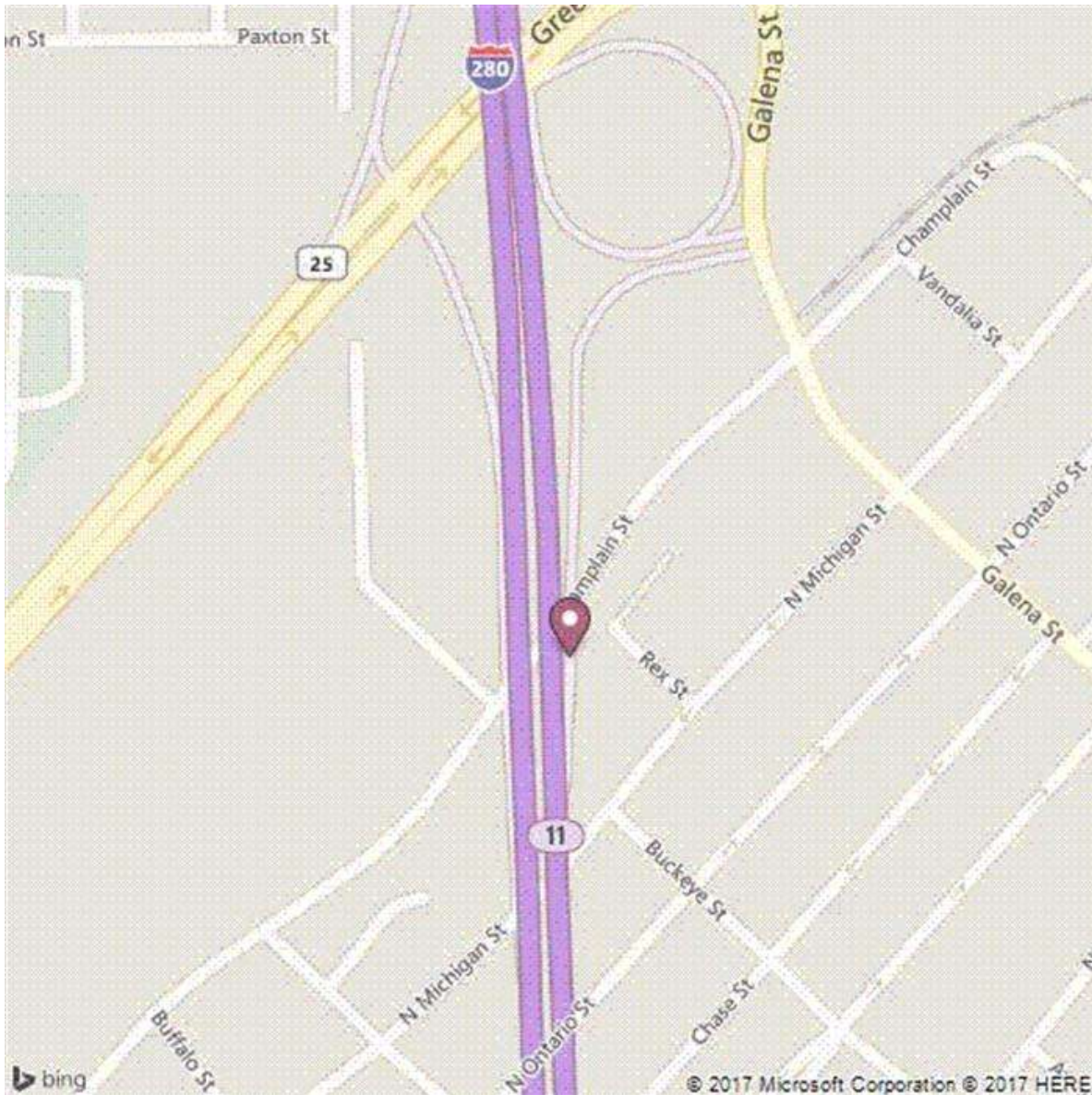
Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

I-280,RAMP D over CHAMPLAIN NSRR.

Type of Service on: HIGHWAY



LOCATION MAP #1

Region:

State: 395

County: 48

Facility Carried: I-280,RAMP D

Facility Intersected: CHAMPLAIN NSRR.

Location: RAMP D TO GALENA ST.

Description: Ramp D Location Map

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

GENERAL ELEVATION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 -
CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

I-280,RAMP D over CHAMPLAIN NSRR.

Type of Service on: HIGHWAY



Photo 1 Ramp D Elevation View looking southwest.



Photo 2 End View of Ramp D looking north.



Photo 3 End View of Ramp D looking south.

Unit of Measure: ENGLISH
Structure File Number: 4805879
Sufficiency Rating: 96.5

Bridge Inventory and Appraisal
Inventory Bridge Number: LUC 00280 04.340 DR
1 CHAMPLAIN NSRR.

Report Date: 08/31/2017
BR. TYPE: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Date of Last Inventory Update: 02/10/2018

(2) District: 02		(3) County: 48 - LUCAS		(9) Location: RAMP D TO GALENA ST.		(7) Facility Carried: I-280,RAMP D	
(4) FIPS Code: 77000 - TOLEDO				(208) Route On Bridge: 41 - Municipal		(207) Route Under Bridge: 10 - State (ODOT) (Toll	
(102) Direction of Traffic: 1 - 1-way traffic		(216) Temporary:		(110) Truck Network: 1		(101) Parallel: R	
				(42A) Type Serv (On): 1 - Highway		(42B) Type Serv (Under): 4 - Highway - railroad	
Inventory Route Data				(45) Main Spans Number: 12			
(5A) Route On/Under: 1 - Route carried "on" the				Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS			
(5B) Hwy Sys: 1 - Interstate Highway				(46) Approach Spans Number: 0			
(5D) Route No: 00280				Type: N - NONE/N - NONE/N - NONE			
(5E) Dir: 0 - Not				(307) Total Spans: 0			
(5C) Des: 7 - Ramp or Wye				(48) Max Span: 148 Ft			
(6) Feature Intersected: CHAMPLAIN NSRR.				(49) Overall Leng: 1572 Ft			
(3) County: LUC (200) Mileage: 04.340 (201) Special Desig: DR (209)Mile Marker: 10.973				Substructure:			
(29) Avg. Daily Traffic (ADT): 4,690				Foundation and Scour Information:			
(30) ADT Year: 2005				Abut-Rear (532) Matl: N - None			
(235) Truck Traf: 375				(531) Type: N - None			
(210) Corridor: Y				(533) Fnd: N - None (such as most Culverts)			
(104) NHS: 1- NHS BRIDGE				Abut-Fwd (527) Matl: 2 - Concrete			
(100) Strahnt: 0 - NOT STRAHNET				(526) Type: 8 - Pedestal			
				(528) Fnd: 3 - Drilled Shafts			
				Pier-Pred (535) Matl: 2 - Concrete			
				(534) Type: 4 - Open Column			
				(536) Fnd: 3 - Drilled Shafts			
				Pier-Other (538) Matl: N - None			
				(537) Type: N - None			
				(539) Fnd: N - None (Such as most Culverts)			
				Pier-Other (541) Matl: N - None			
				(540) Type: N - None			
				(542) Fnd: N - None (Such as most Culverts)			
Intersected Route Data				(545) Pier, Total Count: 12			
(370A) Record Type: 2 - ROUTE 2				(663) Stream Velocity: 0.0 fps			
(370B) Hwy Sys: 5 - Municipal Street (i.e.				(113) Scour: N - Bridge not over waterway.			
(370D) Route No: 00280				(92B) Dive: N			
(370E) Dir:				Freq: 0			
(370C) Des: 1 - Mainline				(655) Chan Prot: X - Not Applicable			
(373) Feature Intersected: RAMP D,NB TO GALENA				(93B) Date of Last Dive Insp:			
(3) County: LUC				(657) Drainage Area: 0 Sq. Mi			
(371) Mile Marker:							
(387) Special Desig:							
(379) Avg. Daily Traffic (ADT): 589							
(380) ADT Year: 2015							
(381) Truck Traf: 28							
(384) Corridor: N							
(378) NHS: X - NON-NHS BRG EXCLDES							
(375) Functional Class: 19 - Urban - Local							
(386) Strahnt: 0 - Non-strahnet Bridges							
Clearance On the Bridge				Clearance Under the Bridge			
Min. Hriz on Bridge:				Min. Horiz Under Clear:			
(335) NC: 0 Ft				(326) NC: 0 Ft			
(47) CARD: 26 Ft				(325) CARD: 28 Ft			
(53) Prac Max Vert On Brg: 23.667 Ft				(328) Prac Max Vrt Under Clear: 28.5 Ft			
Min Vrt Clr On Brg:				Min. Vert Under Clear:			
(336) NC: 99.99 Ft				(327) NC: 28.5 Ft			
(10) CARD: 23.667 Ft				(54) CARD: H 23.667 Ft			
Min Latl Clr:				Min Lat Under Clear:			
(338) Right NC: 0 Ft				(329) Right NC: 0 Ft			
(337) Right CARD: 6 Ft				(55) Right CARD: H 38.5 Ft			
(340) Left NC: 0 Ft				(330) Left NC: 0 Ft			
(339) Left CARD: 4 Ft				(56) Left CARD: 84 Ft			
(39) Vrt Clr Lft: 0 Ft							
Structure Information				Load Rating Information			
(19) Bypass Length: 10 Miles				(31) Design Load: 9 - HS25 or greater			
(16) Latitude: 41.670885831735				(64) Opr Rat Fact: 2.300			
(17) Longitude: -83.514684457329				(700) LD: 2 - HS20 Loading			
(20) Toll: 3 - On Free Road, the structure is toll				(66) Inv Rat Fact: 1.250			
(106) Major Rehabilitation:				(702) LD: 2 - HS20 Loading			
(27) Date Built: 2007				(734) Ohio Percent Legal 150			
Major Reconstruction Date:				(704) Year of Rating: 7/1/2011			
(28A) No. Lanes On: 1				(63) Analysis: 6 - Load Factor Rating (LFR) reported by RF using HS20			
(28B) No. Lanes Under: 2				(708) Rate Soft: 5 - Finite Element (FE) Program			
(34) Skew: 0 Deg				(707) PE# 0			
(301) Horiz Curve: 4.4							
(32) App. Rdw Width: 26 Ft							
(51) Brg. Rdw Width: 26 Ft							
(52) Deck Width: 29 Ft							
Deck Area: 45588							
(406) Median Type: N - NONE/N - NON BARRIER/N - NO JOINT							
(33) Bridge median: 0 - No median							
Sidewalks:							
(50A) Left: 0 Ft							
(50B) Right: 0 Ft							
Type Curb or Sidewalk:							
(425) Left Matl: N - None							
(426) Type: N - None or N/A (RR, Pedestrian,							
(427) Right Matl: N - None							
(428) Type: N - None or N/A (RR, Pedestrian,							
(412) Flared: N							
(408) Composite: N - Non-composite							
(407) Railing: D - 42" Deflector Type Parapet (New Jersey Shape)							
(409) Deck Drainage: 4 - Inlets with drain pipes							
(107) Deck Type: 0 - Other							
Deck Protection:							
(108B) External: N - Not Applicable (only for bridges for no decks)							
(108C) Internal: 1 - Epoxy Coated Reinforcing							
(108A) Wearing Surface: 2 - Integral Concrete (Monolithic) - Not an Overlay							
(420) Thickness: 1.0 in							
(419) Date of Wearing Surface: 06/06/2007							
(547) Slope Protection: 2 - Stone (No. 1 Aggregate)							
				Approach Information			
				(401) Approach Guardrail: 7 - Concrete Deflector Parapet			
				(403) Approach Pavement: 1 - Concrete			
				(402) Grade: 1 - Good			
				Culvert Information			
				(575) Culvert Type: N - Not a Culvert or Rigid Frame			
				(578) Length: 0 Ft			
				(580) Depth of Fill: 0 Ft			
				(582) Headwalls: N - None or Not Applicable (Not a			
				General Information			
				(475) Main Member: 9 - Segmental Box Girder			
				(477) Moment Plate: N - No Moment Plates			
				(414) Expansion Joint: A - MODULAR//			
				(453) Bearing Devices: C - ELASTOMERIC (LAMINATED)/A - SLIDING (OTHER)/			
				(38) Navigation: N - Not Applicable - No waterway			
				(39) Vert Clr: 0 Ft			
				(92C) Spec Insp: N			
				Freq: 0			
				(92A) Fracture Critical Insp: N			
				Freq:			
				(474) Long Member: N - Not Applicable (i.e. Culvert, Beam, Slab,			
				(486) Structural Steel Memb: N - None			
				(468) Hinges: N - Not Applicable (structures with no hinges)			
				(465) Framing: N - None or Not Applicable			
				(407) Railing: D - 42" Deflector Type Parapet (New Jersey Shape)			
				(482) Paint: N - None or Not Applicable			
				(203) Bridge Dedicated MAUMEE RIVER CROSSING			

Unit of Measure: ENGLISH
 Structure File Number: 4805879
 Sufficiency Rating: 96.5

Bridge Inventory and Appraisal
 Inventory Bridge Number: LUC 00280 04.340 DR
 1 CHAMPLAIN NSRR.

Report Date: 08/31/2017
 BR. TYPE: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
 Date of Last Inventory Update: 02/10/2018

General Information (Continued)		Original Plans Information	
(37) Hist Significance: 4 - Not determinable at this time (112) NBIS: Yes (842) Hist/Designer: (827) Hist Build Year: (828) Hist Type: (98A) Border Bridge (98B) Resp: (99) SFN:		(250) Fabricator: (249) Contractor: FRU-CON (248) Ohio Original Construction Project Number: 049301 (252) Microfilm Reel: (251) Standard Drawing: Aperture Cards: (246) Orig: N (247) Repair: N (245) Fabr: N (709) Rating Score: 1 - Plan information available for load rating analysis (Default)	
Proposed Improvements		Utilities	Special Features
(114) Future ADT (On Bridge): 6510 (115) Year of Future ADT: 2031		(265) Electric Line: Y (266) Gas Line: N (269) Sanitary Sewer: N (267) Telephone Line: N (268) TV Cable: N (270) Water Line: N (271) Other Utilities: N	(283) Lighting: Y (430) Fence: N (432) Glare Screen: N (435) Splash Guard: N (459) Catwalk: N (271) Other-Feat: N (279) Signs on Bridge: Y (281) Signs Under Bridge: N (431) Fence Height: 0 Ft (433) Noise Barrier: N
Programming Info			
PID Number: PID Status: PID Date:			
Inspection Summary	Survey Items		
(58) Deck: 6 (59) Superstructure: 6 (60) Substructure: 7 (62) Culvert: N (61) Channel: N (c6) Approaches: 6 General Appraisal: 6 (41) Operational Status: A (90) Inspection Date: 08/31/2017 (91) Desig Insp Freq: 12 Months	(36A) Railings: 1 - Meets acceptable standards (36B) Transitions: 1 - Meets acceptable standards (36C) Guardrail: 1 - Meets acceptable standards (36D) Rail Ends: N - NA/safety feature is not required (92A) Fracture Critical: N (113) Scour Critical: N - Bridge not over waterway. Inspection Review Date:		
SFNs Replacing this retired bridge: - SFNs That were replaced by this bridge: - This bridge was retired and copied to: The bridge was copied from:		Insp 1st: 1 - Ohio State Transportation Department 2nd: X - None 3rd: X - None (21) Major Maint 1st: 1 - Ohio State Transportation Department 2nd: X - None 3rd: X - None (225) Routine Maint 1st: 1 - Ohio State Transportation Department 2nd: X - None 3rd: X - None	

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

APPROACH INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

APPROACH

(c6) Approach Summary: 6 **Recommended:** 6

c1. Approach Wearing Surface (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
1	1				1.00

Areas of insignificant hairline transverse cracks present along the length and width of the approach slab. The riding surface over the length of the slab and at the expansion joint location was noted to be slightly rough and bumpy.

c2. Approach Slabs (SF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
650		650			2.00

Moderate transverse cracking ranging in length from 4 ft. to full width in the approach slab. A hole from a rodent, likely a ground hog, was noted at the southwest side of the approach slab. See Photo 1.

Potential areas of settlement were observed on both the east and west edges of the approach slab. Foam was installed under the east barrier to fill a gap between the approach slab and barrier. The west barrier had foam installed under the approach slab and barrier at the expansion joint location. See Photo 2. Additionally both barriers exhibited vertical and horizontal displacement over the length of the approach slab.

c3. Relief Joint (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
22	22				1.00

The relief joint was in good condition with minor transverse cracks in the joint asphalt. Both northern and southern edges of the relief joint and roadway/approach slab concrete exhibited minor spalling and deterioration along the length of the joint. See Photo 3.

c4. Embankment (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
2	2				1.00

Insignificant cracking in the cast-in-place reinforced concrete wall along the length was noted at various locations.

Areas of potential settlement were noted in the embankment based on observations from both concrete barriers where vertical and horizontal displacement was measured. See the Approach Slab and Guardrail sections for a more detailed description of these areas.

c5. Guardrail (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
2	0	2			2.00

The concrete barriers on both sides of the roadway exhibited typical hairline vertical cracks, some with efflorescent leaching, over the length of the approach slab.

Both barriers had areas where foam was installed to fill voids between the concrete of the barrier and the approach slab deck. See Photo 2.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

APPROACH INSPECTION

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Inventory Bridge Number: LUC 00280 04.340 DR

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CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

I-280,RAMP D over CHAMPLAIN NSRR.

Type of Service on: HIGHWAY

APPROACH

At the middle of the approach slab, the east barrier displayed signs of settlement in the embankment with vertical and horizontal displacement measured at the joint. The concrete was spalled and cracked in this area. See Photo 4. In addition, a 14 in. x 7 in. x 3.5 in. deep spall with exposed reinforcement was observed on the backside of the east barrier at the south end of the approach slab near the abutment backwall. See Photo 5. The west barrier at the end of the approach slab also had measurable vertical and horizontal displacement between the adjoining section of concrete barrier. See Photo 6.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

APPROACH INSPECTION PHOTOS

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I-280,RAMP D over CHAMPLAIN NSRR.

Type of Service on: HIGHWAY



Photo 1 Moderate transverse cracking in the approach slab running full width.



Photo 2 Foam filling void between barrier and approach slab at the west end of the expansion joint.



Photo 3 Typical condition of the relief joint at the end of the approach slab.



Photo 4 East barrier with vertical displacement/rotation, spalling and cracking of the concrete at the midspan of the approach slab.

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APPROACH INSPECTION PHOTOS

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I-280,RAMP D over CHAMPLAIN NSRR.

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Photo 5

Backside of the east barrier near the abutment backwall with spalled concrete and exposed reinforcement.



Photo 6

West barrier with vertical and horizontal displacement present at the end of the approach slab.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

DECK INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

DECK

(58) NBIS Deck Summary: 6 **Recommended:** 9

c7.1 Floor/Slab (SF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
45588	45213	375			1.01

Ramp D (LUC-280-0434DR) deck sketches show from Pier 1D (Sta. 1+90.99) to Abutment 13D (Sta. 17+62.68). The entire deck quantity is rated in this report. The longitudinal joint is rated in the LUC-280-0375R report as per the 2016 inspection. Hairline transverse and map cracking, with efflorescent leaching in areas, was noted along the length of the longitudinal closure pour. See Photo 1.

The defects in the bottom of the deck slab is documented and detailed in the Superstructure Inspection section of this report and subsequent photos for these defects area also located in that section. Several previously grouted lift holes in the top flange/deck of the segments exhibited heavy efflorescence and rust staining along the length of the bridge. See Photos 1 and 2 in the Supplemental section. In addition, numerous transverse closure pour joints in the top flange/deck displayed areas of voids, cracking, and efflorescence over the length of the bridge.

Areas of moderate (0.013 in. to 0.025 in.) transverse cracking along the majority of the roadway segment joints were noted along the length of the bridge. See Photo 2.

Numerous lift holes and deck patches were noted along the length of the bridge and displayed moderate cracking (0.013 in. to 0.025 in.), spalling and discoloration around the perimeter or these patches. See Photo 3. Other patches along the bridge were determined to be delaminated or unsound with hairline to moderate cracking within a portion of these patches. See Photo 4.

These patches and cracks appeared to be reflective and were present in the wearing surface as well.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches.

c7.2 Edge of Floor/Slab (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
	0				

c8. Wearing Surface (SF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
40872	40422	450			1.02

Areas of moderate (0.013 in. to 0.025 in.) transverse cracking along the majority of the roadway segment joints were noted in the wearing surface along the length of the bridge. See Photo 2. Moderate (0.013 in. to 0.016 in.) longitudinal and map cracks were noted in the middle of the traffic lane wearing surface in Spans 8D, 10D, 11D and 13D. See Photo 5.

Numerous lift holes and deck patches were noted in the wearing surface along the length of the bridge and displayed moderate cracking (0.013 in. to 0.025 in.), spalling and discoloration around the perimeter or these patches. See Photo 3. Other patches along the bridge were determined to be delaminated or unsound with hairline to moderate cracking within a portion of these patches. See Photo 4.

A few areas of the wearing surface exhibited scaling and abrasion at the edges of the travel lanes near the painted lane lines along the length of the bridge. See Photo 6.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches.

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DECK

c10. Median (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
1572	1572				1.00

c11. Railing (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
2325	815	1510			1.74

The east parapet/barrier runs for the entire length of the Ramp D structure; however, the west parapet/barrier runs from Pier 7D (Sta. 10+10.45) to Abutment 13D (Sta. 17+62.68). The quantity was adjusted accordingly.

Typical areas of hairline to moderate vertical cracking was noted along the length of the concrete parapet on both sides of the roadway. See Photo 7. Numerous areas of cracks had efflorescence, rust stains and/or discoloration and leaching.

Several areas of minor spalls/gouges were noted along the length of the bridge. Three areas of collision damage and minor scraping to the parapets were noted in Spans 5D, 8D and 9D. See Photo 8. A few areas of concrete scaling were observed along the length of the bridge of the top and vertical faces of the parapets. See Photo 9.

Multiple areas of missing paint, minor deterioration and rust on the steel railing were noted along the length of the bridge. See Photo 10.

The attenuator at the Pier 5D/Ramp D exit where the NB North Approach railing begins at Pier 53NB is damaged due to collision impact. See Photo 11.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches.

c12. Drainage (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
9			9		3.00

Moderate to severe amounts of debris was observed in a majority of the scuppers, some of which had vegetation growing from the debris. See Photo 12. All deck scuppers appeared to be filled and not serving their intended function.

The drainage caps at the edge face of the pier end segments were leaking on a majority of the scupper locations. These locations consisted of varying levels, moderate to heavy, of rust staining and efflorescence in the concrete. See Photo 13.

At Pier 4D, the deck drainage pipe was disconnected from the outflow PVC pipe draining into the pier column. The brackets connecting the two pipes were also rusted and corroded. See Photo 14.

The deck drainage pipes within the interior of the segment at Piers 1D, 3D, 7D and 9D exhibited areas of leakage or evidence of past leakage with wet concrete, rust staining and efflorescence present. See Photo 15.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches.

c13. Expansion Joint (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
78	0	78			2.00

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DECK

No leakage of the glands within the modular joints was observed. The joints at Piers 7D and 10D and Abutment 13D were partially filled over the entire width of the roadway. See Photo 16.

The expansion joint at Piers 1D and 4D are included in the NB North Approach deck quantity and sketches due to being continuous with that joint.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches and joint measurements.

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DECK INSPECTION PHOTOS

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Type of Service on: HIGHWAY



Photo 1 Longitudinal joint with cracking and efflorescent leaching.



Photo 2 Typical transverse cracking along the width of the roadway in Span 9D.



Photo 3 Lift hole patch in the deck/wearing surface with cracks and spalling around the perimeter in Span 8D.



Photo 4 Delaminated patch in the deck/wearing surface with hairline map cracking in the patch in Span 8D.



Photo 5 Typical longitudinal and map cracks located in the middle of the travel lane in Span 10D.



Photo 6 Area of scaling and abrasion in the wearing surface along the east side of the travel lane in Span 9D.

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Photo 7 Typical vertical cracking and discoloration in the concrete parapet along the length of the bridge.



Photo 8 Collision damage/scraping to the west parapet and steel railing in Span 9D.



Photo 9 Area of concrete scaling along the vertical face of the east parapet in Span 3D.



Photo 10 Area of minor deterioration and rust on the steel railing in Span 8D.



Photo 11 Collision damage to the attenuator at the Ramp D exit.



Photo 12 Heavy debris and vegetation present in the deck scuppers at Pier 7D.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

DECK INSPECTION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 -
CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

I-280,RAMP D over CHAMPLAIN NSRR.

Type of Service on: HIGHWAY



Photo 13 Heavy rust staining and efflorescence on the edge face of the pier end segments.



Photo 14 Disconnected drainage pipes and rusted clamps at Pier 4D.



Photo 15 Interior drainage pipe at Pier 1D with wet concrete, rust staining and efflorescence.



Photo 16 Typical condition of the expansion joints along the width of the roadway.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

SUPERSTRUCTURE INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

SUPERSTRUCTURE

(59) NBIS Superstructure Summary: 6

Recommended: 9

c14. Alignment (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
12	12				1.00

No areas of misalignment or distortion were noted.

c15.1 Beams/Girders (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
1572	1287	285			1.25

Numerous areas of unsound patches were observed in the lift holes located at the top flange/slab along the edges of the interior segment. A majority of these areas exhibited rust staining and efflorescence as well as spalled concrete and exposed reinforcement in some locations over the length of the bridge. See Photos 1 and 2. Other patches and construction joints in the interior segment exhibited efflorescence around the perimeters and some locations of delaminated concrete within these patches/joints. See Photo 3. One lift hole was not patched at the interior face and contained a large bolt that was embedded into the grout in Span 3D. Along the exterior web and bottom flange/slab, several delaminated and spalled areas and patches were noted along the length of the bridge at patch locations and joints. See Photo 4 and 5.

Longitudinal hairline to moderate cracking was present along both interior corner edges between the web and top flange/slab of every segment. These cracks varied in length and were typically 0.005 in. to 0.025 in. in width. Approximately half of the cracks exhibited efflorescence; however, based on previously installed marks, they did not appear to be actively leaching. Additional hairline vertical and longitudinal cracking was present along the interior and exterior webs, bottom and top flanges/slab of the box segments and construction/closure pour joints over the length of the bridge. Areas with efflorescent leaching and discoloration were noted at some of these locations. See Photos 6 and 7. The exterior pier end segments had typical hairline vertical and horizontal cracking on the edge face of the concrete near the drainage cap locations and additionally along the width of the box segment flanges. See Photo 8.

Voids were present in the segment construction/closure joints, both interior and exterior, varying in size and depth. See Photos 9 and 10. Spalls and delaminated areas were noted throughout the interior and exterior of the box segments and future exterior stressing blocks located at the top of the webs and along the floor slab. Some of the spall areas were greater than 1 in. in depth and contained exposed reinforcement.

Small areas of honeycombed concrete were also noted on the interior and exterior of the segments along the length of the bridge. One location in Span 2D along the diaphragm in the bottom flange/slab contained a 1 SF area of patched concrete at a hold down hole that was partially filled. See Photo 11.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches and spreadsheets.

c16. Diaphragm/Cross Frames (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
24	19	5			1.28

The interior diaphragm vertical faces exhibited typical hairline to moderate vertical and map cracking ranging from 0.005 in. to 0.030 in. in width. Efflorescence and leaching/discoloration were present at some locations although the areas did not appear to be active. See Photos 12 and 13. Several diaphragms additionally had areas of delaminated and unsound concrete on the vertical faces. See Photo 14.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for spreadsheet.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

SUPERSTRUCTURE INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

SUPERSTRUCTURE

c26. Bearing Devices (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
33		33			2.00

The plinths at Piers 3D and 4D exhibited typical areas of unsound, spalled or delaminated concrete with areas of moderate to severe cracking in over 5% of the bearing area over the length of the bridge.

A measured at Pier 4D gap between the pad and plinth concrete was observed and measured where the pad was not fully bearing on the concrete. The bearing gap was 5 in. in length and 4 in. in depth along the west edge of the west bearing, while the gap along the east edge of the east bearing measured 5 in. in length and 2 in. in depth.

The pedestal at the east bearing location on Pier 4D had areas of spalled concrete with portions extending underneath the pad location. The bearing pads on this pier were also racked to the west by 1/4 in. on the southwest bearing and 3/4 in. on the southeast bearing. See Photo 15. In addition, the north bearings at Pier 4D were contracted to within 1/4 in. from the end edge of the sliding plates. See Photo 16.

The east edge surface of the Pier 1D sliding plate had an area of rust over a 6 in. long section. See Photo 17.

A few bearings have strips missing (patch pin grooves) in the edge of the elastomeric pads. These grooves are used to hold the internal shims in place during the fabrication process and do not contribute structurally to the bearing pad.

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SUPERSTRUCTURE INSPECTION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

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Type of Service on: HIGHWAY



Photo 1 Typical lift hole patches with rust staining leaching from the holes.



Photo 2 Spalled concrete and exposed reinforcement at a lift hole in Span 10D.



Photo 3 Delaminated concrete and efflorescence in top flange patch located in Span 2D.



Photo 4 Delaminated concrete at exterior hold down patch in the bottom flange of Span 6D.



Photo 5 Spalled concrete at segment joint in Span 12D.



Photo 6 Area of efflorescence in the bottom flange and closure pour near bearing in Span 3D.

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SUPERSTRUCTURE INSPECTION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS

Sufficiency Rating: 96.5

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Photo 7 Longitudinal cracking in the top flange/slab concrete with heavy efflorescence.



Photo 8 Typical cracking along the width of the end pier segment flanges.



Photo 9 Typical interior void between segment joints.



Photo 10 Typical exterior void between segment joints.



Photo 11 Hold down hole in the bottom flange of the Span 2D segment partially filled with grout.



Photo 12 Typical cracking on the vertical face of the interior diaphragm.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

SUPERSTRUCTURE INSPECTION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

I-280,RAMP D over CHAMPLAIN NSRR.

Type of Service on: HIGHWAY



Photo 13 Cracking and efflorescence at the vertical face of the walk through area of the diaphragm at Pier 3D.



Photo 14 Area of delaminated concrete and cracking on the diaphragm at Pier 3D.



Photo 15 Spall in the east bearing pedestal at Pier 4D and pad leaning toward the west.



Photo 16 Pier 4D northeast bearing contracted to within 1/4 in. of the edge of the sliding plate.



Photo 17 Pier 1D steel sliding plate with an area of rust on the east edge.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

SUBSTRUCTURE INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

SUBSTRUCTURE

(60) NBIS Substructure Summary: 7

Recommended: 8

c33. Abutment Walls (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
29	21	8			1.36

The abutment wall exhibited areas of hairline to narrow width horizontal and map cracking with efflorescence present in some of the crack locations. See Photo 1. A diagonal crack was observed on the edge of the backwall with efflorescence noted along the length of the crack. See Photo 2.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches.

c35. Abutment Columns/Bents (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
1.0	1				1.00

The abutment bent exhibited areas of hairline vertical cracking.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches.

c34. Abutment Caps (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
	0				

c38. Pier Columns/Bents (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
12	12				1.00

Typical hairline to medium (0.040 in.) width vertical, horizontal and map cracking areas were present on the pier columns. Photo 3. A few small spalls and areas of delaminations were noted on the pier columns. See Photo 4.

Water was present in some of the interior voids of the pier columns. These locations were noted in the interior superstructure defect spreadsheet.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches and spreadsheet.

c36. Pier Walls (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
	0				

c37. Pier Caps (LF)

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SUBSTRUCTURE INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

SUBSTRUCTURE

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
120	100	20			1.23

Typical hairline to medium (0.030 in.) width vertical and map cracking areas were noted on the pier caps. See Photo 5.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches.

c39. Backwalls (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
	0				

c40. Wingwalls (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
2	2				1.00

Insignificant cracking in the cast-in-place reinforced concrete wall along the length of the approach slab.

c43. Slope Protection (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
1	1				1.00

No defects noted.

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SUBSTRUCTURE INSPECTION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

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Photo 1 Typical horizontal and map cracking along the full height of the Abutment 13D backwall.



Photo 2 Diagonal cracking with efflorescence on the east end of the Abutment 13D backwall.



Photo 3 Typical hairline to medium width vertical and map cracks on the pier columns.



Photo 4 1 ft. x 1 ft. x 2.5 in. deep spall near ground level on the Pier 9D column.



Photo 5 Typical hairline to medium width vertical cracking in the pier cap.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT
CULVERT INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

CULVERT

(62) NBIS Culvert Summary:

N

Recommended:

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CULVERT INSPECTION PHOTOS

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
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CHANNEL INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

CHANNEL

(61) NBIS Channel Summary:

N

Recommended:

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CHANNEL INSPECTION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 -
CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

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Type of Service on: HIGHWAY

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

SIGNS/UTILITIES INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

SIGNS/UTILITIES

(41) Open, Posted or Closed: A

c55. Signs (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
2	2				1.00

All signs (stop light warning and a speed limit) were in good condition with no notable defects.

c56. Sign Supports (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
2	2				1.00

The sign supports were in good condition with no notable defects.

c57. Utilities (LF)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
1502	1487	15			1.01

Bracket clips and fasteners for the interior electrical conduit had areas where they were disconnected or broken along the length of the bridge. A few locations along the conduit also exhibited broken and/or disconnected conduit at joints. See Photo 1.

Empty conduit was attached to the top flange/slab conduit running north from the junction box in Span 12D.

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SIGNS/UTILITIES INSPECTION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 -
CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

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Photo 1

Broken electrical conduit clip and conduit disconnected at joint in Span 4D.

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SUPPLEMENTAL INSPECTION

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 -
CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

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Type of Service on: HIGHWAY

SUPPLEMENTAL

c63. Post Tensioning End Cap (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
160	150	10			1.09

10 PT end cap locations were noted to have small void areas within the grout in the cap. These areas were determined and verified by gently tapping on the plastic end caps with a hammer. See Photo 1. A few end caps were observed to have missing bolts connecting the cap with the duct at the diaphragm.

The end caps and adjacent diaphragm concrete were covered with a black water-proofing material.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches and spreadsheets.

It would be recommended to remove the plastic PT caps or utilize a form of NDT/ultrasound to determine the exact extent and accuracy of the voids. With the caps being covered in waterproofing material and plastic, hollow areas within the cap were difficult to detect with certainty. In addition, the brittle nature of the plastic material could lead to cracking of the end caps if struck too hard with a hammer.

c64. Post Tensioning Segmental Box Internal (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
180	0	180			2.00

Numerous areas of unsound patches were typical in the lift holes located at the top flange/slab along the edges of the interior segment along the length of the bridge. A majority of these areas exhibited rust staining and efflorescence as well as spalled concrete and exposed reinforcement in some locations. See Photos 1 and 2 in the Superstructure section. Other patches and construction joints in the interior segment exhibited efflorescence around the perimeters and some locations of delaminated concrete within these patches/joints. See Photo 3 in the Superstructure section. In Span 3, one lift hole contained a large bolt that was embedded into the grout above and was not fully patched. See Photo 2.

Longitudinal hairline to moderate cracking was present along both interior corner edges between the web and top flange/slab of every segment. These cracks varied in length and were typically 0.005 in. to 0.025 in. in width. Approximately half of the cracks exhibited efflorescence; however, based on previously installed marks, they did not appear to be actively leaching. Additional hairline vertical and longitudinal cracking was present along the interior webs, bottom and top flanges/slab of the box segments and construction/closure pour joints over the length of the bridge. Areas with efflorescent leaching and discoloration were noted at some of these locations. See Photos 6 and 7 in the Superstructure section.

Voids were present in the segment construction/closure joints varying in size and depth. See Photo 9 in the Superstructure section. Spalls and delaminated areas were noted throughout the interior of the box segments and future exterior stressing blocks located at the top of the webs and along the floor slab. Some of the spall areas were greater than 1 in. in depth and contained exposed reinforcement.

Small areas of honeycombed concrete were also noted on the interior of the segments along the length of the bridge. One location in Span 2D along the diaphragm in the bottom flange/slab contained a 1 SF area of patched concrete at a hold down hole that was partially filled. See Photo 11 in the Superstructure section.

The diaphragm vertical faces exhibited typical hairline to moderate vertical and map cracking. Efflorescence and leaching/discoloration were present at some locations although the areas did not appear to be active. See Photos 12 and 13 in the Superstructure section. Several diaphragms additionally had areas of delaminated and unsound concrete on the vertical faces. See Photo 14 in the Superstructure section.

A few of the grates covering the access holes in the bottom flange/slab were unstable when load was applied by standing on the edges.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches and spreadsheets.

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SUPPLEMENTAL INSPECTION

Structure File Number: 4805879 Inventory Bridge Number: LUC 00280 04.340 DR Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS
Sufficiency Rating: 96.5 Date Built: 6/24/2007
District: 02 Place Code (FIPS): TOLEDO I-280,RAMP D over CHAMPLAIN NSRR. Type of Service on: HIGHWAY

SUPPLEMENTAL

c65. Post Tensioning Segmental Box External (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
180	130	50			1.37

Along the exterior web and bottom flange/slab, multiple delaminated, cracked and spalled patches and areas were noted along the length of the bridge. See Photo 5 in the Superstructure section. Additional hairline map and longitudinal cracking was observed along the exterior webs, bottom flanges/floor slabs and top overhang flanges of the box segments over the length of the bridge. See Photo 4 in the Superstructure section.

Hairline cracking in the exterior pier segments were typical on a majority of the elements. These cracks ranged in width and length with some exhibiting leaching of efflorescence and rust staining and were typically located along the centerline of the segment. See Photo 8 in the Superstructure section.

Voids were present in the segment closure joints, varying in size and depth. See Photo 10 in the Superstructure section. Small areas of honeycombed concrete was also noted on the exterior of the segments along the length of the bridge.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches and spreadsheets.

c66. Post Tensioning External Tendon (EA)

Total Quantity	State 1	State 2	State 3	State 4	Transition Rating
80	80				1.00

External tendons were in good condition with minimal notable defects. A few areas of rusting were observed on the steel PT ducts and clamps connecting the sheathing to the ducts. See Photo 3.

An area of the PTFE sheathing was recently patched in Span 7D due to a previously noted gouge in the tendon. No defects or issues were noted at this location and the patch appeared to be adequate. See Photo 4.

Numerous future stressing ducts in the diaphragms exhibited moderate to heavy rust with staining leaching down the concrete in some locations. See Photo 5.

As noted above in the PT end cap section, it would be recommended to have a form of NDT or ultrasound be utilized to determine the exact extent and accuracy of any voids in the tendons.

For a detailed layout and description of defects found during the inspection, refer to the asset file section for sketches and spreadsheets.

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SUPPLEMENTAL INSPECTION PHOTOS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 - CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

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Type of Service on: HIGHWAY



Photo 1 Small void in the PT end cap of T3 tendon and missing cap bolt at Pier 2D.



Photo 2 Large bolt encased in the lift hole concrete with the hole not patched.



Photo 3 Typical rust on clamps connecting PT ducts with sheathing.



Photo 4 Patch added to the tendon in Span 7D due to previously documented gouge.



Photo 5 Typical moderate rusting on the future PT ducts located in the diaphragms.

2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

CRITICAL FINDINGS

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 -
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2017 LUC-00280-0434_DR (RAMP D) ROUTINE INSPECTION REPORT

REVIEW

Structure File Number: 4805879

Inventory Bridge Number: LUC 00280 04.340 DR

Bridge Type: 1 - CONCRETE/3 - BOX BEAM/2 -
CONTINUOUS

Sufficiency Rating: 96.5

Date Built: 6/24/2007

District: 02 Place Code (FIPS): TOLEDO

I-280,RAMP D over CHAMPLAIN NSRR.

Type of Service on: HIGHWAY