# GROSSE ILE PARKWAY OVER TRENTON CHANNEL STRUCTURE NUMBER 12066 BRIDGE EVALUATION



AUGUST 2022

Prepared for:

TOWNSHIP OF GROSSE ILE

DEREK M THIEL, TOWNSHIP MANAGER 9601GROH ROAD GROSSE ILE, MICHIGAN 48138

PREPARED BY:

THE MANNIK & SMITH GROUP, INC.

1771 NORTH DIXIE HIGHWAY MONROE, MICHIGAN 48162





August 30, 2022

Mr. Derek Thiel Township Manager/DPS Director 9601 Groh Road Grosse Ile, Michigan 48138

Re: **Bridge Evaluation** 

**Grosse Ile Parkway over Trenton Channel** 

Dear Mr. Thiel:

The Mannik & Smith Group, Inc. (MSG) has completed our review of the bridge and associated documents at Grosse Ile Parkway over the Trenton Channel. The purpose of the study was to evaluate the bridge's general condition and to assess if the recent repairs made will provide 30 years of anticipated useful life. A letter report is included herein.

Please call if you have any questions.

Sincerely,

Cliff Elling, PE

My letty

Structural Engineer

Christopher M. Zangara, P.E. Vice President / Sr. Associate

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#### **EXECUTIVE SUMMARY**

The Township of Grosse IIe retained the Mannik & Smith Group to gather information and complete a report that summarizes our observations and our document reviews of the Grosse IIe Parkway bridge (the bridge) over the Trenton Channel. Our Report also makes assessments regarding the bridge condition and if the recent bridge repairs will provide 30 years of anticipated useful life.

This report provides general background information, a definition of bridge inspection terms and condition ratings, as well as observations during a cursory walk-thru inspection of the bridge. Bridge information was obtained from Wayne County thru Freedom of Information Act (FOIA) requests, field observations, and from other public sources. Information obtained from Wayne County FOIA requests is provided in Appendix A.

Repair work that has recently been performed on the bridge superstructure and substructure has allowed the bridge to remain open to traffic with a 40/65/80 posting, and allowed the structure to continue to satisfy present service conditions. Recent bridge inspection documentation appears to be in conformance with National Bridge Inspection Standards (NBIS). Based on these recent bridge inspection reports, the bridge substructure is rated a 5, **FAIR CONDITION** and the bridge superstructure is rated a 4, **POOR CONDITION**. Based on our extensive experience and understanding of bridge material (e.g., concrete and steel) deterioration rates, it is our professional opinion that – unless additional bridge repairs are performed – the recent bridge repairs may not be adequate for 30 years of safe bridge performance.

The **bridge substructure** repair work to-date meets present service conditions. The information provided suggests that portions of the bridge substructure are in need of repair, protection, monitoring, or possibly replacement. We believe that this work is necessary for extending the useful life of the bridge for 30 years.

The **bridge superstructure** repair work to-date, combined with rigorous and comprehensive program of continuous inspection, maintenance, repair, and strengthening, may allow the bridge superstructure to satisfy service conditions and provide 30 years of useful life.

In order to provide 30 years of additional useful life, it is our professional opinion that the substructure and superstructure should be repaired to a condition rating of 6, **SATISFACTORY CONDITION**, combined with continued NBIS bridge inspections, repairs, and strengthening.

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#### 1.0 **GENERAL INFORMATION AND DATA COLLECTION**

Information about the existing Grosse Ile Parkway bridge over the Trenton Channel was obtained from Wayne County thru Freedom of Information Act (FOIA) requests in May, June, and July 2022. The information obtained thru Wayne County FOIA requests is listed below and provided in Appendix A:

- MDOT Structure Inventory and Appraisal(SIA), 1 page, 11/23/2021
- MDOT Bridge Safety Inspection Report (BSIR), 14 pages, 6/30/2022
- Fracture Critical Inspection Report (SIA #92-A), 93 pages,11/23/2021
- Channel Cross Sections at the bridge, 4 pages, 11/9/2021
- Underwater Bridge Inspection Report, 88 pages, 11/9/2021
- MDOT Bridge Load Rating Assumptions, 1 page, 11/23/2021
- MDOT Bridge Load Rating Summary, 1 pages, 11/23/2021
- Load Rating Results, 3 pages
- Other Special Inspection Report (SIA #92-C), 1 page,4/4/2022, (created to inspect bridge elements that caused the bridge to be posted)

For security reasons, the existing bridge plans and existing bridge rehabilitation plans are unavailable to the public thru FOIA requests, and MSG was unable to obtain these documents.

In addition to the above FOIA data, other information about the bridge was obtained from Grosse Ile Township, Wayne County's website, the website BridgeHunter.org (historic bridge database), and from Detroit WXYZ news reports. Additional sources of material about bridge inspection policy were obtained from current manuals for inspection and evaluation of Michigan bridges including:

- MDOT's Bridge Analysis Guide
- Michigan Structure Inventory and Appraisal Coding Guide,
- The AASHTO Manual for Bridge Evaluation
- and the National Highway Institute bridge inspection training resources

#### 2.0 **DEFINITION OF BRIDGE INSPECTION TERMS**

For purposes of this report, it may be helpful to identify the nomenclature pertaining to bridge inspections:

National Bridge Inspection Standards (NBIS): Federal regulations establishing requirements for inspection procedures, frequency of inspections, qualifications of personnel, inspection reports, and maintenance of bridge inventory.

National Bridge Inventory (NBI): an aggregation of structure inventory and appraisal data collected by each state to fulfill the requirements of the NBIS.

**Structurally Deficient**: A bridge is structurally deficient if significant load carrying elements are in poor condition (rating 4 or less) due to deterioration and/or damage, or if the adequacy of the waterway opening provided by the bridge is insufficient to the point of causing intolerable traffic interruptions. Structurally deficient is a legacy classification that is no longer needed within the Federal-aid Highway Program.

Functionally Obsolete: Bridges are functionally obsolete if they have deck geometry, load carrying capacity, horizontal or vertical clearance, approach roadway alignment, waterway adequacy issues that no longer meet the current design standard. Functionally obsolete is a legacy classification that is no longer recorded within the Federal-aid Highway Program.

**Fracture Critical**: A bridge member is considered fracture critical if it is a steel member in tension or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse. These members are also referred to as **non-redundant steel tension members**.

**Superstructure**: The portion of a bridge above the bearing devices. Bridge superstructures would generally include, beams, girders, floor beams, cross frames and truss members.

**Substructure**: The portion of the bridge below the bearings. Bridge substructures typically include abutments, piers, footings, and foundation piling.

**Built up Riveted Girder**: large I beam members fabricated from plates and angles. These girders were fabricated when the largest rolled beams were still not large enough as required by design.

**Riveted Boxes**: large rectangular shapes fabricated from plates, angles, or channels. These boxes are used for truss chord members.

**Load Rating**: A load rating is used to determine the usable live load capacity of a bridge. Each member of a bridge has a unique load rating, and the bridge load rating represents the most critical one. Bridge load rating is generally expressed in units of tons. Typically only the bridge superstructure is load rated, capacity (and useful remaining life) of the bridge substructure is usually based on good engineering judgement.

**Inventory Rating**: A load rating based on the customary design vehicle that can utilize the structure for an indefinite period of time.

**Operating Rating**: A load rating based on the maximum permissible live load to which a structure may be subjected.

**Bridge Posting**: Bridge loads are posted to warn the public of the load capacity of a bridge, to avoid safety hazards, and to adhere to federal law. Federal regulation requires highway bridges on public roads to be inspected every 24 months. Federal regulation also requires bridges to be posted when the state's legal loads exceed the operating rating or equivalent rating for the bridge. Bridge postings show the maximum allowable load by law for single vehicles and vehicle combinations while still maintaining an adequate margin of safety.

**Structure Inventory and Appraisal Form (SI&A)**: A summary of bridge data required by NBIS. The bridge data on this form pertains to the overall bridge data such as number of spans, span lengths, deck width, year built, etc. and is generally not subject to change.

**Bridge Safety Inspection Report (BSIR)**: A condition report of bridge and bridge elements based on observations and measurements needed to determine the physical and functional condition of the bridge, to identify any changes from the initial or previously recorded conditions, and to ensure that the structure continues to satisfy present service conditions. The data in the BSIR may be subject to change with each inspection cycle. The frequency of the safety inspection are set by the NBIS. The bridge inspector assigns a descriptive condition rating of "good", "fair", or "poor" based on physical deficiencies found on the individual element. The following guidelines are used in establishing an element's condition rating:

- Good element is limited to only minor problems.
- **Fair** structural capacity of element is not affected by minor deterioration, section loss, spalling, cracking, or other deficiency.
- **Poor/Critical** structural capacity of element is affected or jeopardized by advanced deterioration, section loss, spalling, cracking, or other deficiency.

The following general numerical condition rating guidelines are used in evaluating various bridge element's existing condition rating:

- N NOT APPLICABLE
- 9 **EXCELLENT CONDITION**
- 8 **VERY GOOD CONDITION** no problems noted.
- 7 **GOOD CONDITION** some minor problems.
- 6 **SATISFACTORY CONDITION** structural elements show some minor deterioration.
- 5 **FAIR CONDITION** all primary structural elements are sound but may have minor section loss, cracking, spalling, or scour.
- 4 **POOR CONDITION** advanced section loss, deterioration, spalling, or scour.
- 3 **SERIOUS CONDITION** loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
- 2 CRITICAL CONDITION advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
- 1 "IMMINENT" FAILURE CONDITION major deterioration or section loss present in critical structural components, or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic but corrective action may put bridge back in light service.
- 0 **FAILED CONDITION** out of service; beyond corrective action.

**Fracture Critical Inspection Report**: A condition report of fracture critical steel bridge elements based on a very detailed, close visual "hands-on" inspection in the field. The inspection and report typically include the identification of all FCM members

**Bridge Underwater Inspection Report**: A condition report of underwater portions of the bridge substructure elements and channel based on probing, wading, diving, or some combination of these methods. The frequency of the underwater inspections are set by the NBIS

**Bridge Special Inspection Report**: A condition report of a particular known or suspected deficiency, such as foundation settlement or scour, member condition, and the public's use of a load posted bridge. The frequency of special inspections are at the discretion of the Bridge Owner or the responsible agency.

#### 3.0 ABUTMENT AND PIER IDENTIFICATION

The abutment and pier numbering sequence used in this report is the same as that used in the recent bridge inspection documents. Figure 1 on the next page identifies the abutments and piers.

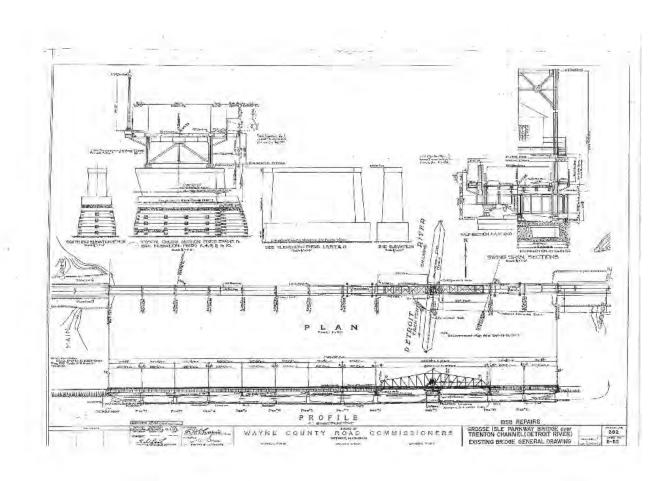


Figure 1 Location of the abutment and piers

The abutment and piers are also described below:

**Abutment A**, constructed in 1931, reinforced concrete counterfort gravity type

Pier 1, constructed in 1931, footing supporting a solid unreinforced concrete wall type pier

Pier 2, original 1873 cribbing supporting a reinforced concrete base and pier stem constructed in 1931

**Pier 3**, constructed in 1931, footing supporting a solid unreinforced concrete wall type pier.

Pier 4, original 1873 cribbing supporting a reinforced concrete base and pier stem constructed in 1931

**Pier 5**, constructed in 1931, footing supporting a solid unreinforced concrete wall type pier.

Pier 6, original 1873 cribbing supporting a reinforced concrete base and pier stem constructed in 1931

**Pier 7**, constructed in 1931, footing supporting a solid unreinforced concrete wall type pier.

**Pier 8**, rest pier for swing span, original 1873 cribbing supporting a reinforced concrete base and pier stem constructed in 1931

**Pier 9**, pivot pier for swing span, original 1873 cribbing supporting a reinforced concrete base and pier stem constructed in 1931

**Pier 10**, rest pier for swing span, original 1873 cribbing supporting a reinforced concrete base and pier stem constructed in 1931

**Pier 11**, constructed in 1931, footing supporting a solid unreinforced concrete wall type pier.

**Abutment B**, constructed in 1931, reinforced concrete counterfort gravity type

#### 4.0 BACKGROUND INFORMATION ABOUT THE GROSSE ILE BRIDGE

A brief description of the existing Grosse Ile Parkway bridge over the Trenton Channel is provided below. This background information is based on data listed in Section 1, GENERAL INFORMATION, of this report. Although this background information is not exhaustive or comprehensive, as far as we can determine, it is accurate and correct.

Grosse Ile, Michigan was once served by the Canada Southern Railway, which later became part of the Michigan Central Railroad. Canada Southern Bridge Company, a subsidiary of the Canada Southern Railway, constructed a single-track iron rail bridge in 1873 connecting the Island to the mainland of Michigan. This structure was built by Augustus J. Dupuis Company of Detroit. East of the island, railroad cars would be ferried across the river to Canada, where they would travel to Buffalo and other eastern US cities. This rail bridge, shown in Figure 2, would carry rail, automobile, and bicycle traffic until 1929,



Figure 2 Existing 1873 Post Truss single-track railroad bridge between Grosse Ile and mainland Michigan

The rail bridge had five 198 ft. long fixed spans and one 340 ft. long swing span over the navigable Trenton Channel. The overall bridge length is 1,343 ft. The bridge spans were iron Post Trusses supported by timber crib / limestone piers and abutments. A plan and elevation of the single-track iron rail bridge is shown in Figure 3, which shows the

five fixed span piers and the one pivot pier. (this drawing was developed in 1930 by the Wayne County Board of Road Commissioners as part of reconstruction work for this bridge, as described herein.)

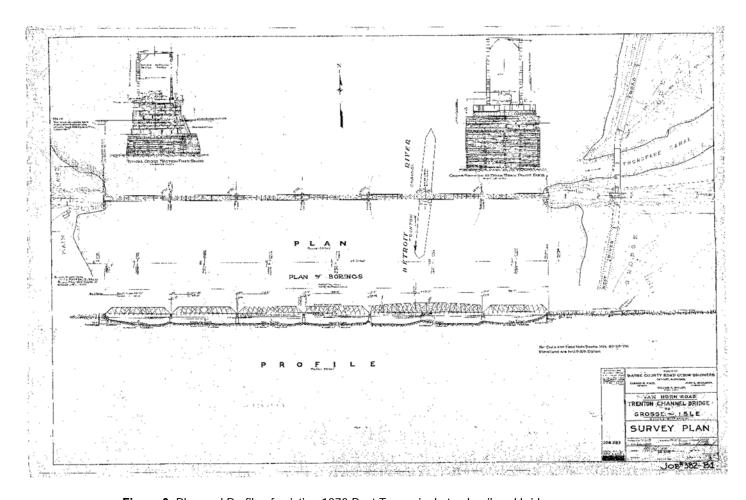


Figure 3 Plan and Profile of existing 1873 Post Truss single track railroad bridge

Three piers supporting the fixed spans and the two rest piers on either side of the swing span consist of 10 ft. high, 12 in. timber cribbing from the top of limestone to 7 ft. below the water surface. The timber cribbing is filled with loose rock. The timber cribbing supports 15 ft. 6 in. of coursed limestone block. On top of the limestone block is a 12 in. sandstone cap. The sandstone cap supports the truss bearings. A cross section view of the fixed span piers is shown in Figure 4.

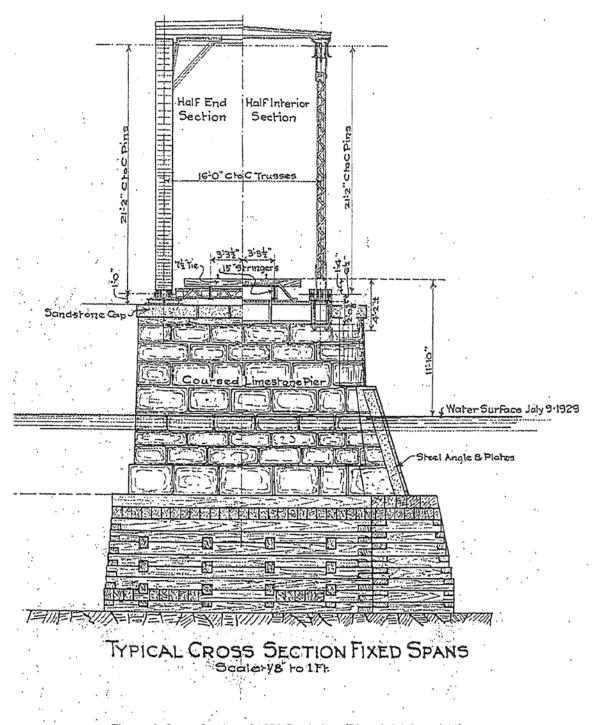


Figure 4 Cross Section of 1873 fixed piers (Piers 2,4,6,8, and 10)

The pivot pier consists of 20 ft. high, 12 in. timber cribbing from the top of limestone to 2.5 ft. below the water surface. The timber cribbing is filled with loose rock. The timber cribbing supports 6 ft. of coursed limestone block. On top of the limestone block the steel drum for the swing span. A cross section of the pivot pier for the swing span is shown in Figure 5.

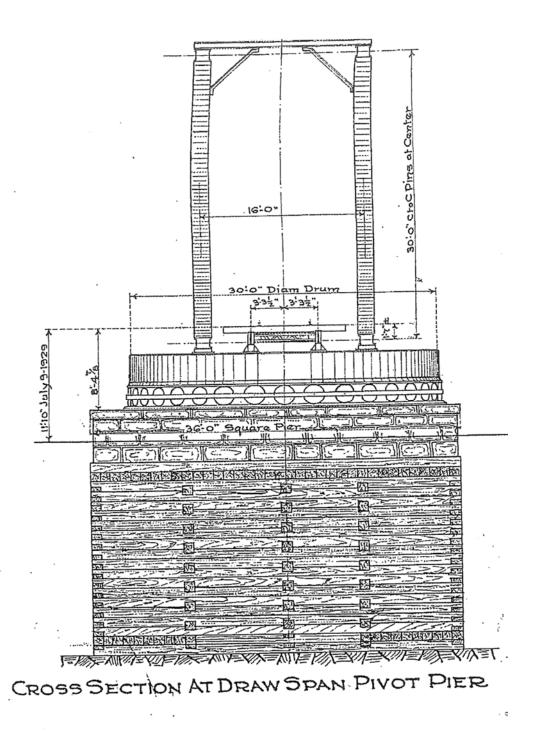
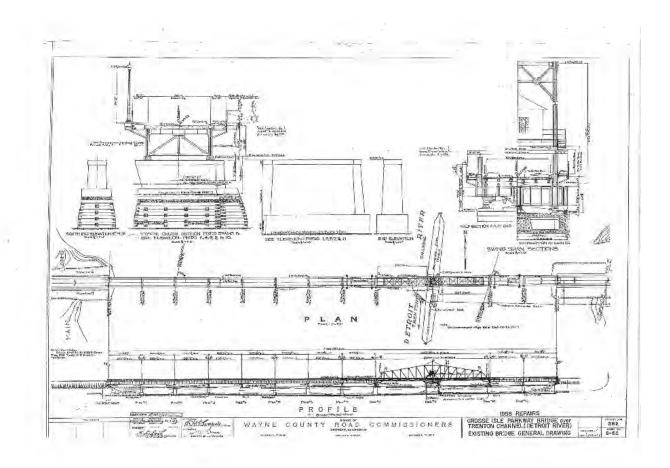


Figure 5 Cross Section of 1873 draw span pier (Pier 9)

The railroad line in Grosse Isle remained operational until 1929. After that, Wayne County converted the bridge crossing the Trenton Channel into a vehicular and pedestrian bridge.

The rehabilitated bridge has 10 100 ft. 2 in. long fixed spans and one 340 ft. long swing span over the navigable Trenton Channel. The overall bridge length is 1346 ft. and carries two lanes of vehicular traffic with pedestrian sidewalks on each fascia. A plan and elevation view of this bridge is shown below in Figure 6.



**Figure 6** Plan and Profile of 1929 rehabilitated bridge for vehicles and pedestrians

The fixed bridge spans consist of steel a girder-floorbeam-stringer system. The two girders are built-up riveted members and steel cantilever brackets support the pedestrian sidewalks. The swing span over the navigable channel consists of a steel camelback through truss bridge with a Pratt configuration. This bridge was the last through truss swing bridge to be constructed in Michigan. The steel for the bridge was fabricated by Duffin Iron Company of Chicago, Illinois. Rossen, Evans, and Rossen of Chicago, Illinois are noted as engineers on the shop drawings for the bridge.

When the new Grosse Ile Bridge was built, the existing iron Post Trusses and the existing abutments were removed. At the piers, the coursed limestone and sandstone over the timber cribbing was removed, but the timber cribbing was retained as a support for the new bridge.

At the three fixed span piers and the two rest piers for the swing span, a new reinforced concrete base and pier stem was constructed over the timber cribbing to form a support for new approach spans. A typical cross section of the rebuilt fixed span piers is shown in Figure 7.

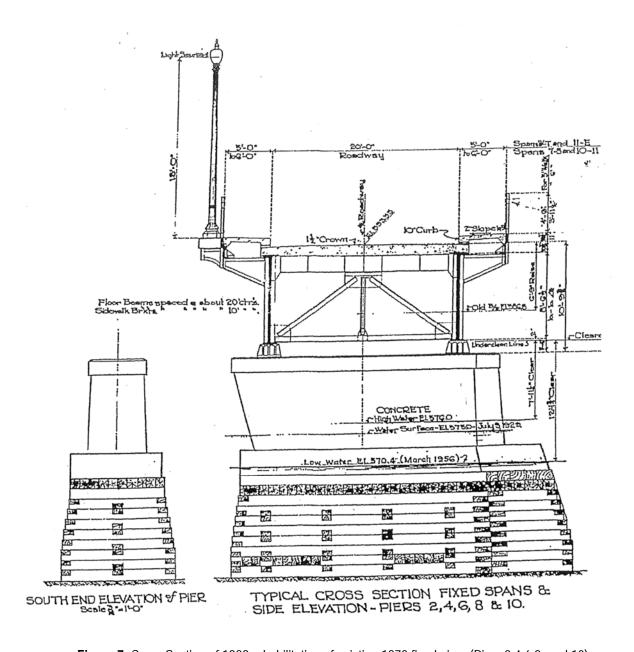


Figure 7 Cross Section of 1929 rehabilitation of existing 1873 fixed piers (Piers 2,4,6,8, and 10)

At the pivot pier, a reinforced concrete circular cap was constructed over the existing timber cribbing to form support for the new swing span. This rebuilt pivot pier is shown in Figure 8.

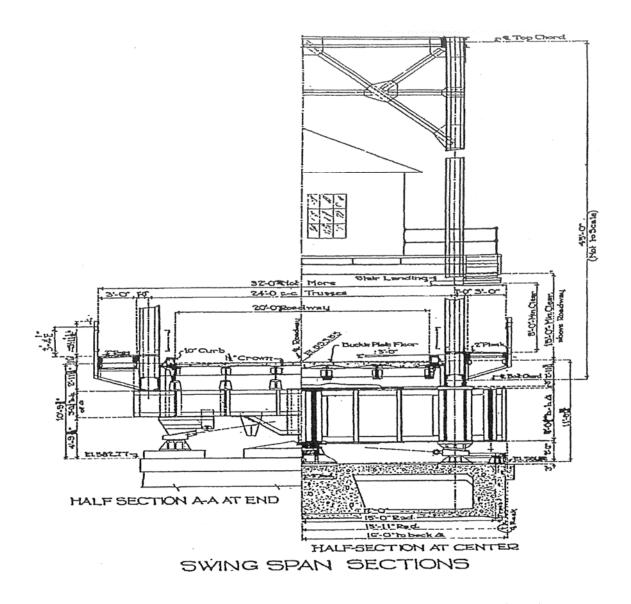


Figure 8 Cross Section of 1929 rehabilitation of existing 1873 pivot pier (Pier 9)

In between the five approach piers, four additional piers were constructed to make the shorter approach spans. These additional piers have a 9 ft. 7 in. wide, 33 ft. 8 in. long by 11 ft. thick concrete footing. The footing bears on limestone bedrock and supports a solid unreinforced concrete wall type pier. These additional piers are shown in Figure 9.

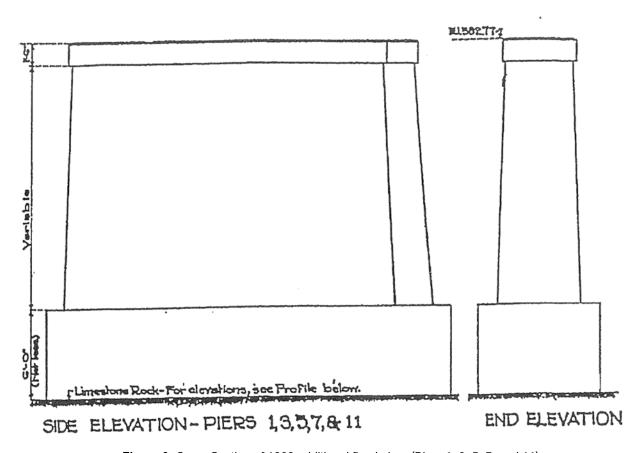


Figure 9 Cross Section of 1929 additional fixed piers (Piers 1, 3, 5, 7, and 11)

At the abutments, a new reinforced concrete counterfort gravity type abutment was constructed. This bridge, which is shown on the following page, is owned by the Wayne County Road Commission and was opened to traffic on September 3, 1931.



Figure 10 Aerial view of bridge looking north towards mainland Michigan

In 1958, stabilization and repairs were made to the rock filled rest piers (Piers 8 and Pier 10) and on the rock filled pivot pier (Pier 9). Two cores were taken thru each rest pier to solid limestone and four cores were taken thru the pivot pier to solid limestone. It was discovered that the Pier 8 timber cribbing was founded above the top of bedrock on blue clay and soft rock. The Pier 9 timber cribbing was founded above the top of bedrock on soft rock, and that portions of the Pier 10 timber cribbing was founded on bedrock and portions were founded above bedrock on gravel, cinders, and mud. ¾ in. to 3 in. wide gaps were found in the existing 12 in. timber cribbing. The repairs included installing timber sheeting around the piers, installing 1.25 in, diameter dowels from the top to cap to 12 ft. into the limestone, installing timber sheeting around the perimeter of the piers and pressure grouting the voids in the rock fill.

The bridge deck was replaced in 1979. It is not clear what portions of the deck were replaced. During much of the 1979 closure period, one lane of traffic was provided across the bridge. At the times when the span was completely closed, vehicle access to and from the Grosse IIe was via the Grosse IIe Toll Bridge.

An underwater inspection was performed on the bridge in 2007. At that time, it was recommended to perform underwater inspections at 36-month intervals. Wayne County completely closed the bridge to vehicle traffic from May 2, 2007, until December 21, 2007 to enable the replacement of the bridge superstructure components. Approach span floorbeams were replaced, the railings on the swing span were replaced, and approach railings were replaced. It is not clear what other members were repaired or replaced.

In 2017, an in-depth structural, mechanical, electrical, and underwater inspection was performed.

On August 30, 2019, a structural, mechanical, and electrical inspection of the bridge was completed. On November 12, 2019, Wayne County received notice that the bridge's load rating was being dropped to zero. The County closed the bridge on November 13, 2019, installed 10 steel plates supporting four floor beams, and reopened the bridge a week later.

The Grosse Ile Parkway Bridge closed for repairs and rehabilitation on May 2020 until December 2021 for repairs. Wayne County DPS undertook a project to repair the steel superstructure in May 2020. C.A. Hull was the primary contractor for this over 7 million Federal Highway Administration contract. The project began in May 2020. In November 2020, during the course of the superstructure repairs, a scheduled underwater inspection revealed deterioration to underwater piers. Upon recommendations of the engineer, the bridge was closed to traffic and the work by C.A. Hull was suspended. A separate contract was undertaken to repair Piers 2, 4, 6, 8, 9, and 10. The 9.4 million dollar contract for the repairs was awarded to J.F. Brennan Co. and the work involved jacketing the piers 2, 4, 6 with vinyl sheeting and jacketing Piers 8, 9, and 10 with steel sheeting. The substructure work also included grouting the voids between the sheet piling and the timber cribbing, grouting voids in the loose rock fill, and installing grout bags on the riverbed around the perimeter of Piers 2, 4, 6, and 10. Pier repair work began in May 2021 and was completed in November 2021. C.A. Hull was then able to complete the superstructure repairs, and the bridge was open to traffic in December 2021.

#### 5.0 FINDINGS DURING SITE INSPECTION

A site inspection of the Grosse Ile bridge was performed on Friday, August 12, 2022 by the authors of this report. The condition of the bridge was evaluated from the level of the pedestrian walkway and riverbanks only. MSG agrees that the condition of the bridge substructure and superstructure, and the condition ratings as presented in the bridge BSIR is accurate and correct.

The bridge substructure units at Piers 2, 4, and 6 produce a notice dip in the road surface. Cracks and spalls consistent with the bridge BSIR were observed on exposed portions of the concrete pier caps. The timber fender protection system at Pier 9 had heavy vegetation growth and appeared to be sunken in a state of disrepair. The bridge superstructure had heavily corroded steel members and connections. The bridge approach walkway, curbs, sidewalks, deck surface, and parapet, were in satisfactory or good condition.

#### 6.0 EVALUATION OF EXISTING DATA

#### **Bridge Substructure**

The bridge substructure is scheduled for underwater inspections on a 24-month cycle. Given the age and observed deterioration, this inspection frequency appears prudent.

The November 23, 2021 Bridge Safety Inspection Report rated the substructure a 5, **FAIR CONDITION**. In the November 9, 2021 underwater inspection, the even numbered piers, Piers 2, 4, 6, 8, 10 were rated 5, **FAIR CONDITION**. These piers should be continued to be monitored for movement / settlement, or degradation of the pier repairs or streambed. Piers 1, 3, 5, 7, 9, and 11 were rated 4, **POOR CONDITION** because of exposure of the vertical face of the footing. All the piers were noted to have spalling, delamination, scaling, and vertical and horizontal cracks. In our opinion, the 6 ft. high face of pier 1, 3, 5, 7, and 11 footings were designed to be exposed, as shown on the 1929 profile view in Figure 6, and the amount of exposure does not appear to be particularly concerning. The observed cracking, spalling, and delamination on the faces of these plain concrete piers is of concern.

The November 23, 2021 Bridge Safety Inspection Report was performed after superstructure and superstructure repairs were complete, but prior to opening the bridge to traffic on December 3, 2021. The BSIR indicated that the bridge dips at the even numbered piers. This vertical alignment problem should be corrected.

The November 9, 2021 underwater inspection noted that substructure repairs (concrete patching, epoxy injection of cracks) on Piers 2, 3, 4, 5, 6, 7, 10, and 11 need to be performed. This pier repair work was shown on the construction plans, but apparently was not performed. The even numbered piers, Pier 1, 3, 5, 7, and 11 may be

constructed from plain concrete, and this repair work is necessary to protect the concrete from further rapid degradation.

The November 9, 2021 underwater inspection also noted that the timber pier protection system at the pivot pier, Pier 9 should be replaced or retrofitted. The pivot pier is in the navigable waterway and requires a fender protection system. If this protection system is in a state of disrepair, then the pivot pier, may be vulnerable to vessel impact damage. Piers 8 and 10 are also in the navigable channel but do not have a fender protection system. Piers 8 and 10 may need a protection system as well.

It is also worth noting that the 1958 pier cores at Piers 8, 9, and 10 established that the timber cribbing was not completely founded on limestone. Repairs were made in 1958 to Piers 8, 9, and 10 to anchor the piers to limestone with metal rods, and to grout voids in the rock fill. It may be reasonable to conclude that the timber cribbing at Piers 2, 4, and 6 may not be completely founded on limestone either. It is unknown if similar anchor type repairs were made to Piers 2, 4 and 6. The November 9, 2021 underwater inspection noted that it is necessary to continue to monitor pier elevations to check for settlement. This may indicate that pier settlement may be an ongoing.

The information provided would suggest that portions of the **bridge substructure** is in need of repair, protection, monitoring, or possibly replacement. In addition, some piers appear to be vulnerable to vessel impact. The amount of outstanding substructure repair and protection work is significant.

#### **Bridge Superstructure**

The bridge superstructure is scheduled for routine inspections on a 12-month cycle. Given the age and observed deterioration, this inspection frequency appears prudent.

Wayne County has a load rating on file. The controlling member for the load rating analysis is floorbeam 7W on the moveable span. The controlling condition is bending. The load rating accounts for the existing member section loss due to deterioration. The bridge has been posted at 40/65/80, which is satisfactory for current service conditions.

The November 23, 2021 Bridge Safety Inspection Report rated the superstructure members a 4, **POOR CONDITION**. The approach span main girders have heavy rust, scale, and holes thru the web plates, the stringers had areas of heavy rust and section loss, and the lateral wind bracing has rust at the connection plates and several lateral members are broken. Truss members below the level of the roadway have heavy corrosion. Heavy steel deterioration on main bridge members will require ongoing repairs, strengthening, and routine bridge maintenance. A 90 year old, steel, fracture critical structure with an open steel grate deck will require a rigorous and comprehensive program of continuous inspection, maintenance, repair, and strengthening in order for the bridge superstructure to continue to satisfy present service conditions.

#### 7.0 CONCLUSIONS AND RECOMMENDATIONS

Repair work that has recently been performed on the bridge superstructure and substructure allows the bridge to remain open to traffic with 40/65/80 posting, and allows the structure to continue to satisfy present service conditions. Recent bridge inspection documentation appears to be in conformance with National Bridge Inspection Standards (NBIS). Based on these recent bridge inspection reports, the bridge substructure has a condition rating of 5, **FAIR CONDITION** and the bridge superstructure has a condition rating of 4, **POOR CONDITION**. It can be concluded, based on our experience and understanding of bridge material deterioration rates, that without further repairs, the recent bridge repairs may not be adequate for 30 years.

The existing **bridge substructure** repair work to date allows the bridge to satisfy present service conditions. The information provided would suggest that portions of the bridge substructure are presently in need of repair,

protection, monitoring, or possibly replacement, and this work is necessary in order to consider extending the useful life of the bridge for 30 years.

The existing **bridge superstructure** repair work to date combined with rigorous and comprehensive program of continuous inspection, maintenance, repair, and strengthening, may allow the bridge superstructure to continue to satisfy present service conditions and provide 30 years of additional useful life.

In our opinion, in order to provide 30 years of additional useful life, it is preferred to repair the substructure and substructure to a condition rating of 6, **SATISFACTORY CONDITION**, combined with continued NBIS bridge inspections, repairs, and strengthening.

# APPENDIX A INFORMATION OBTAINED THRU WAYNE COUNTY FOIA REQUESTS





#### **STR 12006** STRUCTURE INVENTORY AND APPRAISAL **MDOT Structure ID Structure Condition Facility** Latitude / Longitude **GROSSE ILE PARKWAY** 42.1273 / -83.173 82200010000B020 Poor Condition(4) **Feature** Length / Width / Spans Owner TRENTON CHANNEL 1,345.88 / 31.8 / 12 County: Wayne(82) Built / Recon. / Paint / Ovly. **TSC Operational Status** Location 1932 / 2007 / 1978 / P Posted for load(406580) **GROSSE ILE** Taylor(25) Region / County Material / Design **Last NBI Inspection** Scour Evaluation Metro(7) / Wayne(82) 4 Steel Continuous / 17 11/23/2021 / 6SAN 4 Stable, needs action Movable-Swing **Bridge History, Type, Materials** Route Carried By Structure(ON Record) **Route Under Structure (UNDER Record)** 27 - Year Built 5A - Record Type 5A - Record Type 1932 106 - Year Reconstructed 2007 5B - Route Signing 4 5B - Route Signing 202 - Year Painted 1978 5C - Level of Service 5C - Level of Service 203 - Year Overlay 5D - Route Number 02057 5D - Route Number 5E - Direction Suffix 5E - Direction Suffix 43 - Main Span Bridge Type 17 4 0 44 - Appr Span Bridge Type 3 03 10L - Best 3m Unclr-Lt 0 0 10L - Best 3m Unclr-Lt 77 - Steel Type 10R - Best 3m Unclr-Rt 10R - Best 3m Unclr-Rt 99 99 78 - Paint Type 2 PR Number PR Number 79 - Rail Type 4 Control Section Control Section 80 - Post Type 0 11 - Mile Point 0 11 - Mile Point 12 - Base Highway Network 107 - Deck Type 3 12 - Base Highway Network 0 13 - LRS Route-Subroute 13 - LRS Route-Subroute 108A - Wearing Surface 0000016924 07 0 108B - Membrane 19 - Detour Length 19 - Detour Length 0 124 20 - Toll Facility 20 - Toll Facility 108C - Deck Protection ი 3 26 - Functional Class 26 - Functional Class 16 **Structure Dimensions** 28A - Lanes On 28B - Lanes Under 34 - Skew 0 29 - ADT 22180 29 - ADT 35 - Struct Flared Ν 30 - Year of ADT 2007 30 - Year of ADT 45 - Num Main Spans 2 32 - Appr Roadway Width 42B - Service Type Under 5 40 46 - Num Apprs Spans 10 32A/B - Ap Pvt Type/Width 39.99 47L - Left Horizontal Clear 48 - Max Span Length 169.9 42A - Service Type On 47R - Right Horizontal Clear 5 49 - Structure Length 1345.9 47L - Left Horizontal Clear 0.0 54A - Left Feature 50A - Width Left Curb/SW 2.3 99 47R - Right Horizontal Clear 22.0 54B - Left Underclearance 99 50B - Width Right Curb/SW 2.3 53 - Min Vert Clr Ov Deck 99 54C - Right Feature 99 33 - Median 0 100 - STRAHNET 0 54D - Right Clearance 99 99 51 - Width Curb to Curb 20 102 - Traffic Direct Under Clearance Year 2 0 52 - Width Out to Out 31.8 109 - Truck % 55A - Reference Feature Ν 112 - NBIS Length Υ 110 - Truck Network 55B - Right Horiz Clearance 0 99.9 **Inspection Data** 56 - Left Horiz Clearance 114 - Future ADT 27060 0 115 - Year Future ADT 100 - STRAHNET 90 - Inspection Date 11/23/2021 2027 Freeway 102 - Traffic Direct 91 - Inspection Freq 8 0 92A - Frac Crit Reg/Freg 7 109 - Truck % Structure Appraisal 110 - Truck Network 93A - Frac Crit Insp Date 11/23/2021 36A - Bridge Railing 0 92B - Und Water Reg/Freg 114 - Future ADT 10 36B - Rail Transition 1 93B - Und Water Insp Date 11/09/2021 115 - Year Future ADT 36C - Approach Rail 1 92C - Oth Spec Insp Req/Freq 6 Freeway 36D - Rail Termination 1 04/04/2022 93C - Oth Spec Insp Date **Proposed Improvements** 67 - Structure Evaluation 4 92D - Fatigue Req/Freq Ν 68 - Deck Geometry 75 - Type of Work 2 93D - Fatigue Insp Date 76 - Length of Improvement 69 - Underclearance Ν 176A - Und Water Insp Method 3 71 - Waterway Adequacy 94 - Bridge Cost 8 58 - Deck Rating 72 - Approach Alignment 95 - Roadway Cost 4 58A/B - Deck Surface/Bottom 6 103 - Temporary Structure 96 - Total Cost 59 - Superstructure Rating 4 113 - Scour Criticality 97 - Year of Cost Estimate 59A - Paint Rating 5 **Miscellaneous Load Rating and Posting** 60 - Substructure Rating 5 61 - Channel Rating 37 - Historical Significance 31 - Design Load 6 62 - Culvert Rating N 98A - Border Bridge State 41 - Open, Posted, Closed Р 98B - Border Bridge % 63 - Fed Oper Rtg Method 6 **Navigation Data** 101 - Parallel Structure 64F - Fed Oper Rtg Load 1.5 Ν 38 - Navigation Control FPA ID MIK478564743 64MA - Mich Oper Rtg Method 6 39 - Vertical Clearance Stay in Place Forms 64MB - Mich Oper Rtg .93 40 - Horizontal Clearance 149.9 64MC - Mich Oper Truck 143 - Pin & Hanger Code 17 0 111 - Pier Protection 148 - No. of Pin & Hangers 65 - Inv Rtg Method 6 116 - Lift Brdg Vert Clear n 66 - Inventory Load .9 70 - Posting 3 141 - Posted Loading 406580 193 - Overload Class



STR 12006	BRIDGE SAFETY IN			
Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	<b>1</b>
GROSSE ILE PARKWAY	42.1273 / -83.173	82200010000B020	Poor Condition(4)	
Feature	Length / Width / Spans	Owner		
TRENTON CHANNEL	1,345.88 / 31.8 / 12	County: Wayne(82)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
GROSSE ILE	1932 / 2007 / 1978 /	Taylor(25)	P Posted for load(406580)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Metro(7) / Wayne(82)	4 Steel Continuous / 17 Movable- Swing	06/30/2022 / LLO6	4 Stable, needs action	

NBI INSPECTION							
Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date				
Eric Rickert	Great Lakes Engineering Group	12	06/30/2022				

# **GENERAL NOTES**

No. 0382.

Superstructure dips at even numbered pier locations. In swing span, vertical clearance of 14'-10".

Currently posted at 40/65/80 Inspected with Brian Hebden

Weight limit signs in place on both ends of bridgeYESWeight limit shown on signs at bridge406580Required advance warning weight limit signs in placeYESWeight limit shown on advance warning signs406580

#### **DECK**

	06/21	11/21	06/22	
1. Surface (SIA-58A)	7	7	7	Open grid riveted deck with serrated wearing surface, rattles under traffic in several spans. Concrete-filled grid deck with serrated wearing surface at ends of movable spans - minor voids and delaminations, visible wear in the wheel path. (06/22)  Open grid riveted deck with serrated wearing surface. Loose panel in span 12 repaired. Concrete-filled grid deck with serrated wearing surface at ends of movable spans - minor voids and delaminations, visible wear in the wheel path. (11/21)  Open grid riveted deck with serrated wearing surface - some missing rivets, <1% of total. Span 12 has loose panel in WB lane. Concrete-filled grid deck with serrated wearing surface at ends of movable spans - minor voids and delaminations, visible wear in the wheel path. Some panels loose, moved for ongoing repairs. Previous Rating Carried Through. (06/21)
2. Expansion Joints	6	6	6	Open joints at ends of swing span. Hot poured joints at reference lines, west end is approx. 40% sunken. (06/22) Open joints at ends of swing span. Hot poured joints at reference lines are bulged, with spots of adhesion loss. (11/21) Open joints at ends of swing span. Hot poured joints at reference lines are bulged, with spots of adhesion loss. (06/21)
3. Other Joints	N	N	N	(06/22) (11/21) (06/21)
4. Railings	5	5	5	Aesthetic concrete parapets with dual galvanized metal tube on fixed spans. Some missing

Aesthetic concrete parapets with dual galvanized metal tube on fixed spans. Some missing bolts and washers noted. Open picket pedestrian railing on movable spans, with paint peeling and spots of surface rust. Truss mounted dual W-beam rails on vehicular side of movable spans, some damage to boxing glove ends and scrapes throughout. (06/22) Aesthetic concrete parapets with dual galvanized metal tube on fixed spans. Some missing bolts and washers noted. Open picket pedestrian railing on movable spans, with some paint peeling and spots of surface rust. Truss mounted dual W-beam rails on vehicular side of movable spans, some damage to boxing glove ends and scrapes throughout. (11/21) Aesthetic concrete parapets with dual galvanized metal tube on fixed spans in good condition. Some missing bolts and washers noted. Open picket railing on movable spans, with some paint peeling and spots of surface rust. Structure mounted dual W-beam rails on vehicular side of movable truss, some damage to boxing glove ends and scrapes throughout. (06/21)

STR 12006								
Facility GROSSE ILE PARKWAY Feature TRENTON CHANNEL Location GROSSE ILE Region / County Metro(7) / Wayne(82)			42.1 Leng 1,34 Built 1932 Mate 4 Ste	tude / Longitude 273 / -83.173 gth / Width / Spans 5.88 / 31.8 / 12 t / Recon. / Paint / Ovly. 2 / 2007 / 1978 / erial / Design eel Continuous / 17 able- Swing	MDOT Structure ID 82200010000B020 Owner County: Wayne(82) TSC Taylor(25) Last NBI Inspection 06/30/2022 / LLO6	Structure Condition Poor Condition(4)  Operational Status P Posted for load(406580) Scour Evaluation 4 Stable, needs action		
5. Sidewalks or Curbs					eel curb face welded and painted as part ong top of concrete. Joint between fixed vertical difference. (06/22) in movable spans. Openings in movable eel curb face welded and painted as part p of concrete. (11/21) concrete filled grid. Openings in m grid sidewalk on fixed spans. Several			
6. Deck Bottom Surface (SIA-58B)	7	6	6	Open steel grating in lanes. In movable span, concrete filled sidewalk is heavily corroded. (06/22) Open steel grating in lanes. In movable span, concrete filled sidewalk is heavily corroded. (11/21) Deck bottom of concrete filled sidewalk on swing span is heavily corroded. Open grid deck is present throughout approach spans. Previous Rating Carried Through. (06/21)				
7. Deck (SIA-58)	7	7	7	Surface: Open grid riveted deck with serrated wearing surface, rattles under traffic in several spans. Concrete-filled grid deck with serrated wearing surface at ends of movable spans - minor voids and delaminations, visible wear in the wheel path.  Soffit: Open steel grating in lanes. In movable span, concrete filled sidewalk is heavily corroded. (06/22)  Surface: Open grid riveted deck with serrated wearing surface. Loose panel in span 12 repaired. Concrete-filled grid deck with serrated wearing surface at ends of movable spans - minor voids and delaminations, visible wear in the wheel path  Soffit: Open steel grating in lanes. In movable span, concrete filled sidewalk is heavily corroded. (11/21)  Open grid riveted deck with serrated wearing surface - some missing rivets, <1% of total. Concrete-filled grid deck with serrated wearing surface at ends of movable spans - minor voids and delaminations, visible wear in the wheel path. Previous Rating Carried Through. (06/21)				
8. Drainage				(06/22) (11/21) (06/21)				

### **SUPERSTRUCTURE**

06/21 11/21 06/22

MICHIGAN DEPARTMENT OF TRANSPORTATION								
STR 12006		BRIDGE SAFETY INSPECTION REPORT						
Facility GROSSE ILE PARKWA Feature TRENTON CHANNEL Location GROSSE ILE Region / County Metro(7) / Wayne(82)	Y		42.12 Leng 1,345 Built 1932 Mate 4 Ste	ude / Longitude 273 / -83.173 gth / Width / Spans 5.88 / 31.8 / 12 c / Recon. / Paint / Ovly. c / 2007 / 1978 / grial / Design gel Continuous / 17 gable- Swing	MDOT Structure ID 82200010000B020 Owner County: Wayne(82) TSC Taylor(25) Last NBI Inspection 06/30/2022 / LLO6	Structure Condition Poor Condition(4)  Operational Status P Posted for load(406580) Scour Evaluation 4 Stable, needs action		
9. Stringer (SIA-59)	4	4	4	between bottom cover plat and a 2"x3" hole thru web law, 7W, 8W, 11W, and 12 2007 or 2021. Original rive heavy rust and section loss have section loss. Lateral holes and several lateral by SWING SPAN: Truss: Trubelow the roadway have alload hit. Floorbeams: Mos stringers with some bolted APPROACH SPANS: Grid between bottom cover plat Floorbeams: most of floorlorbeam connections hav stringers. Several stringer bracing: throughout bridge bracing member has holes SWING SPAN: Truss: Trubelow the roadway have alload hit. Floorbeams: Mos stringers with some bolted APPROACH SPANS: Gird and lower portion of web walso built along the top flan covered with debris and cosection loss). A few floorbe section loss at or near commembers in the load analy connections and isolated a inspection appear to be ad SWING SPAN: Truss chort The members at or below the section below the section below the section below the section and solated a sinspection appear to be ad SWING SPAN: Truss chort The members at or below the section below the section below the section below to be ad SWING SPAN: Truss chort The members at or below the section below the secti	russ chords have areas of pitting and corrosion. The members at or areas of heavy corrosion. Upper portal brace in span 10 has a high set floorbeams have bolted repairs. Stringers: Rust and scale on drepairs on stringers. (11/21) reders exhibit heavy corrosion and minor pitting along bottom flange with pack rust built up between bottom cover plates. Pack rust is ange of west approach spans. Lateral bracing connections are connection plates exhibit section loss (some locations have severe exams were repaired in 2007, the remaining FB's have severe nnections, top flanges and bottom flanges and are the controlling lysis. Stringers have active corrosion and pitting at their end areas throughout the bottom flagnes. Ongoing repairs at time of addressing elements with appreciable section loss. Ords are generally in fair condition with areas of pitting and corrosion of the roadway surface have heavy areas of corrosion with the lateral eavy section loss in a few areas. The upper portal bracing of span 10			
10. Paint (SIA-59A)	4	5	5	scale. Estimate 25% paint Newer paint at floorbeam a Estimate 25% paint failed.	failed. (06/22) and stringer repairs. Areas (11/21) ough. Coating system failure	Areas outside of repairs have rust and outside of repairs have rust and scale. es with heavy flaking and rust inspection. (06/21)		
11. Section Loss	0	0	0	scattered stringers have <2 Holes rusted through latera scattered stringers have <2 Extensive corrosion on stri bracing on bottom chord of	25% section loss. (06/22) al bracing members and gu 25% section loss. (11/21) ngers, floor beams and stri	sset plates; span 1W south grider web; sset plates; span 1W south grider web; nger to floor beam connections. Lateral st and section loss in some locations. carried forward. (06/21)		
12. Bearings	6	6	6	stiffeners at bearing plates (06/22) Rocker bearings at Piers 1 stiffeners at bearing plates (11/21) Rocker bearings at Piers 1 stiffeners at bearing plates	with heavy section loss. Fi., 3, 5, 7 & 11 were replaced with heavy section loss. Fi., 3, 5, 7 & 11 were replaced with moderate to heavy se	d in 2007. Anchor bolts, nuts and xed bearings have severe corrosion.  d in 2007. Anchor bolts, nuts and xed bearings have severe corrosion.  d in 2007. Anchor bolts, nuts and ction loss. Fixed bearings have severe ious rating carried forward. (06/21)		

#### SUBSTRUCTURE

STR 12006			BRIDGE SAFETY INSPECTION REPORT					
Facility			Latitu	ıde / Longitude	MDOT Structure ID	Structure Condition		
GROSSE ILE PARKWAY			42.12	73 / -83.173	82200010000B020	Poor Condition(4)		
Feature			Leng	th / Width / Spans	Owner			
TRENTON CHANNEL			1,345	.88 / 31.8 / 12	County: Wayne(82)			
Location			Built	/ Recon. / Paint / Ovly.	TSC	Operational Status		
GROSSE ILE			1932	/ 2007 / 1978 /	Taylor(25)	P Posted for load(406580)		
Region / County				rial / Design	Last NBI Inspection	Scour Evaluation		
Metro(7) / Wayne(82)				el Continuous / 17	06/30/2022 / LLO6	4 Stable, needs action		
				ble- Swing				
	06/21	11/21	06/22					
13. Abutments (SIA-60)	7	7	7	Abutments consists of cut stone with concrete caps. Stone slope walls. Both abutments have missing mortar, minor delaminations, and cracking. Riprap in place along both abutments. (06/22) Abutments consists of cut stone with concrete caps. Stone slope walls. Both abutments have minor delaminations and cracking. Riprap in place along both abutments. (11/21) Minor spalls, delamination, and cracking. (06/21)				
14. Piers (SIA-60)	4	5	5	have footing exposure. Ab has STS totaling 20% of pi sinking at north and south Below water repairs to pier have footing exposure. Ab has STS totaling 20% of pi sinking at north and south Spalls, delaminations, and spalling with exposed reinf at N end is deteriorated ca (horizontally) undermining deteriorating as noted by 2 no significant settlement no at north and south ends. T	pove water piers have spater area. The pier protection of the pier protection of the pier have spater area. The pier protection of the pier have spater area. The pier protection of the pier pier pier pier pier pier pier pie	and 10W performed in 2021. Other piers alls, delaminations, and cracking. Pier 2W on for Pier 9w appears to be settling / and 10W performed in 2021. Other piers alls, delaminations, and cracking. Pier 2W on for Pier 9w appears to be settling / vater line. Pier 2 east face has severe all area. Timber cribbing at peirs 4 and 6 Il that is 8' high by 8' in length crete nosing below water line is s. Piers were monitored for 6 months with or Pier 9 appears to be settling / sinking is underwater. Ongoing repairs at time of us rating carried forward. (06/21)		
15. Slope Protection	N	N	N	(06/22) (11/21) (06/21)				
16. Channel	7	7	7		place at piers. Swift curre	ent with eddy currents throughout		
(SIA-61)				channel. (06/22)		·		
				channel. (11/21)	piace at piers. Swill Curr	ent with eddy currents throughout		
				Rock bottom with riprap in	place at piers. Swift curre	ent. Difficult to hold on to piers during		
17. Scour 4 4 Inspection				inspection. (06/21)  Below water repairs on piers 2W, 4W, 6W, 8W, 9W, and 10W consisting of grouting existing timber cribbing with forms left in place. Piers 1W, 3W, 5W, 7W, and 11W all have footing exposure. (06/22)  Below water repairs on piers 2W, 4W, 6W, 8W, 9W, and 10W consisting of grouting existing timber cribbing with forms left in place. Piers 1W, 3W, 5W, 7W, and 11W all have footing exposure. (11/21)  UW report notes the sides of all piers appear to be well armored by built-up stones and ripra measuring 6-12 inches in diameter. Large riprap members measuring 3-4 feet in diameter a also present along the east sides of Piers 2, 3, 4, 6 and 8. The embankments have no erosi protection, but no erosion was noted. The timber cribbing noted on even number piers is heavily to severely deteriorated. (06/21)				
APPROACH								
	06/21	11/21	06/22					
18. Approach	7	7	7	Concrete approaches. Fas	t approach: newer concre	ete 20 ft from reference line leading up to		
Pavement	•	•	•	new adjacent bridge, edge spall at reference line. West approach; minor cracks and edge				

# Pavement

Concrete approaches. East approach; newer concrete 20 ft from reference line leading up to new adjacent bridge, edge spall at reference line. West approach; minor cracks and edge spalls where it meets adjacent HMA. (06/22)

Concrete approaches. East approach has newer concrete beyond 20 ft leading up to new adjacent bridge. West approach has minor cracks and edge spalls where it meets adjacent HMA. (11/21)

Concrete approaches. East approach in good condition with newer concrete beyond 20 ft leading up to new adjacent bridge. West approach has minor cracks and edge spalls where it meets adjacent HMA. (06/21)

	MICHI	JAN DEPARTMEN	I OF TRANSPORTATION						
STR 12006	BRI	DGE SAFETY IN	SPECTION REPORT						
Facility GROSSE ILE PARKWAY Feature TRENTON CHANNEL Location GROSSE ILE Region / County Metro(7) / Wayne(82)	42.1273 / Length / V 1,345.88 / Built / Rec 1932 / 200 Material /	Width / Spans 31.8 / 12 con. / Paint / Ovly. 07 / 1978 / Design utinuous / 17	MDOT Structure ID 82200010000B020 Owner County: Wayne(82) TSC Taylor(25) Last NBI Inspection 06/30/2022 / LLO6	Structure Condition Poor Condition(4)  Operational Status P Posted for load(406580) Scour Evaluation 4 Stable, needs action					
19. Approach 7 6 Shoulders Sidewalks	east NW a east	NW approach curb has a 2sft spall. SE approach curb has a 1sft spall. New approach rail at east end. West end has 15' of approach sidewalk. (06/22)  NW approach curb has a 2sft spall. SE approach curb has a 1sft spall. New approach rail at east end. West end has 15' of approach sidewalk. (11/21)  No settlement at reference lines noted. Minor chips, small spalls along curb faces. (06/21)							
20. Approach Slopes  Vegetated slopes with heavy brush. (06/22) Vegetated slopes. (11/21) (06/21)									
21. Utilities	Thro	Throughout bridge for movable span. (06/22) Throughout bridge for movable span. (11/21) (06/21)							
22. Drainage Culverts	(06/2 (11/2 (06/2	21)							
MISCELLANEOUS									
Guard Rail			Other Items						
<u>Item</u>	Rating		<u>Item</u>	Rating					
36A. Bridge Railings	0		71. Water Adequacy	8					
36B. Transitions	1		72. Approach Alignment	4					
36C. Approach Guardrail	1		Temporary Support	0 No Temporary Supports					
36D. Approach Guardrail Ends	1		High Load Hit (M)	No					
			Special Insp. Equipment	4					
			Underwater Insp. Method	3					
False Decking (Timber) Removed	to Complete	Inspection	N/A - No False Decking						
Critical Feature Inspections (S	Critical Feature Inspections (SIA-92)								
004 5 0 111	Freq	Date							
92A. Fracture Critical	12	06/30/2022							

92B. Underwater

92C. Other Special

92D. Fatigue Sensitive

11/09/2021

04/04/2022

10

6

#### STR 12006 **BRIDGE SAFETY INSPECTION REPORT Facility** Latitude / Longitude **MDOT Structure ID Structure Condition** GROSSE ILE PARKWAY 42.1273 / -83.173 82200010000B020 Poor Condition(4) **Feature** Length / Width / Spans Owner TRENTON CHANNEL 1,345.88 / 31.8 / 12 County: Wayne(82) Location Built / Recon. / Paint / Ovly. **TSC Operational Status** 1932 / 2007 / 1978 / P Posted for load(406580) **GROSSE ILE** Taylor(25) **Last NBI Inspection Scour Evaluation** Region / County Material / Design Metro(7) / Wayne(82) 4 Steel Continuous / 17 06/30/2022 / LLO6 4 Stable, needs action Movable-Swing

#### **SUPPORTING IMAGES**

LLO6 06/30/2022



Document Name: IMG\_7135.JPG

Category: Elevation Span Number:

Comments: North elevation



Document Name: IMG\_7136.JPG

Category: Elevation Span Number:

Comments: South elevation

## STR 12006 BRIDGE SAFETY INSPECTION REPORT

Facility
GROSSE ILE PARKWAY

Feature

TRENTON CHANNEL

Location
GROSSE ILE
Region / County
Metro(7) / Wayne(82)

Latitude / Longitude 42.1273 / -83.173 Length / Width / Spans 1,345.88 / 31.8 / 12 Built / Recon. / Paint / Ovly. 1932 / 2007 / 1978 /

Material / Design 4 Steel Continuous / 17 Movable- Swing **MDOT Structure ID** 82200010000B020

Owner

County: Wayne(82)

TSC Taylor(25)

Last NBI Inspection 06/30/2022 / LLO6

**Structure Condition** 

Poor Condition(4)

Operational Status

P Posted for load(406580)

Scour Evaluation
4 Stable, needs action





Document Name: 001.jpg Category: Posting Span Number:

Comments: WB advance posting

Document Name: IMG\_6897.JPG

Category: Posting Span Number:

Comments: EB posting sign

#### **STR 12006**

#### **BRIDGE SAFETY INSPECTION REPORT**

**Facility** 

GROSSE ILE PARKWAY

**Feature** 

TRENTON CHANNEL

Metro(7) / Wayne(82)

Location **GROSSE ILE** Region / County Latitude / Longitude 42.1273 / -83.173 Length / Width / Spans 1,345.88 / 31.8 / 12

Built / Recon. / Paint / Ovly. 1932 / 2007 / 1978 /

Material / Design 4 Steel Continuous / 17 Movable-Swing

**MDOT Structure ID** 

82200010000B020

Owner

County: Wayne(82)

**TSC** Taylor(25)

**Last NBI Inspection** 

06/30/2022 / LLO6

**Structure Condition** 

Poor Condition(4)

**Operational Status** 

P Posted for load(406580)

**Scour Evaluation** 

4 Stable, needs action



Document Name: IMG\_6914.JPG

Category: Posting Span Number:

Comments: WB posting sign



Document Name: IMG\_6917.JPG

Category: Posting Span Number:

Comments: EB advance posting



Document Name: IMG\_6915.JPG

Category: Approach Span Number:

Comments: Road and bridge section facing west



Document Name: IMG\_6903.JPG

Category: Railing Span Number:

Comments: Fixed span railing

#### **STR 12006**

#### **BRIDGE SAFETY INSPECTION REPORT**

**Facility** 

GROSSE ILE PARKWAY

**Feature** 

TRENTON CHANNEL

Metro(7) / Wayne(82)

Location GROSSE ILE Region / County Latitude / Longitude 42.1273 / -83.173 Length / Width / Spans 1,345.88 / 31.8 / 12

Built / Recon. / Paint / Ovly. 1932 / 2007 / 1978 /

Material / Design 4 Steel Continuous / 17 Movable- Swing **MDOT Structure ID** 82200010000B020

Owner

County: Wayne(82)

TSC Taylor(25)

Last NBI Inspection 06/30/2022 / LLO6

**Structure Condition** 

Poor Condition(4)

Operational Status

P Posted for load(406580)

Scour Evaluation

4 Stable, needs action



Document Name: IMG\_6908.JPG

Category: Railing Span Number:

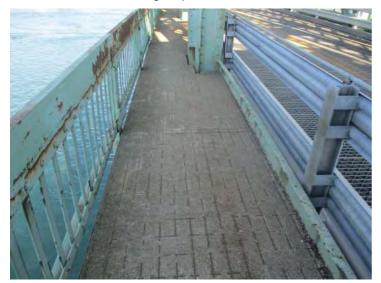
Comments: Guardrail railing in spans 9W and 10W



Document Name: IMG\_6904.JPG

Category: Deck Span Number:

Comments: Steel grate deck



Document Name: IMG\_6907.JPG

Category: Deck Span Number:

Comments: Scaling along top of sidewalk in spans 9W and 10W



Document Name: IMG\_6910.JPG

Category: Deck Span Number:

Comments: Concrete filled grating in moveable span

#### **STR 12006 BRIDGE SAFETY INSPECTION REPORT**

**Facility** GROSSE ILE PARKWAY

**Feature** 

TRENTON CHANNEL Location **GROSSE ILE** Region / County

Metro(7) / Wayne(82)

Latitude / Longitude 42.1273 / -83.173 Length / Width / Spans 1,345.88 / 31.8 / 12 Built / Recon. / Paint / Ovly. 1932 / 2007 / 1978 / Material / Design

4 Steel Continuous / 17

Movable-Swing

**MDOT Structure ID** 82200010000B020 Owner

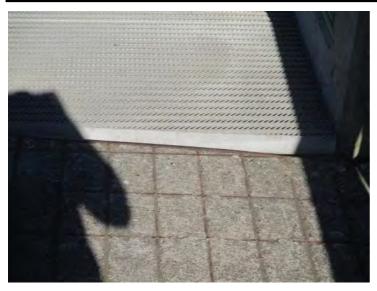
County: Wayne(82) **TSC** 

Taylor(25) **Last NBI Inspection** 06/30/2022 / LLO6

**Structure Condition** 

Poor Condition(4)

**Operational Status** P Posted for load(406580) **Scour Evaluation** 4 Stable, needs action



Document Name: IMG\_6916.JPG

Category: Deck Span Number:

Comments: Vertical offset between fixed and movable span

sidewalks



Document Name: IMG\_6899.JPG

Category: Joints Span Number:

Comments: East end joint



Document Name: IMG\_6911.JPG

Category: Joints Span Number:

Comments: Joint at end of moveable span



Document Name: IMG\_6909.JPG

Category: Superstructure

Span Number:

Comments: Vertical clearance sign for WB

#### **STR 12006**

#### **BRIDGE SAFETY INSPECTION REPORT**

**Facility** 

GROSSE ILE PARKWAY

**Feature** 

TRENTON CHANNEL

Location **GROSSE ILE** 

Region / County Metro(7) / Wayne(82) Latitude / Longitude 42.1273 / -83.173 Length / Width / Spans 1,345.88 / 31.8 / 12 Built / Recon. / Paint / Ovly. 1932 / 2007 / 1978 / Material / Design

4 Steel Continuous / 17

Movable-Swing

**MDOT Structure ID** 82200010000B020

Owner

County: Wayne(82)

**TSC** Taylor(25)

**Last NBI Inspection** 06/30/2022 / LLO6

**Structure Condition** 

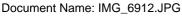
Poor Condition(4)

**Operational Status** 

P Posted for load(406580) **Scour Evaluation** 

4 Stable, needs action





Category: Superstructure

Span Number:

Comments: Truss, typical



Document Name: IMG\_6913.JPG

Category: Superstructure

Span Number:

Comments: View through truss in spans 9W and 10W



Document Name: IMG\_6922.JPG

Category: Superstructure

Span Number:

Comments: Span 1W, south girder, 2"x3" hole in web btw FB 1W

and 2W



Document Name: IMG\_6926.JPG

Category: Superstructure

Span Number:

Comments: Hole through gusset plate, typical

#### **STR 12006**

#### **BRIDGE SAFETY INSPECTION REPORT**

**Facility** 

GROSSE ILE PARKWAY

**Feature** 

TRENTON CHANNEL

Location **GROSSE ILE** 

Region / County Metro(7) / Wayne(82) Latitude / Longitude 42.1273 / -83.173 Length / Width / Spans 1,345.88 / 31.8 / 12 Built / Recon. / Paint / Ovly. 1932 / 2007 / 1978 / Material / Design

4 Steel Continuous / 17

Movable-Swing

**MDOT Structure ID** 82200010000B020

Owner

County: Wayne(82)

**TSC** Taylor(25)

**Last NBI Inspection** 06/30/2022 / LLO6

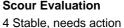
**Structure Condition** 

Poor Condition(4)

**Operational Status** 

P Posted for load(406580)

**Scour Evaluation** 





Document Name: IMG\_6930.JPG Category: Superstructure

Span Number:

Comments: Hole through web stiffener, typical



Document Name: IMG\_6952.JPG

Category: Superstructure

Span Number:

Comments: Typical lower joint in moveable span



Document Name: IMG\_7130.JPG Category: Superstructure

Span Number:

Comments: Swing span



Document Name: IMG\_6928.JPG

Category: Bearings Span Number:

Comments: Typical rocker bearings

## **STR 12006**

# **BRIDGE SAFETY INSPECTION REPORT**

**Facility** 

GROSSE ILE PARKWAY

**Feature** 

TRENTON CHANNEL

Location **GROSSE ILE** 

Region / County Metro(7) / Wayne(82) Latitude / Longitude 42.1273 / -83.173 Length / Width / Spans 1,345.88 / 31.8 / 12 Built / Recon. / Paint / Ovly. 1932 / 2007 / 1978 / Material / Design

4 Steel Continuous / 17

Movable-Swing

**MDOT Structure ID** 82200010000B020

Owner

County: Wayne(82)

**TSC** Taylor(25)

**Last NBI Inspection** 06/30/2022 / LLO6

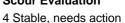
**Structure Condition** 

Poor Condition(4)

**Operational Status** 

P Posted for load(406580)

**Scour Evaluation** 





Document Name: IMG\_6954.JPG

Category: Substructure Span Number: Comments: Pier 9W



Document Name: IMG\_7122.JPG

Category: Substructure

Span Number:

Comments: West abutment



Document Name: IMG\_7124.JPG

Category: Substructure

Span Number:

Comments: Pier 2W, east face



Document Name: IMG\_7126.JPG

Category: Substructure

Span Number: Comments: Pier 4W

## STR 12006

# **BRIDGE SAFETY INSPECTION REPORT**

**Facility** 

GROSSE ILE PARKWAY

**Feature** 

TRENTON CHANNEL

Location GROSSE ILE

Region / County
Metro(7) / Wayne(82)

Latitude / Longitude 42.1273 / -83.173 Length / Width / Spans 1,345.88 / 31.8 / 12 Built / Recon. / Paint / Ovly. 1932 / 2007 / 1978 /

Material / Design 4 Steel Continuous / 17 Movable- Swing **MDOT Structure ID** 82200010000B020

Owner

County: Wayne(82)

TSC Taylor(25)

Last NBI Inspection 06/30/2022 / LLO6

**Structure Condition** 

Poor Condition(4)

Operational Status

P Posted for load(406580)

Scour Evaluation

4 Stable, needs action



Document Name: IMG\_7127.JPG

Category: Substructure Span Number: Comments: Pier 5W



Document Name: IMG\_7129.JPG

Category: Substructure Span Number: Comments: Pier 7W



Document Name: IMG\_7133.JPG

Category: Substructure Span Number:

Comments: East abutment



Document Name: IMG\_7134.JPG

Category: Substructure

Span Number: Comments: Pier 9W



STR 12006	FRACTURE CRITICAL INSPE	CTION REPORT [SIA #	92-A]	
Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	<b>₩</b>
GROSSE ILE PARKWAY	42.1273 / -83.173	82200010000B020	Poor Condition(4)	
Feature	Length / Width / Spans	Owner		
TRENTON CHANNEL	1,345.88 / 31.8 / 12	County: Wayne(82)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
GROSSE ILE	1932 / 2007 / 1978 /	Taylor(25)	P Posted for load(406580)	
Region / County	Material / Design	<b>Last NBI Inspection</b>	Scour Evaluation	
Metro(7) / Wayne(82)	4 Steel Continuous / 17 Movable- Swing	06/30/2022 / LLO6	4 Stable, needs action	

FRACTURE CRITICAL SPECIAL INSPECTION			T6XF
Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Eric Rickert	Great Lakes Engineering Group	12	06/30/2022

#### **INSPECTION PROCEDURES**

SPAN CONFIGURATION

Inspection frequency revised to 12 months.

Fracture Critical Inspection performed with MDOT's reachall. Full bridge closure required to complete inspection. Coordinate with Wayne County DPS minimum 4 weeks in advance of inspection date for closure, County performed closure. USCG permit required for movable span inspection, contact Lee Soule at Cleveland OH office for permit.

In fixed spans, reachall used to inspect girders; floorbeams inspected from catwalk. In movable span, reachall used to inspect bottom of truss, lower joints, and floorbeams; bucket truck used to inspect upper joints.

SI AN COM IOUNATION			
Bridge Type	17 Movable-Swing	Appr Span Type	03 Girder-Floorbeam
Main Span	4 Steel Continuous	Appr Span	3 Steel
# of Main Spans	2	# of Appr Span	10
Lanes On	2	Lanes Under	0

47L-Left Horizontal Clear (ft)047R-Right Horizontal Clear (ft)22.0154B-Left Underclearance (ft in)0 ft. 0 in.54D-Right Underclearance (ft in)0 ft. 0 in.

## NBIS RATINGS & COMMENTS (Latest Inspection Ratings Transferred from BSIR)

Stringer (SIA-59):

4 APPROACH SPANS: Griders: Heavy rust and scale at floorbeam connections and pack rust between bottom cover plates. Span 1W, south girder has a 5"x5" hole thru web at FB 2W and a 2"x3" hole thru web btw FB 1W and 2W. Noted holes thru web stiffeners in span 3W, 4W, 7W, 8W, 11W, and 12W. Floorbeams: most of floorbeams either repaired or replaced in 2007 or 2021. Original riveted floorbeam connections have packrust. Stringers: areas of heavy rust and section loss on stringers. Several stringer connections to repaired floorbeams have section loss. Lateral bracing: throughout bridge gusset plates for lateral bracing have holes and several lateral bracing member has holes and are broken.

SWING SPAN: Truss: Truss chords have areas of pitting and corrosion. The members at or below the roadway have areas of heavy corrosion. Upper portal brace in span 10 has a high load hit. Floorbeams: Most floorbeams have bolted repairs. Stringers: Rust and scale on stringers with some bolted repairs on stringers.

Paint (SIA-59A):

5 Newer paint at 2021 floorbeam and stringer repairs. Areas outside of repairs have rust and scale. Estimate 25% paint failed.

### FRACTURE CRITICAL ELEMENTS

#### **FC Element**

Tension Areas of Main Girder

**Element Location** 

Spans 1-8, 11-12: Two-girder system

Inspection Comments

Locations of paint system failure on web and bottom flange; Widespread paint system failure and corrosion on top flange and cover plate beneath open grid deck. Lower flange of girders has pack-rust between flange plates. Vertical stiffeners have heavy pitting with holes found in spans 3W,4W,7W,8W,11W,12W. Specific girder information located in documents tab.

#### **FC Element**

Floor Beams (Spa > 14?)

STR 12006	FRACTURE CRITICAL INSPECTION REPORT [SIA #92-A]			
Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	
GROSSE ILE PARKWAY	42.1273 / -83.173	82200010000B020	Poor Condition(4)	
Feature	Length / Width / Spans	Owner		
TRENTON CHANNEL	1,345.88 / 31.8 / 12	County: Wayne(82)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
GROSSE ILE	1932 / 2007 / 1978 /	Taylor(25)	P Posted for load(406580)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Metro(7) / Wayne(82)	4 Steel Continuous / 17 Movable- Swing	06/30/2022 / LLO6	4 Stable, needs action	

**Element Location** 

Spans 1-8, 11-12: Floor Beams on two-girder system

Spans 9-10: Floor Beams in through truss (swing span)

Inspection Comments

Majority of fixed spans floor beams have either been replaced or have bolted repairs.

Truss Spans, 9 of 16 floor beams have bolted repairs. Floor beams without repairs still have heavy paint flaking and corrosion along bottom flanges, webs and near connections.

Specific floor beam information located in documents tab.

#### **FC Element**

Truss Chords and Diagonals

**Element Location** 

Spans 9-10: Truss Members

Inspection Comments

The paint system has scattered failures throughout resulting in surface corrosion on truss members. Members above roadway have spot corrosion. Pitting and section loss was exhibited on bottom chord, diagonals and verticals below the roadway. Moderate painted over pitting, South Truss L2-L3. Multiple lacing bars on truss bottom chord with 100% section loss/holes.

North truss, span 9W, L3L4 has 2" hole thru outside web plate. South truss, span 10W, L1'-L0' has 1" and 0.25" hole thru inside channel web.

## **FC Element**

Steel Cross Girder

**Element Location** 

West end of span 9, east end of span 10, and at Pier 9 (swing span center pier)

Inspection Comments

Minor rust with scale and flaking paint.

#### **FC Element**

Gusset Plate, Truss

**Element Location** 

Spans 9-10 Truss Members Connections

Inspection Comments

Top chord gusset plates exhibit paint failure and spot corrosion with no measurable section loss. Rivets in good condition. Bottom chord gusset plates have crevice corrosion along top of bottom chord with up to 1/8" section loss along top angles of bottom chord.

### **MISCELLANEOUS FIELD NOTES**

Bottom chord of portal frames with impact damage along each lane centerline. Bridge is posted at 40/65/80.

At pier 10W, south diagonal brace for the machinery girder has hole rusted through connection plate (06/22)

Bottom chord of portal frames with impact damage along each lane centerline. Bridge is Load Posted 26 tons (11/21)

Bottom chord of portal frames with impact damage along each lane centerline. Bridge is Load Posted 26T-32T-43T. (06/21)

Traffic Control Y Comments: Full bridge closure

Special Equipment 4 Reach All Comments: MDOT Reachall used for inspection

Photographs Y

## **RECOMMENDATIONS AND ACTION ITEMS**

STR 12006 FRACTURE CRITICAL INSPECTION REPORT [SIA #92-A]				
Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	
GROSSE ILE PARKWAY	42.1273 / -83.173	82200010000B020	Poor Condition(4)	
Feature	Length / Width / Spans	Owner		
TRENTON CHANNEL	1,345.88 / 31.8 / 12	County: Wayne(82)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
GROSSE ILE	1932 / 2007 / 1978 /	Taylor(25)	P Posted for load(406580)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Metro(7) / Wayne(82)	4 Steel Continuous / 17 Movable- Swing	06/30/2022 / LLO6	4 Stable, needs action	

## Recommendation

Clean and Paint

Priority Comments

Н Clean and paint steel superstructure. Existing paint contains lead.

### Recommendation

Steel Repairs

Priority Comments

Repair lower lateral bracing connections/gusset plates. Repair vertical stiffeners on fixed spans. Repair/Replace members of sway bracing with impact damage Н

STR 12006 FRACTURE CRITICAL INSPECTION REPORT [SIA #92-A]				
Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	
GROSSE ILE PARKWAY	42.1273 / -83.173	82200010000B020	Poor Condition(4)	
Feature	Length / Width / Spans	Owner		
TRENTON CHANNEL	1,345.88 / 31.8 / 12	County: Wayne(82)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
GROSSE ILE	1932 / 2007 / 1978 /	Taylor(25)	P Posted for load(406580)	
Region / County	Material / Design	<b>Last NBI Inspection</b>	Scour Evaluation	
Metro(7) / Wayne(82)	4 Steel Continuous / 17 Movable- Swing	11/23/2021 / 6SAN	4 Stable, needs action	

FRACTURE CRITICAL SPECIAL INSPECTION			UOIS
Inspector Name	Agency / Company Name	Insp. Freq.	Insp. Date
Eric Rickert	Great Lakes Engineering Group	7	11/23/2021

#### **INSPECTION PROCEDURES**

Post construction fracture critical inspection.

Upon completion of 2022 FC inspection, revise inspection frequency.

SPAN CONFIGURATION			
Bridge Type	17 Movable-Swing	Appr Span Type	03 Girder-Floorbeam
Main Span	4 Steel Continuous	Appr Span	3 Steel
# of Main Spans	2	# of Appr Span	10
Lanes On	2	Lanes Under	0
47L-Left Horizontal Clear (ft)	0	47R-Right Horizontal Clear (ft)	22.01
54B-Left Underclearance (ft in)	0 ft. 0 in.	54D-Right Underclearance (ft in)	0 ft. 0 in.

## NBIS RATINGS & COMMENTS (Latest Inspection Ratings Transferred from BSIR)

Stringer (SIA-59):

4 APPROACH SPANS: Griders: heavy rust and scale at floorbeam connections and pack rust between bottom cover plates. Span 1W, south girder has a 5"x5" hole thru web. Floorbeams: most of floorbeams either repaired or replaced in 2007 or 2021. Original riveted floorbeam connections have packrust. Stringers: areas of heavy rust and section loss on stringers. Several stringer connections to repaired floorbeams have section loss. Lateral bracing: throughout bridge gusset plates for lateral bracing have holes and several lateral bracing member has holes and are broken.

SWING SPAN: Truss: Truss chords have areas of pitting and corrosion. The members at or below the roadway have areas of heavy corrosion. Upper portal brace in span 10 has a high load hit. Floorbeams: Most floorbeams have bolted repairs. Stringers: Rust and scale on stringers with some bolted repairs on stringers.

Paint (SIA-59A):

5 Newer paint at floorbeam and stringer repairs. Areas outside of repairs have rust and scale. Estimate 25% paint failed.

### FRACTURE CRITICAL ELEMENTS

### FC Element

Tension Areas of Main Girder

**Element Location** 

Spans 1-8, 11-12: Two-girder system

Inspection Comments

Fair: Few locations of minor paint system failure on web and bottom flange; Widespread paint system failure and corrosion on top flange and cover plate beneath open grid deck. Lower flange of girders has pack-rust between flange plates. Vertical stiffeners have heavy pitting with 100% section loss noted on S. Girder Span 12. Specific girder information located in documents tab.

### **FC Element**

Floor Beams (Spa > 14?)

**Element Location** 

Spans 1-8, 11-12: Floor Beams on two-girder system

Spans 9-10: Floor Beams in through truss (swing span)

Modified by: RICKERTE1975 on 01/06/2022 Printed on 05/20/2022 Page 1 of 3

STR 12006	FRACTURE CRITICAL INSPECTION REPORT [SIA #92-A]			
Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	
GROSSE ILE PARKWAY	42.1273 / -83.173	82200010000B020	Poor Condition(4)	
Feature	Length / Width / Spans	Owner		
TRENTON CHANNEL	1,345.88 / 31.8 / 12	County: Wayne(82)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
GROSSE ILE	1932 / 2007 / 1978 /	Taylor(25)	P Posted for load(406580)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Metro(7) / Wayne(82)	4 Steel Continuous / 17 Movable- Swing	11/23/2021 / 6SAN	4 Stable, needs action	

### Inspection Comments

Fair: Majority of fixed spans floor beams have either been replaced or have bolted repairs.

Fair: Truss Spans, 9 of 18 floor beams have bolted repairs. Floor beams without repairs still have heavy paint flaking and corrosion along bottom flanges, webs and near connections.

Specific floor beam information located in documents tab.

#### **FC Element**

Truss Chords and Diagonals

**Element Location** 

Spans 9-10: Truss Members

Inspection Comments

Fair: The paint system has scattered failures throughout resulting in surface corrosion on truss members. Members above roadway have spot corrosion. Pitting and section loss was exhibited on bottom chord, diagonals and verticals below the roadway. Moderate painted over pitting, South Truss L2-L3. Multiple lacing bars on truss bottom chord with 100% section loss/holes.

#### **FC Element**

Steel Cross Girder

**Element Location** 

West end of span 9, east end of span 10, and at Pier 9 (swing span center pier)

Inspection Comments

Good condition: minimal scattered corrosion.

#### **FC Element**

Gusset Plate, Truss

**Element Location** 

Spans 9-10 Truss Members Connections

Inspection Comments

Fair condition: Top chord gusset plates exhibit paint failure and spot corrosion with no measurable section loss. Rivets in good condition. Bottom chord gusset plates have crevice corrosion along top of bottom chord with up to 1/8" section loss along top angles of bottom chord.

# **MISCELLANEOUS FIELD NOTES**

Bottom chord of portal frames with impact damage along each lane centerline. Bridge is Load Posted 26 tons (11/21)

Bottom chord of portal frames with impact damage along each lane centerline. Bridge is Load Posted 26T-32T-43T. (06/21)

Bottom chord of portal frames with impact damage along each lane centerline. Bridge is Load Posted 26T-32T-43T. (06/20)

**Traffic Control** N **Comments:** Bridge closed to traffic during inspection

**Special Equipment** 3 Bucket Truck **Comments:** 

Photographs Y

#### **RECOMMENDATIONS AND ACTION ITEMS**

#### Recommendation

Clean and Paint

Priority Comments

H Clean and paint steel superstructure. Existing paint contains lead.

STR 12006 FRACTURE CRITICAL INSPECTION REPORT [SIA #92-A]				
Facility	Latitude / Longitude	MDOT Structure ID	Structure Condition	<u>A</u> Z
GROSSE ILE PARKWAY	42.1273 / -83.173	82200010000B020	Poor Condition(4)	
Feature	Length / Width / Spans	Owner		
TRENTON CHANNEL	1,345.88 / 31.8 / 12	County: Wayne(82)		
Location	Built / Recon. / Paint / Ovly.	TSC	Operational Status	
GROSSE ILE	1932 / 2007 / 1978 /	Taylor(25)	P Posted for load(406580)	
Region / County	Material / Design	Last NBI Inspection	Scour Evaluation	
Metro(7) / Wayne(82)	4 Steel Continuous / 17 Movable- Swing	11/23/2021 / 6SAN	4 Stable, needs action	

## Recommendation

Steel Repairs

Priority Comments

Repair lower lateral bracing connections/gusset plates. Repair vertical stiffeners on fixed spans. Repair/Replace members of sway bracing with impact damage

## Recommendation

Other-Misc.

Priority Comments

Coordinate work with recommendations from Detailed Inspection Report



Wayne County Fracture Critical Inspection GLEG Project No. 1020-2-680 Grosse Ile over Trenton Channel SN 12006 November 23, 2021

South elevation of bridge



North elevation of bridge







Span 2w, floorbeam 2w, bay 1w, stringer 1s, web loss of section



Span 2w, floorbeam 2w, bay 1w, stringer 2s, web loss of section







Span 6w, floorbeam 3w, west face, south end, bolted repair.



Span 6w, floorbeam 5w, bolted web repair.







Span 7w, floorbeam 2w, bolted web and flange repair.



Span 7w,
Floorbeam/
stringer
connection,
bay 2w,
stringer 1s,
painted over
LOS







Span 7w, floorbeam 3w, bolted repair.



Span 7w, stringer 1s connection, bay 2w, stringer 1s, heavy LOS







Span 7w, stringer 3s connection, bay 2w, stringer 1s, heavy LOS



Span 7w, floorbeam 4w, Stringer/ floorbeam connection







Span 7w, floorbeam 4w, Stringer/ floorbeam connection



Span 7w, floorbeam 4w, Stringer/ floorbeam connection





Wayne County Fracture Critical Inspection GLEG Project No. 1020-2-680 Grosse Ile over Trenton Channel SN 12006 November 23, 2021

Span 7w, floorbeam 5w, bolted web and flange repair.



Span 8w, new floorbeam







Span 9w, floorbeam 1w



Span 9w, floorbeam 1w, bolted repair, stringer 2s







Span 9w, floorbeam 2w



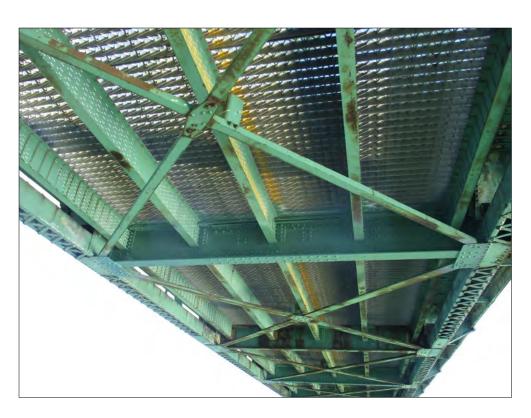
Span 9w, floorbeam 2w, bolted repair





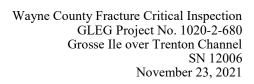


Span 9w, floorbeam 3w



Span 9w, floorbeam 3w, bolted repair





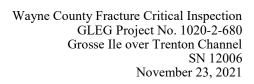


Span 9w, floorbeam 4w



Span 9w, floorbeam 4w, original beam



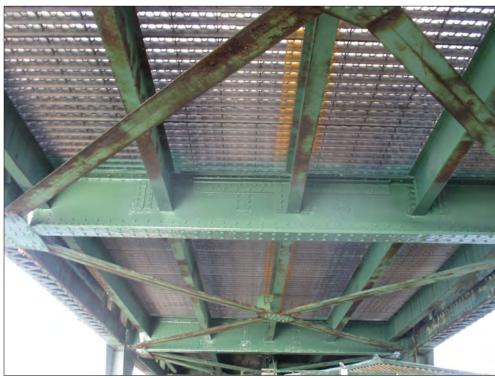




Span 9w, floorbeam 5w



Span 9w, floorbeam 5w, bolted repair







Span 9w, floorbeam 6w



Span 9w, floorbeam 6w, bolted repair





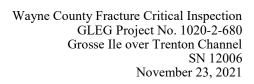


Span 10w, floorbeam 0w



Span 10w, floorbeam 1w







Span 10w, floorbeam 2w



Span 10w, floorbeam 3w





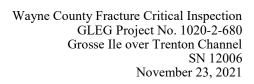


Span 10w, floorbeam 3w, west face



Span 10w, floorbeam 3w, east face







Span 10w, floorbeam 4w, west face



Span 10w, floorbeam 4w, east face





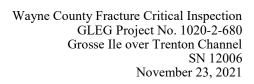


Span 10w, floorbeam 5w



Span 10w, floorbeam 5w







Span 10w, floorbeam 6w



Span 10w, floorbeam 6w







Span 11w, floorbeam 2w 1/2" wide hole at edge of bottom flange



Span 11w, floorbeam 2w 1/2" wide hole at edge of bottom flange







Span 12w, floorbeam 3w

Bottom flange thickness 0.22" adjacent to bolted repair



Span 12w, floorbeam 3w

Bottom flange thickness 0.22" adjacent to bolted repair





Wayne County Fracture Critical Inspection GLEG Project No. 1020-2-680 Grosse Ile over Trenton Channel SN 12006 November 23, 2021

South elevation of bridge



North elevation of bridge







Span 1w, south girder, section loss at floorbeam 4w



Span 1w, north girder







Span 1w, south girder, floorbeam 2w, 5" x 5" hole in web



Span 1w, south girder, floorbeam 2w, 5" x 5" hole in web





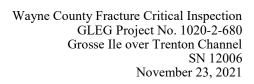


Span 2w, south girder, section loss at floorbeam 3w, 4w



Span 2w, north girder, section loss at floorbeam 3w, 4w







Span 3w, south girder, section loss at floorbeam 3w, 4w



Span 3w, north girder, section loss at floorbeam 3w, 4w





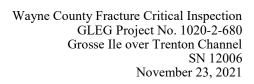


Span 4w, south girder, section loss at floorbeam 3w, 4w



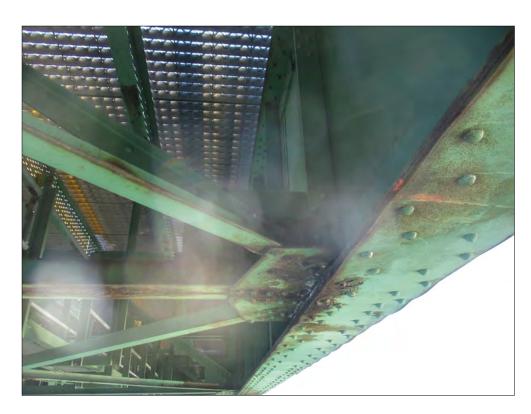
Span 4w, north girder, section loss at floorbeam 3w, 4w







Span 5w, south girder, section loss at floorbeam 3w, 4w



Span 5w, north girder, section loss at floorbeam 3w, 4w





Wayne County Fracture Critical Inspection GLEG Project No. 1020-2-680 Grosse Ile over Trenton Channel SN 12006 November 23, 2021

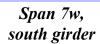
Span 6w, south girder, section loss at floorbeam 3w, 4w



Span 6w, north girder, section loss at floorbeam 3w, 4w









Span 7w, north girder







Span 7w, north girder, bottom flange, floorbeam 5w



Span 7w, north girder, bottom flange, floorbeam 5w







Span 11w, south girder, section loss at floorbeam 3w, 4w



Span 11w, north girder, section loss at floorbeam 3w, 4w

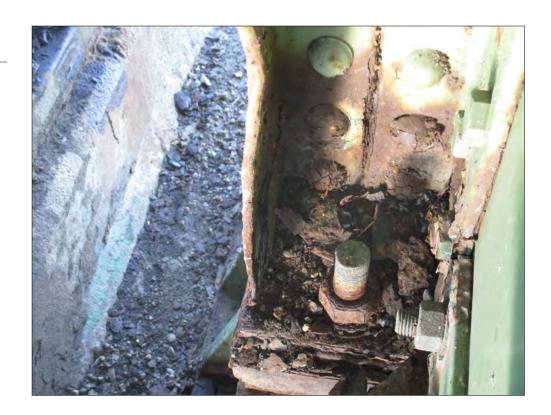




Wayne County Fracture Critical Inspection GLEG Project No. 1020-2-680 Grosse Ile over Trenton Channel SN 12006 November 23, 2021

Span 11w, North girder,

Bearing stiffener paper thin







Span 12w, south girder, section loss at floorbeam 3w, 4w



Span 12w, north girder, section loss at floorbeam 3w, 4w





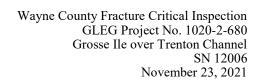
Wayne County Fracture Critical Inspection GLEG Project No. 1020-2-680 Grosse Ile over Trenton Channel SN 12006 November 23, 2021

## Elevation of truss



## South truss







North truss



Span 9w, south truss, lower gusset, north plate  $L_0$  holes







Span 9w, south truss, lower gusset, north plate  $L_0$  holes



Span 9w, south truss, south face, diagonal  $L_0$  -  $U_1$ 







Span 9w, south truss, north face, diagonal  $L_{\theta}$  -  $U_{I}$  section loss



Span 9w, south truss, north face, diagonal  $L_0$  -  $U_1$  section loss



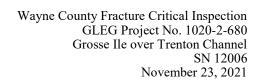


Span 9w, south truss, south face, vertical  $L_1$  -  $U_1$  west leg



Span 9w, south truss, north face, vertical  $L_1$  -  $U_1$ west leg







Span 9w, south truss, south face, vertical  $L_1$  -  $U_1$  possible impact damage



Span 9w, south truss, north face, vertical L<sub>1</sub> - U<sub>1</sub> rust crack







Span 9w, south truss, south face, diagonal  $U_1$  -  $L_2$ 



Span 9w, south truss, north face, diagonal  $U_1$  -  $L_2$  bottom flange







Span 9w, south truss, north face, diagonal  $U_1$  -  $L_2$ bottom flange



Span 9w, south truss, north face, vertical  $L_2$  -  $U_2$  west leg







Span 9w, south truss, north face, vertical  $L_2$  -  $U_2$ west leg



Span 9w, south truss, south face, diagonal  $U_2$  -  $L_3$ 







Span 9w, south truss, north face, diagonal  $U_2$  -  $L_3$ section loss



Span 9w, south truss, north face, diagonal  $U_2 - L_3$ section loss







Span 9w, south truss, south face, diagonal U<sub>3</sub> - L<sub>4</sub> section loss



Span 9w, south truss, north face, diagonal  $U_3$  -  $L_4$ section loss







Span 9w, south truss, north face, lower gusset, vertical  $L_4$  -  $U_4$ missing rivets



Span 9w, south truss, north face, lower gusset, vertical  $L_4$  -  $U_4$ missing rivets







Span 9w, south truss, north face, lower gusset, vertical  $L_5$  -  $U_5$  section loss



Span 9w, south truss, north face, lower gusset, vertical  $L_6$  -  $U_6$  pack rust







Span 9w, south truss, north face, lower gusset, vertical  $L_6$  -  $U_6$  pack rust



Span 9w, north truss, lower gusset, south plate, L<sub>0</sub>, holes







Span 9w, north truss, lower gusset, south plate, L<sub>0</sub>, holes



Span 9w, north truss, east face, web, vertical  $L_1$  -  $U_1$ section loss







Span 9w,
north truss,
east leg,
south flange,
vertical
L<sub>1</sub> - U<sub>1</sub>
section loss



Span 9w,
north truss,
east leg,
south flange,
vertical
L<sub>1</sub> - U<sub>1</sub>
section loss







Span 9w, north truss, south face, diagonal  $U_1$  -  $L_2$ section loss



Span 9w, north truss, south face, diagonal  $U_2$  -  $L_3$ section loss







Span 9w, north truss, south face, diagonal  $U_2$  -  $L_3$ section loss



Span 9w, north truss, north face, diagonal  $U_3$  -  $L_4$ section loss







Span 9w, north truss, north face, diagonal U<sub>3</sub> - L<sub>4</sub> section loss



Span 9w, north truss, north face, diagonal  $U_5$  -  $L_6$ section loss







Span 9w, north truss, north face, diagonal U<sub>5</sub> - L<sub>6</sub> section loss



Span 9w, north truss, south face, lower gusset  $L_6$  -  $U_6$ missing rivets







Span 9w, north truss, south face, lower gusset  $L_6$  -  $U_6$ missing rivets



Span 10w, south truss, north face, diagonal  $U_I$  -  $L_\theta$  section loss







Span 10w, south truss, north face, vertical  $U_I - L_I$  section loss



Span 10w, south truss, north face, vertical  $U_1$  -  $L_1$  section loss







Span 10w, south truss, north face, vertical  $U_I - L_I$  section loss



Span 10w, south truss, north face, vertical  $U_I$  -  $L_I$  section loss







Span 10w, south truss, south face, diagonal  $U_2$  -  $L_1$ section loss



Span 10w, south truss, south face, diagonal  $U_2$  -  $L_1$  section loss







Span 10w, south truss, north face, diagonal  $U_2$  -  $L_1$  section loss



Span 10w, south truss, north face, diagonal  $U_2$  -  $L_1$  section loss







Span 10w, south truss, north face, vertical  $U_2$  -  $L_2$ section loss



Span 10w, south truss, north face, diagonal U<sub>3</sub> - L<sub>2</sub> section loss







Span 10w, south truss, north face, diagonal U<sub>3</sub> - L<sub>2</sub> section loss



Span 10w, south truss, north face, diagonal U<sub>3</sub> - L<sub>2</sub> section loss







Span 10w, south truss, north face, diagonal U<sub>4</sub> - L<sub>3</sub> section loss



Span 10w, south truss, north face, diagonal  $U_4$  -  $L_3$ section loss







Span 10w, south truss, south face, diagonal  $U_4$  -  $L_3$ section loss



Span 10w, south truss, north gusset, vertical  $U_6$  -  $L_6$  section loss







Span 10w, south truss, north gusset, vertical  $U_6$  -  $L_6$ section loss



Span 10w, north truss, north face, diagonal  $L_{\theta}$  -  $U_{I}$  section loss





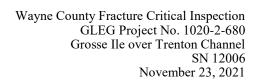


Span 10w, north truss, south face, vertical  $L_1$  -  $U_1$  section loss



Span 10w, north truss, south face, diagonal  $U_1$  -  $L_2$  section loss







Span 10w, north truss, north face, diagonal  $U_4$  -  $L_3$ section loss



Span 10w, north truss, north face, diagonal  $U_4$  -  $L_3$ section loss







































Span 10w, south truss, south face, gusset plate U<sub>5</sub>



Span 10w, south truss, north face, gusset plate U<sub>5</sub>































Span 10w, north truss, south face, gusset plate U<sub>3</sub>

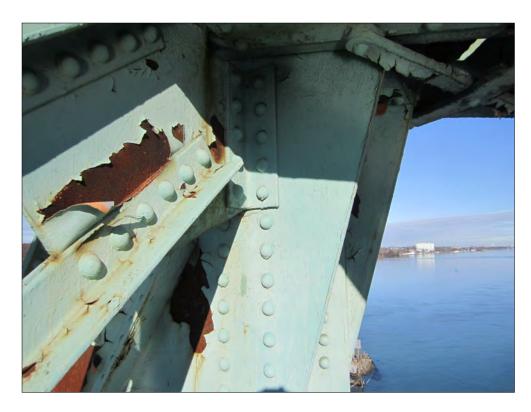


Span 10w, north truss, north face, gusset plate U<sub>3</sub>















Span 10w, north truss, south face, gusset plate U<sub>5</sub>



Span 10w, north truss, north face, gusset plate U<sub>5</sub>















Span 10w, south truss, bottom chord,  $L_0$  -  $L_1$ 



Span 10w, south truss, bottom chord,  $L_1$  -  $L_2$ 







Span 10w, south truss, bottom chord,  $L_2$  -  $L_3$ 



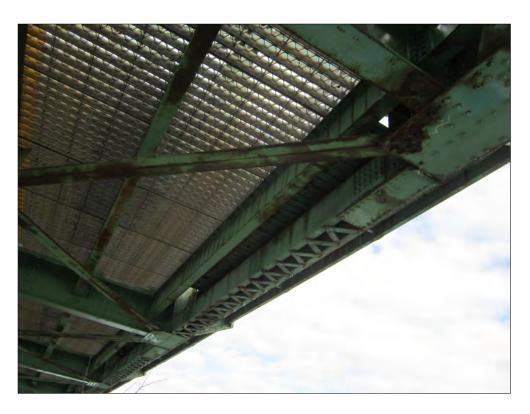
Span 10w, south truss, bottom chord,  $L_3$  -  $L_4$ 







Span 10w, south truss, bottom chord,  $L_4$  -  $L_5$ 



Span 10w, north truss, bottom chord,  $L_0$  -  $L_1$ 







Span 10w, south truss, bottom chord,  $L_1$  -  $L_2$ 



Span 10w, north truss, bottom chord, L<sub>2</sub> - L<sub>3</sub>







Span 10w, south truss, bottom chord,  $L_3$  -  $L_4$ 



Span 10w, north truss, bottom chord, L<sub>4</sub> - L<sub>5</sub>



Span	Floorbeam	M&M 2019 LOS	<b>Current Condition</b>	Notes	Photos
1W	1W	NA	Replaced 2007	W18x55, grade 36	
1W	2W	30.62	Replaced 2021	W18x55, grade 50	
1W	3W	32.17	Replaced 2021	W18x55, grade 50	
1W	4W	NA	Bolted repair		
1W	5W	39.92	Replaced 2021	W18x55, grade 50	
1W	6W	NA	No 2021 repair		
2W	1W	NA	No 2021 repair		
2W	2W	5.52	Bolted repair	Bay 1W, ST2S and ST1S web LOS	5840, 41
2W	3W	40.7	Bolted repair		
2W	4W	NA	No 2021 repair		
2W	5W	30.62	Bolted repair		
2W	6W	NA	No 2021 repair		
3W	1W	NA	No 2021 repair		
3W	2W	11.04	Bolted repair		
3W	3W	11.04	Bolted repair		
3W	4W	NA	Old bolted repair		
3W	5W	11.04	Replaced 2021	W18x55, grade 50	
3W	6W	11.04	Replaced 2021	W18x55, grade 50	
4W	1W	5.52	Replaced 2021	W18x55, grade 50	
4W	2W	69.54	Replaced 2021	W18x55, grade 50	
4W	3W	NA	Bolted repair		
4W	4W	66.23	Replaced 2021	W18x55, grade 50	
4W	5W	5.52	Bolted repair		
4W	6W	NA	No 2021 repair		
5W	1W	NA	No 2021 repair		
5W	2W	22.08	Bolted repair		
5W	3W	NA	No 2021 repair		
5W	4W	NA	Bolted repair		
5W	5W	NA	Replaced 2021	W18x55, grade 50	
5W	6W	NA	No 2021 repair		
6W	1W	NA	Replaced 2007	W18x55, grade 36	
6W	2W	3.73	No 2021 repair		
6W	3W	26.25	Bolted repair		5842
6W	4W	NA	No 2021 repair		
6W	5W	NA	Bolted repair		5843
6W	6W	NA	No 2021 repair		
				FB/Stringer connections on ST 2S and	
7W	1W	7.5	No 2021 repair	3S have heavy LOS	5844, 45
				FB/Stringer connection on ST 1S	
7W	2W	11.04	Bolted repair	painted over LOS	5847
				FB/Stringer connections on ST 1S and	
7W	3W	9.69	Bolted repair	3S have heavy LOS	5848, 49, 50
7W	4W	9.69	No 2021 repair		5851, 52, 53
7W	5W	NA	Bolted repair		5854

Span	Floorbeam	M&M 2019 LOS	<b>Current Condition</b>	Notes	Photos
7W	6W	19.38	Bolted repair		
8W	1W	11.04	No 2021 repair		
8W	2W	11.04	Replaced 2021	W18x55, grade 50	5855
8W	3W	9.69	Bolted repair	FB/Stringer connections have LOS	
8W	4W	NA	Replaced 2021	W18x55, grade 50	
8W	5W	NA	Replaced 2021	W18x55, grade 50	
8W	6W		Replaced 2007	W18x55, grade 36	
9W	0W	NA	No 2021 repair		
9W	1W	9.29	Bolted repair		5856
9W	2W	10.62	Bolted repair		5857
9W	3W	10.62	Bolted repair		5858
9W	4W	NA	No 2021 repair		5859
9W	5W	10.62	Bolted repair		5860
9W	6W	10.62	Bolted repair		5861
10W	0'W	5.56	No 2021 repair		44
10W	1'W	5.31	Bolted repair		47
10W	2'W	5.31	No 2021 repair		
10W	3'W	10.62	Bolted repair		52, 51
10W	4'W	5.31	Bolted repair		55, 54
10W	5'W	5.31	No 2021 repair		56
10W	6'W	5.31	Bolted repair		59
11W	1W	NA	No 2021 repair		
				0.5" wide hole in btm flange at stringer	
11W	2W	7.5	No 2021 repair	3N (use M&M 2019 LOS)	5817, 5818
11W	3W	16.56	Replaced 2021	W18x55, grade 50	
11W	4W	19.38	Bolted repair		
11W	5W	19.38	Bolted repair		
11W	6W	19.38	Bolted repair		
12W	1W	14.92	Bolted repair		
12W	2W	13.8	Replaced 2021	W18x55, grade 50	
				Btm flange 0.22" adj. to existing bolted	
12W	3W	NA	No 2021 repair	repair (do not include in load rating)	5819, 5820
12W	4W	NA	No 2021 repair		
12W	5W	NA	Replaced 2007	W18x55, grade 36	
12W	6W	NA	No 2021 repair		

# SN 12006, Grosse Ile Parkway over Trenton Channel Fixed Span Girders

Span	Girder	Notes*	Photos
1W	G1 ( north)		5781
		Section loss at FB 4W, 5"x5" hole in	5782, 5838,
1W	G2 (south)	web at FB 2W (LOS in BrR model)	5839
2W	G1 ( north)	Section loss at FB 3W and 4W	5784
2W	G2 (south)	Section loss at FB 3W and 4W	5783
3W	G1 ( north)	Section loss at FB 3W and 4W	5785
3W	G2 (south)	Section loss at FB 3W and 4W	5786
4W	G1 ( north)	Section loss at FB 3W and 4W	5788
4W	G2 (south)	Section loss at FB 3W and 4W	5787
5W	G1 ( north)	Section loss at FB 3W and 4W	5789
5W	G2 (south)	Section loss at FB 3W and 4W	5790
6W	G1 ( north)	Section loss at FB 3W and 4W	5791
6W	G2 (south)	Section loss at FB 3W and 4W	5792
		Btm flange is 0.275" (18% LOS) at FB	5793, 5795,
7W	G1 ( north)	5W (LOS in BrR Model)	5796
7W	G2 (south)		5794
8W	G1 ( north)		
8W	G2 (south)		
		Section loss at FB 3W and 4W. At pier	
		10W, bearing stiffener paper thin (used	5810, 5811,
11W	G1 ( north)	6"x4"x1/8" stiffener in BrR model)	5816
11W	G2 (south)	Section loss at FB 3W and 4W	5812
12W	G1 ( north)	Section loss at FB 3W and 4W	5813
12W	G2 (south)	Section loss at FB 3W and 4W	5814

<sup>\*</sup>All girders have pack rust between bottom cover plates. Pack rust is causing cover plates to "ripple".



# BRIDGE CROSS-SECTIONS

 DATE:
 11/9/2021

 STRUCTURE NO.:
 12006

 CONTROL SECTION:
 N/A

 ROUTE:
 Grosse lle Parkway

 WATERCOURSE:
 Trenton Channel

### CURRENT CROSS SECTION

#### PREVIOUS CROSS SECTION

### PREVIOUS CROSS SECTION

#### PREVIOUS CROSS SECTION

UPSTREAM FACE					UPSTREAM	/ FACE			UPSTREAM	/ FACE		UPSTREAM FACE				
	BENCHMARK ELEVATION: DESCRIPTION OF BENCHMARK:		583.94 Low steel, span 1w	BENCHMARK ELEVATION: DESCRIPTION OF BENCHMARK:		583.94 Low steel, span 1w		BENCHMARK ELEVATION: DESCRIPTION OF BENCHMARK:		583.94 Low steel, span 1w	BENCHMARK ELEVATION: DESCRIPTION OF BENCHMARK:		582.77 Top of Pier 1w			
UNDERCLEARANCE ELEVATION: TOP OF ROAD ELEVATION: WATER SURFACE ELEVATION:		575.49	UNDERCLEARANCE ELEVATION: TOP OF ROAD ELEVATION: WATER SURFACE ELEVATION:		575.1	TOP OF ROA	UNDERCLEARANCE ELEVATION: TOP OF ROAD ELEVATION: WATER SURFACE ELEVATION:		576.4	UNDERCLEARANCE ELEVATION: TOP OF ROAD ELEVATION: WATER SURFACE ELEVATION:		574.8				
DATE: REFERENC	DATE: REFERENCE ELEVATION:		11/9/2021 575.49	DATE: REFERENCE ELEVATION:		11/4/2020 575.1	DATE: REFERENCE ELEVATION:		6/30/2020 576.4	DATE: REFERENCE ELEVATION:			12/3/2019 574.8			
STATION	READING	ELEVATION	DESCRIPTION	STATION	READING	ELEVATION	DESCRIPTION	STATION	READING	ELEVATION	DESCRIPTION	STATION	READING	ELEVATION	DESCRIPTION	
0.0	-2.0	577.5	East abutment	0.0	-2.0	577.1	East abutment	0.0	-2.0	578.4	East abutment	0.0	-2.5	577.3	East abutment	
2.0 25.0	0.0 1.9	575.5 573.6	East edge of water Span 12W, 1/4 pt	2.0 25.0	0.0 8.8	575.1 566.3	East edge of water Span 12W, 1/4 pt	2.0 25.0	0.0 10.8	576.4 565.6	East edge of water Span 12W, 1/4 pt	6.0 25.0	0.0 12.4	574.8 562.4	East edge of water Span 12W, 1/4 pt	
50.0	17.2	558.3	Span 12W, 1/2 pt	50.0	16.7	558.4	Span 12W, 1/2 pt	50.0	17.0	559.4	Span 12W, 1/2 pt	50.0	19.1	555.7	Span 12W, 1/2 pt	
74.9	19.1	556.4	Span 12W, 3/4 pt	74.9	19.8	555.3	Span 12W, 3/4 pt	74.9	20.0	556.4	Span 12W, 3/4 pt	74.9	19.9	554.9	Span 12W, 3/4 pt	
99.9	22.9	552.6	Pier 11W	99.9	21.3	553.8	Pier 11W	99.9	22.6	553.8	Pier 11W	99.9	21.8	553.0	Pier 11W	
125.1 150.3	19.8 20.5	555.7 555.0	Span 11W, 1/4 pt	125.1 150.3	21.8 22.0	553.3 553.1	Span 11W, 1/4 pt	125.1 150.3	21.6 22.7	554.8 553.7	Span 11W, 1/4 pt	125.1 150.3	22.0 22.7	552.8 552.1	Span 11W, 1/4 pt	
150.3 175.4	20.5	555.0 553.7	Span 11W, 1/2 pt Span 11W, 3/4 pt	150.3 175.4	22.0	553.1 552.6	Span 11W, 1/2 pt Span 11W, 3/4 pt	150.3 175.4	23.2	553.7 553.2	Span 11W, 1/2 pt Span 11W, 3/4 pt	150.3 175.4	22.7	552.1 551.7	Span 11W, 1/2 pt Span 11W, 3/4 pt	
200.6	24.8	550.7	Pier 10W	200.6	22.0	553.1	Pier 10W	200.6	23.0	553.4	Pier 10W	200.6	23.7	551.1	Pier 10W	
239.0	21.7	553.8	Span 10W, 1/4 pt	239.0	20.9	554.2	Span 10W, 1/4 pt	239.0	23.1	553.3	Span 10W, 1/4 pt	239.0	21.5	553.3	Span 10W, 1/4 pt	
277.4	20.2	555.3	Span 10W, 1/2 pt	277.4	20.0	555.1	Span 10W, 1/2 pt	277.4	20.9	555.5	Span 10W, 1/2 pt	277.4	22.0	552.8	Span 10W, 1/2 pt	
315.9 354.3	21.7 20.7	553.8 554.8	Span 10W, 3/4 pt Pier 9W, east side	315.9 354.3	20.9 20.7	554.2 554.4	Span 10W, 3/4 pt Pier 9W, east side	315.9 354.3	21.5 24.0	554.9 552.4	Span 10W, 3/4 pt Pier 9W, east side	315.9 354.3	21.4 20.0	553.4 554.8	Span 10W, 3/4 pt Pier 9W, east side	
389.6	20.7	554.7	Pier 9W, east side	389.6	20.7	554.3	Pier 9W, west side	389.6	28.0	548.4	Pier 9W, west side	389.6	24.3	550.5	Pier 9W, west side	
428.0	26.2	549.3	Span 9W, 1/4 pt	428.0	27.6	547.5	Span 9W, 1/4 pt	428.0	28.2	548.2	Span 9W, 1/4 pt	428.0	26.9	547.9	Span 9W, 1/4 pt	
466.5	27.6	547.9	Span 9W, 1/2 pt	466.5	27.9	547.2	Span 9W, 1/2 pt	466.5	28.6	547.8	Span 9W, 1/2 pt	466.5	27.0	547.8	Span 9W, 1/2 pt	
504.9	27.2	548.3	Span 9W, 3/4 pt	504.9	28.0	547.1	Span 9W, 3/4 pt	504.9	28.7	547.7	Span 9W, 3/4 pt	504.9	24.9	549.9	Span 9W, 3/4 pt	
543.3 568.5	23.2	552.3 555.2	Pier 8W Span 8W, 1/4 pt	543.3 568.5	21.0	554.1 554.9	Pier 8W Span 8W, 1/4 pt	543.3 568.5	20.3	556.1 554.1	Pier 8W Span 8W, 1/4 pt	543.3 568.5	22.2 20.6	552.6 554.2	Pier 8W Span 8W, 1/4 pt	
593.6	18.7	556.8	Span 8W, 1/2 pt	593.6	20.2	554.4	Span 8W, 1/2 pt	593.6	20.6	555.8	Span 8W, 1/2 pt	593.6	21.9	552.9	Span 8W, 1/2 pt	
618.8	21.4	554.1	Span 8W, 3/4 pt	618.8	21.6	553.5	Span 8W, 3/4 pt	618.8	22.4	554.0	Span 8W, 3/4 pt	618.8	21.9	552.9	Span 8W, 3/4 pt	
644.0	24.0	551.5	Pier 7W	644.0	22.0	553.1	Pier 7W	644.0	23.2	553.2	Pier 7W	644.0	22.3	552.5	Pier 7W	
669.0	18.2	557.3	Span 7W, 1/4 pt	669.0	20.6	554.5	Span 7W, 1/4 pt	669.0	20.2	556.2	Span 7W, 1/4 pt	669.0	20.8	554.0	Span 7W, 1/4 pt	
694.1 719.2	20.2 19.8	555.3 555.7	Span 7W, 1/2 pt Span 7W, 3/4 pt	694.1 719.2	20.8 19.7	554.3 555.4	Span 7W, 1/2 pt Span 7W, 3/4 pt	694.1 719.2	21.9 20.7	554.5 555.7	Span 7W, 1/2 pt Span 7W, 3/4 pt	694.1 719.2	20.2 19.9	554.6 554.9	Span 7W, 1/2 pt Span 7W, 3/4 pt	
744.2	22.2	553.7	Pier 6W	744.2	20.5	554.6	Pier 6W	719.2	21.3	555.1	Pier 6W	719.2	20.5	554.3	Pier 6W	
769.3	20.3	555.2	Span 6W, 1/4 pt	769.3	21.0	554.1	Span 6W, 1/4 pt	769.3	22.0	554.4	Span 6W, 1/4 pt	769.3	20.9	553.9	Span 6W, 1/4 pt	
794.3	20.8	554.7	Span 6W, 1/2 pt	794.3	21.4	553.7	Span 6W, 1/2 pt	794.3	22.5	553.9	Span 6W, 1/2 pt	794.3	21.0	553.8	Span 6W, 1/2 pt	
819.4	20.3	555.2	Span 6W, 3/4 pt	819.4	21.0	554.1	Span 6W, 3/4 pt	819.4	22.1	554.3	Span 6W, 3/4 pt	819.4	20.9	553.9	Span 6W, 3/4 pt	
844.5 869.6	23.5 21.3	552.0 554.2	Pier 5W Span 5W, 1/4 pt	844.5 869.6	21.7 21.7	553.4 553.4	Pier 5W Span 5W, 1/4 pt	844.5 869.6	22.6 22.7	553.8 553.7	Pier 5W Span 5W, 1/4 pt	844.5 869.6	21.8 21.9	553.0 552.9	Pier 5W Span 5W, 1/4 pt	
894.6	20.3	555.2	Span 5W, 1/2 pt	894.6	21.7	553.6	Span 5W, 1/2 pt	894.6	22.7	554.2	Span 5W, 1/2 pt	894.6	21.2	553.6	Span 5W, 1/2 pt	
919.7	20.3	555.2	Span 5W, 3/4 pt	919.7	21.6	553.5	Span 5W, 3/4 pt	919.7	22.6	553.8	Span 5W, 3/4 pt	919.7	21.0	553.8	Span 5W, 3/4 pt	
944.8	23.8	551.7	Pier 4W	944.8	22.0	553.1	Pier 4W	944.8	22.2	554.2	Pier 4W	944.8	22.1	552.7	Pier 4W	
969.8 994.9	22.3 19.7	553.2 555.8	Span 4W, 1/4 pt	969.8 994.9	23.2 19.8	551.9 555.3	Span 4W, 1/4 pt	969.8 994.9	23.8 24.3	552.6 552.1	Span 4W, 1/4 pt	969.8 994.9	23.8 21.3	551.0 553.5	Span 4W, 1/4 pt	
1019.9	18.3	557.2	Span 4W, 1/2 pt Span 4W, 3/4 pt	1019.9	19.8	556.1	Span 4W, 1/2 pt Span 4W, 3/4 pt	1019.9	19.3	557.1	Span 4W, 1/2 pt Span 4W, 3/4 pt	1019.9	19.4	555.4	Span 4W, 1/2 pt Span 4W, 3/4 pt	
1045.0	19.6	555.9	Pier 3W	1045.0	18.3	556.8	Pier 3W	1045.0	20.5	555.9	Pier 3W	1045.0	17.9	556.9	Pier 3W	
1070.1	15.9	559.6	Span 3W, 1/4 pt	1070.1	18.8	556.3	Span 3W, 1/4 pt	1070.1	18.7	557.7	Span 3W, 1/4 pt	1070.1	18.9	555.9	Span 3W, 1/4 pt	
1095.1	19.2	556.3	Span 3W, 1/2 pt	1095.1	19.7	555.4	Span 3W, 1/2 pt	1095.1	20.0	556.4	Span 3W, 1/2 pt	1095.1	20.1	554.7	Span 3W, 1/2 pt	
1120.2 1145.3	18.7 20.6	556.8 554.9	Span 3W, 3/4 pt Pier 2W	1120.2 1145.3	18.5 17.5	556.6	Span 3W, 3/4 pt	1120.2 1145.3	21.5	554.9 559.3	Span 3W, 3/4 pt Pier 2W	1120.2 1145.3	20.0	554.8 555.9	Span 3W, 3/4 pt	
1145.3 1170.3	20.6	554.9 554.2	Span 2W, 1/4 pt	1145.3	17.5 21.5	557.6 553.6	Pier 2W Span 2W, 1/4 pt	1145.3	17.1 23.1	559.3 553.3	Span 2W, 1/4 pt	1145.3	18.9 21.0	555.9 553.8	Pier 2W Span 2W, 1/4 pt	
1170.3	20.7	554.8	Span 2W, 1/2 pt	1170.3	21.2	553.9	Span 2W, 1/2 pt	1170.3	22.3	554.1	Span 2W, 1/2 pt	1170.3	20.7	554.1	Span 2W, 1/2 pt	
1220.4	19.2	556.3	Span 2W, 3/4 pt	1220.4	21.2	553.9	Span 2W, 3/4 pt	1220.4	20.7	555.7	Span 2W, 3/4 pt	1220.4	18.6	556.2	Span 2W, 3/4 pt	
1245.5	16.8	558.7	Pier 1W	1245.5	13.5	561.6	Pier 1W	1245.5	16.0	560.4	Pier 1W	1245.5	15.1	559.7	Pier 1W	
1270.5	13.0	562.5	Span 1W, 1/4 pt	1270.5	8.2	566.9	Span 1W, 1/4 pt	1270.5	9.5	566.9	Span 1W, 1/4 pt	1270.5	9.7	565.1	Span 1W, 1/4 pt	
1295.5 1320.6	8.1 6.2	567.4 569.3	Span 1W, 1/2 pt	1295.5 1320.6	6.9 5.6	568.2 569.5	Span 1W, 1/2 pt	1295.5 1320.6	6.6 3.9	569.8 572.5	Span 1W, 1/2 pt	1295.5 1320.6	7.3 4.1	567.5 570.7	Span 1W, 1/2 pt	
1320.6 1340.0	6.2	569.3 575.5	Span 1W, 3/4 pt West edge of water	1320.6 1340.0	5.6	569.5 575.1	Span 1W, 3/4 pt West edge of water	1320.6 1340.0	3.9	572.5 576.4	Span 1W, 3/4 pt West edge of water	1320.6 1336.0	4.1 0.0	570.7 574.8	Span 1W, 3/4 pt West edge of water	
1345.8	-2.0	577.5	West abutment	1345.8	-2.0	577.1	West abutment	1345.8	-2.0	578.4	West abutment	1345.8	-3.5	578.3	West abutment	
									•							

# BRIDGE CROSS-SECTIONS

 DATE:
 11/9/2021

 STRUCTURE NO.:
 12006

 CONTROL SECTION:
 N/A

 ROUTE:
 Grosse lle Parkway

 WATERCOURSE:
 Trenton Channel

CURRENT CROSS SECTION

#### PREVIOUS CROSS SECTION PREVIOUS CROSS SECTION

#### PREVIOUS CROSS SECTION

DOWNSTREAM FACE		DOWNSTREAM FACE					DOWNSTR	EAM FACE		DOWNSTREAM FACE					
	RK ELEVATION: ON OF BENCH		583.94 Low steel, span 1w	BENCHMARK ELEVATION: DESCRIPTION OF BENCHMARK:			583.94 Low steel, span 1w		BENCHMARK ELEVATION: DESCRIPTION OF BENCHMARK:				BENCHMARK ELEVATION: DESCRIPTION OF BENCHMARK:		
UNDERCLEARANCE ELEVATION: TOP OF ROAD ELEVATION: WATER SURFACE ELEVATION: 575.49		575.49	UNDERCLEARANCE ELEVATION: TOP OF ROAD ELEVATION: WATER SURFACE ELEVATION:		575.14	TOP OF RO	ARANCE ELEV AD ELEVATION RFACE ELEVAT	V:	576.44	UNDERCLEARANCE ELEVATION: TOP OF ROAD ELEVATION: WATER SURFACE ELEVATION:			574.77		
DATE:	DATE: 11/9/2021		11/9/2021	DATE:			11/4/2020	DATE:			6/30/2020	DATE:			12/3/2019
REFERENC	E ELEVATION:		575.49	REFERENCI	E ELEVATION:		575.14	REFERENCI	E ELEVATION:		576.44	REFERENCE	ELEVATION:		574.77
STATION	READING	ELEVATION	DESCRIPTION	STATION	READING	ELEVATION	DESCRIPTION	STATION	READING	ELEVATION	DESCRIPTION	STATION	READING	ELEVATION	DESCRIPTION
0.0	-2.0	577.5	East abutment	0.0	-2.0	577.1	East abutment	0.0	-2.0	578.4	East abutment	0.0	-2.0	576.8	East abutment
2.0	0.0	575.5	East edge of water	2.0	0.0	575.1	East edge of water	2.0	0.0	576.4	East edge of water	6.0	0.0	574.8	East edge of water
25.0	2.3	573.2	Span 12W, 1/4 pt	25.0	5.6	569.5	Span 12W, 1/4 pt	25.0	4.6	571.8	Span 12W, 1/4 pt	25.0	5.7	569.1	Span 12W, 1/4 pt
50.0	13.5	562.0	Span 12W, 1/2 pt	50.0	8.9	566.2	Span 12W, 1/2 pt	50.0	13.6	562.8	Span 12W, 1/2 pt	50.0	9.5	565.3	Span 12W, 1/2 pt
74.9	16.3	559.2	Span 12W, 3/4 pt	74.9	13.8	561.3	Span 12W, 3/4 pt	74.9	17.2	559.2	Span 12W, 3/4 pt	74.9	15.5	559.3	Span 12W, 3/4 pt
99.9	20.2	555.3	Pier 11W	99.9	19.0	556.1	Pier 11W	99.9	18.5	557.9	Pier 11W	99.9	19.1	555.7	Pier 11W
125.1	20.1	555.4	Span 11W, 1/4 pt	125.1	19.7	555.4	Span 11W, 1/4 pt	125.1	21.2	555.2	Span 11W, 1/4 pt	125.1	19.8	555.0	Span 11W, 1/4 pt
150.3	20.4	555.1	Span 11W, 1/2 pt	150.3	20.5	554.6	Span 11W, 1/2 pt	150.3	22.7	553.7	Span 11W, 1/2 pt	150.3	20.9	553.9	Span 11W, 1/2 pt
175.4	20.3	555.2	Span 11W, 3/4 pt	175.4	21.0	554.1	Span 11W, 3/4 pt	175.4	21.5	554.9	Span 11W, 3/4 pt	175.4	21.8	553.0	Span 11W, 3/4 pt
200.6 239.0	21.8 21.7	553.7 553.8	Pier 10W Span 10W, 1/4 pt	200.6 239.0	19.7 21.8	555.4 553.3	Pier 10W Span 10W, 1/4 pt	200.6 239.0	21.2 22.9	555.2 553.5	Pier 10W Span 10W, 1/4 pt	200.6 239.0	20.7 22.7	554.1 552.1	Pier 10W Span 10W, 1/4 pt
239.0	20.5	555.0	Span 10W, 1/4 pt Span 10W, 1/2 pt	239.0	21.8	553.4	Span 10W, 1/4 pt Span 10W, 1/2 pt	239.0	22.9	553.9	Span 10W, 1/4 pt Span 10W, 1/2 pt	239.0	22.7	552.7	Span 10W, 1/4 pt Span 10W, 1/2 pt
315.9	21.4	554.1	Span 10W, 1/2 pt	315.9	21.7	553.6	Span 10W, 3/4 pt	315.9	22.4	554.0	Span 10W, 1/2 pt	315.9	20.9	553.9	Span 10W, 3/4 pt
354.3	20.5	555.0	Pier 9W, east side	354.3	20.5	554.6	Pier 9W, east side	354.3	20.7	555.7	Pier 9W, east side	354.3	20.9	554.8	Pier 9W, east side
389.6	22.0	553.5	Pier 9W, west side	389.6	22.0	553.1	Pier 9W, west side	389.6	19.2	557.2	Pier 9W, west side	389.6	17.9	556.9	Pier 9W, west side
428.0	25.2	550.3	Span 9W, 1/4 pt	428.0	27.6	547.5	Span 9W, 1/4 pt	428.0	27.0	549.4	Span 9W, 1/4 pt	428.0	26.7	548.1	Span 9W, 1/4 pt
466.5	27.0	548.5	Span 9W, 1/2 pt	466.5	27.8	547.3	Span 9W, 1/2 pt	466.5	27.6	548.8	Span 9W, 1/2 pt	466.5	26.9	547.9	Span 9W, 1/2 pt
504.9	26.8	548.7	Span 9W, 3/4 pt	504.9	27.9	547.2	Span 9W, 3/4 pt	504.9	28.2	548.2	Span 9W, 3/4 pt	504.9	26.7	548.1	Span 9W, 3/4 pt
543.3	24.5	551.0	Pier 8W	543.3	21.3	553.8	Pier 8W	543.3	20.0	556.4	Pier 8W	543.3	22.8	552.0	Pier 8W
568.5	22.3	553.2	Span 8W, 1/4 pt	568.5	23.2	551.9	Span 8W, 1/4 pt	568.5	24.1	552.3	Span 8W, 1/4 pt	568.5	22.3	552.5	Span 8W, 1/4 pt
593.6	21.0	554.5	Span 8W, 1/2 pt	593.6	21.5	553.6	Span 8W, 1/2 pt	593.6	21.7	554.7	Span 8W, 1/2 pt	593.6	20.9	553.9	Span 8W, 1/2 pt
618.8	22.3	553.2	Span 8W, 3/4 pt	618.8	23.6	551.5	Span 8W, 3/4 pt	618.8	22.5	553.9	Span 8W, 3/4 pt	618.8	22.1	552.7	Span 8W, 3/4 pt
644.0	22.5	553.0	Pier 7W	644.0	20.7	554.4	Pier 7W	644.0	21.8	554.6	Pier 7W	644.0	20.8	554.0	Pier 7W
669.0	21.6	553.9	Span 7W, 1/4 pt	669.0	21.8	553.3	Span 7W, 1/4 pt	669.0	23.1	553.3	Span 7W, 1/4 pt	669.0	20.9	553.9	Span 7W, 1/4 pt
694.1	20.7	554.8	Span 7W, 1/2 pt	694.1	21.9	553.2	Span 7W, 1/2 pt	694.1	22.2	554.2	Span 7W, 1/2 pt	694.1	21.9	552.9	Span 7W, 1/2 pt
719.2	20.7	554.8	Span 7W, 3/4 pt	719.2	21.7	553.4	Span 7W, 3/4 pt	719.2	22.2	554.2	Span 7W, 3/4 pt	719.2	21.1	553.7	Span 7W, 3/4 pt
744.2	19.4	556.1	Pier 6W	744.2	17.5	557.6	Pier 6W	744.2	19.5	556.9	Pier 6W	744.2	17.7	557.1	Pier 6W
769.3	18.9	556.6	Span 6W, 1/4 pt	769.3	20.2	554.9	Span 6W, 1/4 pt	769.3	20.0	556.4	Span 6W, 1/4 pt	769.3	18.7	556.1	Span 6W, 1/4 pt
794.3	19.2	556.3	Span 6W, 1/2 pt	794.3	20.7	554.4	Span 6W, 1/2 pt	794.3	20.6	555.8	Span 6W, 1/2 pt	794.3	18.9	555.9	Span 6W, 1/2 pt
819.4	19.8	555.7	Span 6W, 3/4 pt	819.4	21.6	553.5	Span 6W, 3/4 pt	819.4	21.4	555.0	Span 6W, 3/4 pt	819.4	20.3	554.5	Span 6W, 3/4 pt
844.5	20.8	554.7	Pier 5W	844.5	18.5	556.6	Pier 5W	844.5	21.0	555.4	Pier 5W	844.5 869.6	19.1	555.7	Pier 5W
869.6	21.8	553.7	Span 5W, 1/4 pt	869.6	23.7	551.4	Span 5W, 1/4 pt	869.6	23.4	553.0	Span 5W, 1/4 pt	000.0	22.7	552.1	Span 5W, 1/4 pt
894.6 919.7	20.7 20.8	554.8 554.7	Span 5W, 1/2 pt	894.6 919.7	22.5	552.6 553.3	Span 5W, 1/2 pt	894.6 919.7	24.1 22.8	552.3 553.6	Span 5W, 1/2 pt	894.6 919.7	22.4 22.0	552.4 552.8	Span 5W, 1/2 pt
919.7	19.7	555.8	Span 5W, 3/4 pt Pier 4W	919.7	20.0	555.1	Span 5W, 3/4 pt Pier 4W	919.7	18.3	558.1	Span 5W, 3/4 pt Pier 4W	919.7	18.0	556.8	Span 5W, 3/4 pt Pier 4W
969.8	21.9	553.6	Span 4W, 1/4 pt	969.8	21.7	553.4	Span 4W, 1/4 pt	969.8	23.0	553.4	Span 4W, 1/4 pt	969.8	21.2	553.6	Span 4W, 1/4 pt
994.9	19.6	555.9	Span 4W, 1/2 pt	994.9	19.7	555.4	Span 4W, 1/2 pt	994.9	21.7	554.7	Span 4W, 1/2 pt	994.9	20.8	554.0	Span 4W, 1/2 pt
1019.9	17.8	557.7	Span 4W, 3/4 pt	1019.9	16.6	558.5	Span 4W, 3/4 pt	1019.9	19.2	557.2	Span 4W, 3/4 pt	1019.9	18.8	556.0	Span 4W, 3/4 pt
1045.0	18.1	557.4	Pier 3W	1045.0	15.5	559.6	Pier 3W	1045.0	18.1	558.3	Pier 3W	1045.0	16.4	558.4	Pier 3W
1070.1	16.5	559.0	Span 3W, 1/4 pt	1070.1	17.4	557.7	Span 3W, 1/4 pt	1070.1	17.6	558.8	Span 3W, 1/4 pt	1070.1	16.2	558.6	Span 3W, 1/4 pt
1095.1	16.7	558.8	Span 3W, 1/2 pt	1095.1	17.2	557.9	Span 3W, 1/2 pt	1095.1	17.7	558.7	Span 3W, 1/2 pt	1095.1	16.7	558.1	Span 3W, 1/2 pt
1120.2	17.2	558.3	Span 3W, 3/4 pt	1120.2	18.6	556.5	Span 3W, 3/4 pt	1120.2	18.2	558.2	Span 3W, 3/4 pt	1120.2	17.1	557.7	Span 3W, 3/4 pt
1145.3	16.6	558.9	Pier 2W	1145.3	17.8	557.3	Pier 2W	1145.3	16.4	560.0	Pier 2W	1145.3	14.9	559.9	Pier 2W
1170.3	17.2	558.3	Span 2W, 1/4 pt	1170.3	19.8	555.3	Span 2W, 1/4 pt	1170.3	18.6	557.8	Span 2W, 1/4 pt	1170.3	18.0	556.8	Span 2W, 1/4 pt
1195.4	18.2	557.3	Span 2W, 1/2 pt	1195.4	18.7	556.4	Span 2W, 1/2 pt	1195.4	19.7	556.7	Span 2W, 1/2 pt	1195.4	19.1	555.7	Span 2W, 1/2 pt
1220.4	18.8	556.7	Span 2W, 3/4 pt	1220.4	19.2	555.9	Span 2W, 3/4 pt	1220.4	19.6	556.8	Span 2W, 3/4 pt	1220.4	18.1	556.7	Span 2W, 3/4 pt
1245.5	18.3	557.2	Pier 1W	1245.5	16.9	558.2	Pier 1W	1245.5	18.5	557.9	Pier 1W	1245.5	17.9	556.9	Pier 1W
1270.5	14.5	561.0	Span 1W, 1/4 pt	1270.5	15.3	559.8	Span 1W, 1/4 pt	1270.5	17.0	559.4	Span 1W, 1/4 pt	1270.5	14.7	560.1	Span 1W, 1/4 pt
1295.5	11.6	563.9	Span 1W, 1/2 pt	1295.5	11.3	563.8	Span 1W, 1/2 pt	1295.5	13.0	563.4	Span 1W, 1/2 pt	1295.5	9.9	564.9	Span 1W, 1/2 pt
1320.6	3.2	572.3	Span 1W, 3/4 pt	1320.6	6.6	568.5	Span 1W, 3/4 pt	1320.6	5.0	571.4	Span 1W, 3/4 pt	1320.6	5.1	569.7	Span 1W, 3/4 pt
1340.0	0.0	575.5	West edge of water	1340.0	0.0	575.1	West edge of water	1340.0	0.0	576.4	West edge of water	1333.0	0.0	574.8	West edge of water
1345.8	-2.0	577.5	West abutment	1345.8	-2.0	577.1	West abutment	1345.8	-2.0	578.4	West abutment	1345.8	-3.5	578.3	West abutment

