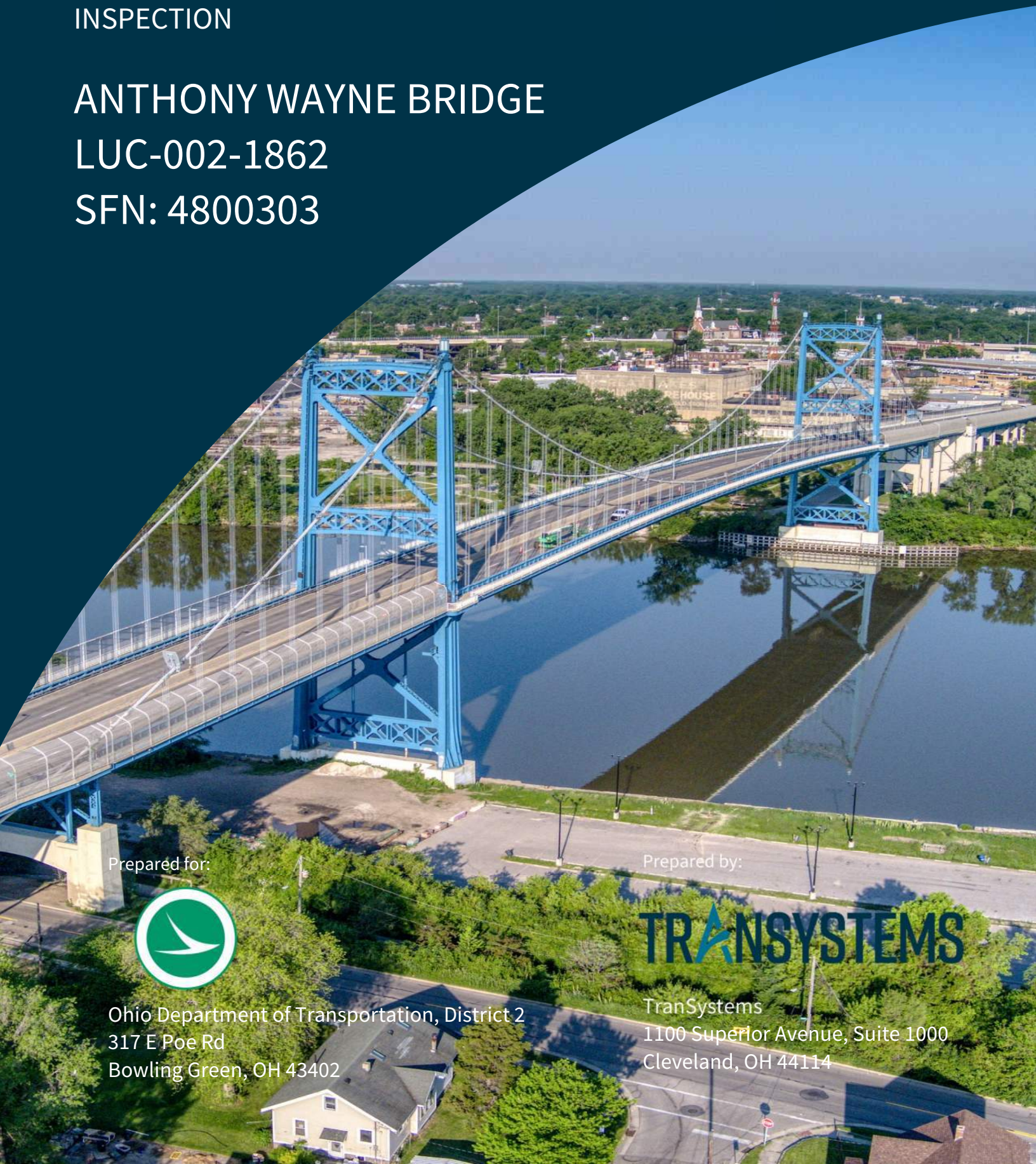
PHYSICAL CONDITION REPORT
2024 ROUTINE ELMENT LEVEL AND NSTM INSPECTION

INSPECTION MAY 2024
REPORT AUGUST 2024

ANTHONY WAYNE BRIDGE
LUC-002-1862
SFN: 4800303



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2024 ROUTINE ELEMENT LEVEL & NONREDUNDANT STEEL TENSION MEMBER (NSTM) PHYSICAL CONDITION REPORT

of

BRIDGE NO. LUC-002-1862
SFN: 4800303

TOLEDO, OHIO

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May 20 to 24 and May 29, 2024

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Final Report Submitted August 30, 2024

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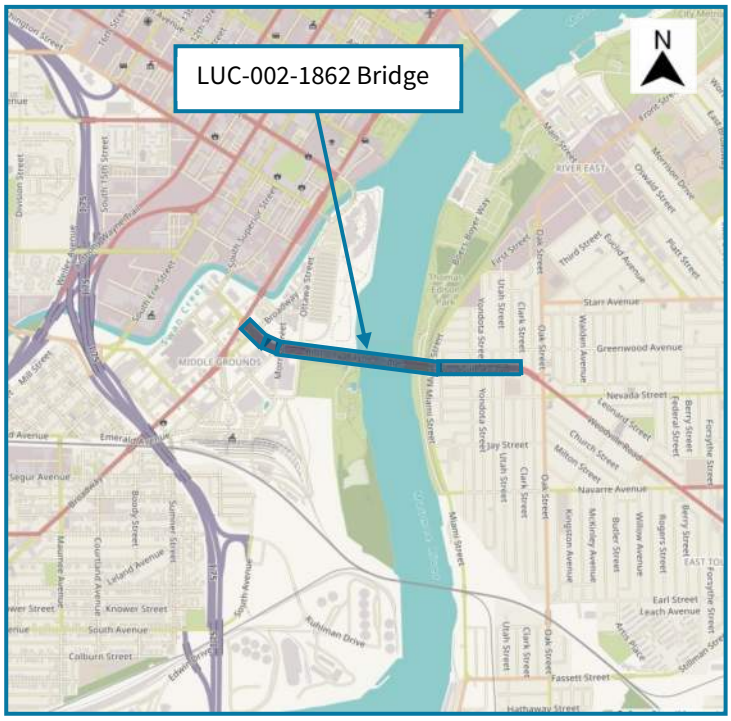
BRIDGE DESCRIPTION

The LUC-002-1862 (Anthony Wayne Bridge or the High-Level Bridge) is a thirty-span structure that carries four lanes of State Route 2, 51, and 65 (Clayton Street/Woodville Road) traffic over the Maumee River and numerous local roads including Morris Street, Ottawa Street, Boers Boyer Way, Miami Street, Yondota Street, and Utah Street in Toledo, Ohio **(see Location Map)**. The overall structure is approximately 3,215' long; constructed in 1931 and last rehabilitated in 2015. The superstructure consists of three (3) continuous suspension spans, fourteen (14) two-girder approach spans and thirteen (13) multi-beam/girder approach spans. The superstructure supports a reinforced concrete deck with curbs and metal railing separating the roadway and sidewalk and a concrete median barrier down the center of the bridge.



Location Map

The superstructure is comprised of two-span continuous rolled beams in Spans RW-2 to RW-1, RE-1 to RE-2 and Spans 12E to 15E with built-up cantilever brackets supporting the sidewalk on the north and south sides. In Spans 8W to 1W and Spans 1E to 11E single span built-up two-girder system with floorbeams and stringers or multi-beams comprise the superstructure with built-up cantilever brackets at the floorbeam locations which support the sidewalk. In the suspension span, the deck is supported by a continuous built-up two-girder system with built-up floorbeams and rolled stringers. The girders are supported by two 1 5/8" diameter wire ropes draped over castings clamped onto the main cables. The two main cables consist of 19 strands of 186 parallel wires with each wire being No. 6 galvanized wire with a diameter of 0.192 inches resulting in a total cable diameter of 13 5/16". In 2018-2020 a cable dehumidification system and wrap were added to the main suspension cables.

The substructure is comprised of multiple structure types summarized below. Piers 7W, 6W and 4E-7E are reinforced concrete columns. Piers 5W-1W, RW, B, E, RE and 1E-3E are reinforced concrete, two-column, open-webbed capped piers. Piers 8E-14E are reinforced concrete, four-column, open-webbed capped piers. Additionally, two (2) steel frames (Piers B & E), two (2) steel towers with reinforced concrete bases (Towers C & D), two (2) reinforced concrete vaulted anchorages (Anchorage A & F), one (1) reinforced concrete gravity abutment (Rear Abutment) and one (1) reinforced concrete semi-integral abutment (Forward Abutment) make up the remainder of the substructure. Anchorage A, Anchorage F, Tower C and Tower D are supported by spread footings, whereas all other Piers are founded on piles. The two steel bents atop Piers B and E where the original truss spans were replaced with multi-girder spans.

The bridge is oriented from west to east with bridge nomenclature following the convention set in the design plans. Spans are numbered from the Main Suspension Span out to the abutments (Span 8W-1W, RW-2, RW-1, West Suspension, Main Suspension, East Suspension, RE-1, RE-2, 1E-15E). Substructure units are numbered from west to east for the Main Suspension Spans and from the Main Suspension Span out to the abutments for the remaining units (West Abutment, Piers 7W-1W, Anchorage A, Pier RW, Pier

B, Tower C, Tower D, Pier E, Pier RE, Anchorage F, Piers 1E-14E). Girders and stringers are labeled from north to south. Approach span floorbeams are numbered from west to east, beginning at FB0 in each span. Suspension span floor beams are numbered from west to east, beginning at Floorbeam 0 (Pier B) and ending with Floorbeam 65 (Pier E). Suspender ropes match the numbering scheme of the suspension span floorbeams **(see Figure 1)**.

The nonredundant steel tension members (NSTMs) of the bridge are the girders and floorbeams in Spans 7W to 1W, Main Suspension Span, and Spans 1E to 7E, main suspension cables and suspender cables in the Main Suspension Span, and the steel plate caps at Piers B and E which support Spans RW-1 and RE-1 respectively.

Figure 1 - LUC-002-1862 Bridge Nomenclature

INSPECTION SCOPE AND PROCEDURE

Personnel from TranSystems Corporation and Gannett Fleming performed a routine element level and nonredundant steel tension member (NSTM) inspection of the bridge between May 20 to 24 and May 29, 2024. Access to the structure was gained using two (2) 120-foot manlifts, one (1) 60-foot manlift, a 24-foot extension ladder, rope access methods, and on foot. The 120-foot manlifts were used to gain hands-on access to the substructure and superstructure in Spans 4W to the West Suspension Span and East Suspension Span to Span RE-2, including the tower exteriors. A 120-foot manlift on the deck was used to inspect the main suspension cables and the suspenders throughout the Main Suspension Spans and for the exteriors of Towers C and D for above deck level. The 60-foot manlift was used to gain hands-on access to the substructure and superstructure in Spans 8W to 5W and 1E to 15E. The 24-foot extension ladder was used to gain access to the catwalk via the fixed ladders attached to Piers B & E. Rope access methods were utilized to inspect the framing system of the Main Suspension Span between the Left and Right Girders and to inspect the cantilevered sidewalks brackets and the exterior face of the Left and Right Girders of the Main Suspension Span. The top of deck and portions of the Left and Right Girders above deck in the suspended spans were accessed on foot.

Traffic control was necessary to perform a hands-on inspection of several NSTM components of the structure including the Left and Right Girder exteriors of the West and East Suspension spans, the suspender cables of all suspension spans and the two-girder framing system of several approach spans. Single exterior lane closures across the bridge were necessary during the day between May 20-23, 2024. Daytime flagging was utilized on Miami Street, Ottawa Street, and Yondota Street. Traffic control was provided by A&A Safety, Inc. and all signs/devices were placed in accordance with the latest Ohio Manual for Uniform Traffic Control Devices.

A hand-on inspection was performed on all NSTM member. The NSTM plan and procedures can be found in **Appendix D**. A soapy water test was performed on the main suspension wrap to identify areas of leaks from the dehumidification system.

The inspection findings were recorded on bridge specific field inspection forms, and field sketches were created to document specific conditions. Inspection equipment utilized during the inspection included but was not limited to: chipping hammers, wire brushes, measuring tapes, 6-foot carpenter rules, and flashlights. Color digital photographs were taken of areas of deterioration, condition changes, typical details, and any immediate maintenance needs, if necessary.

INSPECTION TEAM

The inspection team members are as follows:

- Steven Hammerschmidt, PE – TranSystems (Team Leader)
- Brian Janus, PE, – TranSystems
- Jacob Adamrovich, EI – TranSystems
- Kyle Doy, PE – TranSystems
- Paul Earnest – TranSystems
- Melissa Chanto Lukert, EI – TranSystems
- Robert Flinn, PE – TranSystems
- Evan Lowell, PE – TranSystems
- Hailey DeGeorge – TranSystems
- Vincent Traini, PE – Gannett Fleming
- Matt McFadden, EI – Gannett Fleming

CONDITION RATING

State and federal guidelines for evaluating the condition of bridges have been developed to promote uniformity in the inspections performed by different teams and at different times. Condition ratings are used to describe the existing, in-place bridge as compared to the as-built condition. The following table was used as a guide in evaluating the condition of the various members of the bridge.

SUMMARY ITEMS (SNBI)	CONDITION	DEFECTS
9	Excellent	Isolated inherent defects.
8	Very Good	Some inherent defects.
7	Good	Some minor defects.
6	Satisfactory	Widespread minor or isolated moderate defects.
5	Fair	Some moderate defects; strength and performance of the component are not affected.
4	Poor	Widespread moderate or isolated major defects; strength and/or performance of the component is affected.
3	Serious	Major defects; strength and/or performance of the component is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.
2	Critical	Major defects; component is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions in order to keep the bridge open.
1	"Imminent" Failure	Bridge is closed to traffic due to component condition. Repair or rehabilitation may return the bridge to service.
0	Failed	Bridge is closed due to component condition, and is beyond corrective action. Replacement is required to restore service.

The inspection of this bridge was performed in accordance with the following documents:

1. Manual of Bridge Inspection, Ohio Department of Transportation (ODOT), 2014.
2. Manual for Bridge Element Inspection, 2nd Edition, AASHTO, 2019 (rev 2022).
3. Manual for Condition Evaluation of Bridges, 2nd Edition, AASHTO, 2011 (rev 2016).
4. Bridge Inspector's Reference Manual, U. S. Department of Transportation, 2022 NBIS (rev 2023).
6. National Bridge Inspection Standards, U.S. Department of Transportation, 2022.
7. Manual for Bridge Evaluation, AASHTO, 2018 (3rd edition with 2020 and 2022 Interim Revisions).
8. Specifications for the National Bridge Inventory, Federal Highway Administration, 2022.
9. Ohio Manual of Uniform Traffic Control Devices (OMUTCD), ODOT, 2012 (rev 2011).

EXECUTIVE SUMMARY

The LUC-002-1862 Bridge (Anthony Wayne Bridge) is in SATISFACTORY CONDITION [6-NBIS] overall. Significant findings include:

- Isolated section loss and broken strands of secondary suspension cables at hold down piers.
- Areas of pitting and section loss to the girders, floorbeams, and stringers in the suspension spans.
- Areas of section loss to the links at the hold down piers and within the anchorage pits.
- Existing cracks in the top flange angle of several cantilever sidewalk brackets.
- Minor leaks in the main suspension cable dehumidification system.

The overall item ratings can be summarized in Table 1:

Bridge Condition Summary Ratings		
ITEM	**RATING**	**TYPICAL NOTES**
DECK	**7**	**Hairline cracks, isolated minor spalls and delaminations, moderate efflorescence along suspension span girders, isolated corrosion to the SIP forms**
SUPERSTRUCTURE	**6**	**Minor corrosion, cracks in the top flange angle of the cantilever sidewalk brackets, pack rust at connections, isolated areas of 100% section loss. Suspension span with minor section loss of main cable in anchorage pits and minor section loss and isolated broken strands at strand shoes of secondary cables**
SUBSTRUCTURE	**7**	**Isolated minor spalls and hairline to minor width cracking**

Table 1 – Bridge Condition Summary Ratings

INSPECTION FINDINGS

B.C.01 – DECK CONDITION RATING (ITEM 58)

The deck is in GOOD CONDITION [7-SNBI] overall with isolated minor spalls, delaminations and moderate efflorescence in the underside of the deck **(see Photo 1)**. The wearing surface exhibits hairline longitudinal and transverse cracks in all spans with isolated moderate abrasion/wear in the suspension spans near the towers. Both bridge railings have isolated areas of impact damage, and the median barrier has hairline transverse and longitudinal cracks, minor spalls, delaminations, and minor impact scrapes throughout. All expansion joints typically have loosely packed debris along their entire length, but no signs of water leakage.

Photo 1 – Typical condition underside of deck and stay-in-place forms (looking up and northwest between Girders 9 and 11 in Span 14E).

ELEMENT 12 – REINFORCED CONCRETE DECK

The reinforced concrete deck is in good condition with isolated minor spalls, isolated minor delaminations and typical hairline longitudinal and transverse cracks. The deck was rated based on the condition of the wearing surface and portions of the deck underside where it is visible, near the deck joints and along the girders. The predominant deficiency present in the suspension spans is moderate

efflorescence on the deck underside with longitudinal cracking, isolated delaminations, and minor spalls along the interior face of the Left and Right Girders **(see Photo 2)**. This deficiency is previously noted, and prior testing of the efflorescence determined the substance is lithium carbonate, which is a result of the installation materials used for the anodes in the deck. Minor efflorescence and corrosion of the stay-in-place forms is present at isolated locations in both the approach and main suspension spans **(see Photo 3)**. Minor curb spalling and map cracking is present adjacent to assembly joints in the following locations:

- Pier B, West Suspension Span at north curb
- Tower C, Main Suspension Span at north curb
- Tower D, Main Suspension Span at north curb
- Pier E, East Suspension Span at south curb **(see Photo 4)**

Photo 2 – Typical effloresence along girders in suspension spans and isolated location of a stalactite (looking southwest at the north face of Right Girder between Floorbeams 29 and 30 in the Main Supsension Span).

Photo 3 – Isolated corrosion of the stay-in-place forms and minor effloresence between Beams 4 and 5 in Span 1W (looking east).

Photo 4 – Isolated area of moderate abrasion/wear in the Main Suspension Span near Tower C (looking north).

Photo 5 – 1' long by 6" wide by 1" deep curb spall with surrounding delaminated area at Pier E expansion joint, south curb (looking south).

ELEMENT 805 – WEARING SURFACE – MONOLITHIC CONCRETE

The integral concrete deck wearing surface is in good condition overall with isolated minor spalls and hairline longitudinal and transverse cracks throughout. There are several areas of moderate abrasion/wear scattered throughout the suspension spans **(see Photo 4)**. The areas of abrasion also include minor popouts and chipping of the grooved wearing surface.

B.C.08 -BRIDGE JOINTS CONDITION RATING

The joints are in GOOD CONDITION [7-SNBI] overall with minor debris impaction.

ELEMENT 300 – STRIP SEAL EXPANSION JOINT

The strip seal expansion joints (located at the Rear Abutment, Piers 7W through 1W, Anchorage A, Pier B, Pier E, Anchorage F, Piers 1E through 11E, and Pier 13E) are in good condition overall. Minor debris impaction is present throughout the entire length of each joint; however, the overall movement of the joint does not appear to be affected **(see Photo 6)**. Minor popouts are present along the header of several joints. No signs or indications of water leakage were noted at the time of inspection.

Photo 6 – Debris accumulation and minor header popouts at Pier 3W, westbound lanes (looking south).

ELEMENT 301 – POURABLE STRIP SEAL

The pourable strip seal joint (located at the Forward Abutment) is in very good condition overall **(see Photo 7)**. No notable deficiencies were noted at the time of inspection.

Photo 7 – Pourable strip seal at Forward Abutment, eastbound lanes (looking north).

ELEMENT 303 – ASSEMBLY JOINT WITH SEAL

The modular expansion joints (located at Tower C and Tower D) are in good condition overall. The entire length of each joint is impacted with loosely packed debris, which does not appear to affect the overall movement of the joint **(see Photo 8)**. No signs or indications of water leakage were noted at the time of inspection.

ELEMENT 305 – ASSEMBLY JOINT WITHOUT SEAL

The sliding plate expansion joint (located over the sidewalks at Pier B and Pier E) are in very good condition overall **(see Photo 9)**. No notable deficiencies were noted at the time of inspection.

Photo 8 – Debris accumated in Tower C modular expansion joint, westbound lanes (looking south).

B.C.05 -BRIDGE RAILINGS CONDITION RATING

The bridge railings are in GOOD CONDITION [7-SNBI] overall with isolated areas of impact damage. The bridge railings consist of metal bridge railing along each curb line and a concrete median barrier.

ELEMENT 330 – METAL RAILING

The metal bridge railings, running the full length of the bridge between the roadway and pedestrian sidewalk, are in good condition overall with isolated areas of impact damage and minor scrapes. The North Railing at the Forward Abutment in Span 15E has one post with a crack extending from a bolt hole to the edge of the flange (**see Photo 12**). Several areas of impact damage are present at the following locations:

- Span 8W, South Railing at Rear Abutment **(see Photo 11)**.
- Span 7W, South Railing Post at Pier 7W **(see Photo 11)**.

Photo 11 – Impact damage to south railing in Span 8W at Rear Abutment (looking northeast).

ELEMENT 331 – REINFORCED CONCRETE BRIDGE RAILING

The reinforced concrete bridge railing, which includes the median barrier along the centerline of the bridge, is in satisfactory condition overall with isolated spalls, isolated minor delaminations, and longitudinal cracking at light poles **(see Photo 13)**. Full height vertical cracks, typically at 3' spacing with light rust staining, and hairline transverse cracks are present throughout **(see Photo 14)**.

Photo 9 – Sliding plate expansion joint at Pier E, south sidewalk (looking east).

Photo 10 – Crack extending from the lower bolt hole on the east flange of the of north railing post in Span 15E at Forward Abutment (looking southwest).

Photo 12 – Impact damage to south railing post in Span 7W at Pier 7W (looking northeast).

Photo 13 – Longitudinal cracking and delamination under light pole in Main Suspension Span between Floorbeams 47 and 48 on the south face (looking north).

Photo 14 – Typical cracks with rust staining at 3' spacing, (looking south at the north face in Span RW-1).

ELEMENT 815 – DECK DRAINAGE GRATES & SCUPPERS

The bridge deck drainage is in satisfactory condition. The deck scuppers throughout are 25-75% clogged with debris but appear to be draining. One grate, along the south curb of the eastbound lane of the West Suspension Span near Pier B, has a broken grating bar **(see Photo 15)**. No deficiencies were observed to the remainder of the drainage system below deck level.

Photo 15 – Broken and partially clogged drainage grate at Pier B, West Suspension Span along the south curb (looking south).

SIDEWALK (Non-Element)

The pedestrian sidewalk, cantilevered off the north and south sides of the bridge, is in satisfactory condition overall with hairline transverse and longitudinal cracking throughout and hairline map cracking in isolated areas. Close attention was paid to the areas of sidewalk nearest the towers due to problems know by ODOT. Most notably at the south sidewalk at Tower C, a 2' by 4' area of delamination with up to full-depth spalling around the embedded concrete anchors connecting the sidewalk panels together and exposed reinforcement is present between Right Stringer 1 and Right Stringer 2 **(see Photo 16)**. In the same area, the protective coating is worn off the bottom flanges of both Right Stringer 1 and Right Stringer 2 where they bear and slide on Floorbeam 12 (2" on the east and 4" on the west) **(see Photo 17)**. This movement has also broken a utility conduit under the deck **(see Photo 16)**. There is a 5" wide gap between the sidewalk panels at the east side of Tower C on the southside walk. An aluminum plate is connected to both sidewalk panels, with a 4 1/2" long tear at the

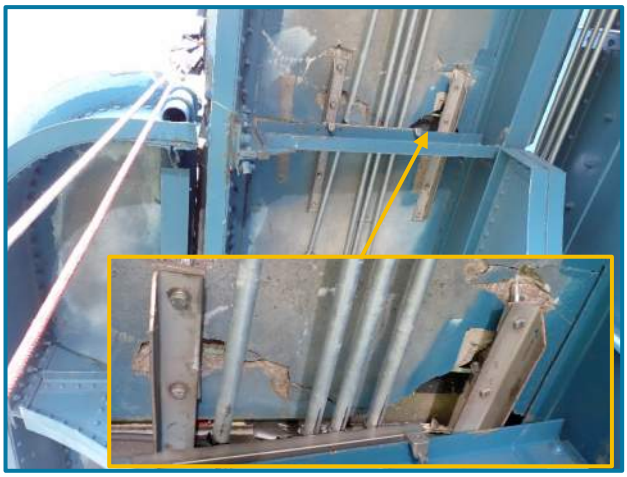


Photo 16 – Spalls with exposed reinforcement and spalls around anchors connecting the sidewalk panels together at the east side of Tower C, south sidewalk (looking west). Note several broken conduits and exposed wires.

sidewalk fence post **(see Photo 18)**. Areas of poorly consolidated concrete with minor spalling are present in several of the approach spans along the fascia stringers **(see Photo 19)**.

Photo 18 – Aluminum plate covering 5" gap between sidewalk panels with a 4 1/2" long tear at the railing post on the south sidewalk, east of Tower C (looking west).

Photo 17 – Signs of expansion at the sidewalk stringers (looking north at Right Stringer 2 on at Floorbeam 12).

Photo 19 – Poorly consolidated concrete along Stringer 13 in Span 12E (looking east).

SIDEWALK RAILING (Non-Element)

The sidewalk railing is in good condition overall with isolated areas of surface corrosion without section loss **(see Photo 20)**. A fence is attached to the railing in all spans except the main suspension span over the Maumee River.

Photo 20 – Typical condition of the sidewalk railing in Span 12E at the south sidewalk (looking south).

B.C.02 – SUPERSTRUCTURE CONDITION RATING (ITEM 59)

The superstructure is in SATISFACTORY CONDITION [6-NBIS] overall with areas of corrosion throughout the girders, floorbeams and stringers, arrested cracks in the top flange angle of the cantilever sidewalk brackets, isolated areas of 100% section loss, and pack rust between the flange angles, cover plates, and stiffeners of the floorbeams and girders.

ELEMENT 107 – STEEL OPEN BEAMS/GIRDERS

The steel built-up plate girders in Spans 7W to 1W and Spans 1E to 7E are in satisfactory condition overall whereas the rolled girders in the Spans 8W, RW-2, RW-1, RE-1, RE-2, and Spans 8E to 15E are in good condition overall. There is typical pitting up to 1/8" deep throughout the girder webs and flanges, arrested by paint. Areas of pitting up to 1/4" deep and corrosion holes up to 1/2" diameter are present in the webs of the suspension span girders at isolated locations **(see Photo 21)**. Similar isolated areas of up to 1/4" pitting are present in the flanges of suspension span girders above lateral bracing connection plates with heavy debris and rivet heads with up to 100% section loss **(see Photo 22)**. Laminate corrosion is typical along the edge of the fill plates between the transverse stiffeners and girder webs **(see Photo 23)**. Additional pack rust is typical between the bottom flange angles and the bottom cover plate up to 1 1/2" thick **(see Photo 24)**. Similar pack rust is typical between the top cover plates and top flange angles of girders up to 5/8" thick. Corrosion holes through the outstanding leg of the transverse stiffeners, up to full width by 4 1/2" high, are present throughout the suspension span girders **(see Photo 24)**. A limited number of transverse stiffeners above deck level exhibit minor deformations from impacts **(see Photo 25)**. Similarly, all approach span fascia girders over roadway exhibit minor impact scrapes, paint loss and surface corrosion of the bottom flange **(see Photo 26)**.

Photo 21 – 1/4" deep web pitting with 1/2" diameter corrosion hole through Right Girder in Main Suspension Span between Floorbeams 42 and 43 (looking south).

Photo 22 – 1/4" deep pitting of bottom flange angle and rivet head loss up to 100% at Left Girder in Main Suspension Span at Floorbeam 39 (looking north).

Photo 23 – Laminate corrosion to the edge of fill plate and girder web along the edge of the transverse stiffener on the Left Girder between Floorbeams 26 and 27 in the Main Suspension Span (looking west).

Photo 24 – Pack rust between the bottom flange cover plateswith rust staining on the Right Girder between Floorbeams 30 and 31 in the Main Suspension Span (looking southeast). Note the 100% section loss to the base of the transverse stiffener.

Photo 25 – Impact damage to transverse stiffener above deck of the Left Girder between Floorbeams 1 and 2 in the West Suspension Span (looking northeast).

Photo 26 – Minor impact scrapes and surface corrosion of Girder S2 in Span 14E (looking east).

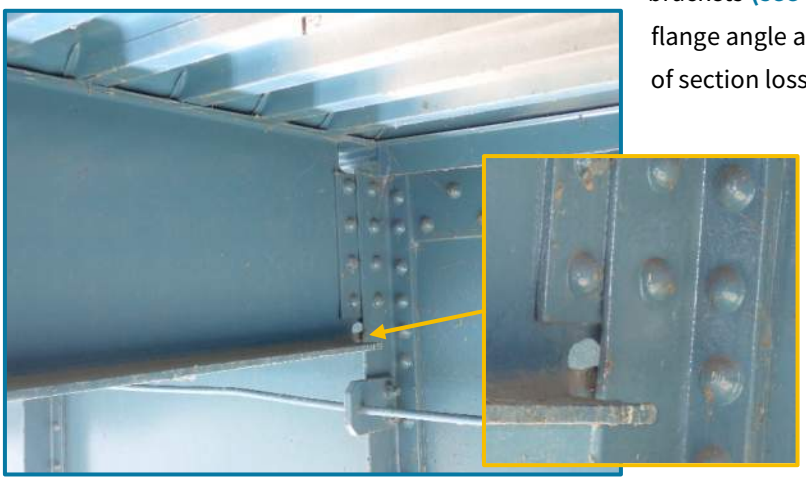


Photo 27 – 3" corrosion hole through Stringer 3 web at connection to Floorbeam 30 in Main Suspension Span (looking southwest).

ELEMENT 113 – STEEL STRINGER

The steel stringers are in satisfactory condition overall with typical minor pack rust at connections to floorbeam, section loss, and isolated areas of 100% section loss typically in the fascia stringers under the sidewalk. Section loss of the top flanges up to 1/4" deep and corrosion holes in the web below floorbeam connections up to 3" wide by 1/2" are present at isolated locations **(see Photo 27)**. Section loss between 1/16" deep to 1/8" deep is typical to both the stringer webs and flanges at connections to floorbeams. Advanced section loss and larger corrosion holes to the lower flange angle and adjacent web plate are typical to most fascia stringers (Right Stringer 2 and Left Stringer 2) at connections to intermediate diaphragms and cantilever sidewalk brackets **(see Photo 28)**. Pack rust is also typical between the bottom flange angle and web plate at these locations **(see Photo 29)**. All areas of section loss are arrested by paint.

Photo 28 – Typical advanced section loss to the bottom flange angle and web plate at the cantilever sidewalk brackets (looking north at Right Stringer 2 at Floorbeam 2 in Span 4E).

Photo 29 – Pack rust between bottom flange angle and web plate of Right Stringer 2 at Floorbeam 1 in Span 6W (looking west).

ELEMENT 152 – STEEL FLOORBEAM

The steel stringers are in satisfactory condition overall with pack rust, isolated web section loss up to 3/16" deep, isolated areas of 100% section loss to the top and bottom flanges, and cracks through the top flange angle of the cantilever sidewalk bracket. The most prominent areas of section loss are adjacent to/underneath the deck joints with multiple areas of 100% section loss to the outstanding legs of both the top and bottom flanges **(see Photos 30 and 31)**. The transverse stiffeners on the floorbeam face adjacent to the deck joint have 100% section loss to the lower 4" by full width **(see Photo 32)**. Pack rust up to 1" thick is typical between the bottom flange angles and cover plate under the deck joints **(see Photo 33)**. At nearly every floorbeam in the suspension spans there is 100% section loss to the outstanding leg of the kneebrace at the interior (roadway face) of each girder where it crosses through the deck **(see Photo 34)**. Nine cracks extending partially through the top flange angle were previously documented along the south cantilever sidewalk bracket at Floorbeams 10, 15-18, 47, 50 and 51 and at the north cantilever sidewalk bracket at Floorbeam 51 **(see Photo 35)**. These cracks have been arrested and there were no Indications of crack propagation beyond the arrest holes at the time of inspection.

Photo 30 – Areas of 100% section loss to Floorbeam 0 bottom flange in Span 5W at south cantilever floorbeam bracket (looking north).

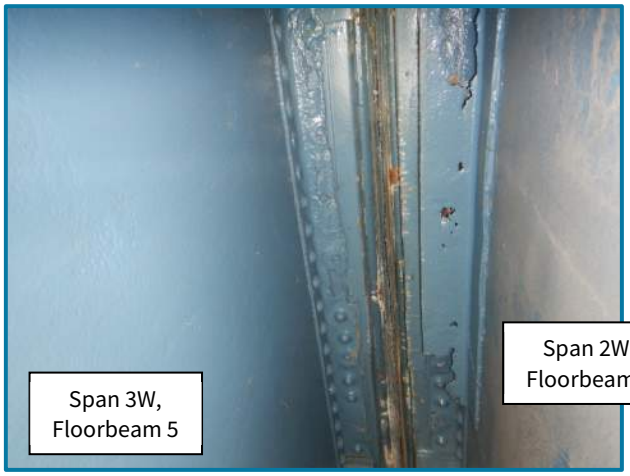


Photo 31 – Areas of 100% section loss to the top flange of Floorbeam 5 and Floorbeam 0 over Pier 2W (looking south).

Photo 32 – Areas of 100% section loss to Floorbeams 0 and 5 transverse stiffeners in Spans 3E and 4E under joint (looking south).

Photo 33 – Pack rust up to 1" thick along FB3 bottom flange in Span 7W at midspan (looking west).

Photo 34 – Floorbeam 65 kneebrace at the deck interface at the Left Girder in East Suspension Span (looking northwest).

Photo 35 – Cantilever sidealk bracket at Floorbeam 51, top flange with 1 3/4" long crack between Left Stringer 1 and Left Girder in Main Suspension Span (looking southwest). Note the arrest hole filled with caulk.

ELEMENT 515 – STEEL PROTECTIVE COATING

The steel protective coating is in good condition. As part of the 2016-2017 rehabilitation, all structural steel components were cleaned and painted **(see Photo 36)**. Isolated instances of peeling paint, paint failure and light chalking are typical at areas of reactivated laminate corrosion.

Photo 36 – Typical condition of steel protective coating, Span RW-2 (looking west).

B.C.07 – BRIDGE BEARING CONDITION RATINGS

The bridge bearings are in SATISFACTORY CONDITION [6-SNBI] overall due to minor bulging of the elastomeric bearings, backed off anchor rod nuts, and isolated rocker bearings are misaligned, inconsistent with temperature conditions.

Photo 37 – Minor bulging of Beam 11 elastomeric bearing at Rear Abutment (looking northwest).

Photo 39 – Typical bearing retrofitted with an elastomeric bearing pad during a previous rehabilitation project (looking northeast)

ELEMENT 310 – ELASTOMERIC BEARING

The elastomeric bearing devices are in satisfactory condition overall with isolated minor bulging, backed off anchor rod nuts or bent anchor rods. At the Rear Abutment, there is minor bulging of the elastomeric bearing pad under Beams 8, 11, 12, and 14 **(see Photo 37)**. The northeast anchor bolt is bent with a loose nut under Stringer 11 at Pier 12E **(see Photo 38)**. The elastomeric bearings at Piers 8E, 11E, 13E and 14E do not have anchor bolts due to retrofit **(see Photo 39)**.

Photo 38 –Backed off northeast anchor rod nut of Beam 11 at Pier 12E (looking southwest).

ELEMENT 311 – MOVABLE BEARING

The moveable bearing devices are in satisfactory condition overall with surface corrosion and isolated locations of pack rust between the rockers, sole plates, and masonry plates **(see Photo 40)**. At Anchorage A, Stringers 1 and 2 are undermined up to 1/2" deep by full width of the masonry plate due to spalls on the bearing seat and anchor bolts exhibit up to 50% section loss **(see Photo 41)**. All four rocker bearings at Pier 6W exhibit a tolerable, but more than expected, 9° to 10° degree tilt to the east **(see Photo 42)**. At Pier 2W, four of eight connectors between

Photo 40 – Right Girder rocker bearing at Pier 6E (looking north).

the rocker bearing sole plate and Left Girder bottom flange are missing **(see Photo 43)**. The bottom flange of the Left Girder between adjacent Spans 3W and 2W is in contact above Pier 2W.

Photo 41 – Bearing seat spalled exposing up to a 1/2" wide by full length of the the masonry plate under Stringer 1 at Anchorage A (looking northwest).

Photo 42 –Right Girder rocker bearing tilted up to 10° to the east at Pier 6W (looking northwest).

ELEMENT 312 – CONCEALED BEARING

The concealed bearing devices at the semi-integral Forward Abutment are not visible for inspection and no alignment issues were noted in the deck or along the beams **(see Photo 44)**.

ELEMENT 313 – FIXED BEARING

The fixed bearing devices are in good condition overall without any notable deficiencies **(see Photo 45)**.

Photo 43 – 4 of 8 missing connectors at Left Girder rocker bearing sole plate, Pier 2W (looking south).

Photo 44 – Concealed bearings at Forward Abutment (looking northeast).

Photo 45 – Right Girder fixed bearing at Pier 7W (looking southwest).

SUSPENSION COMPONENTS SUMMARY

The suspension components are in satisfactory condition overall. There is section loss of main cable in the anchorage pits and isolated minor leaks and gouges to the cable wrap dehumidification system. The secondary cables exhibit section loss and isolated broken strands at the strand shoes near the hold-down piers. The pin and hanger assemblies have minor rust bleed. The steel hold-down piers at Piers B and E have widespread pitting and corrosion holes throughout. Towers C and D exhibit section loss and isolated corrosion holes in secondary members.

ELEMENT 147 – STEEL MAIN CABLES

The steel main suspension cables are in satisfactory condition with minimal deficiencies to the cable wrap and a majority of noted defects located within the anchorage pits. A soapy water test was conducted across the length of the main cables and several minor leaks of the cable dehumidification system were uncovered within the cable wrap and at open holes of the suspender collar **(see Photos 46 and 47)**. The main cable wrap also exhibits minor scrapes and gouges at isolated locations throughout **(see Photo 48)**. No deficiencies were noted to the tower cable saddles **(see Photo 49)** whereas painted over laminate corrosion and water ponding are present on the cable saddles within the anchorage pits **(see Photos 50 and 51)**. The main cable sleeve exhibits surface corrosion at the entrance into the anchorage pits **(see Photo 52)**. The main cable strands, strand shoes, pinned connections and eyebars within the anchorage pits exhibit typical painted over section loss **(see Photo 53)**. Areas of section loss and painted losses were most pronounced within Anchorage F at the North Cable with typical pitting between 1/8" to 3/16" deep noted to the eyebars at their interface with the anchorage floor **(see Photo 54)** as well as active pack rust between the eyebars, strand shoes, and pinned connections **(see Photo 55)**.

Photo 46 – Dehumidification system at North Cable east of Tower D (looking northwest).

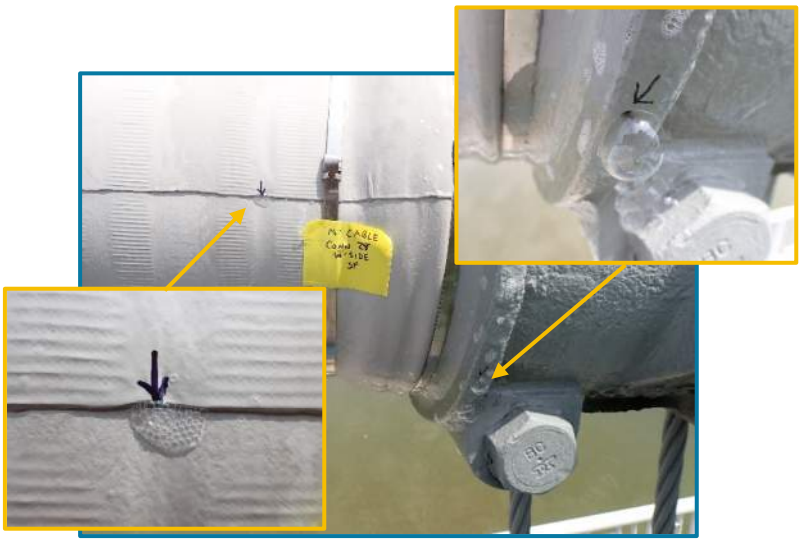


Photo 47 – Minor leaks in the cable wrap and at an open hole in the suspender collar of the North Cable at Suspender Cable 28 (looking north).

Photo 48 – Gouge in South Cable wrap at Suspender Cable 24 (looking south). Note there were not leaks associated with this gouge.

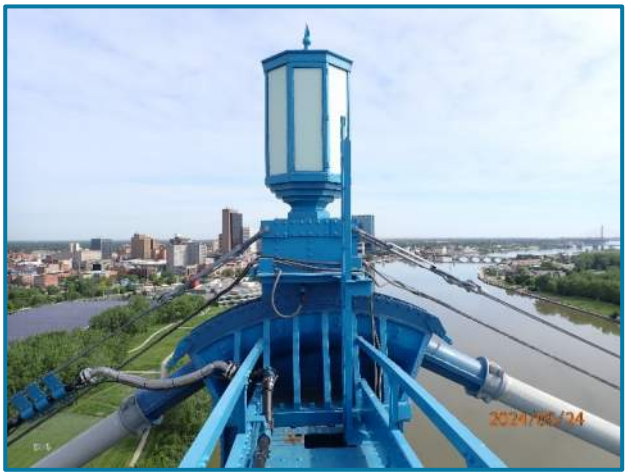


Photo 49 – North Cable saddle at Tower C (looking north).

Photo 50 – North Cable saddle in Anchorage A (looking southwest).

Photo 51 – Water ponding at South Cable saddle in Anchorage F (looking south).

Photo 52 – Surface corrosion of North Cable sleeve at entrance into Anchorage F (looking west).

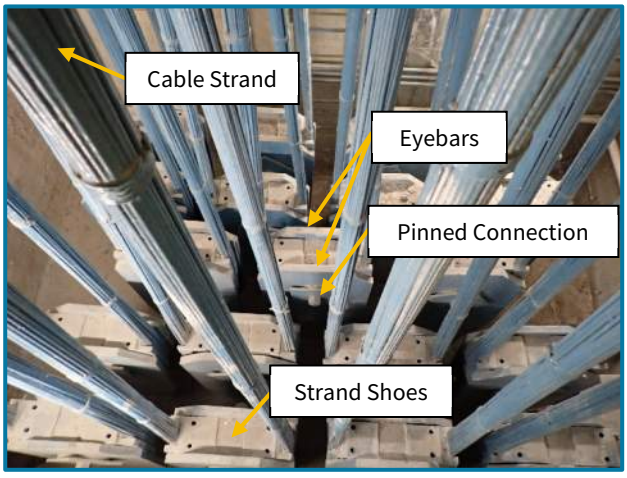


Photo 53 – South Cable in Anchorage A (looking north).

Photo 54 – Typical 1/8" to 3/16" deep pitting at base of the eyebars (looking northeast at the North Cable in Anchorage F).

Photo 55 – Active pack rust between the eyebars and strand shoe (looking northwest, North Cable, Anchorage F).

Photo 56 – Minor surface corrosion on North Suspender Cable 10 in the splash zone (looking northwest).

ELEMENT 148 – STEEL SECONDARY CABLES

The steel secondary cables (suspender cables) are in satisfactory condition overall with isolated areas of surface corrosion and active rust within the splash zone above the stiffening girder **(see Photo 56)**. Between the top flange of the stiffening girders and above the suspender sockets at deck level, the suspender bearing stiffeners exhibit painted over section loss and are susceptible to the accumulation of debris **(see Photo 57)**. Above the strand shoes at the pinned hold-down piers at Pier B and Pier E, corrosion and section loss of the suspender cables is typical **(see Photo 58)**. There is a broken wire at both the southeast and northeast suspender cables at Panel Point 0 above the southern hold-down column at Pier B **(see Photo 59)**.

Photo 57 – Accumulation of roadway debris between the stiffeners at deck level at the North Suspender Cable 5 at Left Girder (looking northwest)

Photo 58 – Corrosion of strand at southwest suspender cable of North Suspender Cable 65 (looking southwest).

Photo 59 – Broken wire at southeast suspender cable of South Suspender Cable 0 (looking east).

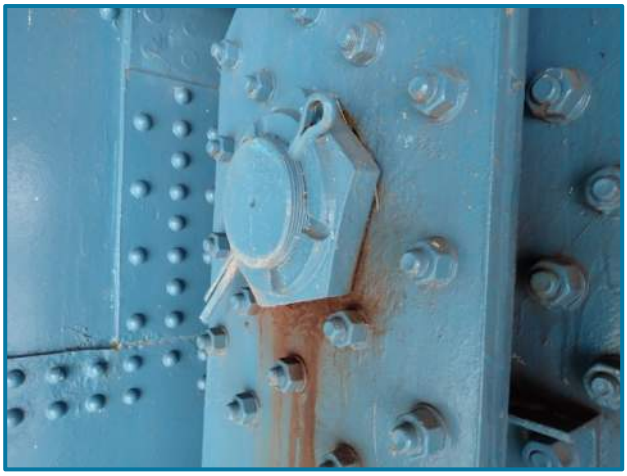


Photo 60 – Minor rust bleed and abrasion dust at upper east pin at the north leg of Tower C (looking northwest).

Photo 61 – Contact between link plates and tower pin tie beam at the lower west pin at the north leg of Tower D (looking east).

ELEMENT 161 – STEEL PIN AND PIN & HANGER ASSEMBLY

The steel pin and hanger assemblies at Pier B, Tower C, Tower D and Pier E are in good condition. No notable deficiencies are present to the pins at the hold-down piers (Pier B or Pier E). Both east upper pins at the north and south legs of Tower C exhibit minor rust bleed and abrasion dust between the link plates and pin nuts **(see Photo 60)**. At Tower D, the west upper pin at the north leg and the west lower pin at the south leg exhibit similar rust bleed and abrasion dust. Typical of all lower pins at both towers, the link plates above the lower pins are in contact with the upper flanges of the tower pin tie beam **(see Photo 61)**. The link plates exhibit section loss between 1/8" up to 3/16" deep above their connection angles to the steel column on both faces **(see Photo 62)**. Additional section loss is noted to the inside face of the south link plate at the north column of Pier E measuring 1/4" deep by 4" wide for 90% of the perimeter of the pin **(see Photo 63)**.

Photo 62 – 1/8" deep pitting of south link plate of the south column at Pier B (looking northwest).

ELEMENT 202 – STEEL COLUMN

The steel hold-down columns at Pier B and Pier E are in satisfactory condition overall with widespread pitting and numerous corrosion holes. Three of the four columns exhibit perforations to the web of the interior channel under the secondary cable sockets. Most notably, the north channel of the south column at Pier E exhibits full-width 3/16" deep pitting with two perforations up to 2 1/2" in diameter **(see Photo 64)**. Corrosion holes, severe section loss to rivet heads, and severed lattices are typical throughout the lateral and diagonal struts connecting the north and south columns **(see Photo 65)**.

Photo 63 – 1/4" deep pitting on the inside face of south link plate of the north column at Pier E (looking west).

Photo 64 – 3/16" deep pitting with perforations up to 2 1/2" diameter through the north channel of the south column at Pier E (looking northwest).

Photo 65 – Numerous corrosion holes through the upper strut at Pier E near the north column (looking southeast).

ELEMENT 207 – STEEL TOWER

The steel towers are in good condition overall with isolated areas of minor section loss, corrosion holes in secondary bracing members, isolated missing rivet heads, and pack rust up to 1" thick between connection plates **(see Photos 66 and 67)**. The steel towers consist of five cells below deck level and 3 cells above. The center cell remains constant throughout the full height of the towers, whereas the exterior cells to the west and east combine above the deck. The original blue paint of the center cell exhibits typical paint flaking and surface corrosion **(see Photo 68)**. The exterior cells of each tower are only primed and exhibit more widespread paint flaking with surface corrosion. The interior ladders were in good condition with an isolated location within the easternmost cell of the south leg of Tower C in the first segment below deck level which has two missing nuts **(see Photo 69)**. The access hatch at Tower C of the north leg at deck level has broken hinges and is secured with tack welds along the top and bottom, therefore making it inaccessible for inspection **(see Photo 70)**. Similarly, the access hatch of the north leg of Tower D at deck level, exhibits cracked hinges, but it is not welded shut. The upper tower access doors of Tower D are either stuck open (at the south leg) or found open and subsequently closed (at the north leg) **(see Photo 71)**. Heavy accumulation of bird debris, up to 6" deep, is typical throughout the center cell of each tower on most internal diaphragms **(see Photo 72)**. Debris accumulation and laminate corrosion up to 7" high by 1" thick is also typical of the center cell of each tower at its base **(see Photo 73)**.

Photo 66 – Tower D, West Elevation (looking east).

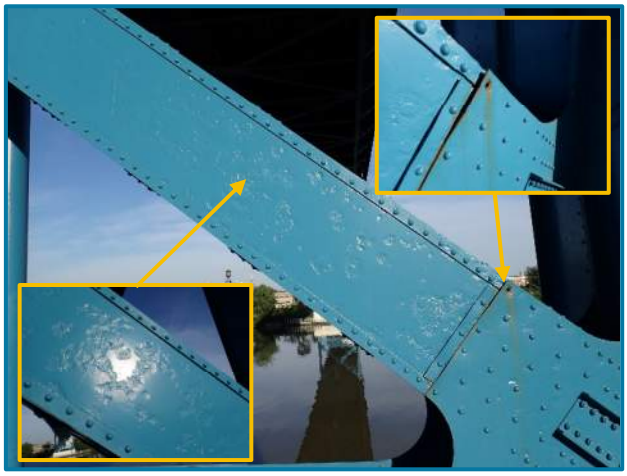


Photo 67 – Pack rust up to 1" thick, missing rivet head and pitting at north leg of Tower D below deck level to the diagonal strut(looking west).

Photo 68 – Typical paint condition and paint flaking of the center cell of Tower D in the north leg (looking north).

Photo 69 – Missing nuts at ladder connection and typical paint condition of the easternmost cell of Tower D in the south leg (looking southeast).

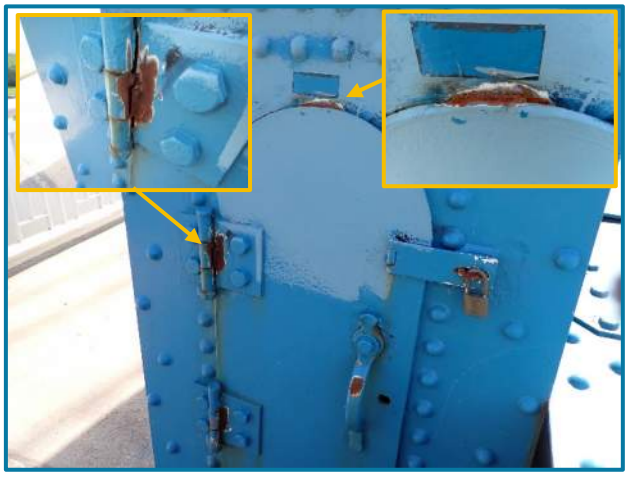


Photo 70 – Tower C access hatch welded shut at the north sidewalk due to broken hinges (looking east).

Photo 71 – Unsecured upper access hatch at the north leg of Tower D (looking north).

Photo 72 – Heavy accumulation of bird debris in the center cell of Tower D in the south leg, 2nd segment from the top (looking southeast).

Photo 73 – Debris and laminate corrosion in the center cell of Tower D at the north leg base (looking east/down).

B.C.03 – SUBSTRUCTURE CONDITION RATING (ITEM 60)

The substructure is in GOOD CONDITION [7-NBIS] overall with spalls typically 1" deep or less without exposed reinforcement, minor delaminations, and areas of hairline to moderate width cracking throughout.

ELEMENT 205 – REINFORCED CONCRETE COLUMN

The reinforced concrete pier columns are in good condition. Typically, there are isolated minor spalls, rust stains, and hairline cracking throughout. An isolated 2' wide by 4' high delamination is present on Pier 6E, Column 1 on the south face about 4' above the ground level **(see Photo 74)**. There is also a minor spall, 18" long by 2" high by 1/2" deep, below a sound patch at the south face of Column 1 at Pier 4W **(see Photo 75)**.

ELEMENT 210 – REINFORCED CONCRETE PIER WALL

The reinforced concrete pier walls in Anchorages A and F are in good condition overall. Anchorage A walls have minor cracks with efflorescence and isolated areas of rust staining. There are isolated minor and moderate spalls throughout both the interior and exterior faces of both anchorages.

ELEMENT 215 – REINFORCED CONCRETE ABUTMENT

The reinforced concrete abutments are in good condition with minor spalls, isolated delaminations, and hairline cracking throughout. There is an isolated 2' wide delamination with moderate width cracking and rust staining under Beam 1 where a conduit protrudes through the Rear Abutment stem **(see Photo 76)** Both the Forward and Rear Abutments exhibit areas of moderate width horizontal and diagonal cracking with rust staining, which have been sealed over (**see Photo 77)**.

Photo 74 – Isolated delamination on the south face of Column 1

Photo 75 – Isolated spall on the south face of Column 1 at Pier 4W below an existing patched area (looking north).

Photo 76 – Isolated 2' wide delamination and rust staining from the existing conduit at the Rear Abument under Beam 1 (looking west).

ELEMENT 231 – STEEL PIER CAP

The steel pier caps are in very good condition overall without any notable deficiencies **(see Photo 78)**. As previously noted, the bearing pins at Pier E remain unpainted, however, the bearing pin nuts have since been painted.

Photo 78 – Steel Pier Cap frame at Pier B (looking west).

Photo 77 – Typical areas of moderate width horizontal and diagonal cracking with rust staining at the Forward Abutment under Stringer 13 (looking east).

ELEMENT 234 – REINFORCED CONCRETE PIER CAP

The reinforced concrete pier caps are in good condition with isolated spalls and hairline horizontal and vertical cracks throughout. Minor rust staining is typical of most pier caps **(see Photo 79)**. There is a 2' wide by 6" high by 3" deep spall on the west face of the Pier 11E cap under Beam 11. The spall does not undermine the masonry plate or bearing area **(see Photo 80)**. The east face of the Pier 13E cap under Stringer 2 exhibits a 3' long moderate width unsealed horizontal crack.

Photo 79 – Typical minor rust staining on the east face of the Pier 9E cap (looking west).

Photo 80 – 2' wide by 6" high by 3" deep spall on the west face of the Pier 11E cap under Beam 11 (looking east).

ELEMENT 830 – ABUTMENT BACKWALL

The abutment backwalls are in good condition with hairline cracking throughout. One previously noted 2' wide delamination is present between Beams 11 and 12 on the Rear Abutment backwall **(see Photo 81)**.

Photo 81 – Hairline cracking and isolated 2' wide delamination on the Rear Abutment backwall between Beams 11 and 12 (looking west).

RETAINING/WINGWALLS (no associated element)

The retaining walls and wingwalls are in satisfactory condition with minor spalling, scaling, hairline map cracking with light efflorescence and isolated horizontal and vertical cracking throughout. At the Rear Abutment North Retaining Wall, there is a staircase light with disconnected electrical wires above a 40' long horizontal crack **(see Photo 82)**. Much of the Rear Abutment North Retaining Wall was hard to access due to private property fencing built adjacent to the parapet. Similarly, the wingwalls at the Forward Abutment were inaccessible due to fencing and private property access restraints.

Photo 82 – 40'L horizontal crack and disconnected staircase light at the Rear Abutment North Retaining Wall (looking south).

PIER PROTECTION (no associated element)

The pier protection is in satisfactory condition overall. Pier protection at Tower C is comprised of a system of steel piles and timber walers. Scattered checks and isolated dry rot of timbers is typical. Multiple walers have loose or missing fasteners, however, most remain intact, and one timber waler is missing **(see Photo 83)**. The northernmost pile has poor-quality welds at the splice near the waterline **(see Photo 84)**. Pier protection at Tower D is comprised of steel sheet piling in front of a concrete retaining wall. Sheet piling exhibits minor surface corrosion without section loss.

Photo 83 – Missing timber waler at Tower C pier and one waler with several missing fasteners (looking northwest).

Photo 84 – Poor quality at northernmost pile at Tower C pier protection (looking south).

B.C.09 -CHANNEL CONDITION RATING

The channel is in GOOD CONDITION [7-NBIS] overall with no known obstructions, slumping or erosion noted through visual inspection. Minor debris has accumulated behind the north side of the pier protection at Tower C **(see Photo 85)**. Typical channel views are shown in **Photos 86 and 87**.

Photo 85 – Debris accumulation behind the north end of pier protection at Tower C (looking west).

Photo 86 – Downstream channel view (looking south towards the bridge).

Photo 87 – Upstream channel view (looking north towards the bridge).

APPROACH SUMMARY

The approaches are in SATISFACTORY CONDITION [6-NBIS] overall with typical cracking in the approach slabs and a damaged impact attenuator at the west approach.

ELEMENT 321 – REINFORCED CONCRETE APPROACH SLABS

The reinforced concrete approach slabs are in good condition. Both the Rear and Forward Approaches exhibit similar minor map, longitudinal, and transverse cracking across all lanes of travel **(see Photo 88)**.

Photo 88 – Typical widespread map cracking in the Rear Approach Slab, westbound lanes (looking south).

APPROACH GUARDRAIL (no associated element)

The approach guardrail is in satisfactory condition overall with hairline vertical cracks spaced at 3' throughout. There is a large 4' long by 2' high by 6" deep spall with exposed reinforcement on the back of the concrete railing between the Rear Abutment and Broadway Street **(see Photo 89)**. At the west end of the Rear Approach median barrier there is impact damage to the attenuator **(see Photo 90**Photo 46**)**.

Photo 89 – Rear Approach guardrail with 4' long by 2' high by 6" deep spall with exposed reinforcement (looking north).

ITEM 41 – OPERATIONAL STATUS

The bridge remains OPEN WITH NO RESTRICTIONS [A-NBIS].

Photo 90 – Impact damage to attenuator at the west end of the Rear Approach median barrier (looking northeast).

CONCLUSIONS AND RECOMMENDATIONS

Based upon the results of the 2024 routine element level and NSTM inspection, the LUC-002-1862 Bridge (SFN 4800303) is in SATISFACTORY CONDITION [6-NBIS] overall. There are minor spalls, delaminations, and hairline cracking throughout the concrete wearing surface and median barrier. All expansion joints across the full length of the bridge exhibit minor debris impaction along the entire width of the roadway. The underside of deck has typical longitudinal cracks with efflorescence along the edge girders of in the suspension spans and isolated areas of corrosion to the stay-in-place forms. All scuppers are 25-75% clogged with debris and one grate is broken at Pier B in the eastbound lane of the West Suspension Span. The beams, girders, stringers, and floorbeams all exhibit typical minor to moderate corrosion, pack rust at connections and between built-up members, and isolated areas of 100% section loss arrested by paint. The nine (9) previously noted cracks partially through top flange angle of the cantilever sidewalk brackets have been arrest with a drilled hole, cleaned, caulked, and painted. There is minor surface corrosion throughout all bearing devices with isolated instances of pack rust. The elastomeric bearings have isolated bulges. There is a minor spall below the bearing of the fascia stringers at Anchorage A. The rocker bearings at Pier 6W have a tilt of 9-10° to the east. The steel protective coating is in good condition with only isolated instances of failure and chalking. There is minor section loss to the main cable in the anchorage pits and isolated minor leaks and gouges to the cable dehumidification system. The secondary cables exhibit minor section loss and isolated broken wires at the strand shoes near the hold-down columns (Piers B and E). The pin and hanger assemblies have minor rust bleed and abrasion dust. The steel columns have widespread pitting and corrosion holes throughout. Both steel towers exhibit only minor section loss and isolated corrosion holes in secondary members. The substructure components are in good condition overall with isolated delaminations, minor spalls, and minor cracking.

The four categories of recommendations for the LUC-002-1862 Bridge are as follows:

- Priority Work: (Within 1 Year Period) — Work which should be performed as soon as possible to address deficiencies which affect the capacity of the structure or public safety.
- Rehabilitation/Evaluation: (Within 5 Year Period) — Recommendations for large-scale deficiencies which are extensive in nature and require engineering analysis.
- Maintenance: (As Scheduled) — Recommendations that are minor in nature and can be easily repaired.
- Monitoring: (As Recommended) — Regular field observation of defects which are not currently in need of repair but will require corrective action if deterioration continues.

Priority Work: None.

Rehabilitation/Evaluation: None.

Maintenance:

Deck

1. Clean debris from clogged drainage scuppers throughout bridge.
2. Remove debris from strip seal and modular expansion joints throughout bridge.
3. Replace the broken drainage grate at Pier B in the eastbound lane of the West Suspension Span.

Suspension

4. Patch the minor leaks in the cable dehumidification system.
5. Repair and ensure the upper access doors close at Tower D.
6. Remove the welds and replace the hinges of the access door at Tower C at the north sidewalk for inspection access.
7. Replace the broken hinges of the access door at Tower D at the north sidewalk.

Pier Protection

8. Replace the missing timber waler and secure the loose timber walers to the piles.

Approach

9. Replace the broken impact attenuator at the Rear Approach median.
10. Patch the large spall at the Rear Approach barrier.

Monitoring:

Bearings

11. Monitor the tilt of the rocker bearings at Pier 6W.

Suspension

12. Monitor the corrosion of the Main Cable strands and eyebars in the anchorage pits.
13. Monitor the corrosion and broken strands of the Secondary Cables at the hold-down columns at Piers B & E (Suspender Cable 0 and Suspender Cable 65).
14. Monitor the advanced corrosion of the steel hold-down columns at Piers B and E.

APPENDIX A

ASSETWISE REPORT

Inspector: Hammerschmidt,Steven **Structure Number:** 4800303

Inspection Date: 05/29/2024 **Facility Carried:** HIGH LEVEL BRIDGE

Ohio Bridge Inspection Summary Report LUC-00002-1862 (4800303)

2: District	District 02	77000 - TOLEDO (LUC county)	
5A: Inventory Route	1	00002	
21: Major Maint A/B	01 - State Highway Agency	/	
225 Routine Main A/B	04 - City or Municipal Highway Agency	/	
221 Inspection A/B	01 - State Highway Agency	/	
220: Inv. Location	DISTRICT 02		
7: Facility On	HIGH LEVEL BRIDGE		
6: Feature Ints	MAUMEE RIVER,RRS&STREETS		
9: Location	0.2 mile East of Summit		
Lat, Lon	41.641576522440076 ,-83.53905033064147		

Condition

58: Deck	**7 - Good Condition**
58.01 Wearing Surface	7 - Good (1% distress)
58.02 Joint	7- Good (no leaking)
59: Superstructure	**6 - Satisfactory Condition**
59.01 Paint & PCS	7 - Good (1-5% corr.)
60: Substructure	**7 - Good Condition**
61: Channel	**7**
61.01 Scour	**7 - Good**
62: Culverts	**N - Not Applicable**
67.01 GA	**6**

Appraisal

Sufficiency Rating	59.0 SD/FO 2 - FO
36: Rail, Tr, Gd, Term Std	1 1 1 1
72: Approach Alignment	6 - Equal to present minimum criteria
113: Scour Critical	8 - Stable for scour conditions
71: Waterway Adequacy	8 - Bridge Above Approaches

Geometric

48: Max Span Length (ft)	785.0
49: Structure Length (ft)	3218
52: Deck Width, Out-To-Out (ft)	68
424: Deck Area (sf)	218824
32: Appr Roadway Width (ft)	54
51: Road Width, Curb-Curb (ft)	54.0
50A: Curb/SW Width: Left (ft)	6
50A: Curb/SW Width: Right (ft)	6
34: Skew (deg)	0
33: Bridge Median	3 - Closed median with non-mountable barriers
54B: Min Vert Underclearance (ft)	14
336A: Min Vert Clrnce IR Cardinal (ft)	33
336B: Min V Clr IR Non-Cardinal (ft)	0
578: Culvert Length (ft)	0

Load Posting

41: Op/Post/Closed	A - Open
70: Posting	5 - Equal to or above legal loads
70.01: Date	
70.02: Sign Type	
734: Percent Legal (%)	150
704: Analysis Date	05/18/2009
63: Analysis Method	6 - Load Factor (LF) rating reported by rating factor (RF) method using MS18 loading.

Structure Type

43: Bridge Type	3 - Steel
	13 - Suspension
	N- Not Applicable
45: Spans Main / Approach	3 / 27
107: Deck Type	1 - Concrete Cast-in-Place
408: Composite Deck	Y - Composite Construction
414A Joint Type 1	A - Modular
414B: Joint Type 2	8 - Elastomeric Strip Seal
108A: Wearing Surface	1 - Monolithic Concrete (concurrently placed with structural deck)
	N- Not Applicable
422: WS Date	06/06/2015
423: WS Thick (in)	1.0
482: Protective Coating	5 - Paint System OZEU
483: PCS Date	10/01/2017
453: Bearing Type 1	2 - Rockers & Bolsters
455: Bearing Type 2	4 - Elastomeric (Plain)
528: Foundn: Abut Fwd	U - Unknown
533: Foundn: Abut Rear	U - Unknown
536: Foundn: Pier 1	U - Unknown
539: Foundn: Pier 2	U - Unknown

Age and Service

27: Year Built/ 106 Rehab	1931 / 2015
42A: Service On	5 - Highway-pedestrian
42B: Service Under	6 - Highway - waterway
28A: Lanes on	04
28B: Lanes Under	13
19: Bypass Length	8
29: ADT	21253
109: % Trucks (%)	7

Inspections

		Months	
90: Routine Insp.		12	05/29/2024
92A: FCM Insp.	Y	12	05/29/2024
92B: Dive Insp.	N	0	
92C: Special Insp.	N	0	
92D: UBIT Insp.	N	0	
92E: Drone Insp.	N	0	

Inspector Hammerschmidt,Steven

Inspector:	Hammerschmidt,Steven	**Structure Number:**	4800303
Inspection Date:	05/29/2024	**Facility Carried:**	HIGH LEVEL BRIDGE

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12-Reinforced Concrete Deck	3 - Mod.	187865	sq. ft.	186024	530	1311	0
	CS2 - Efflorescence on underside of deck along the interior face of the girder in the Main Suspension Spans. Delaminations and small spalls along the girder haunch in the Main Suspension Spans. CS3 - Longitudinal cracking on underside of deck along the interior face of the girder in the Main Suspension Spans, crack length and width varies (1/8" width, 5' long typical). Isolated spalls along the haunch of the girders in the Main Suspension Spans. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
805-Wearing Surface - Monolithic Concrete		167165	sq. ft.	164591	2574	0	0
	CS2 - Abrasion/Wear in the westbound lanes just west of Tower C and at Tower D The grooved pavement is popping in these areas. Minor cracking throughout the spans. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
107-Steel Open Girder/Beam	3 - Mod.	10852	ft.	9694	137	1021	0
	Approach Spans CS2 - Freckled corrosion and/or minor pack rust and 1' impact damage to bottom flange of Beam 2 in Span 14E CS3 - Section loss to flanges or web greater than 1/16" deep or pack rust between flange angles and cover plates causing distortion (painted over and sealed) Suspension Spans CS3 - Section loss to flanges or web greater than 1/16" deep or pack rust between flange angles and cover plates causing distortion (painted over and sealed). Impact damage to stiffeners above deck level on Left Girder near Floorbeam 30 (10') For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
515-Steel Protective Coating		186590	sq. ft.	184803	1785	0	2
	CS2 - Substantially effective paint with sporadic freckled rust or chalking CS4 - No paint present due to impact damage on bottom flange of Beam 2 in Span 14E For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						

Inspector: Hammerschmidt,Steven
Inspection Date: 05/29/2024
Structure Number: 4800303
Facility Carried: HIGH LEVEL BRIDGE

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
113-Steel Stringer	3 - Mod.	33258	ft.	30861	87	2310	0
	Approach Spans CS2 - Freckled corrosion and/or minor pack rust CS3 - Section loss to flanges or web greater than 1/16" deep or pack rust induced distortion (painted over and sealed) or missing bolts/rivets Suspension Spans CS3 - Section loss to flanges or web greater than 1/16" deep or pack rust between flange angles and cover plates causing distortion (painted over and sealed). For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
515-Steel Protective Coating		206484	sq. ft.	206418	66	0	0
	CS2 - Substantially effective paint with sporadic freckled corrosion For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
147-Steel Main Cables	3 - Mod.	3318	ft.	3289	22	7	0
	CS2/CS3 - Section loss in the anchorage eyebars just above the embedment surface in each anchorage pit and areas of moderate corrosion and section loss at the tops of the eyebar sets where the parallel cable wires protrude. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
148-Secondary Steel Cables	3 - Mod.	124	each	67	53	4	0
	Both suspender cables around each main cable band are considered one each. CS2 - Surface corrosion on suspender ropes near roadway level and at the bases of the cables at the top of cable bent columns CS3 - Section loss and isolated broken wires at suspender cables at Piers B and E. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
152-Steel Floor Beam	3 - Mod.	9449	ft.	6381	599	2469	0
	Approach Spans CS2 - Freckled corrosion and/or minor pack rust CS3 - Section loss to flanges or web greater than 1/16" deep or pack rust between flange angles and cover plates causing distortion (painted over and sealed) Suspension Spans CS3 - Section loss to flanges or web greater than 1/16" deep or pack rust between flange angles and cover plates causing distortion (painted over and sealed). 9 cracks located in the top flange of the cantilever sidewalk bracket at the Right Girder at Floorbeams 10, 15, 16, 17, 18, 47, 50, 51 and the Left Girder at Floorbeam 51 For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						

Inspector: Hammerschmidt,Steven
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	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
515-Steel Protective Coating		145559	sq. ft.	144255	1304	0	0
	CS2 - Substantially effective paint with sporadic freckled rust For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in Assetwise.						
161-Steel Pin and Pin & Hanger Assembly or both	3 - Mod.	24	each	20	4	0	0
	Four at each hold-down Pier and eight at each tower. CS2 - Tower C, North Leg, East Link, Top pin; Tower C, South leg, East Link, Lower pin; Tower D, North Leg, West Link, Top Pin; Tower D, South Leg, West Link, Top Pin all exhibit corrosion staining emanating from them For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
202-Steel Column	3 - Mod.	4	each	0	0	4	0
	CS3 - Areas of pitting section loss in link plates at each cable bent column For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
205-Reinforced Concrete Column	3 - Mod.	68	each	65	3	0	0
	CS2 - Delaminations and minor spalls at previous patched areas. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
207-Steel Tower	3 - Mod.	384	ft.	363	6	15	0
	CS2/3 - Isolated areas of corrosion and section loss. Section loss typically at the tower bases. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
210-Reinforced Concrete Pier Wall	3 - Mod.	162	ft.	130	31	1	0
	CS2 - Areas of cracking and efflorescence or minor rust staining on the walls of Anchorage A and F. CS3 - Spall on at Anchorage F. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
215-Reinforced Concrete Abutment	3 - Mod.	153	ft.	131	22	0	0
	CS2 - Forward Abutment - 12 feet, 7' of sporadic rust staining, 1' delamanation between beams 3 and 4, 1' spall between beams 7 and 8, 2' spall between beams 9 and 10, 1' for spall on south face For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in Assetwise.						

Inspector: Hammerschmidt,Steven
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Facility Carried: HIGH LEVEL BRIDGE

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
231-Steel Pier Cap	3 - Mod.	185	ft.	185	0	0	0
	Steel frames at Pier 7W and Piers B and E For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
515-Steel Protective Coating		1064	sq. ft.	1062	0	0	2
	The bearing pins at Pier E are not painted. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in Assetwise.						
234-Reinforced Concrete Pier Cap	3 - Mod.	630	ft.	534	95	1	0
	CS2 - Pier 5W - 8 feet, 3' rust staining, 3' sealed crack, 2' honeycombing; Pier 2W - 8 feet, minor rust staining from rebar ties; Pier B - 36 feet, rust staining from rebar ties and sealed cracks on underside; Tower D - 55 feet, entire top of cap is spalled/cracked (sealed); Pier E - 5 feet, 4' rust staining from rebar ties, 1' spall @ south edge between bearing and column; Pier 1E - 10 feet, 5' sealed crack > 0.05" below north bearing, 5' rust staining; Pier 2E - 11 feet, 3' sealed crack > 0.05" on west face near bottom of cap, 8' rust staining; Pier 3E - 27 feet, 24' sealed spalls on top of cap, 3' rust staining; Pier 8E - 25 feet, 10' sealed spalls on top of cap, 15' rust staining; Pier 9E - 15 feet, 5' sealed spalls on top of cap, 10' rust staining; Pier 10E - 2 feet delam/spall in the middle of west face; Pier 11E - 6 feet, 2' delam on west face above column 2, 2' spall on top near Beam 10, 2' spall on west face above south column; Pier 12E - 3 feet spalls/delams on west face For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in Assetwise.						
300-Strip Seal Expansion Joint	3 - Mod.	1622	ft.	0	1622	0	0
	CS2 - All joints are partially filled with sediment but movement does not appear to be affected For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
301-Pourable Joint Seal	3 - Mod.	66	ft.	66	0	0	0
	For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
303-Assembly Joint with Seal	3 - Mod.	112	ft.	0	112	0	0
	CS2 - Both modular joints are partially filled with sediment but movement does not appear to be affected For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
305-Assembly Joint without Seal	3 - Mod.	36	ft.	36	0	0	0
	For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
310-Elastomeric Bearing	3 - Mod.	170	each	166	4	0	0

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Structure Number: 4800303
Facility Carried: HIGH LEVEL BRIDGE

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
	The quantity includes all expansion elastomeric bearings on the structure. CS2 - Bearings under Beams 3, 8 and 9 at the Rear Abutment and at Pier 12E have minor budges. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
311-Movable Bearing	3 - Mod.	48	each	41	5	2	0
	The quantity includes all rocker and sliding plate bearings on the structure CS2 - Left and Right Girders at Pier 6W are tilted east 10 degrees opposite temperature; Left Girder of Span 6W bearing at Pier 5W exhibits rust from pin; Right Girder bearings at Pier 2W are both tilted ~10 degrees towards each other resulting in less than 1/2" separation between Span 3W and 2W bottom flanges CS3 - Left Girder bearings at Pier 2W are both tilted ~10 degrees towards each other resulting in contact between Span 3W and 2W bottom flanges, movement is restricted For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
312-Enclosed/Concealed Bearing	3 - Mod.	13	each	13	0	0	0
	The quantity includes the bearings at the semi-integral forward abutment For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in Assetwise.						
313-Fixed Bearing	3 - Mod.	24	each	24	0	0	0
	CS2 - S05 northeast anchor rod bent and nut not tight at Pier 12E The quantity includes all fixed elastomeric and bolster bearings on the structure For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in Assetwise.						
321-Reinforced Concrete Approach Slab	3 - Mod.	3122	sq. ft.	2972	150	0	0
	For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
330-Metal Bridge Railing	3 - Mod.	6432	ft.	6422	6	4	0
	CS2 - Missing bolt in top rail/post connection at northeast corner of bridge (Span 15E) CS3 - 15' of impact damage to lower rail at first post on southwest corner of bridge. For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
331-Reinforced Concrete Bridge Railing	3 - Mod.	3215	ft.	1962	1253	0	0

Inspector: Hammerschmidt,Steven
Inspection Date: 05/29/2024
Structure Number: 4800303
Facility Carried: HIGH LEVEL BRIDGE

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
	Median Parapet CS2 - Vertical cracking at 3' spacing typical (593 LF in west approach spans, 321 LF in east approach spans); 4 LF of delamination and spalling under light poles adjacent to Tower D (2 LF each); For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
815-Drainage	3 - Mod.	26	each	8	17	1	0
	CS2 - Most grates were partially or fully covered in sediment/debris but there were no signs of ponding CS3 - Broken grate at south curb near Pier B For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						
830-Abutment Backwall	3 - Mod.	145	ft.	143	2	0	0
	CS2 - Rear Abutment - 2 feet of delamination between beams 5 and 6 For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in Assetwise.						
840-Approach Slab: Termination or Joint	3 - Mod.	112	ft.	112	0	0	0
	For additional information regarding condition states and a table of condition states broken down by span, refer to the 2024 Routine Element Level and Non-Redundant Steel Tension Member (NSTM) Inspection Report, attached in AssetWise.						

Inspector:	Hammerschmidt,Steven	**Structure Number:**	4800303
Inspection Date:	05/29/2024	**Facility Carried:**	HIGH LEVEL BRIDGE

LUC-00002-1862 _(4800303)

ODOT District:	District 02					Date Built:	07/01/1931
Major Maint:	01 - State Highway Agency	Facility Carried:	HIGH LEVEL BRIDGE	Traffic On:	5 - Highway-pedestrian	Rehab Date:	06/06/2015
Routine Maint:	04 - City or Municipal Highway Agency	Feature Inters:	MAUMEE RIVER,RRS&STREETS	Traffic Under:	6 - Highway - waterway	Insp. Resp A:	01 - State Highway Agency
FIPS Code:	77000 - TOLEDO (LUC county)	Location:	DISTRICT 02		0.2 mile East of Summit	Insp Resp B:	

Inspector Hammerschmidt,Steven Inspection Date 05/29/2024 Reviewer Not Approved

Inspector Comments - Deck and Approach

Deck

Overall, deck is in good condition. All spans have stay-in-place forms. Underside of deck at girder/deck edge interface in suspension spans exhibits efflorescence and longitudinal cracking and isolated spalls or delaminations.

Wearing surface is in good condition. Abrasion present in westbound lanes near both towers. Minor transverse cracks.

Expansion joints are in good condition, no signs of leaking observed. Modular joints at the towers, elastomeric strip seals everywhere else. All are full of sediment, but movement doesn't appear to be affected.

Median parapet exhibits vertical cracking at 3' spacing typical in approach spans. Delamination and spalling under both light poles adjacent to Tower D.

All grates are partially covered in sediment/debris but appear to be draining.

Approach

Overall, approach roadway is in satisfactory condition. All lanes on the west and east approaches exhibit map, transverse and longitudinal cracks.

Inspector Comments - General Appraisal

Superstructure

Overall, superstructure is in fair condition. Painted over section loss and pack rust induced distortion is present throughout approach and suspension spans. Isolated locations exhibit active corrosion or reactivated pack rust.

Nine cantilever sidewalk brackets in the suspension spans have cracks in the top flange. All cracks have been arrested with a drill hole at the end, with no signs of propagation.

Substructure

Substructures are in good condition. Overall, patches are sound with intermittent, minor unsound areas. All minor cracks are sealed.

Culvert

Inspector Comments - Waterway

Waterway Adequacy

Inspector:	Hammerschmidt,Steven	**Structure Number:**	4800303
Inspection Date:	05/29/2024	**Facility Carried:**	HIGH LEVEL BRIDGE

Channel

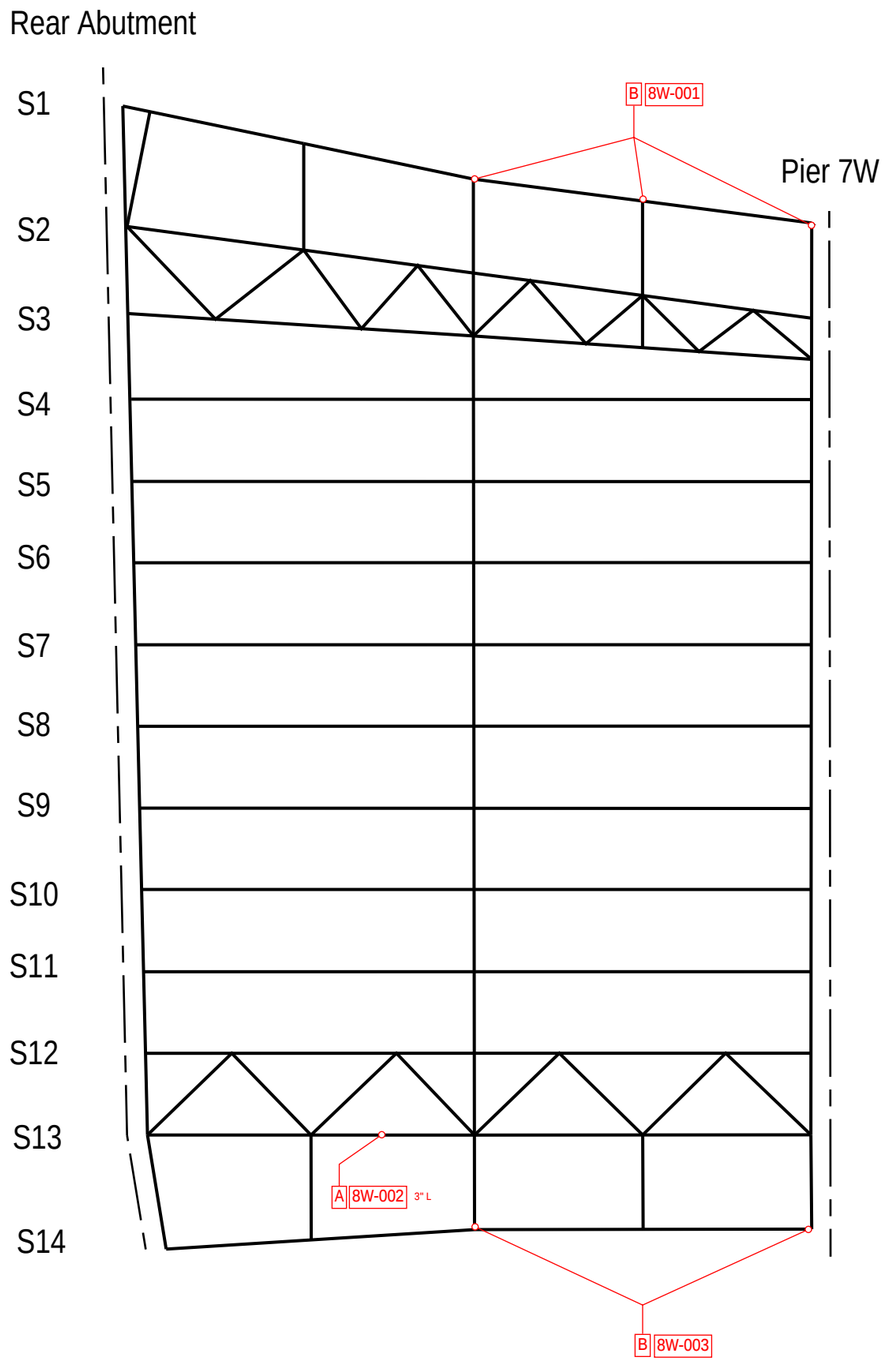
Channel is in good condition. No signs of obstructions or erosion. Minor accumulation of debris on the north side of Tower C.

Scour Critical

APPENDIX B

DEFICIENCY SHEETS

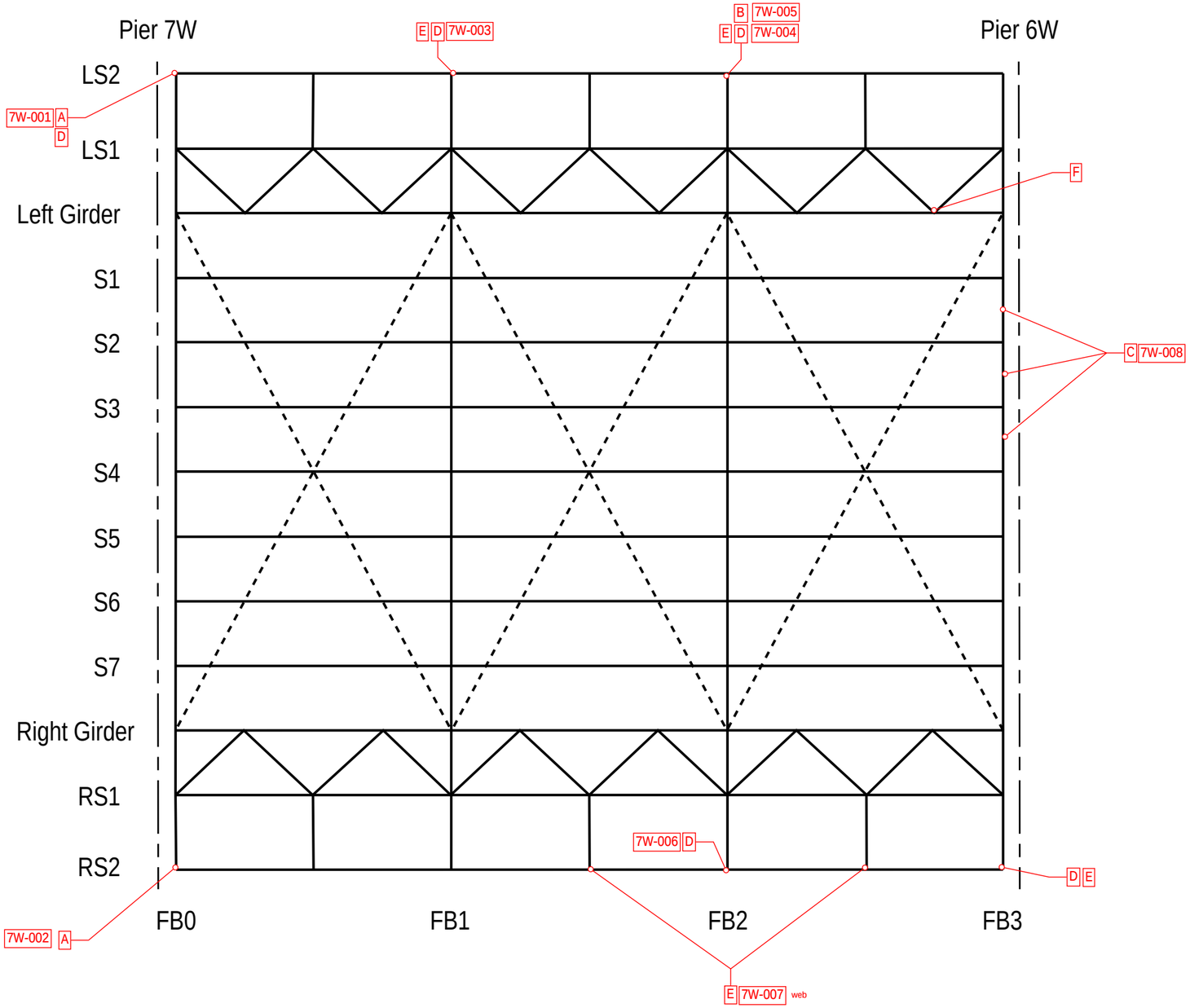
A: Stringer - Painted over gouge/section loss of bottom flange
B: Stringer - Typical, painted over section loss of fascia stringers at connection



TRANSYSTEMS

Span 8W - Framing Plan
Anthony Wayne
Deficiency Sheet

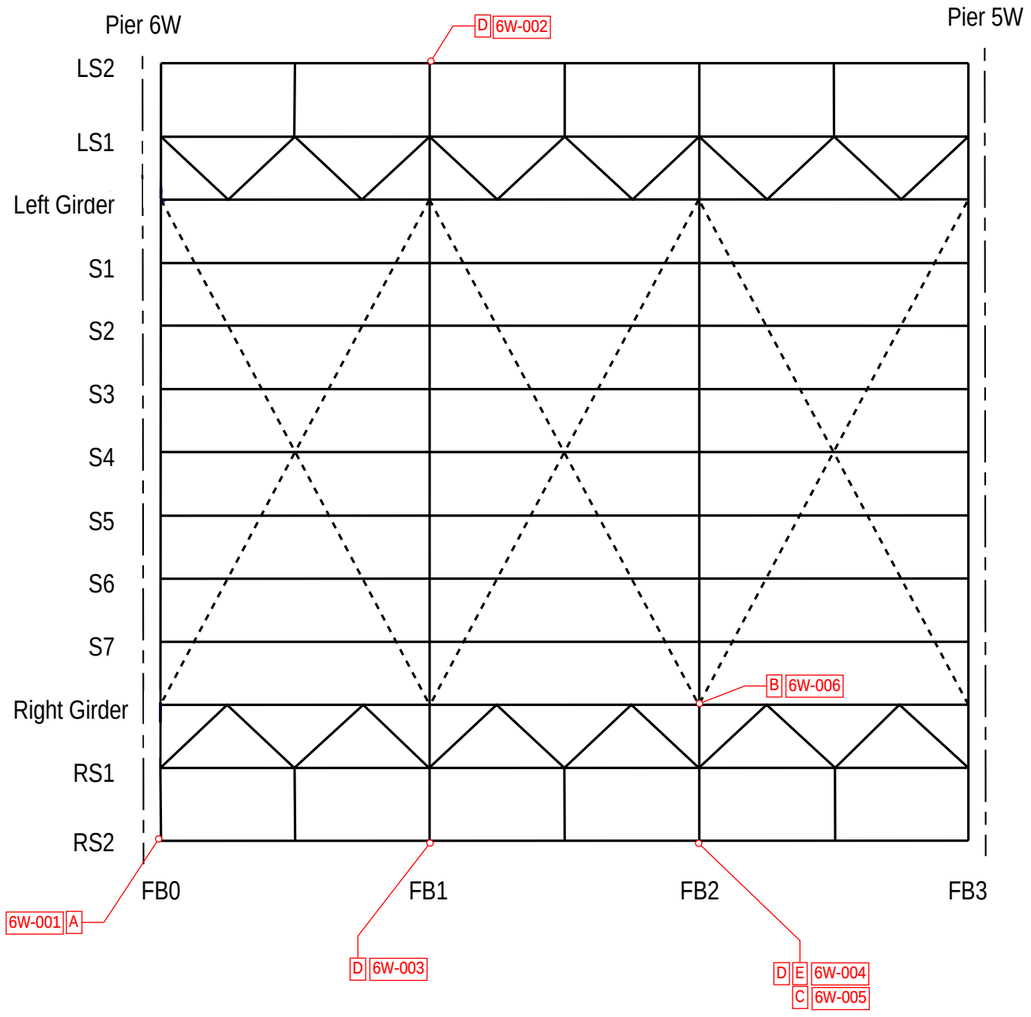
A: Floorbeam - up to 100% section loss of top flange at sidewalk overhang
B: Floorbeam - Painted over section loss of top flange at sidewalk overhang
C: Floorbeam - Typical, pack rust between bottom angle/cover plate
D: Stringer - Typical, pack rust between bottom angle/web of fascia stringers
E: Stringer - Typical, painted over section loss of fascia stringers at connection
F: Deck - minor hauch spalling



TRANSYSTEMS

Span 7W - Framing Plan
Anthony Wayne
Deficiency Sheet

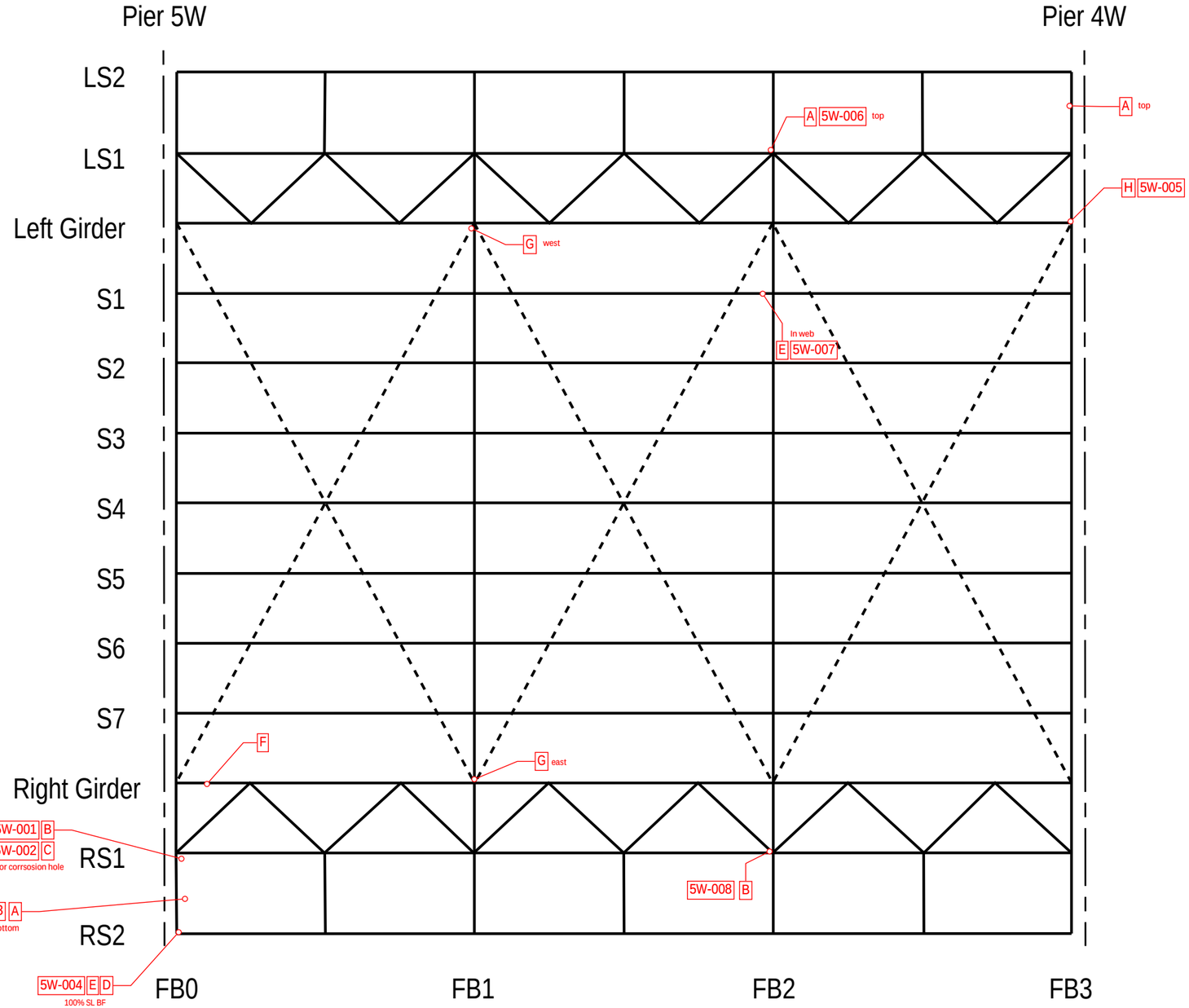
A: Bearing - all bearings at Pier 6 tilted 10° degrees to the east
B: Lateral Brace - typical granular and bird debris on connection plate
C: Stringer - 3 of 4 bolts missing on stiffener angle
D: Stringer - Typical, pack rust between bottom angle/web of fascia stringers
E: Stringer - Typical, painted over section loss of fascia stringers at connection



TRANSYSTEMS

Span 6W - Framing Plan
Anthony Wayne
Deficiency Sheet

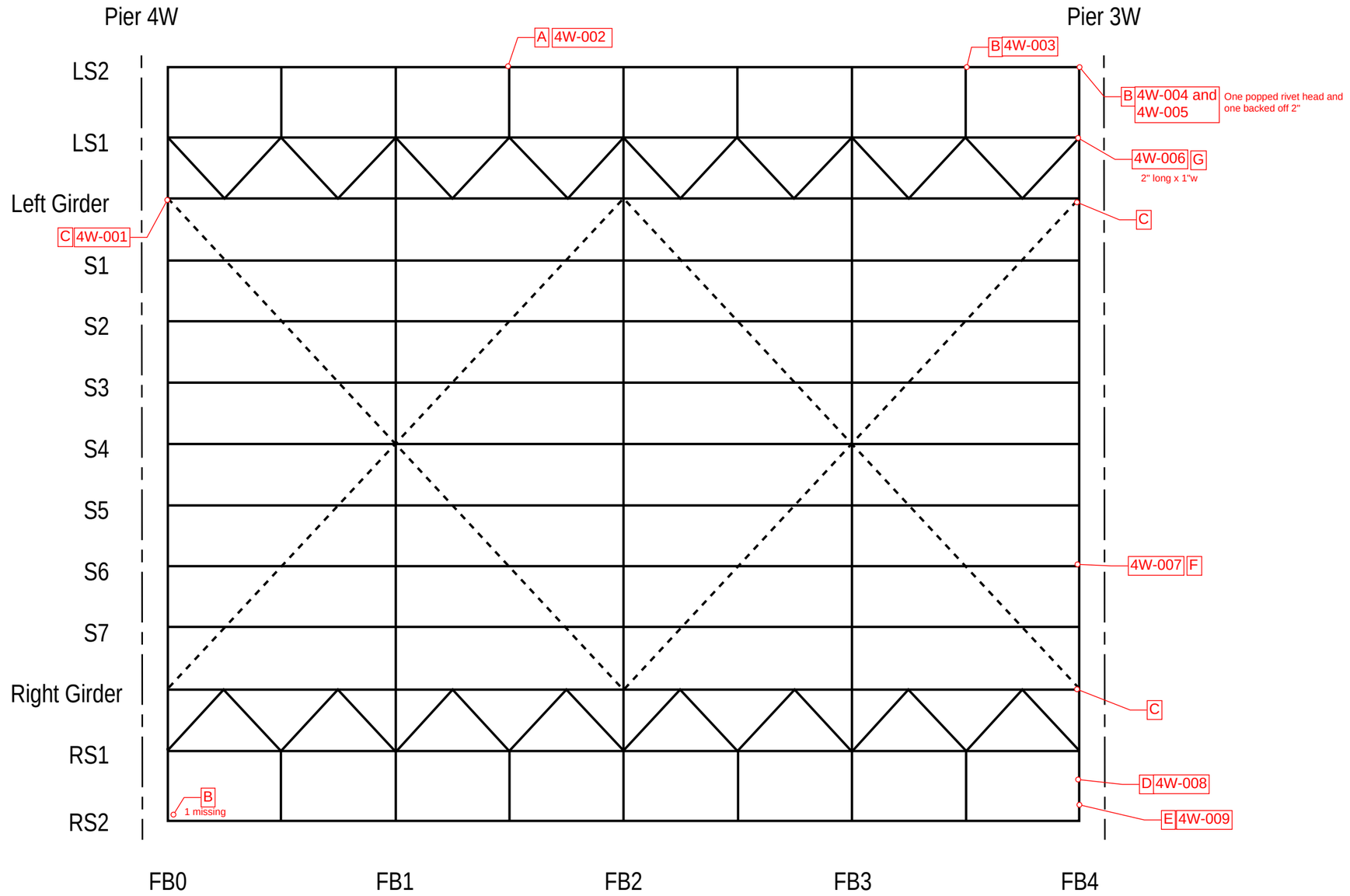
A: Floorbeam - up to 100% section loss of ___ flange at sidewalk overhang
B: Floorbeam - Painted over pitting throughout web
C: Floorbeam - Minor bowing to web
D: Stringer - Typical, pack rust between bottom angle/web of fascia stringers
E: Stringer - Typical, painted over section loss of fascia stringers
F: Girder - abandoned fillet welds on web
G: Girder - typical bird nesting debris on bottom flange, ___ side of floorbeam
H: Floorbeam - stiffeners flame cut 12" from bottom flange



TRANSYSTEMS

Span 5W - Framing Plan
Anthony Wayne
Deficiency Sheet

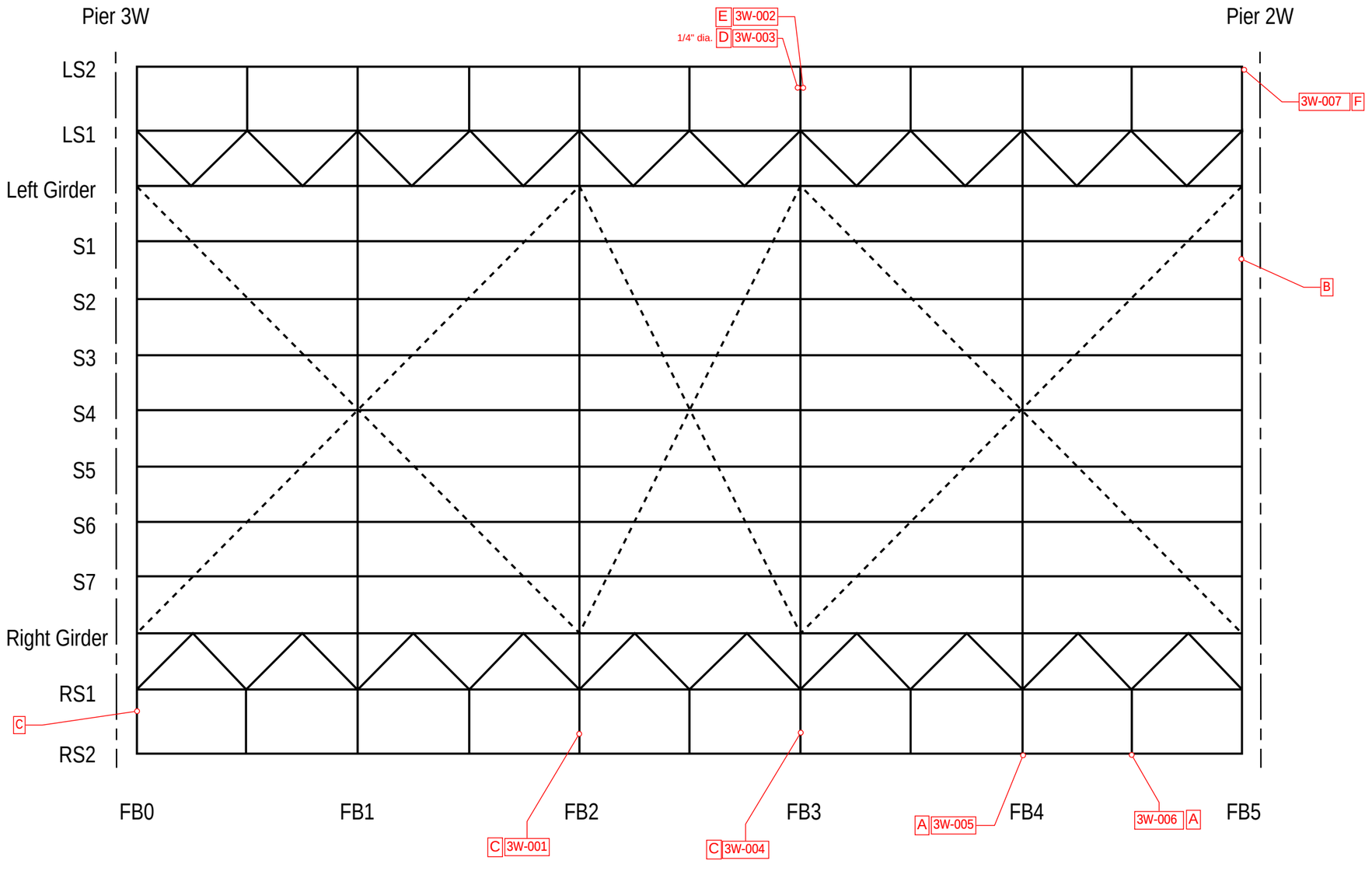
A: Stringer - up to 1/2" thick pack rust between the sidewalk cantilever bracket connection causing wave in bottom of C-channel (typical)
B: Stringer - missing bolt at the bottom of utility hanger connection
C: Floorbeam - bottom flange coped (13" length) at either end between girders
D: Floorbeam - transverse weld in the top flange between LS1 and LS2
E: Bearings - up to 50% section loss to anchor rod
F: Floorbeam - typical painted over section loss with caulking at stiffener base
G: Floorbeam - up to 100% section loss in top flange



TRANSYSTEMS

Span 4W - Framing Plan
Anthony Wayne
Deficiency Sheet

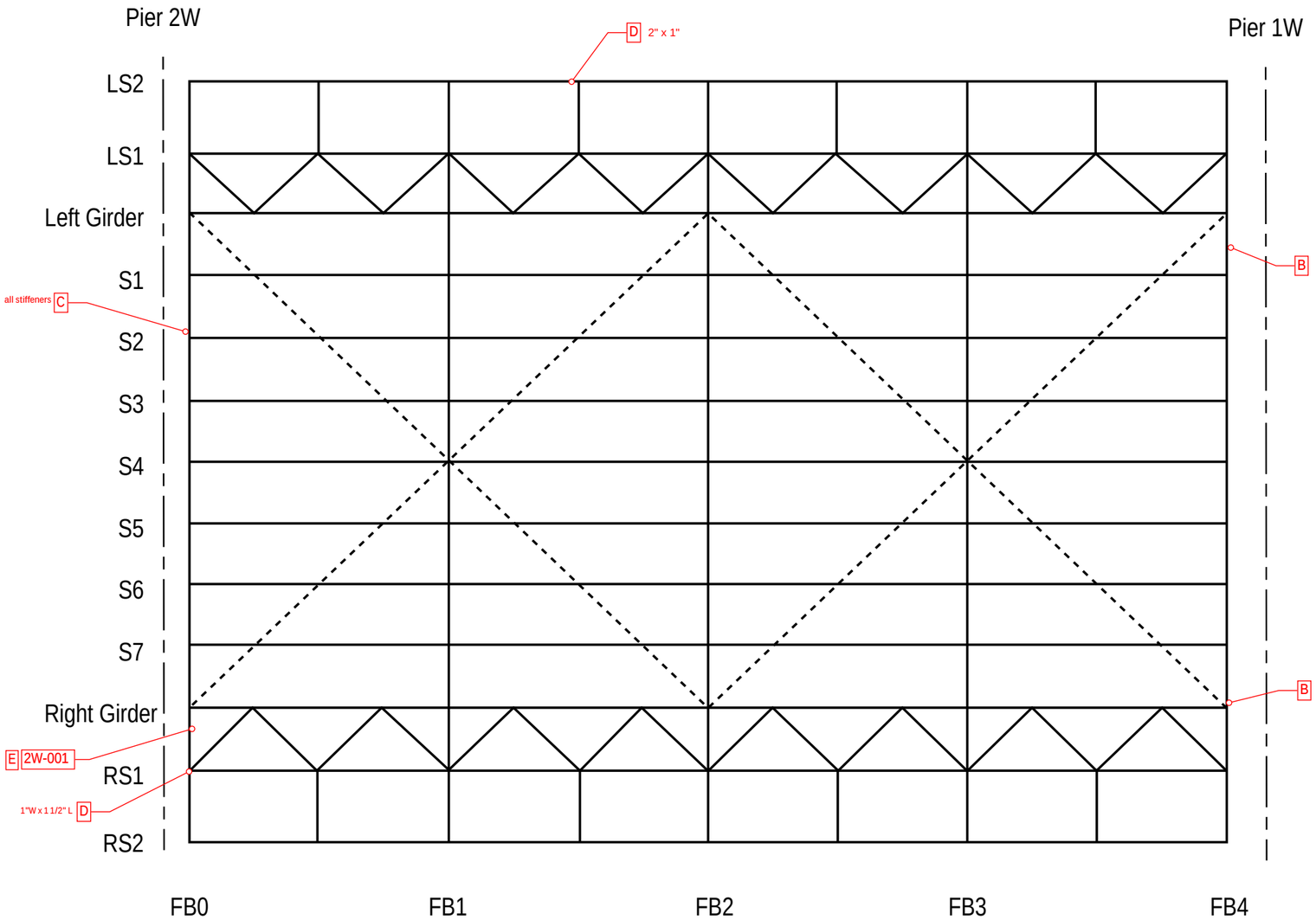
A: Stringer - up to 1/2" thick pack rust between the sidewalk cantilever bracket connection causing wave in bottom of C-channel (typical). Scattered areas on exterior angle with 100% loss x FH of vertical leg
B: Floorbeam - stiffeners flame cut 12" from bottom flange
C: Floorbeam - transverse weld in the top flange between RS1 and RS2
D: Floorbeam - top flange with up to 100% section
E: Floorbeam - top flange repair plate at top with 3 tab plates on underside.
F: Floorbeam - section loss up to 100% throughout flanges and stiffeners



TRANSYSTEMS

Span 3W - Framing Plan
Anthony Wayne
Deficiency Sheet

A: Stringer - up to 1/2" thick pack rust between the sidewalk cantilever bracket connection causing wave in bottom of C-channel (typical)
B: Floorbeam - bottom flange coped (13" length) at either end between girders
C: Floorbeam - stiffeners flame cut 12" from bottom flange
D: Stringer - bottom flange with 100% section loss
E: Floorbeam overhang - three popped rivet heads in top flange, underside

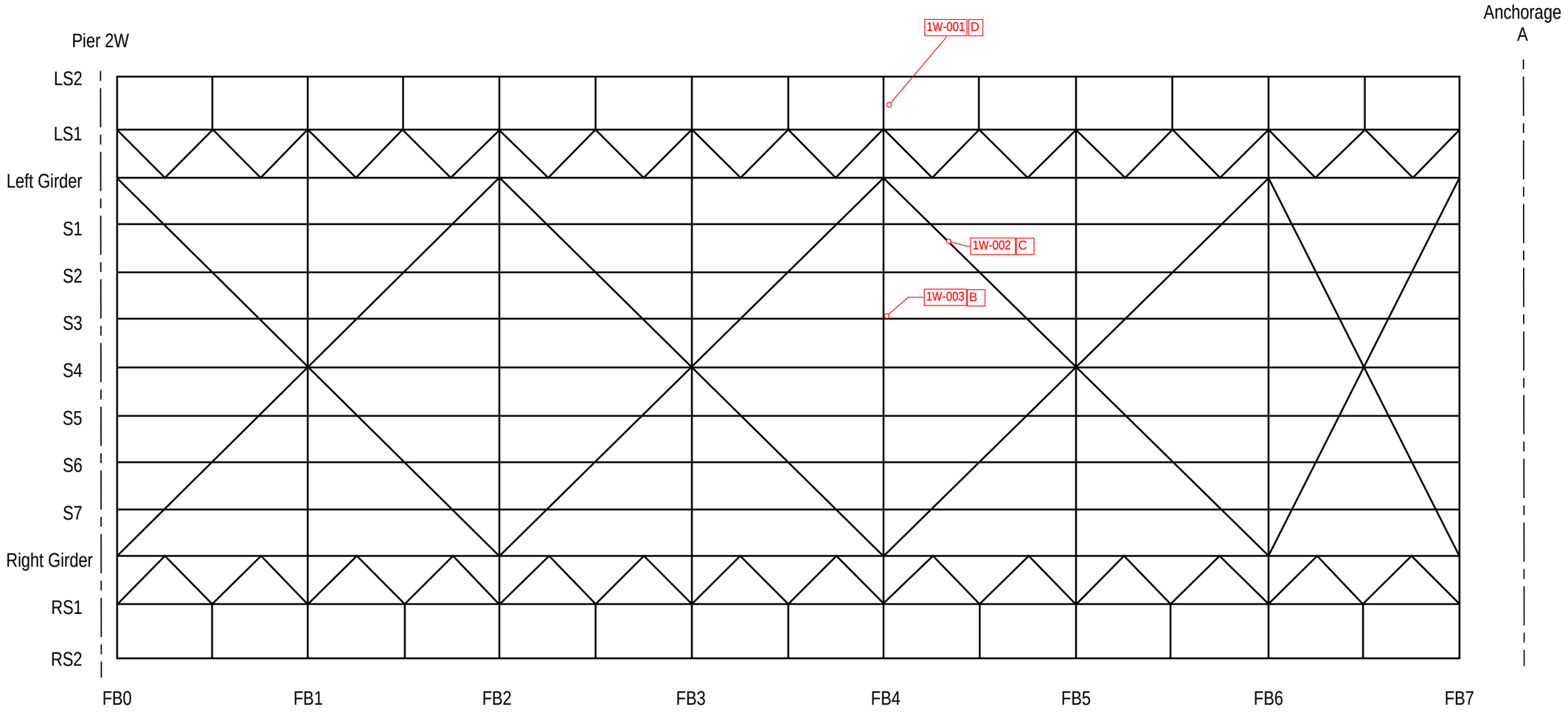


TRANSYSTEMS

Span 2W - Framing Plan
Anthony Wayne
Deficiency Sheet

A: Stringer - up to 1/2" thick pack rust between the sidewalk cantilever bracket connection causing wave in bottom of C-channel (typical)
B: Floorbeam - up to 1/2" thick pack rust between bottom flange and cover plate
C: Lateral bracing - distorted and twisted up to 2' long
D: Floorbeam - cantilever bracket bottom flange with areas of 100% SL (typical)

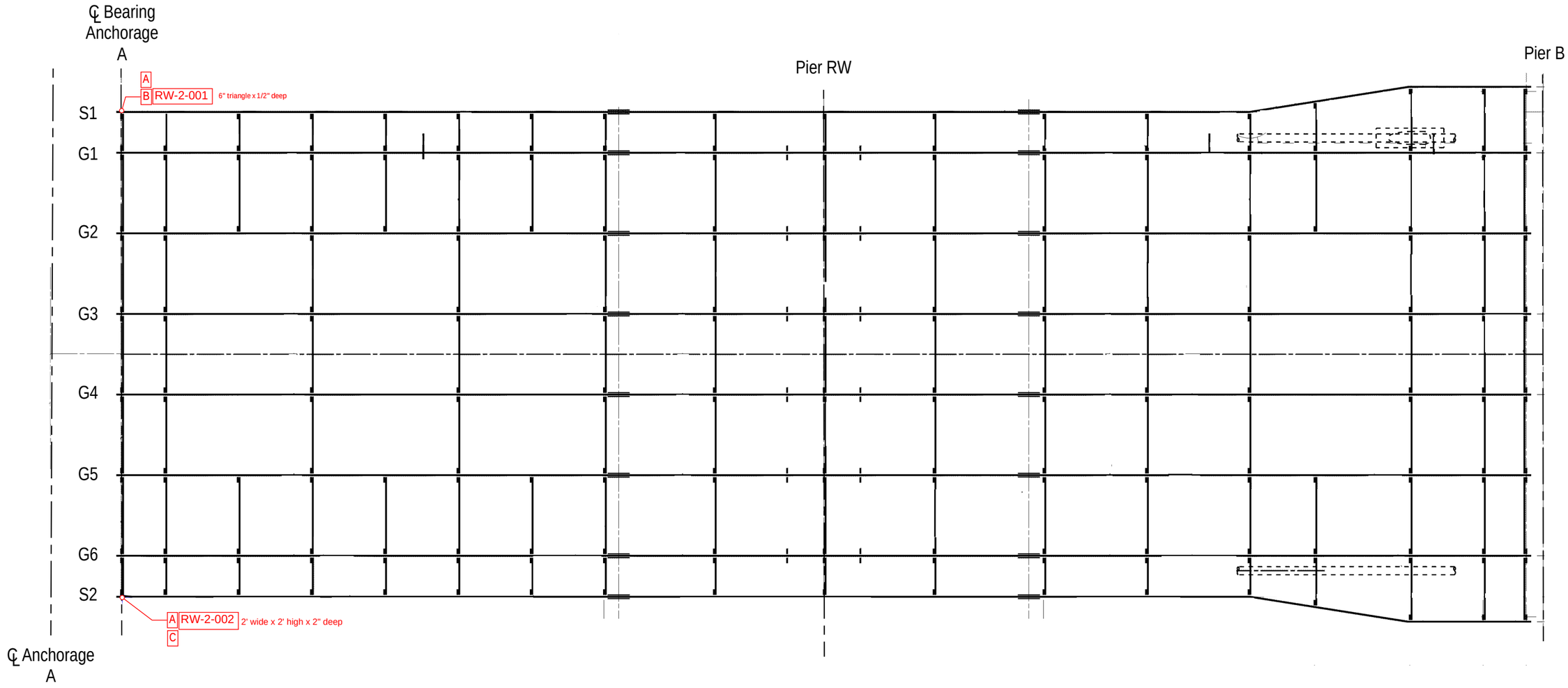
N



TRANSYSTEMS

Span 1W - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Bearing - loss of bearing area
B. Bearing - bearing plate missing, masonry plate slanted down towards east face of pedestal
C. Bearing - anchor bolts with up to 50% section loss throughout



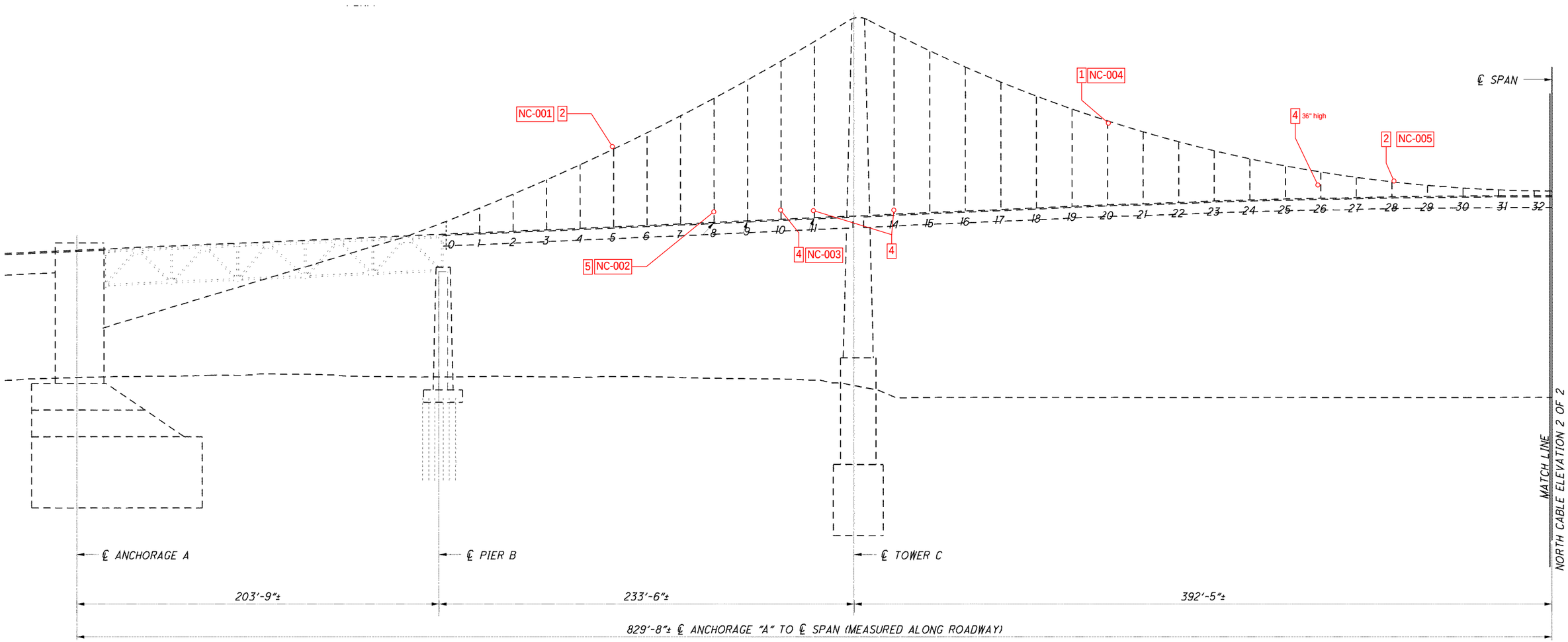
Span RW-2

Span RW-1

TRANSYSTEMS

Span RW - Framing Plan
Anthony Wayne
Deficiency Sheet

1. Main Cable - cable wrap surface defect/gouge
2. Main Cable - minor leak through cable wrap
3. Main Cable - minor leak through suspender cable saddle
4. Suspender Cable - minor surface corrosion with active rust in splash zone
5. Suspender Cable - minor coating failure

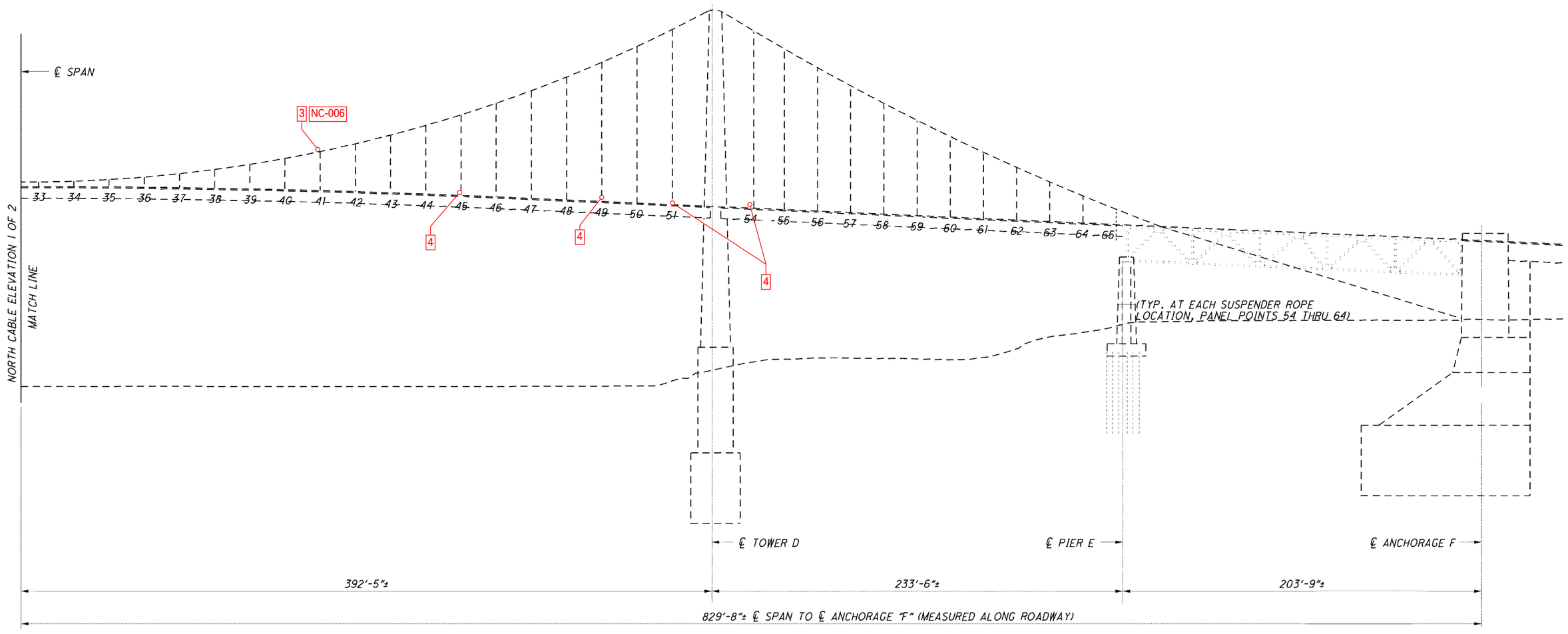


NORTH CABLE - PARTIAL SOUTH ELEVATION
(LOOKING NORTH)

TRANSYSTEMS

North Cable - Partial South Elevation
Anthony Wayne
Deficiency Sheet

1. Main Cable - cable wrap surface defect/gouge
2. Main Cable - minor leak through cable wrap
3. Main Cable - minor leak through suspender cable saddle
4. Suspender Cable - minor surface corrosion with active rust in splash zone
5. Suspender Cable - minor coating failure

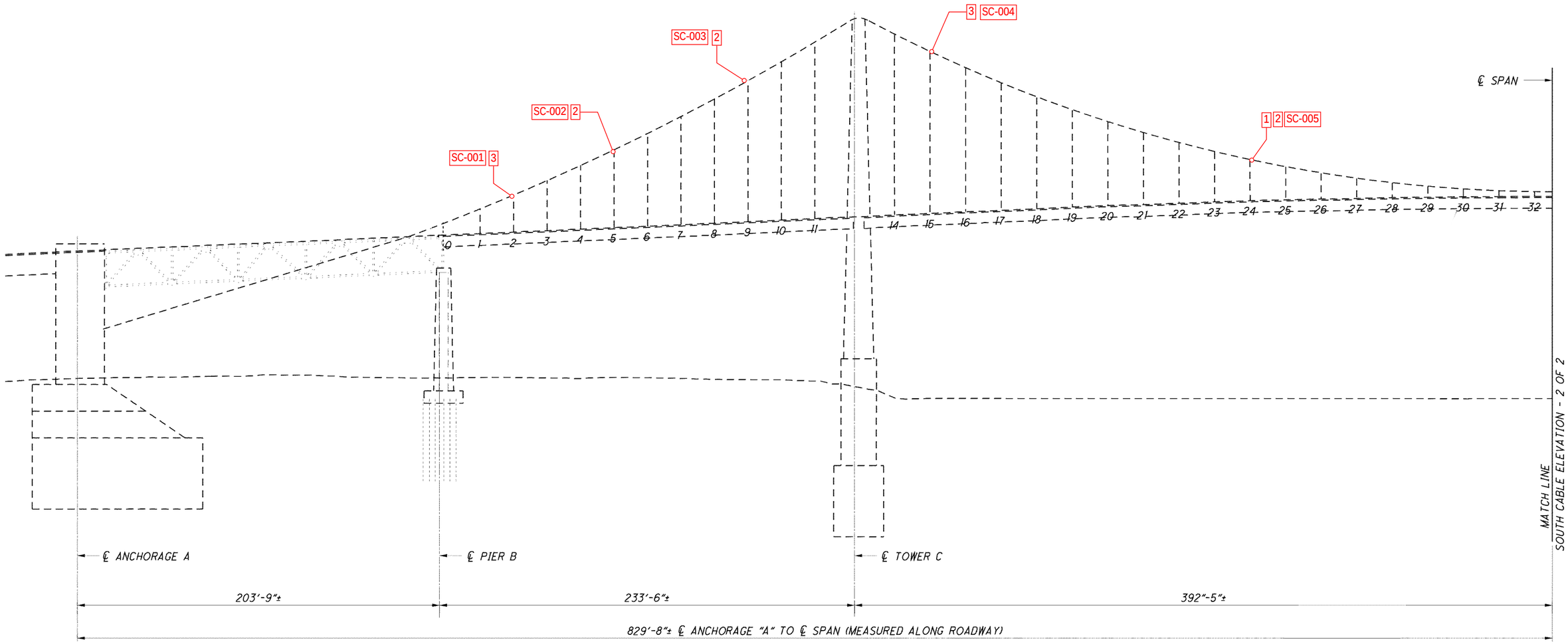


NORTH CABLE - PARTIAL SOUTH ELEVATION
(LOOKING NORTH)

TRANSYSTEMS

North Cable - Partial South Elevation
Anthony Wayne
Deficiency Sheet

1. Main Cable - cable wrap surface defect/gouge
2. Main Cable - minor leak through cable wrap
3. Main Cable - minor leak through suspender cable saddle
4. Suspender Cable - minor surface corrosion with active rust in splash zone
5. Suspender Cable - minor coating failure

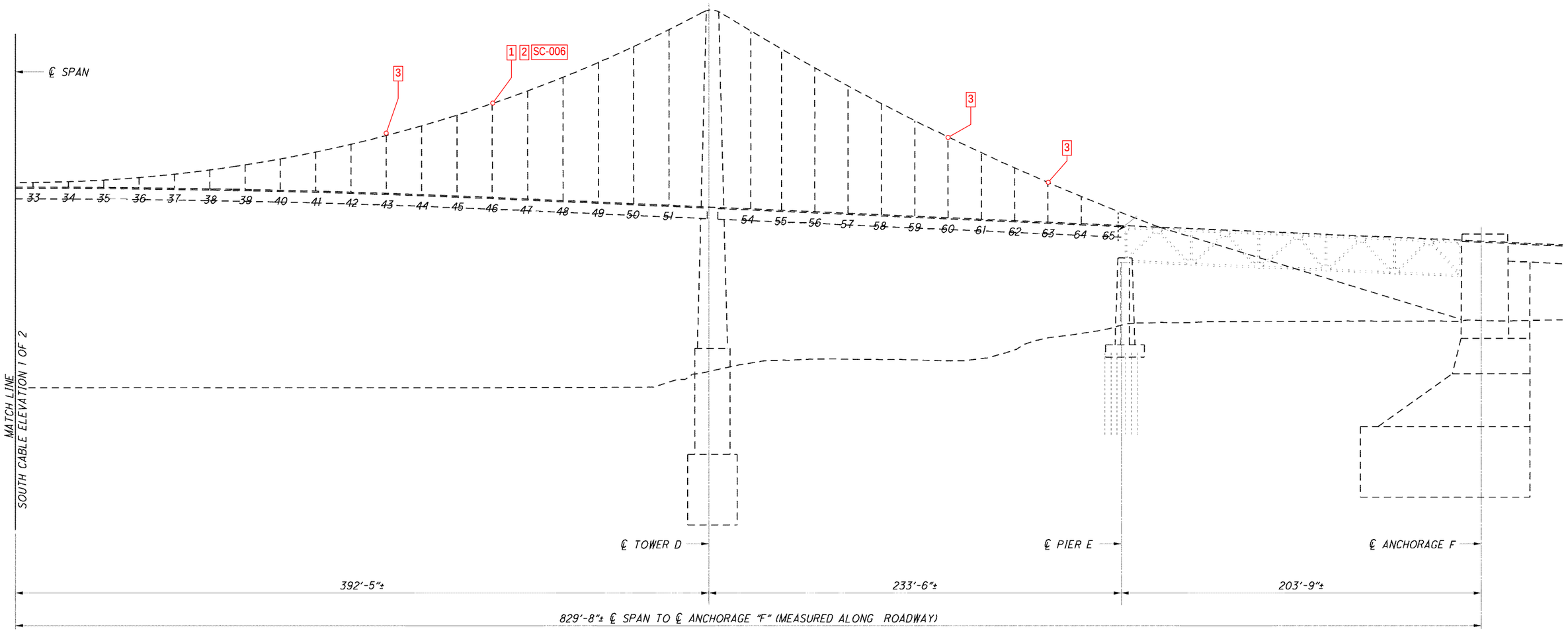


SOUTH CABLE - PARTIAL SOUTH ELEVATION
(LOOKING NORTH)

TRANSYSTEMS

South Cable - Partial South Elevation
Anthony Wayne
Deficiency Sheet

1. Main Cable - cable wrap surface defect/gouge
2. Main Cable - minor leak through cable wrap
3. Main Cable - minor leak through suspender cable saddle
4. Suspender Cable - minor surface corrosion with active rust in splash zone
5. Suspender Cable - minor coating failure

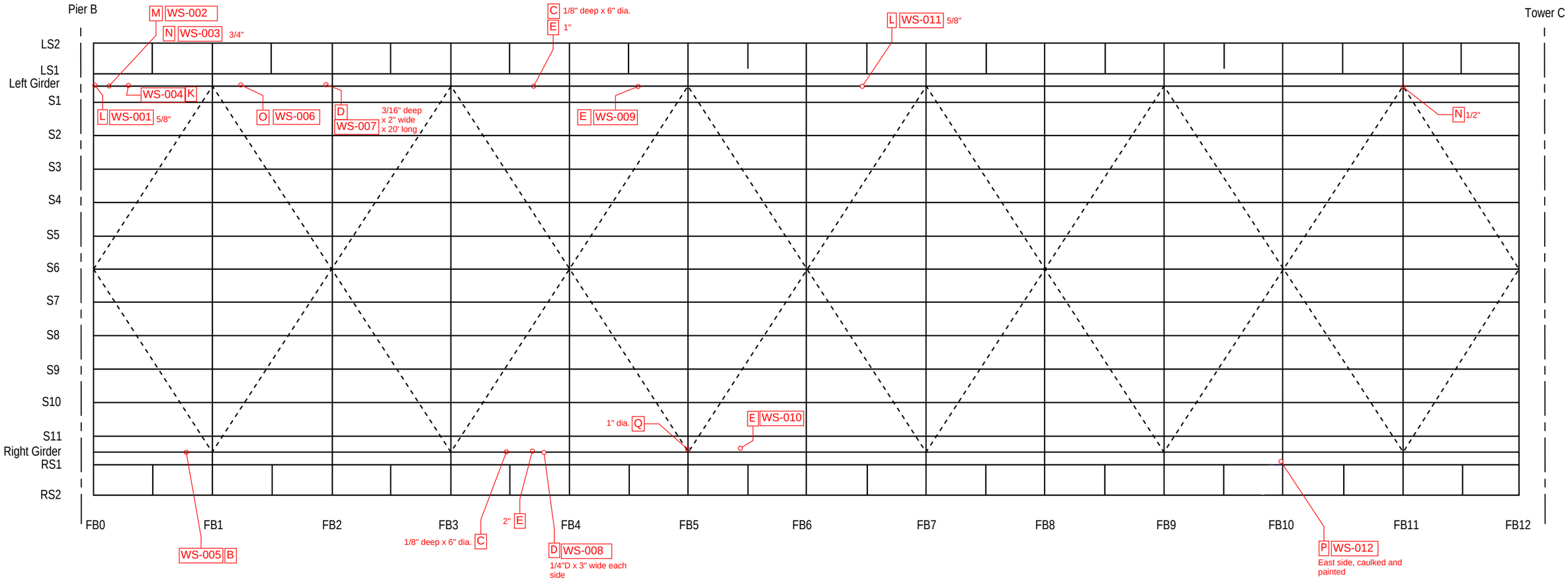


SOUTH CABLE - PARTIAL SOUTH ELEVATION
(LOOKING NORTH)

TRANSYSTEMS

South Cable - Partial South Elevation
Anthony Wayne
Deficiency Sheet

A: Edge Girder - typical rivet heads with up to 100% section loss on the bottom flange
B: Edge Girder - typical pitting 1/16" to 1/8" deep throughout
C: Edge Girder - Pitting to the web ____
D: Edge Girder - Pitting to the bottom flange ____
E: Edge Girder - Pack rust between the bottom flange plates
F: Edge Girder - Advanced section loss/100% section loss to transverse stiffener
G: Floorbeam Kneebrace - 100% section loss to outstanding leg of angle
H: Lower Lateral Brace - typical granular and bird debris on connection plate
J: Lower Lateral Brace - Pack rust between connection plate and lateral bracing member
K: Deck - typical efflo staining on girder web
L: Edge Girder - Pack rust between the top flange plates
M: Edge girder - Punched hole with missing rivet at transverse stiffener
N: Edge girder - Pack rust up to ____ between kneebrace and girder web
O: Edge girder - Impact damage to transverse stiffener outstanding leg above deck
P: Floorbeam - sidewalk cantilever top flange cracked
Q: Lateral bracing - connection plate with area of 100% section loss



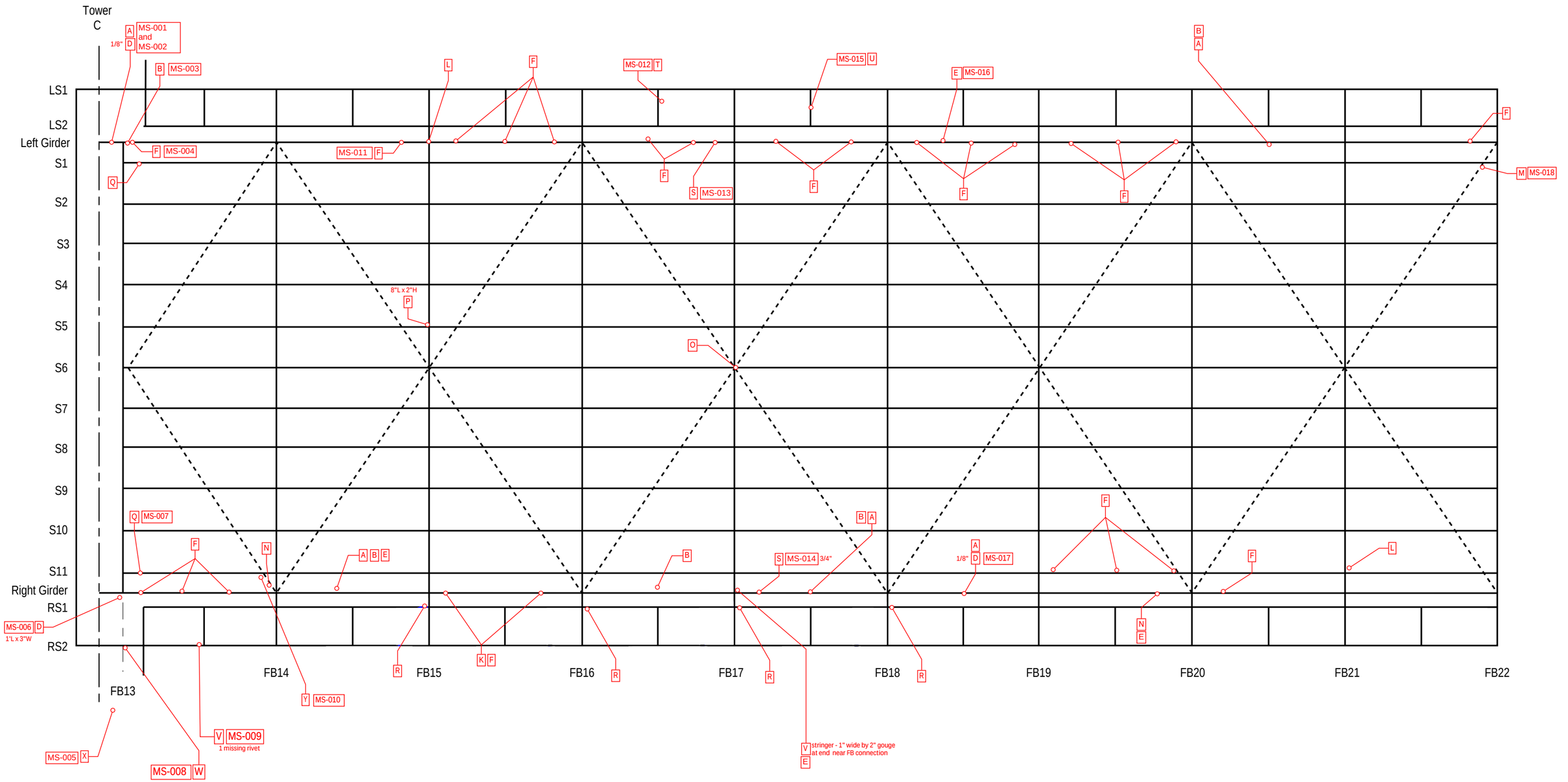
TRANSYSTEMS

West Suspension Span (FB0-12) - Framing Plan
Anthony Wayne
Deficiency Sheet

A: Edge Girder - typical rivet heads with up to 100% section loss on the bottom flange
B: Edge Girder - typical pitting 1/16" to 1/8" deep throughout
C: Edge Girder - Pitting to the web _____
D: Edge Girder - Pitting to the bottom flange ____
E: Edge Girder - Pack rust between the bottom flange plates
F: Edge Girder - Advanced section loss/100% section loss to transverse stiffener
G: Floorbeam Kneebrace - 100% section loss to outstanding leg of angle
H: Lower Lateral Brace - typical granular and bird debris on connection plate
J: Lower Lateral Brace - Pack rust between connection plate and lateral bracing member
K: Deck - typical efflo staining on girder web

L. Deck - abandoned steel cable protruding through
M. Lower Lateral Brace - typ. bolted repair
N: Edge Girder - two open holes in web between FB 20 and transverse stiffener
O: Lower Lateral Brace - area of 100% section loss to center connection plate
P: Stringer - 1/16" deep pitting to web
Q: Stringer - stray angles welded longitudinally along bottom flange
R: Floorbeam - sidewalk cantilever top flange crack
S: Edge Girder - Pack rust between the top flange plates

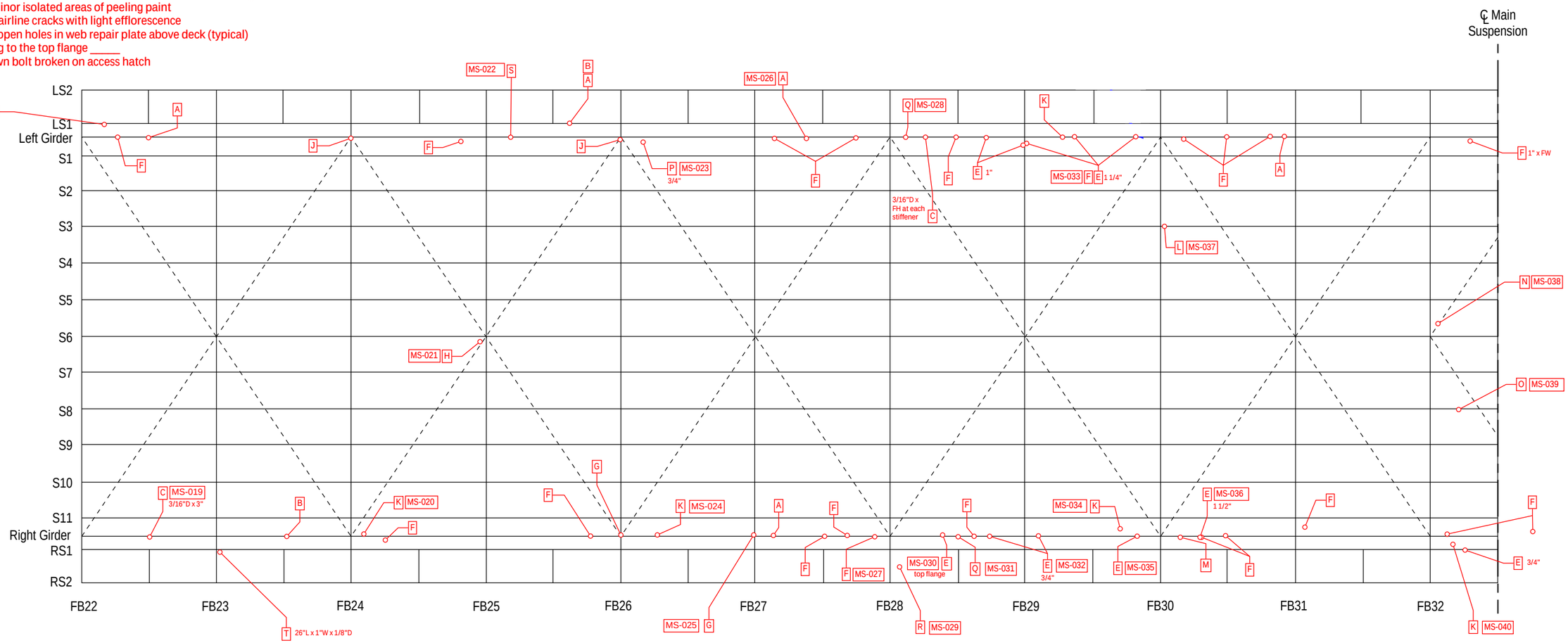
T. Deck - typical hairline map cracking
U. Utility Hanger - two 3/4" diameter open holes through top flange (typical)
V. Stringer - Painted over section loss to bottom flange
W. Stringer - Signs of expansion/contraction along bottom flange with surface corrosion
X. Deck - Spalling up to 2'L x 18"W by full depth with exposed reinforcement, broken conduit and exposed wires, at first intermediate diaphragm east of FB13
Y. Stringer - Abandoned rigging attached to bottom flange



TRANSYSTEMS

Main Suspension Span (FB13-22) - Framing Plan
Anthony Wayne
Deficiency Sheet

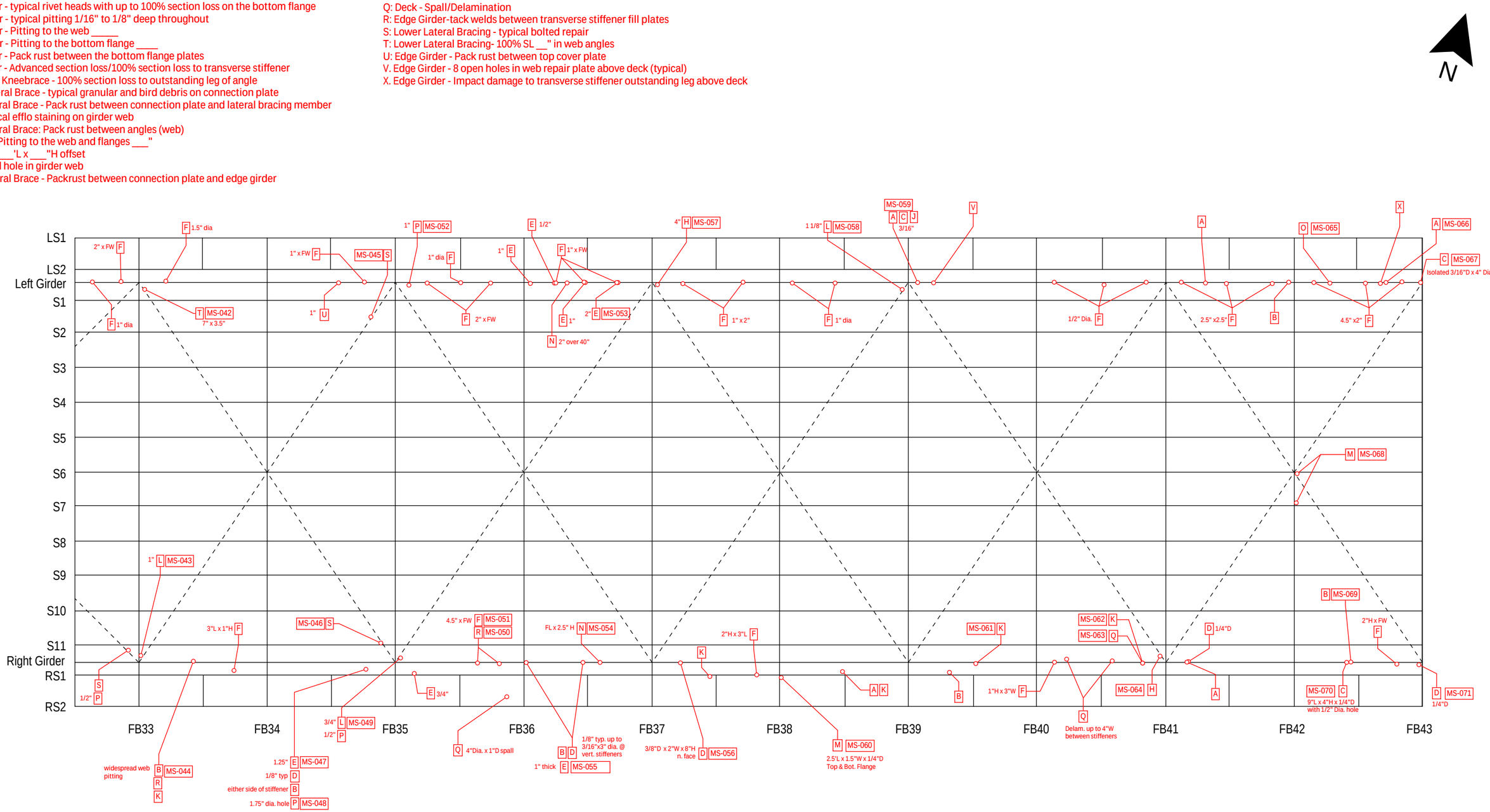
A: Edge Girder - typical rivet heads with up to 100% section loss on the bottom flange
B: Edge Girder - typical pitting 1/16" to 1/8" deep throughout
C: Edge Girder - Pitting to the web _____
D: Edge Girder - Pitting to the bottom flange ____
E: Edge Girder - Pack rust between the bottom flange plates
F: Edge Girder - Advanced section loss/100% section loss to transverse stiffener
G: Floorbeam Kneebrace - 100% section loss to outstanding leg of angle
H: Lower Lateral Brace - typical granular and bird debris on connection plate
J: Lower Lateral Brace - Pack rust between connection plate and lateral bracing member
K: Deck - typical efflo staining on girder web
L: Stringer - 3"H x 1 1/2"W hole in web at connection to floorbeam
M: Lower Later Brace - Area of advanced section loss to connection plate
N: Lower Lateral Brace - Typical bolted repair
O: Stringer 8 - 2 misdrilled holes at diaphragm connection
P: Edge Girder - __" thick pack rust between transverse stiffener and girder web
Q: Edge Girder - minor isolated areas of peeling paint
R: Deck - typical hairline cracks with light efflorescence
S. Edge Girder - 8 open holes in web repair plate above deck (typical)
T. Stringer - Pitting to the top flange _____
U. Deck - hold down bolt broken on access hatch



TRANSYSTEMS

Main Suspension Span (FB22-32) - Framing Plan
Anthony Wayne
Deficiency Sheet

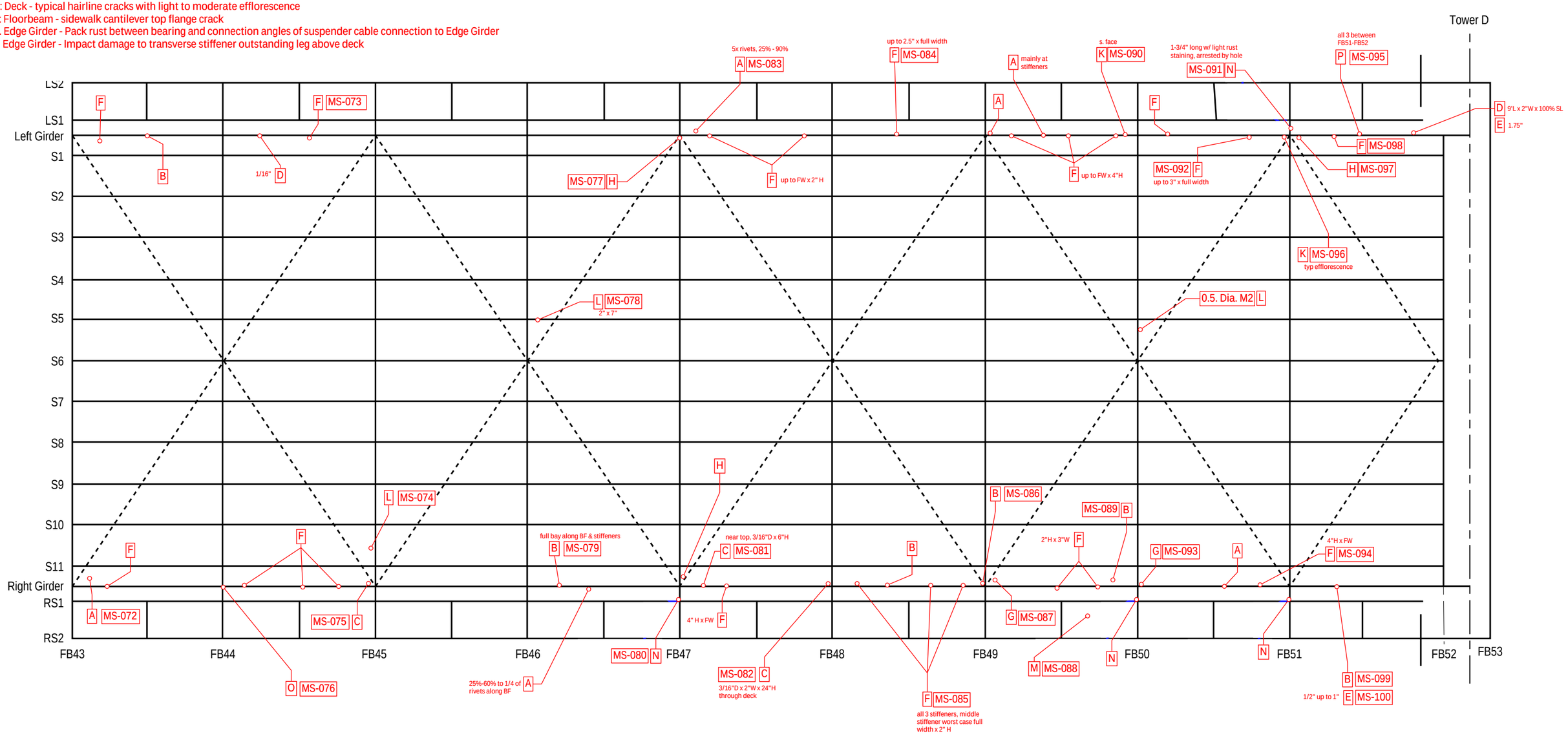
A: Edge Girder - typical rivet heads with up to 100% section loss on the bottom flange
B: Edge Girder - typical pitting 1/16" to 1/8" deep throughout
C: Edge Girder - Pitting to the web _____
D: Edge Girder - Pitting to the bottom flange ____
E: Edge Girder - Pack rust between the bottom flange plates
F: Edge Girder - Advanced section loss/100% section loss to transverse stiffener
G: Floorbeam Kneebrace - 100% section loss to outstanding leg of angle
H: Lower Lateral Brace - typical granular and bird debris on connection plate
J: Lower Lateral Brace - Pack rust between connection plate and lateral bracing member
K: Deck - typical efflo staining on girder web
L: Lower Lateral Brace: Pack rust between angles (web)
M: Stringers: Pitting to the web and flanges ___"
N: Handrail - ___'L x ___"H offset
O: 3/8" drilled hole in girder web
P: Lower Lateral Brace - Packrust between connection plate and edge girder
Q: Deck - Spall/Delamination
R: Edge Girder-tack welds between transverse stiffener fill plates
S: Lower Lateral Bracing - typical bolted repair
T: Lower Lateral Bracing- 100% SL __" in web angles
U: Lower Lateral Brace - Pack rust between top cover plate
V. Edge Girder - 8 open holes in web repair plate above deck (typical)
X. Edge Girder - Impact damage to transverse stiffener outstanding leg above deck



TRANSYSTEMS

Main Suspension Span (FB33-43) - Framing Plan
Anthony Wayne
Deficiency Sheet

A: Edge Girder - typical rivet heads with up to 100% section loss on the bottom flange
B: Edge Girder - typical pitting 1/16" to 1/8" deep throughout
C: Edge Girder - Pitting to the web _____
D: Edge Girder - Pitting to the bottom flange ____
E: Edge Girder - Pack rust between the bottom flange plates
F: Edge Girder - Advanced section loss/100% section loss to transverse stiffener
G: Floorbeam Kneebrace - 100% section loss to outstanding leg of angle
H: Lower Lateral Brace - typical granular and bird debris on connection plate
J: Lower Lateral Brace - Pack rust between connection plate and lateral bracing member
K: Deck - typical efflo staining on girder web
L: Lower lateral brace - 100% section loss to connection plate
M: Deck - typical hairline cracks with light to moderate effloresecence
N: Floorbeam - sidewalk cantilever top flange crack
O. Edge Girder - Pack rust between bearing and connection angles of suspender cable connection to Edge Girder
P. Edge Girder - Impact damage to transverse stiffener outstanding leg above deck

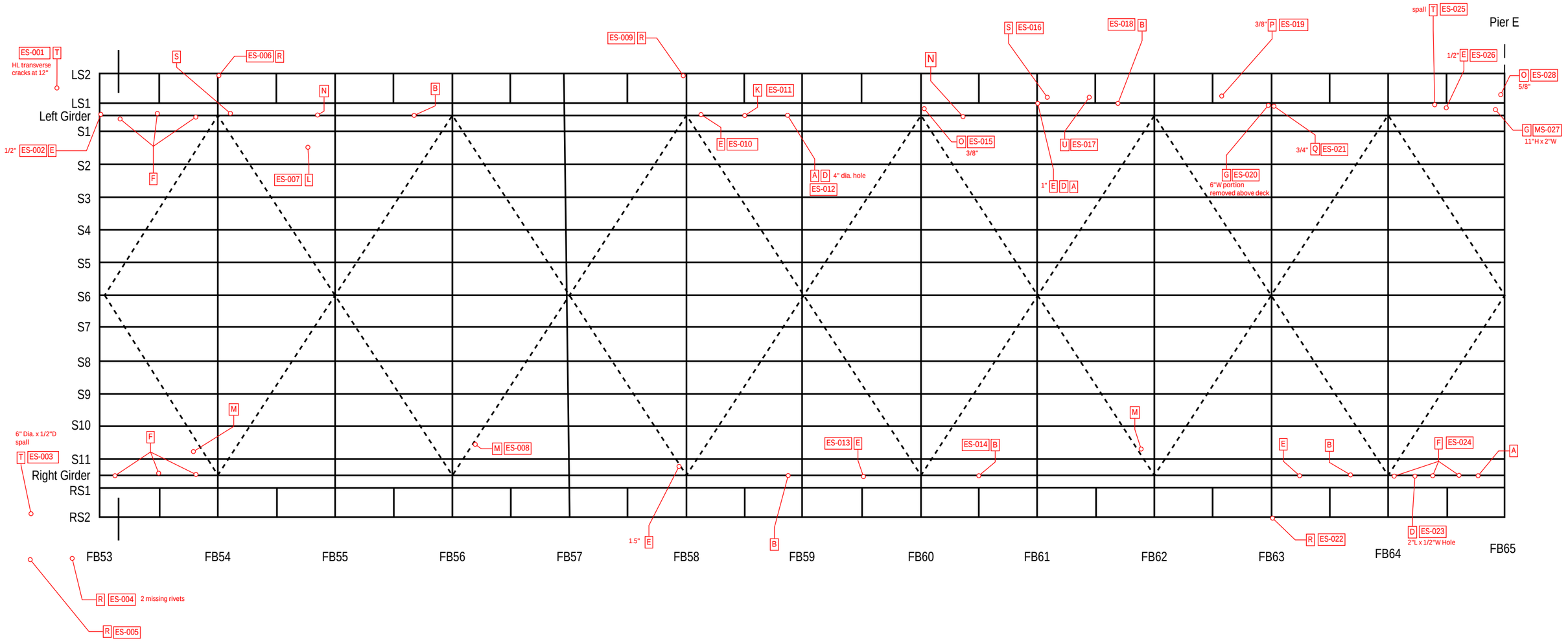


TRANSYSTEMS

Main Suspension Span (FB43-52) - Framing Plan
Anthony Wayne
Deficiency Sheet

A: Edge Girder - typical rivet heads with up to 100% section loss on the bottom flange
B: Edge Girder - typical pitting 1/16" to 1/8" deep throughout
C: Edge Girder - Pitting to the web ____
D: Edge Girder - Pitting to the bottom flange ____
E: Edge Girder - Pack rust between the bottom flange plates
F: Edge Girder - Advanced section loss/100% section loss to transverse stiffener
G: Floorbeam Kneebrace - 100% section loss to outstanding leg of angle
H: Lower Lateral Brace - typical granular and bird debris on connection plate
J: Lower Lateral Brace - Pack rust between connection plate and lateral bracing member
K: Deck - typical efflo staining on girder web
L: Deck - underside of pan with 3' wide by 1' long area of minor laminate corrosion
M: Lower Lateral Brace - Typical bolted repair

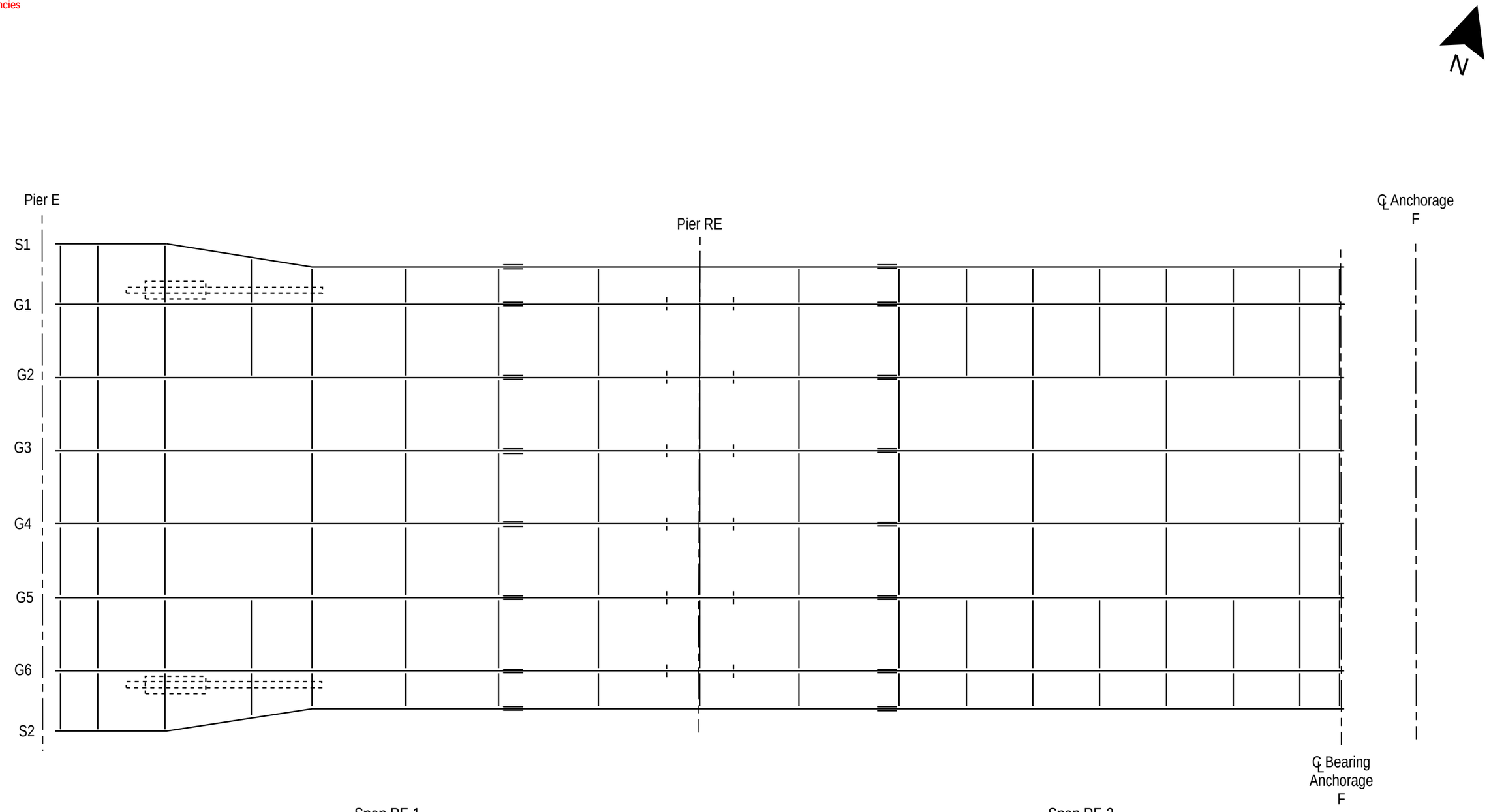
N. Edge Girder - Impact damage to transverse stiffener outstanding leg above deck
O: Edge Girder - Pack rust between the top flange plates
P: Edge Girder - Pack rust between the transverse/longitudinal stiffeners and web
Q. Edge Girder - Pack rust between bearing and connection angles of suspender cable connection to Edge Girder
R. Stringer - Painted over areas of corrosion up to 100% SL, pack rust between bottom angle/web of fascia stringers (typical)
S. Edge Girder - 8 open holes in web repair plate above deck (typical)
T. Deck - ____ through CIP deck at overhang
U. Edge Girder - Tack welds between transverse stiffeners and fill plates (typical)



TRANSYSTEMS

East Suspension Span (FB53-65) - Framing Plan
Anthony Wayne
Deficiency Sheet

A: No notable deficiencies

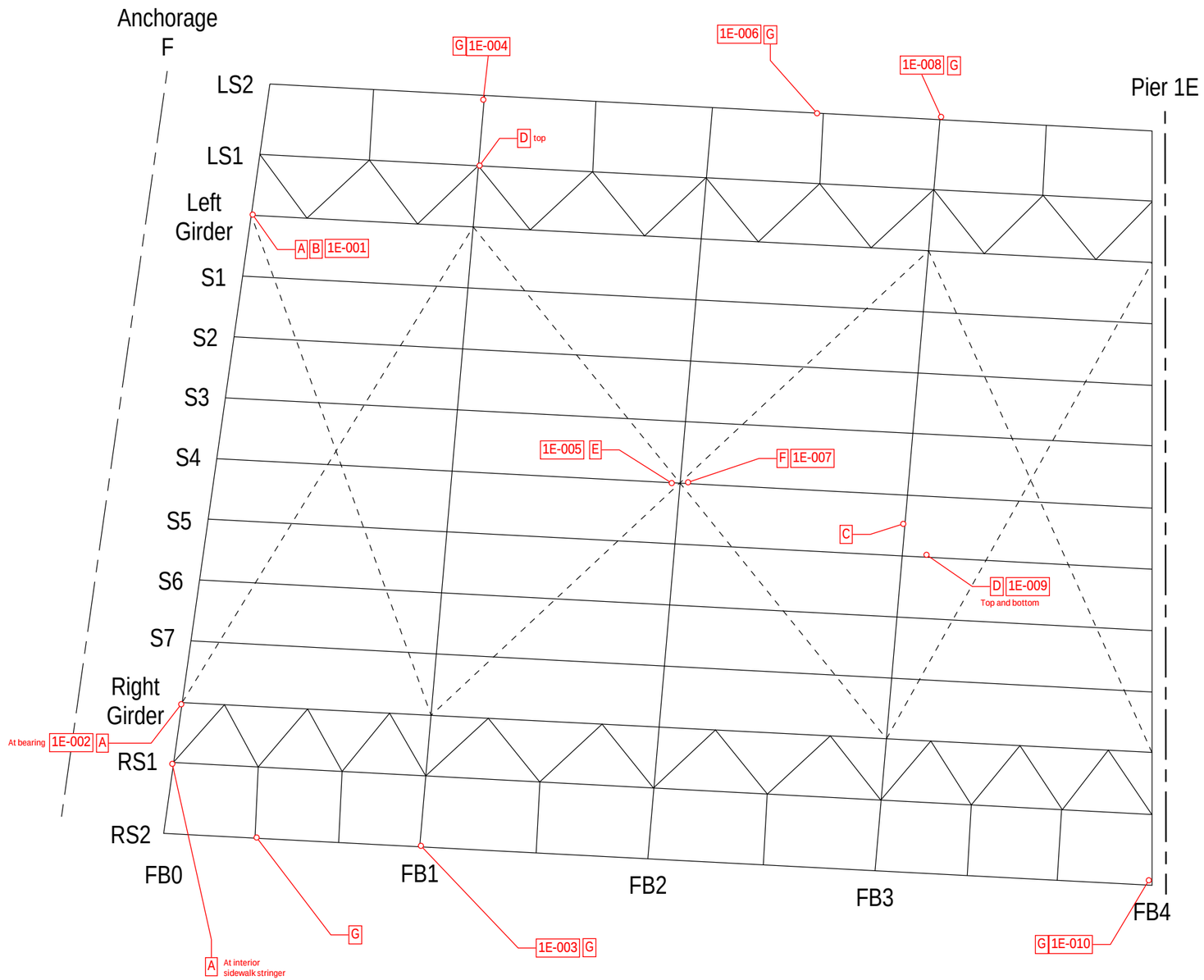


TRANSYSTEMS

Span RE - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Bearing - Minor corrosion of masonry plate
B. Floorbeam - Minor distortion to bottom angles of knee brace at Left Girder and painted over pack rust
C. Floorbeam - Minor active corrosion to ____ flange
D. Stringer - Minor active corrosion to ____ flange
E. Floorbeam - Painted over 100% section loss to transverse stiffener
F. Lateral Bracing - Painted over minor pack rust/deformation to lateral bracing connection plate
G. Stringer - Painted over areas of corrosion, pack rust between bottom angle/web of fascia stringers (typical)

N

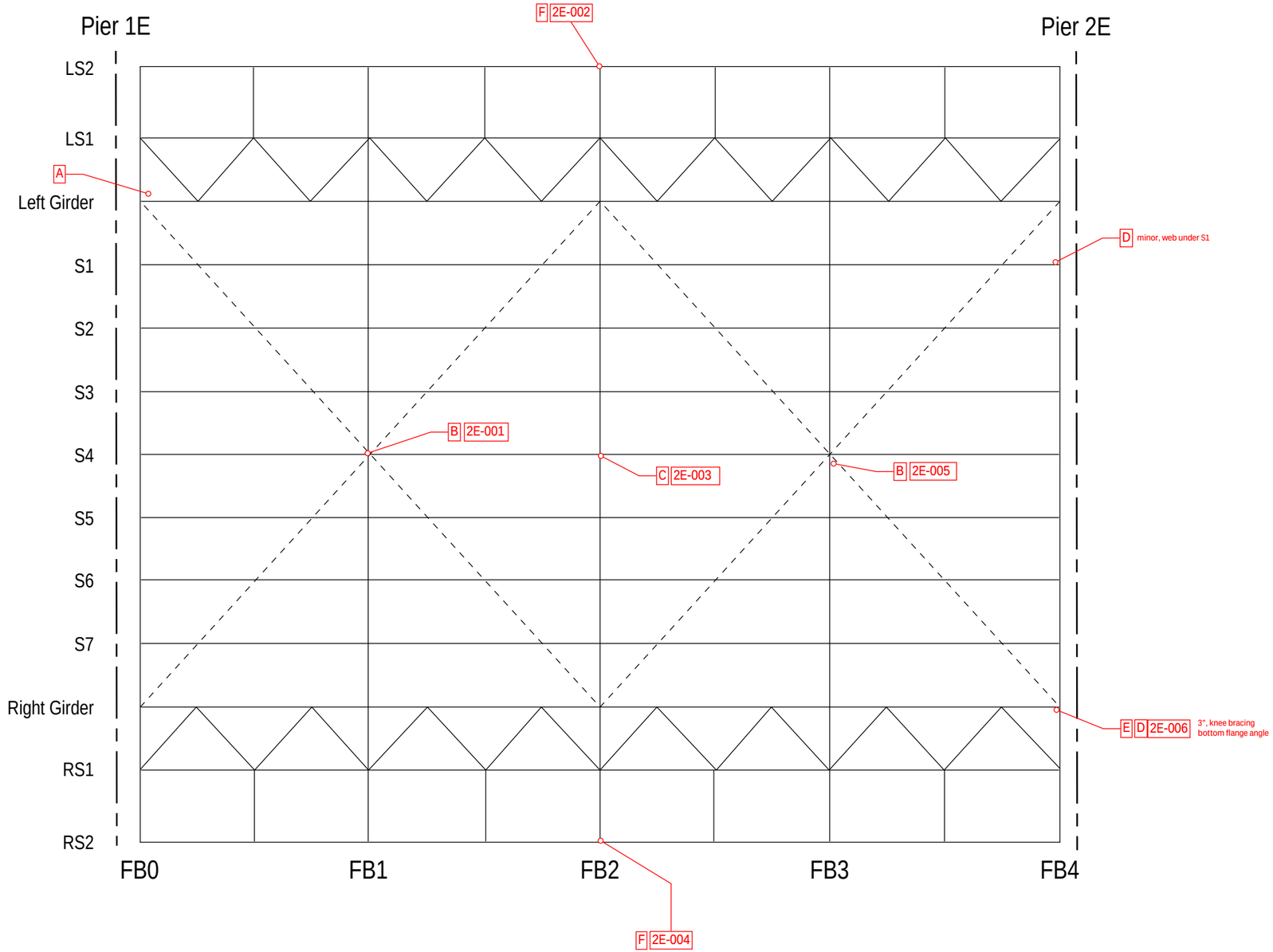


TRANSYSTEMS

Span 1E - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Floorbeam - Minor active corrosion between knee brace angles at overhang
B. Lateral Bracing - Minor bowing of connection plate due to painted over pack rust
C. Stringer - Minor painted over pack rust at stringer connection to floorbeam stiffener
D. Floorbeam - ____ painted over perforation of ____
E. Floorbeam - Up to 100% section loss of majority of transverse stiffeners along bottom flange
F. Stringer - Painted over areas of corrosion, pack rust between bottom angle/web of fascia stringers (typical)

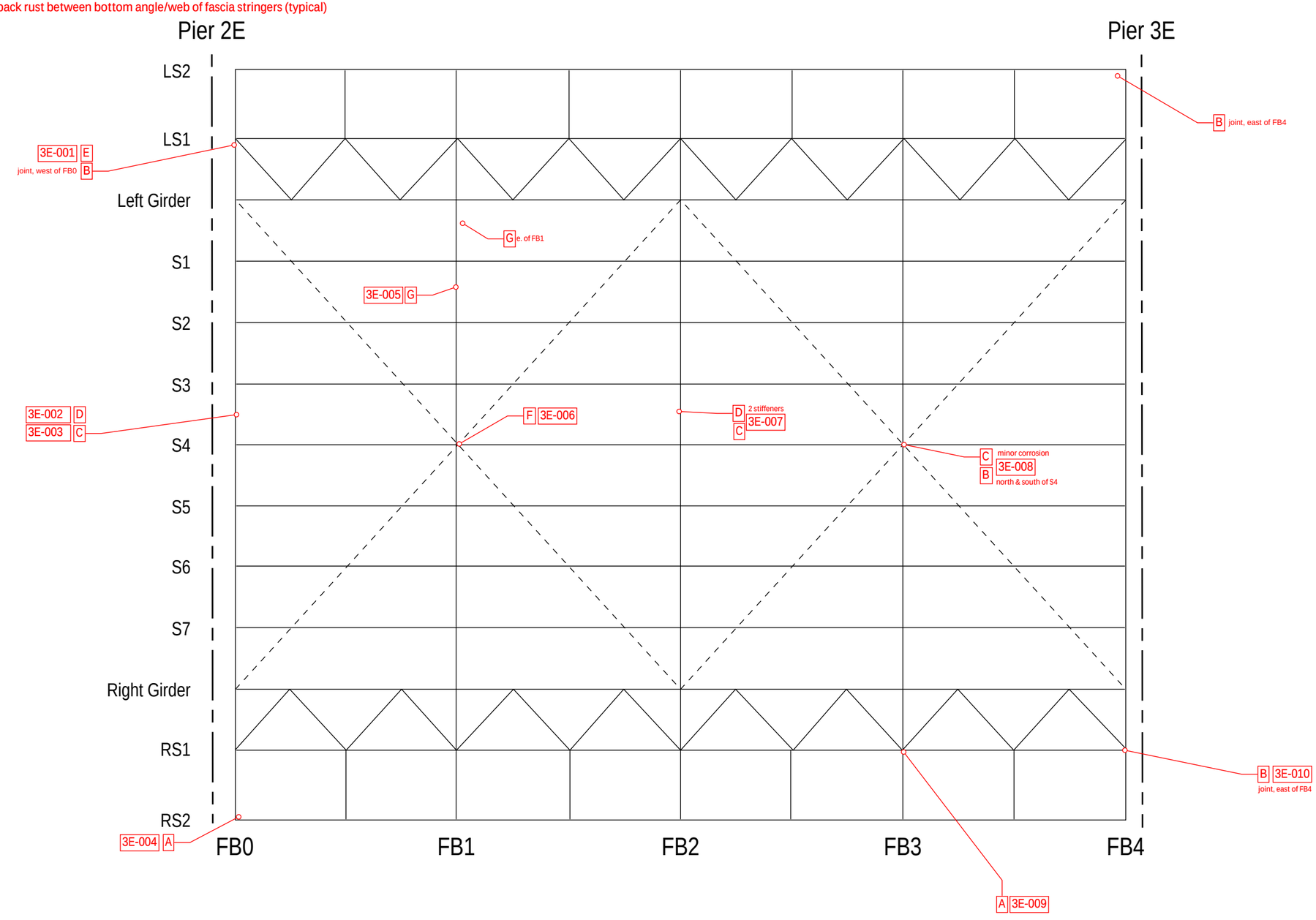
N



TRANSYSTEMS

Span 2E - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Stringer - Minor painted over pack rust at stringer connection to floorbeam stiffener
B. Deck - Minor corrosion and efflorescence of deck pan flashing at ____
C. Floorbeam - Painted over pack rust between bottom flange angles and cover plate causing minor distortion along bottom flange
D. Floorbeam - Up to 100% section loss of majority of transverse stiffeners along bottom flange
E. Floorbeam - Painted over area of 100% section loss to bottom flange angle of kneebrace at overhang
F. Lateral Bracing - Minor bowing of connection plate due to painted over pack rust
G. Floorbeam - Minor impact damage to transverse stiffener
H. Stringer - Painted over areas of corrosion, pack rust between bottom angle/web of fascia stringers (typical)

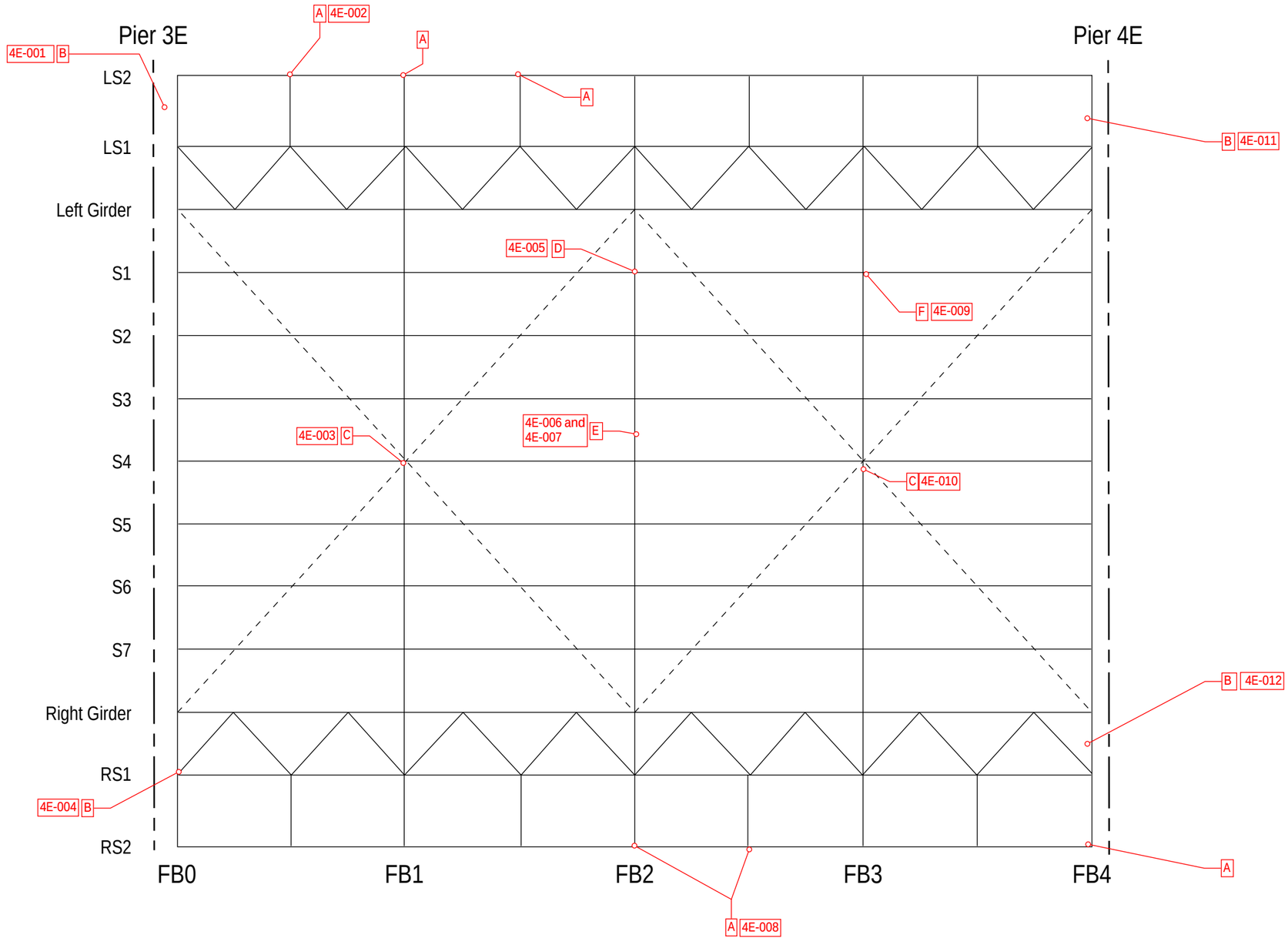


TRANSYSTEMS

Span 3E - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Stringer - Painted over areas of corrosion, pack rust between bottom angle/web of fascia stringers (typical)
B. Floorbeam - Painted over areas of pitting with up to 100% section loss of top flange/transverse stiffeners and active corrosion of deck pan flashing at joints
C. Lateral Bracing - Minor bowing of connection plate due to painted over pack rust
D. Stringer - Painted over areas of pitting with up to 100% section loss to web
E. Floorbeam - Painted over pack rust between bottom flange angles and cover plate with minor distortion along bottom flange. Painting over pitting of bottom flange and transverse stiffeners, one with 100% section loss. Very minor areas of corrosion to the top flange
F. Stringer - Minor painted over pack rust at stringer connection to floorbeam stiffener

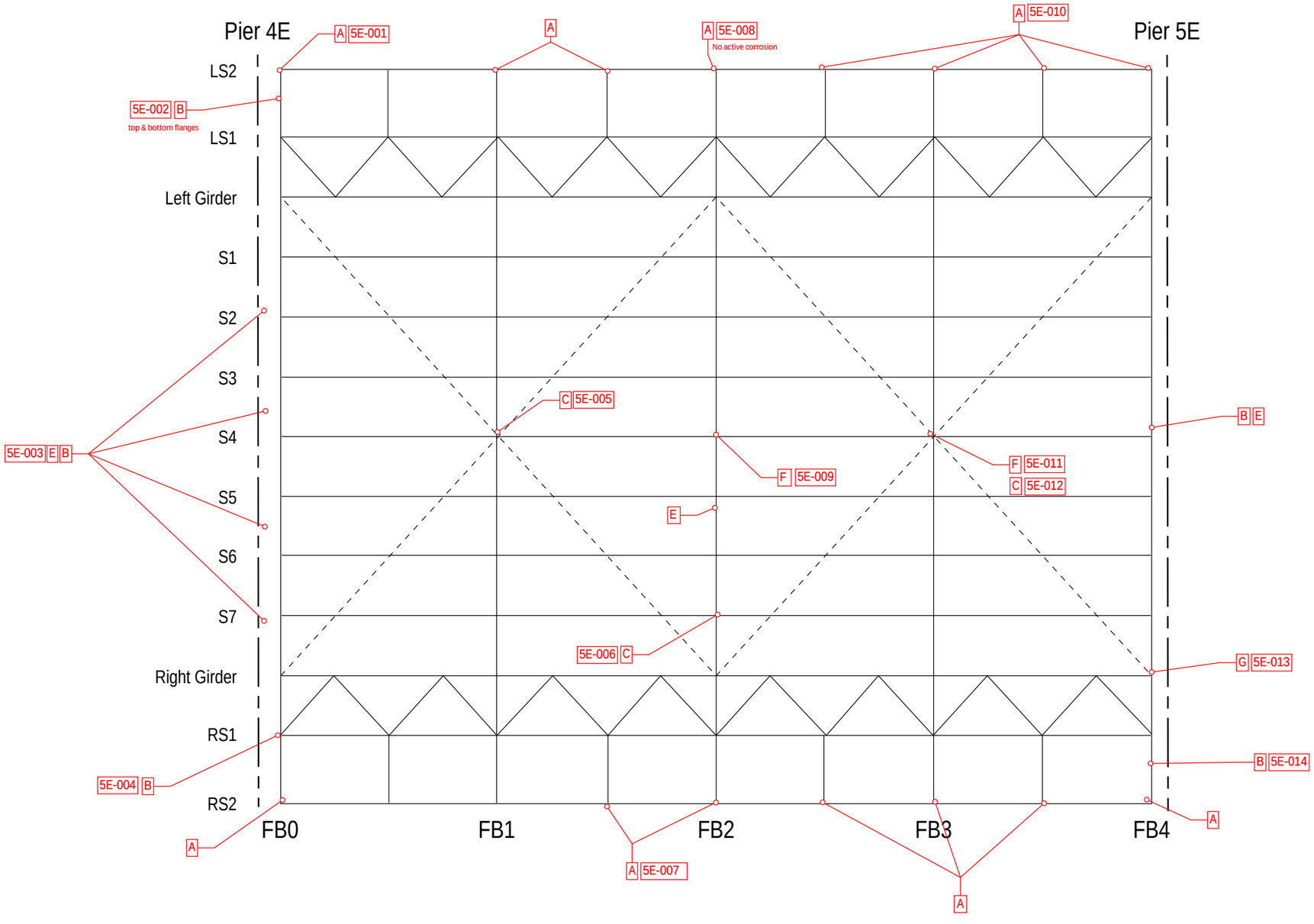
N



TRANSYSTEMS

Span 4E - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Stringer - Painted over areas of corrosion up to 100% section loss and pack rust between bottom angle/web of fascia stringers (typical)
B. Floorbeam - Painted over areas of pitting with up to 100% section loss of top flange/transverse stiffeners and active corrosion of deck pan flashing at joints
C. Lateral Bracing - Minor bowing of connection plate due to painted over pack rust
D. Stringer - 1 1/2' long by 4" high unpainted web with exposed primer
E. Floorbeam - Painted over pack rust between bottom flange angles and cover plate causing minor distortion along bottom flange
F. Stringer - Minor painted over active corrosion of top flange with light deck efflorescence
G. Bearing - Minor corrosion of masonry plate

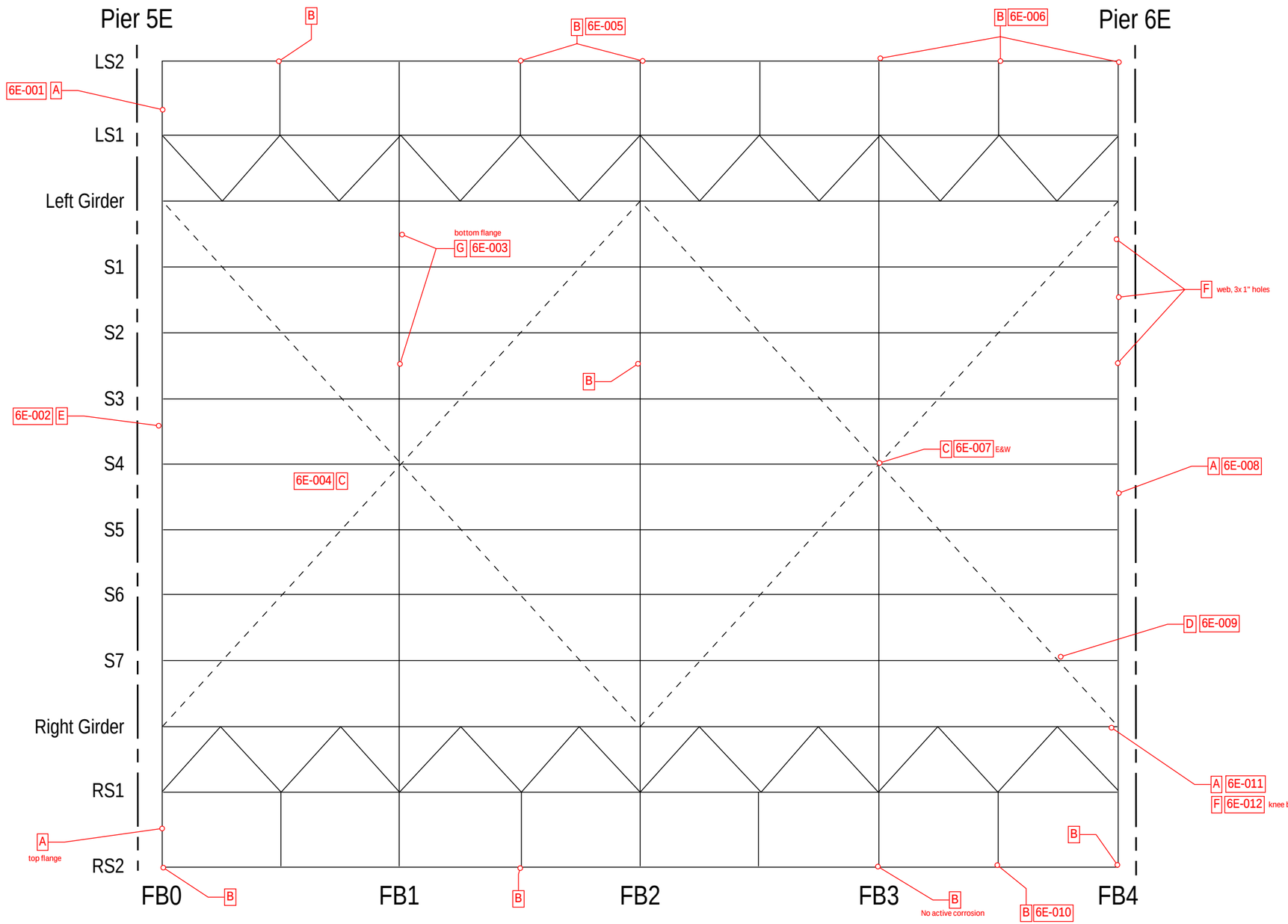


TRANSYSTEMS

Span 5E - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Floorbeam - Painted over areas of pitting with up to 100% section loss of top flange/transverse stiffeners and active corrosion of deck pan flashing at joints
B. Stringer - Painted over areas of corrosion up to 100% section loss and pack rust between bottom angle/web of fascia stringers (typical)
C. Lateral Bracing - Minor bowing of connection plate due to painted over pack rust
D. Lateral Bracing - Minor impact damage
E. Floorbeam - Painted over pack rust between bottom flange angles and cover plate causing minor distortion along bottom flange
F. Floorbeam - Painted over section loss up to 100% of ____
G. Floorbeam - Minor impact damage

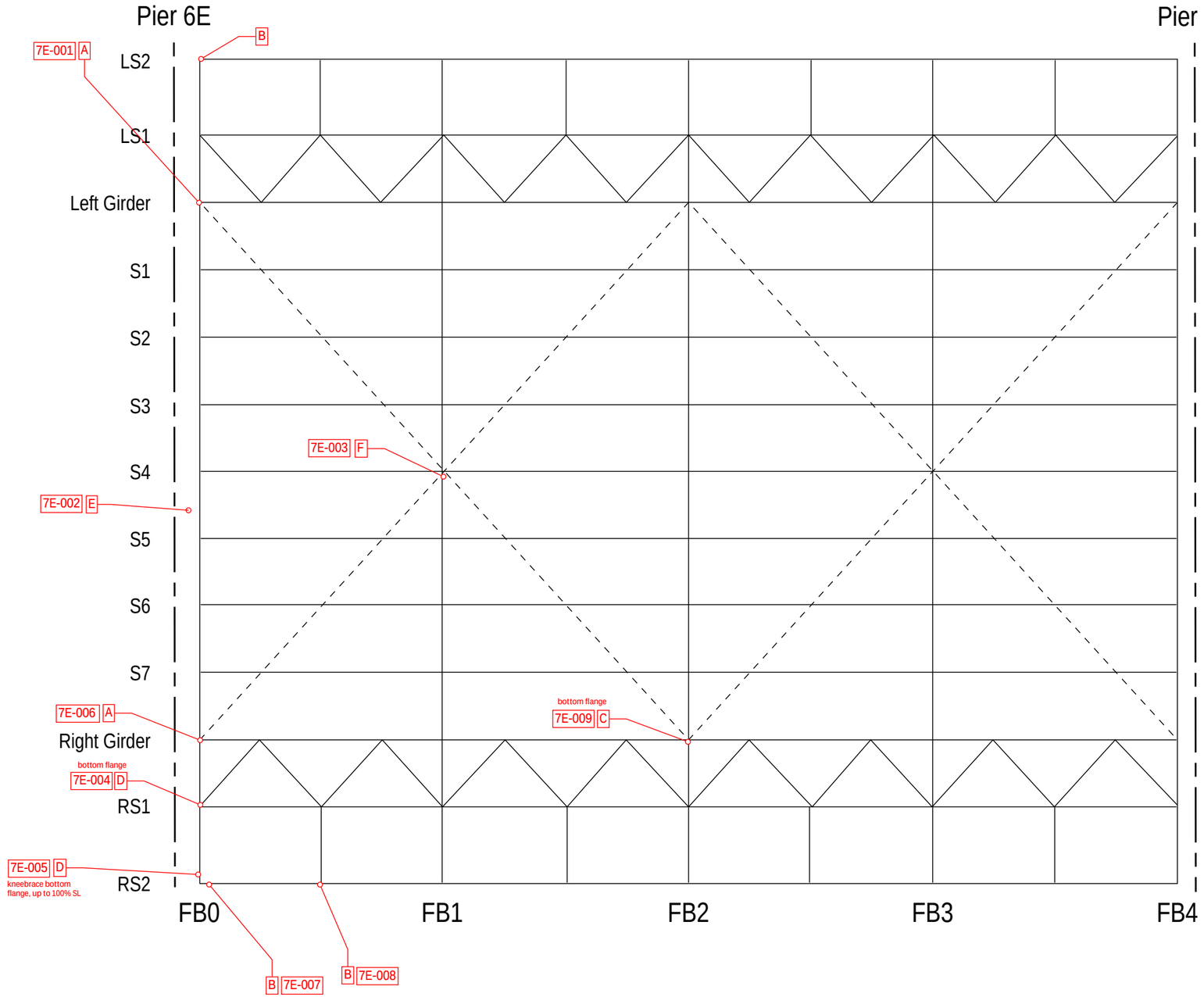
N



TRANSYSTEMS

Span 6E - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Bearing - Corrosion between masonry plate/rocker assembly and minor pack rust between sole plate/rocker assembly
B. Stringer - Painted over areas of corrosion up to 100% section loss and pack rust between bottom angle/web of fascia stringers (typical)
C. Girder - Minor painted over section loss to ____
D. Floorbeam - Painted over section loss to ____
E. Floorbeam - Up to 100% section loss of majority of transverse stiffeners along bottom flange
F. General - broken underpass light

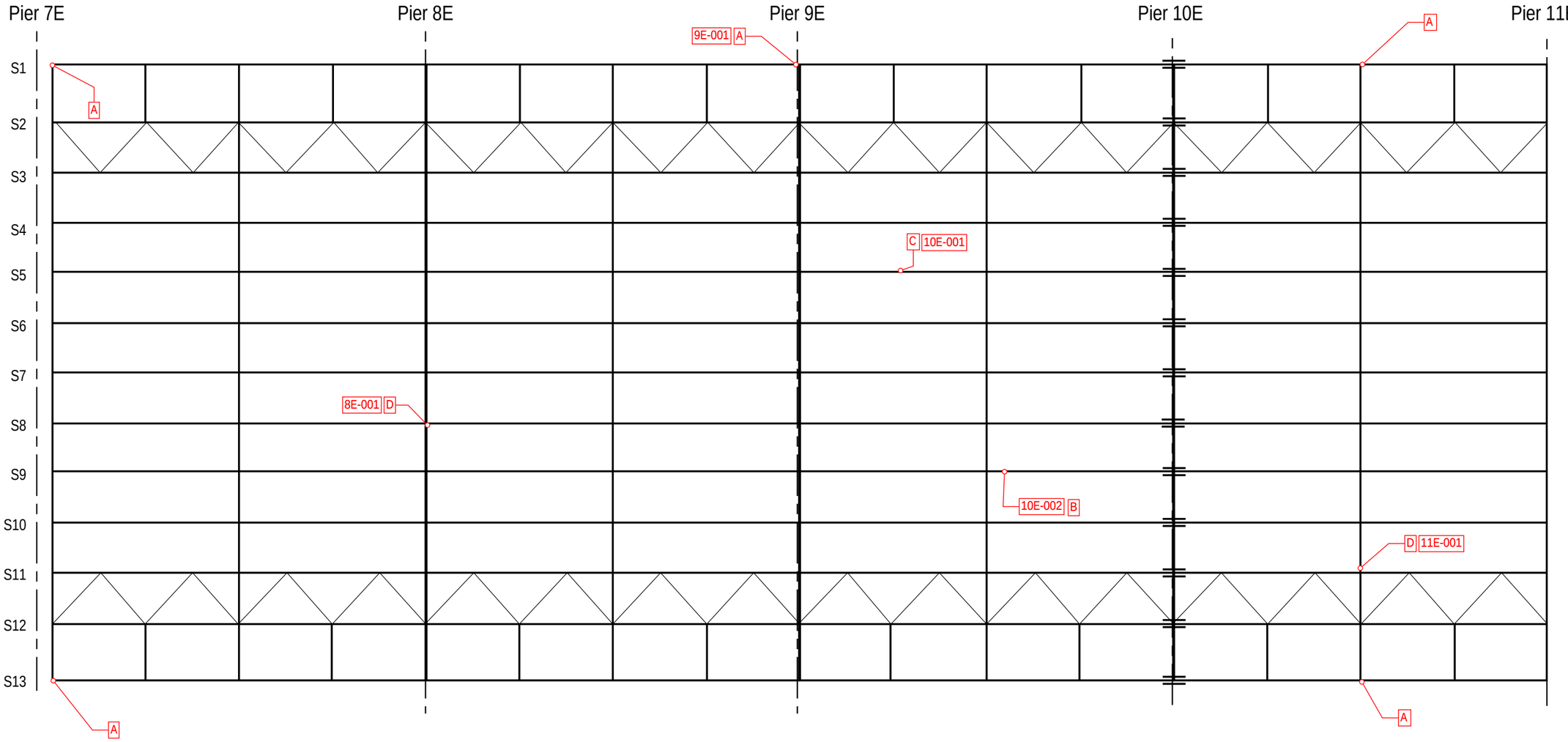


TRANSYSTEMS

Span 7E - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Stringer - Painted over areas of corrosion with up to 100% section loss and pack rust between bottom angle/web of fascia stringers (typical)
B. Stringer - Minor active top flange corrosion (typical)
C. Stringer - Minor impact scrapes on bottom flange
D. Stringer - Minor painted over pitting throughout stringer, focused along bottom flange and at stringer ends and bearing stiffeners

N



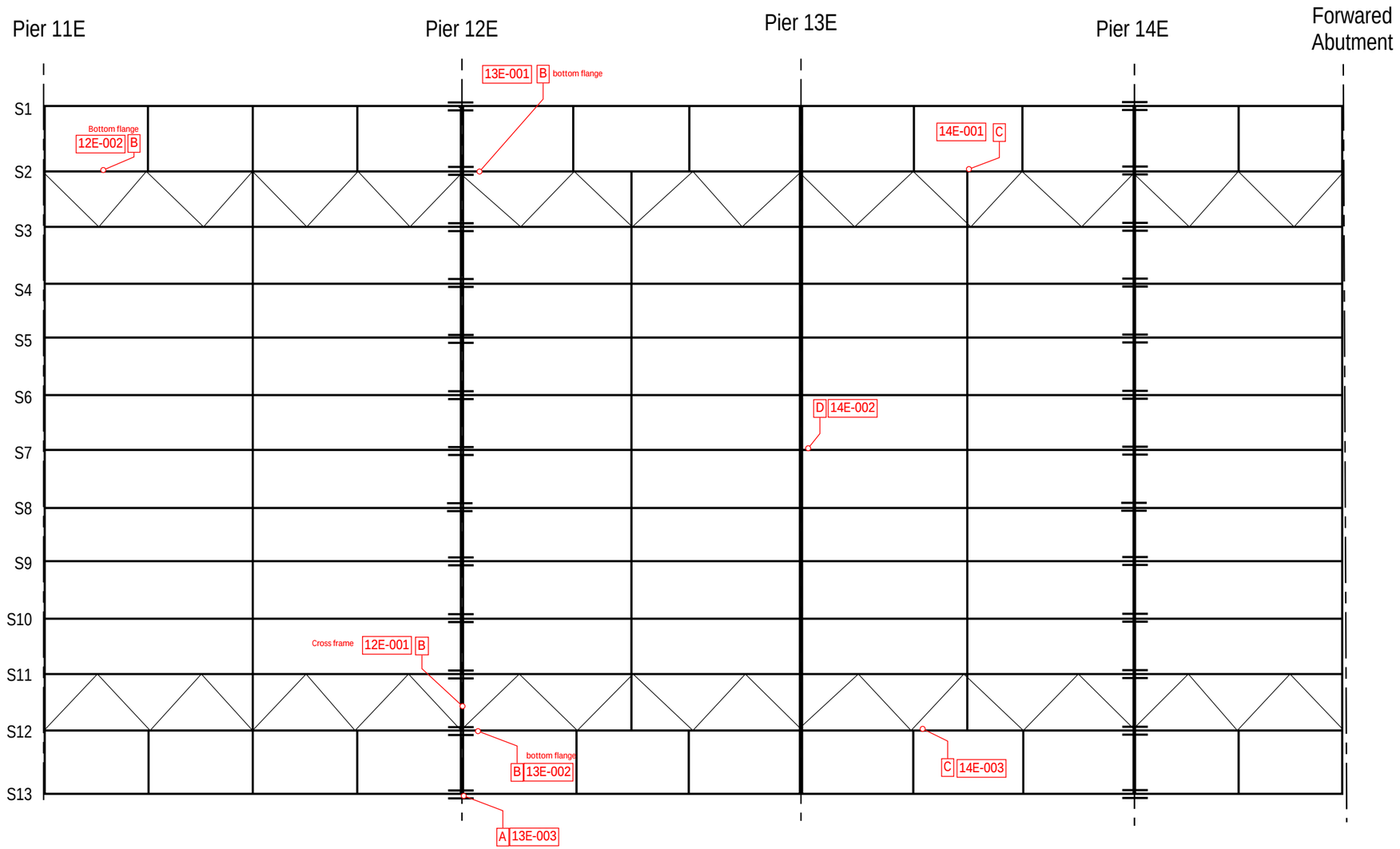
Span 8E | Span 9E | Span 10E | Span 11E

TRANSYSTEMS

Span 8-11E - Framing Plan
Anthony Wayne
Deficiency Sheet

A. Stringer - Painted over areas of corrosion with up to 100% section loss and pack rust between bottom angle/web of fascia stringers (typical)
B. Stringer - Minor painted over pitting throughout stringer (typical)
C. Stringer - Minor impact scrapes on bottom flange
D. General - broken underpass light

N



Span 12E | Span 13E | Span 14E | Span 15E

TRANSYSTEMS

Span 12-15E - Framing Plan
Anthony Wayne
Deficiency Sheet

Photo 8W-001: Typical connection painted over section loss on north face of S1 at midspan sidewalk bracket, looking south

Photo 8W-002: Painted over gouge (3" long) on bottom flange of S13, between midspan sidewalk bracket and intermediate sidewalk bracket west of midspan

Photo 8W-003: Typical connection painted over section loss on south face of S14 at midspan sidewalk bracket, looking north

Photo 7W-001: Painted over 100% section loss on top flange of FB0 north overhang at LS2

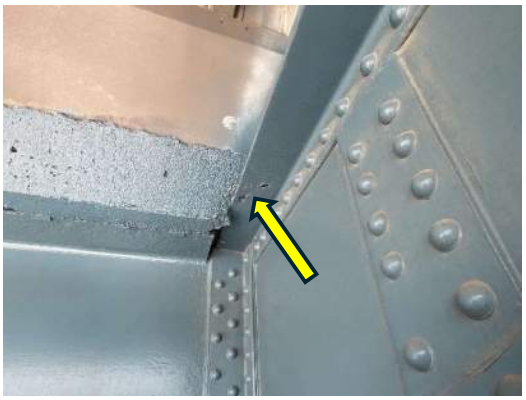


Photo 7W-002: Areas of 100% section loss in top flange of FB0 south overhang, at RS2, looking south

Photo 7W-003: Pack rust and painted over section loss at FB1 north overhang, at LS2, with minor active corrosion

Photo 7W-004: Pack rust and painted over section loss on FB2 north overhang, at LS2, looking southwest

Photo 7W-005: Painted over pitting on top flange of FB2 north overhang, near LS1, looking west

Photo 7W-006: Pack rust between bottom angle/web of stringer RS2 at FB2, looking west

Photo 7W-007: Painted over pitting on south face of RS2, near FB2, looking northwest

Photo 7W-008: Pack rust along the east face bottom flange of FB3 in multiple locations between S1 and S4, looking west

Photo 6W-001: Bearing tilted 10 degrees to the east at Pier 6W south bearing, looking north

Photo 6W-002: Pack rust between bottom angle/web of stringer LS2 at FB1, looking west

Photo 6W-003: Pack rust between bottom angle/web of stringer RS2 at FB1, looking west

Photo 6W-004: Pack rust causing separation of bottom flange angle to web, with painted over 100% section loss, at FB2 south overhang, at RS2, looking east

Photo 6W-005: Three missing bolts on stiffener angle on FB2 south overhang, at RS2

Photo 6W-006: Granular and bird debris on lateral bracing connection plate on east side of Right Girder at FB2, looking south

Photo 5W-001: 100% section loss and painted over pitting throughout east face web of FB0, between RS1 and RS2

Photo 5W-002: Minor bowing to FB0, between RS1 and RS2

Photo 5W-003: 100% painted over section loss on bottom flange of FB0 south overhang, between RS1 and RS2

Photo 5W-004: 100% section loss on bottom flange angle of RS2 at FB0, with pack rust causing gap between stringer web and bottom flange

Photo 5W-005: 12" flame cut from bottom of stiffener on FB3 east face, at Left Girder, looking north

Photo 5W-006: Minor perforations in top flange of FB2 north overhang, near LS1, looking south

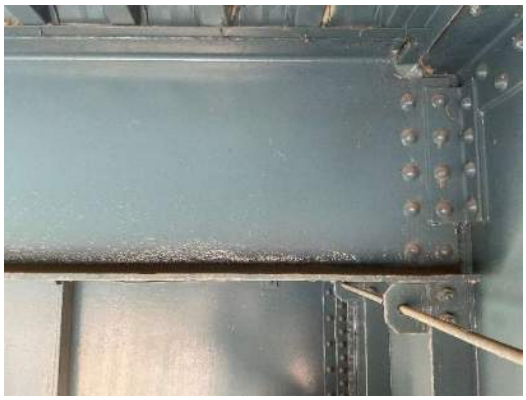


Photo 5W-007: Painted over pitting on south face web of S1, at FB2, looking north

Photo 5W-008: Painted over pitting near FB2 and RS1 interface

Photo 4W-001: Coped bottom flange (13" length) on FB0 near Left Girder, looking northwest

Photo 4W-002: 1/2" thick pack rust between sidewalk cantilever connection on LS2 between FB1 and FB2, looking northeast

Photo 4W-003: Missing bolt at utility hanger connection on LS2 between FB3 and FB4, looking north

Photo 4W-004: Popped rivet head at the LS2 and FB4 connection, looking northwest

Photo 4W-005: Bolt backed off 2" at the LS2 and FB4 connection, looking northwest

Photo 4W-006: Section loss up to 100% (2" long by 1" wide) on east side of FB4 top flange between LS1 and LS2, looking south

Photo 4W-007: Painted over section loss with caulking at stiffener base on east face of FB4 near S4, looking northwest

Photo 4W-008: Transverse weld in top flange of FB4 south cantilever between RS1 and RS2, looking southeast

Photo 4W-009: Up to 50% section loss in northwest anchor rod of pier 3W Right Girder bearing, looking southeast

Photo 3W-001: Transverse weld in top flange of FB2 south cantilever between RS1 and RS2, looking east

Photo 3W-002: Top flange repair plate at top with 3 tab plates on underside of FB3 between LS1 and LS2, looking west

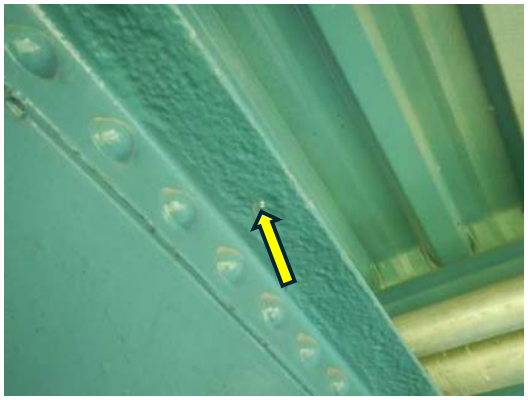


Photo 3W-003: 100% section loss (1/4" diameter) in top flange of FB3 east face between LS1 and LS2, looking northwest

Photo 3W-004: Transverse weld in top flange of FB3 south cantilever between RS1 and RS2, looking west

Photo 3W-005: 100% section loss by full height of vertical angle on exterior angle of RS2 near FB4, looking north

Photo 3W-006: 100% section loss by full height of vertical angle on exterior angle on RS2 between FB4 and FB5, looking north

Photo 3W-007: 100% section loss throughout flanges and stiffeners on FB5 at north cantilever, looking up and south

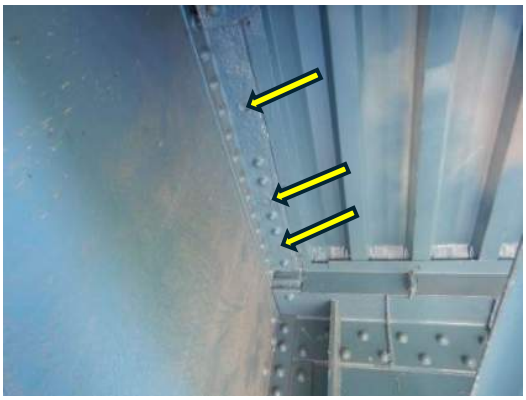


Photo 2W-001: 3 popped rivet heads on top flange on FB0 between Right Girder and RS1, looking north

Photo 1W-001: 100% section loss on FB4 north cantilever bracket bottom flange, looking up and south

Photo 1W-002: Distorted and twisted up to 2' long on north lateral bracing between FB4 and FB5, looking north

Photo 1W-003: Up to 1/2" thick pack rust between bottom flange and cover plate on FB4 at S3, looking southeast

Photo RW-2-001: Spall undermining masonry plate (6" long by 1/2" deep) at anchorage A S1 bearing, looking northwest

Photo RW-2-002: Beginning of undermining with slight section loss of bearing area (2' wide by 2' high by 2" deep) at anchorage A S2 bearing, looking southwest

No Notable Deficiencies

Photo NC-001: Main cable at suspender cable 5, leak, east end, south face

Photo NC-002: Suspender cable 8, coating failure

Photo NC-003: Suspender cable 10, areas of surface corrosion with active rust

Photo NC-004: Main cable at suspender cable 20, surface defect, left and right side of connection, north face

Photo NC-005: Main cable at suspender cable 28, two leaks, west end, south face

Photo NC-006: Main cable at suspender cable 41, connection leakage, east end, north face

Photo SC-001: Main cable at suspender cable 2, leak, east end, north face

Photo SC-002: Main cable at suspender cable 5, slight leak at tape seam, east end, south face

Photo SC-003: Main cable at suspender cable 9, slight leak at tape seam, west end, north face

Photo SC-004: Main cable at suspender cable 15, leak, west end, south face

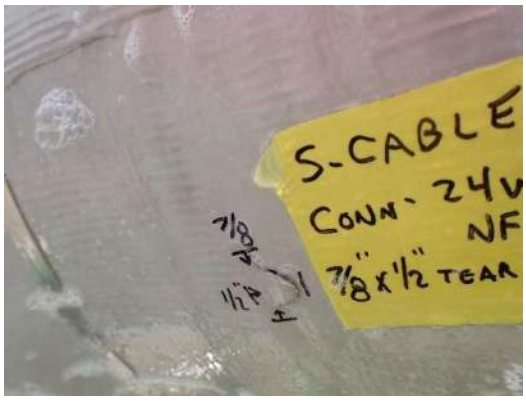


Photo SC-005: Main cable at suspender cable 24, gouge in cable, leak, west end, north face

Photo SC-006: Main cable at suspender cable 46, leak in cable gouge, east end, south face

Photo WS-001: Pack rust between top flange plates of Left Girder at FB0, looking north

Photo WS-002: Punched hole with missing rivet at transverse stiffener on Left Girder south face east of FB0, looking northeast

Photo WS-003: Kneebrace with 3/4" thick pack rust and up to 100% section loss on Left Girder south face at FB0, looking northwest

Photo WS-004: Typical efflorescence staining on Left Girder web, between FB0 and FB1

Photo WS-005: Pitting to the web of the Right Girder, near FB1

Photo WS-006: 2 1/4" impact damage to transverse stiffener outstanding leg on Left Girder south face east of FB1, looking north

Photo WS-007: Section loss (20' long by 2" wide by 3/16" deep) on bottom flange of Left Girder near FB2, looking northeast

Photo WS-008: Section loss (3" wide by 1/4" deep) on bottom flange of Right Girder between FB3 and FB4

Photo WS-009: Pack rust between bottom flange plates on Left Girder between FB4 and FB5, looking northeast

Photo WS-010: Pack rust between bottom flange plates on Right Girder between FB5 and FB6, looking southeast

Photo WS-011: Pack rust between top flange plates on Left Girder between FB6 and FB7, looking northeast

Photo WS-012: Top flange cracked on east side of FB10 south cantilever between Right Girder and RS1, looking northwest

Photo MS-001: Rivet heads up to 100% section loss on north face of Left Girder bottom flange east of FB13, looking southwest

Photo MS-002: 7' long by 7" wide heavy paint peeling with 1/4" laminate corrosion and up to 1/8" deep pitting on north face of Left Girder bottom flange east of FB13, looking southwest

Photo MS-003: Pitting on north web of Left Girder east of FB13, looking southwest

Photo MS-004: 100% section loss to transverse stiffener on Left Girder near FB13

Photo MS-005: Spalling (2' long by 18" wide x full depth) with exposed reinforcement at south canitlever sidewalk at first intermidiate bracket east of FB13, looking west

Photo MS-006: 1' long by 3" wide corrosion hole in Right Girder bottom flange north face at FB13, looking southwest

Photo MS-007: Stray angles welded longitudinally along S11 bottom flange on east side of FB13, looking northwest

Photo MS-008: South sidewalk Stringer RS2 at FB13 with signs of expansion/contraction (2" on east side, 4" on west side), looking northwest

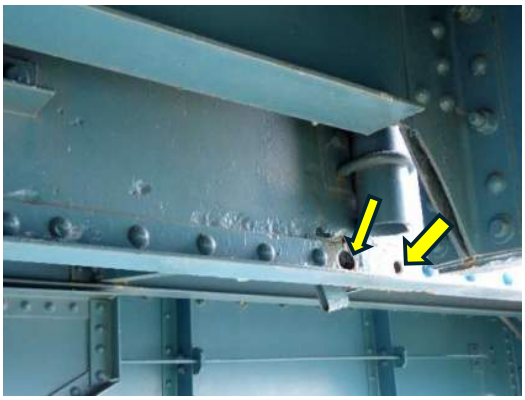


Photo MS-009: Missing rivet and 100% section loss to RS2 bottom flange angle at intermediate diaphragm between FB13 and FB14, looking northeast

Photo MS-010: Abondoned rigging along bottom flange of S11 west of FB14, looking southeast

Photo MS-011: 100% section loss (3" high by full width) to transverse stiffener at bottom flange of Left Girder between FB14 and FB15, looking northwest

Photo MS-012: Area map cracking (3' long by full width) on underside of deck between LS1 - LS2 and FB16 - FB17, looking south

Photo MS-013: 12" wide by 3/4" thick pack rust between top flange and cover plate on Left Girder between FB16 and FB17, looking east

Photo MS-014: 3/4" thick pack rust between top flange plate and cover plate on Right Girder between FB17 and FB18

Photo MS-015: Two 3/4" diameter holes through top flange north overhang utility hanger between FB17 and FB18, looking west

Photo MS-016: Pack rust between bottom flange plates of Left Girder south face between FB18 and FB19, looking north

Photo MS-017: Rivets heads with 100% section loss and pitting on bottom flange of Right Girder north face between FB18 and FB19, looking south

Photo MS-018: Bolted repair on lower lateral brace west of FB22 at Left Girder, looking northeast

Photo MS-019: Pitting (3/16" deep by 3" diameter) on web of Right Girder between FB22 and FB23

Photo MS-020: Typical efflorescence staining on east face of FB24 web, between S11 and Right Girder, looking west

Photo MS-021: Typical granular and bird debris on lateral bracing connection plate, west side of FB25, between S6 and S7, looking east

Photo MS-022: Eight bolt holes in repair plate, north web of Left Girder, east of FB25, looking south

Photo MS-023: Pack rust (30" high by 3/4" thick) between transverse stiffener and Left Girder web, south face between FB26 and FB27, looking northwest

Photo MS-024: Typical efflorescence staining on north face of Right Girder, between FB26 and FB27, looking southwest

Photo MS-025: 100% section loss (up to 3" diameter) in mulitple location on outstanding leg of Floorbeam Kneebrace, west face of FB27 at Right Girder, looking up and east

Photo MS-026: Rivet heads with up to 100% section loss on botttom flange of Left Girder, south face, between FB27 and FB28, looking northwest

Photo MS-027: 100% section loss (4" wide x 3" high) to transverse stiffener on Right Girder north face, between FB27 and FB28, looking west

Photo MS-028: Isolated spots of peeling paint on top flange cover plate on Left Girder, between FB28 and FB29, looking northeast

Photo MS-029: Hairline cracks (3' long by 5' wide) to underside of sidewalk, south overhang, east of FB28

Photo MS-030: Pack rust (up to 3/4") between cover plate and top flange of Right Girder, between FB28 and FB29, looking north

Photo MS-031: Peeling paint with laminate corrosion along edge deck and minor rust staining on north face of Right Girder, between FB28 and FB29, looking southeast

Photo MS-032: Pack rust (up to 3/4" thick)between north edge of bottom flange plates on Right Girder, between FB28 and FB29, looking south

Photo MS-033: Pack rust between bottom flange and cover plate of Left Girder south face, between FB29 and FB30, section loss on transverse stiffener, looking north

Photo MS-034: Efflorescence on underside of deck between FB29 and FB30, along Right Girder, looking southwest

Photo MS-035: Pack rust between bottom flange plates on north edge of Right Girder, between FB29 and FB30, looking southeast

Photo MS-036: Pack rust (1 1/2" thick) between bottom flange plates with minor reactivated corrosion on north edge of Right Girder, east of FB30, looking southwest

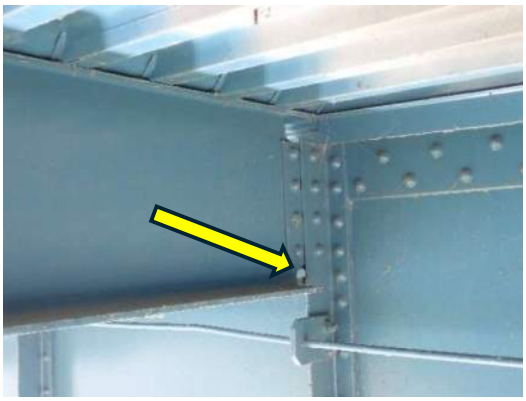


Photo MS-037: 3" high by 1 1/2" long hole in S3 web at connection to east web face of FB30, looking southwest

Photo MS-038: Bolted repair in lower lateral bracing near FB32 under S6

Photo MS-039: Two misdrilled holes in south face web of S8, between FB32 and FB33 at diaphragm, looking northeast

Photo MS-040: Efflorescence staining on north face web of Right Girder, between FB32 and FB33, looking southeast

Photo MS-041: Broken hold down bolt in access hatch on LS1 between FB22 and FB23

Photo MS-042: 100% section loss (7" long by 3.5" high) in lower lateral bracing web angle at FB33 near Left Girder, looking west

Photo MS-043: Pack rust (1" thick) between vertical flanges of lower lateral bracing, east side of FB33, at Right Girder, looking southwest

Photo MS-044: Pitting and efflorenscence staining on north face web of Right Girder, between FB33 and FB34, looking south

Photo MS-045: Bolted repair on lower lateral bracing at FB35 near Left Girder, looking northeast

Photo MS-046: Bolted repair on lower lateral bracing on west side of FB35 at Right Girder, looking east

Photo MS-047: Pack rust (1 1/4" thick) between bottom flange plates on north face of Right Girder, between FB34 and FB35 at midspan, looking southwest

Photo MS-048: 100% section loss (1.75" diameter) in lateral bracing connection plate, west of FB35, at Right Girder, looking southeast

Photo MS-049: Pack rust (3/4" thick) between web angles of lower lateral bracing at connection plate, east of FB35, at Right Girder, looking southwest

Photo MS-050: Tack weld between transverse stiffener angle and fill plate on north face of Right Girder, between FB35 and FB36, looking southeast

Photo MS-051: 100% section loss (4.5" high by full width) on transverse stiffener on north face of Right Girder, between FB35 and FB36, looking southeast

Photo MS-052: Pack rust (1" thick) between lower lateral brace connection plate and Left Girder, near FB35, looking north

Photo MS-053: Pack rust (2" thick) between bottom flange plates of Left Girder, between FB36 and FB37

Photo MS-054: Offset handrail 2.5" high by full length, along Right Girder north face between FB36 and FB37, looking west

Photo MS-055: Pack rust (1" thick) between bottom flange plates on north face of Right Girder at FB36, looking south

Photo MS-056: Pitting (3/8" deep by 2" wide by 8" high) on north face bottom flange of Right Girder, between FB37 and FB38, looking south

Photo MS-057: Typical granular and bird debris (4" high) on lower lateral brace connection plate to Left Girder, at FB37, looking north

Photo MS-058: Pack rust between lower lateral brace angles, causing 1 1/8" deformation, at FB39 to Left Girder connection, looking north

Photo MS-059: Pitting (up to 3/16" deep) and 100% section loss on rivets on Left Girder web angle, at FB39, looking north

Photo MS-060: Pitting (2.5' long by 1.5" wide by up to 1/4" deep) on top flange north and south face of RS1, east and west of FB39, looking northwest

Photo MS-061: Efflorescence staining on north face web of Right Girder, between FB39 and FB40, looking southwest

Photo MS-062: Efflorescence staining on north face of Right Girder, west of FB 41, looking southwest

Photo MS-063: Spall (6" wide by 3' long) and delamination (6" wide by 16" long) on underside of deck along north face of Right Girder, west of FB41, looking southwest

Photo MS-064: Granular and bird debris on lower lateral connection plate at Right Girder and west face of FB41, looking southeast

Photo MS-065: 3/8" drilled hole in Left Girder web, between FB42 and FB43, looking north. Fatigue category D detail

Photo MS-066: Up to 90% section loss on rivet heads on top of south face bottom flange of Left Girder between FB42 and FB43, looking northwest

Photo MS-067: Pitting (1/16"-1/32" average depth) for 50% south web area on Left Girder between FB42 and FB43. Isolated locations up to 3/16" deep x 4" diameter, looking northwest

Photo MS-068: Pitting (1/16"-1/8" deep by full flange width by 36" long) on bottom flange of S6 east of FB42. Also pitting (full web height x 7" long) on web of S6. Looking southwest

Photo MS-069: Pitting on north face web of Right Girder between FB42 and FB43, looking southwest

Photo MS-070: Hole (1/2" diameter) with advanced section loss (1/4" deep by 9" long by 4" high) on north face web of Right Girder between FB42 and FB43, looking south

Photo MS-071: Pitting (up to 1/4" deep by full height) on vertical leg of bottom flange on north face of Right Girder at west face of FB43, looking south

Photo MS-072: Up to 100% section loss on rivet heads on bottom flange on north face of Right Girder, east of FB43, looking southeast

Photo MS-073: 100% section loss (3" high by full width) on transverse stiffener on south face of Left Girder, between FB44 and FB45, looking west

Photo MS-074: 100% section loss to lower lateral brace connection plate at Right Girder and FB45, looking southeast

Photo MS-075: Pitting on web of Right Girder north face, west of FB45, looking southeast

Photo MS-076: Pack rust between bearing and connection angles of Suspender Cable 44 connection to Right Girder

Photo MS-077: Dirt and debris on top of lateral bracing connection plate at Left Girder, east of FB47, looking northwest

Photo MS-078: 100% section loss (2" high by 7" long) in lateral bracing connection plate at FB46, looking down

Photo MS-079: Pitting (1/8" deep) along bottom flange and stiffeners on Right Girder north face, between FB46 and FB46, looking south

Photo MS-080: Crack highlighted with yellow paint in top flange of south sidewalk cantilever of FB47 west face, looking east

Photo MS-081: Pitting (3/16" deep by 6" high) to the web of Right Girder near top flange, north face, east of FB47, looking southeast

Photo MS-082: Pitting (3/16" deep by 2" wide by 24" high) in web of Right Girder west face of FB48, looking southeast and up

Photo MS-083: Section loss (25%-90%) of rivet heads on bottom flange of Left Girder, south face, between FB47 and FB48, looking northeast

Photo MS-084: 100% section loss (up to 2.5" high by full width) on transverse stiffeners on Left Girder between FB48 and FB49, looking west

Photo MS-085: 100% section loss (up to 2" high and full width) on 3 transverse stiffeners on north face of Right Girder, between FB48 and FB49, looking west

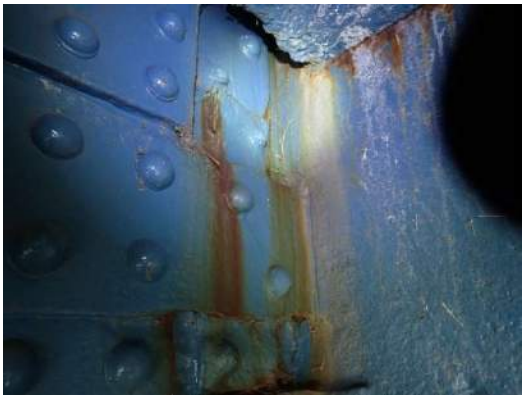


Photo MS-086: Pack rust (3/4") between FB49 plates on west face, with 1/16" deep pitting, looking east

Photo MS-087: 100% section loss on outstanding leg of FB49 kneebrace, east face at Right Girder, looking southwest

Photo MS-088: Hairline cracks between RS1 and RS2 and FB49 and FB50, with light efflorenscence

Photo MS-089: Pitting (1/8" deep) throughout web and flanges of Right Girder north face, west of FB50, looking south

Photo MS-090: Efflorescence staining on southface of Left Girder, between FB49 and FB50, looking northeast

Photo MS-091: Crack (1 3/4" long) with light rust staining in top flange of north sidewalk cantilever on FB51

Photo MS-092: 100% section loss (up to 3" high by full width) in transverse stiffener on Left Girder near FB51, looking west

Photo MS-093: 100% section loss on outstanding leg of FB50 kneebrace, east face at Right Girder, looking northwest

Photo MS-094: 100% section loss (4" high by full width) on transverse stiffener on Right Girder north face, west of FB51, looking west

Photo MS-095: Impact damage on 3 stiffeners on Left Girder, between FB51 and FB52, looking north at center stiffener

Photo MS-096: Efflorescence staining on south face of Left Girder web near FB51, looking west

Photo MS-097: Dirt and debris accumulation on lateral bracing connection plate between FB51 and FB52, south face of Left Girder, looking northwest

Photo MS-098: 100% section loss (up to 2" diameter) on transverse stiffener on south face of Left Girder, east of FB51, looking east

Photo MS-099: Pitting (1/16" deep by 2" wide by full height) on north face of Right Girder at stiffeners, between FB51 and FB52, looking south

Photo MS-100: Pack rust (1/2" - 1" thick) between Right Girder bottom flange connection angle and bottom plate, between FB51 and FB52, looking southeast

Photo ES-001: Hairline transverse cracks spaced 12" apart between LS1 and LS2, between FB53 and FB54

Photo ES-002: Pack rust (up to 1/2" thick) between bottom flange plates at Left Girder and FB53

Photo ES-003: Spall (6" diameter by 1/2" deep) on underside deck south overhang, west of FB53

Photo ES-004: Two missing rivet heads at tower D, between south exterior stringer and sidewalk bracket, east most railing connection, looking north

Photo ES-005: 100% section loss and knife edge on exterior bottom flange at tower D, south sidewalk exterior stringer, looking northeast

Photo ES-006: Pack rust (1" thick) and pitting (1/8" deep) at connection between LS2 and FB54

Photo ES-007: Laminate corrosion (3' wide by 1' long) on underside of pan between S1 and S2 and between FB54 and FB55

Photo ES-008: Bolted repair plates on lower lateral bracing between FB56 and FB57, near S11

Photo ES-009: Pack rust (1" thick) and pitting (1/8" deep) with areas of 100% section loss at LS2 and FB58 connection

Photo ES-010: Pack rust between bottom flange plates on Left Girder, between FB58 and FB59

Photo ES-011: Efflorescence staining on Left Girder web, between FB58 and FB59

Photo ES-012: 100% section loss on rivet heads and pitting on bottom flange of Left Girder, between FB58 and FB59

Photo ES-013: Pack rust between north face bottom flange plates of Right Girder, between FB59 and FB60

Photo ES-014: Pitting (1/16" - 1/8" deep) on bottom flange of Right Girder, between FB60 and FB61

Photo ES-015: Pack rust (3/8" thick) on top of Left Girder between top flange plates, between FB60 and FB61, looking southeast

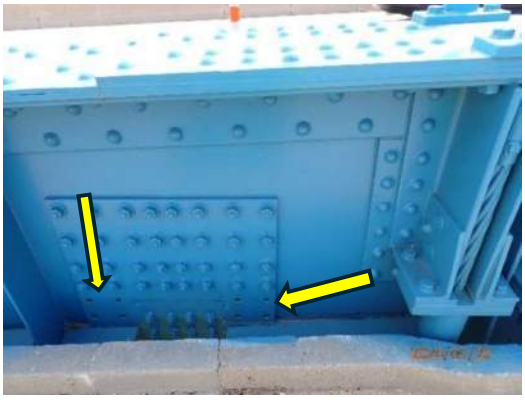


Photo ES-016: Eight open holes in north face repair plate on Left Girder, between FB61 and FB62, looking south

Photo ES-017: Tack welds on north face of Left Girder transverse stiffener, between FB61 and FB62, looking southwest

Photo ES-018: Section loss (1/8" deep by 5" wide by 6" long) top flange of Left Girder, between FB61 and FB62, looking southwest

Photo ES-019: Pack rust (3/8" thick) and pitting (1/8" deep) on north face of Left Girder, between FB62 and FB63, looking southwest

Photo ES-020: 6" wide portion of kneebrace removed above deck at Left Girder and FB63, looking northeast

Photo ES-021: Pack rust between vertical cable plates and anchorage horizontal bearing plate at top of vertical legs of connection angle, at Left Girder south face, at FB63, looking north

Photo ES-022: Pack rust (1" thick) and pitting (1/8" deep) with areas of 100% section loss at FB63 connection to RS2

Photo ES-023: Pitting on top of bottom flange with up to 100% section loss on Right Girder, between FB64 and FB65

Photo ES-024: 100% section loss on transverse stiffeners on Right Girder, between FB64 and FB65

Photo ES-025: Spall on underside of deck, at Left Girder and FB64, looking northeast

Photo ES-026: Pack rust (18" high by 1/2" thick) and pitting (8" high by 1/8" deep) between transverse stiffener and Left Girder web, between FB64 and FB65, looking northwest

Photo ES-027: 100% section loss (11" high by 2" wide) on vertical gusset plate, south face connection angle leg, at Left Girder and FB65, looking northwest

Photo ES-028: Pack rust (5/8" thick) between built up top flange plates at Left Girder and cable 65 anchorage, north face, looking southeast

No Notable Deficiencies

No Notable Deficiencies

Photo 1E-001: Painted over pack rust and minor distortion to bottom angle of kneebrace under FB0 at Left Girder

Photo 1E-002: Minor corrosion into masonry plate on Right Girder bearing at anchorage F

Photo 1E-003: Pack rust and painted over section loss of RS2 at FB1 overhang, looking northeast

Photo 1E-004: Pack rust and painted over section loss of LS2 at FB1 overhang, looking west

Photo 1E-005: 100% section loss to transverse stiffener below S4, west side of FB2, looking south

Photo 1E-006: Minor corrosion and painted over pitting of bottom flange angle of LS2 at intermediate channel bracket between FB2 and FB3, looking east

Photo 1E-007: Pack rust with minor deformations to lateral bracing connection plate, at S4 and FB2 interface

Photo 1E-008: Pack rust and painted over section loss of LS2 at FB3 overhang, looking southeast

Photo 1E-009: Active corrosion (8' long) to top and bottom flange of S5, east of FB3

Photo 1E-010: Pack rust and painted over section loss of RS2 at FB4 overhang, looking east

Photo 2E-001: Bowing on both sides of lateral bracing connection plate with painted over pack rust, at S4 and FB1 connection

Photo 2E-002: Pack rust and painted over section loss of LS2 at FB2 overhang, looking southeast

Photo 2E-003: Painted over pack rust between stringer web and angle connection, causing bowing, on S4 at connection to FB2, looking southeast

Photo 2E-004: Pack rust and painted over section loss of RS2 at FB2 overhang, looking northeast

Photo 2E-005: Bowing on both sides of lateral bracing connection plate with painted over pack rust, at S4 and FB3 connection

Photo 2E-006: 100% section loss in transverse stiffeners on east face of FB4

Photo 3E-001: 100% section loss and painted over corrosion to bottom angle of kneebrace on FB0 north overhang

Photo 3E-002: 100% section loss on transverse stiffeners on west face of FB0, between S3 and S4

Photo 3E-003: Pack rust on bottom flange cover plate, causing waves on FB0 between S3 and S4

Photo 3E-004: Painted over pitting and pack rust on top of stringer RS2 at connection to FB2

Photo 3E-005: Impact damage to transverse stiffener, painted over, on S2, west of FB1

Photo 3E-006: Pack rust and minor bowing between bottom flange of FB1 and lower lateral connection plate at S4

Photo 3E-007: 100% section loss on transverse stiffener on FB2 and pack rust along bottom flange of FB2, between S3 and S4

Photo 3E-008: Corrosion to deck pan flashing, along FB3, with efflorescence on north and south sides of S4

Photo 3E-009: Pack rust and bowing on RS1 at FB3 connection

Photo 3E-010: Corrosion and efflorescence on joint above RS1 top flange and deck pan flashing on FB4 east face

Photo 4E-001: Active corrosion to top flange of FB0 north overhang and deck pan flashing, looking south

Photo 4E-002: Pack rust and painted over section loss to LS2 web, at intermediate bracket between FB0 and FB1, looking east

Photo 4E-003: Pack rust and bowing in lateral bracing connection plate at FB1 and S4

Photo 4E-004: Corrosion and efflorescence on top flange of RS1, top flange of FB0, and deck pan flashing, with rust staining, looking north

Photo 4E-005: 100% section loss on top of S1 web near at cope, at FB2

Photo 4E-006: Pack rust between bottom flange plates and pitting along top of bottom flange on FB2 west face

Photo 4E-007: 100% section loss in transverse stiffener on west face of FB2, between S3 and S4

Photo 4E-008: Pack rust and painted over section loss of RS2 at FB2 south overhang, looking northwest

Photo 4E-009: Minor painted over pack rust between S1 web and vertical stiffener, at FB3

Photo 4E-010: Painted over pack rust and bowing of lateral bracing connection plate under lateral bracing angle and FB3 bottom flange, at S4

Photo 4E-011: Painted over corrosion on top flange of FB4 north overhang, with active corrosion and efflorescence on deck pan flashing above FB4, looking south

Photo 4E-012: Painted over pitting on transverse stiffener opposite of RS1 on east face of FB4, looking north

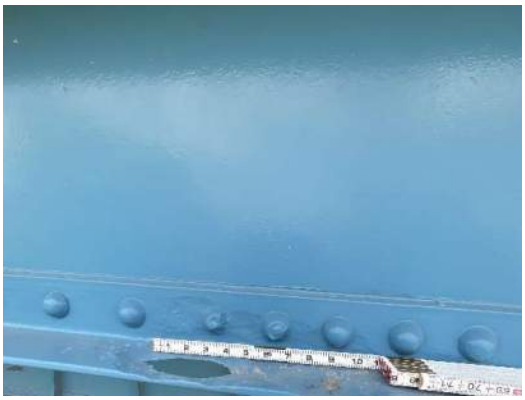


Photo 5E-001: 100% section loss (4" long) in bottom flange of LS2, 1' east of FB0 overhang bracket, looking south

Photo 5E-002: Painted pitting on stiffeners and bottom flange of FB0 north overhang, active corrosion to top flange and deck pan flashing, with efflorescence, looking south

Photo 5E-003: Painted section loss on top and bottom flange of FB0 west face and bottom 4" of stiffeners, pack rust between bottom flange plates with wavy action, between S1 and S7

Photo 5E-004: Painted pitting on stiffeners and bottom flange of FB0 south overhang, active corrosion to top flange and deck pan flashing, with efflorescence, looking north

Photo 5E-005: Pack rust and bowing (up to 1/2") in connection plate for lateral bracing at bottom flange of FB1, at S4

Photo 5E-006: Unpainted area (1 1/2' long by 4" high) with primer exposed on web of S7, west of FB2

Photo 5E-007: Pack rust and painted over section loss on RS2 at intermediate overhang brace between FB1 and FB2, looking east

Photo 5E-008: Pack rust and painted over section loss on LS2 at FB2 overhang, looking southwest

Photo 5E-009: Active corrosion and efflorescence at top flange of S4 and FB2

Photo 5E-010: Pack rust andpainted over section loss on LS2 at FB4 overhang , looking southeast

Photo 5E-011: Active corrosion to top flange of FB3 west face and top web of S4, dripping to bottom flange of S4, looking southeast

Photo 5E-012: Pack rust and bowing of lateral bracing connection plate and bottom flange of FB3, with sporadic, active corrosion to bottom flange cover plate FB3 west face

Photo 5E-013: Active area of minor corrosion on south side of masonry plate at south bearing on pier 5E, looking north

Photo 5E-014: Active corrosion to top flange of FB4 south overhang and deck pan flashing, with efflorescence, between RS1 and RS2

Photo 6E-001: Active corrosion and efflorescence through joint on east face FB0, with painted over section loss on top and bottom flange of FB0, north overhang

Photo 6E-002: Painted over section loss top and bottom flange, with active corrosion and painted pack rust intermittent along bottom flange of FB0, between S3 and S4

Photo 6E-003: Minor impact damage to bottom flange of FB1, south of Left Girder, looking northwest

Photo 6E-004: Pack rust and bowing in lateral bracing connection plate on west side of FB1, at S4

Photo 6E-005: Pack rust and painted over section loss of LS2, at FB2 north overhang, looking east

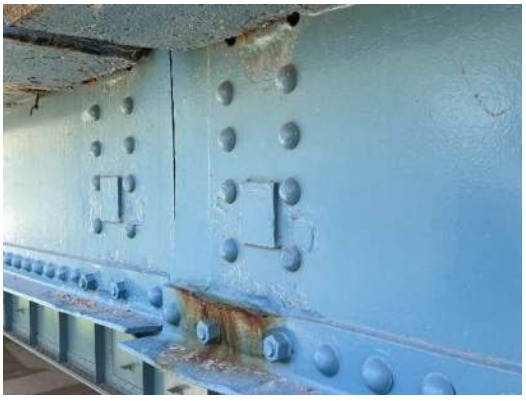


Photo 6E-006: Active corrosion and section loss on bottom flange angle and web of LS2, at FB4 north overhang, looking southeast

Photo 6E-007: Pack rust and bowing to lateral bracing connection plate, east and west of FB3, at S4

Photo 6E-008: 100% section loss on transverse stiffeners at bottom flange, FB4 east face, full length of FB4

Photo 6E-009: Minor impact damage to angle of lateral bracing, near S7, between FB3 and FB4

Photo 6E-010: Painted over corrosion and section loss on bottom flange angle and web of RS2, at intermediate bracket south overhang, between FB3 and FB4, looking north

Photo 6E-011: Active corrosion and efflorescence at top flange FB4 and deck pan flashing, on south overhang

Photo 6E-012: 100% section loss in bottom flange of FB4 south overhang, near Right Girder, looking north

Photo 7E-001: Corrosion and pack rust between rocker assembly and masonry/sole plates at Pier 6E north bearing, looking southwest

Photo 7E-002: 100% section loss to stiffeners 6 and 7 on west face of FB0, at bottom flange, between S4 and S5, looking north

Photo 7E-003: Broken light under bridge at S4 and FB1 connection

Photo 7E-004: Painted over pitting on FB0 angles, west face, near RS1, looking northeast

Photo 7E-005: Painted over pitting and 100% section loss in angle on FB0, between at RS2

Photo 7E-006: Surface corrosion with pack rust on top of south bearing at pier 6E, looking northwest

Photo 7E-007: Pack rust and painted over section loss to RS2 at FB0, looking northwest

Photo 7E-008: 100% section loss in bottom flange angle of RS2 south face, between FB0 and FB1, looking north

Photo 7E-009: Typical painted over section loss to bottom flange of Right Girder, intermittent for full length, shown at FB2

Photo 8E-001: Painted over pitting on throughout S9 at pier 8E, looking southeast

Photo 9E-001: Painted over corrosion and 100% section loss and pack rust between bottom angle/web of S1 at pier 9E

Photo 10E-001: Impact damage to S5 bottom flange, between pier 9E and midspan

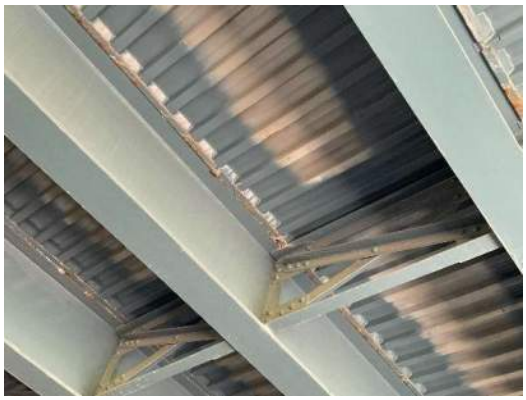


Photo 10E-002: Typical active corrosion along top flange for 50% length of stringers, shown along S9

Photo 11E-001: Painted over section loss along S12

Photo 12E-001: Minor painted over pitting on cross frame, at pier 12E, between S11 and S12

Photo 12E-002: Painted over section loss on bottom flange of S2, just east of pier 11E, looking north

Photo 13E-001: Painted over section loss on S2, west end, looking northwest

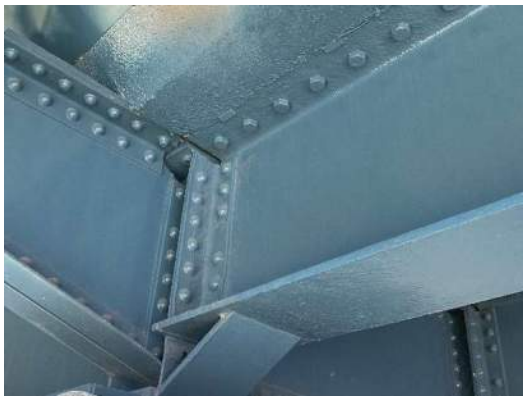


Photo 13E-002: Painted over section loss on S12, west end, looking northwest

Photo 13E-003: Painted over corrosion with 100% section loss and pack rust between bottom angle/web of S13 at pier 12E, looking northeast

Photo 14E-001: Minor impact scrapes with active corrosion on the bottom flange of S2 midspan

Photo 14E-002: Broken light cover below S7, at pier 13E, looking west

Photo 14E-003: Minor impact scrapes on bottom flange of S12 near midspan

No Notable Deficiencies

APPENDIX C

ELEMENT LEVEL QUANTITIES

Deck Summary							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	187,865	186,024	530	1,311	0
805	Wearing Surface - Monolithic Concrete	SF	167,165	164,591	2,574	0	0
300	Strip Seal Expansion Joint	LF	1,622	0	1,622	0	0
301	Pourable Joint Seal	LF	66	66	0	0	0
303	Assembly Joint with Seal	LF	112	0	112	0	0
305	Assembly Joint without Seal	LF	36	36	0	0	0
330	Metal Bridge Railing	LF	6,432	6,422	6	4	0
331	Reinforced Concrete Bridge Railing	LF	3,215	1,962	1,253	0	0
815	Drainage	EA	26	8	17	1	0

Deck West Approach Spans							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	51,394	51,394			
805	Wearing Surface - Monolithic Concrete	SF	46,886	46,416	470		
300	Strip Seal Expansion Joint	LF	552	0	552		
330	Metal Bridge Railing	LF	1,804	1,800		4	
331	Reinforced Concrete Bridge Railing	LF	902	284	618		
815	Drainage: RA, 7W, 3W, 2W, Pier A	EA	10	0	10		

Deck Main Suspension Spans							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	73,858	72,037	510	1,311	
805	Wearing Surface - Monolithic Concrete	SF	65,095	63,490	1,605		
300	Strip Seal Expansion Joint	LF	390	0	390		
303	Assembly Joint with Seal	LF	112	0	112		
305	Assembly Joint without Seal	LF	36	36			
330	Metal Bridge Railing	LF	2,504	2,504			
331	Reinforced Concrete Bridge Railing	LF	1,252	1,122	130		
815	Drainage: Pier B, Tower D, Pier E	EA	6	0	5	1	

Deck East Approach Spans							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
12	Reinforced Concrete Deck	SF	62,613	62,593	20		
805	Wearing Surface - Monolithic Concrete	SF	55,184	54,685	499		
300	Strip Seal Expansion Joint	LF	680	0	680		
301	Pourable Joint Seal	LF	66	66			
330	Metal Bridge Railing	LF	2,124	2,118	6		
331	Reinforced Concrete Bridge Railing	LF	1,061	556	505		
815	Drainage Pier F, 2E, 6E, 11E, 14E	EA	10	8	2		

Superstructure Summary							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
107	Steel Open Girder/Beam	LF	10,852	9,694	137	1,021	0
515	Steel Protective Coating	SF	186,584	184,797	1,785	0	2
113	Steel Stringer	LF	33,258	30,861	87	2,310	0
515	Steel Protective Coating	SF	206,418	202,132	66	0	0
152	Steel Floorbeams	LF	9,449	6,381	599	2,469	0
515	Steel Protective Coating	SF	145,559	144,255	1,304	0	0
147	Steel Main Cables	LF	3,318	3,289	22	7	0
148	Secondary Steel Cables	EA	124	67	53	4	0

Superstructure West Approach Spans							
Element No.	**Description**	**Unit**	**Quantity**	**CS1**	**CS2**	**CS3**	**CS4**
	Span 8W						
107	Steel Open Girder/Beam	LF	542	542			
515	Steel Protective Coating	SF	4,377	4,377			
113	Steel Stringer	LF	92	85	7		
515	Steel Protective Coating	SF	441	441			
	Span 7W						
107	Steel Open Girder/Beam	LF	136	136			
515	Steel Protective Coating	SF	2,696	2,696			
113	Steel Stringer	LF	749	749			
515	Steel Protective Coating	SF	5,580	5,580			
152	Steel Floorbeams	LF	198	183	15		
515	Steel Protective Coating	SF	3,021	3,021			
	Span 6W						
107	Steel Open Girder/Beam	LF	136	136			
515	Steel Protective Coating	SF	2,696	2,696			
113	Steel Stringer	LF	749	745		4	
515	Steel Protective Coating	SF	5,580	5,580			
152	Steel Floorbeams	LF	265	247	3	15	
515	Steel Protective Coating	SF	4,028	4,028			
	Span 5W						
107	Steel Open Girder/Beam	LF	136	116		20	
515	Steel Protective Coating	SF	2,696	2,696			
113	Steel Stringer	LF	749	637		112	
515	Steel Protective Coating	SF	5,580	5,580			
152	Steel Floorbeams	LF	265	264		1	
515	Steel Protective Coating	SF	4,027	4,027			
	Span 4W						
107	Steel Open Girder/Beam	LF	160	136		24	
515	Steel Protective Coating	SF	4,224	4,224			
113	Steel Stringer	LF	880	742		138	
515	Steel Protective Coating	SF	6,583	6,583			
152	Steel Floorbeams	LF	330	198		132	
515	Steel Protective Coating	SF	5,034	5,034			
	Span 3W						
107	Steel Open Girder/Beam	LF	212	212			
515	Steel Protective Coating	SF	5,623	5,623			
113	Steel Stringer	LF	1,170	1,170			
515	Steel Protective Coating	SF	8,764	8,764			
152	Steel Floorbeams	LF	397	331		66	
515	Steel Protective Coating	SF	6,041	6,033	8		
	Span 2W						
107	Steel Open Girder/Beam	LF	180	180			
515	Steel Protective Coating	SF	4,752	4,752			
113	Steel Stringer	LF	990	981		9	
515	Steel Protective Coating	SF	7,406	7,406			
152	Steel Floorbeams	LF	330	325		5	
515	Steel Protective Coating	SF	5,034	5,033	1		

Superstructure West Approach Spans Continued							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
Span 1W							
107	Steel Open Girder/Beam	LF	305	305			
515	Steel Protective Coating	SF	9,059	9,059			
113	Steel Stringer	LF	1,678	1,650		28	
515	Steel Protective Coating	SF	12,549	12,549			
152	Steel Floorbeams	LF	529	453	66	10	
515	Steel Protective Coating	SF	8,055	8,052	3		
Span RW-2							
107	Steel Open Girder/Beam	LF	576	576			
515	Steel Protective Coating	SF	7,482	7,482			
113	Steel Stringer	LF	191	191			
515	Steel Protective Coating	SF	1,055	1,055			
Span RW-1							
107	Steel Open Girder/Beam	LF	576	576			
515	Steel Protective Coating	SF	7,482	7,482			
113	Steel Stringer	LF	191	191			
515	Steel Protective Coating	SF	1,055	1,055			

Superstructure Main Suspension Spans							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
West Suspension Span							
107	Steel Open Girder/Beam	LF	467	350		117	
515	Steel Protective Coating	SF	12,322	12,076	246		
113	Steel Stringer	LF	3,502	3,292		210	
515	Steel Protective Coating	SF	18,914	18,914			
152	Steel Floorbeams	LF	949	711		238	
515	Steel Protective Coating	SF	14,789	14,641	148		
147	Steel Main Cables	LF	874	865	5	4	
148	Secondary Steel Cables	EA	24	11	11	2	
Main Suspension Span							
107	Steel Open Girder/Beam	LF	1,570	1,178		393	
515	Steel Protective Coating	SF	41,448	40,619	829		
113	Steel Stringer	LF	11,774	10,237		1,537	
515	Steel Protective Coating	SF	63,585	63,585			
152	Steel Floorbeams	LF	2,920	1,291		1,629	
515	Steel Protective Coating	SF	45,503	45,048	455		
147	Steel Main Cables	LF	1,570	1,559	11		
148	Secondary Steel Cables	EA	76	50	26		
East Suspension Span							
107	Steel Open Girder/Beam	LF	467	350		117	
515	Steel Protective Coating	SF	12,329	12,082	247		
113	Steel Stringer	LF	3,502	3,335		167	
515	Steel Protective Coating	SF	18,914	18,914			
152	Steel Floorbeams	LF	949	713		236	
515	Steel Protective Coating	SF	14,789	14,641	148		
147	Steel Main Cables	LF	874	865	6	3	
148	Secondary Steel Cables	EA	24	6	16	2	

Superstructure East Approach Spans							
Element No.	**Description**	**Unit**	**Quantity**	**CS1**	**CS2**	**CS3**	**CS4**
Span RE-1							
107	Steel Open Girder/Beam	LF	576	576			
515	Steel Protective Coating	SF	7,482	7,482			
113	Steel Stringer	LF	192	192			
515	Steel Protective Coating	SF	1,055	1,055			
Span RE-1							
107	Steel Open Girder/Beam	LF	576	576			
515	Steel Protective Coating	SF	7,482	7,482			
113	Steel Stringer	LF	191	191			
515	Steel Protective Coating	SF	1,055	1,055			
Span 1E							
107	Steel Open Girder/Beam	LF	165	165			
515	Steel Protective Coating	SF	4,343	4,343			
113	Steel Stringer	LF	905	891		14	
515	Steel Protective Coating	SF	6,768	6,755	13		
152	Steel Floorbeams	LF	331	255	65	11	
515	Steel Protective Coating	SF	5,034	4,920	114		
Span 2E							
107	Steel Open Girder/Beam	LF	157	157			
515	Steel Protective Coating	SF	4,145	4,145			
113	Steel Stringer	LF	864	852		12	
515	Steel Protective Coating	SF	6,460	6,460			
152	Steel Floorbeams	LF	331	266	43	22	
515	Steel Protective Coating	SF	5,034	4,946	88		
Span 3E							
107	Steel Open Girder/Beam	LF	157	157			
515	Steel Protective Coating	SF	4,145	4,145			
113	Steel Stringer	LF	864	845	10	9	
515	Steel Protective Coating	SF	6,460	6,457	3		
152	Steel Floorbeams	LF	331	278	31	22	
515	Steel Protective Coating	SF	5,034	4,987	47		
Span 4E							
107	Steel Open Girder/Beam	LF	157	157			
515	Steel Protective Coating	SF	4,145	4,145			
113	Steel Stringer	LF	864	853	3	8	
515	Steel Protective Coating	SF	6,460	6,457	3		
152	Steel Floorbeams	LF	331	226	95	10	
515	Steel Protective Coating	SF	5,034	4,949	85		
Span 5E							
107	Steel Open Girder/Beam	LF	157	157			
515	Steel Protective Coating	SF	4,145	4,145			
113	Steel Stringer	LF	864	845	4	15	
515	Steel Protective Coating	SF	6,460	6,457	3		
152	Steel Floorbeams	LF	331	195	87	49	
515	Steel Protective Coating	SF	5,034	4,932	102		
Span 6E							
107	Steel Open Girder/Beam	LF	157	157			
515	Steel Protective Coating	SF	4,145	4,145			
113	Steel Stringer	LF	864	847	5	12	
515	Steel Protective Coating	SF	6,460	6,450	10		
152	Steel Floorbeams	LF	331	220	94	17	
515	Steel Protective Coating	SF	5,034	5,008	26		

Superstructure East Approach Spans Continued							
Element No.	**Description**	**Unit**	**Quantity**	**CS1**	**CS2**	**CS3**	**CS4**
Span 7E							
107	Steel Open Girder/Beam	LF	157	137	20		
515	Steel Protective Coating	SF	4,145	4,118	27		
113	Steel Stringer	LF	864	854	5	5	
515	Steel Protective Coating	SF	6,460	6,453	7		
152	Steel Floorbeams	LF	331	225	100	6	
515	Steel Protective Coating	SF	5,034	4,955	79		
Span 8E							
107	Steel Open Girder/Beam	LF	440	409		31	
515	Steel Protective Coating	SF	3,546	3,515	31		
113	Steel Stringer	LF	80	65	10	5	
515	Steel Protective Coating	SF	390	384	6		
Span 9E							
107	Steel Open Girder/Beam	LF	440	337		103	
515	Steel Protective Coating	SF	3,546	3,443	103		
113	Steel Stringer	LF	80	68	10	2	
515	Steel Protective Coating	SF	390	384	6		
Span 10E							
107	Steel Open Girder/Beam	LF	440	415	25		
515	Steel Protective Coating	SF	3,546	3,546			
113	Steel Stringer	LF	80	68	5	7	
515	Steel Protective Coating	SF	390	384	6		
Span 11E							
107	Steel Open Girder/Beam	LF	440	353	87		
515	Steel Protective Coating	SF	3,546	3,459	87		
113	Steel Stringer	LF	80	68	5	7	
515	Steel Protective Coating	SF	390	384	6		
Span 12E							
107	Steel Open Girder/Beam	LF	440	225		215	
515	Steel Protective Coating	SF	3,546	3,331	215		
113	Steel Stringer	LF	80	70	5	5	
515	Steel Protective Coating	SF	390	387	3		
Span 13E							
107	Steel Open Girder/Beam	LF	358	356		2	
515	Steel Protective Coating	SF	2,881	2,881			
113	Steel Stringer	LF	65	55	10		
515	Steel Protective Coating	SF	317	317			
Span 14E							
107	Steel Open Girder/Beam	LF	352	347	5		
515	Steel Protective Coating	SF	2,837	2,835			2
113	Steel Stringer	LF	64	56	8		
515	Steel Protective Coating	SF	312	312			
Span 15E							
107	Steel Open Girder/Beam	LF	220	220			
515	Steel Protective Coating	SF	1,773	1,773			
113	Steel Stringer	LF	40	36		4	
515	Steel Protective Coating	SF	195	195			

Substructure Summary							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
215	Reinforced Concrete Abutment	LF	153	131	22	0	0
830	Abutment Backwall	LF	145	143	2	0	0
202	Steel Column	EA	4	0	0	4	0
205	Reinforced Concrete Column	EA	68	65	3	0	0
207	Steel Tower	LF	384	363	6	15	0
210	Reinforced Concrete Pier Wall	LF	162	130	31	1	0
231	Steel Pier Cap	LF	185	185	0	0	0
234	Reinforced Concrete Pier Cap	LF	630	534	95	1	0
310	Elastomeric Bearing	EA	170	166	4	0	0
311	Movable Bearing	EA	48	41	5	2	0
312	Concealed Bearings	EA	13	13	0	0	0
313	Fixed Bearing	EA	24	24	0	0	0

Substructure Units							
Element No.	**Description**	**Unit**	**Quantity**	**CS1**	**CS2**	**CS3**	**CS4**
Rear Abutment							
215	Reinforced Concrete Abutment	LF	81	79	2		
830	Abutment Backwall	LF	77	75	2		
310	Elastomeric Bearing	EA	14	11	3		
Pier 7W							
205	Reinforced Concrete Column	EA	2	2			
231	Steel Pier Cap	LF	67	67			
313	Fixed Bearing	EA	2	2			
Pier 6W							
205	Reinforced Concrete Column	EA	2	2			
311	Movable Bearing	EA	4	2	2		
Pier 5W							
205	Reinforced Concrete Column	EA	2	2			
311	Movable Bearing	EA	4	3	1		
Anchorage A							
210	Reinforced Concrete Pier Wall	LF	81	61	20		
310	Elastomeric Bearing	EA	6	6			
311	Movable Bearing	EA	4	4			
313	Fixed Bearing	EA	2	2			
Pier 4W							
205	Reinforced Concrete Column	EA	2	1	1		
311	Movable Bearing	EA	4	4			
Pier 3W							
205	Reinforced Concrete Column	EA	2	2			
313	Fixed Bearing	EA	2	2			
Pier 2W							
205	Reinforced Concrete Column	EA	2	2			
311	Movable Bearing	EA	4	0	2	2	
Pier 1W							
205	Reinforced Concrete Column	EA	2	2			
311	Movable Bearing	EA	4	4			
Pier RW							
205	Reinforced Concrete Column	EA	2	2			
234	Reinforced Concrete Pier Cap	LF	66	66			
310	Elastomeric Bearing	EA	6	6			
Pier B							
205	Reinforced Concrete Column	EA	2	1	1		
234	Reinforced Concrete Pier Cap	LF	51	15	36		
231	Steel Pier Cap	LF	59	59			
313	Fixed Bearing	EA	6	6			
Tower C							
205	Reinforced Concrete Column	EA	2	2			
207	Steel Tower	LF	192	184	2	6	
Tower D							
205	Reinforced Concrete Column	EA	2	2			
207	Steel Tower	LF	192	179	4	9	
Pier E							
205	Reinforced Concrete Column	EA	2	2			
234	Reinforced Concrete Pier Cap	LF	51	46	5		
231	Steel Pier Cap	LF	59	59			
313	Fixed Bearing	EA	6	6			

Substructure Units Continued							
Element No.	**Description**	**Unit**	**Quantity**	**CS1**	**CS2**	**CS3**	**CS4**
Pier RE							
205	Reinforced Concrete Column	EA	2	2			
234	Reinforced Concrete Pier Cap	LF	63	63			
310	Elastomeric Bearing	EA	6	6			
Anchorage F							
210	Reinforced Concrete Pier Wall	LF	81	69	11	1	
310	Elastomeric Bearing	EA	6	6			
311	Movable Bearing	EA	4	4			
313	Fixed Bearing	EA	2	2			
Pier 1E							
205	Reinforced Concrete Column	EA	2	2			
311	Movable Bearing	EA	4	4			
Pier 2E							
205	Reinforced Concrete Column	EA	2	2			
311	Movable Bearing	EA	4	4			
Pier 3E							
205	Reinforced Concrete Column	EA	2	2			
234	Reinforced Concrete Pier Cap	LF					
Pier 4E							
205	Reinforced Concrete Column	EA	2	2			
313	Fixed Bearing	EA	2	2			
Pier 5E							
205	Reinforced Concrete Column	EA	2	2			
311	Movable Bearing	EA	4	4			
Pier 6E							
205	Reinforced Concrete Column	EA	2	1	1		
311	Movable Bearing	EA	4	4			
Pier 7E							
205	Reinforced Concrete Column	EA	2	2			
313	Fixed Bearing	EA	2	2			
Pier 8E							
205	Reinforced Concrete Column	EA	4	4			
234	Reinforced Concrete Pier Cap	LF	57	32	25		
310	Elastomeric Bearing	EA	22	22			
Pier 9E							
205	Reinforced Concrete Column	EA	4	4			
234	Reinforced Concrete Pier Cap	LF	57	42	15		
310	Elastomeric Bearing	EA	22	22			
Pier 10E							
205	Reinforced Concrete Column	EA	4	4			
234	Reinforced Concrete Pier Cap	LF	57	55	2		
310	Elastomeric Bearing	EA	22	22			
Pier 11E							
205	Reinforced Concrete Column	EA	4	4			
234	Reinforced Concrete Pier Cap	LF	57	50	6	1	
310	Elastomeric Bearing	EA	22	22			
Pier 12E							
205	Reinforced Concrete Column	EA	4	4			
234	Reinforced Concrete Pier Cap	LF	57	54	3		
310	Elastomeric Bearing	EA	11	10	1		

Substructure Units Continued							
Element No.	Description	Unit	Quantity	CS1	CS2	CS3	CS4
Pier 13E							
205	Reinforced Concrete Column	EA	4	4			
234	Reinforced Concrete Pier Cap	LF	57	54	3		
310	Elastomeric Bearing	EA	22	22			
Pier 14E							
205	Reinforced Concrete Column	EA	4	4			
234	Reinforced Concrete Pier Cap	LF	57	57			
310	Elastomeric Bearing	EA	11	11			
Forward Abutment							
215	Reinforced Concrete Abutment	LF	72	52	20		
830	Abutment Backwall	LF	68	68			
312	Concealed Bearings	EA	13	13			

APPENDIX D

NONREDUNDANT STEEL TENSION MEMBER PLAN

Nonredundant Steel Tension Member (NSTM) Inspection Procedure

Reference: ODOT Manual of Bridge Inspection

Inspection Responsibility: ODOT District 2

County-Route-SLM: LUC-002-1862

Structural File Number: 4800303

Inspection Frequency: 24 Months

Fatigue Life Study: Year of Study: Not Calculated Remaining Fatigue Life: Not Calculated

Load Path Redundant: No

Structurally Redundant: No

Internally Redundant: Main Suspension Cable with several wire bundles per cable, suspender cables with individual wires and two cables per group, floorbeams and girders are built-up riveted members

System Redundant: No rigorous analysis performed (i.e. finite element, 3-D modeling)

South Elevation (looking north)

Location: The LUC-002-1862 (Anthony Wayne Bridge or High-Level Bridge) is a thirty-span structure that carries four lanes of State Route 2, 51, and 65 (Clayton Street/Woodville Road) traffic over the Maumee River and numerous local roads including Morris Street, Ottawa Street, Boers-Boyer Way, Miami Street, Yondota Street, and Utah Street in Toledo, Ohio **(see Figure 1)**.

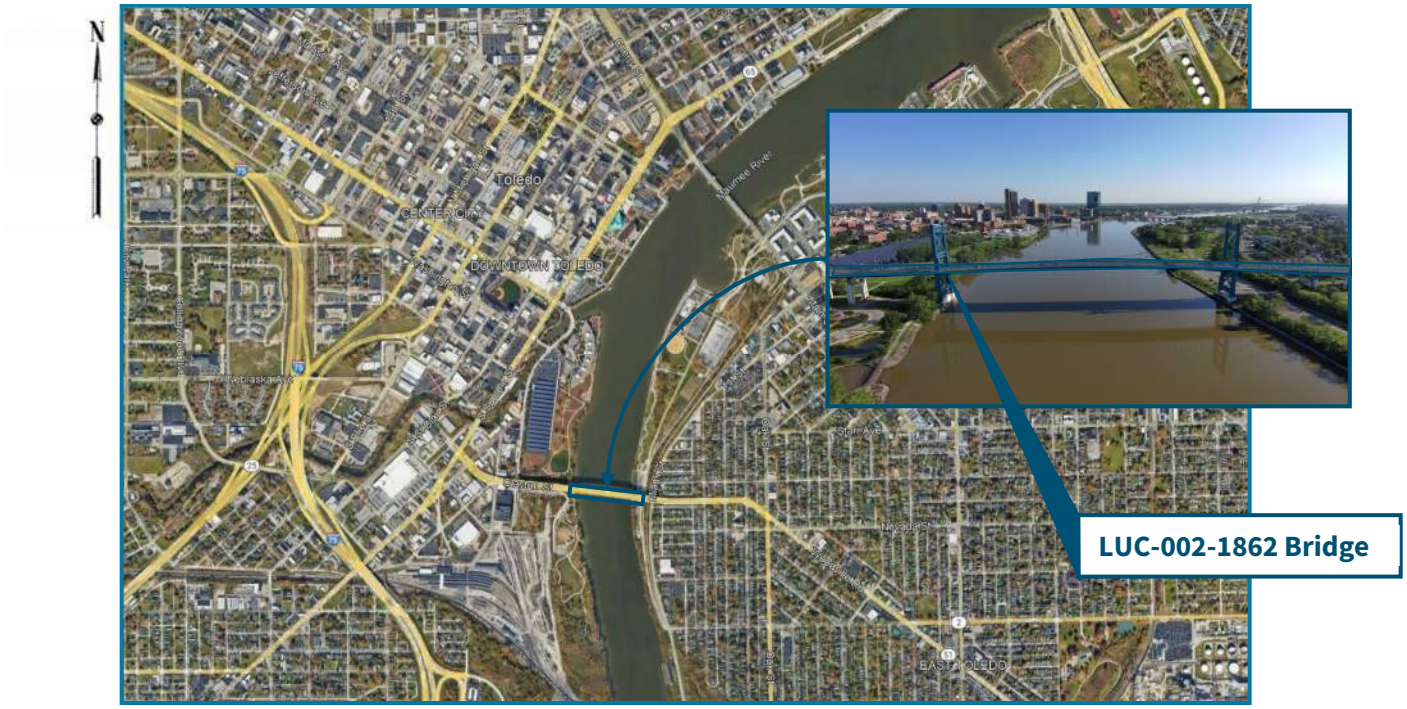


Figure 1 – LUC-002-1862 (SFN 4800303) overall location map.

Structure Description: The overall structure is approximately 3,215' and was built in 1931, with the last major rehabilitation in 2015, and is composed of three continuous suspension spans, fourteen two-girder approach spans, and thirteen multi-beam/girder approach spans. The Main Suspension Spans, Spans 7W to 1W, Spans 1E to 7E, and Bents at Piers B and E contain Nonredundant Steel Tension Members (NSTMs). NSTMs consist of the girders, floorbeams, main suspension cables, suspender cables, and pin and hanger (links) in the Main Suspension Spans, girders and floorbeams in Spans 7W to 1W and Spans 1E to 7E, and a steel plate cap at Piers B and E supporting Spans RW-1 and RE-1 respectively. The various NSTMs are identified in the figures below.

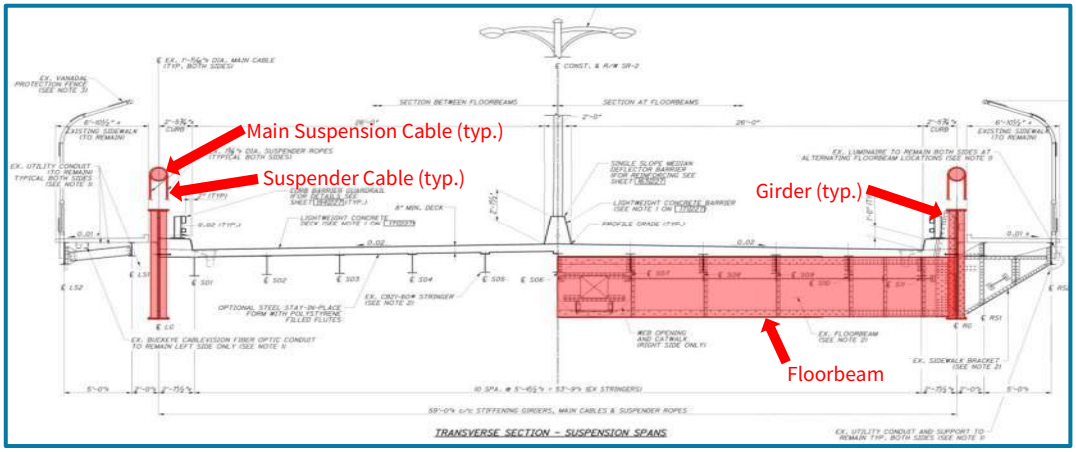


Figure 2 – Typical Main Suspension Spans section. NSTMs are highlighted in red.

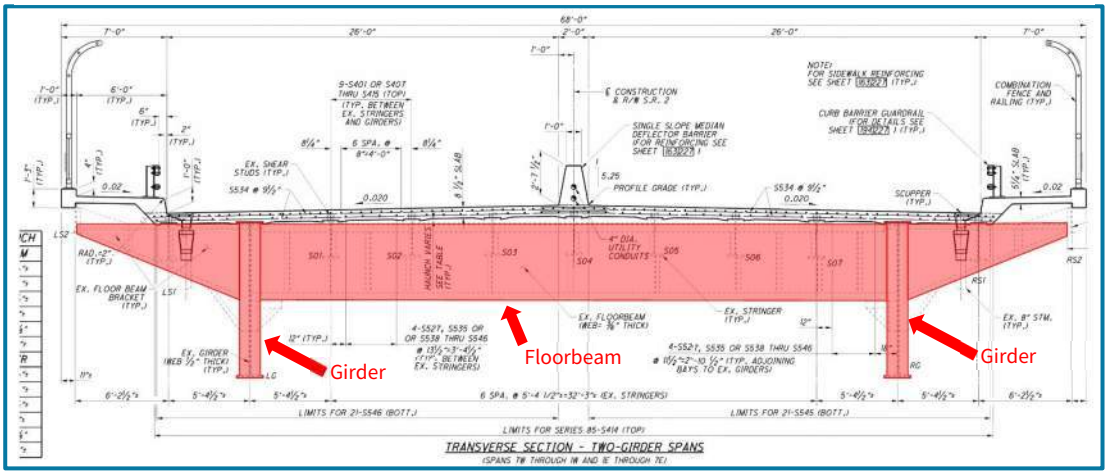


Figure 3 – Spans 7W to 1W and Spans 1E to 7E with a typical two-girder cross-section. NSTMs are highlighted in red.

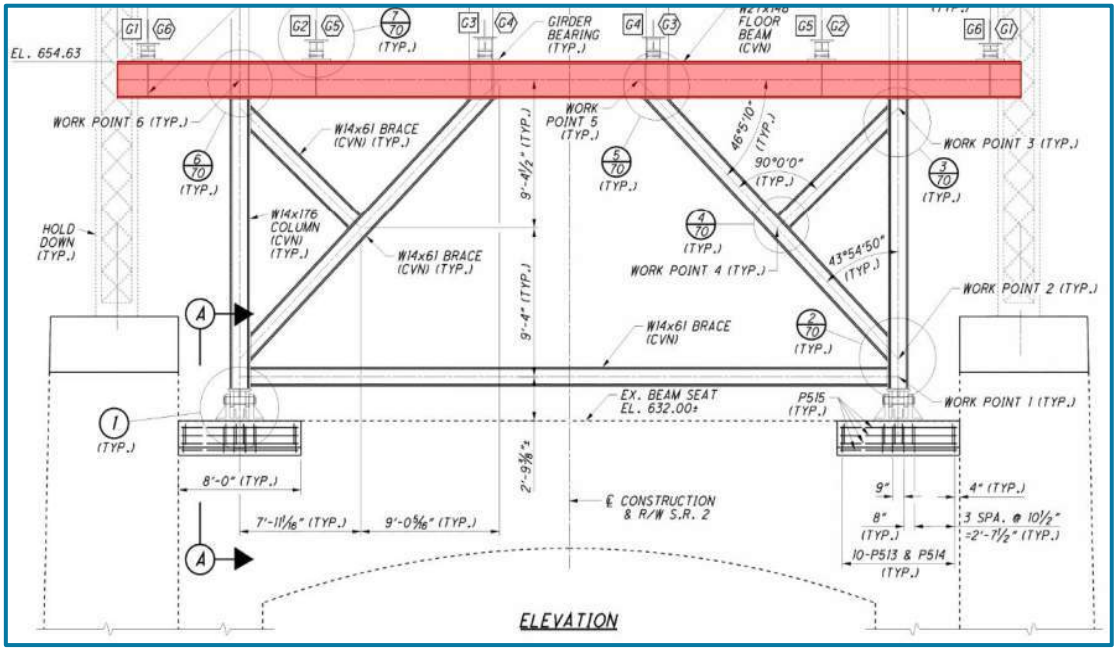


Figure 4 – Typical steel bent (located at Pier B and Pier E). NSTMs are highlighted in red.

Inspection Procedure and Inspector Access Risk Factors

Inspection Procedure: A combination of rope access techniques, 120' and 65' aerial lifts, and ladders are required to provide hands-on access to NSTMs.

- Inspection Methods
  - Main Suspension Cables: Inspect the entire length of both suspension cables focusing on high stress regions at the anchorages and at secondary hanger cable connections.
  - Suspender Cables: Inspect the entire length of each cable. Special attention should be given to the hanger-girder connection.
  - Floorbeams throughout suspension spans and two-girder spans: Inspect the bottom flange and bottom half of the web in the positive moment region, the top flange and top half of the web in the negative moment regions, and the web in primary shear regions for cracks and distress at fatigue prone details.
  - Girders throughout suspension spans and two-girder spans: Inspect the bottom flange and bottom half of the web in the positive moment region, the top flange and top half of the web in the negative moment regions, and the web in primary shear regions for cracks and distress at fatigue prone details.
  - Steel frames at Pier B and Pier E: Inspect the plate cap along the bottom flange and bottom half of the web in positive moment regions and top flange and top half of the web in the negative moment regions.
  - Pins/Hangers at Anchorage A, Towers C and D, and Anchorage F: Inspect the link pins and hangers securing the girders at Towers C and D and the main suspension cable at the anchorages.
- Access
  - Main Suspension Cables: A 120' aerial lift or rope access techniques can be used to access the main suspension cables. A single right lane closure of SR-2 westbound and a single right lane closure of SR-2 eastbound should be utilized.
  - Secondary Hanger Cables: A 120' aerial lift or rope access techniques can be used to access the main suspension cables. A single right lane closure of SR-2 westbound and a single right lane closure of SR-2 eastbound should be utilized.
  - Floorbeams throughout suspension spans and two-girder spans: A combination of rope access techniques and a 120' aerial lift can be used to gain access to the floorbeams throughout the suspension spans and two-girder spans.
  - Girders throughout suspension spans and two-girder spans: A combination of rope access techniques and a 120' aerial lift can be used to gain access to the girders throughout the suspension spans and two-girder spans.

  - Steel frames at Pier B and Pier E: A 120' aerial lift can be used to access the steel pier cap.
  - Pins/Hangers at Anchorage A, Towers C and D, and Anchorage F: Rope access techniques can be used to access the link pins and hangers.
- Maintenance of Traffic
  - Single right lane closures of SR-2 westbound and eastbound are necessary when utilizing a 120' aerial lift or rope access techniques to achieve hands-on access to all critical areas of the main suspension cables and suspender cables.
  - Flagging is required on Miami Street, Ottawa Street, and Yondota Street for use of 120' aerial lift and hands-on access to girders and floorbeams over the roadway.

Inspector Access Risk Factors

- Inspector risks
  - Traffic on the bridge
  - Work at heights
  - Cold/Hot extreme temperatures
  - Areas of raccoon debris and histoplasmosis
  - Non-permit confined space

Structural Risk Factors			
Risk Factor	**Location**	**Description**	**Photo** (photos on following pages)
Bridge with NSTMs	Superstructure – main suspension cables, suspender cables, floorbeams, girders, steel frames, pins/hangers	Failure of any of these members would be catastrophic.	1-6
Previous Cracking and Repairs	Floorbeam cantilever top flange	Cracks in the top flange of the cantilever sidewalk brackets at Floorbeams 10, 15, 16, 17, 18, 47, 50, and 51 along the Right Girder and Floorbeam 51 at the Left Girder. All cracks have been arrested, caulked, and painted.	7
Fatigue Details	All NSTMs	No Fatigue Prone Details of E or E' on bridge	---
High ADTT	All steel pier caps and floorbeams	Average daily truck traffic is 21,253	---

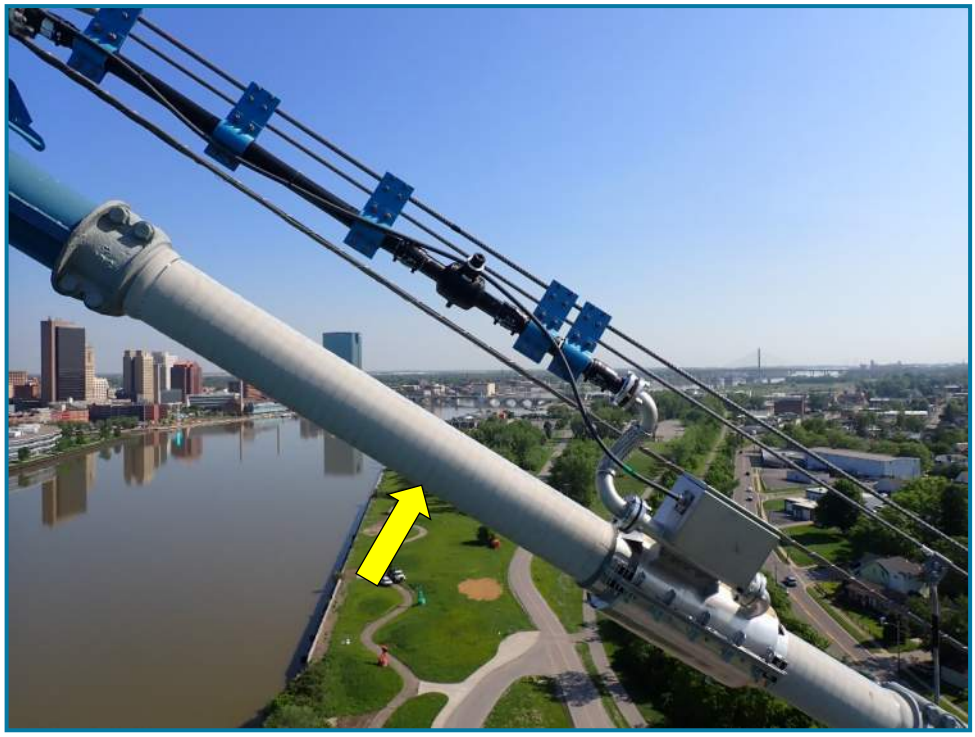


Photo 1 – Main Suspension Cables

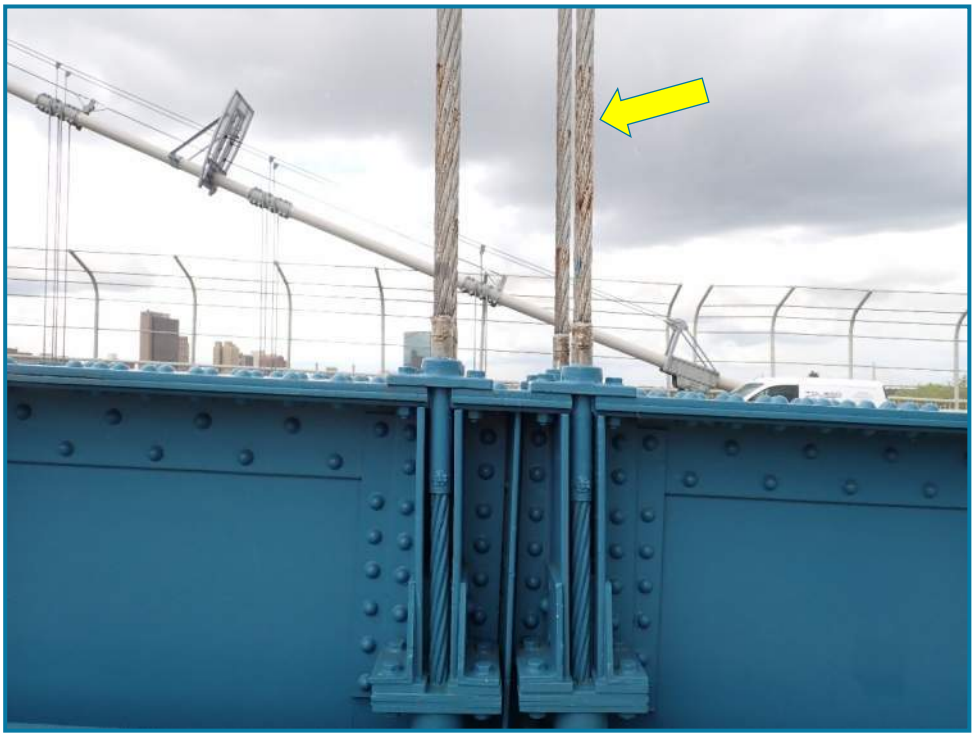


Photo 2 – Suspender Cables

Photo 3 – Typical built-up floorbeam shown in the Main Suspension Spans (other spans similar)

Photo 4 – Typical built-up girder shown in the Main Suspension Span (other spans similar)

Photo 5 – Steel frame (Pier B shown, Pier E similar)

Photo 6 – Typical link pin and hanger assembly at the tower

APPENDIX E

COMPLEX INSPECTION PROCEDURES

Complex Bridge Inspection Procedure

LUC-00002-1862, SFN 4800303

Anthony Wayne Bridge over Maumee River

Toledo, Ohio

Bridge Type:

Main spans consist of three suspension spans with a light weight reinforced concrete deck supported with two built up steel towers, two reinforced concrete hold down piers, and two anchorage pits. Approach spans consist of two continuous steel plate girder spans, fourteen simple plate girder spans and nine simple multi beam spans. All approach spans have reinforced concrete deck supported on reinforced concrete substructures. Abutments, approach piers and hold down piers have foundations supported with precast cast concrete piles driven to rock or hard pan. Approach retaining walls are supported on spread footings. Towers are supported on deep concrete mass block foundations socketed into bedrock and anchorage piers are supported with deep concrete caissons embedded into rock.

Spans:	West Approach Spans, 45'-3" (Span 8W), 68'-10" (Span 7W), 2 at 69'-7" (Spans 6W-5W), 81'-6" (Span 4W), 107'-10" (Span 3W), 91'-7" (Span 2W), 163'-8" (Span 1W), 105'-7" (Span RW-2), 98'-2" (Span RW-1) Suspension Span, 233'-6", 784'-10", 233'-6" East Approach Spans, 98'-2" (Span RE-1), 105'-2" (Span RE-2), 93'-8" (Span 1E), 5 at 80'-0" (Spans 2E-6E), 79'-3" (Span 7E), 5 at 40'-0" (Spans 8E-12E), 32'-6" (Span 13E), 32'-0" (Span 14E), 20'-0" (Span 15E)
Roadway:	26'-0" face to face of curb in each direction and 5' sidewalks on each side.

Loading:	Original: H20 (area specification 1927);
	Rehabilitation HS20-44 (superstructure only)
Skew:	Varies
Wearing surface:	Monolithic concrete
Approach Slabs:	AS-1-81, 25'-0" long

Location Map:

The LUC-002-1862 (Anthony Wayne Bridge or High-Level Bridge) is a thirty-span structure that carries four lanes of State Route 2, 51, and 65 (Clayton Street/Woodville Road) traffic over the Maumee River and numerous local roads including Morris Street, Ottawa Street, Boers-Boyer Way, Miami Street, Yondota Street, and Utah Street in Toledo, Ohio (see Figure 1).

Figure 1 – LUC-002-1862 (SFN 4800303) overall location map.

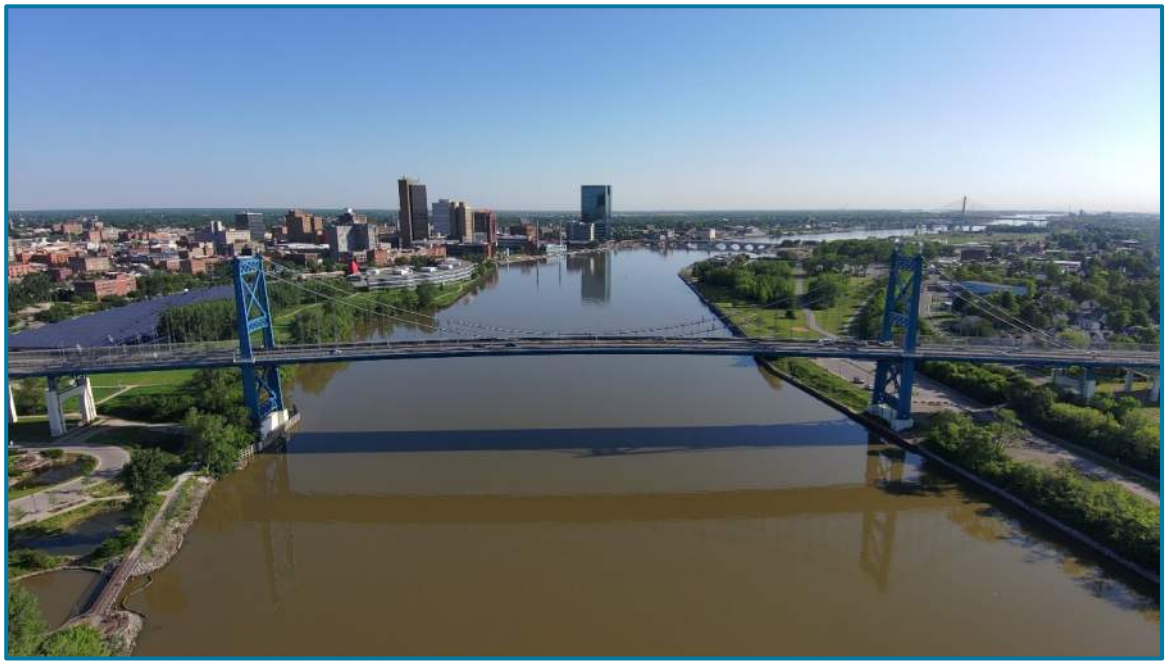


Photo 1 – South Elevation (looking north)

Figure 2 – Plan View and Bridge Nomenclature

Structure Description

The overall structure is approximately 3,215' and was built in 1931, with the last major rehabilitation in 2015, and is composed of three continuous suspension spans, fourteen two-girder approach spans, and thirteen multi-beam/girder approach spans. The Main Suspension Spans, Spans 7W to 1W, Spans 1E to 7E, and Bents at Piers B and E contain Nonredundant Steel Tension Members (NSTMs). NSTMs consist of the girders, floorbeams, main suspension cables, suspender cables, and pin and hanger (links) in the Main Suspension Spans, girders and floorbeams in Spans 7W to 1W and Spans 1E to 7E, and a steel plate cap at Piers B and E supporting Spans RW-1 and RE-1 respectively. The various NSTMs are identified in the figures below.

Public Entity	Contact Name and Number
Bridge Inspection Responsibility	Ohio Department of Transportation
Bridge Maintenance, Major Bridge Maintenance, Minor	Ohio Department of Transportation City of Toledo

Complex Features on this Bridge:

Complex Feature	III. Frequency of Inspection
Main Towers	Routine Annual to spot-check known deficiencies, In-Depth Inspection every 60 months, Nonredundant Steel Tension Member (NSTM) Inspection every 24 months, soapy water test on main suspension cable every 12 months
Main suspension cables, suspender cables, and brackets and saddles	
Girders, floorbeams, and stringers	
Anchorage pits and hold-down piers	
Dehumidification system on main suspension cables	

Describe Risk Factors Unique to this Bridge:

Risk Factors	Description
Inspection of bridge floorbeams and girders from catwalk and by rope access techniques	Access from fixed ladders, some in excess of 50' high and 15' to 20' above ground.
Main Towers	Access doors at deck level. Inside tower fixed ladders in excess of 100' high, confined space with no electricity or light.
Main suspension cables, suspender cables, and cable saddles	Access from bridge deck or from main towers.
Anchorage piers	Access from doors or fixed ladders in excess of 50' below ground level.
Dehumidification system	Access from walking main suspension cables and interior access at anchorage piers.

Contacts for this Bridge:

Agency	Contact Name and Number
ODOT District 2	ODOT District 2 Headquarters 317 E. Poe Road Bowling Green, Ohio 43402 Primary Phone: 419-353-8131
City of Toledo	Streets, Harbor, and Bridges 1189 Central Avenue Toledo, Ohio 43610 419-936-2508
Toledo Police	525 N. Erie Street Toledo, Ohio 43604 419-245-3340
Toledo Fire	Non-Emergency 419-939-3550

Additional Inspector Training, Experience, Licensing and Certification Requirements to Inspect Complex Features listed:

	Inspector Training, Experience, Licensing and Certification Required
Team Leader	• The inspection team shall be led by a Professional Engineer or supervised by a Professional Engineer who meets the minimum requirements for a Team Leader in the Specifications for the National Bridge Inventory (SNBI). • Meet the requirements and training for a NSTM Inspection Team Leader • Familiar with suspension span bridges, their construction, design, and current inspection techniques. • Understanding of where and how defects occur. • Understanding and ability to perform testing or recommend advanced testing procedures at problem areas.

Relevant Operating Manuals, Guides, and Supporting Documents Necessary for the Successful Inspection of the Complex Features on this Bridge:

Document Name, Agency, and Year	Location of Document
Previous Inspection Reports	ODOT Bridge Database
Previous Inspection Photographs	ODOT Bridge Database, ODOT District 2 local server

Detail the Inspection Methods and Equipment to be employed on this bridge:

Inspections of the main suspension spans is access from utilizing a 120' aerial lifts and rope access techniques. Inspection of the suspender cables and girders will require single right lane closures in each direction. Lane closures are to be coordinated with the City of Toledo and ODOT District 2.

Access:

A. Main Suspension Span Access (below deck):

Access to the main suspension span catwalk system located below the bridge deck is accessible from the hold down Piers B and E, located on each side of the river and opposite of the towers. Equipment required to access the top of the hold down pier is 20' extension ladder to access fixed ladder or a 120' aerial lift. Even though the paint

system has been replaced, inspectors should be cautioned that areas of lead paint may still remain and to be cautious of bird droppings.

B. Tower C and D Access:

Access to the inside of the four towers is through hinged man doors located at the sidewalk level. The doors are locked, keys may be obtained from the bridge engineer. Keys are not to be reproduced unless granted permission from the bridge engineer and are to be returned after the inspection is completed unless the inspector has authorization to keep the key. Each tower consist of three cells above deck level and five cells below deck level and each cell is accessible using installed fixed ladders. The only cell that exits to the top of the tower is the center cell. When exiting the towers it is important that the upper doors are kept closed to keep birds out and the sidewalk doors are locked to prevent vandals from entering. The tower cells are unlighted, contain lead paint and bird droppings. Inspectors are cautioned to have the proper equipment.

Confined space entry techniques and equipment may be required for entry into these areas. Special care should be taken.

C. Main Suspension Cable Access:

The cables are accessible from the sidewalks or from the towers. Locked gates on the cables have been installed to prevent vandals from climbing the bridge. Keys may be obtained from the bridge engineer and are not to be reproduced unless permission is grated and are to be returned after the inspection unless permission is granted for the key to remain with the inspector. The cables are equipped with safety cables. Inspectors must have proper PPE when on the cable. The bridge engineer should be informed when the inspectors are on the cables so that local authorities are notified.

D. Anchorage Pit A and F Access:

Access to the four anchorage pits is by locked hinged doors located on the ground level of the anchorage piers. Keys can be obtained from the bridge engineer. Keys are not to be reproduced unless permission is grated and are to be returned after the inspection unless permission is granted for the key to remain with the inspector. The pits are

lighted and have ventilation systems. Inspectors should not enter these areas if these systems are found to not work. Also, if standing water is visualized inspectors should not enter. If any of the above is found it should be reported to the bridge engineer for repair. Located in these pits is electrical equipment, sump pumps, and dehumidifiers. Even though this equipment is powered from ground fault circuits, to avoid electrical shock, inspectors should not enter until it is confirmed by a certified electrician that the equipment is de-energized or repaired. Access to the lower and upper levels of these pits is by uncaged fixed ladders. Inspectors should have the proper PPE when accessing these ladders.

Routine Inspection:

Routine inspections are to be performed annually. Throughout this time the bridge should be observed to ensure that it is functioning properly through the different seasons. Routine inspections shall include a general inspection of the following items:

Suspension Spans:

1. Suspender cables and saddles.
2. Hold down pin and links, cables and pier anchors.
3. Main cable – check for wrap tears and open seams.
4. Anchorage pits - access system, cable anchors, mechanical equipment
5. Superstructure - access ladders, catwalk, girders, floorbeams, and stringers, wind braces
6. Navigation lights upstream and downstream.
7. Channel - seawall and fender system.

NSTM Inspection:

The bridge shall receive a hands-on Nonredundant Steel Tension Member (NSTM) inspection on all NSTMs every 24 months at an arm's length distance. The main suspension cables, suspender cables, girders, and floorbeams are considered NSTMs. Inspectors shall consult the previous inspection and NSTM Plan for deficiencies and nomenclature.

In-depth Inspection:

Every 60 months the bridge should receive an in-depth inspection requiring that all components of the bridge be inspected with in arms reach. This inspection should include all of the above items including the following:

1. On the suspension span:
    a. Cable saddles including spot checking bolt tensions, minimum one per saddle, 1-3/4" diameter at 54,000 pounds, 120 locations.
    b. Suspender cables.
    c. Tower wind struts, check gusset and batten plates.
    d. Tower airplane light anchor bolts.
    e. Main cable above and below the suspension span, checking wrap system, including the cable bands at the saddles, and dehumidification system.

Cable Dehumidification system:

The dehumidification system will be inspected and maintained with a yearly maintenance contract. The inspection of all mechanical and electrical equipment relating to this system will be per manufacturer's requirements and performed by a specialist, recommended by the manufacturer. Any potential air leaks noted in any of the piping systems or on the cable wrap system should be brought to the bridge engineer's attention and should be monitored utilizing a soapy water test.

Safety:

The bridge engineer is to be notified before the inspection starts so that he can advise local authorities. Inspectors shall refer to the procedures outlined by their own employer's health and safety policies for the minimum safety requirements. All inspections are to be conducted at a minimum in compliance with the NBIS and the Ohio Department of Transportation Manual of Bridge Inspection.

It may be necessary to set up traffic control or safety zones on the bridge or sidewalks to safely conduct inspection operations. Any required traffic control for the inspection of the structure shall be in conformance with the requirements of the Ohio Manual of Uniform Traffic Control Devices and shall be coordinated with the City of Toledo and the ODOT District 2 office.

Access to the suspension span catwalk, towers, and anchorage pits is limited. Therefore, the inspection team needs to be aware of any physical limitations that might require them to return to the egress point.

Entry of some bridge components may pose OSHA requirements regarding confined spaces. Locations that could require special concern are the inside of the tower bases, tower wind locks, and anchorage pits. Therefore, entry of these items may include additional challenges with requirements for personal protective equipment following the protocols of the Ohio Department of Transportation Confined Space Entry Program and the Alternate Entry Procedures for bridge inspection as set forth in the Department's Manual of Bridge Inspection.

When accessing some components of the bridge proper safety procedures, clothing and personal protective equipment including a radio, flashlight, and possibly an air monitor are to be used.

Suspension Span Catwalk:

- When using the inspection walkway under the suspension spans care is to be taken to abide by all load restrictions. The walkway is designed to provide access for inspection personnel only. The spans are limited to three persons or 750 lbs. of persons and equipment per walkway span.
- The catwalk system and railings are NOT designed to provide fall arrests. Do not use the railings or any part of the catwalk or its support framing as an anchor point for fall arrest equipment. The rails are purely to function as safety railings and are not to be loaded as part of any construction or maintenance activities.

- All required fall protection for operations outside of the handrails is to be independent of the catwalk system and shall be designed by a qualified person, in accordance with OSHA, not to provide any loads to the catwalk or handrail system.
- No additional loads are to be placed along the catwalks due to mechanical equipment, maintenance or repair operations. Any maintenance or construction scaffolding is to be supported independently of the catwalk system and railings.
- The catwalk is to be visually inspected for any signs of corrosion or deterioration prior to being fully loaded.

History:

The most recent In-Depth and Routine Inspection Reports need to be reviewed prior to performing the inspection in order to determine specific Risk Factors on the bridge.

- 1931 – The Anthony Wayne Bridge, designed by Waddell and Hardesty, was opened to traffic. The McClintic Marshall Company was the contractor for the erection of the superstructure and HP Converse and the Holmes Construction Company were the substructure contractors.
- 1960-61 – Improvements to the structure included concrete deck replacement, lighting improvements, structural steel repair, expansion joint replacement, new scuppers, and downspouts.
- 1978 – Concrete barrier built on centerline.
- 1981 – Fences constructed on east approach spans.
- 1984-85 – Structural steel was painted using ODOT System A (inorganic zinc silicate primer and a vinyl finish coat).
- 1987 – Decorative lighting added in the suspension spans.
- 1988 – City of Toledo, Division of Streets, Bridges, and Harbors started to replace sidewalk in the suspension spans.
- 1989 – Plans and specifications were developed to repair the substructure concrete, rehabilitate the link bearing members at the towers, install new strip seal expansion joints, drainage troughs and downspouts, pavement relief joints, and curb railing on the bridge approach spans. In addition, Physical Condition Report was prepared by SSOE, Incorporated.
- 1991 – Burgess & Niple, Limited (B&N) performed the first annual inspection of the bridge. Modjeski & Masters was hired as a subconsultant to inspect the suspension components with B&N. A night field survey was performed to provide geometric data for a structural and geometric behavior analysis of the suspension spans. Improvements included substructure concrete repair, rehabilitation of the link bearing

members at the towers, new strip seal expansion joints, new drainage troughs and downspouts, and installation of curb railing on bridge approach spans.

- 1992 – B&N performed the second annual inspection of the bridge. Modjeski & Masters was hired as a consultant to inspect the suspension components with B&N.
- 1993 – B&N performed the third annual inspection of the bridge. Modjeski & Masters was hired as a subconsultant to inspect the suspension components with B&N. Commercial Diving Service, Inc. was hired as a subconsultant to perform a subaqueous inspection.
- 1995 – B&N prepared rehabilitation plans for various improvements, including a superplasticized dense concrete overlay, sidewalk replacement, finger joint replacement, new deck joints, structural steel repairs, new suspender ropes, new cable wrap, painting the entire structure, etc.
- 1997-98 – American Bridge Company performed 1995 plan rehabilitation.
- 2003 –Gannet Fleming inspected the structure. Modjeski & Masters was hired as a subconsultant to inspect the suspension components. Mannik & Smith was hired as a subconsultant to inspect the east and west approach span components.
- 2012- Cable opening inspection-Plasecki Steel Const. Corp.
- 2014-15- E.S. Wagner Const. Co. preformed plan rehabilitation to replaced bridge deck, made structure steel repairs, replaced approach truss spans with continuous steel girders and patched concrete substructures. The suspension span deck was replaced with light weight reinforced concrete. Consulting engineers were Arcadis, Gannet Fleming & Modjeski & Masters.
- 2016-17- UCL Inc. performed plan work to replace the bridge paint system.
- 2018-2019- Future planned work- Replace cable wrap and installation of cable dehumidification system, install dynamic lighting system.