

Benchmark:
Illinois Waterway Benchmark #288.8, Brass Disc in Concrete Wall (Upstream West Bank) Elevation 545.341 (MSL 1929)
Illinois Waterway Benchmark #288.7, Brass Disc in Concrete Wall (Downstream West Bank) Elevation 545.353 (MSL 1929)

Existing Structure:

The existing structure (SN 099-9901) was built to carry Ruby Street over the Des Plaines River, Sta. 2+86.815 in the year 1934-35. The structure is a double-leaf Trunnion Bascule Bridge with a main movable span of 257'-0" E -to- E of trunnion, and one fixed approach span of 76'-0". It carries four lanes of traffic and is 66'-0" out-to-out of railing and 394'-6 3/8" back-to-back Abutments.

No Salvage unless otherwise noted.

DESIGN DATA (FOR BRIDGE REHABILITATION)

SPECIFICATIONS

ORIGINAL CONSTRUCTION (1933)

For Features common to fixed and movable bridges: American Association of Highway Officials, 1928.
For features special to movable bridges: Hovey's Specifications for Movable Bridges, 1925.

PROPOSED

AASHTO Standard Specifications For Highway Bridges, 17th Edition, 2002.

AASHTO Standard Specifications For Movable Highway Bridges, 5th Edition, 1988,

with Interims Through 1995.

American Welding Society, Bridge Welding Code, D1.5:2015.

DESIGN LOADS

Dead load: Actual weights of the structure including structural steel, concrete, railings, electrical equipment, mechanical equipment, utilities and other permanent construction and fixtures.

Live load on main trusses and girders: HS 20-44

Live load on sidewalk: 85 psf

All other loads as per AASHTO Specification.

No Future Wearing Surface will be allowed.

DESIGN STRESSES

FIELD UNITS (according to 1985 Rehabilitation Plans)

$f'_c = 3,500$ psi

$f_y = 40,000$ psi (reinf.)

$f_y = 50,000$ psi (structural steel AASHTO M270 Grade 50, Anchorage Girders)

$f_y = 30,000$ psi (structural steel)

PROPOSED

$f'_c = 4,000$ psi

$f_y = 60,000$ psi (reinf.)

$f_y = 36,000$ psi (structural steel AASHTO M270 Grade 36)

$f_y = 46,000$ psi (structural steel ASTM A500 Grade B, Railing Posts)

SCOPE OF WORK

1. Perform Floorbeam 1 bottom chord gusset plate repairs at East and West Leaves.
2. Perform steel plating repairs to Floorbeams 2 and 6 webs on West Leaf.
3. Remove and replace bottom diagonal lateral bracing, struts and/or associated connection angles/gusset plates, as specified in plans.
4. Repair Floorbeam-to-bottom chord gusset plate at L3 (South truss) on East Leaf as specified in plans.
5. Repair bottom counterweight horizontal bracing and repair associated gusset plates at East and West Leaves.
6. Repair/replace components of Member MO-L1 as specified in plans.
7. Repair/replace sidewalk Floorbeam posts and brackets.
8. Remove and replace catwalk at East Leaf.
9. Perform miscellaneous repairs including nut, rivet and bolt replacement, and drainage pipe extension, as specified in plans.

REFERENCE DRAWINGS:

Drawing

Plan and Elevation

Sheet No.

80071-06

*For Reference Drawings Key, see Sheet S-02.



Signed Moussa A. Issa
Moussa A. Issa, HBM IL Lic. No. 081-005738
Expires 11-30-2016

Date 10/19/2016 For Sheets S-01 Thru S-24
(Total of 25 Sheets)

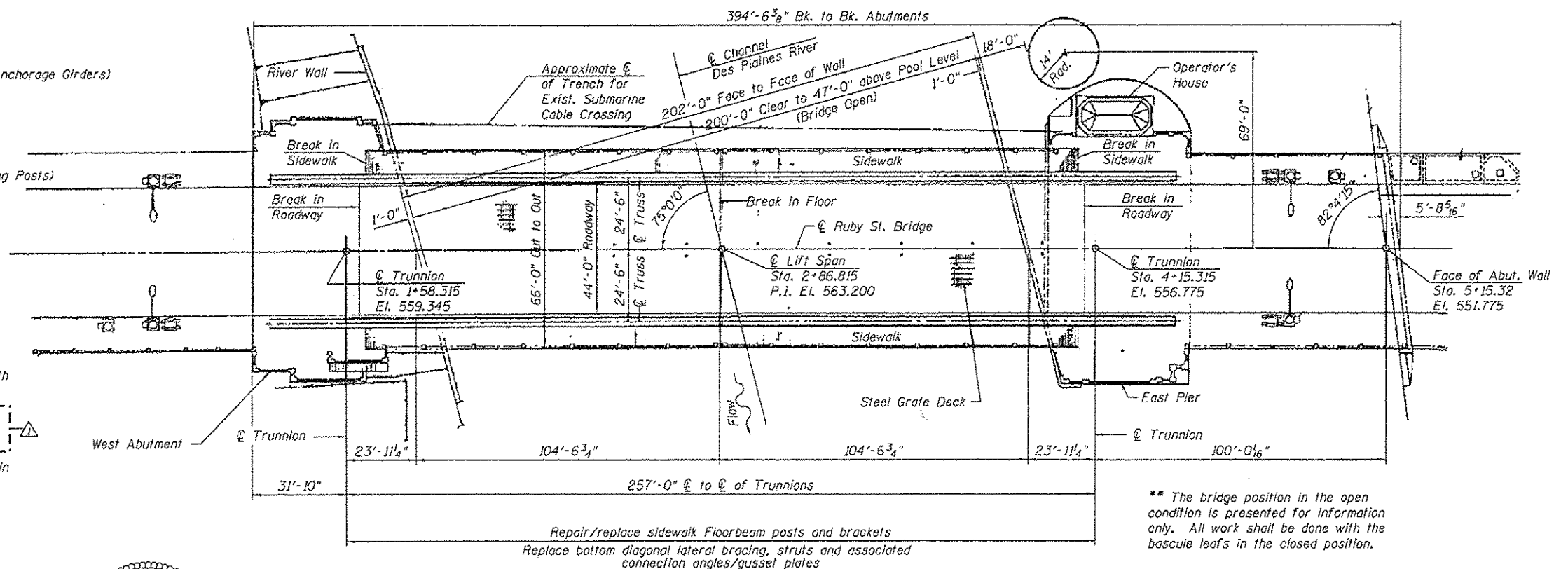
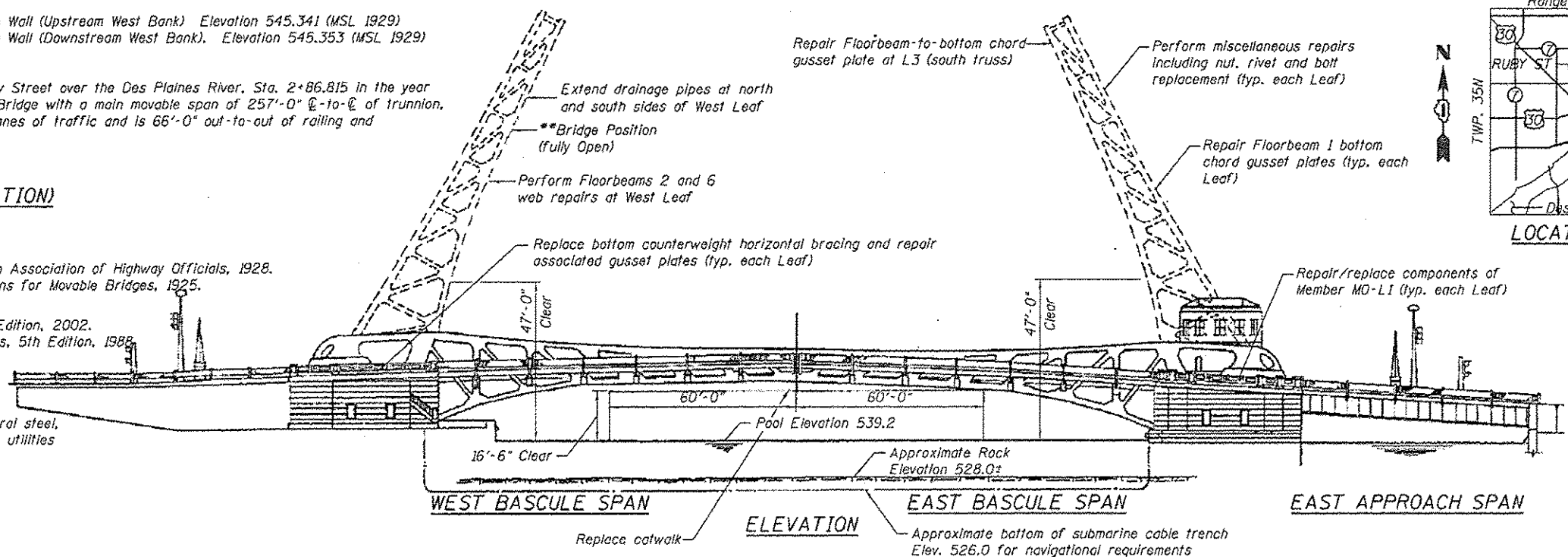
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RUBY STREET OVER DES PLAINES RIVER - SN 099-9901

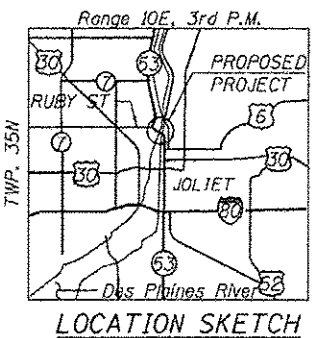
SHEET 5-01 OF 5-24 SHEETS

GENERAL PLAN AND ELEVATION
RUBY STREET (F.A.P. 112) OVER
DES PLAINES RIVER
WILL COUNTY
STRUCTURE NUMBER 099-9901

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	M-BDR (BR)	WILL	29	4
				CONTRACT NO. 62B79
ILLINOIS FED. AID PROJECT				



** The bridge position in the open condition is presented for information only. All work shall be done with the bascule leafs in the closed position.



GENERAL NOTES:

1. Fasteners shall be high strength bolts. Bolts 7/8" diameter, open holes 15/16" diameter, unless otherwise noted.
2. Calculated weight of Structural Steel AASHTO M270, Grade 36 = 23,030 lb.
 Calculated weight of Structural Steel ASTM A500, Grade B = 2,980 lb.
 Estimated Structural Steel Removal is 18,930 lb.
3. Plan dimensions and details relative to existing structure have been taken from existing plans and are subject to nominal construction variations. It shall be the Contractor's responsibility to verify such dimensions and details in the field and make necessary approved adjustments prior to construction or ordering materials. Such variations shall not be cause for additional compensation for a change in the scope of work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for work.
4. All new and repair structural steel shall be AASHTO M270, Grade 36; all structural steel for bridge railing posts shall be ASTM A500, Grade B.
5. Field welding of construction accessories will not be permitted to the tension flange or web of beams or girders. Field welding in other areas will be permitted only when approved by the Engineer.
6. Load carrying components designated "NTR" shall conform to the Impact Testing Requirement, Zone 2.
7. The Contractor shall submit a detailed plan of proposed construction procedures and sequences for the proposed work on the bascule span to the Engineer for review and approval prior to commencing this work. Approval shall not relieve the Contractor of any responsibility for the stability of the bridge during the removal and replacement operations.
8. All work shall be performed with the bascule leaf's in the lowered position; however, work on the structure shall be done in such a manner that the closure of the bridge to river traffic (periods where the bridge is restricted to the down position) is prohibited. River traffic is to be maintained at all times.
9. The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.
10. Existing Structural steel that will be in contact with new structural steel shall be cleaned and painted prior to erection as required by the Special Provision "Cleaning and Painting Contact Surface Areas of Existing Steel Structures".
11. All new structural steel shall be shop painted according to the requirements of paint System 1-OZ/E/U. The color of the final finish coat shall match the existing paint color, see Paint Detail. The color for all steel truss surfaces, including handrails, shall be Blue Munsell No. 10B 3/6. The color for the remaining steel floor system, including catwalk, cross frames and lateral bracing, shall be Gray, Munsell No. 5B 7/1.
12. The Contractor shall take all necessary measures to ensure that no debris falls in the Des Plaines River or endangers or interferes with river traffic beneath the bridge. The cost of this work shall be included with Structural Steel Repair.
13. Elements of this structure may require removal and re-installation due to the proposed repairs. Such removal and re-installation shall not be paid separately and shall be included in the cost of Structural Steel Repair.
14. Field reaming of bolt holes in plates shall only be allowed with the approval of the Engineer.

INDEX OF SHEETS

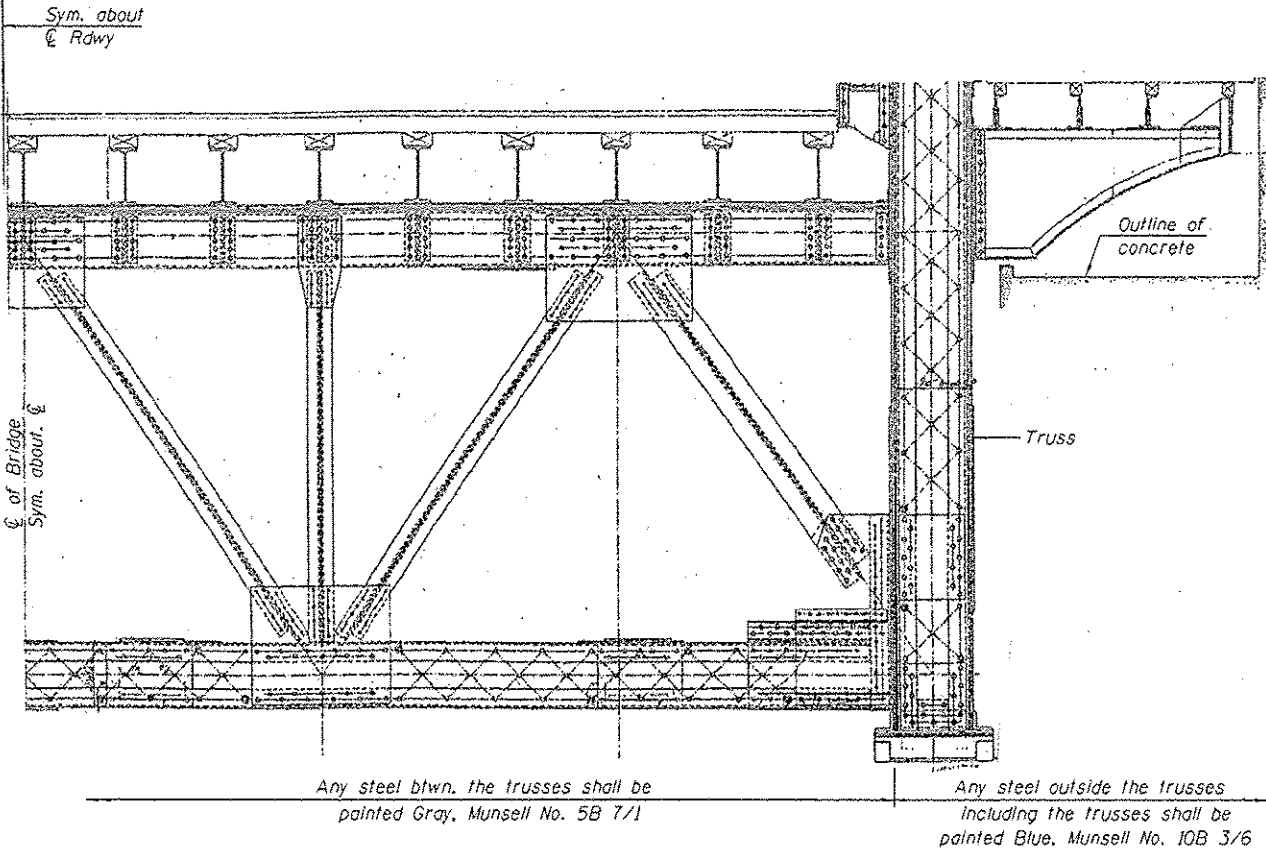
- S-01 General Plan and Elevation
S-02 General Notes, Index of Sheets and Total Bill of Material
S-03 Framing Plan - Structural Steel Repairs
S-04 Floorbeam 1 Repair Details
S-05 Floorbeam 2 Repair Details
S-06 Floorbeam 6 Repair Details
S-07 Bottom Diagonal Lateral Bracing Removal and Replacement
S-08 Strut Removal and Replacement
S-08A Strut End Plate Details
S-09 Floorbeam and Bottom Lateral Bracing Gusset Plates Removal and Replacement (Sheet 1 of 4)
S-10 Floorbeam and Bottom Lateral Bracing Gusset Plates Removal and Replacement (Sheet 2 of 4)
S-11 Floorbeam and Bottom Lateral Bracing Gusset Plates Removal and Replacement (Sheet 3 of 4)
S-12 Floorbeam and Bottom Lateral Bracing Gusset Plates Removal and Replacement (Sheet 4 of 4)
S-13 Strut and Floorbeam Connection Angles Removal and Replacement (Sheet 1 of 2)
S-14 Strut and Floorbeam Connection Angles Removal and Replacement (Sheet 2 of 2)
S-15 Bottom Counterweight Bracing Removal and Replacement
S-16 Member MO -L1 Repairs - East Leaf (Sheet 1 of 2)
S-17 Member MO -L1 Repairs - East Leaf (Sheet 2 of 2)
S-18 Member MO -L1 Repairs - West Leaf (Sheet 1 of 2)
S-19 Member MO -L1 Repairs - West Leaf (Sheet 2 of 2)
S-20 Sidewalk Post and Floorbeam Brackets Repairs
S-21 Existing Catwalk Removal and Replacement
S-22 Framing Plan - Miscellaneous Repairs
S-23 Miscellaneous Repairs Details (Sheet 1 of 2)
S-24 Miscellaneous Repairs Details (Sheet 2 of 2)

TOTAL BILL OF MATERIAL

Pay Item	Unit	Super.	Sub.	Total
Floor Drain Extension	Each	2	-	2
Structural Steel Repair	Pound	26,010	-	26,010
Bridge Balancing	L.Sum	1	-	1

REFERENCE DRAWINGS KEY

1343-xx	Original Design Plans
5075-xx	Shop Drawings
80071-xx	Rehabilitation Plans
M-BDR-4-1(82)-xx	Rehabilitation Plans
60193-xx	Rehabilitation Plans
62714-xx	Rehabilitation Plans



PAINT DETAIL
EAST AND WEST LEAVES

REFERENCE DRAWINGS:

Drawing	Sheet No.
General Paint Notes	62714-04

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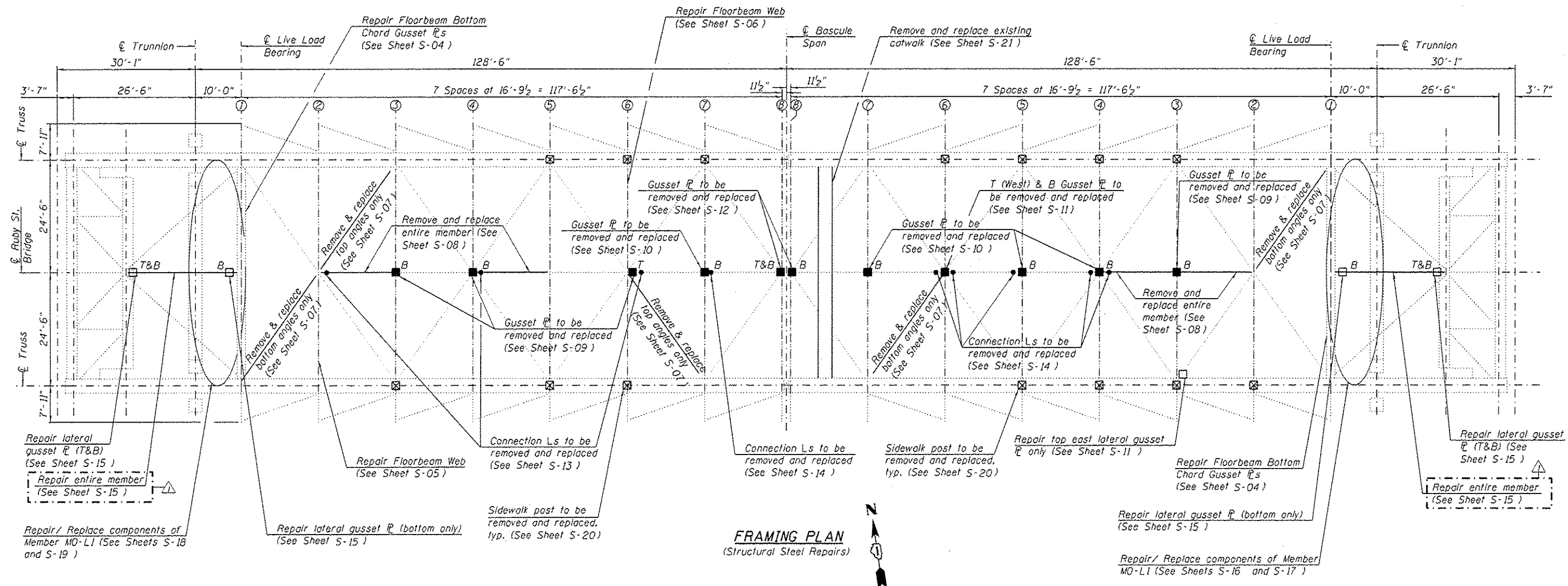
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DEPARTMENT OF TRANSPORTATION

GENERAL NOTES, INDEX OF SHEETS AND TOTAL BILL OF MATERIAL
RUBY STREET OVER DES PLAINES RIVER - SN 099-9901

SHEET S-02 OF S-24 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	M-BOR (BRI)	WILL	29	5
CONTRACT NO. 62B79				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN
(Structural Steel Repairs)

LEGEND:

- Existing member to remain
- Member to be removed and replaced
- Gusset Pl to be repaired
- Gusset Pl to be removed and replaced
- ⊗ Sidewalk Post to be removed and replaced
- Connection angle from lateral bracing to floorbeam to be removed and replaced
- T Top gusset Pl to be repaired or removed and replaced
- B Bottom gusset Pl to be repaired or removed and replaced

NOTES:

1. Locations of repair and/or replacement shown are based on field inspection. Conditions in field may have changed. Contractor to verify all components for repair or replacement as directed by the Engineer.

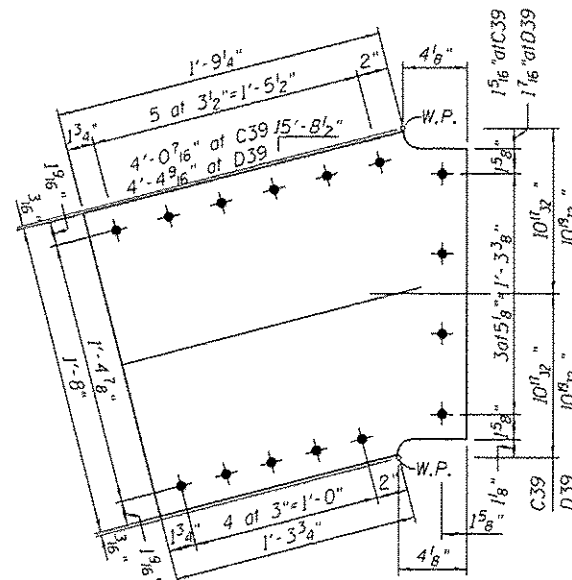
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN - STRUCTURAL STEEL REPAIRS
RUBY STREET OVER DES PLAINES RIVER - SN 099-9901
SHEET S-03 OF S-24 SHEETS

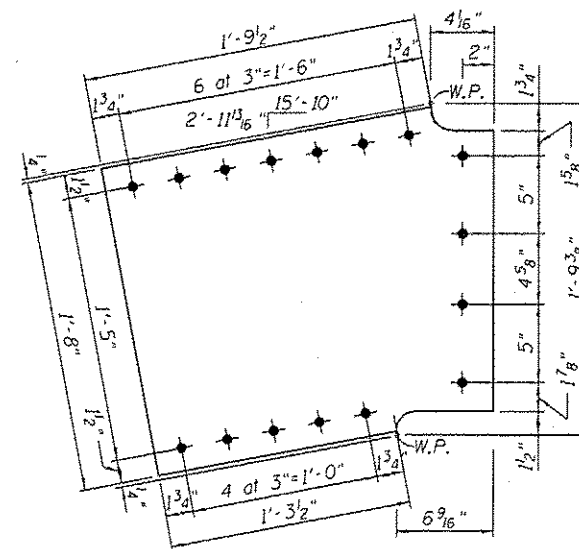
F&P RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	M-BDR (BRI)	WILL	29	6
CONTRACT NO. 62879				
ILLINOIS FED. AID PROJECT				

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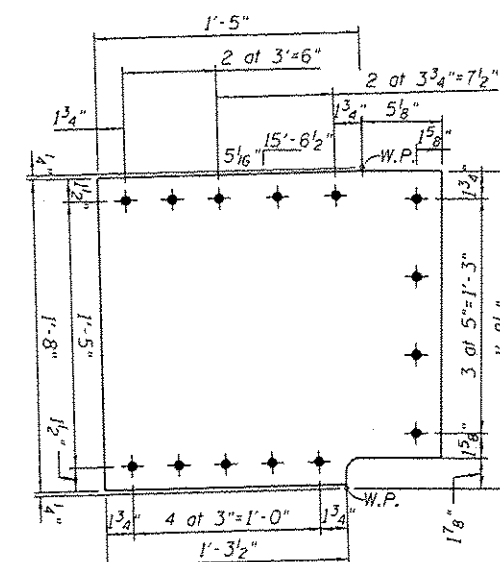
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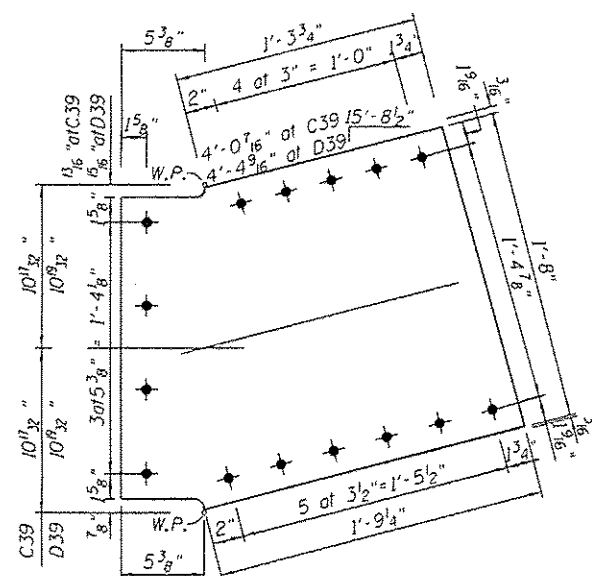
STRUT C39&D39 - UPPER END PLATE
(2 required)



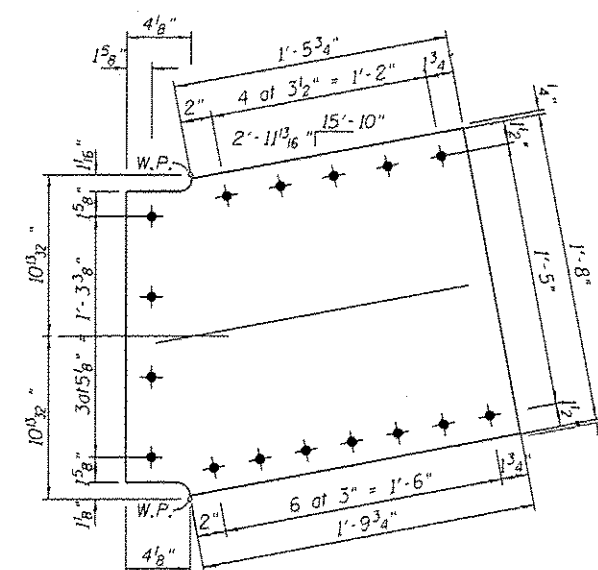
STRUT F39 - UPPER END PLATE
(1 required)



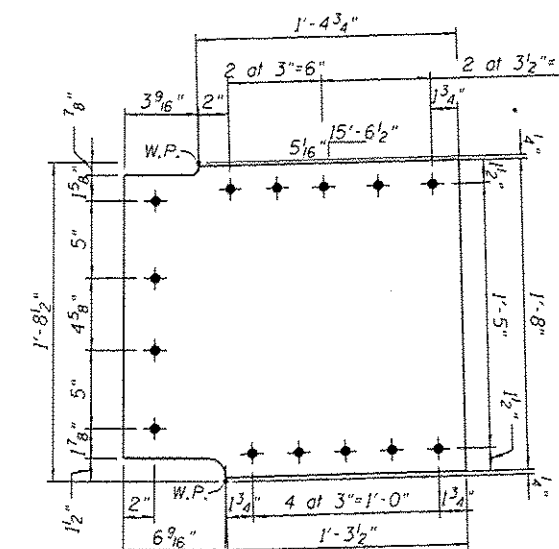
STRUT G39 - UPPER END PLATE
(1 required)



STRUT C39&D39 - LOWER END PLATE
(2 required)



STRUT F39 - LOWER END PLATE
(1 required)



STRUT G39 - LOWER END PLATE
(1 required)

LEGEND:

— New Member

○ or • Exist. bolt or rivet to remain

★ New bolt in existing or new steel.
Remove existing rivet or bolt and replace with new 7/8" diameter H.S. bolt, unless noted otherwise

REFERENCE DRAWINGS:

Drawing
Struts

Sheet No.
5075-39

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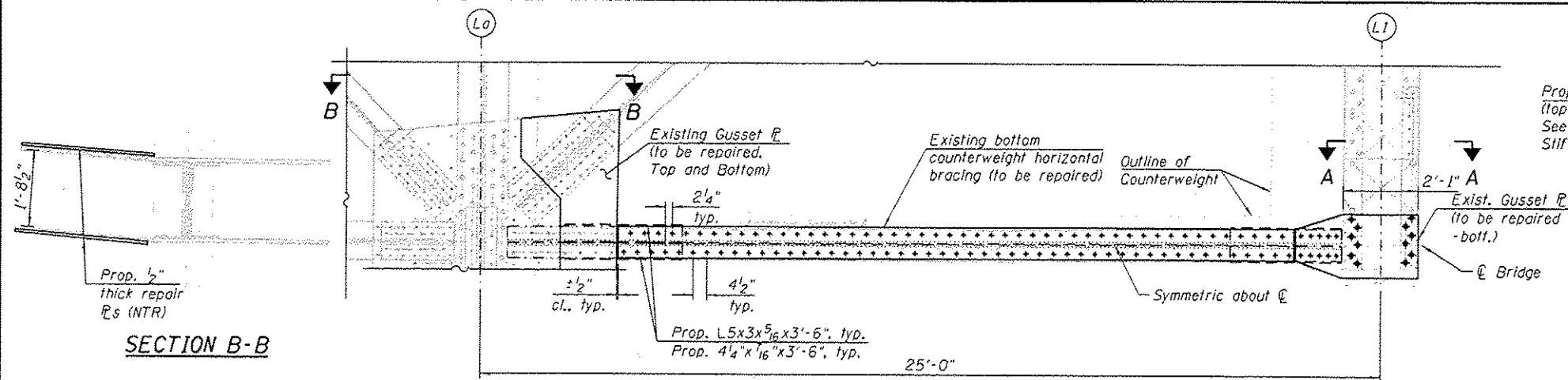
STRUT END PLATE DETAILS
RUBY STREET OVER DES PLAINES RIVER - SN 099-9901

SHEET S-08A OF S-24 SHEETS

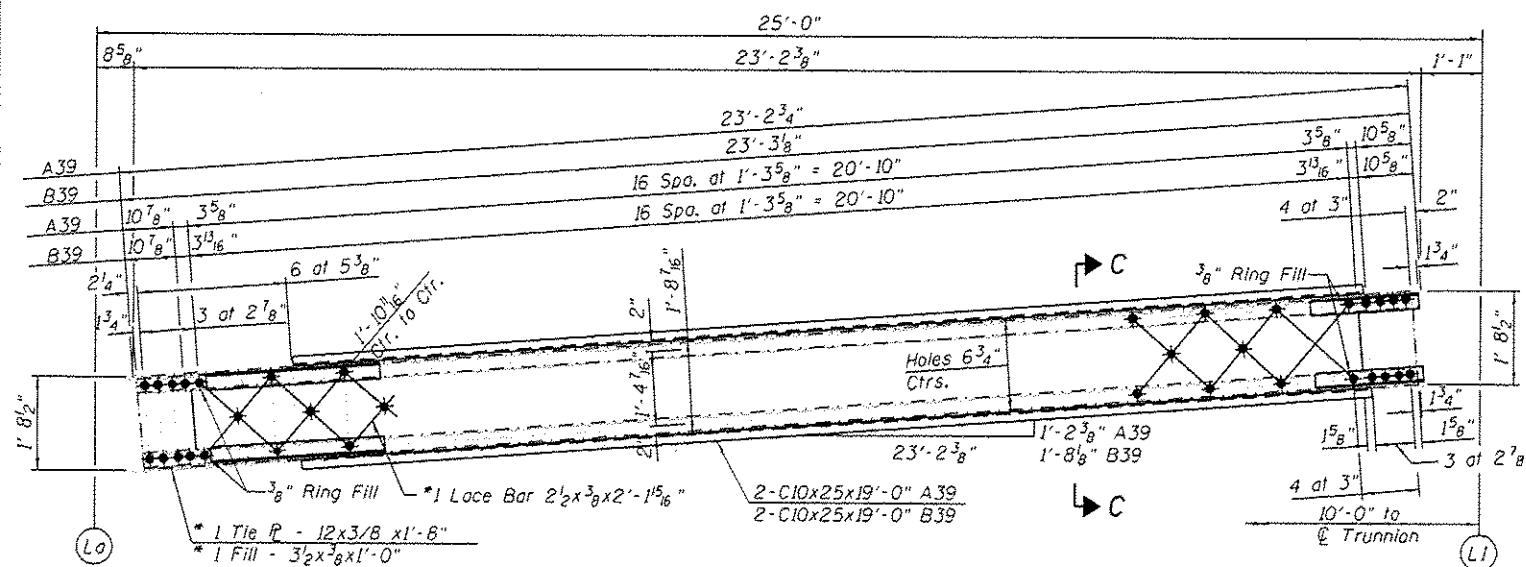
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	M-BDR (BRI)	WILL	29	11A
CONTRACT NO. 62879				

ILLINOIS FED. AID PROJECT

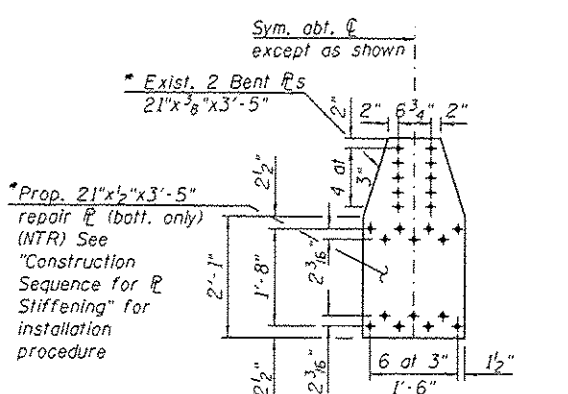
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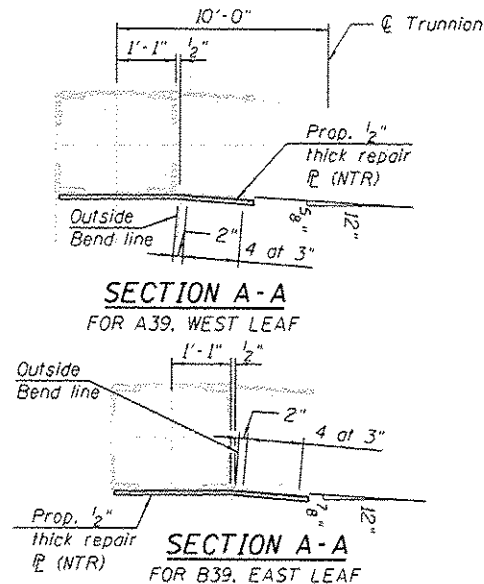
PLAN - BOTTOM COUNTERWEIGHT HORIZONTAL BRACING
EAST AND WEST LEAVES



ELEVATION - BOTTOM COUNTERWEIGHT HORIZONTAL BRACING
FOR A39 WEST LEAF AND B39 EAST LEAF



BOTTOM COUNTERWEIGHT HORIZONTAL BRACING - GUSSET PLATE REPAIR (AT L1)
EAST AND WEST LEAVES
(2 Required)



CONSTRUCTION SEQUENCE FOR BOTTOM COUNTERWEIGHT HORIZONTAL BRACING:

1. Drill holes in existing top angles and install top C10x25 channel. Holes shall be drilled and 7/8" diameter H.S. bolts shall be installed one at a time.
2. Repeat Item 1 above for the bottom channel.
3. Remove and replace existing lacing bars with new lacing bars. Lacing bars shall be replaced one at a time.

The Contractor shall not deviate from the above construction sequence without the approval of the Engineer.

CONSTRUCTION SEQUENCE FOR R STIFFENING:

1. Clean exterior faces of existing steel (angles, plates and gusset plates) according to the special provision "Cleaning and Painting Contact Surface Areas of Existing Steel Structures."
2. Remove existing gusset plate rivet/bolt and replace with proposed H.S. bolts. Existing bolts/rivets shall be replaced one at a time. As each rivet/bolt is replaced with a H.S. bolt, the first washer and nut shall be installed and fully tightened as shown in Detail 1 on Sheet S-04.
3. Construct template for location for newly installed H.S. bolts to determine if field reaming of fill or repair plates is required.
4. Install additional washer as shown in Detail 1 on Sheet S-04.
5. Place repair plate with holes centered with centerline of new H.S. bolts. Install second washer and nut and fully tighten.

NOTES:

1. Portions of this drawing are extracted from the original drawing for this bridge. Details shown are provided to illustrate the work to be performed.
2. Repairs and replacement shown are based on field inspection. Conditions in field may have changed. Contractor to verify all components for repair or replacement as directed by the Engineer.
3. When required to completely remove and replace members, remove rivets (and/or existing bolts) and replace with 7/8" diameter high strength bolts, unless noted otherwise.
4. "Replace" indicates: remove existing members, furnish and install new member as shown.
5. New plates and lacing bars to match existing plates and bars in shape, size and hole locations. Existing dimensions are shown for information only. The Contractor shall verify all dimensions in field prior to ordering materials. The number and spacing for proposed 7/8" H.S. bolts shall match existing holes. Contractor shall use existing plates, angles and bars for templates.
6. For details of plate stiffening, See Detail 1 on Sheet S-04.
7. See also notes 3 thru 7 on Sheet S-04.

REFERENCE DRAWINGS:

Drawing	Sheet No.
Counterweight Supports	1343-36
Detail of Crwt. Truss "A" For West & East Side	5075-29
Bottom Chords Of Floor Beam "F1"	5075-33
Struts	5075-39

LEGEND:

—	New Member
○ or ●	Exist. bolt or rivet to remain.
✦	New bolt in existing or new steel. Remove existing rivet or bolt and replace with new 7/8" diameter H.S. bolt, unless noted otherwise

BILL OF MATERIAL

Pay Item	Unit	Quantity
Structural Steel Repair	Pound	4,430

BOTTOM COUNTERWEIGHT BRACING REMOVAL AND REPLACEMENT
RUBY STREET OVER DES PLAINES RIVER - SN 099-9901

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
112	M-BDR (BRI)	WILL	29	18
				CONTRACT NO. 62879

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DEPARTMENT OF TRANSPORTATION

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USER NAME :	DESIGNED - JJS, MI	REVISED - 10/19/2016 LAB
PLOT SCALE :	CHECKED - MI, MAJ	REVISED -
PLOT DATE :	DRAWN - MAA, PA	REVISED -
	CHECKED - JJS, MI	REVISED -

