



FRACTURE CRITICAL PIER CAP INSPECTION REPORT

SFN3110443 (HAM-75-1102R)
I-75 NB OVER WEST FORK MILL
CREEK/GALBRAITH RD
HAMILTON COUNTY, OH
DISTRICT 8

July 2023

Prepared for:



Prepared by:

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EXECUTIVE SUMMARY

- Project:** VAR-District 8 Bridge Inspections No. 2023-4. (PID No. 105476)
- Purpose of Project:** To perform a fracture critical inspection of fracture critical steel pier caps of bridges for the Ohio Department of Transportation, District 8.
- Inspection Team:** Team Leader – Michael Seal, P.E. – Collins Engineers, Inc.
Team Member – Trent Graham – Collins Engineers, Inc.
Team Member – Matt McFadden E.I.T. – Gannett Fleming, Inc.
- Inspection Date(s):** July 11, 2023

Summary of Findings:

- **Pier 3:**
 - The retrofits performed as part of the rehabilitation efforts in 1993 continue to function as designed. There are 2 in. diameter stress relief holes drilled through all girder webs adjacent to the pier cap top flange and connected with sawcuts. These have not changed since the prior inspection.
 - Past inspections noted welds between the cap bottom flange plate and girder bottom flanges, on the cap exterior. Welds transverse to the pier cap flange were removed during the 1993 rehabilitation, which caused gouging on the bottom flange and on some of the longitudinal welds along the pier cap flange. At several locations, this has resulted in weld cacks along the pier cap flange. The crack on the east side of Girder 5, north face of the cap, bottom flange has grown 1/16 in. since the 2021 inspection. See Section 2.1.1.2 below for specifics.
 - A few impact scrapes and gouges are present on the bottom of the cap web plates and bottom flange of the cap exterior. These are old comments and have not changed since the prior inspection.
 - On the cap interior, there are a few locations of tack welds on the backer bars that have cracked. These have not changed since the prior inspection and are not currently significant. Specifics are included in Section 2.1.1.1 below.
 - On the cap interior, backer bars were removed in some locations along the cap web/flange interface. At isolated locations a gap is present between the backer bar and the cap web. These have not changed since the prior inspection.
- **Pier 4:**
 - The retrofits performed as part of the rehabilitation efforts in 1993 continue to function as designed. There are 2 in. diameter stress relief holes drilled through all girder webs adjacent to the pier cap top flange and connected with sawcuts. These have not changed since the prior inspection.
 - On the cap interior, backer bars were removed in some locations along the cap web/flange interface. At isolated locations a gap is present between the backer bar and the cap web. These have not changed since the prior inspection.

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- On the cap interior, tack welds and overlapping welds are present on and near the diaphragms. These have all been previously noted and have not changed for this inspection.
- A few impact scrapes and gouges are present on the bottom of the cap web plates and bottom flange on the cap exterior. These are old comments and have not changed since the prior inspection.

Summary of Recommendations:

- In future inspections continue to monitor the drilled hole retrofits and sawcuts to ensure they continue to perform as designed.
- In future inspections monitor the cracks observed on the longitudinal welds on the cap bottom flange plates observed on the Pier 3 exterior for additional changes. One crack has grown 1/16 in. for this inspection.
- In future inspections, monitor the cracked tack welds present on the cap top flange backer bars between the cap webs and top flange inside Pier 3.
- In future inspections monitor the removed backer bar areas and locations of gaps between the backer bars and the cap web plates for changes or additional deterioration. Currently there were no changes noted for this inspection.
- In future inspections monitor the gouges and impact scrapes for changes or member eccentricity.
- In future inspections monitor the tack welds on the interior of the pier caps for condition changes or the initiation of cracks. Currently no cracks were noted aside from the locations listed above.
- In future inspections monitor the paint and areas of active corrosion for additional deterioration or section loss. Currently, there was little to no section loss noted on the structure.

NBI Ratings:

Item ID	Description	Condition Rating	Summary
B.C.14	NSTM	6-Satisfactory	Cracks present along cap bottom flange. Active surface corrosion. No significant changes overall.

AASHTO National Bridge Element (NBE) Ratings:

Element #	Description	Units	Total	Condition State			
				1	2	3	4
152	Steel Floor Beam	LF	272	259	10	3	0

Note: Ratings were developed using the FHWA Specifications for the National Bridge Inventory and AASHTO Manual for Bridge Element Inspection, 2nd Edition.

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1.0 INTRODUCTION

1.1 Purpose and Scope

This report consists of the results of a detailed inspection of non-redundant steel tension members (fracture critical) performed at the I-75 NB Bridge over West Fork Mill Creek/Galbraith Rd in Hamilton County, OH. Collins Engineers, Inc. (Collins) conducted the fracture critical pier cap investigation for the Ohio Department of Transportation (ODOT), District 8 on July 11, 2023.

1.2 General Description of the Structure

The HAM-75-1102R Bridge is a six-span welded steel plate girder structure with a reinforced concrete deck that carries four lanes of interstate I-75 northbound traffic over the West Fork of Mill Creek and Galbraith Road (See Figure 1). The West Fork of Mill Creek passes beneath Span 2 of the structure, and Galbraith Road passes beneath Spans 3 to 5, as it is skewed 60 degrees from northbound Interstate I-75. The overall length of the bridge is 507.3 ft.

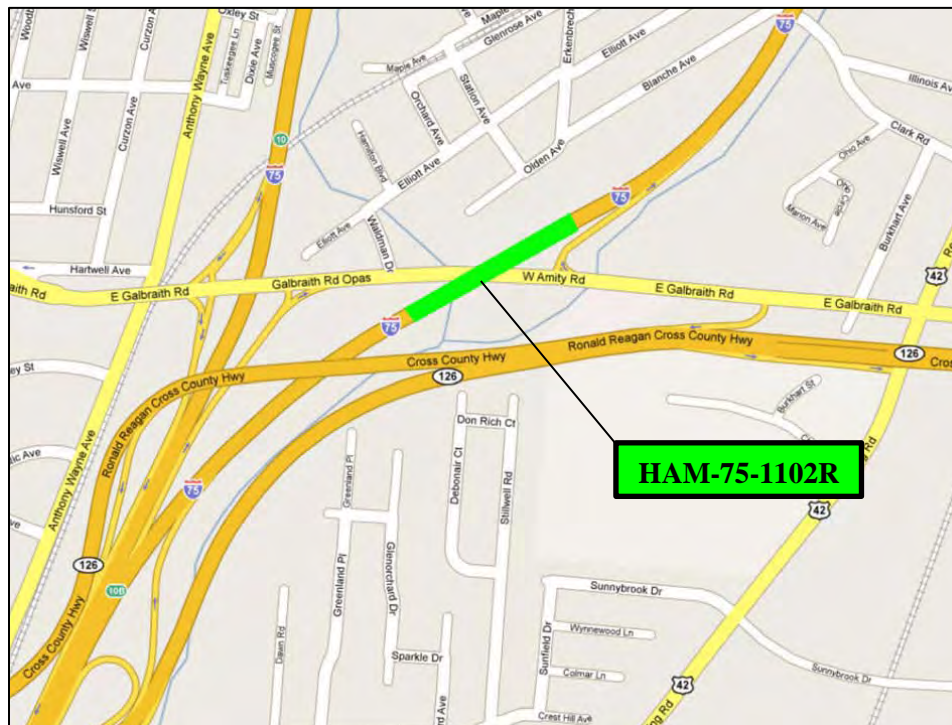


Figure 1: General Bridge Location

The structure has two fracture critical integral pier caps which are located at Piers 3 and 4 (See Figure 2). The identical pier caps are welded steel plate box girders that are simply supported on two circular

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reinforced concrete columns space 46 ft. - 10 1/2 in. center to center. The pier caps are both 52 ft. in length. The web plate heights vary from 3 ft. - 5 1/4 in. to 3 ft. - 10 5/8 in. across the length of the pier caps. The superstructure consists of seven welded, steel I-girders that are haunched and continuous through the pier caps. Their top flanges pass above the pier caps and their bottom flanges pass below the pier caps. Their webs are connected to the web plates of the pier caps by fillet welds.



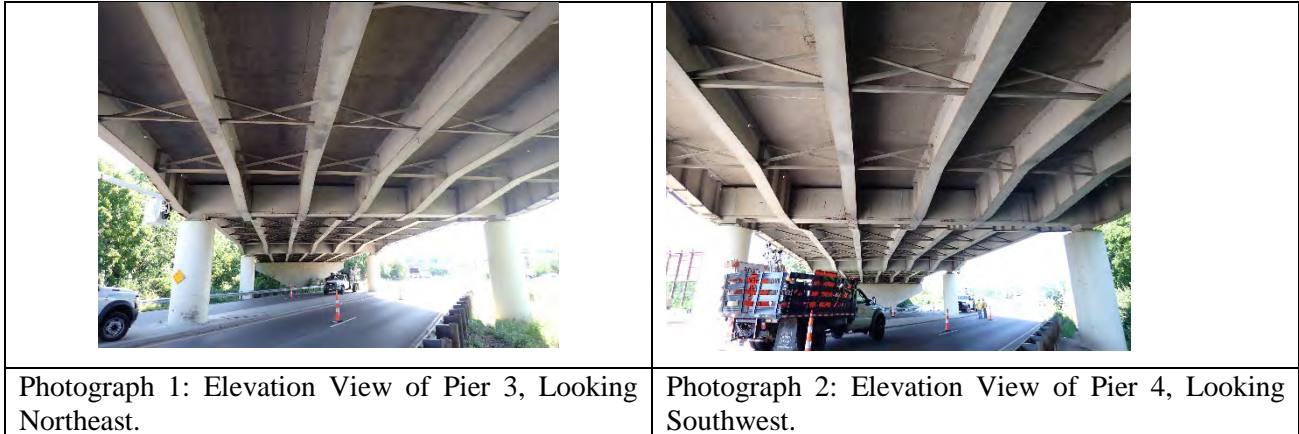
Figure 2: Fracture Critical Pier Cap Location

The nomenclature and girder designation shown on the design plans were used in the inspection of the pier caps. The bridge was rehabilitated in 1993 to improve several fatigue-prone weld details. Two 2 in. diameter stress-relief holes were drilled through the longitudinal girder webs at their connection near the top flange of the pier cap (both north and south face) and then connected with a vertical sawcut. Tack welds between the girder bottom flanges and the bottom flanges of the pier caps were ground out. Tack welds in the pier interior that attached the backer bars to the pier cap webs and bottom flange plates were ground out. Sections of backer bar that had bent away from the web plates of the pier caps were removed.

This bridge is inventoried in a roadway south to north direction, and superstructure units are labeled from left to right looking roadway north. Substructure units are labeled as Rear and Forward Abutments and Piers 2 through 5. Refer to Photographs 1 and 2 below for overall views of the bridge superstructure.

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1.3 Method of Investigation

Collins Engineers Inc. performed a fracture critical inspection of the fracture critical pier caps of Bridge SFN311043 (HAM-75-1102R), Pier Cap 3 and Pier Cap 4 on July 11th, 2023. A&A Safety was used to close one lane of traffic on E. Galbraith Road at a time. A 46 ft. bucket truck was used to access the pier cap interiors and perform the “arm’s length” exterior inspection of the pier caps. One cover plate was removed from each pier cap and replaced using an impact wrench. The cover was resealed with exterior grade silicone caulk. Various socket sizes from 1/2 in. to 15/16 in. were required to remove the hatch bolts.

OSHA confined space entry procedures were followed while inspectors were working inside the pier caps. Entry was performed in accordance with complete permit-required confined space entry procedures per GF SOP #10 and 29 CFR 1910.146. This included the use of an entry permit system, pre-entry air monitoring, continuous air monitoring, the designation of qualified entrants, attendants, and supervisor(s), and available emergency response. OSHA compliant safety harnesses and lanyards were worn by inspectors when working in the bucket truck.

Field measurements were taken using tape measures, calipers, and an ultrasonic thickness gauge to verify structural component dimensions. Observed deficiencies were recorded on member-specific field inspection forms. Digital photographs were taken of the fatigue prone details and other areas of interest or concern to further document the physical condition of the pier cap.

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1.4 Condition Ratings

State and Federal guidelines for evaluating the condition of bridges have been developed to promote uniformity in the inspections performed by different teams 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 pier cap.

CODE	CONDITION	DESCRIPTION
N	NOT APPLICABLE	Component does not exist.
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, AASHTO, 2019.
3. Bridge Inspector's Reference Manual, U.S. Department of Transportation, 2002 (rev 2012).
4. Inspection of Fracture Critical Bridge Members, U.S. Department of Transportation, 1986.
5. Specifications for the National Bridge Inventory, U.S. Department of Transportation, 2022.

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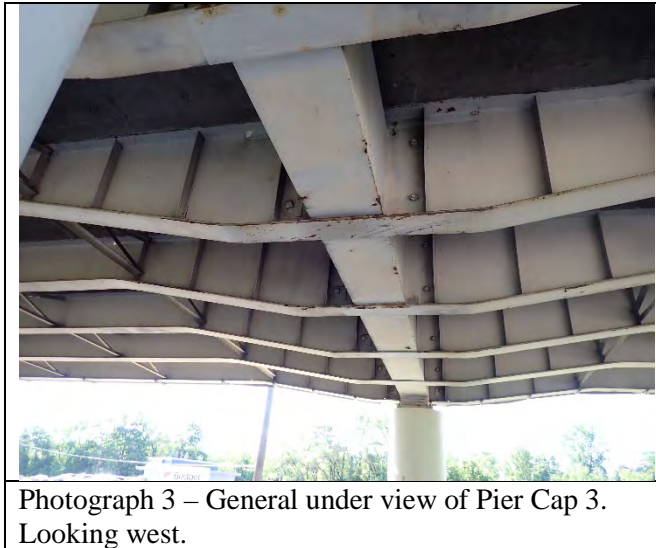


2.0 EXISTING CONDITIONS

2.1 Pier Cap Conditions

2.1.1 *Pier Cap 3 Overall*

Pier Cap 3 was in overall SATISFACTORY condition [6] (Photograph 3). The pier cap is a built-up steel plate sections of varying thicknesses and heights.



2.1.1.1 *Pier Cap 3 Interior*

The interior paint was in GOOD condition [7] and the interior of Pier Cap 3 was dry at the time of inspection. In general, there were no observable changes to the interior condition compared to the prior inspection. Specific items to note on the interior include:

- No water staining or leakage was noted inside the pier cap. There are a total of 4 ineffective bolts and their holes have been covered with caulk. This is an old comment with no change for this inspection.
- Minor surface corrosion with no section loss is present on the cap bottom flange adjacent to the west access hatch (Photograph 4). Additionally, minor scratches and paint damage are present on the interior and likely occurred during prior rehabilitation efforts.
- Tack welds are present at a few locations on the interior. These include:
 - Intermittent tack welds are present on the cap top flange backer bars between the cap webs and top flange. Three of these welds have cracked (no changes from prior inspection). Crack locations include: two cracked welds between the top flange backer bars and both web plates between the east bearing and Girder 7 (Photograph 5), and a

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- completely cracked tack weld between the top flange backer bar and the north web plate at Girder 7 (Photograph 6). These cracks are confined completely to the tack weld and have not propagated to the base metal. No changes from the prior inspection.
- Two remaining 1-1/2 in. tack welds are between both north and south backer bars and the cap bottom flange east of Girder 3 (Photograph 7). No changes for this inspection.
 - There were miscellaneous tack welds on the cap bottom flange throughout the pier cap. This includes: three 1/2 in. welds east of Girder 4 (Photograph 8), three 1/2 in. welds and one 1 in. weld east of Girder 5 (Photograph 9), and tack welds between the diaphragm east of the west bearing and the cap bottom flange (Photograph 10). No changes for this inspection.
 - Select portions of the bottom flange backer bars were removed throughout the length of the pier cap where the backer bars were bowing away from the web plate or where two backer bars met without a butt weld. Several of the remaining backer bars exhibit gaps between them and the web plates; see Photograph 21 for a general example. This is an old comment that has not changed.



Photograph 4: General Example of Surface Corrosion on the Bottom Flange Adjacent to West Access Hatch. Facing West.



Photograph 5: View of Cracked Tack Weld Between the Top Flange and South Web at Girder 7. Looking South.

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Photograph 6: View of Cracked Tack Weld Between the Top Flange and North Web Between the East Bearing and Girder 7.



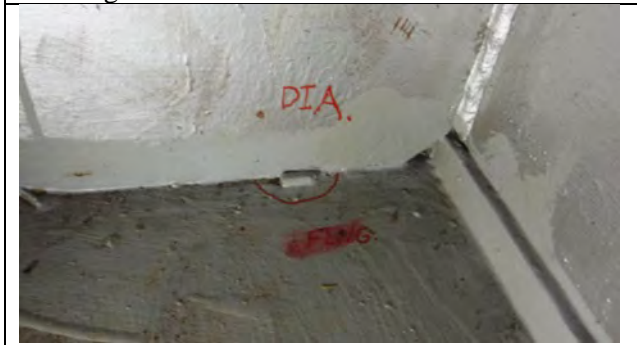
Photograph 7: View of Tack Weld on Cap Bottom Flange at the Cap North Web, East of Girder 3. Looking North.



Photograph 8: View of 1/2 in. Tack Welds on the Cap Bottom Flange East Face of Girder 4 Diaphragm. Looking West.



Photograph 9: View of Four Tack Welds Ranging From 1/2 in. to 1 in. on the Cap Bottom Flange East Face of Girder 5 Diaphragm. Looking West.



Photograph 10: View of 1 in. Tack Weld on the Cap Bottom Flange at the Diaphragm East of the West Bearing Diaphragm. Looking West.



Photograph 11: General Example of Gap Between the Backer Bar and the South Web Plate Located West of the Girder 6 Diaphragm. Looking East.

2.1.1.2 Pier Cap 3 Exterior

The paint system of the pier cap exterior was in SATISFACTORY condition [6] and exhibited widespread areas of chalking. There is flaking paint with active surface corrosion along the underside of the bottom flange plate and along the corners (Photographs 12 and 13). This has not significantly changed from the prior inspection. Specific items on the exterior to note include:

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- As per the 1993 rehabilitation project, 2 in. diameter stress relief holes were drilled through all girder webs adjacent to the pier cap top flange and connected with sawcuts. Some of the retrofits display gouges in the stress relief holes due to mis-drilled holes at Girders 1, 2, 3, and 6. On the south side of the west face of Girder 2, there were errant sawcuts between two of the stress relief holes (Photograph 14). No major changes were observed for this inspection, and the retrofits function as designed.
 - Past inspections observed tack welds or fillet welds between the cap bottom flange plate and girder bottom flanges. The welds transverse to the pier cap flange were removed during the 1993 rehabilitation. This caused gouging on the bottom flange, and some gouging of the welds running longitudinally along the pier cap flange. At several locations, this removal has resulted in weld cacks that run longitudinally along the pier cap flange. Locations of this condition include:
 - On the east side of Girder 5, north face of the cap, bottom flange, there was a 1-9/16 in. crack (was 1-1/2 in., grew 1/16 in. from 2021). See Photograph 15.
 - On the east side of Girder 4, north face of the cap, there was a 3/4 in. sawcut with a 1 in. crack. No change for this inspection.
 - On the east face of Girder 6, south face of the cap, there was a 1-1/2 in. crack (Photograph 16).
 - There was a small gouge in the bottom corner of the pier cap on the east face of Girder 3. This occurred during the 1993 rehabilitation and presents a localized stress riser at the girder/cap interface. This is not currently problematic.
 - The full penetration groove welds between the flange plates and web plates were overlapped with multiple discontinuous fillet welds that were not ground smooth, but the welds show no signs of distress (Photograph 17). No major changes were observed for this inspection.
 - On the south side of the bottom flange west of Girder 3, there was a 4 in. long area of impact damage (Photograph 18). No major changes were observed for this inspection.
 - There was moderate surface corrosion on the west end of the pier cap with up to 5/16 in. of pack rust between the girder bottom flange and the pier cap. No major changes were observed for this inspection.
 - The east bearing exhibits minor surface corrosion with some laminating corrosion around the anchor bolts. The west bearing exhibits minor surface corrosion on the masonry plate and anchor bolts (Photograph 19). No major changes were observed for this inspection.

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- There were several small areas of minor freckling corrosion with no section loss and peeling paint along the bottom flange near bearings on the top flange edges between the girders. No major changes were observed for this inspection.



Photograph 12 – General Example of Flaking Paint and Surface Corrosion at Pier 3, Underside Looking Northeast.



Photograph 13 – General Example of Flaking Paint and Surface Corrosion Along the Pier 3 Cap Edge. Looking Northeast.



Photograph 14 – View of Two Stress Relief Holes With Errant Sawcuts at the West Face of Girder 2, South Side of Pier. Looking Northeast.



Photograph 15 – Close Up View of a 1-9/16 in. Crack on East Side of Girder 5, North Face of Cap. Note 1/16 in. of Growth. Looking South.

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Photograph 16 – Close Up View of a 1-1/2 in. Crack on East Side of Girder 6, South Cap Face. Looking North.



Photograph 17 – General Example of Discontinuous Fillet Welds Not Ground Smooth. Looking North.



Photograph 18 – Close Up View of 4 in. Long Impact Damage To Cap Bottom Plate, West of Girder 3. Looking Southwest.



Photograph 19 – View of Typical Bearing Corrosion and Configuration. West Bearing Shown. Looking Northwest.

2.1.2 Pier Cap 4 Overall

Pier Cap 4 was in overall GOOD condition [7] (Photograph 19). This cap interior was dry at the time of the inspection. Overall, there were no major changes to the conditions from the prior inspection.

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Photograph 19 – General Underview Pier Cap 4.
Looking west.

2.1.2.1 Pier Cap 4 Interior

The paint system of the pier cap interior was in GOOD condition [7] overall. The interior of Pier Cap 4 was dry at the time of inspection and both access hatches were well sealed. No water staining or leakage was noted inside the pier cap. Overall, there were no major changes from the prior inspection. Specific items on the interior to note include:

- Select portions of the cap bottom flange backer bars were removed along the cap where the backer bars had bowed away from the web plate or where backer bars abutted with no joining weld (Photograph 20). There were a couple locations of remaining backer bars with a gap between the bars and the cap web plates (Photograph 21). This has not changed since the prior inspection.
- The backer bars along the cap top flange exhibited discontinuous stitch welds of varying lengths and backer bars abutting with no joining weld (Photograph 22). This has not changed since the prior inspection.
- There were numerous welds at the diaphragms that exhibited overlapping welds and weld porosity (Photograph 23). These is an old condition that has not changed.
- There were various stray welds and weld remnants on the flanges. These are old conditions that have not changed. Locations of this condition include:
 - At the cap bottom flange east of the Girder 6 diaphragm, there was a 7 in. long tack weld (Photograph 24).
 - At the cap bottom flange west of Girder 5, there was a 1-1/2 in. partially ground tack weld (Photograph 25).

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- At the cap bottom flange east of Girder 2 there was a 2 in. long tack weld.
- At the cap top flange there were tack welds at isolated locations. No set pattern was discerned during this inspection.



Photograph 20 – General Example of Backer Bar Removed From Cap Bottom Plate. Occurs Along Portions of Cap Interior. Looking Southwest.



Photograph 21 – General Example of Gap Between Backer Bars and Cap Web Plate. Looking South.



Photograph 22 – Typical Example of Stitch Welds With Varying Lengths Along Cap Top Flange Backer Bars. Looking North.



Photograph 23 – General Example of Overlapping Weld for Cap Web Plate to Diaphragm Weld. Looking South.

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Photograph 24 –View of 7 in. Long Weld on Cap Bottom Flange East of Girder 6 Diaphragm. Looking East.



Photograph 25 – View of Partially Ground Down Tack Weld on Cap Bottom Flange West of Girder 5 Diaphragm. Looking East.

2.1.2.2 Pier Cap 4 Exterior

The paint system of the pier cap exterior was in SATISFACTORY condition [6]. There were widespread areas of chalking to the paint. Specific items to note on the exterior include:

- During the 1993 rehabilitation project, 2 in. diameter stress relief holes were drilled through all the girder webs adjacent to the pier cap top flange and connected with sawcuts. Some of the retrofits display gouges in the stress relief holes due to mis-drilled holes at Girders 2, 4, and 5. This is an old condition that has not changed for this inspection.
- At north face of the pier cap just east of Girder 5, there were several areas of impact damage on the lower corner. Peeling paint and surface corrosion with no section loss was present at this location (Photographs 26 and 27).
- At the northwest corner of Girder 2, there was a 2 in. tack weld along the cap bottom flange (Photograph 28). This is an old condition that has not changed.
- The groove welds typically exhibit multiple passes and overlaps (Photograph 29). No cracks or changes from the prior inspection were noted.
- The removal of tack welds between the cap bottom flange and girder bottom flange plates typically resulted in minor gouges in the cap bottom flange. This is an old comment that has not changed for this inspection.
- There were isolated areas of peeling paint and surface corrosion with no section loss along both flange plates and on the web plates. This has not changed since the prior inspection.

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- Both bearing devices for Pier Cap 4 exhibit minor corrosion with no section loss on the masonry plate and anchor bolts. The bearings function as designed. This has not changed since the prior inspection.



Photograph 26 – View of Impact Gouges and Surface Corrosion On the North Face of the Cap East of Girder 5. Looking Southwest.



Photograph 27– View of Impact Scrapes and Surface Corrosion On the Underside of the Cap East of Girder 5. Looking Southwest.



Photograph 28 – View of a 2 in. Tack Weld On West Side of Girder 2, North Face of Pier Cap. Looking Southeast.



Photograph 29 – General Example of Multipass Welds, North Side Shown. Looking South.

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2.1.3 Pier Cap 3/4 Fatigue Prone Details

Fatigue Prone Detail 1

Fillet welds between girder webs or diaphragms and web plates.

Category: C

Location: All girder diaphragms and web stiffeners

Fatigue Prone Detail 3

Tack welds, less than 2", on web and flange. Category: C

Location:

- Tack welds between top flange backer bars and pier cap 3 flange and web plates between fascia girders and bearings.
- One tack weld between pier cap 3 bottom flange and each backer bar between girder 3 and the adjacent east diaphragm (2 total).
- Three tack welds on interior of pier cap 3 bottom flange between girder 4 and the adjacent east diaphragm; Four tack welds on interior of pier cap 3 bottom flange between girder 5 and the adjacent east diaphragm (7 total).
- One tack weld on interior of pier cap 4 bottom flange between girder 5 and the adjacent west diaphragm.

Fatigue Prone Detail 4

Tack welds, greater than or equal to 2" and less than or equal to 4", on the pier cap flange.

Category: D

Location: 2" tack weld on interior of pier cap 4 bottom flange between girder 2 and the adjacent east diaphragm; 2" tack weld on exterior of pier cap 4 bottom flange on west side of girder 2.

- 2½"-3½" tack welds between the edges of both pier cap bottom flange plates and the bottom flanges of Girders 2 through 6.
- 2"-3½" tack welds along the top flange backer bars and both pier cap flange and web plates between the fascia girders and bearings.

Fatigue Prone Detail 5

Fillet weld greater than 4" or 12 times the connection thickness with a connection thickness less than 1".

Category: E

Location:

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- Fillet weld between bottom flange of girder 6 and south edge of pier cap 3 bottom flange.
- 7" weld on the interior of the pier cap 4 bottom flange between girder 6 and the east bearing.
- 4/4" welds along the top flange backer bars and the flange plates of both pier caps between the east bearings and Girder 7.

Fatigue Prone Detail 9

Drilled hole stress relief retrofit in girder web plates.

Category: B

Location: All girder web plates on each side of the pier cap top flange.

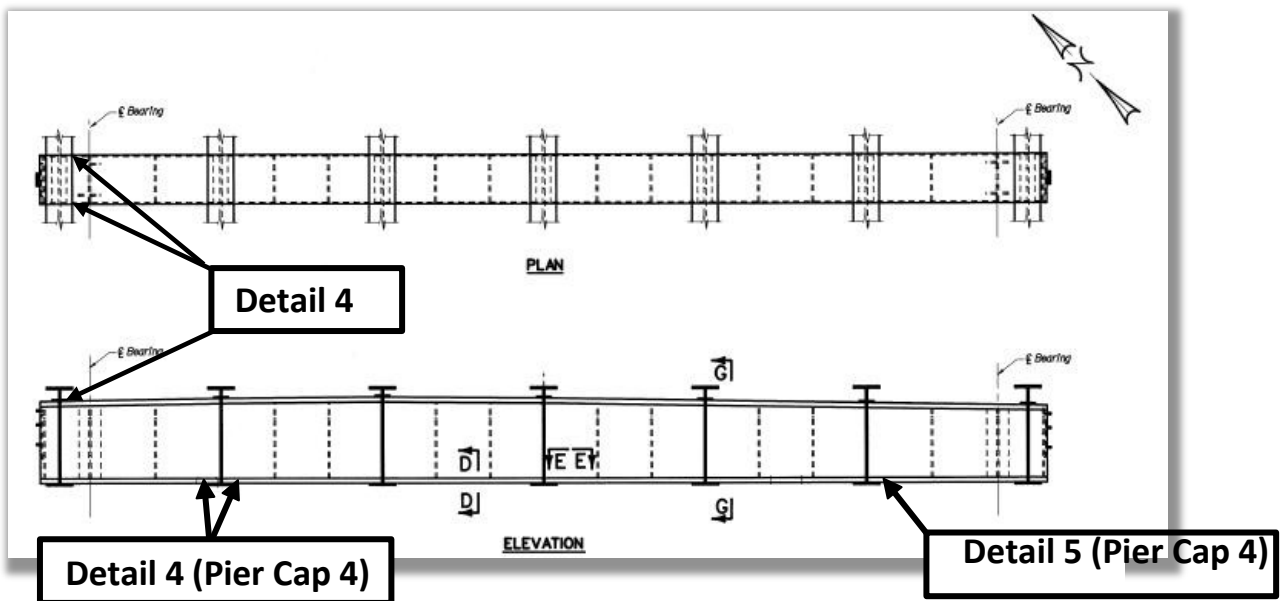


Figure 3: Plan and elevation of Pier Caps 3 & 4 with Fatigue Prone Details

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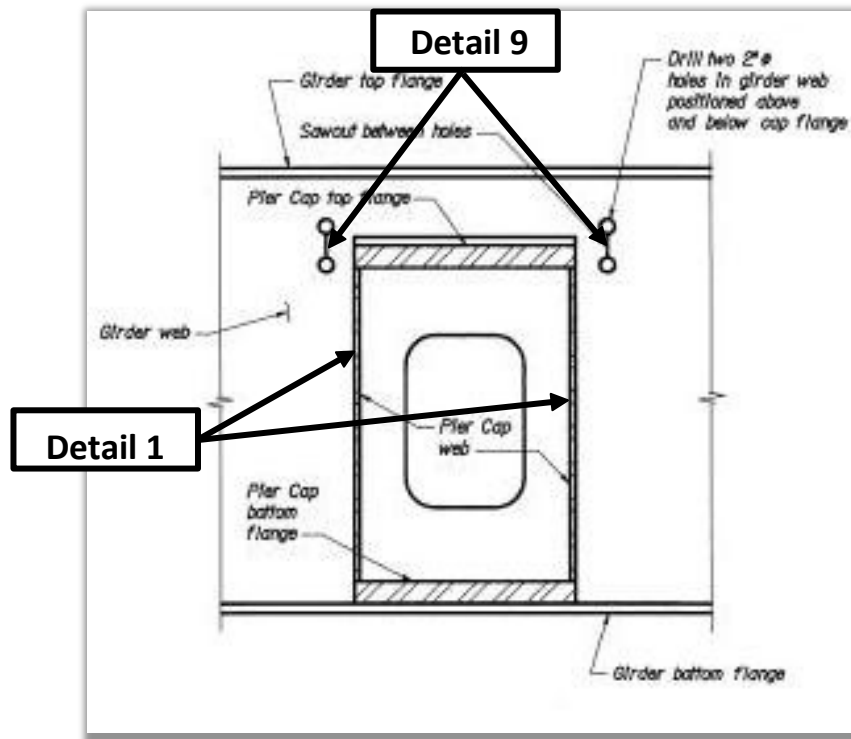


Figure 4: Typical section of Pier Caps 3 & 4.

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3.0 EVALUATION AND RECOMMENDATIONS

Based on the inspection, the fracture critical pier caps of Bridge No. HAM-75-1102R and its associated fatigue prone details were in overall SATISFACTORY condition [6]. Corrosion continues on the caps and one weld crack on Pier 3 has grown slightly since the prior inspection.

Collins appreciates the opportunity to work with the Ohio Department of Transportation on this project and looks forward to working together in the future. We would be happy to discuss any aspect of the report with you in person or via phone or email.

Respectfully Submitted,
COLLINS ENGINEERS, INC.

A handwritten signature in blue ink that reads "Michael Seal".

Michael Seal, P.E.
Project Manager

A handwritten signature in black ink that reads "Kevin Mitchell".

Originated by:
Kevin Mitchell, E.I.T.

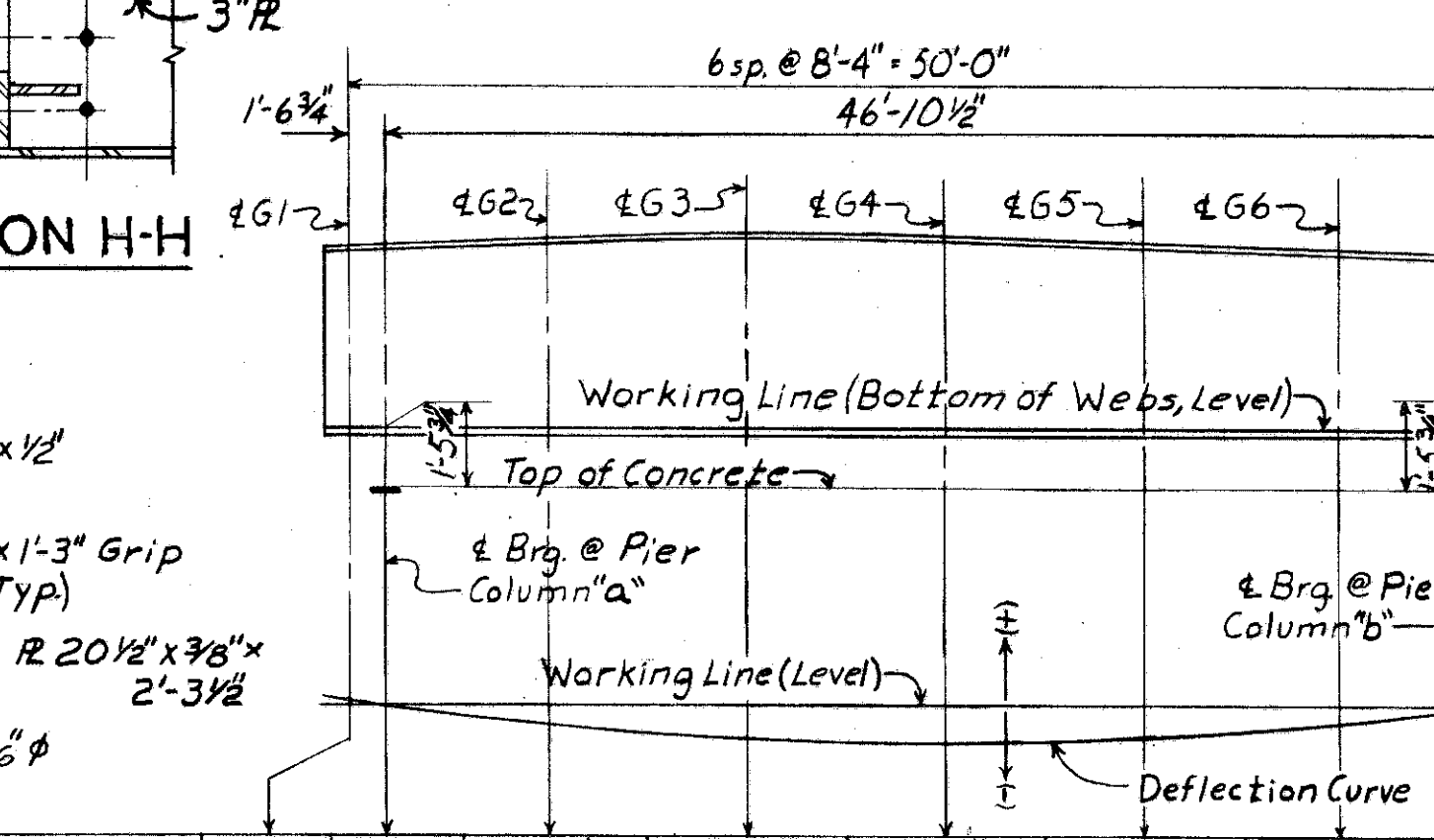
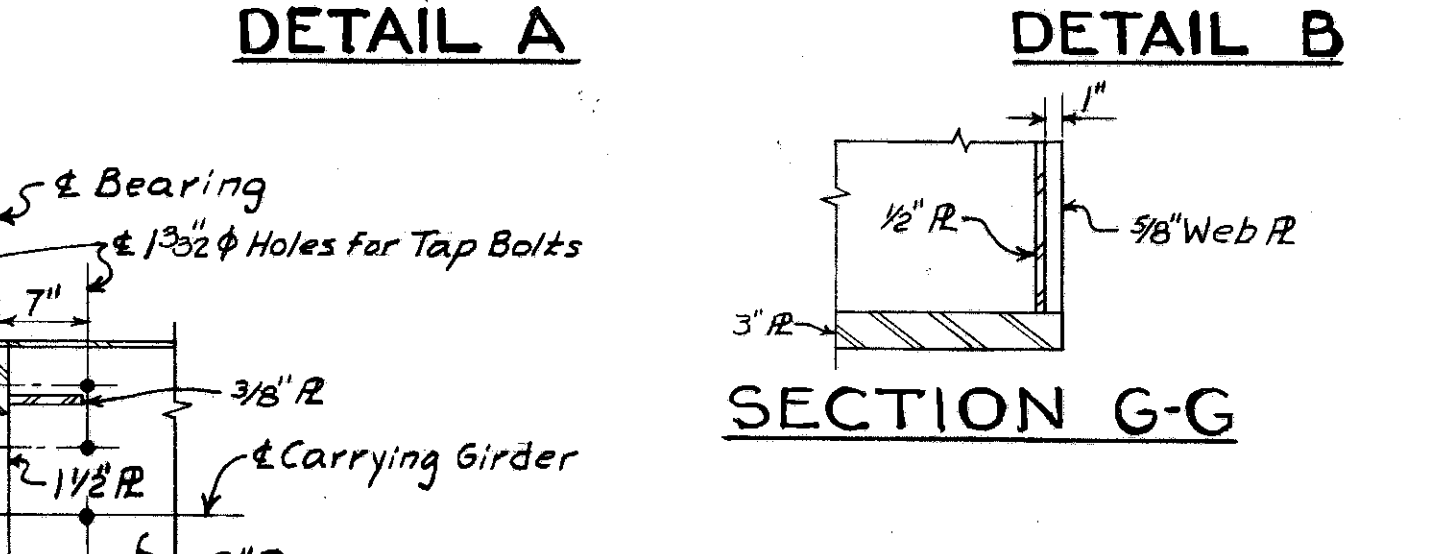
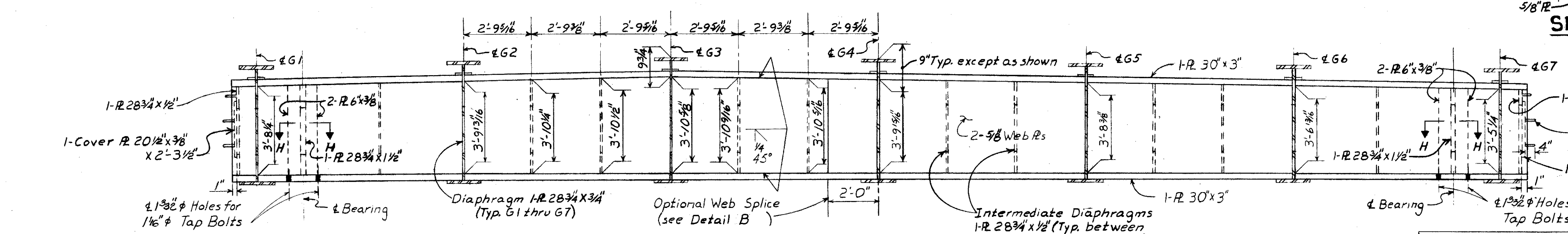
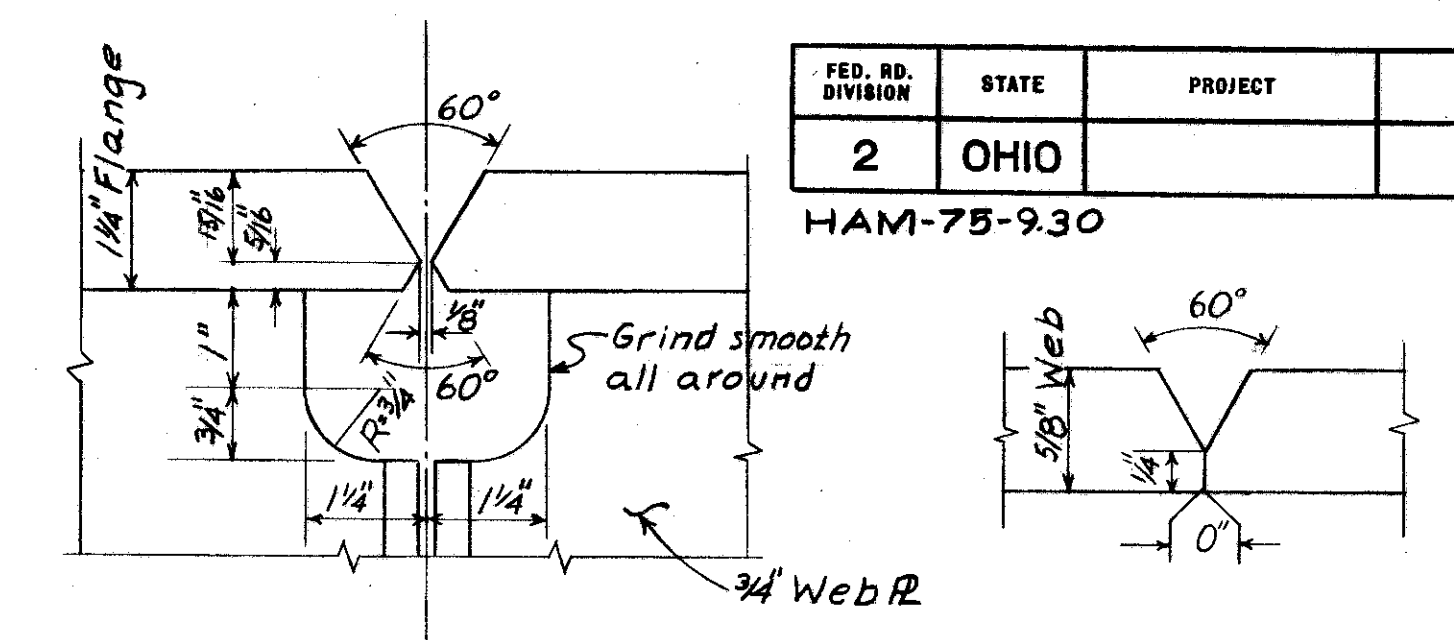
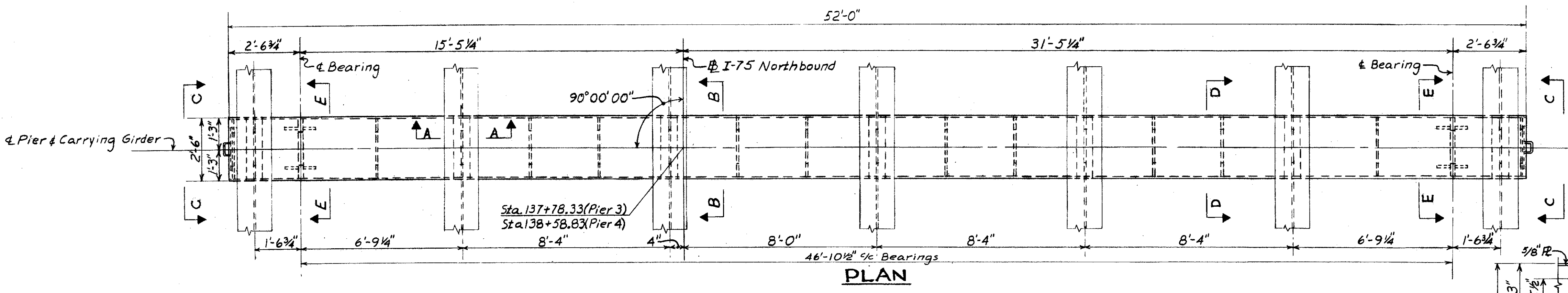
FRACTURE CRITICAL INSPECTION

I-75 NB over West Fork Mill Creek/Galbraith Rd • SFN3110443 (HAM-75-1102R)

Hamilton County, OH • July 2023



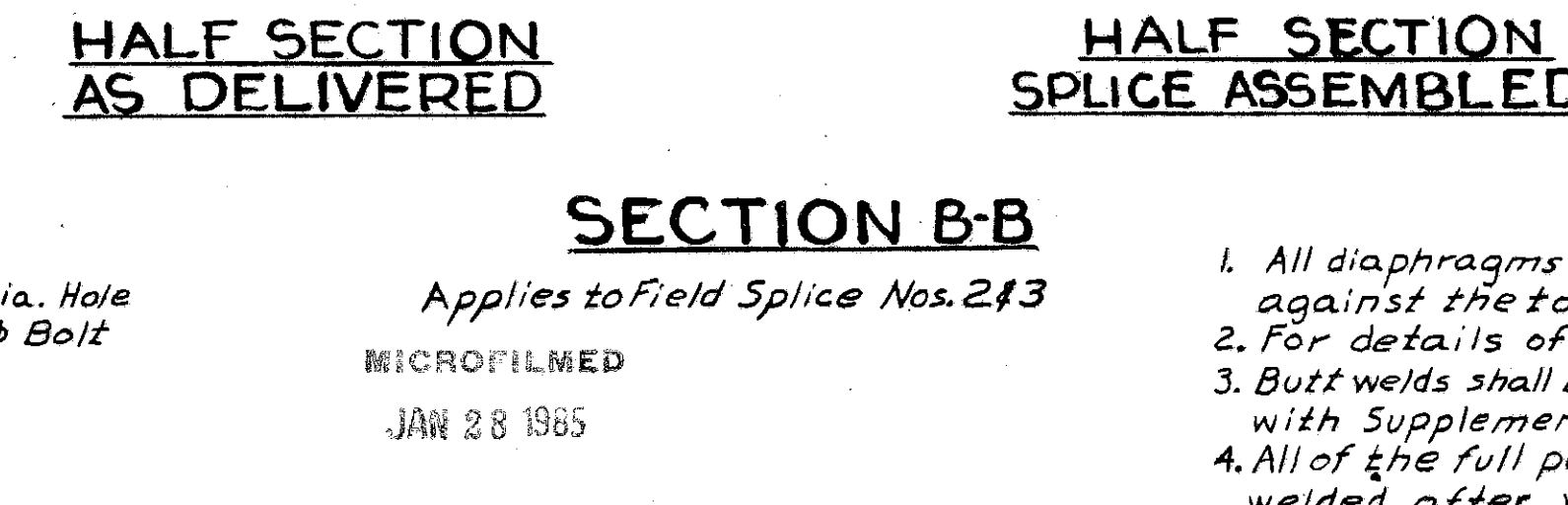
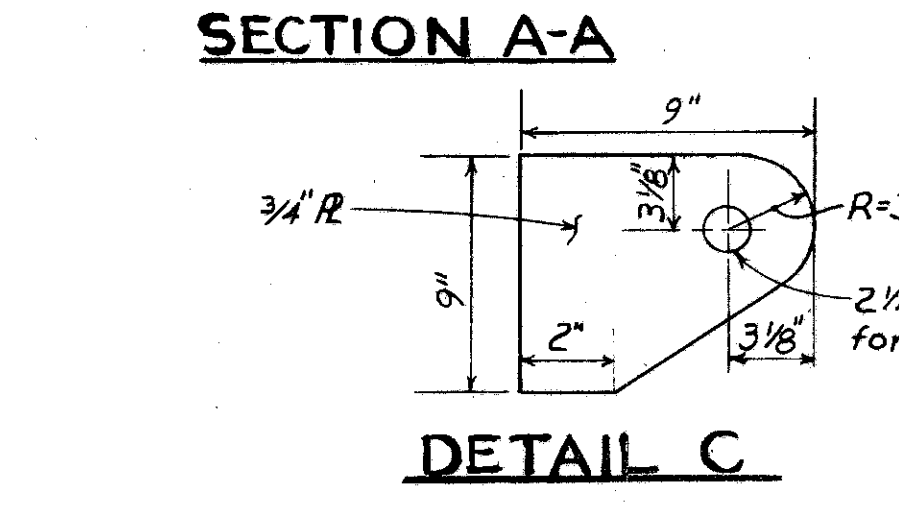
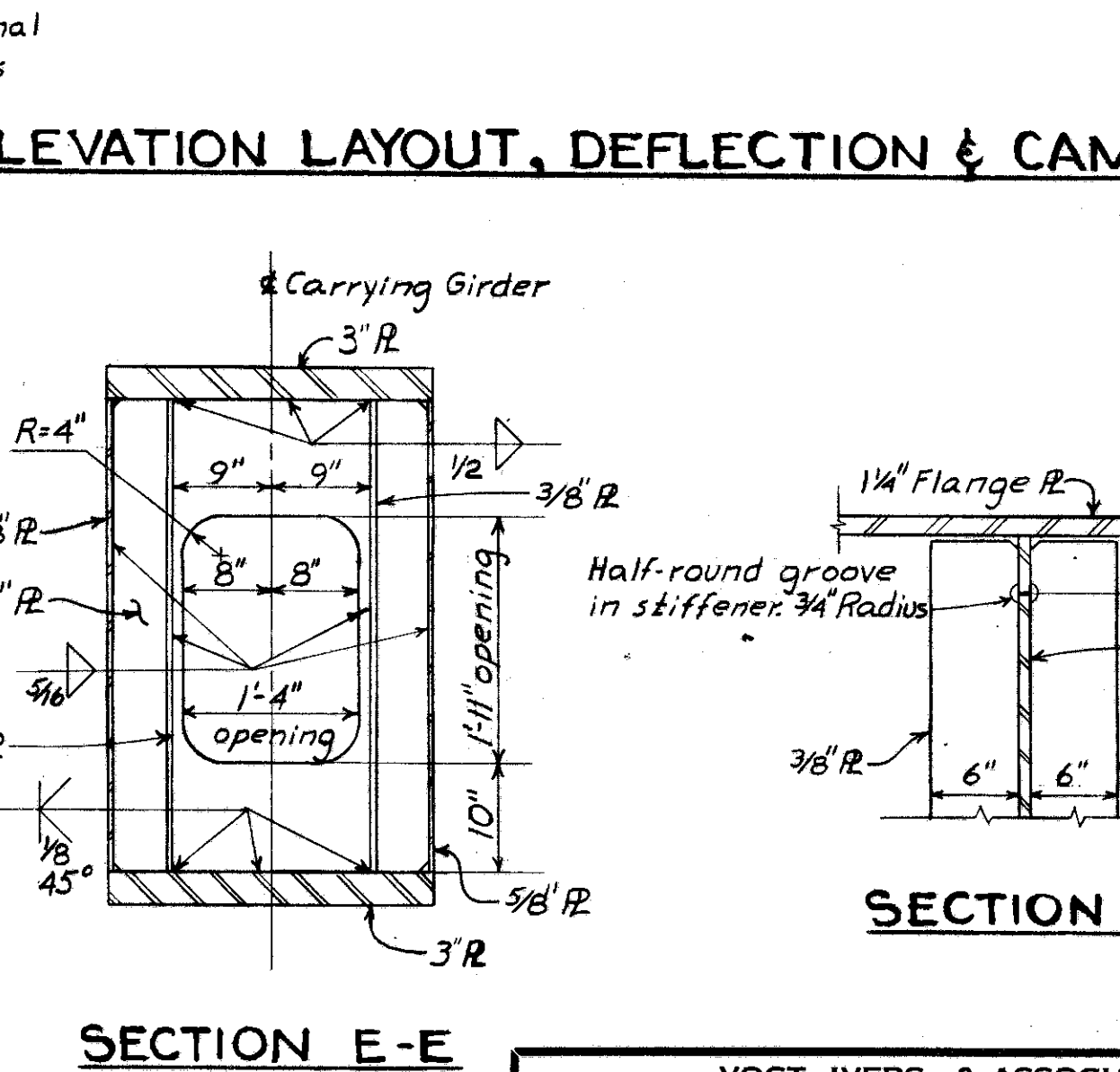
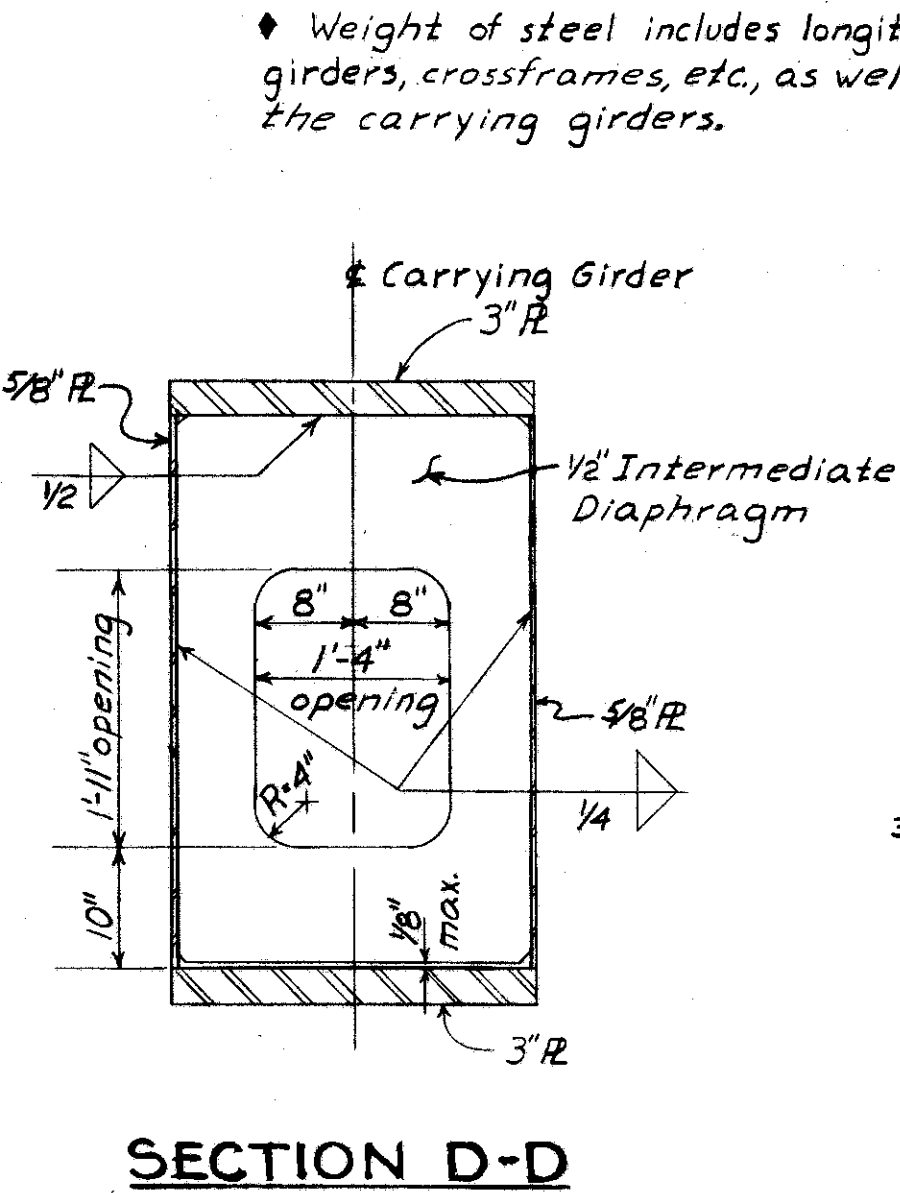
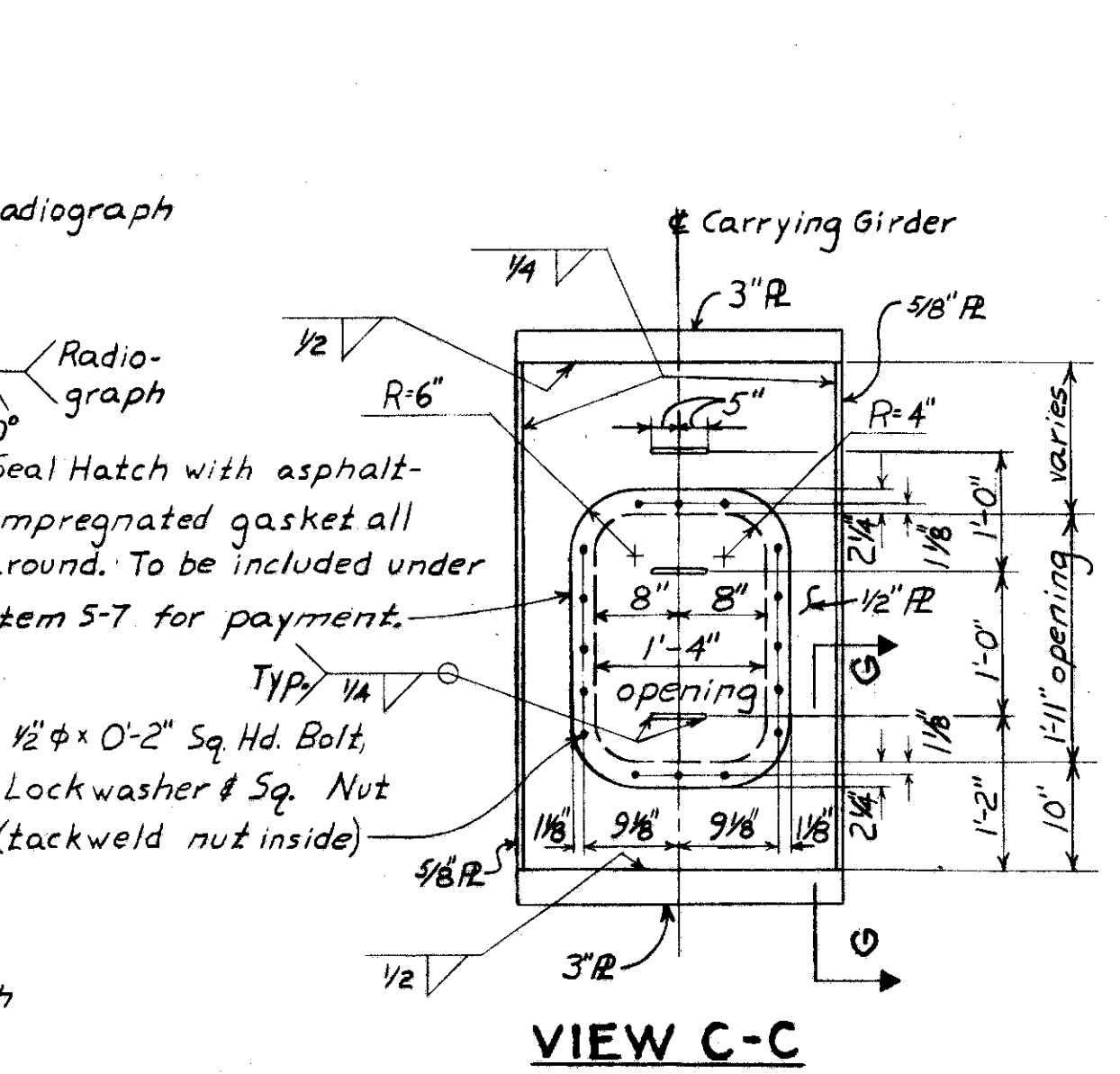
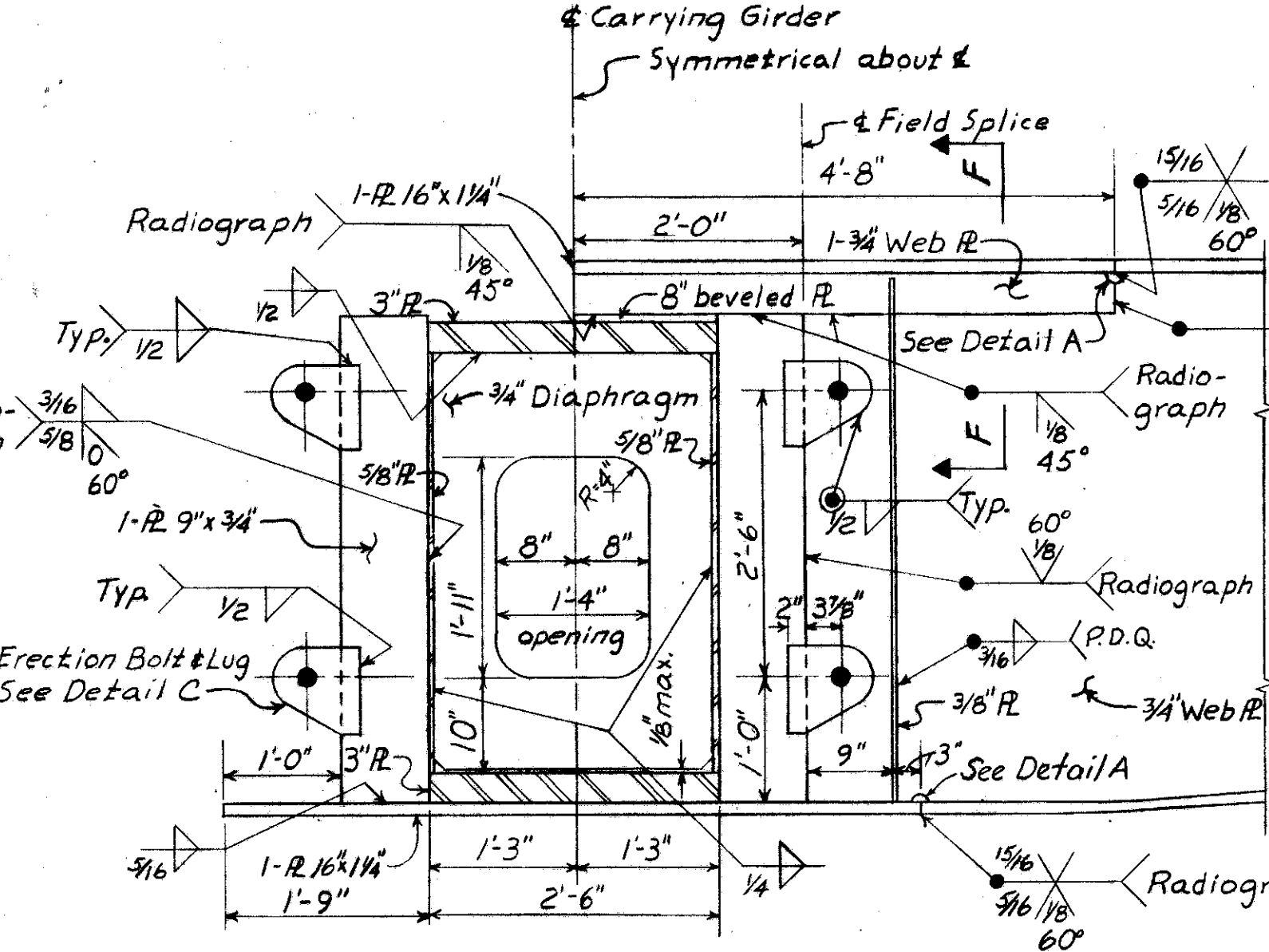
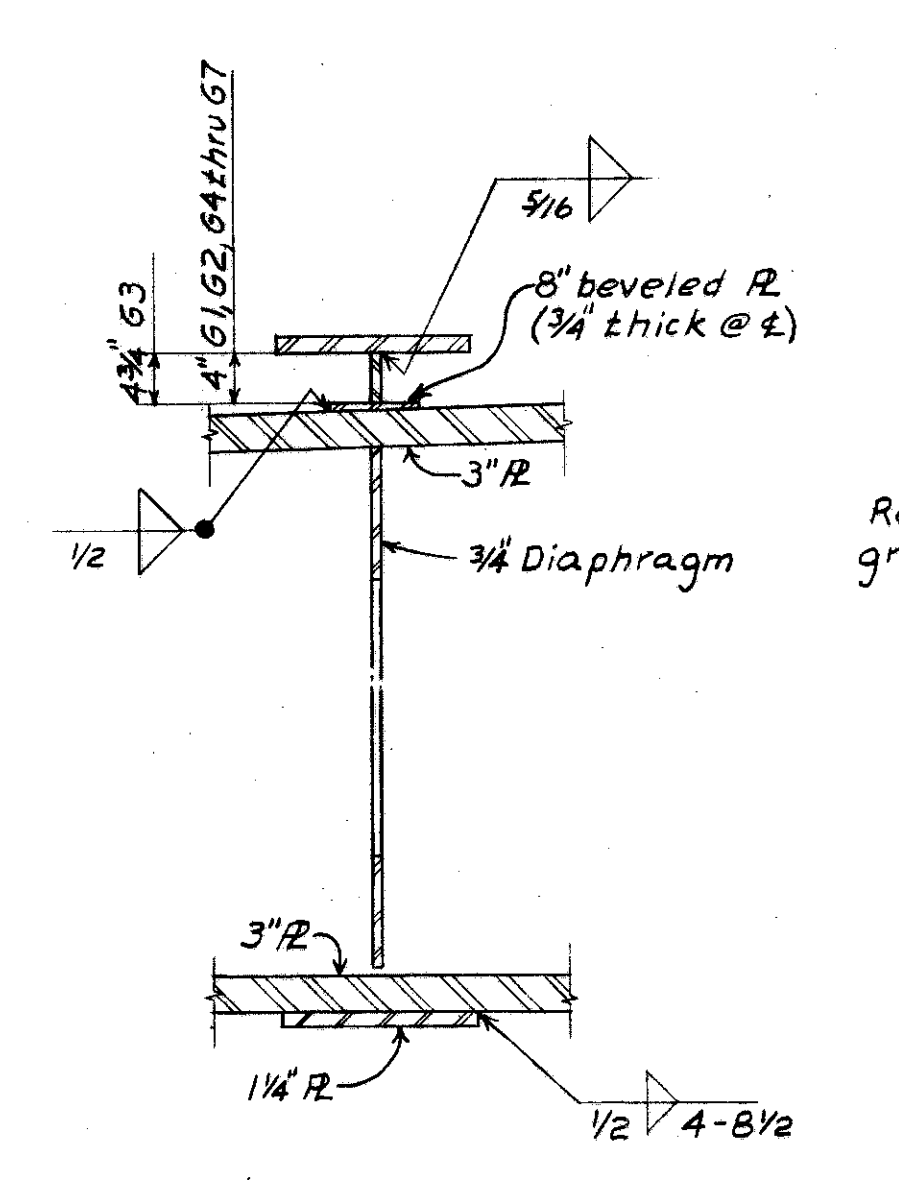
EXHIBIT 1 – EXISTING PIER PLANS



Deflection due to weight of steel	0	0	-1/16	-1/16	-1/8	-1/16	-1/16	0	0
Deflection due to remaining dead load	0	0	-1/8	-1/4	-5/16	-1/4	-1/8	0	0
Total dead load deflection	0	0	-3/16	-3/16	-7/16	-3/16	-3/16	0	0
Camber required	0	0	+3/16	+3/16	+7/16	+3/16	+3/16	0	0

◆ Weight of steel includes longitudinal girders, crossframes, etc., as well as the carrying girders.

ELEVATION LAYOUT, DEFLECTION & CAMBER



- NOTES**
- All diaphragms shall be vertical, and have contact bearing against the top flange.
 - For details of bearings, see Sheet 306.
 - Butt welds shall be radiographically examined in accordance with Supplemental Specification No. S-307, dated 8-23-60.
 - All of the full penetration welds shall be back-gouged and welded after welding far side.
 - Butt welds on girder flange plates shall be ground flush, the finish grinding being parallel to the & of girder.
 - For additional NOTES, see Sheet 303.

Applies to Field Splice Nos. 2 & 3
MICROFILMED
JAN 28 1965

VOGT, IVERS, & ASSOCIATES
ENGINEERS ARCHITECTS
CINCINNATI CHICAGO

**CARRYING GIRDERS
AT PIERS 3 & 4**

BRIDGE NO. HAM-75-1056
NORTHBOUND I-75 OVER WEST FORK
OF MILL CREEK AND GALBRAITH ROAD
HAMILTON COUNTY STA. 135+0708 to
STA. 140+14.08

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
RKS	GRH		RLS	JAD	7-23-64	

FRACTURE CRITICAL INSPECTION

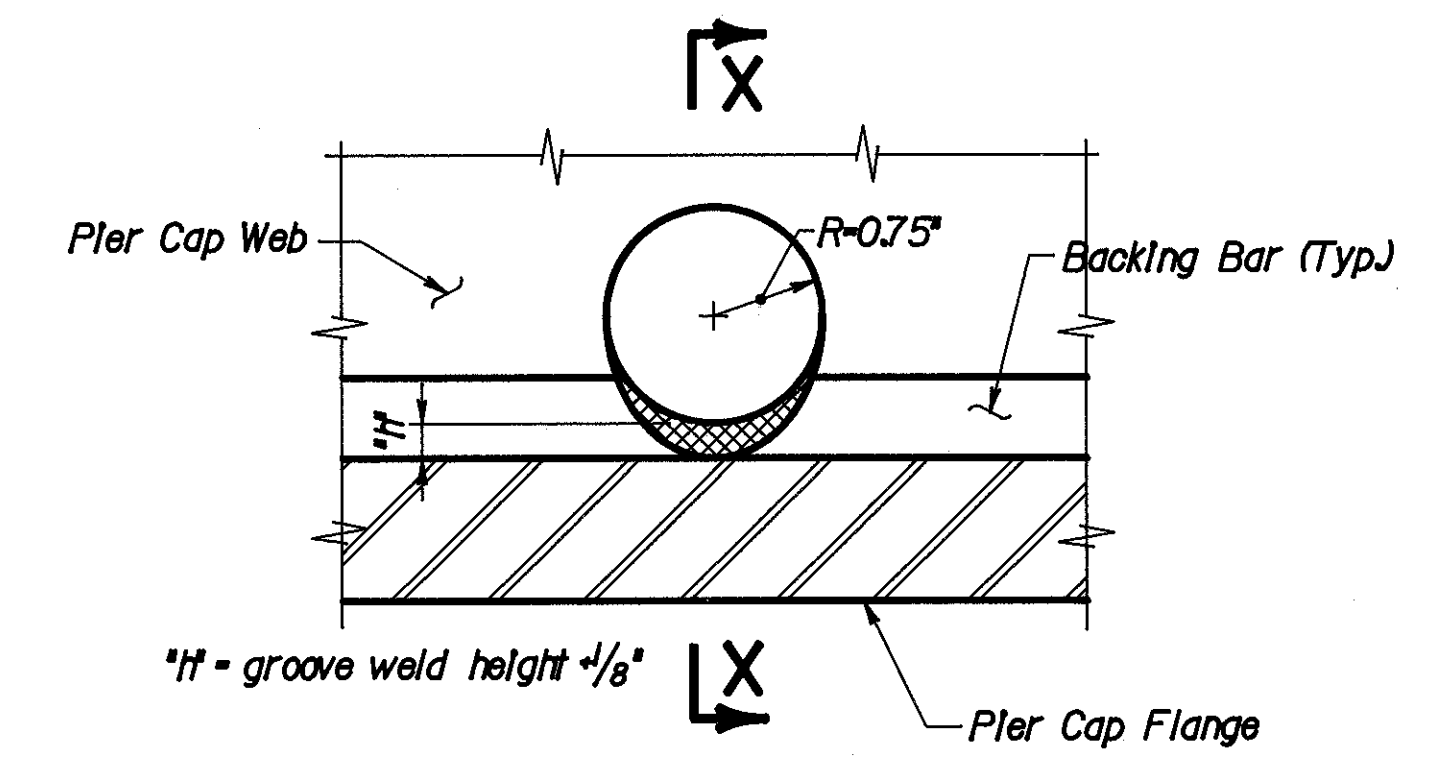
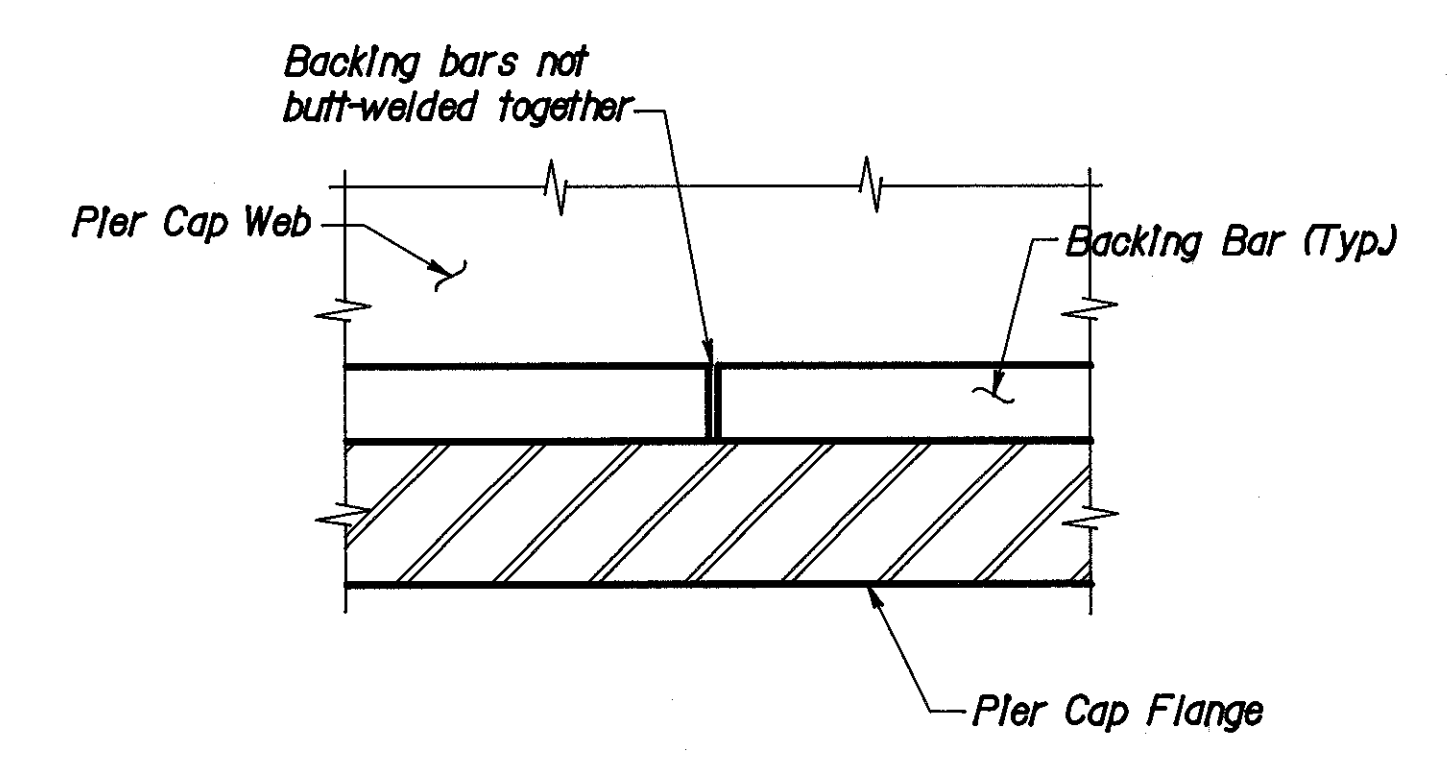
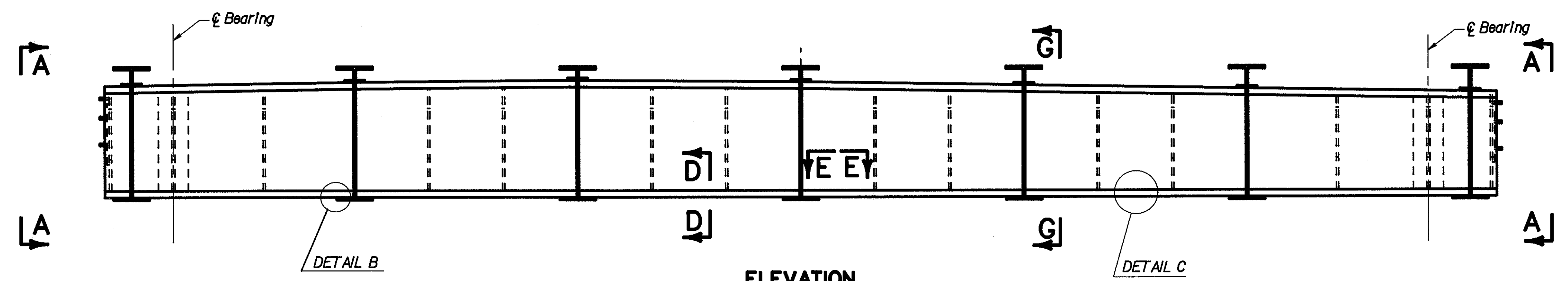
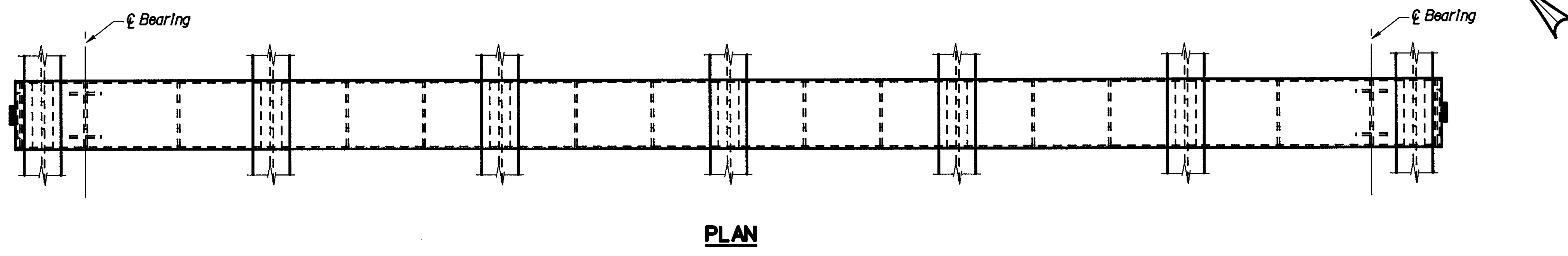
I-75 NB over West Fork Mill Creek/Galbraith Rd • SFN3110443 (HAM-75-1102R)

Hamilton County, OH • July 2023

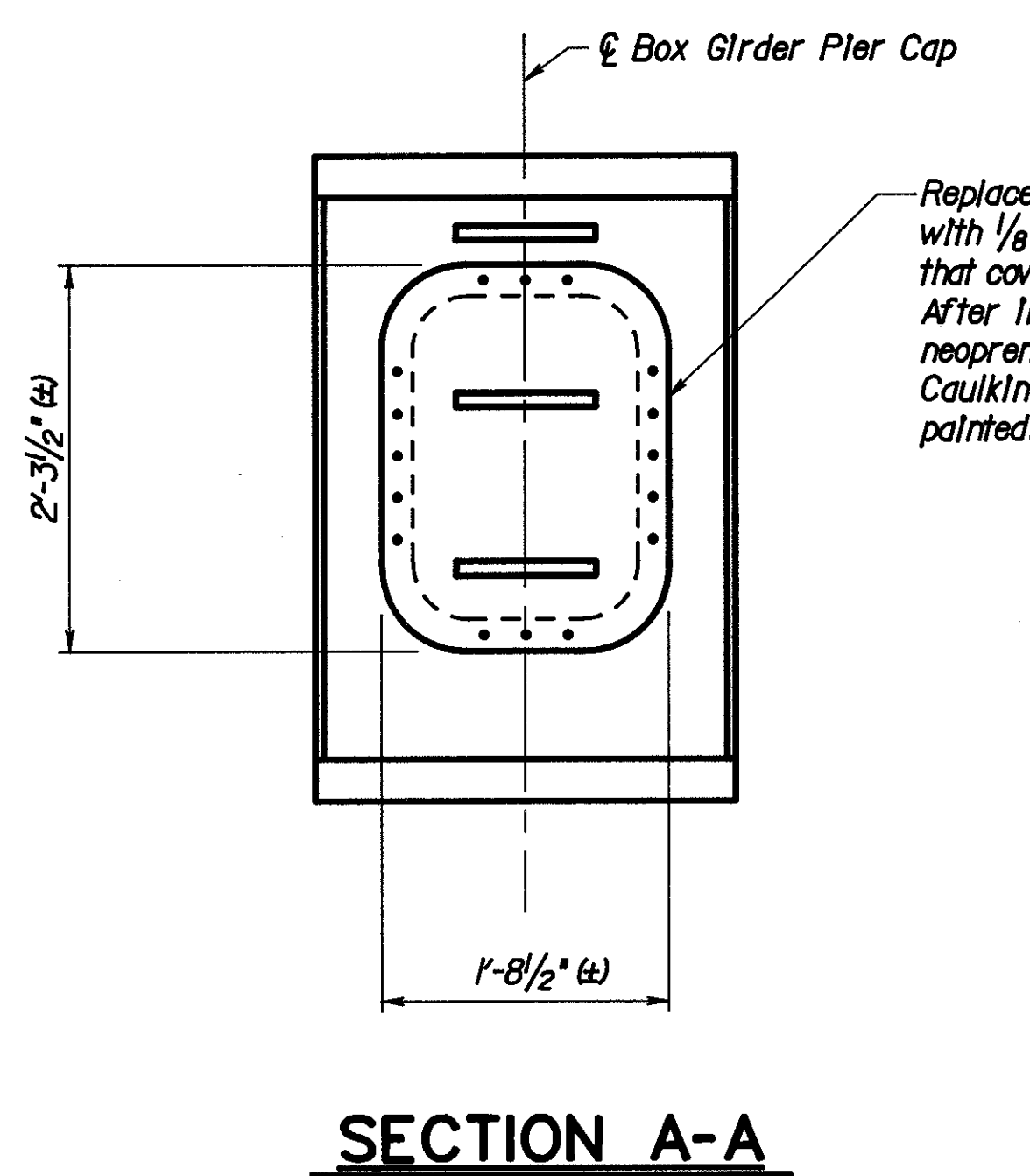


EXHIBIT 2 – REHABILITATION PLANS

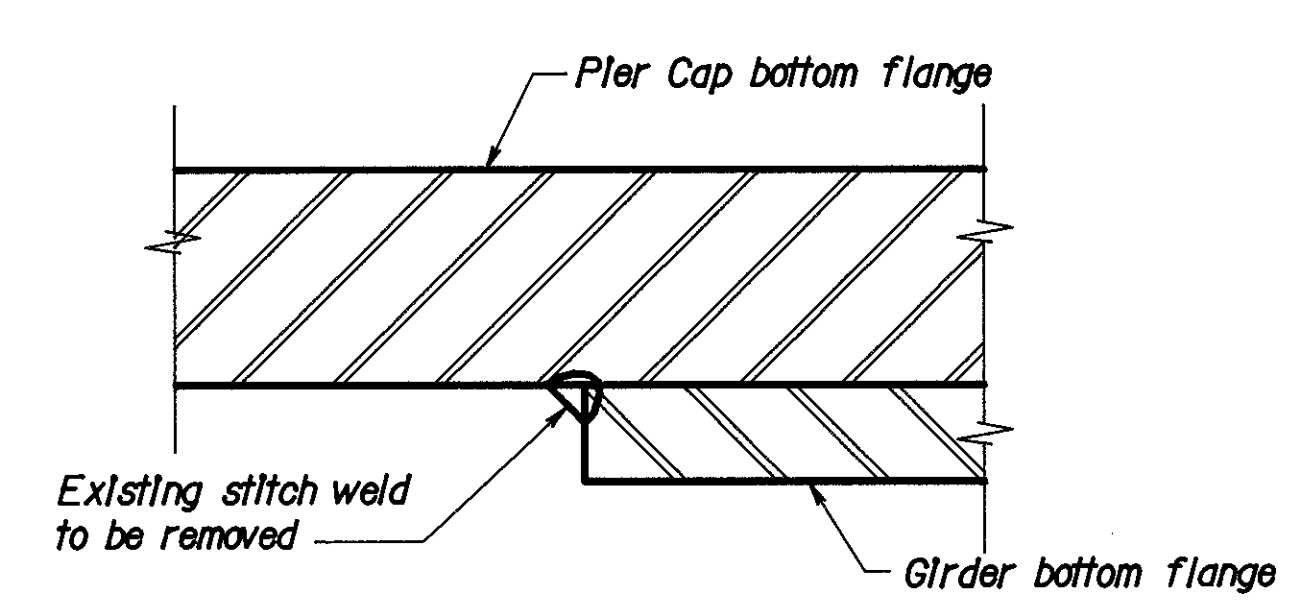
**HAMILTON COUNTY
HAM-75-9.75**



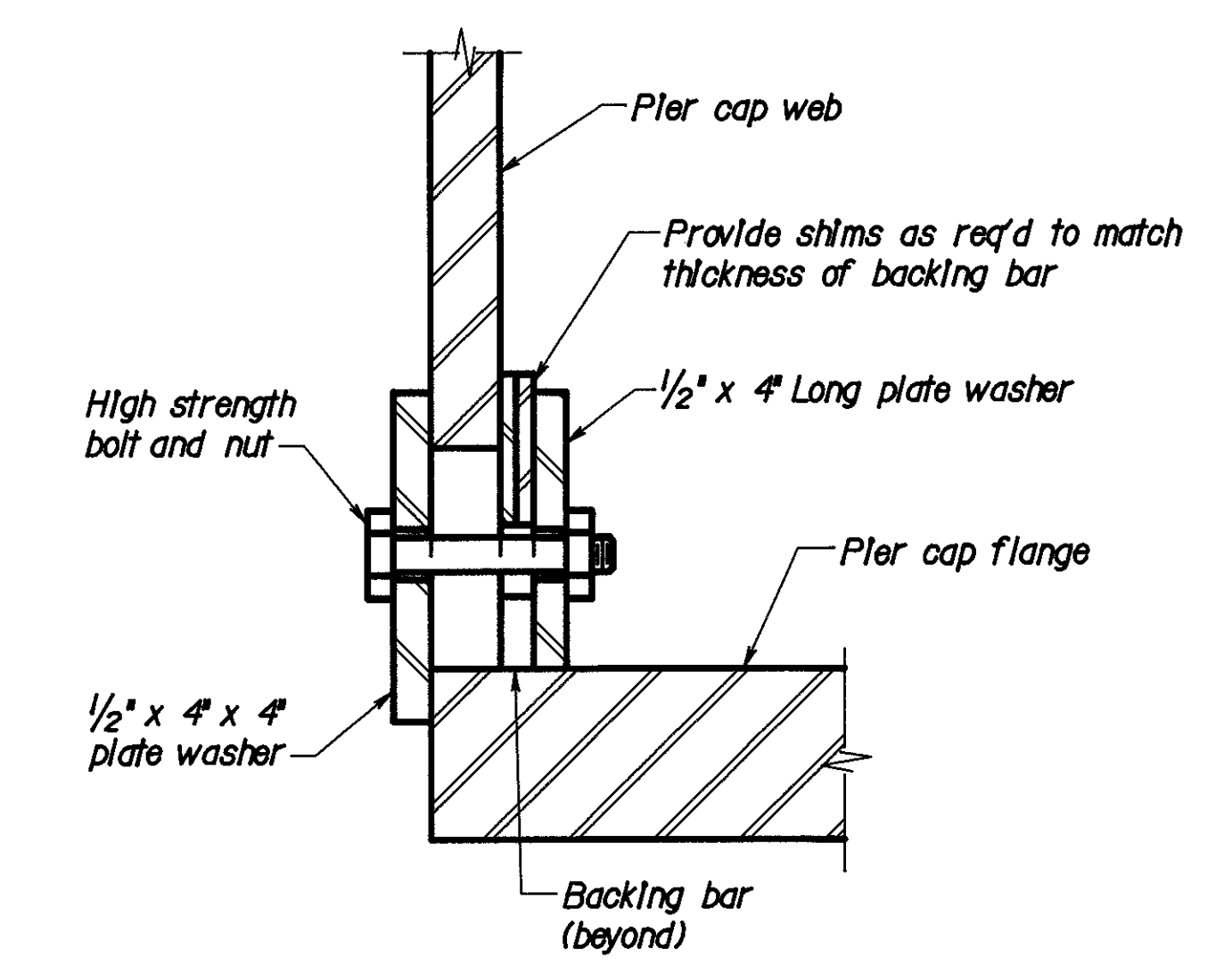
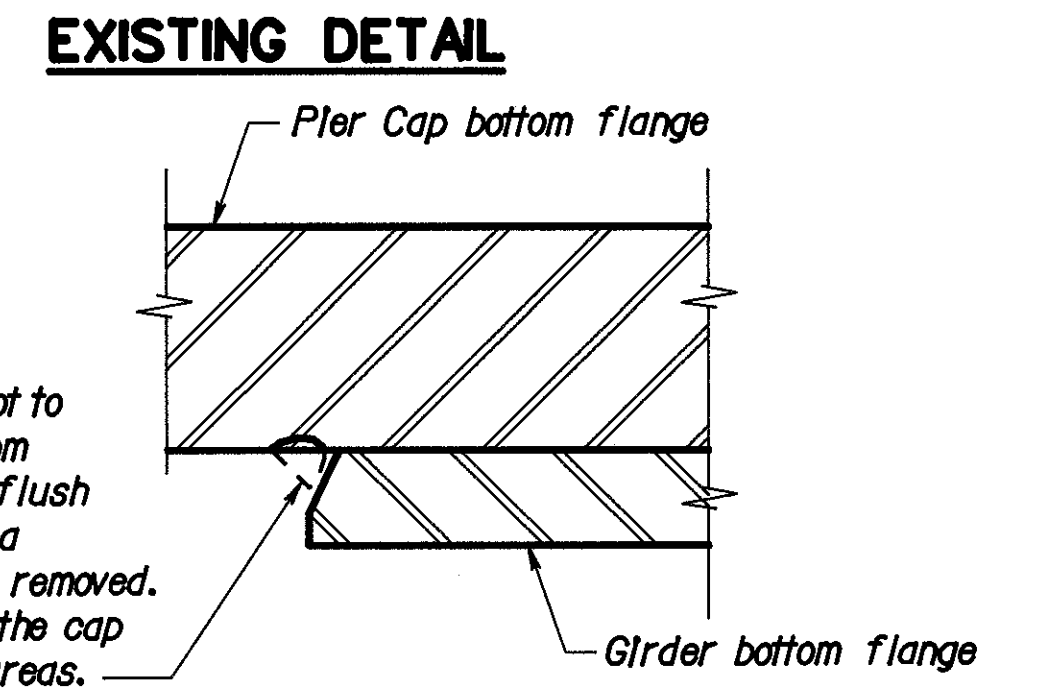
- PROCEDURE**
1. Drill 1/2" hole through web and backing bar.
 2. Remove crosshatched area by grinding. Final surfaces shall be smooth.
 3. Perform magnetic particle and/or dye penetrant tests of the remaining metal in the presence of the Engineer.



Replace existing asphalt-impregnated gasket with 1/8" thick neoprene closed cell sponge that covers the full face of the hatch cover. After installation of the hatch cover, apply neoprene caulking around access hatch cover. Caulking should be applied to bare steel and painted.



Chip away existing welds being careful not to gouge or remove any of the pier cap bottom flange. Grind away girder bottom flange flush with cap bottom flange until all fused area between cap and girder bottom flange is removed. Grind flush any weld material present on the cap bottom flange. Clean and paint repaired areas.



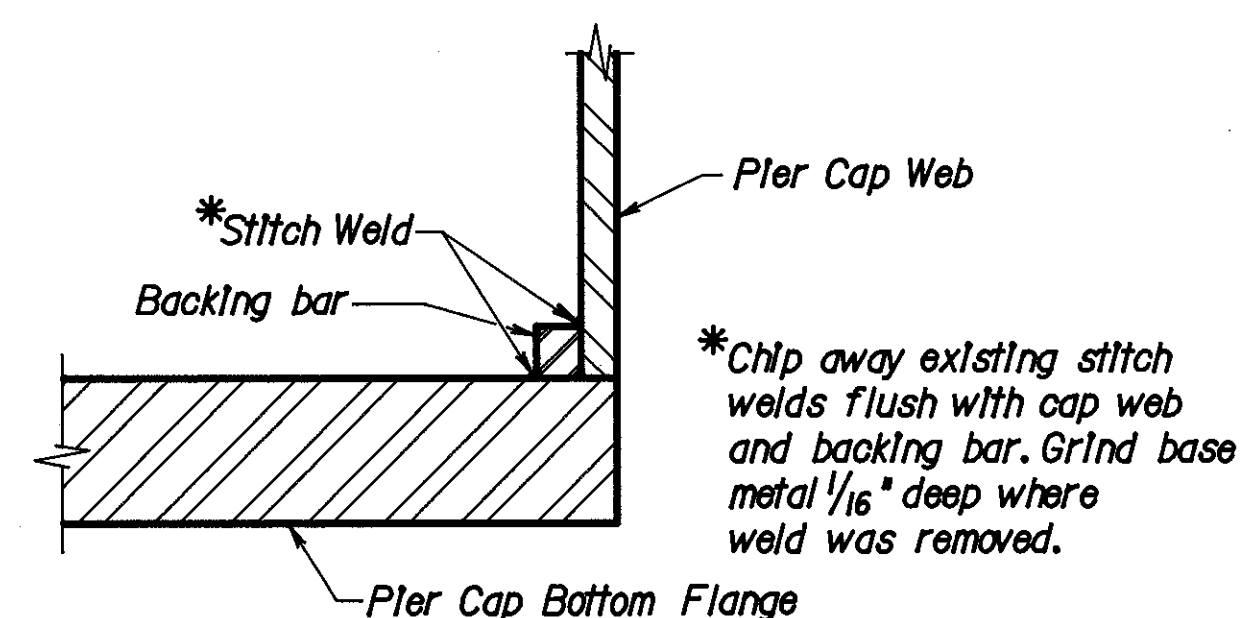
- NOTES**
1. Remove all debris, bird droppings, and nesting material from top of pier caps and bottom flange of girders.
 2. Grind scratches from collision damage on bottom flange of girders in vicinity of pier caps.
 3. Remove soil and debris from inside of cap at pier No. 4. Open hatches to allow moisture to evaporate.
 4. For Sections D-D, E-E and G-G, see sheet 28/105

LOCKWOOD, JONES & BEALS CONSULTING ENGINEERS DAYTON, OHIO				27/105
STEEL PIER CAP REPAIR DETAILS AT PIERS 3 & 4				
BRIDGE NO. HAM-75-1102R NORTHBOUND I-75 OVER WEST FORK OF MILL CREEK & GALBRAITH RD.				
DESIGNED	CHECKED	DRAWN	CHECKED	REVIEWED DATE
B&N	B&N	MJZ	DFS	HDJ 12/92
				REVISED

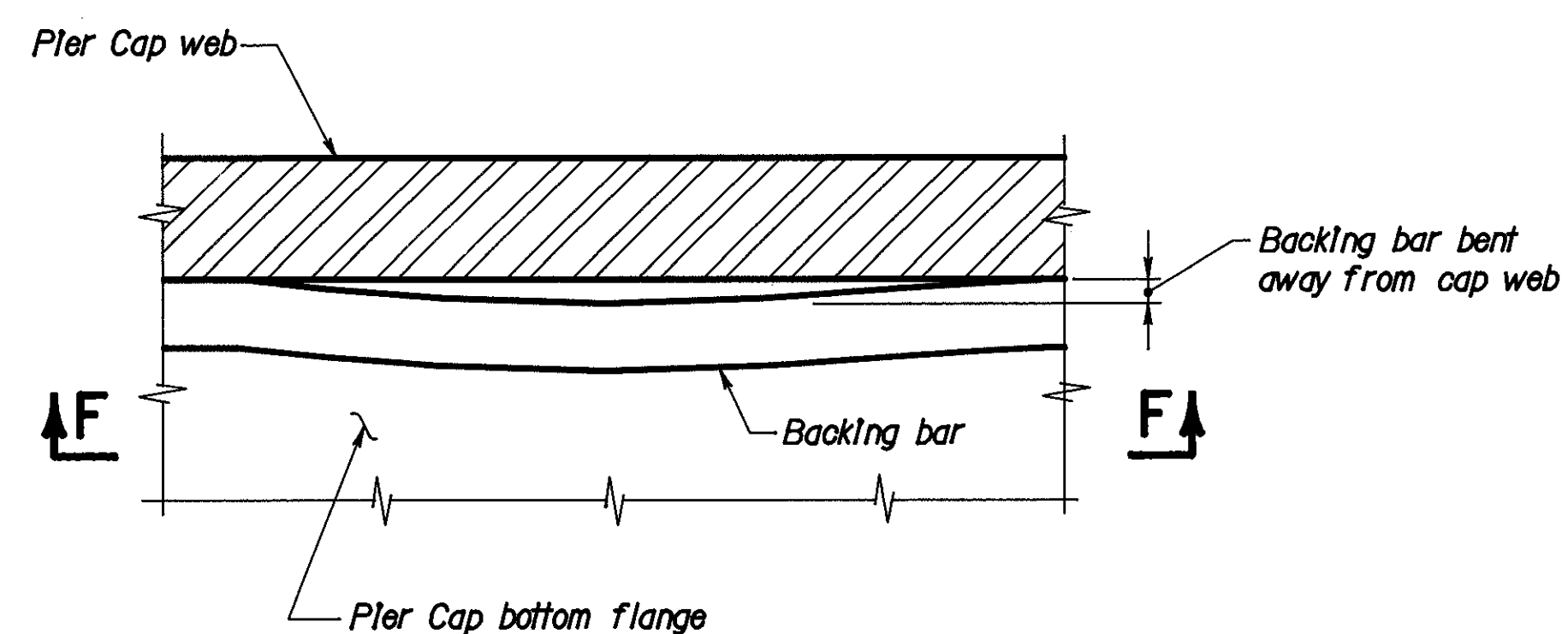
F.H.W.A. REGION	STATE	PROJECT
5	OHIO	

261
338

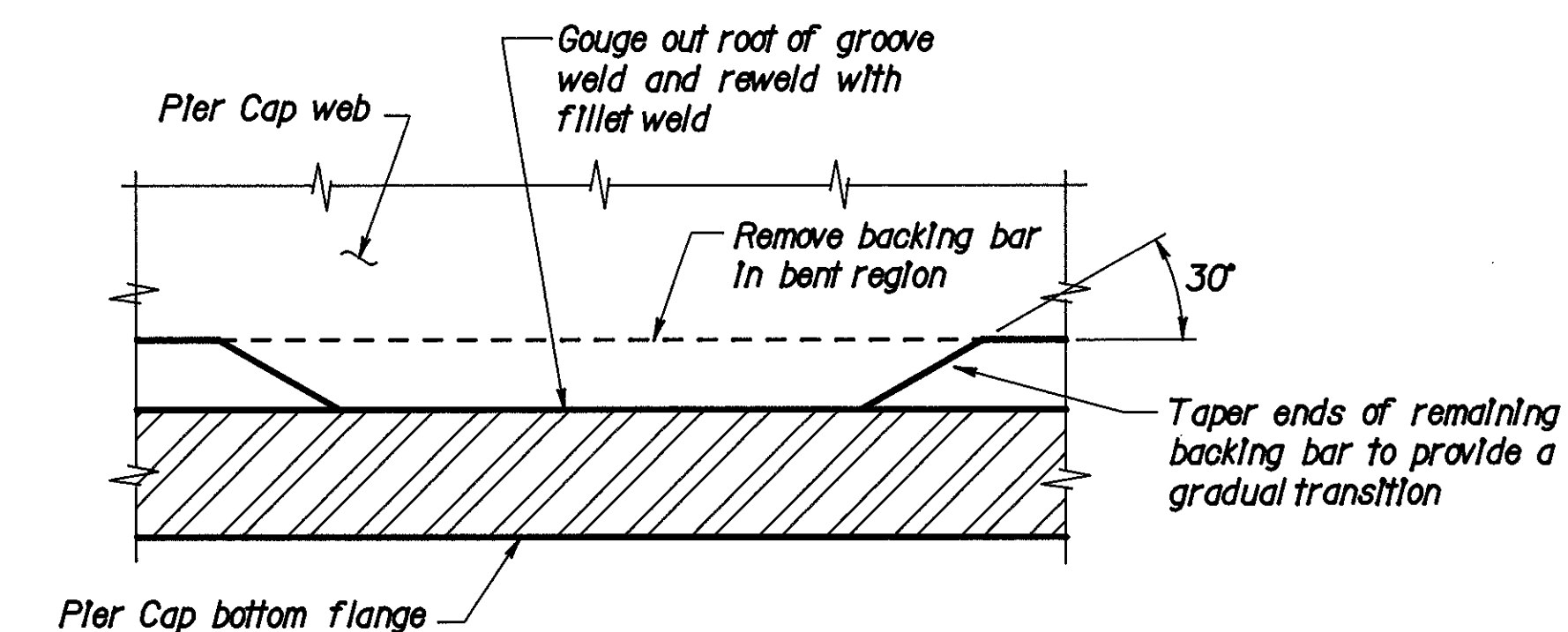
HAMILTON COUNTY
HAM-75-9.75



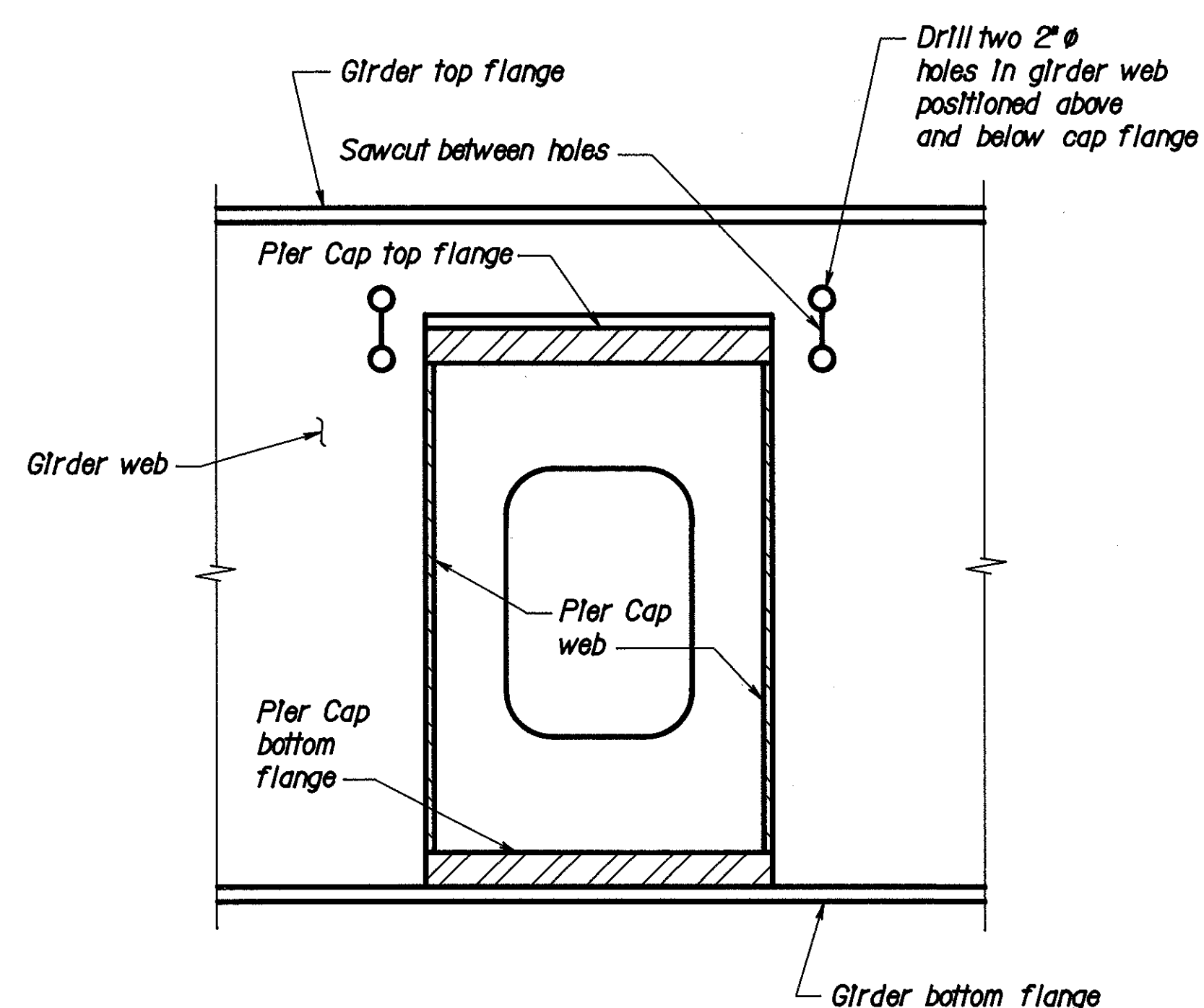
SECTION D-D



**EXISTING DETAIL
SECTION E-E**



**RETROFIT DETAIL
SECTION F-F**



SECTION G-G
TYPICAL AT ALL GIRDER TO
PIER CAP CONNECTIONS

LOCKWOOD, JONES & BEALS
CONSULTING ENGINEERS
DAYTON, OHIO 28/105

**STEEL PIER CAP REPAIR
DETAILS AT PIERS 3 & 4**

BRIDGE NO. HAM-75-1102R
NORTHBOUND I-75 OVER WEST FORK
OF MILL CREEK & GALBRAITH RD.

DESIGNED	CHECKED	DRAWN	CHECKED	REVIEWED DATE	REVISED
B&N	B&N	MJZ	DFS	HDJ 12/92	