

NSTM Member Inspection Report

Submitted to:



Ohio Department of Transportation, District 8
505 S. State Route 741
Lebanon, Ohio 45036

HAM-562-0147

2025 NSTM Member Inspection Report (VAR-District 8 Bridge Inspections for Steel Pier Caps)

SFN: 3113914, PID: 109781



October 19, 2025
Reviewed by: Dan Kent, PE



October 19, 2025
Inspected by: Vince Traini, PE

Submitted by:



October 2025

TABLE OF CONTENTS

I.	INTRODUCTION	1
	A. Bridge Description	1
	B. Inspection and Access Methods	3
	C. Inspection Team.....	3
	D. Condition Rating	4
II.	PIER CAP 4	6
	A. Pier Cap 4 Interior.....	6
	B. Pier Cap 4 Exterior	9
	C. Pier Cap 4 Fatigue Prone Details.....	11
III.	PIER CAP 5	13
	A. Pier Cap 5 Interior.....	13
	B. Pier Cap 5 Exterior	16
	C. Pier Cap 5 Fatigue Prone Details.....	18
IV.	PIER CAP 6	20
	A. Pier Cap 6 Interior.....	20
	B. Pier Cap 6 Exterior	23
	C. Pier Cap 6 Fatigue Prone Details.....	25
V.	PIER CAP 7	27
	A. Pier Cap 7 Interior.....	27
	B. Pier Cap 7 Exterior	29
	C. Pier Cap 7 Fatigue Prone Details.....	31
VI.	PIER CAP 8	33
	A. Pier Cap 8 Interior.....	33
	B. Pier Cap 8 Exterior	36
	C. Pier Cap 8 Fatigue Prone Details.....	38
VII.	PIER CAP 9	40
	A. Pier Cap 9 Interior.....	40
	B. Pier Cap 9 Exterior	43
	C. Pier Cap 9 Fatigue Prone Details.....	44
VIII.	BEARING DEVICES	46
IX.	CONCLUSIONS AND RECOMMENDATIONS	48
	A. Pier Cap 4 Recommendations.....	48
	B. Pier Cap 5 Recommendations.....	48
	C. Pier Cap 6 Recommendations.....	49
	D. Pier Cap 7 Recommendations.....	49
	E. Pier Cap 8 Recommendations.....	49
	F. Pier Cap 9 Recommendations.....	49
X.	APPENDIX A – EXISTING PIER PLANS	
XI.	APPENDIX B – REHABILITATION PLANS	

INTRODUCTION

Bridge Description

The HAM-562-0147 Bridge is a 13-span welded steel plate girder structure with a reinforced concrete deck that carries State Route 562 over Ross Avenue and two (2) Indiana & Ohio Railroad lines (Figure 1). The bridge consists of a left superstructure that carries the westbound lanes, and a right superstructure that carries the eastbound lanes. The overall length of the bridge is 1,400' with clear roadway widths of 36'-0" in each direction. The bridge is on a horizontal and vertical curve with the eastbound and westbound lanes separated by an open joint and concrete median barrier.

The structure has six (6) NSTM pier caps which are located at Piers 4, 5, 6, 7, 8, and 9 (Figure 2). At Pier 4, only the eastbound superstructure is supported while the remaining caps dually support both superstructures. All the pier caps are welded steel plate box girders that support a varying number of welded steel plate girders. Pier Caps 4, 5, 6, 7, and 9 are simply supported with cantilevers over the left pier columns. Pier Cap 8 is a two-span continuous unit. The nomenclature and girder descriptions shown on the design plans were used during the inspection.

The bridge was rehabilitated in 1993 to address some fatigue-prone details. Girder tie plate connections to the pier caps were modified with stress relief holes or hole-and-sawcut retrofits in the pier cap web plates adjacent to filled weld intersections. Welded knee braces were removed from the pier cap web plates below every girder bottom flange tie plate. In the tension zones of the pier cap webs, the ends of the longitudinal stiffeners were clipped and tapered. The ends of the longitudinal stiffener welds were ground flush with the pier cap webs, and stress relief holes were drilled through the web plates near the ends of the stiffeners.

The bridge was again rehabilitated in 2015 to clean and spot paint areas exhibiting corrosion, retrofit the deck drainage system, remove extraneous welds, and regrade the embankments.

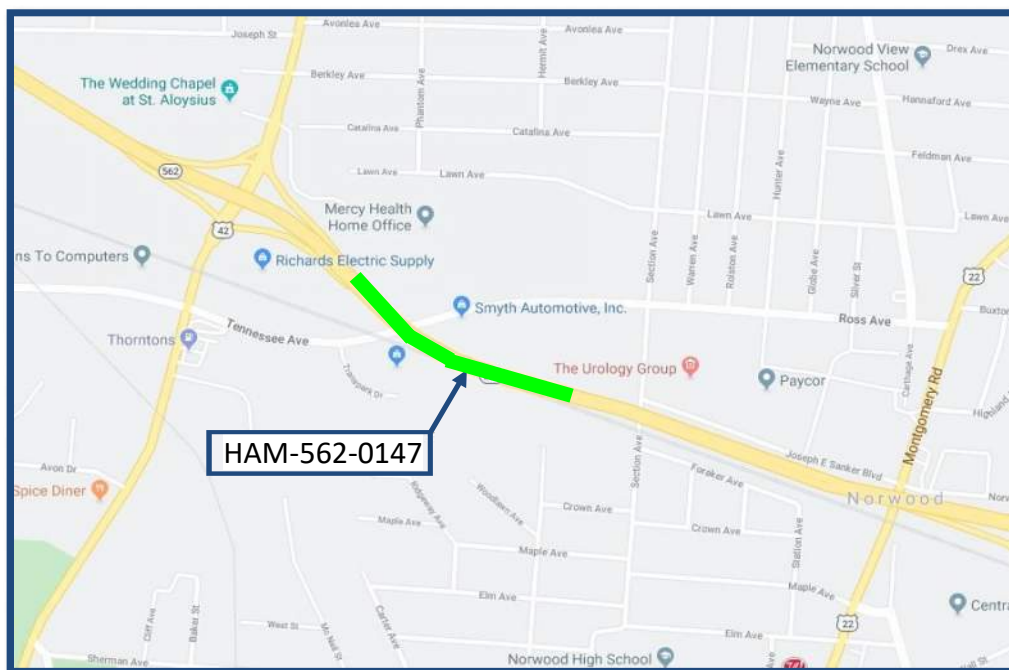


Figure 1: Bridge Location Map



Figure 2: Fracture Critical Pier Cap Locations

Inspection and Access Methods

Between August 20, 2025, and August 22, 2025, Gannett Fleming performed an in-depth inspection of the NSTM steel pier caps. The pier cap hatch covers were removed for the entry and replaced with an impact wrench and resealed with exterior grade silicone caulk after the inspections. Various socket sizes from ½" to 24mm were required to remove the hatch bolts.

An 80-foot aerial man-lift was utilized to access the interior and exterior of each pier cap. A railroad flagger coordinated train traffic on the Indiana & Ohio Railway Company tracks in the work zone to safely allow access to perform the inspections.

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 lift bucket and when implementing bridge climbing techniques.

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. Magnetic particle testing was performed at crack locations to verify crack propagation if necessary. 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.

Inspection Team

The following individuals were part of the inspection team:

- | | |
|--------------------------|-------------|
| • Vince Traini, PE, CBI | Team Leader |
| • Chris DiMarco, PE, CBI | Inspector |

Condition Rating

Summary Items (NBIS)	Condition	Defects
9	Excellent	Excellent Condition.
8	Very Good	No problems noted.
7	Good	Some minor problems.
6	Satisfactory	Structural elements show some minor deterioration.
5	Fair	All primary structural elements are sound but may have minor section loss, cracking, spalling, or scour.
4	Poor	Advanced section loss, deterioration, spalling, or scour.
3	Serious	Loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present.
2	Critical	Advanced deterioration of primary structural elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	"Imminent" Failure	Major deterioration or section loss present in critical structural components or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic, but corrective action may put it back in light service.
0	Failed	Out of service-beyond corrective action

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

1. Manual of Bridge Inspection, Ohio Department of Transportation (ODOT), 2025.
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. National Bridge Inspection Standards, U.S. Department of Transportation, 2004.

AASHTO National Bridge Element Quantities:

NATIONAL BRIDGE ELEMENTS RECORDING SHEET ¹									
Element	Def.	Env	Element/Defect Description	Total Qty	Units	Condition State Quantity			
						CS1	CS2	CS3	CS4
Superstructure									
PIER 4									
231		3	Steel Pier Cap	72	FT	36	36		
PIER 5									
231		3	Steel Pier Cap	93	FT	47	46		
PIER 6									
231		3	Steel Pier Cap	87	FT	44	43		
PIER 7									
231		3	Steel Pier Cap	91	FT	46	45		
PIER 8									
231		3	Steel Pier Cap	109	FT	54	55		
PIER 9									
231		3	Steel Pier Cap	79	FT	39	40		
515		3	Steel Protective Coating ²	212,603	SQ FT	162,181	37,800	12,622	
Substructure									
PIER 4									
205		3	Reinforced Concrete Column	2	EA	1	1		
PIER 5									
205		3	Reinforced Concrete Column	2	EA		2		
PIER 6									
205		3	Reinforced Concrete Column	2	EA	1	1		
PIER 7									
205		3	Reinforced Concrete Column	2	EA	2			
PIER 8									
205		3	Reinforced Concrete Column	3	EA		3		
PIER 9									
205		3	Reinforced Concrete Column	2	EA	1	1		

¹ Includes only the defects for the portions of the elements that were inspected during the NSTM inspection.

² Protective Coating system total quantity is for the six NSTM Pier Caps. Protective coating defects are included in the overall condition state quantities

PIER CAP 4

Pier Cap 4 is in Good condition [7] (Photo 1). As part of a 1993 rehabilitation project, retrofits were installed in the webs for the pier cap that consist of drilled holes above and below each girder's bottom flange ends at the webs and are connected with three sawcuts. The welded knee braces were removed from the pier cap web plates below every girder bottom flange tie plate. To remove all welds, the surfaces were ground smooth. In the tension zones of the pier cap webs, the ends of the longitudinal stiffeners were clipped and tapered. The ends of the longitudinal stiffener welds were ground flush with the pier cap webs and stress relief holes were drilled through the web plates near the ends of the stiffeners. As part of the 2015 rehabilitation, welds between the interior backer bars and top flange or web plates were removed. Blasting and painting was performed along the interior and exterior based upon limits noted in the rehabilitation plans. Drilled holes and sawcut locations were also cleaned, resealed, and had expansion plugs installed in the holes.

Pier Cap 4 Interior

Signs of ponding water and active corrosion with bubbling paint were noted on the bottom flange on the south faces of the stiffener below Girders 1 through 4, 9A, and 10 (Photo 2). Moderate painted over pitting is typical throughout the bottom flange, webs, and stiffeners. The pitting on the lower portion of the web plates between the north end plates and Girder 9 was measured up to 1/16" deep. This pitting increases to 1/8" near the north access hatch. Pitting up to 1/16" was also noted across the top flange between the north end plate and Girder 9A. The corrosion is re-initiating due to leakage through the retrofit holes (Photo 3). Girder 9 on the east web has a 1/8" gap between the web and top flange backer bar.

Overall, the paint is in good condition. On the south face of Girder 10 on the east web plate, there is active corrosion and bubbling paint due to water leaking through the web retrofit (Photo

4). There is a section of paint loss on the south face of the Girder 10 diaphragm (Photo 5). There is also an area of failing, bubbling paint on the east web plate between Girders 8 and 9 due to inadequately cleaned surfaces during repainting (Photo 6). Several isolated areas of peeling paint were also noted.

Throughout the interior of the pier cap, welds along the backer bars are still present between both flange plates and web plates (Photo 7). As part of the 1993 rehabilitation project, the longitudinal stiffeners were cut and removed from the tension zones of the web plates. Stress relief holes were drilled through the web plates at the removal locations near the longitudinal stiffener terminations and plugged. At several locations, sections of the unremoved longitudinal stiffener plates remain on the web plates adjacent to the stress relief holes. Between Girders 7 and 8 the removal of the intersections of the longitudinal and transverse stiffener welds was ineffective, some locations missing plugs (Photo 8).

During the 2015 rehabilitation, a 1/4" long crack was removed from the west web at the transverse stiffener on the south side of Girder 10. The crack originated at an intersection of the fillet welds connecting the longitudinal and transverse stiffeners to the west web. The stiffener was clipped, both the weld intersection and the crack were ground from the web plate, and a 1-1/2" diameter crack arrest hole was drilled (Photo 9).



Photo 1: Elevation of Pier Cap 4



Photo 2: Signs of water with active corrosion and bubbling paint on the south side of Girder 9A



Photo 5: Peeling paint and active corrosion resulting from leakage through the retrofit on the south side of Girder 10



Photo 3: Painted over pitting on web plate on the south side of Girder 6



Photo 6: Inadequate surface preparation leading to bubbling paint on web plate between Girders 8 and 9



Photo 4: Paint loss on the south face of the Girder 10 diaphragm



Photo 7: 5" fillet weld along backer bar between the top flange and east web plate between Girders 9 and 9A



Photo 8: Typical incomplete longitudinal stiffener removal between Girders 7 and 8



Photo 9: Crack arrest retrofit on the west web, south of Girder 10

Pier Cap 4 Exterior

The paint system of the pier cap exterior is in good condition with minor freckling corrosion along the webs and flanges throughout the pier cap and fading paint on the portion of the cap outside the deck (Photo 10).

There is a 3/4" tack weld on the west web plate adjacent to the south side of Girder 6 (Photo 11). There are five 1" long tack welds on the west web on the south side of Girder 9 (Photo 12). There is a similar condition with four 1" long tack welds on the west web on the south side of Girder 10.

As part of the 1993 rehabilitation, the stress relief hole and sawcut retrofits were performed at Girders 7 through 10 only. Thin cracks have begun to form in the epoxy sealant that also exhibit are showing rust staining (Photo 13). There are also some areas that are missing the epoxy sealer on the east web plate at Girders 7 and 9 (Photo 14). There are also missing retrofit hole expansion plugs on the west web at Girder 10 and between Girders 7 and 8 (Photo 15). These issues are likely the cause of the corrosion issues on the interior of pier cap.

The north access hatch is missing the neoprene gasket. Five out of the ten access bolts on the north access hatch cover plate were cross threaded and could not be re-installed. The open bolt holes were covered with caulk to prevent water intrusion into the cap. The south access hatch exhibited no deficiencies and was repainted and given a new neoprene gasket during the 2015 rehabilitation.

At the base of the north column, runoff has created an erosion hole below the abandoned railroad tracks and around the pier column (Photos 16-17).



Photo 10: Typical fading paint and surface corrosion at the south end of the pier cap



Photo 11: 3/4" tack weld on the west web at the south face of Girder 6



Photo 12: Five 1" tack welds on the west web at the south face of Girder 9



Photo 13: Thin cracks in epoxy with rust staining on east web retrofit at Girder 7



Photo 16: Erosion at the base of the north column



Photo 14: Missing epoxy on the east web retrofit at Girder 7



Photo 17: Erosion at the base of the north column



Photo 15: Missing expansion plug in the west web retrofit hole south of Girder 10

Pier Cap 4 Fatigue Prone Details

Fatigue Prone Detail 1

Fillet welds between diaphragms or transverse stiffeners and web plates.

Category: C

Location: All girder diaphragms and transverse web stiffeners

Fatigue Prone Detail 2

Full penetration groove weld of flange splice.

Category: B

Location: One bottom flange splice.

Fatigue Prone Detail 3

Tack weld less than 2" on the web plate.

Category: C

Location: One tack weld on the exterior of the west web on the south side of Girder 6; five tack welds on the exterior of the west web on the south side of Girder 9; four tack welds on the exterior of the west web on the south side of Girder 10 (10 total).

Fatigue Prone Detail 8

Intersection of fillet welds.

Category: E

Location: Fillet welds of web plates and longitudinal stiffeners intersect fillet welds of web plates and transverse stiffeners between Girders 7 and 8.

Fatigue Prone Detail 9

Drilled hole and sawcut stress relief retrofit in web plates.

Category: B

Location: Girders 7 through 10 bottom flange tie plate connections to web plates.

Fatigue Prone Detail 11

Fillet welds between longitudinal stiffeners and web plates.

Category: B

Location: Upper and lower longitudinal stiffeners on the interior of the web plates.

Fatigue Prone Detail 12

Drilled hole stress relief retrofit in web plates.

Category: D

Location: Both web plates above and below the bottom flange tie plate and on each side of the Girder 6 connection; both web plates at longitudinal stiffener terminations between the north bearing and Girder 8.

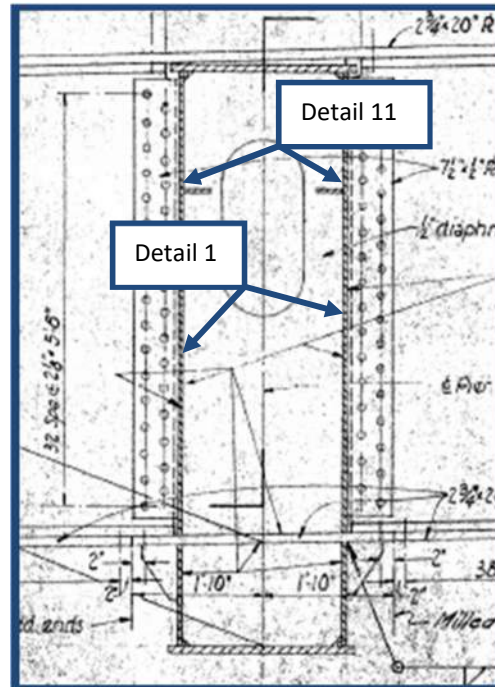


Figure 3: Section of Pier Cap 4

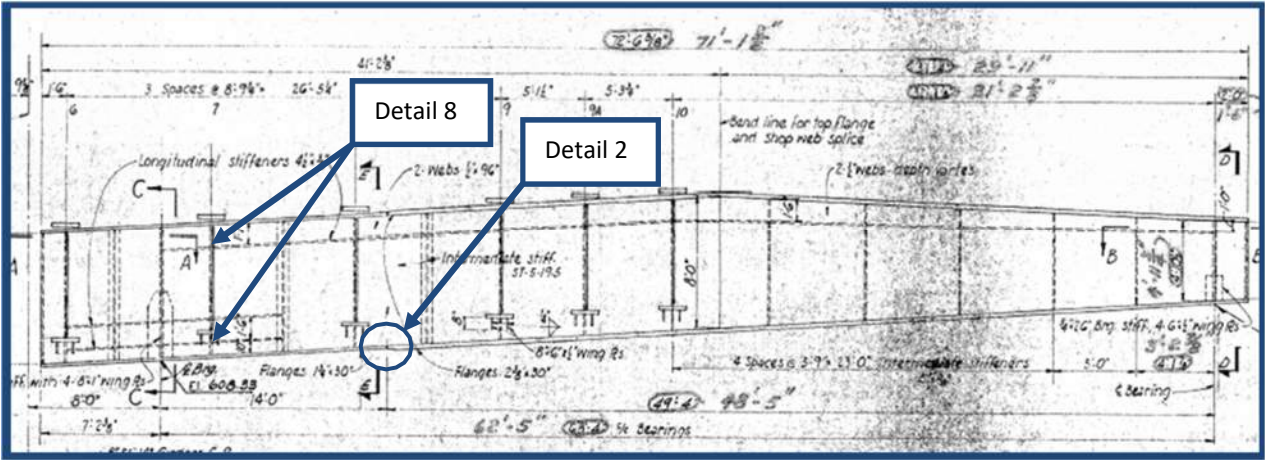


Figure 4: Elevation of Pier Cap 4

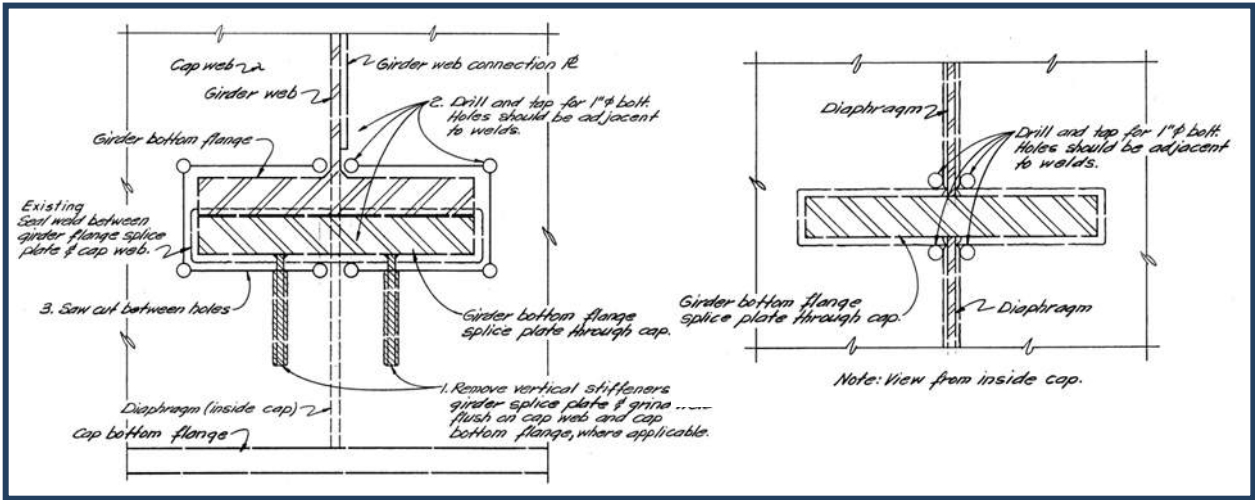


Figure 5: Web plate retrofit details from rehabilitation plans

PIER CAP 5

Pier Cap 5 is in Good condition [7] (Photo 18). As part of a 1993 rehabilitation project, retrofits were installed in the webs for the pier cap that consist of drilled holes above and below each girder's bottom flange ends at the webs and are connected with three sawcuts. The welded knee braces were removed from the pier cap web plates below every girder bottom flange tie plate. To remove all welds, the surfaces were ground smooth. In the tension zones of the pier cap webs, the ends of the longitudinal stiffeners were clipped and tapered. The ends of the longitudinal stiffener welds were ground flush with the pier cap webs and stress relief holes were drilled through the web plates near the ends of the stiffeners. As part of the 2015 rehabilitation, welds between the interior backer bars and top flange or web plates were removed. Blasting and painting was performed along the interior and exterior based upon limits noted in the rehabilitation plans. Drilled holes and sawcut locations were also cleaned, resealed, and had expansion plugs installed in the holes. During the 2025 bridge rehab holes were drilled errantly by the contractor within Pier 5 until it was discovered they were in the wrong pier cap. Reference Pier 6 for retrofit details.

Pier Cap 5 Interior

The interior of Pier Cap 5 has evidence of ponding water on the bottom flange, notably on the south sides of Girder 4 and Girder 5 (Photo 19). There is new paint on lower half of pier cap interior throughout. However, there is some corrosion visible on the bottom flange at the north end.

A previous inspection noted that a 1-1/8" long vertical crack at the bottom flange fillet weld between the west web and the Girder 6 diaphragm had been removed via a retrofit that increased the size of the cope in the diaphragm. No evidence of a new crack was noted during this inspection.

Fillet welds along the transverse web stiffeners typically exhibit rippling and varying widths with

no significant deficiencies. Throughout the cap, welds along the backer bars are still present between the top and bottom flanges and web plates at the following locations:

- 33" long fillet weld between the top flange and east web between Girders 1 and 2 (Photo 20).
- 66" long fillet weld between the top flange and east web between Girders 2 and 3.
- 1" long tack weld on east web between Girders 3 and 4.
- Misc. tack welds south of Girder 3 at top of east web.
- 13" long fillet weld between the top flange and the west web adjacent to the south side of Girder 4.
- 6" long fillet weld between the top flange and the west web between Girders 5 and 6.
- 6" long and 11-1/4" long fillet welds on the east web between Girders 5 and 6 (Photo 21).
- 5-1/2" fillet weld between the bottom flange and the east web between Girders 6 and 7.
- 3" long tack weld between the top flange and east web adjacent to the north face of Girder 7.
- Short tack welds between the south vertical face of the Girder 8 bottom flange and both web plates (Photo 22).
- 10-1/2" long fillet weld between the top flange and the east web between Girders 7 and 8 at the vertical web stiffener.
- 5-1/4" long fillet weld between the bottom flange and the east web between Girders 7 and 8 (Photo 23).
- Misc. weld material in top west corner of Girder 8 diaphragm.
- 6" long fillet weld between web and backer bar on east web, north of Girder 8.
- 14-1/2" long fillet weld between the top flange and the east web between Girders 9 and 10.
- 4" long fillet weld between the top flange and the west web between Girder 10 and the south bearing.

- 15" long fillet weld between top flange and east web at south bearing diaphragm.

Small gouges were also noted in the web plates. These gouges appear to have been caused during torch cutting the copes in the diaphragms or stiffeners:

- 1-1/2" long gouge in the east web near the top flange adjacent to the south face of Girder 2.
- 1" long gouge in west web near top flange adjacent to the north face of Girder 4.
- 1-1/2" long gouge in the east web near the top flange adjacent to the south face of Girder 7 (Photo 24).
- Multiple minor gouges in the east web between Girders 5 and 6, at the longitudinal stiffener retrofit locations.

There is a 1-1/2" long discontinuity in the fillet welds between the west web and the top of the longitudinal stiffener on the north side of the vertical stiffener between Girders 7 and 8 (Photo 25).

The drilled retrofit and grinding performed between Girders 6 and 7 as part of the 1993 rehabilitation project is ineffective due to the unremoved weld intersection between the longitudinal and vertical stiffener welds (Photo 26).

There are numerous missing and incorrectly installed expansion plugs in the drilled retrofit holes throughout the pier cap.

Retrofit at northwest corner of Girder 5 is bowing outward up to 3/8" and opposite bowing inward. Girder 6 has a similar bowing, but not as severe.



Photo 18: Elevation of Pier Cap 5



Photo 19: Evidence of ponding with corrosion on the bottom flange on the south side of Girder 5



Photo 20: 33" long fillet weld between the top flange and east web between Girders 1 and 2



Photo 21: 6" & 11-1/4" long fillet welds between the top flange and east web between Girders 5 and 6



Photo 24: 1-1/2" gouge in east web on the south side of Girder 7



Photo 22: Tack welds on webs on the south side of Girder 8 bottom flange



Photo 25: 1-1/2" discontinuity in weld between west web and a transverse stiffener between Girders 7 and 8



Photo 23: 5-1/4" fillet weld between the east web and bottom flange between Girders 7 and 8



Photo 26: Incomplete removal of longitudinal stiffener between Girder 6 and 7

Pier Cap 5 Exterior

The paint system of the pier cap exterior is in fair condition with corrosion staining and flaking paint on the east web and top flange between Girders 5 and 6 due to leakage through the longitudinal soffit joint (Photo 27). The locations of the cap outside the limits of the deck display fading paint and minor surface corrosion (Photo 28). Previously noted areas of painted over section loss in the web plates above the tie plate for Girders 1 and 5 are in good condition, however the section loss has reactivated at Girder 1 (Photo 29).

The south web hatch has one stripped bolt in the top left corner which has been caulked in place. The north access hatch is missing the middle bolt along the east edge, but the hole has been caulked over to ensure a proper seal.

As part of the 1993 rehabilitation project, the drill and sawcut retrofits were performed at Girder 3 and Girders 5 through 10 only. At several of these locations there are gouges in the web around sawcuts. On the west web at Girder 5, the north edge of the sawcut retrofit has deflected outward (west) from the cap web up to 3/8" (Photo 30). The same situation was also noted on the west web at Girder 6 which is deflected up to 1/4" outward (west) (Photo 31). Minor deflections were noted at other retrofit locations. No cracks were noted beyond the drilled holes or in the welds. Also, as part of the 1993 rehabilitation project, the removal of the girder knee braces resulted in over-grinding in the web plate (Photo 32). There are several missing expansion plugs for the drilled retrofit holes and scattered areas of missing epoxy sealant in the sawcut retrofits.

As part of the 2015 Rehabilitation project, the three downspout brackets along the east web below Girders 4 through 6 were retrofitted with bolted connections to the web plate.



Photo 27: Corrosion and rust staining on top flange and web between Girders 5 and 6.



Photo 28: Fading paint and surface corrosion on the top flange between Girder 10 and the south end of Pier Cap 5



Photo 29: Reactivating corrosion at previously painted over section loss on east web at Girder 1.



*Photo 30: Retrofit in west web deflected up to 3/8"
at Girder 5*



*Photo 31: Retrofit in west web deflected up to 1/4"
at Girder 6*



*Photo 32: Typical overgrinding on web plate during
girder knee brace removal (Girder 10 west web)*

Pier Cap 5 Fatigue Prone Details

Fatigue Prone Detail 1

Fillet welds between diaphragms or transverse stiffeners and web plates.

Category: C

Location: All girder diaphragms and transverse web stiffeners.

Fatigue Prone Detail 2

Full penetration groove weld of flange splice.

Category: B

Location: One bottom flange splice and one top flange splice.

Fatigue Prone Detail 3

Tack weld less than 2" on the web plate.

Category: C

Location: One tack weld on the interior of the east web plate between Girders 3 and 4.

Fatigue Prone Detail 5

Fillet weld greater than 4" or 12 times the connection thickness with a connection thickness less than 1.0" on the web plates.

Category: E

Location: 33" fillet weld between the ½" top flange backer bar and the east web between Girders 1 and 2; 66" fillet weld between the ½" top flange backer bar and the east web on the south side of Girder 2; 13" fillet weld between the ½" top flange backer bar and the west web at Girder 4.

Fatigue Prone Detail 8

Intersection of fillet welds.

Category E

Location: Fillet welds of web plates and longitudinal stiffeners intersect fillet welds of web plates and transverse stiffeners between Girders 6 and 7.

Fatigue Prone Detail 9

Drilled hole and sawcut stress relief retrofit in web plates.

Category: B

Location: Girders 5 through 10 bottom flange tie plate connections to both web plates, and Girder 3 bottom flange tie plate connection to both web plates.

Fatigue Prone Detail 11

Fillet welds between longitudinal stiffeners and web plates.

Category: B

Location: Upper and lower longitudinal stiffeners on the interior of the web plates.

Fatigue Prone Detail 12

Drilled hole stress relief retrofit in web plates.

Category: D

Location: Both web plates above and below the bottom flange tie plate and on each side of the pier cap connections of Girders 1, 2 and 4; both web plates at longitudinal stiffener terminations between Girders 5 and 7.

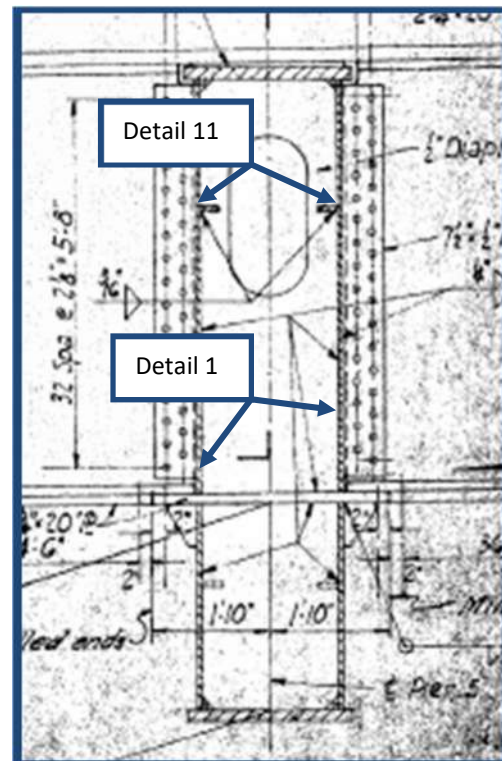


Figure 6: Section of Pier Cap 5

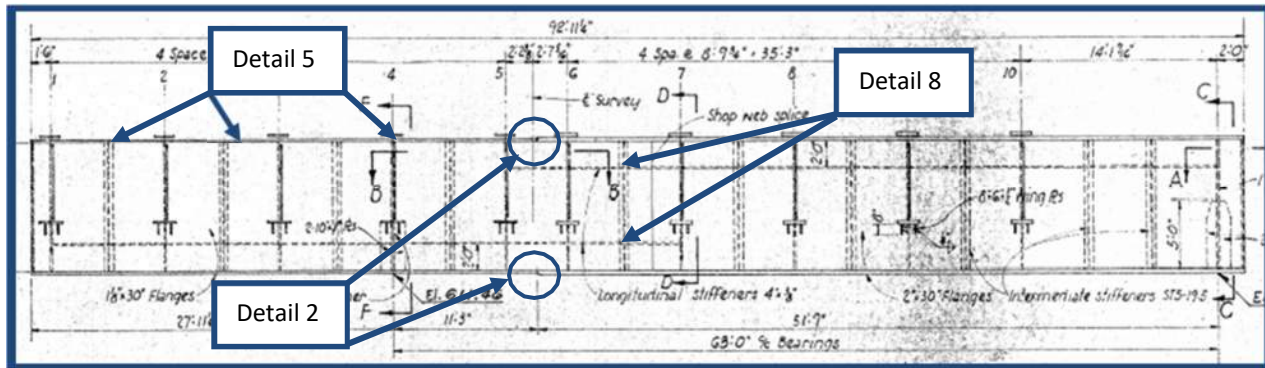


Figure 7: Elevation of Pier Cap 5

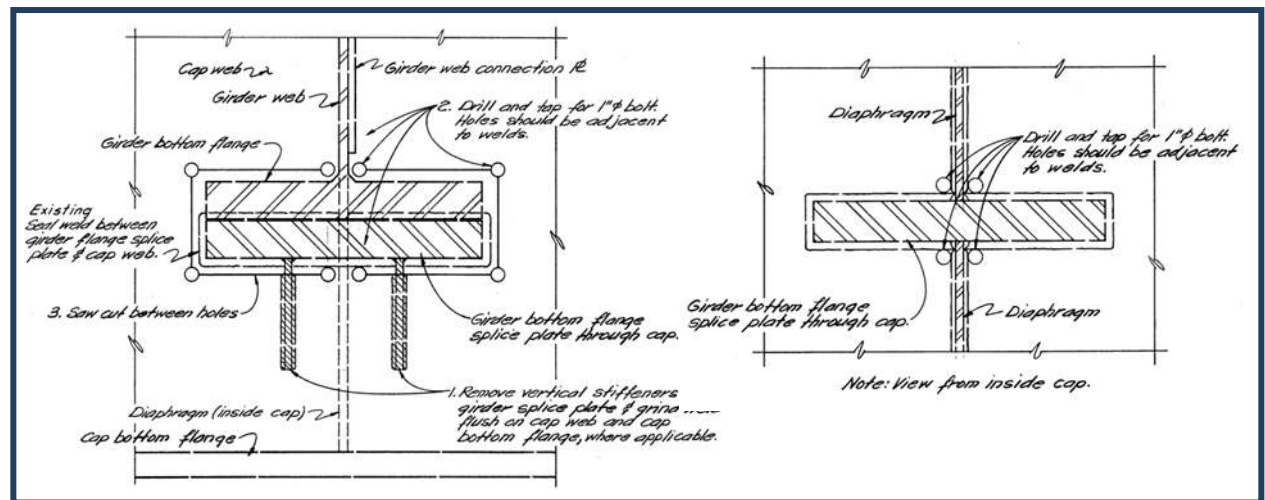


Figure 8: Web plate retrofit details from rehabilitation plans

PIER CAP 6

Pier Cap 6 is in Satisfactory condition [6] (Photo 33). As part of a 1993 rehabilitation project, retrofits were installed in the webs for the pier cap that consist of drilled holes above and below each girder's bottom flange ends at the webs and are connected with three sawcuts. The welded knee braces were removed from the pier cap web plates below every girder bottom flange tie plate. To remove all welds, the surfaces were ground smooth. In the tension zones of the pier cap webs, the ends of the longitudinal stiffeners were clipped and tapered. The ends of the longitudinal stiffener welds were ground flush with the pier cap webs and stress relief holes were drilled through the web plates near the ends of the stiffeners. As part of the 2015 rehabilitation, welds between the interior backer bars and top flange or web plates were removed. Blasting and painting was performed along the interior and exterior based upon limits noted in the rehabilitation plans. Drilled holes and sawcut locations were also cleaned, resealed, and had expansion plugs installed in the holes.

Pier Cap 6 Interior

The interior of the pier cap is in overall fair condition with scattered areas of peeling paint in the upper portions of the pier cap, particularly on the diaphragms.

The reported crack during the 2023 inspection was drilled out at Girder 6 and the weld was removed from the bottom of the crack to the top flange by sawcut. Similar repairs were made at the top of Girders 5, 6, and 7 (Photo 34). Holes were also drilled errantly by the contractor within Pier 5 until it was discovered they were in the wrong pier cap.

Ponding water was not observed during the 2025 inspection. Damp areas were observed between the north end of the cap and the north bearing diaphragm (Photo 35) and south of Girder 3. Evidence of ponding was noted on the upslope sides of remaining girder diaphragms. Surface corrosion of the bottom flange is present in these areas. Heavy corrosion and debris build up

was also noted on the bottom flange between the north end plate and Girder 1 (Photo 36). Measurements were unobtainable due to space constraints between the end plate and the tie plate for Girder 1.

As part of the 2015 Rehabilitation Project, an attempt to remove tack welds via grinding was implemented along the web plates and the backer bars. Numerous welds were noted between the backer bars and the top flange and web plates throughout the pier cap:

- Stitch welds between the north end plate and east web.
- 13" long fillet weld south of north bearing diaphragm between the top flange backer bar and east web.
- 10" long fillet weld south of Girder 2 along the top flange backer bar and east web (Photo 37).
- Multiple long fillet welds starting 18" north of the north bearing and ending 48" south of Girder 2 along the top flange backer bar and west web.
- 10" long fillet weld at the top of the east web on both sides of Girder 3.
- 1" long tack welds between Girders 4 and 5 along the top flange backer bar and top flange, adjacent to the west web. The process of installing a tack weld has created a shallow divot with a 1/8" diameter, in the top flange.



Photo 33: Elevation of Pier Cap 6

- Two 5" long fillet welds between Girders 5 and 6 along the top flange backer and the west web and the top flange backer bar and the top flange.
- 10" long between Girders 5 and 6 along the top flange backer bar and the east web that also intersects the vertical weld connecting two web plates together (Photo 38).
- 7-1/2" long fillet weld south of Girder 6 along the top flange backer bar and the west web.
- 12-1/2" long fillet weld south of Girder 7 along the top flange backer bar and the west web.
- 8" long fillet weld, top of east web, at the south edge of Girder 7.
- 14" long fillet weld south edge of Girder 10 along the top flange backer bar and the east web.

The 1993 drilled retrofit and grinding performed between the north bearing and Girder 3 is ineffective due to the unremoved weld intersection between the longitudinal and vertical stiffener welds. There are several locations where holes have developed in the epoxy sealant around the retrofit, allowing water to leak through the retrofit. This has led to surface corrosion and bubbling paint on the pier cap web plates and stiffeners at Girders 2, 5, 6, 7, and 10 (Photos 39-40).



Photo 34: Typical view of upper corner retrofit between the diaphragms and web at Girder 6



Photo 36: Area of laminating corrosion on bottom flange between Girder 1 and the north end of the cap



Photo 37: 10" fillet weld between the east web and top flange backer bar south of Girder 2



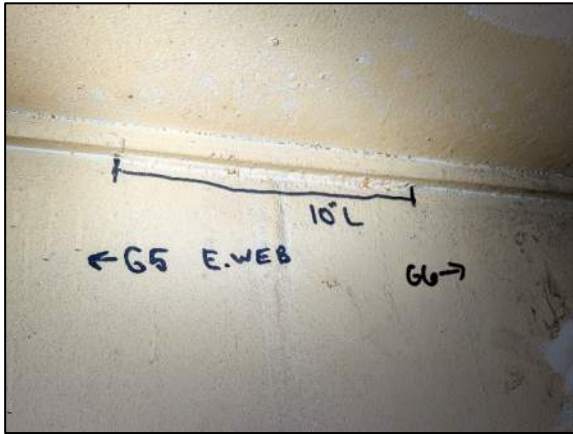


Photo 38: Fillet weld intersecting web butt weld on the top flange between Girders 5 and 6



Photo 39: Typical leakage, bubbling paint, and surface corrosion due to missing epoxy sealant at Girder 7 retrofit



Photo 40: Typical leakage, bubbling paint, and surface corrosion due to missing epoxy sealant at Girder 6 retrofit

Pier Cap 6 Exterior

The exterior of the pier cap is in overall good condition with minor freckling corrosion and areas of missing paint at the north and south ends of the cap outside of the deck limits (Photo 41). Overall, the paint is faded aside from areas that were spot painted below each girder. At an area of painted over section loss on the east web plate on the north side of Girder 6, corrosion is beginning to reactivate (Photo 42). At the south end, five of the ten bolts are missing from the access hatch, and the holes have been caulked over (Photo 43).

As part of the 1993 rehabilitation, drill holes and sawcut retrofits were performed at all girders. During the removal of the girder knee braces, over-grinding occurred in the web plate below all girders. The area of the deepest over-grind was noted below Girders 8 on the west web (Photo 44). There are several retrofit locations that are missing expansion plugs. The east web plate at the retrofit on the north side of Girder 5 is bowed inward (west) up to 1/8" (Photo 45). The west web plate at the retrofit on the south side of Girder 4 is bowed inward (east) up to 1/16". The east web plate at the retrofit on the north side of Girder 9 is bowed inward (west) up to 1/8".

There is a cracked tack weld on the north face of Girder 4 between the girder web and the pier cap west web connection plate (Photo 46). There is also one cracked tack weld and one poor quality tack weld on the north face of Girder 1 at the girder web and pier cap west web connection plate (Photo 47). Cracked tack weld on south face of Girder 2 between the girder web and pier cap west web connection plate.

As part of the 2015 rehabilitation project, the six downspout brackets along the east web below Girders 6 and the north end were retrofitted with bolted connections to the web plate.



Photo 41: Areas of missing paint and surface corrosion at the north end



Photo 42: Corrosion is beginning to reactivate at previously painted over section loss at Girder 6 and pier cap east web plate



Photo 43: Five missing bolts on south hatch



Photo 44: Heavy gouging on west web plate below Girder 8 from girder knee brace removal



Photo 47: one cracked tack weld and one poor quality tack weld on the north face of Girder 1 at the girder web and pier cap west web connection plate



Photo 45: East web retrofit at Girder 5 bowing inward approximately 1/8"



Photo 46: Cracked tack weld on the Girder 4 and pier cap west web plate connection

Pier Cap 6 Fatigue Prone Details

Fatigue Prone Detail 1

Fillet welds between diaphragms or transverse stiffeners and web plates.

Category: C

Location: All girder diaphragms and transverse web stiffeners.

Fatigue Prone Detail 2

Full penetration groove weld of flange splice.

Category: B

Location: Two bottom flange splices.

Fatigue Prone Detail 8

Intersection of fillet welds.

Category: E

Location: Fillet welds of the east web and longitudinal stiffeners intersect fillet welds of the web plate and diaphragms or transverse stiffener between the north bearing and the nearest transverse web stiffener.

Fatigue Prone Detail 9

Drilled hole and sawcut stress relief retrofit in web plates.

Category: B

Location: All girder bottom flange tie plate connections to the web plates.

Fatigue Prone Detail 11

Fillet welds between longitudinal stiffeners and web plates.

Category: B

Location: Upper and lower longitudinal stiffeners on the interior of the web plates.

Fatigue Prone Detail 12

Drilled hole stress relief retrofit in web plates.

Category: D

Location: Both web plates at longitudinal stiffener terminations between the north bearing and the nearest transverse web stiffener.

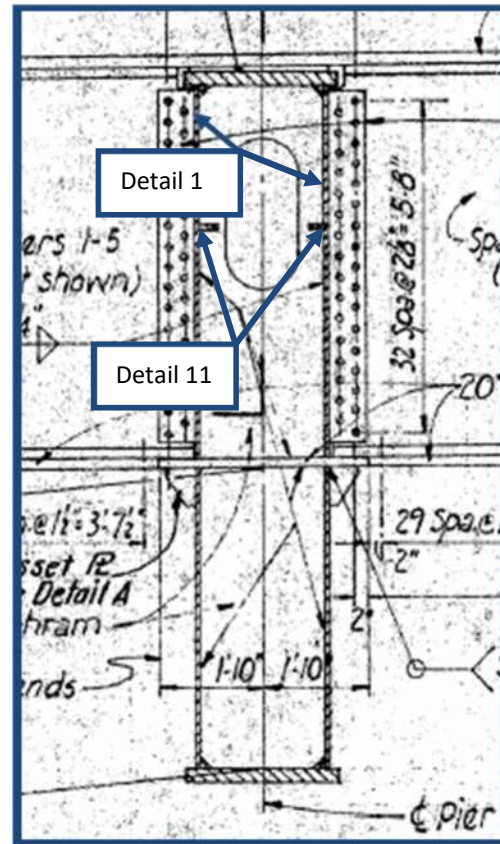


Figure 9: Section of Pier Cap 6

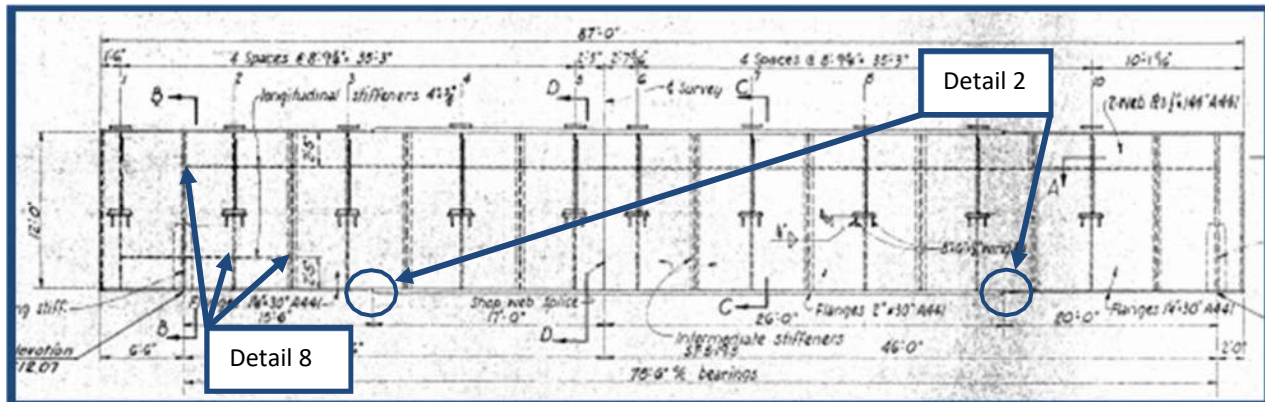


Figure 10: Elevation of Pier Cap 6

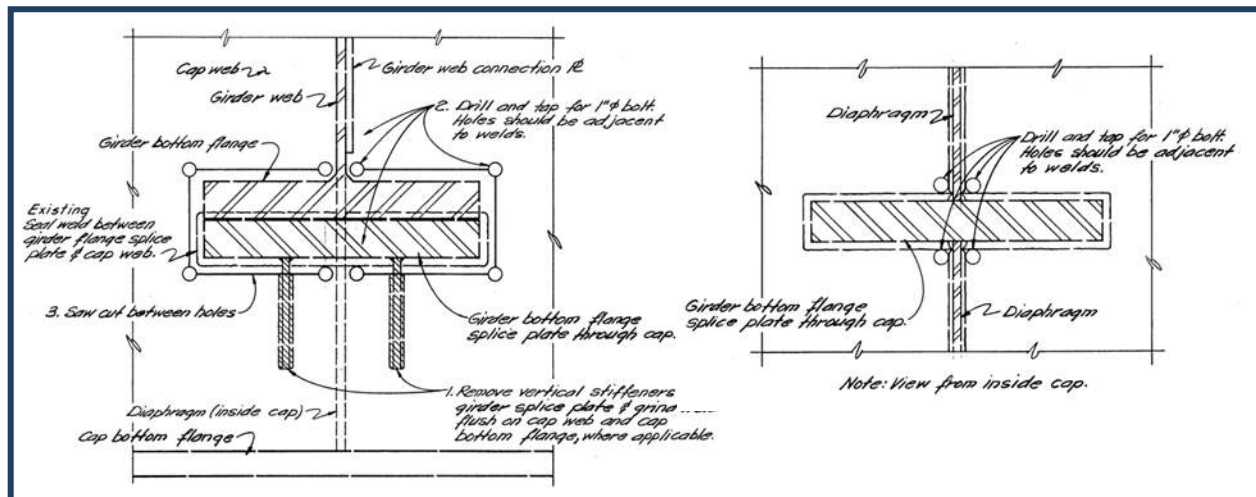


Figure 11: Web plate retrofit details from rehabilitation plans

PIER CAP 7

Pier Cap 7 is in Good condition [7] (Photo 48). As part of a 1993 rehabilitation project, retrofits were installed in the webs for the pier cap that consist of drilled holes above and below each girder's bottom flange ends at the webs and are connected with three sawcuts. The welded knee braces were removed from the pier cap web plates below every girder bottom flange tie plate. To remove all welds, the surfaces were ground smooth. In the tension zones of the pier cap webs, the ends of the longitudinal stiffeners were clipped and tapered. The ends of the longitudinal stiffener welds were ground flush with the pier cap webs and stress relief holes were drilled through the web plates near the ends of the stiffeners. As part of the 2015 rehabilitation, welds between the interior backer bars and top flange or web plates were removed. Blasting and painting was performed along the interior and exterior based upon limits noted in the rehabilitation plans. Drilled holes and sawcut locations were also cleaned, resealed, and had expansion plugs installed in the holes.

Pier Cap 7 Interior

The interior of the pier cap is in overall good condition. Painting was performed as part of the 2015 rehabilitation project throughout portions of the interior of the cap. The paint is in overall good condition with scattered areas of peeling paint and exposed primer in the portions that were not painted in 2015 (Photo 49) and some areas where surface corrosion is initiating at the repainted locations. Painted over pitting up to 1/16" deep exists along the bottom flange at both the north and south ends of the pier cap.

As part of the 1993 rehabilitation project, the ends of the longitudinal stiffeners were cut and removed from the tension zones of the web plates. At Girder 2, stress relief holes were drilled through the weld at the cut end of the longitudinal stiffener (Photo 50). At the upper stiffener retrofit hole, the expansion plugs are missing (Photo 51).

As part of the 2015 rehabilitation project, an attempt to remove tack welds via grinding was implemented along the web plates and the backer bars. Numerous welds were noted between the backer bars and the top flange and web plates throughout the pier cap:

- 5-1/2" long fillet weld between bottom flange backer bar and east web between south bearing diaphragm and south end plate (Photo 52).
- Multiple fillet welds between 4" to 6" long between Girders 1 and 2 at east web and top flange backer bar and the top flange backer bar and the top flange plate.
- Fillet welds between Girders 2 & 3, 3 & 4, 4 & 5, 5 & 6, 8 & 9, and 9 & 10 along the top flange backer bar and top flange and top flange backer bar and east web.
- 24" long fillet weld between Girders 7 and 8 along the west web and bottom flange backer bar and bottom flange backer bar and the bottom flange.
- Multiple 4 to 6" long fillet welds between Girders 7 and 8 along the east web and top flange backer bar and the top flange backer bar and the top flange plate.
- Four fillet welds between 4" to 6" long between south bearing diaphragm and south end plate along the top flange and top flange backer bar and the top flange backer bar and the east web.

A 1/4-inch-long discontinuity exists in the fillet weld of the west web and top weld along the transverse stiffener between Girders 7 and 8 (Photo 53). Isolated locations of overlapping passes and porosity in the welds were found in the transverse stiffeners throughout the pier cap.



Photo 48: Elevation of Pier Cap 7

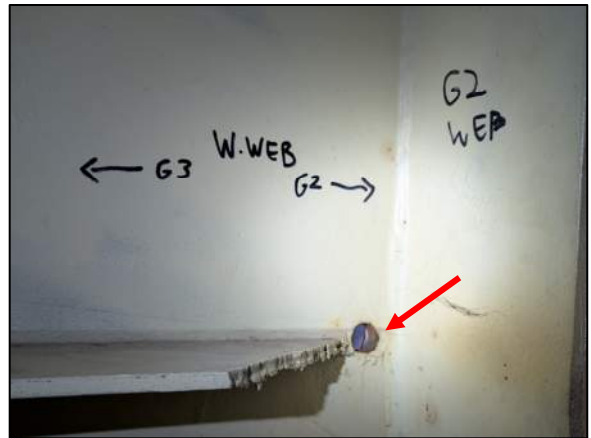


Photo 51: Missing expansion plug at the upper longitudinal stiffener retrofit at Girder 2



Photo 49: Typical scattered peeling paint throughout the interior of the pier cap



Photo 52: 5-1/2" long fillet weld at bottom flange between south bearing diaphragm and south end plate.



Photo 50: Typical longitudinal stiffener retrofit detail



Photo 53: 1-1/4" discontinuity in the transverse stiffener weld on west web between Girders 7 and 8

Pier Cap 7 Exterior

The exterior of the pier cap is in overall good condition with areas of peeling paint and surface corrosion noted throughout (Photo 54). Corrosion staining along the east and west webs between Girders 5 and 6 due to the leaking longitudinal joint in the soffit. The top flange exhibited peeling paint and surface corrosion in the same area (Photo 55). There is surface corrosion on the edges of the bottom flange with areas of bubbling and peeling paint (Photo 56).

Near the south end of the top flange, there are six tack welds ranging between 2" to 5" in length in random orientations. Adjacent to these welds there is a 3" wide by 5-1/2" long lifting plate welded to the top flange. The previously noted tack weld exhibiting a 1-inch-long crack in one of the top flange tack welds has broken off; the tack weld no longer exists. No evidence of cracking into the base metal was noted.

Below north access hatch, there is an 8" long steel rod and nut welded to the pier cap. This might have been used as a step for access into the pier cap during construction or during the rehabilitation projects (Photo 57).

As part of the 2015 rehabilitation project, drill hole and sawcut retrofits were installed at all girders. There are scattered minor offsets in the web plates at some of these retrofits. There are also scattered areas of missing epoxy sealant and holes in some of the expansion plugs at the retrofits (Photo 58).



Photo 54: Typical fading paint and surface corrosion at the south end



Photo 55: Layered corrosion on top flange and rust staining of the web plates due to leakage through the deck joint between Girders 5 and 6



Photo 56: Surface corrosion along bottom flange



Photo 57: 8" long steel rod and nut welded to the pier cap below north access hatch



Photo 58: Missing epoxy sealant east web retrofit on the south side of Girder 10

Pier Cap 7 Fatigue Prone Details

Fatigue Prone Detail 1

Fillet welds between diaphragms or transverse web stiffeners and web plates.

Category: C

Location: All girder diaphragms and transverse web stiffeners.

Fatigue Prone Detail 2

Full penetration groove weld of flange splice.

Category: B

Location: Two bottom flange splices.

Fatigue Prone Detail 3

Tack welds less than 2".

Category: C

Location: Tack welds along the bottom flange
backer bar and the east web at Girders 6 and 7,
between Girders 7 and 8, and between Girders 9
and 10 (ground, but not completely removed).

Fatigue Prone Detail 5

Fillet welds greater than 4" or 12 times the connection thickness with a connection thickness less than 1.0" on the web and flange plates.

Category: E

Location: Intermittent fillet welds 4" to 6" in length along the ½" east web backer bar and both the web and top flange plates between Girders 1 and 2; Intermittent fillet welds 4" to 6" in length along the ½" east web backer bar and both the web and bottom flange plates between Girder 10 and the south bearing; One 24" fillet weld along the ½" west web backer bar and bottom flange plate between Girders 7 and 8.

Fatigue Prone Detail 9

Drilled hole and sawcut stress relief retrofit in web plates.

Category: B

Location: All girder bottom flange tie plate connections to the web plates.

Fatigue Prone Detail 11

Fillet welds between longitudinal stiffeners and web plates.

Category: B

Location: Upper and lower longitudinal stiffeners on the interior of the web plates.

Fatigue Prone Detail 12

Drilled hole stress relief retrofit in web plates.

Category: D

Location: Both web plates at longitudinal stiffener terminations at Girder 2.

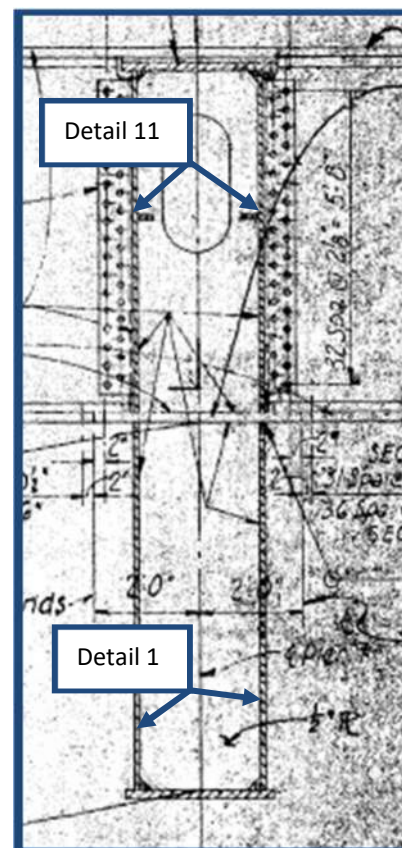


Figure 12: Section of Pier Cap 7

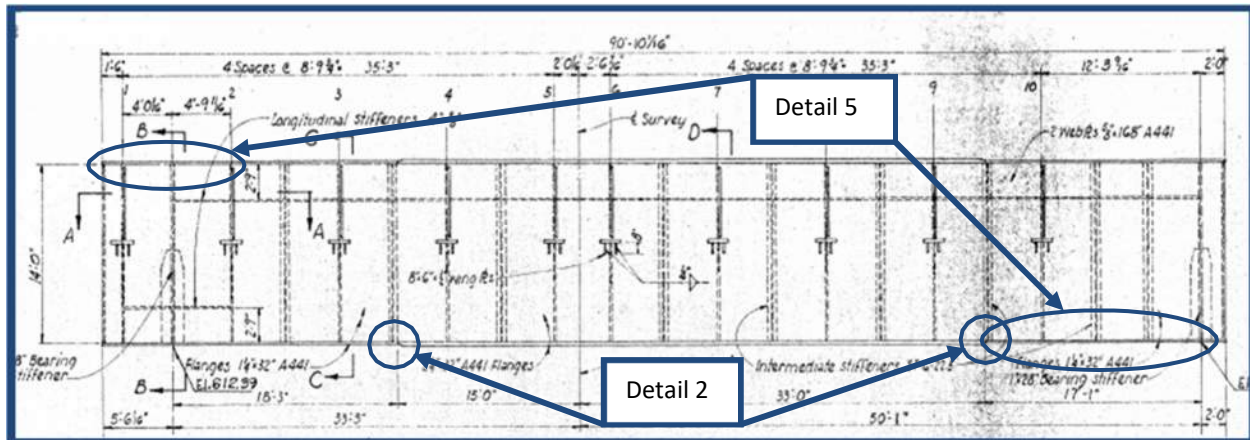


Figure 13: Elevation of Pier Cap 7

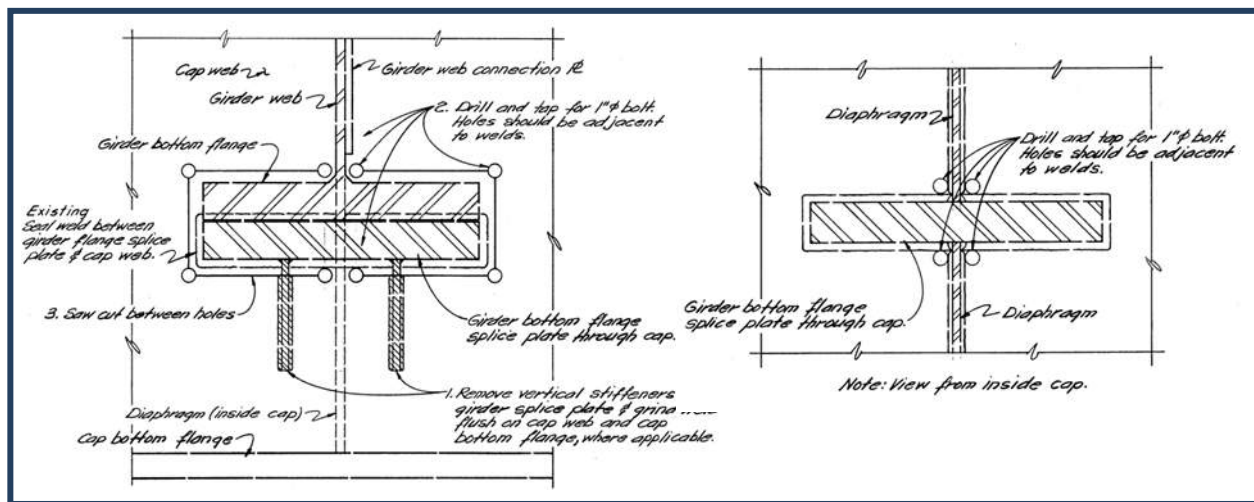


Figure 14: Web plate retrofit details from rehabilitation plans

PIER CAP 8

Pier Cap 8 is in Satisfactory [6] (Photo 59). As part of a 1993 rehabilitation project, retrofits were installed in the webs for the pier cap that consist of drilled holes above and below each girder's bottom flange ends at the webs and are connected with three sawcuts. The welded knee braces were removed from the pier cap web plates below every girder bottom flange tie plate. To remove all welds, the surfaces were ground smooth. In the tension zones of the pier cap webs, the ends of the longitudinal stiffeners were clipped and tapered. The ends of the longitudinal stiffener welds were ground flush with the pier cap webs and stress relief holes were drilled through the web plates near the ends of the stiffeners. As part of the 2015 rehabilitation, welds between the interior backer bars and top flange or web plates were removed. Blasting and painting was performed along the interior and exterior based upon limits noted in the rehabilitation plans. Drilled holes and sawcut locations were also cleaned, resealed, and had expansion plugs installed in the holes.



Photo 59: Elevation of Pier Cap 8

Pier Cap 8 Interior

The interior of the pier cap is in overall good condition. After the repainting of the entire interior during the 2015 rehabilitation project, the paint remains in good condition throughout, with only a few minor areas of peeling paint (Photo 60). There is an area of bubbling paint and rust staining on the web plates, bottom flange, and stiffeners on both sides of Girder 10 from seepage through retrofit holes (Photo 61).



Photo 60: Typical scattered minor areas of peeling paint on the interior

Numerous fillet welds were noted between the backer bars at both the top and bottom flanges and both web plates (see Table 2 on Page 35). The fillet welds noted in Table 2 are in a tension zone.

There is a 20" long cut in the girder bottom flange strap plate that is up to 1/16" deep, on the south side of Girder 9 (Photo 62).



Photo 61: Bubbling paint and rust staining resulting from leakage through the web retrofit at Girder 10



Photo 62: 20" long (1/16" deep) cut in the bottom flange strap plate of Girder 9



Photo 63: Random fillet welds between bottom flange and west web between Girders 1 and 2



Photo 64: 4" fillet weld between the east web and top flange at Girder 8

TABLE 2 – Pier Cap 8 Interior Fillet Welds (Tension Zones)

Location	Web	Flange	Plate	Weld Length(s) (in)	Notes
Girder 1 to Girder 2	West	Bottom	Web	(2) 3-1/2", (2) 4-1/2", 5-1/2"	Photo 63
			Flange	4", 4-1/2"	
Girder 2 to Girder 3	West	Bottom	Web	3-1/2", (3) 4", 4-3/4", 5"	
			Flange	5", 4"	
Girder 3 to Girder 4	West	Bottom	Web	3-1/2", (2) 4", (2) 4-1/2", 5"	
			Flange	4", 4-1/4"	
Girder 4 to Girder 5	West	Bottom	Web	2-1/2", (2) 3-1/2", 4-1/2", 5"	
			Flange	4", 5"	
Girder 5 to Girder 6	West	Top	Web	3-1/2", (2) 4"	
			Flange	4-1/4"	
Girder 6 to M Bearing	West	Top	Web	(2) 4", 4-1/2"	
			Flange	5"	
		Bottom	Flange	5"	
M Bearing to Girder 7	West	Top	Web	(3) 4-1/4"	
			Flange	4-1/2"	
Girder 7 to Girder 8	West	Top	Web	(2) 3-1/2", (2) 4", 4-1/2", 5"	
			Flange	3-1/2", 5"	
Girder 8 to Girder 9	West	Bottom	Web	(2) 3-1/4", 3-1/2", 4", 4-1/4", 4-1/2", 5"	
			Flange	4", 5"	
	East	Top	Flange	4"	Weld extends through web cope (Photo 64)
Girder 9 to Girder 10	West	Bottom	Web	(2) 3", 3-1/2", 4", (2) 4-1/2"	
			Flange	(2) 5"	
	East		Flange	5-1/2"	
Girder 10 to S Bearing	West	Bottom	Web	3-1/4", (3) 3-1/2", (3) 4", (2) 4-1/4", 4-1/2", (5) 5", 5-1/4", 6-1/4"	
			Flange	4-1/4", (2) 4-3/4", (3) 5", 5-1/4", 5-1/2"	
	East		Flange	5-1/2"	Welds located in tension zone

Pier Cap 8 Exterior

The exterior of the pier cap is in overall good condition with flaking paint and surface corrosion on the top and bottom flanges throughout the length of the pier cap. The surface corrosion is particularly pronounced at the exposed southern end of the pier cap (Photo 65). At the south end, a lifting hook was welded to the top flange most likely during construction. Around the hook are three random 3-inch-long welds. No cracks were noted at or around these welds (Photo 66). The longitudinal joint between the decks of the east and west bound lanes is leaking resulting in corrosion staining along both the edges of the top flange and both the east and west web plates between Girders 5 and 6. Corrosion has begun to reactivate at an area of painted over section loss on the west web on the south side of Girder 10 (Photo 67). There is also an area of surface corrosion beginning to initiate on the east and west webs on the north side of Girder 1.

As part of the 1993 rehabilitation project, the drill hole and sawcut retrofits were performed at all girders. At Girder 5 on the west web, a partially miss-drilled hole was noted at the top right corner (Photo 68). The correct hole was drilled closer to the weld intersection. The east web retrofit on the south side of Girder 7 is bowing inward up to 1/16". The top corner of the east and west web retrofits on the south side of Girder 6 are bowing outward up to 1/8" (Photo 69). There are areas of missing epoxy sealant at the sawcut retrofits at Girder 10.

As part of the 2015 rehabilitation project, knee braces were removed from the webs below Girders 1 through 10. Remnants of the fillet welds for the knee braces remain and intersect the weld between bottom flange plate and web plate on each side of the girder (Photo 70).

The end hatches are in overall good condition. The south end hatch has 1 stripped bolt along the east edge and is caulked in place.



Photo 65: Typical fading paint condition on exterior, exposed southern end of pier cap shown



Photo 66: Fillet welds on the top flange at the southern end of the pier cap



Photo 67: Reactivating surface corrosion on the west web at Girder 10



Photo 68: Miss-drilled retrofit hole in the west web at Girder 5



Photo 69: 1/16" bowing of the east web retrofit on the south side of Girder 6



Photo 70: Remnants of knee braces and fillet welds, typical at all girders

Pier Cap 8 Fatigue Prone Details

Fatigue Prone Detail 1

Fillet welds between diaphragms or transverse web stiffeners and web plates.

Category: C

Location: All girder diaphragms and transverse web stiffeners.

Fatigue Prone Detail 2

Full penetration groove weld of flange splice.

Category: B

Location: Two bottom flange splices and two top flange splices.

Fatigue Prone Detail 5

Fillet welds greater than 4" or 12 times the connection thickness with a connection thickness less than 1.0" on the web and flange plates.

Category: E

Location: Intermittent fillet welds 4" to 6" in length along the $\frac{1}{2}$ " west web backer bar and both the web and top flange plates between Girders 4 and 9; Intermittent fillet welds 4" to 6" in length along the $\frac{1}{2}$ " west web backer bar and both the web and bottom flange plates between the north bearing and Girder 5 and between Girder 8 and the south bearing; One $5\frac{1}{2}$ " fillet weld along the $\frac{1}{2}$ " east web backer bar and the bottom flange plate between Girders 9 and 10.

Fatigue Prone Detail 8

Intersection of fillet welds.

Category: E

Location: Remnants of two knee brace fillet welds intersect the full penetration groove welds between the bottom flange and both web plates below Girders 1, 2, 3, 4, 8, 9, and 10 (28 total).

Fatigue Prone Detail 9

Drilled hole and sawcut stress relief retrofit in web plates.

Category: B

Location: All girder bottom flange tie plate connections to the web plates.

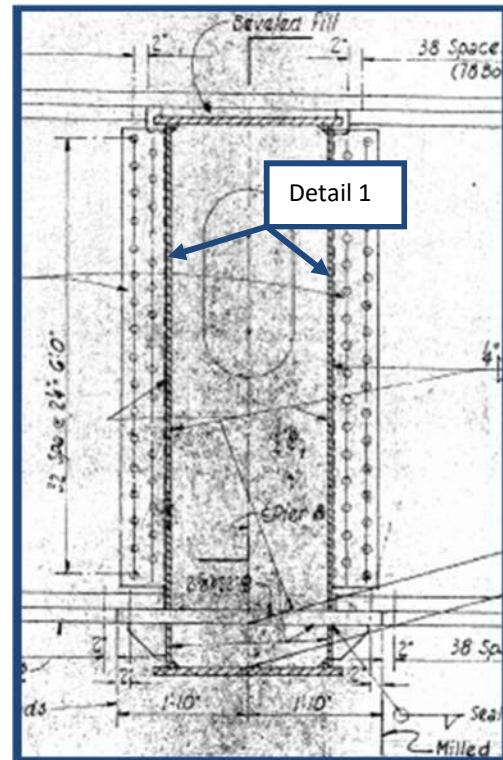


Figure 15: Section of Pier Cap 8

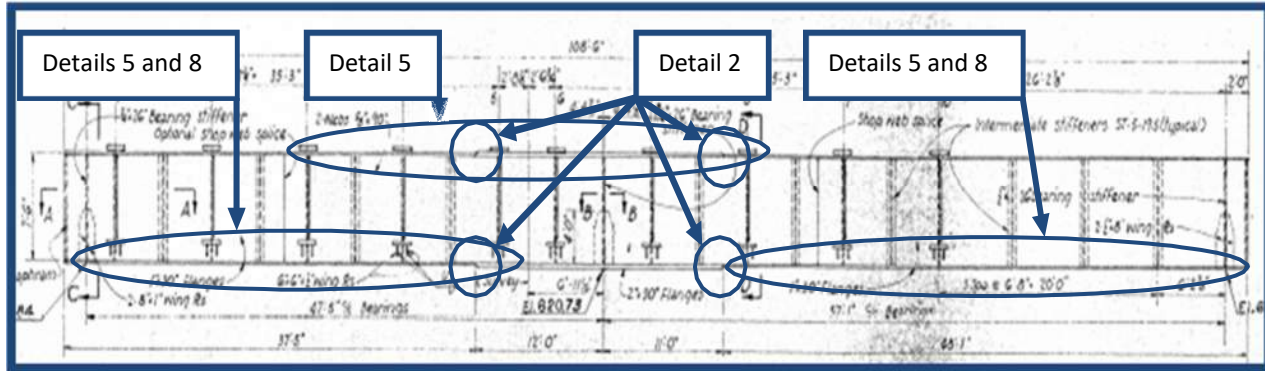


Figure 16: Elevation of Pier Cap 8

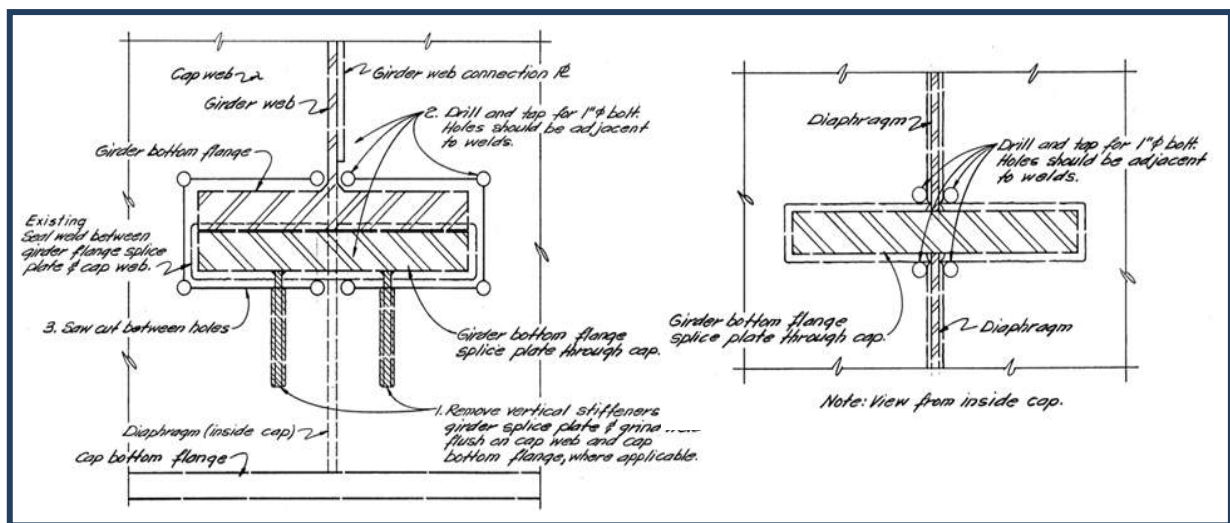


Figure 17: Web plate retrofit details from rehabilitation plans

PIER CAP 9

Pier Cap 9 is in Good condition [7] (Photo 71). As part of a 1993 rehabilitation project, retrofits were installed in the webs for the pier cap that consist of drilled holes above and below each girder's bottom flange ends at the webs and are connected with three sawcuts. The welded knee braces were removed from the pier cap web plates below every girder bottom flange tie plate. To remove all welds, the surfaces were ground smooth. In the tension zones of the pier cap webs, the ends of the longitudinal stiffeners were clipped and tapered. The ends of the longitudinal stiffener welds were ground flush with the pier cap webs and stress relief holes were drilled through the web plates near the ends of the stiffeners. As part of the 2015 rehabilitation, welds between the interior backer bars and top flange or web plates were removed. Blasting and painting was performed along the interior and exterior based upon limits noted in the rehabilitation plans. Drilled holes and sawcut locations were also cleaned, resealed, and had expansion plugs installed in the holes.

Pier Cap 9 Interior

The interior of the pier cap is in overall good condition and was dry at the time of the inspection (Photo 72). The paint, including spot painting performed as part of the 2015 rehabilitation project along the lower portion of the pier cap is also in good condition.

Numerous fillet welds were noted between the backer bars at both the top and bottom flanges and both web plates (see Table 3 on Page 42). Some of these welds were partially removed as part of the 2015 rehabilitation.



Photo 71: Elevation of Pier Cap 9



*Photo 72: Typical interior paint condition
(Girder 5 shown)*



*Photo 73: 2" remaining of a partially ground fillet
weld between the east web and top flange
between Girders 2 and 3*



Photo 74: Fillet welds between the east web and top flange between Girders 5 and 6



Photo 75: Fillet welds between the east web and top flange between Girders 5 and 6

TABLE 3 – Pier Cap 9 Interior Fillet Welds

Location	Web	Flange	Plate	Weld Length(s) (in)	Notes
Girder 1 to Girder 2	East	Top	Flange	2", (2) 4-1/2"	2" weld partially ground, 2" remain
		Bottom	Web	4-1/4", 4-1/2"	
			Flange	3-3/4", 4-1/2", 5"	
Girder 2 to Girder 3	East	Top	Flange	5"	
			Web	3-1/4", 3-3/4", 5-1/2", (2) 6"	6" weld partially removed, 2" remain (Photo 73)
		Bottom	Flange	2-1/2", (2) 3-3/4", 5-1/2"	
	West	Bottom	Flange	6"	
Girder 3 to Girder 4	West	Bottom	Flange	6"	North of bearing
	East		Web	(2) 5-1/2"	
			Flange	2-1/2"	North of bearing
Girder 4 to Girder 5	East	Top	Web	4", 6"	Under Girder 5; 6" weld partially removed
Girder 5 to Girder 6	East	Top	Flange	5-1/2", 5"	Photos 74-75
			Web	3-1/2, 4", 4-1/2", 5"	
Girder 6 to Girder 7	East	Top	Web	(6) up to 6"	
			Flange	5-1/2", 10"	
		Bottom	Web	2", 3-1/2", 4-1/2"	Under Girder 7 and Girder 6, and south of Girder 6 respectively
Girder 7 to Girder 8	West	Bottom	Web	9"	Centered on stiffener
	East		Web	3-1/2"	Under Girder 7
Girder 8 to Girder 9	East	Bottom	Web	(2) 3", (2) 4-1/2"	Between Girder 9 and the bearing
Girder 9 to Girder 10	East	Bottom	Web	(4) 3-1/2", 4-1/2"	

Pier Cap 9 Exterior

The exterior of the pier cap is in overall good condition. Between the end of Girders 1, 6 and 7 and the west pier cap web, corrosion has begun to reactivate at previously noted painted over section loss (Photo 76). It appears that the paint may have trapped water and allowed for laminating corrosion to form. Pack rust has also begun to form between the girder bottom flanges and the tie plates. Between Girders 1 and 8 (west side only), the deck haunch has scattered areas of spalling, exposing, and allowing surface corrosion to form along the west edge of the pier cap top flange above the west web (Photo 77). There is corrosion on the top flange and rust staining on both the east and west webs between Girders 5 and 6 due to leakage through the deck joint (Photo 78).

As part of the 1993 rehabilitation project, the drill hole and sawcut retrofits were only performed at Girders 5 through 7. Girders 1 and 2 and Girders 9 and 10 received drill hole only retrofits. At several locations, the epoxy sealant is partially missing from the sawcuts. At Girders 5 and 8 (west side only), there are missing expansion plugs (Photo 79).

Minor surface corrosion on both bearings, north is worse than south. North bearing is missing two out of four anchor rods.



Photo 77: Typical corrosion on top flange between Girders on the east and west web



Photo 78: Corrosion and rust staining from leakage through deck joint between Girders 5 and 6



Photo 76: Corrosion reactivating at a location of painted over section loss on west web at Girder 1



Photo 79: Missing expansion plug on the west web retrofit at Girder 5

Pier Cap 9 Fatigue Prone Details

Fatigue Prone Detail 1

Fillet welds between diaphragms or transverse web stiffeners and web plates.

Category: C

Location: All girder diaphragms and transverse web stiffeners.

Fatigue Prone Detail 5

Fillet welds greater than 4" or 12 times the connection thickness with a connection thickness less than 1.0" on the web and flange plates.

Category: E

Location: One 7" fillet weld along the ½" top flange backer bar and the east web plate between Girders 1 and 2; Intermittent fillet welds 4" to 6" in length along the ½" bottom flange backer bar and the east web plate between Girders 5 and 8; Three fillet welds 4" to 6" in length along the ½" top flange backer bar and both the flange and east web plates between Girder 8 and the south bearing (ground, but not completely removed); One 9" fillet weld along the ½" bottom flange backer bar and the west web plate between Girders 7 and 8.

Fatigue Prone Detail 9

Drilled hole and sawcut stress relief retrofit in web plates.

Category B

Location: Girders 5 through 7 bottom flange tie plate connections to both web plates, and Girder 8 bottom flange tie plate connection to the west web plate.

Fatigue Prone Detail 12

Drilled hole stress relief retrofit in web plates.

Category: D

Location: Both web plates above and below the bottom flange tie plate and on each side of the pier cap connections of Girders 1, 2, 3, 4, 8, 9, and 10.

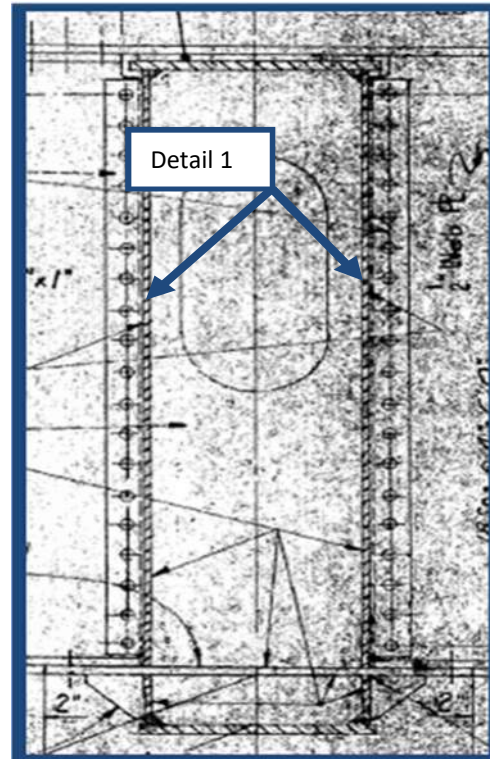


Figure 18: Section of Pier Cap 9

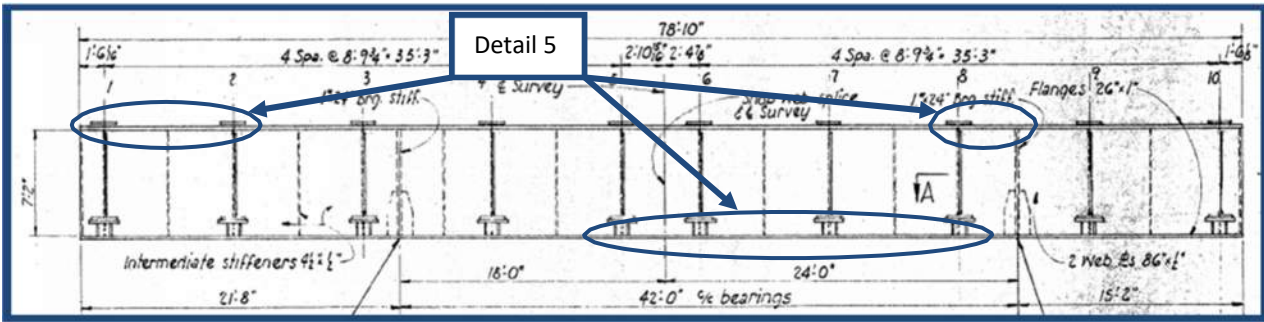


Figure 19: Elevation of Pier Cap 9

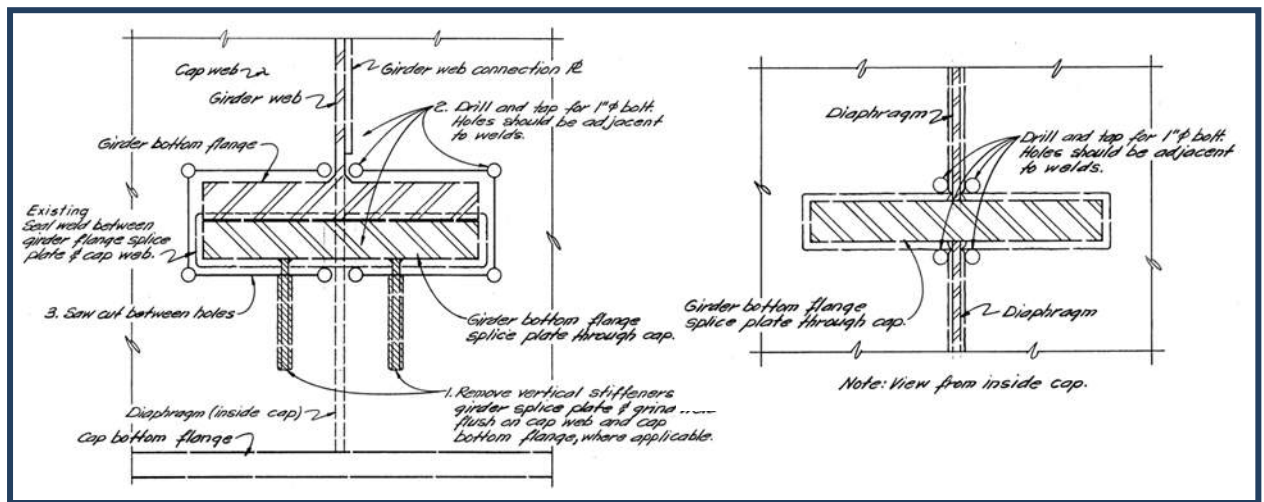


Figure 20: Web plate retrofit details from rehabilitation plans

BEARING DEVICES

The pot bearings for the steel pier caps are in Fair condition [5] (Photos 80-85).

Surface corrosion is typical along the bottom edges of all masonry plates, and in scattered locations on the sole and bearing plates.



*Photo 80: Pier 4 typical bearing condition
(south bearing shown)*



*Photo 81: Pier 5 typical bearing condition
(north bearing shown)*



*Photo 82: Pier 6 typical bearing condition
(south bearing shown)*



*Photo 83: Pier 7 typical bearing condition
(south bearing shown)*



*Photo 84: Pier 8 typical bearing condition
(north bearing shown)*



*Photo 85: Pier 9 typical bearing condition
(north bearing shown)*

CONCLUSIONS AND RECOMMENDATIONS

Based on the in-depth inspection, the NSTM pier caps of Bridge No. HAM-562-0147 and its associated fatigue prone details, are in Satisfactory Condition [6] overall. The recommendations for maintenance of the pier caps are presented in the following four categories:

Priority Repairs (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 (Within 2-4 Month Period)

Recommendations that are minor in nature and can be performed by maintenance personnel or through small maintenance repair contracts.

Monitoring (As Recommended)

Regular field observations of deficiencies which are not currently in need of repair but will require corrective action if deterioration continues.

Pier Cap 4 Recommendations:

Priority Repairs: None

Rehabilitation/Evaluation: None

Maintenance: Backfill the erosion hole at the base of the north column and redirect runoff to prevent future erosion. Replace the five stripped bolts and the neoprene gasket on the north access hatch cover plate. Repair damaged epoxy sealant and replace missing expansion plugs at retrofit locations to prevent future water infiltration.

Monitoring: Continue to monitor fatigue prone details at a 24-month cycle.

Pier Cap 5 Recommendations:

Priority Repairs: None

Rehabilitation/Evaluation: None

Maintenance: Replace the missing bolt on the north access hatch cover plate and replace the stripped bolt on the south access hatch cover plate. Repair damaged epoxy sealant and replace missing expansion plugs at retrofit locations to prevent future water infiltration.

Monitoring: Continue to monitor fatigue prone details at a 24-month cycle.

Pier Cap 6 Recommendations:

Priority Repairs:	None
Rehabilitation/Evaluation:	None
Maintenance:	Replace the five missing bolts on the south access hatch cover plate. Repair damaged epoxy sealant and replace missing expansion plugs at retrofit locations to prevent future water infiltration.
Monitoring:	Continue to monitor fatigue prone details at a 24-month cycle.

Pier Cap 7 Recommendations:

Priority Repairs:	None
Rehabilitation/Evaluation:	None
Maintenance:	Repair damaged epoxy sealant and replace missing or damaged expansion plugs at retrofit locations to prevent future water infiltration.
Monitoring:	Continue to monitor fatigue prone details at a 24-month cycle.

Pier Cap 8 Recommendations:

Priority Repairs:	None
Rehabilitation/Evaluation:	None
Maintenance:	Replace the stripped bolt on the south access hatch cover plate. Repair damaged epoxy sealant and replace missing expansion plugs at retrofit locations to prevent future water infiltration.
Monitoring:	Continue to monitor fatigue prone details at a 24-month cycle.

Pier Cap 9 Recommendations:

Priority Repairs:	None
Rehabilitation/Evaluation:	None
Maintenance:	Repair damaged epoxy sealant and replace missing expansion plugs at retrofit locations to prevent future water infiltration.
Monitoring:	Continue to monitor fatigue prone details at a 24-month cycle.

APPENDIX A

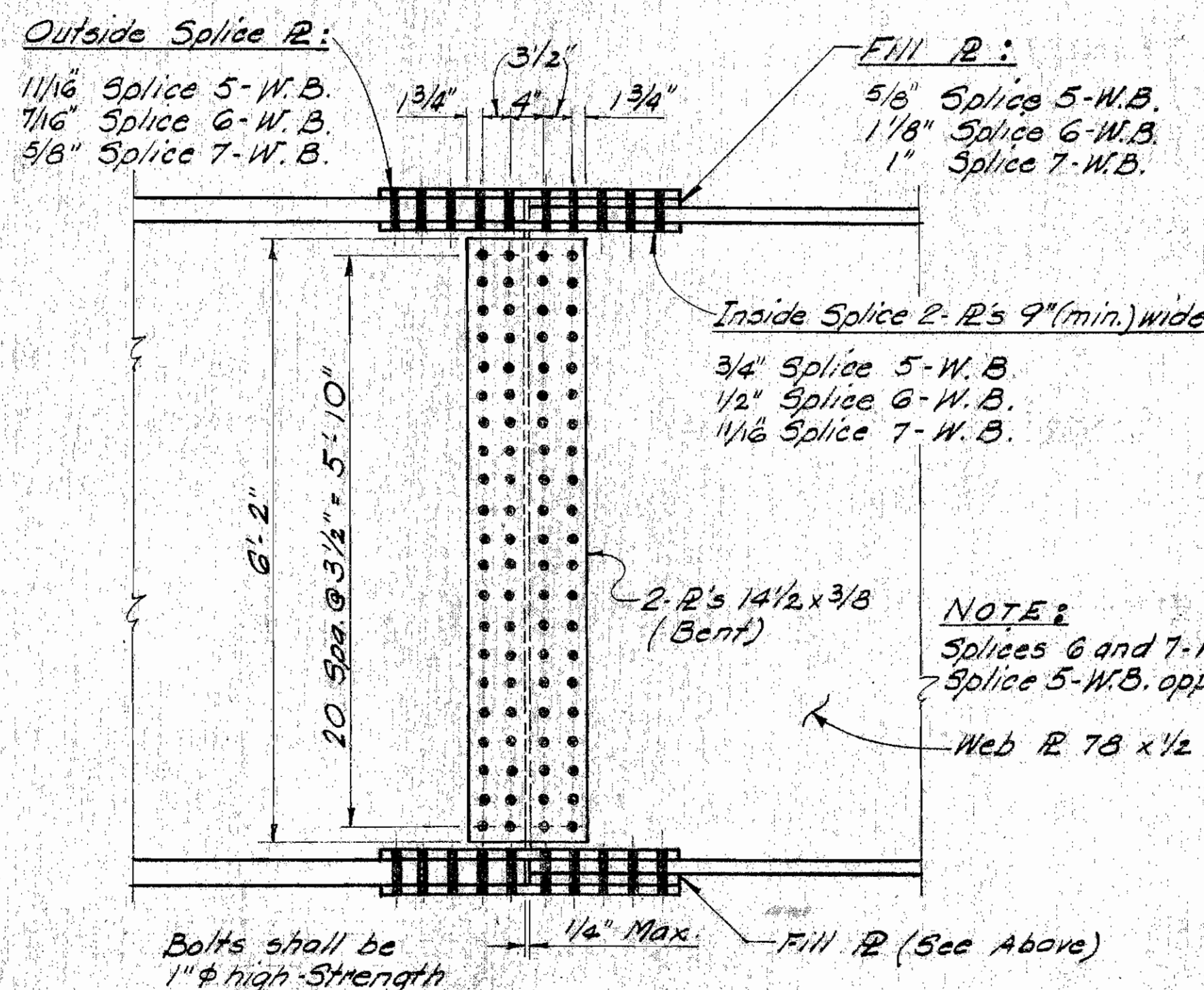
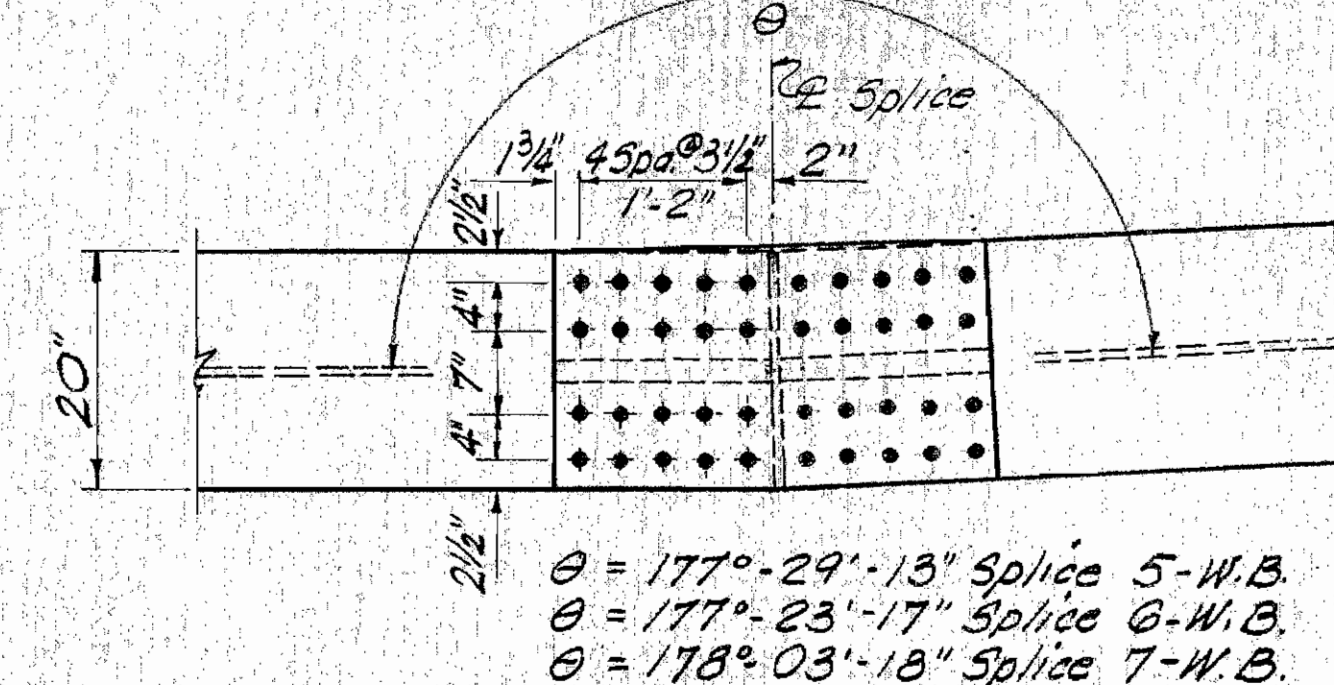
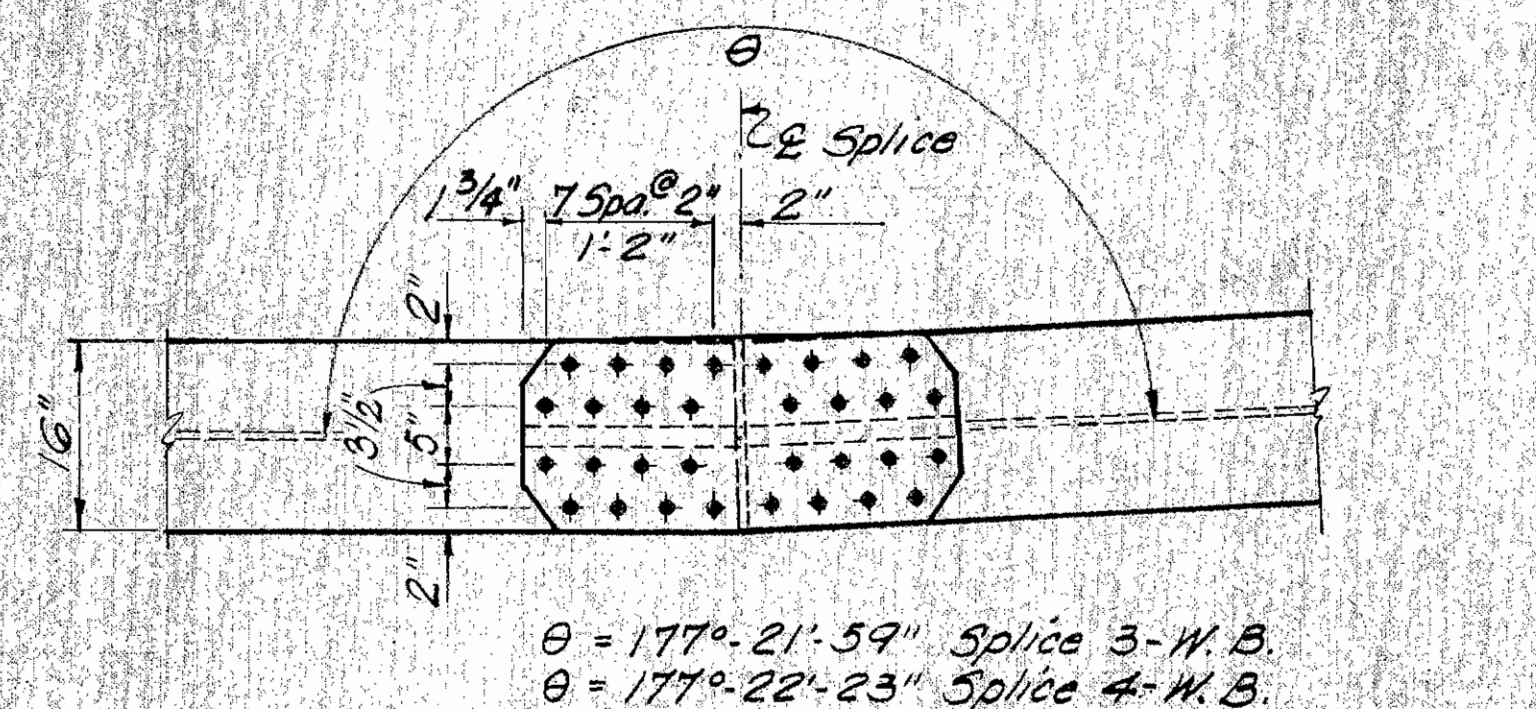
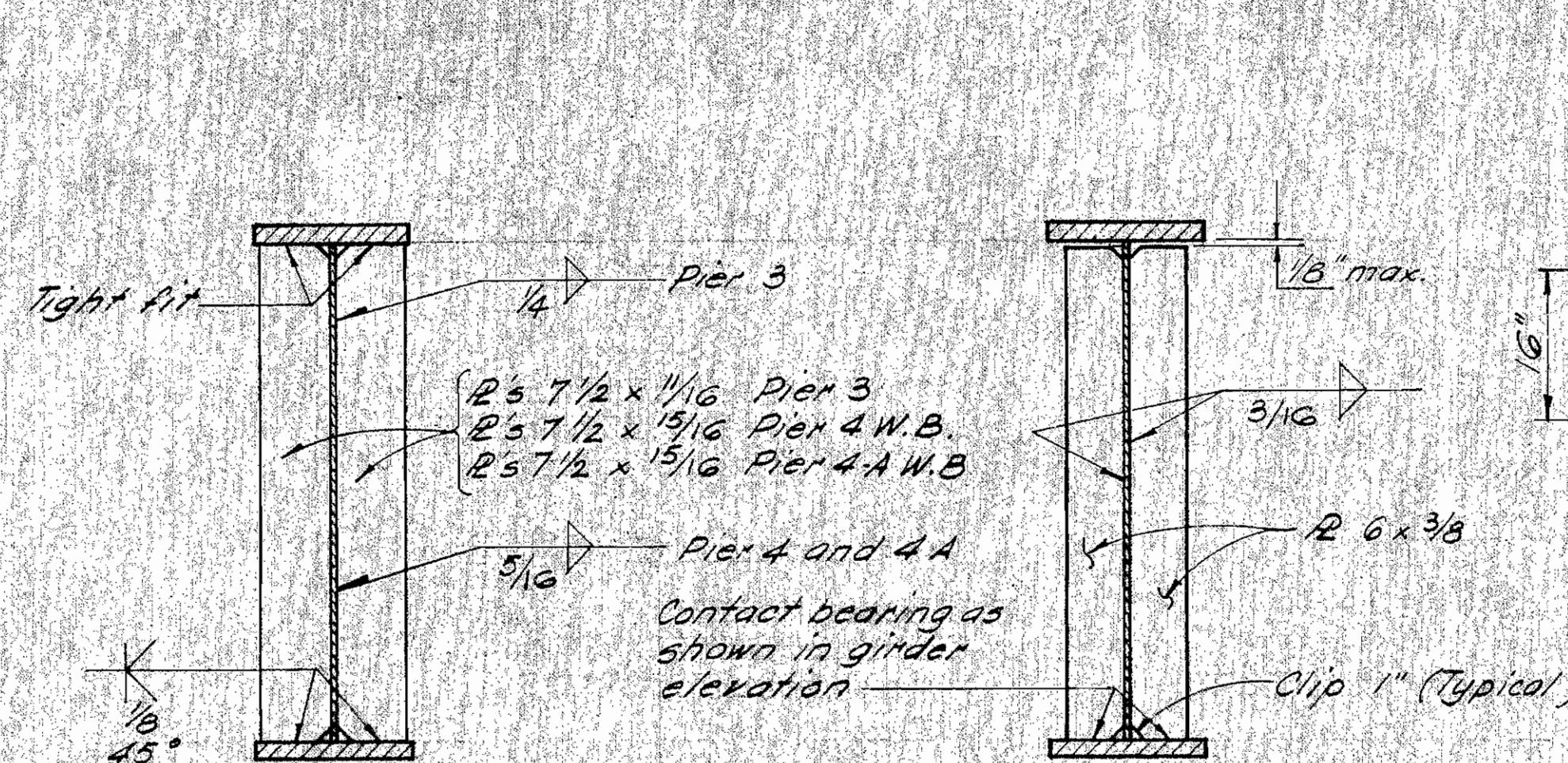
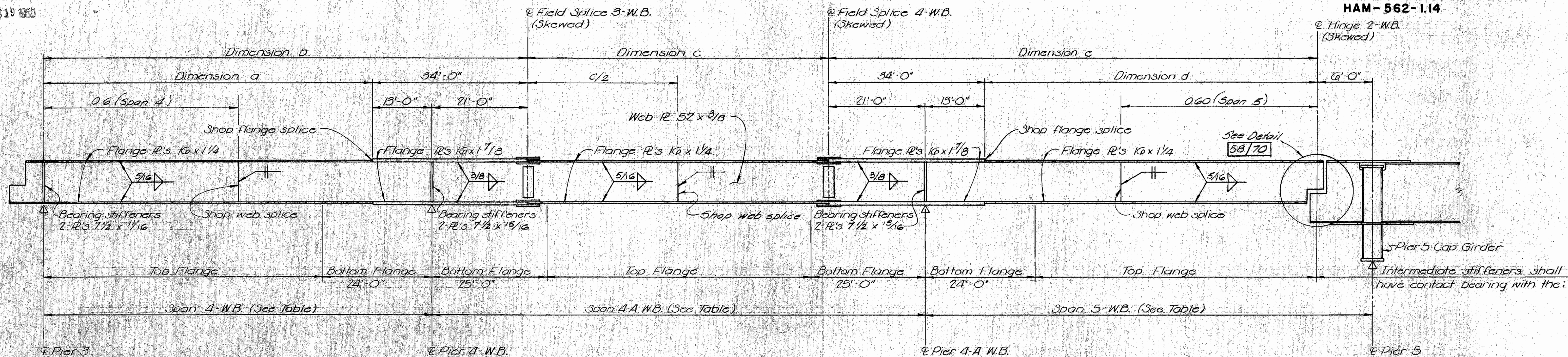
EXISTING PIER PLANS

MICROFILMED
DEC 19 1988

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

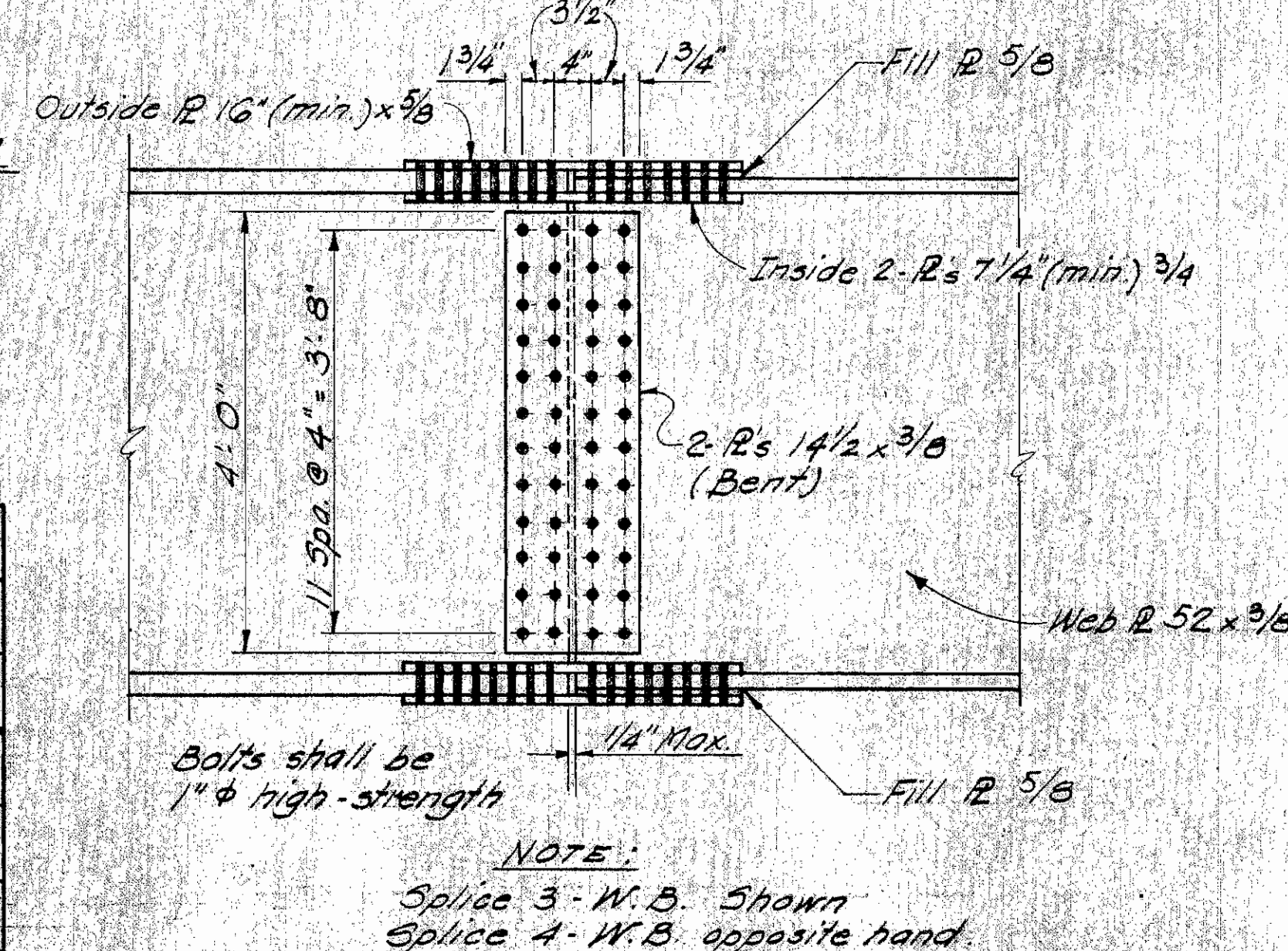
HAM-562-1.14

2-Hinge 2-W.B.
(Skewed)



For joint preparations see 37/70

Girder Line	DIMENSIONS							
	Span 4-W.B.	Span 4-A	Span 5	a	b	c	d	e
1	83'-3 ¹⁵ / ₁₆ "	105'-10 ¹ / ₈ "	87'-5 ¹ / ₈ "	10'-3 ⁵ / ₁₆ "	104'-3 ⁵ / ₁₆ "	63'-10 ¹ / ₈ "	68'-5 ¹ / ₈ "	102'-5 ¹ / ₈ "
2	83'-8 ⁵ / ₈ "	106'-4 ¹ / ₈ "	88'-6"	10'-8 ⁵ / ₈ "	104'-8 ⁵ / ₈ "	64'-4 ¹ / ₈ "	69'-6"	103'-6"
3	84'-1 ⁵ / ₁₆ "	106'-10 ³ / ₄ "	89'-6 ⁵ / ₁₆ "	11'-1 ⁵ / ₁₆ "	105'-1 ⁵ / ₁₆ "	64'-10 ³ / ₄ "	70'-6 ⁵ / ₁₆ "	104'-6 ⁵ / ₁₆ "
4	84'-6"	107'-4 ¹ / ₁₆ "	90'-7 ³ / ₈ "	11'-6"	105'-6"	65'-4 ¹ / ₁₆ "	71'-7 ³ / ₁₆ "	105'-7 ³ / ₁₆ "
5	84'-10 ⁵ / ₈ "	107'-10 ³ / ₈ "	91'-8 ¹ / ₄ "	11'-10 ⁵ / ₈ "	105'-10 ⁵ / ₈ "	65'-10 ⁵ / ₈ "	71'-8 ¹ / ₄ "	106'-8 ¹ / ₄ "



FIELD SPLICES 3 AND 4 W.B. LANES

FIELD SPLICES 5, 6 AND 7 - W.B. LANES

NOTE:
Splices 6 and 7-W.B. shown
Splice 5-W.B. opposite hand.

VOGT, IVERS, & ASSOCIATES ENGINEERS ARCHITECTS CINCINNATI CHICAGO					
GIRDERS - UNIT 2 W.B. BRIDGE NO. HAM-562-0150 NORWOOD LATERAL OVER ROSS AVE. AND B.&O. R.R.					
HAMILTON COUNTY		STA. 79+47.35 STA. 93+52.25			
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
M.M.	M.M.	L.B.F.	L.F.L.	22068	

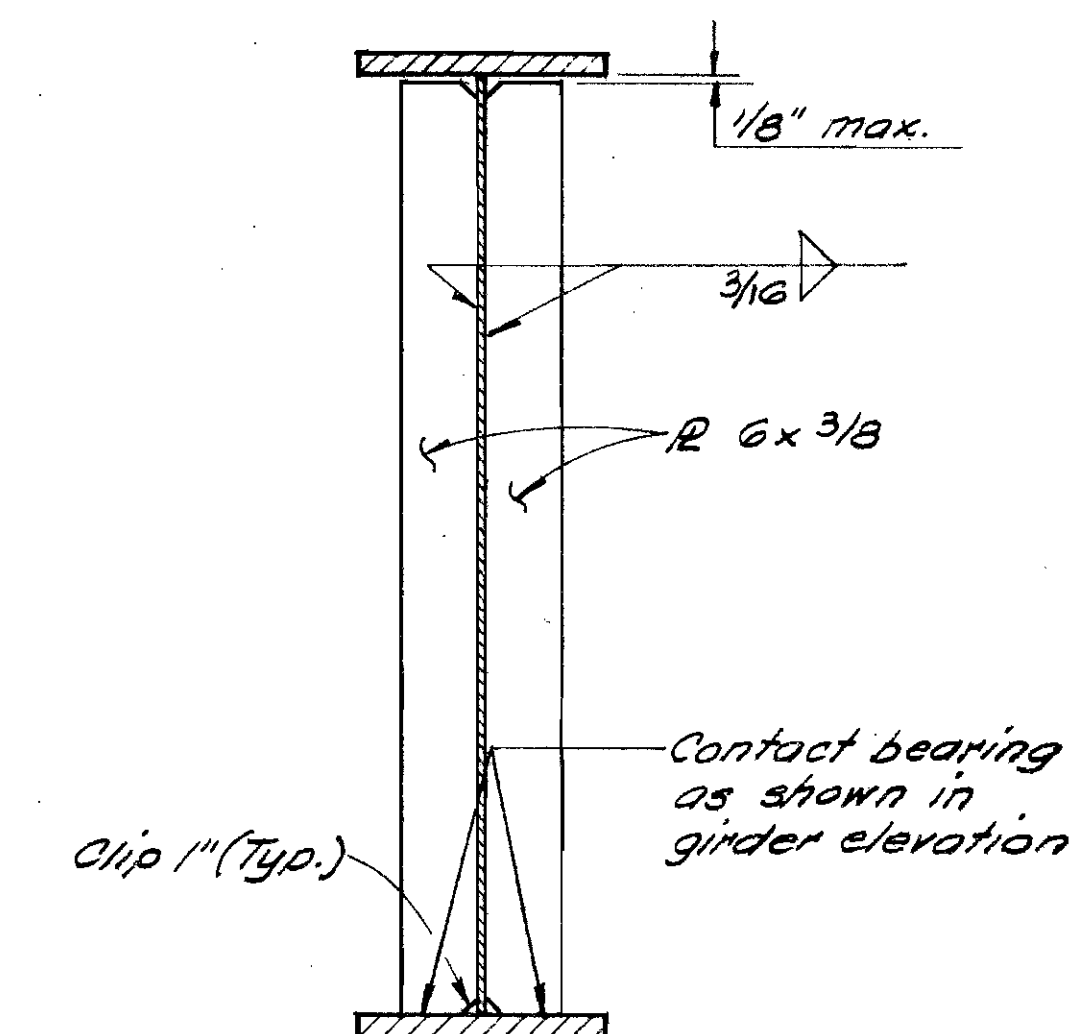
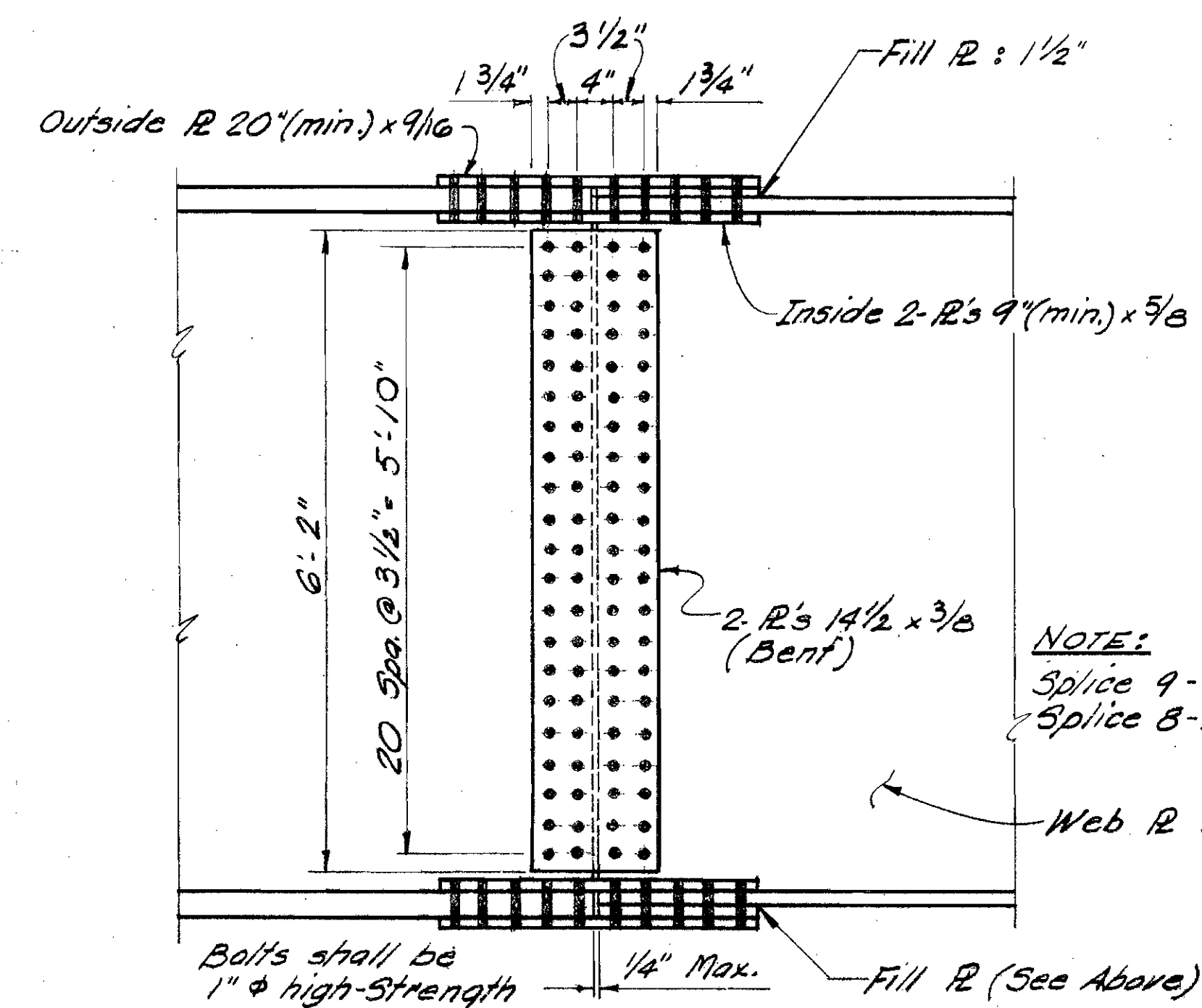
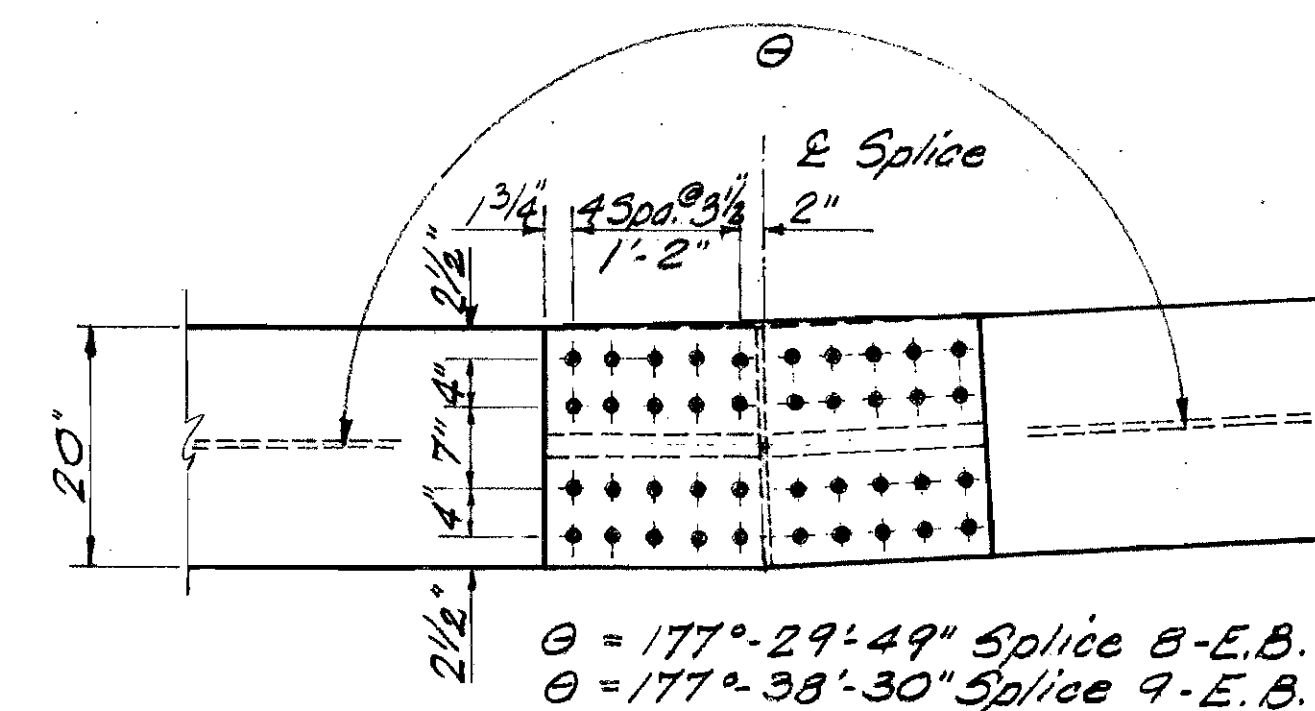
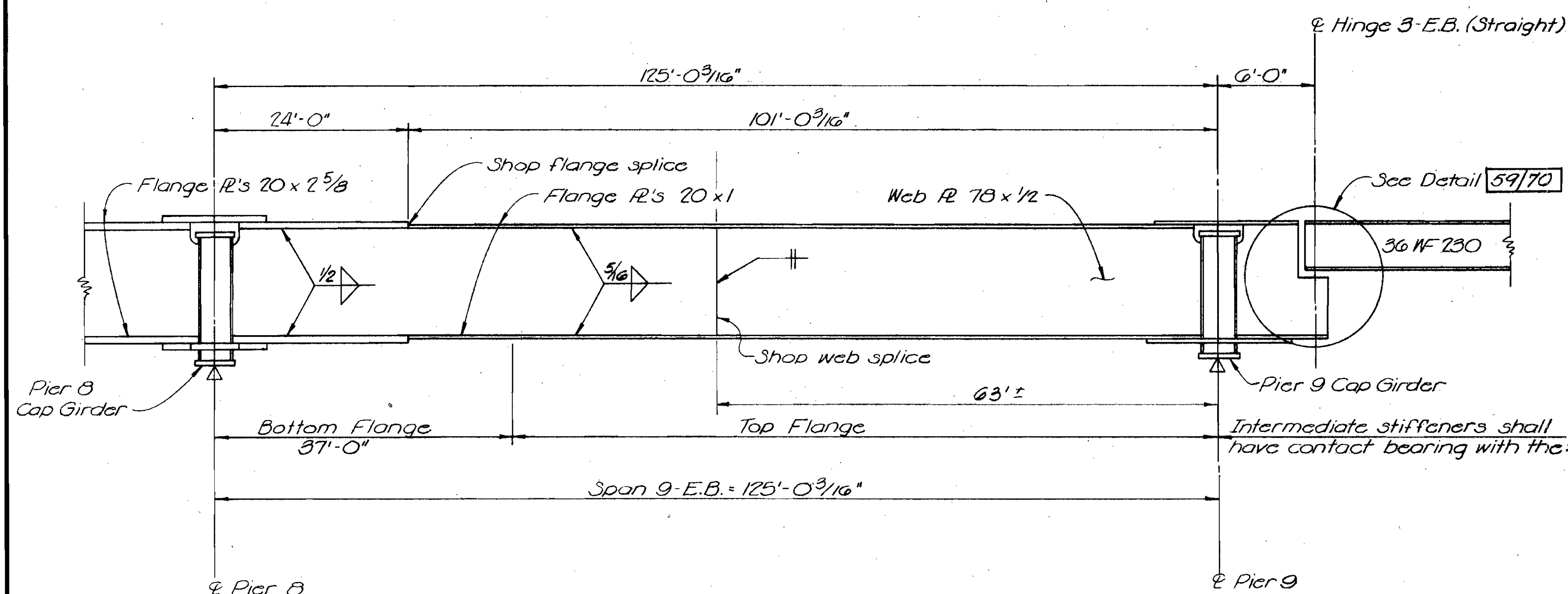
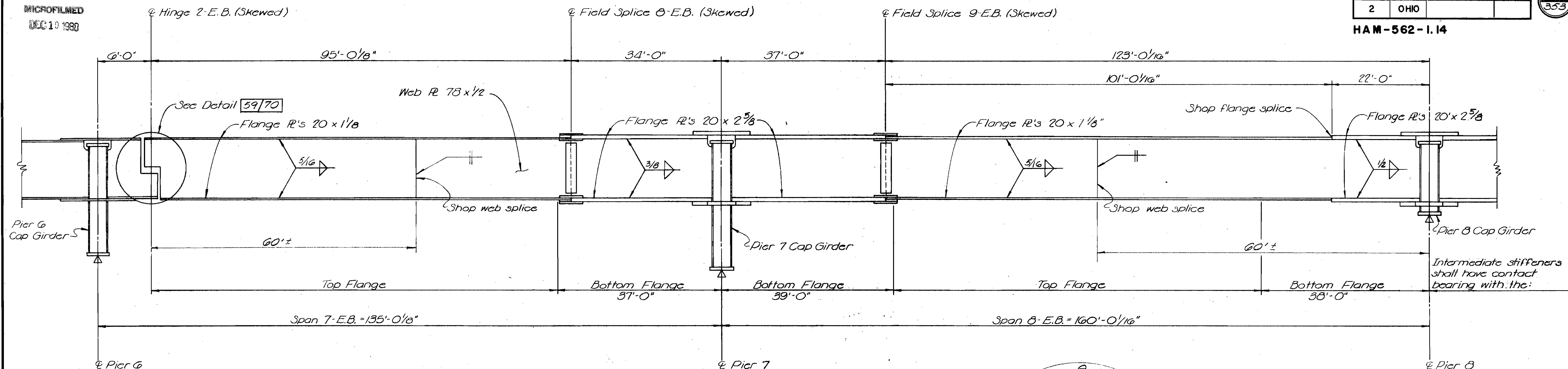
39/70

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
M.M.	M.M.	L.B.F.	L.F.L.	<i>622</i>	2-20-68	

MICROFILMED
DEC 10 1980

FED. RD. DIVISION	STATE	PROJECT	TYPE FUNDS
2	OHIO		

HAM-562-1.14



INTERMEDIATE STIFFENERS

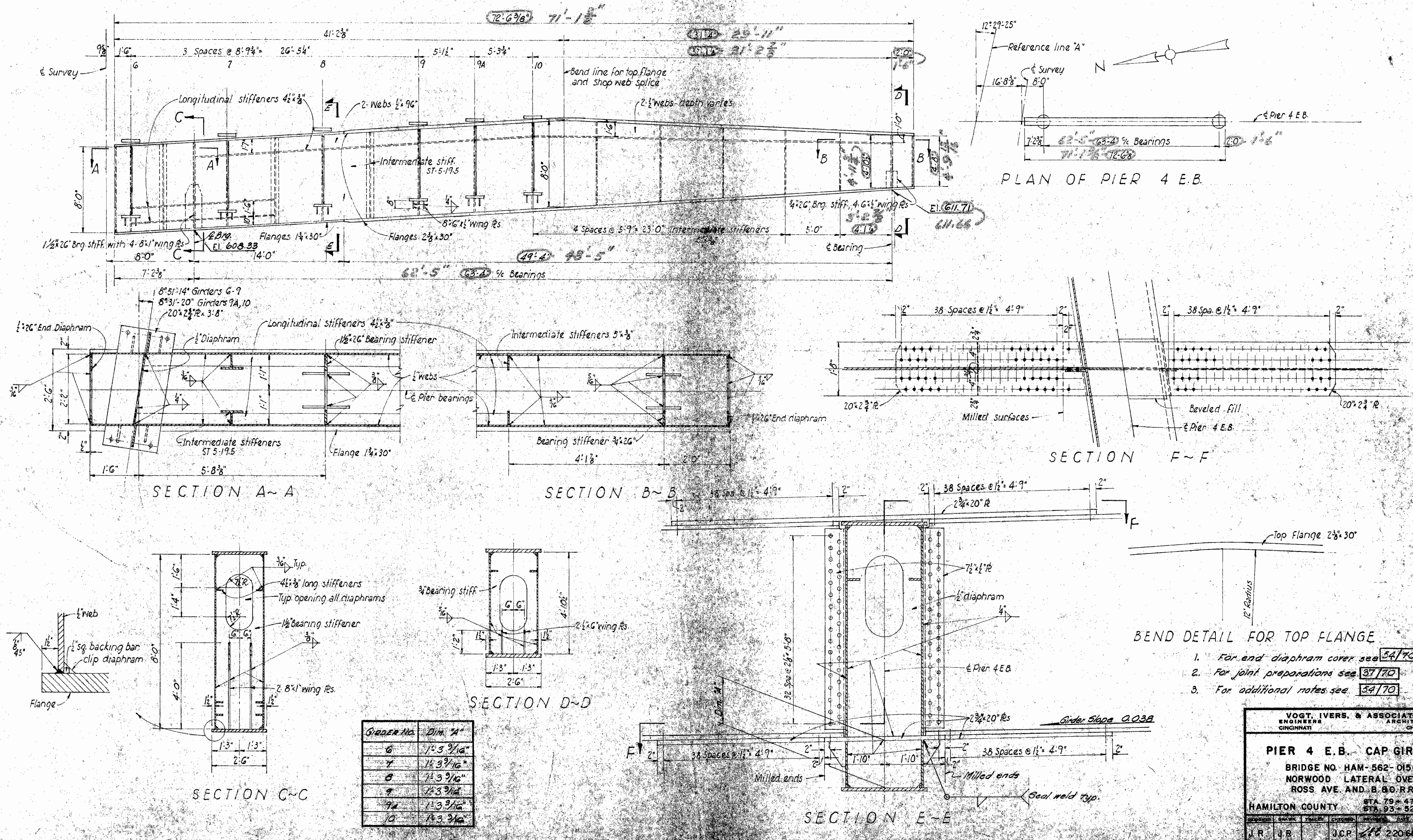
For joint preparations see 37/70

NOTE:
Splice 9-E.B. Shown.
Splice 8-E.B. opposite hand.

FIELD SPLICES 8 AND 9-E.B. LANES

VOGT, IVERS, & ASSOCIATES ENGINEERS CINCINNATI				ARCHITECTS CHICAGO			
GIRDERS - UNIT 3 E.B.							
BRIDGE NO. HAM- 562-0150							
NORWOOD LATERAL OVER							
ROSS AVE. AND B.&O.R.R.							
HAMILTON COUNTY				STA. 79+47.35 STA. 93+52.25			
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED	
M.M.	M.M.	L.B.F. G.M.	L.F.L.	<i>lll</i>	220 68		

HAM - 562-1.14



5072

VOGT, IVERS, & ASSOCIATES
ENGINEERS ARCHITECTS
CINCINNATI CHICAGO

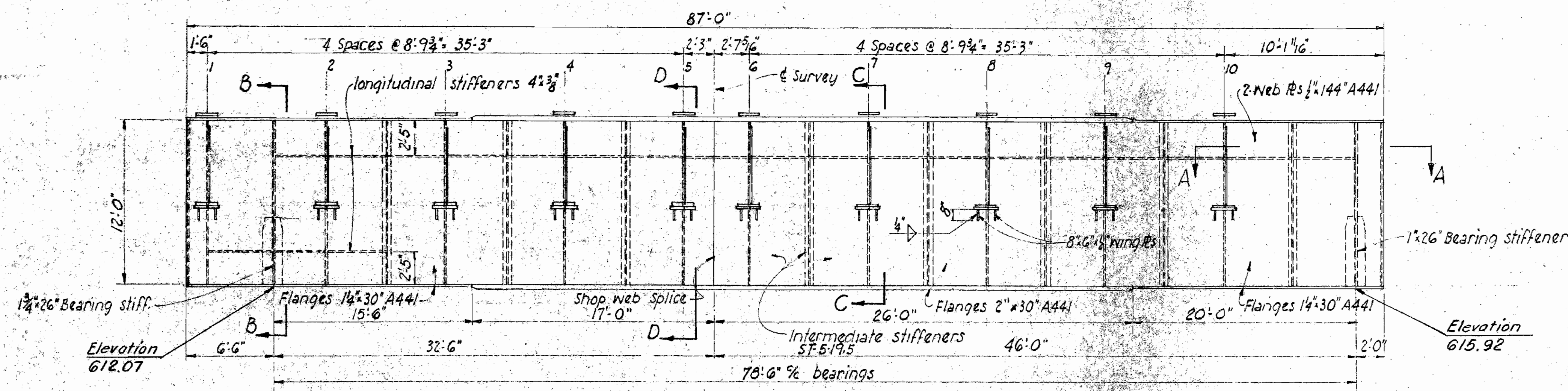
PIER 5 CAP GIRDER

BRIDGE NO. HAM-562-0150
 NORWOOD LATERAL OVER
 ROSS AVE. AND B.&O. R.R.

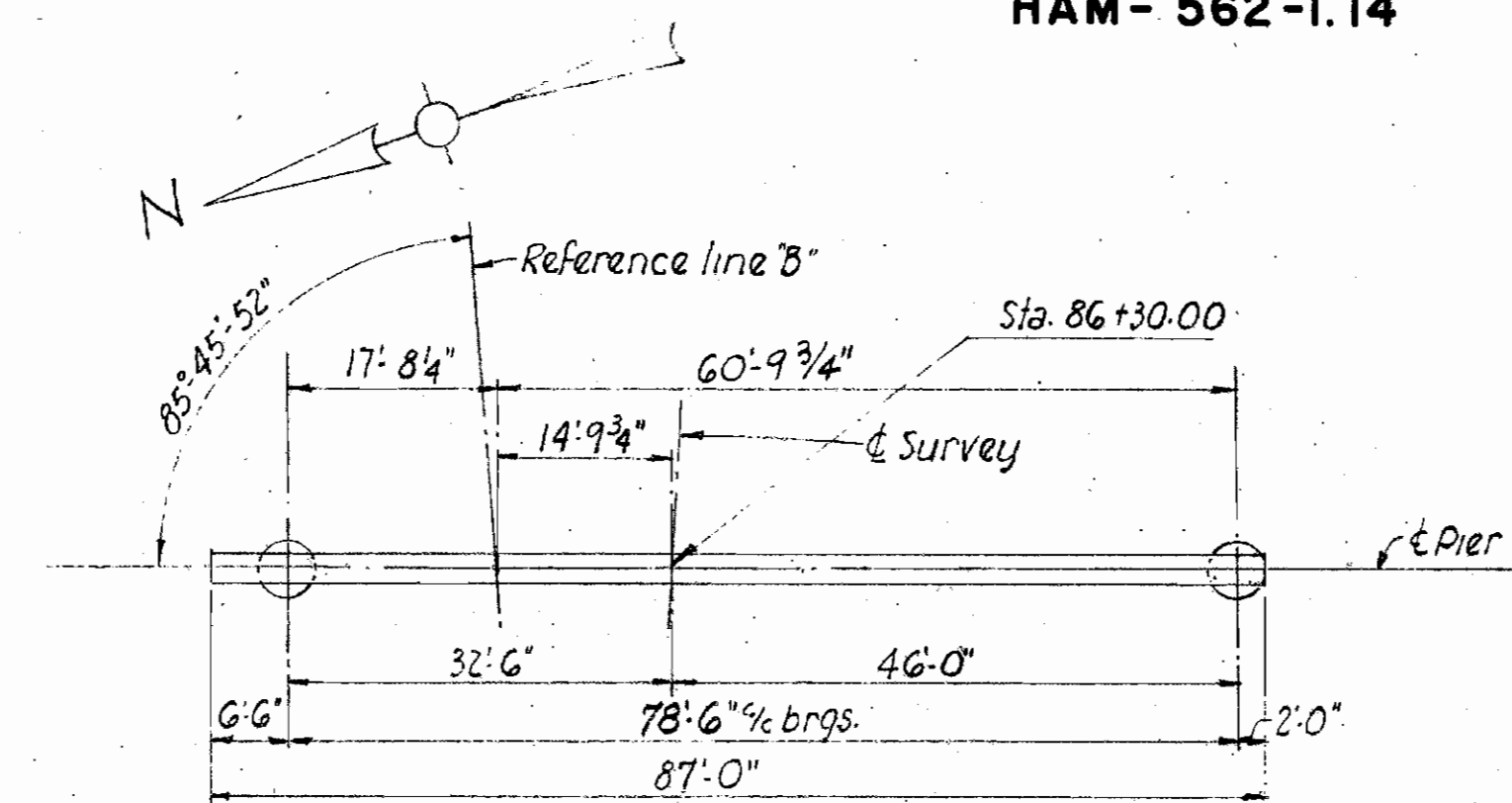
HAMILTON COUNTY STA. 79 + 47.35
 STA. 93 + 52.25

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVISED
J. R.	J. R.		J. C. P.	<i>lll</i>	2-20-68	

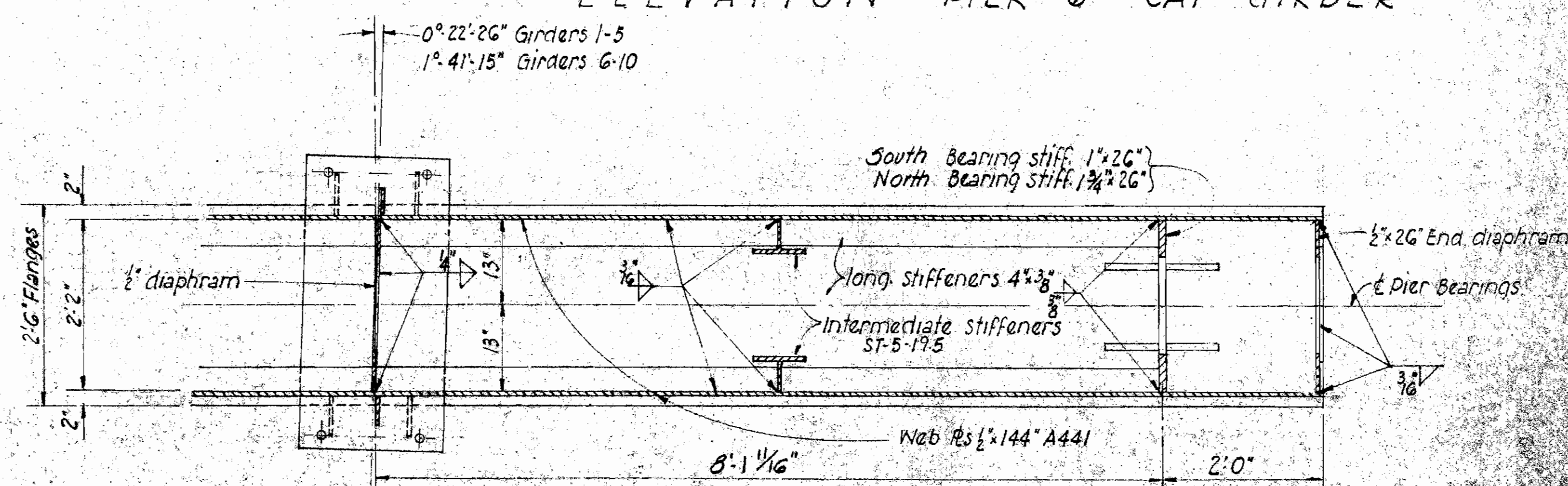
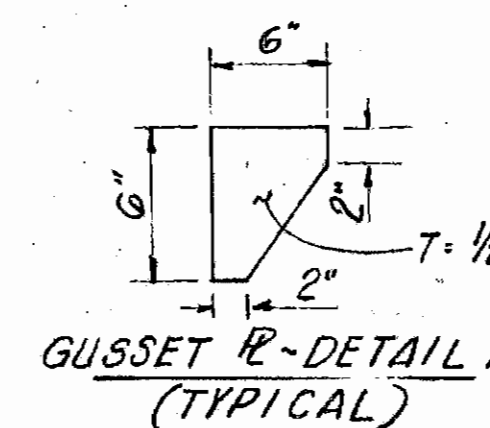
HAM- 562-1.14



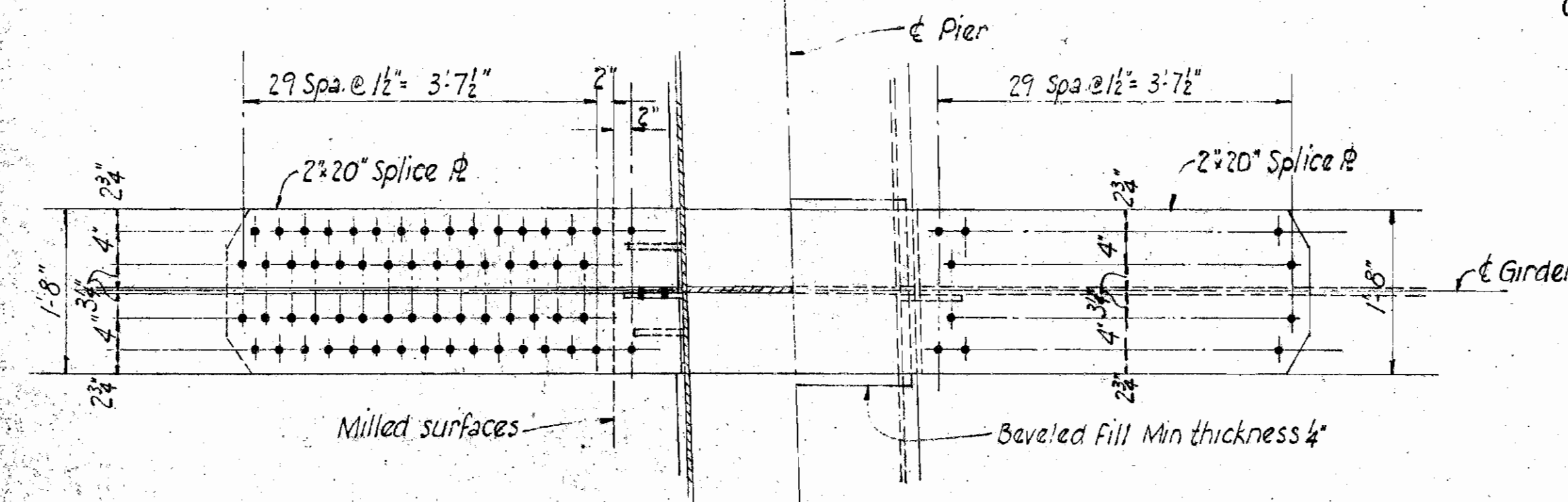
ELEVATION PIER 6 CAP GIRDER



PLAN OF PIER 6



SECTION A~A



SECTION E~E

GIRDER NO.	Dim. "A"
1	5'-4 ⁹ / ₁₆ "
2	5'-4 ⁹ / ₁₆ "
3	5'-4 ⁹ / ₁₆ "
4	5'-4 ⁹ / ₁₆ "
5	5'-4 ⁹ / ₁₆ "

GLIDER NO.	Dim. "A"
6	5'-7 ⁵ / ₈ "
7	5'-7 ⁵ / ₈ "
8	5'-7 ⁵ / ₈ "
9	5'-7 ⁵ / ₈ "
10	5'-7 ⁵ / ₈ "

NOTE:

For additional notes Sec. 54/70

Flanges and webs are A441 steel, all other material is A36.

For end diaphragm cover see 54/70

For joint preparation see 37/70

PIER 6 CAP GIRDER

BRIDGE NO. HAM-562-0150

NORWOOD LATERAL OVER

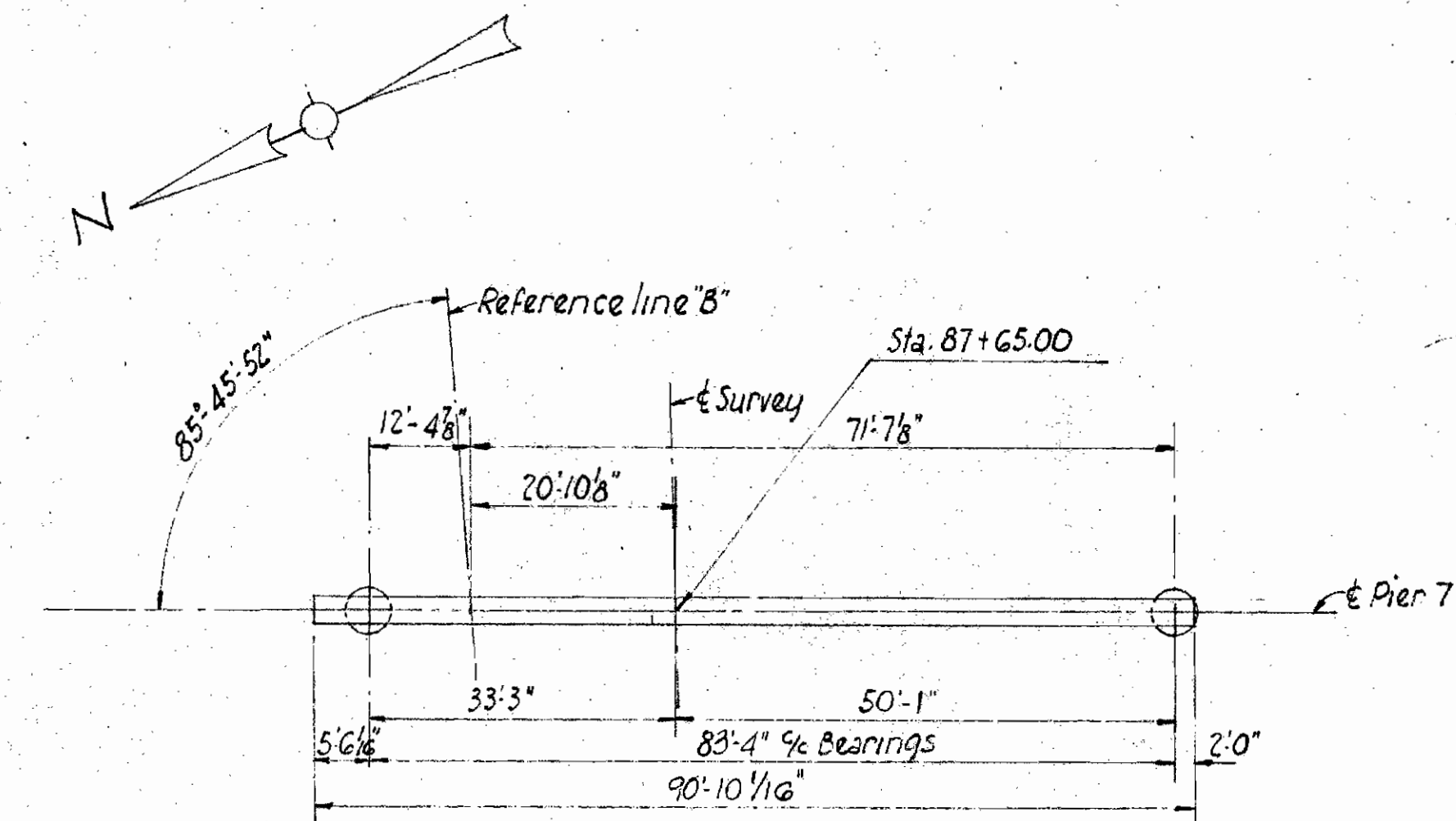
ROSS AVE. AND B. & O. R.R.

HAMILTON COUNTY STA. 79 + 47.35

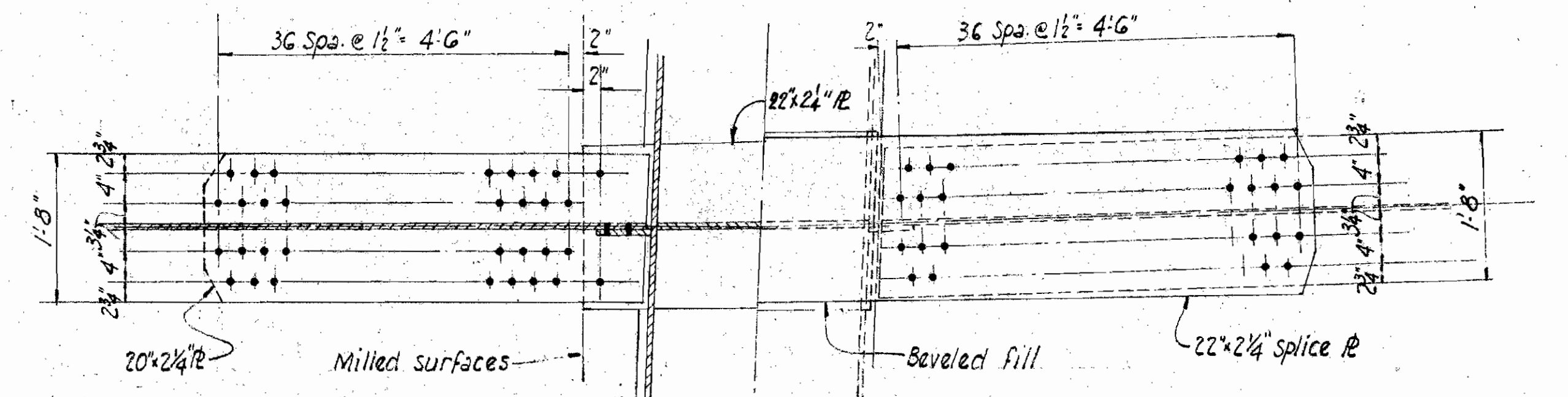
HAMILTON COUNTY STA. 93 + 52.25

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
					11/20/00

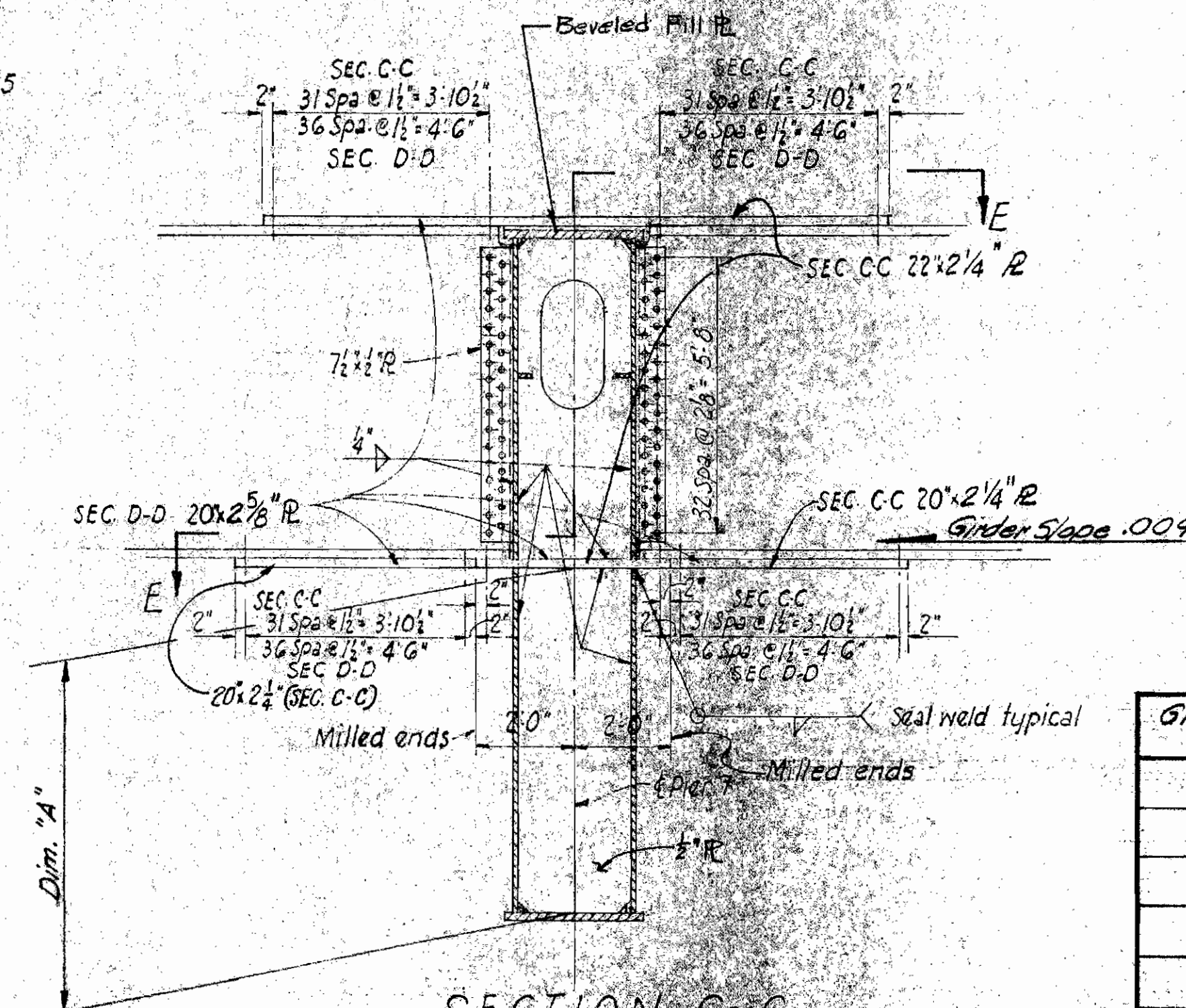
J. R.	J. R.	J. C. P.	626	220-68
-------	-------	----------	-----	--------



PLAN OF PIER 7



SECTION E-E
For Girders 1-5



SECTION E ~ E
For Girders 6-10

NOTE: Flanges and webs are A441 steel-all other material A36

For end diaphragm cover see 54170

For joint preparations see 37170

For additional notes see 54170

GIRDER NO.	DIM. H"
6	7'-1 5/16"
7	7'-1 5/16"
8	7'-1 3/8"
9	7'-1 3/8"
10	7'-1 1/2"

SECTION B~B

SECTION G-C
West bound Lanes Girders 1-5
SECTION D-D
East bound Lanes Girders 6-10

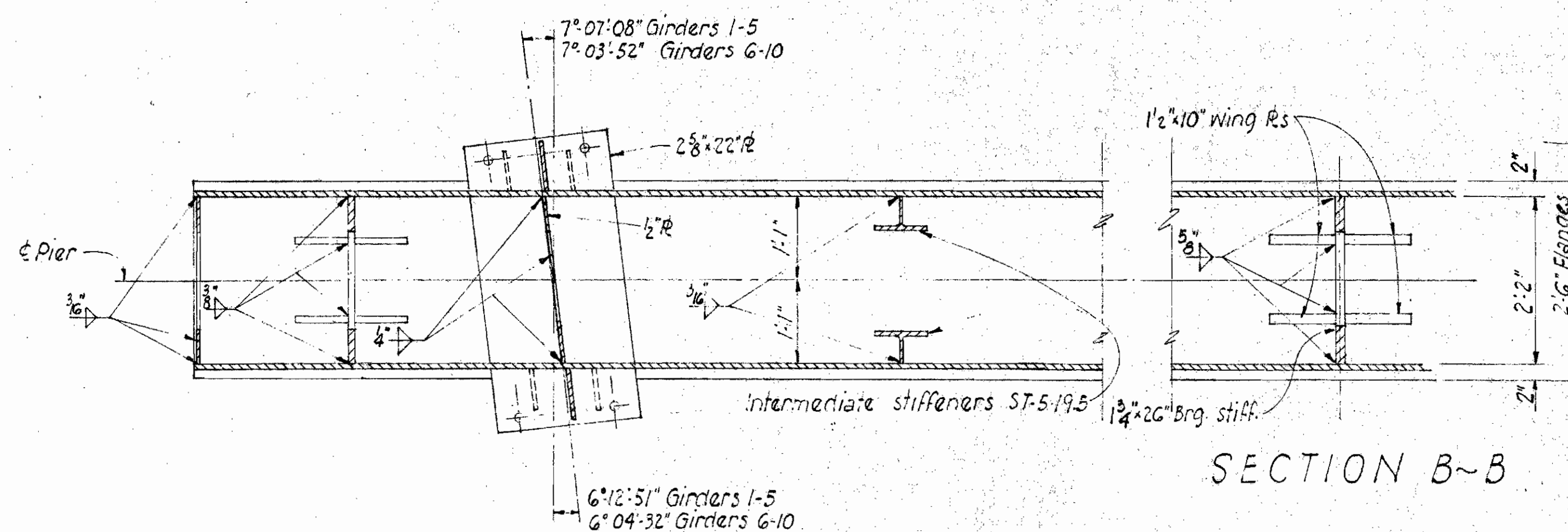
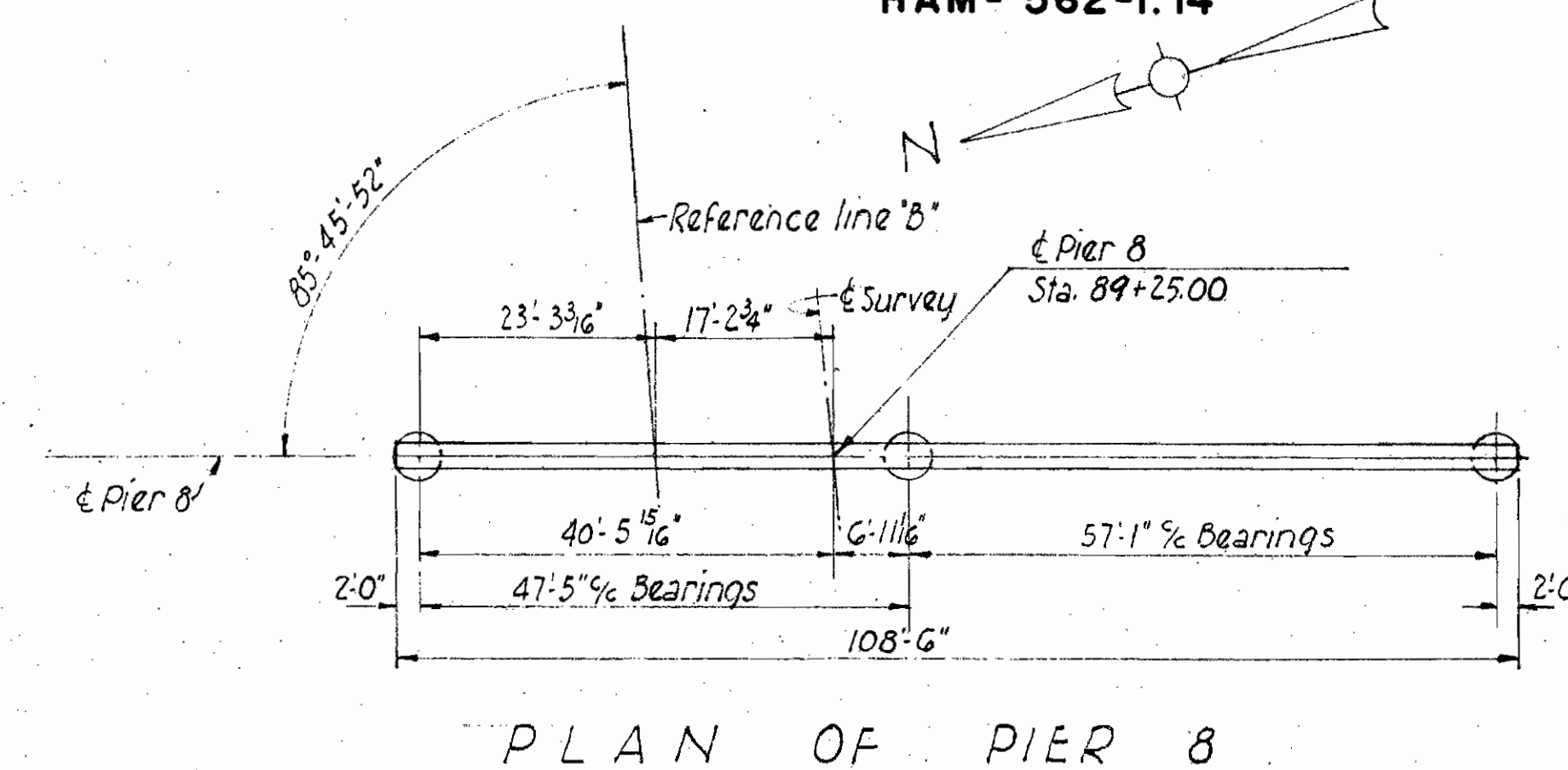
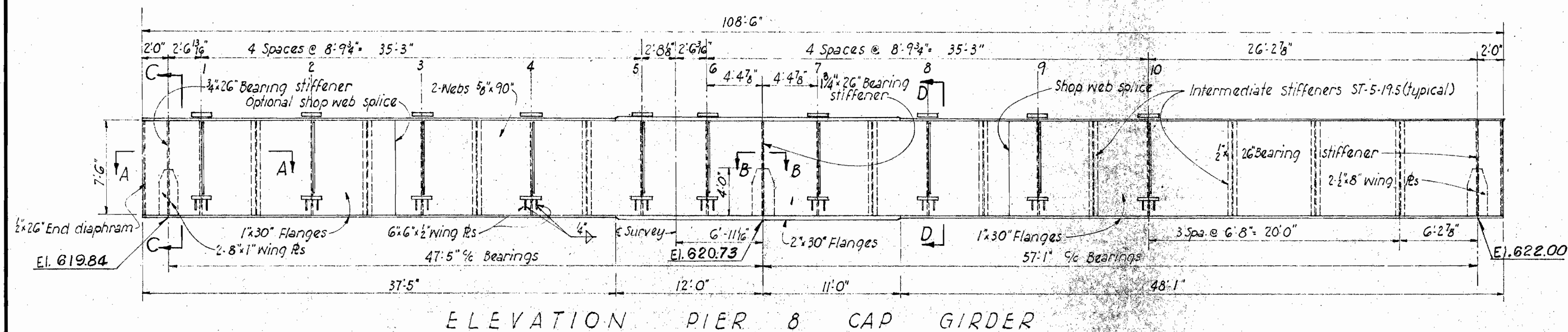
VOGT, IVERS, & ASSOCIATES
ENGINEERS ARCHITECTS
CINCINNATI CHICAGO

PIER 7 CAP GIRDER
BRIDGE NO. HAM-562-0150
NORWOOD LATERAL OVER
ROSS AVE. AND B.&O.R.R.

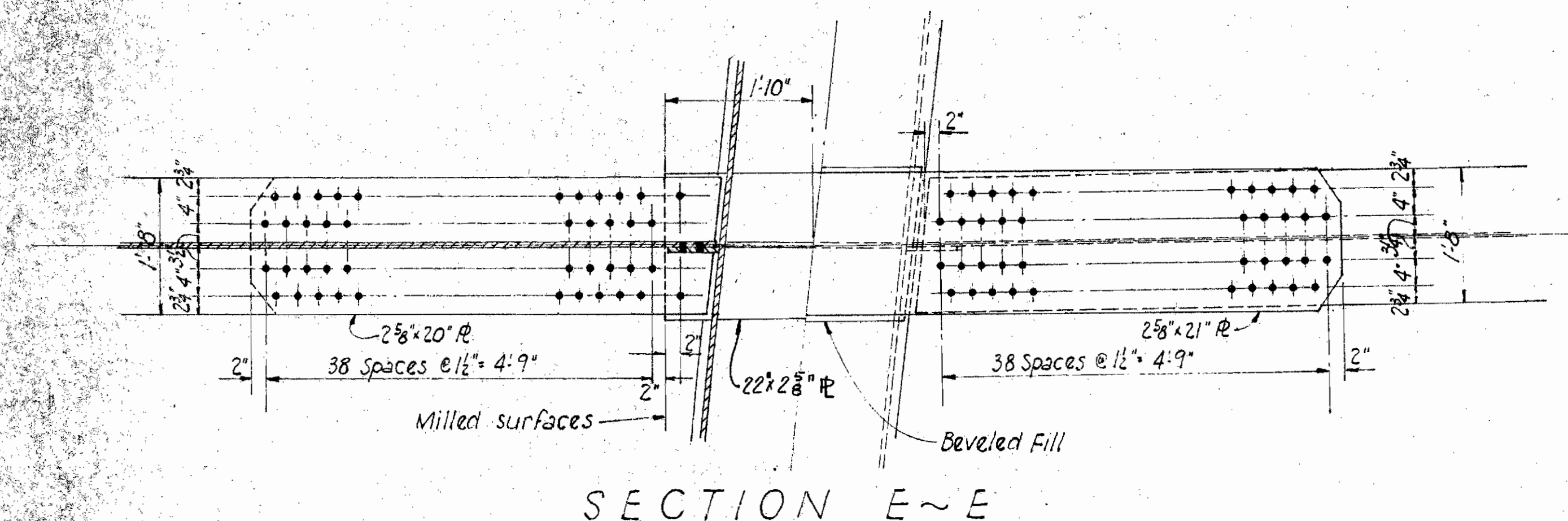
HAMILTON COUNTY STA. 79 + 47.35
STA. 93 + 52.28

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE	REVIEWED
J. R.	J. R.		J. C. P. R. V. R.	<i>bb</i>	2-20-68	

HAM- 562-1.14



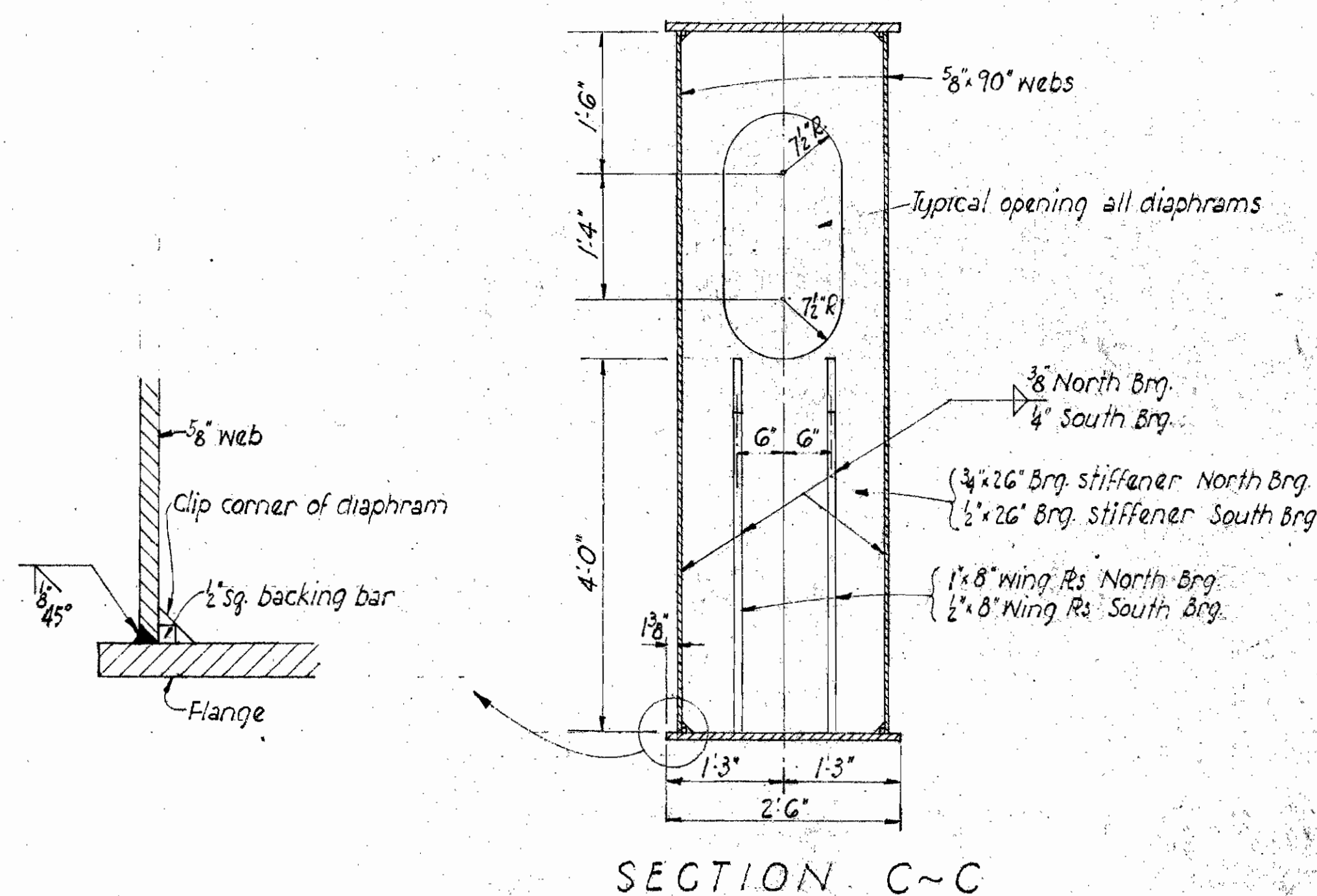
SECTION B~B



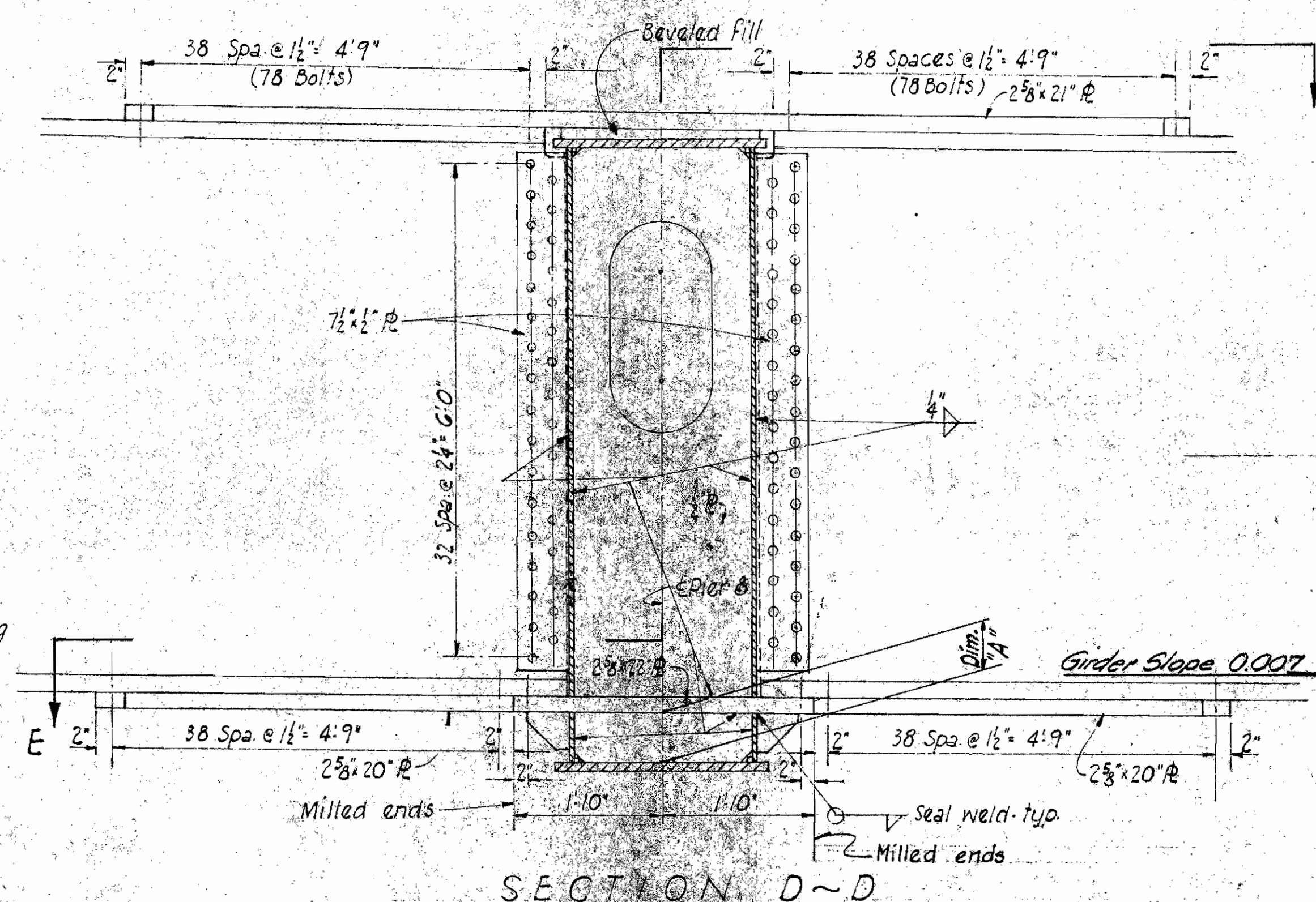
SECTION E~E

SECTION A~A

Note! A bend line exists at the $\frac{1}{2}$ Pier for Girders 1-10



SECTION C~C



SECTION D~E

GIRDER NO.	Dim. "A"
1	7' 3 1/8"
2	7' 1 1/16"
3	7' "
4	6' 15/16"
5	6' 7/8"

GIRDER NO.	DIM. IN
6	6 11/16"
7	6 3/4"
8	6 13/16"
9	6 15/16"
10	7 1/16"

For additional notes
and end diaphragm cover see 54/70

For joint preparation see 37/70

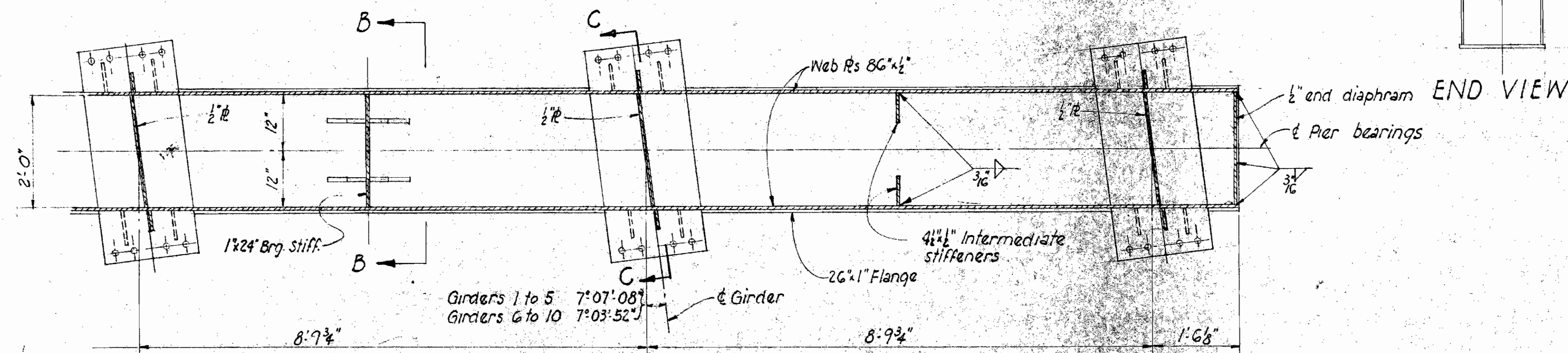
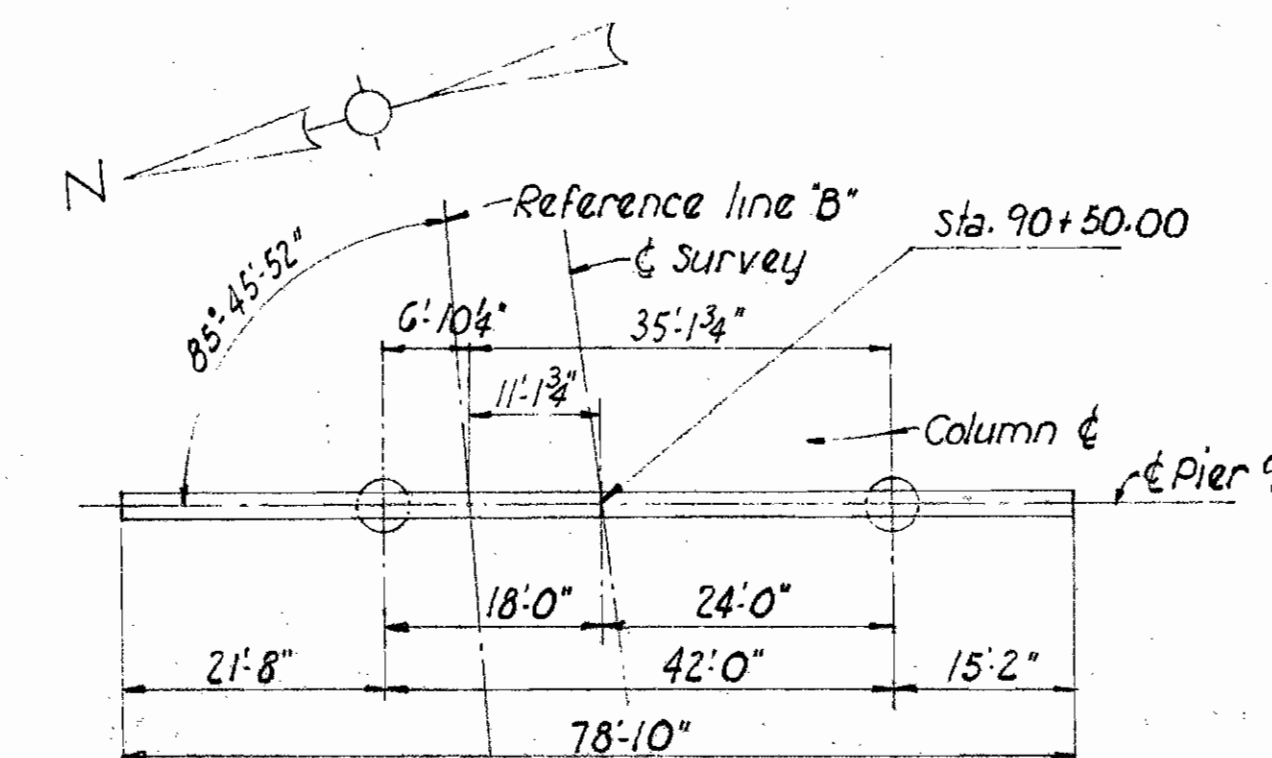
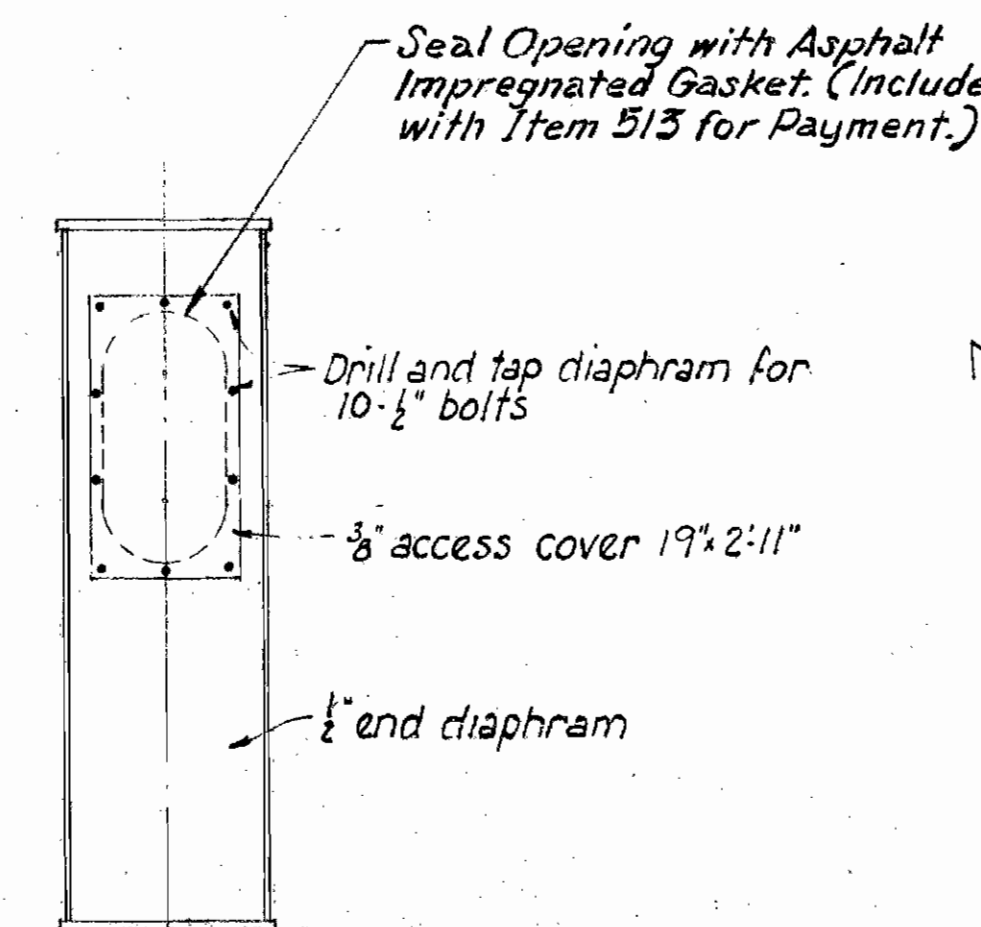
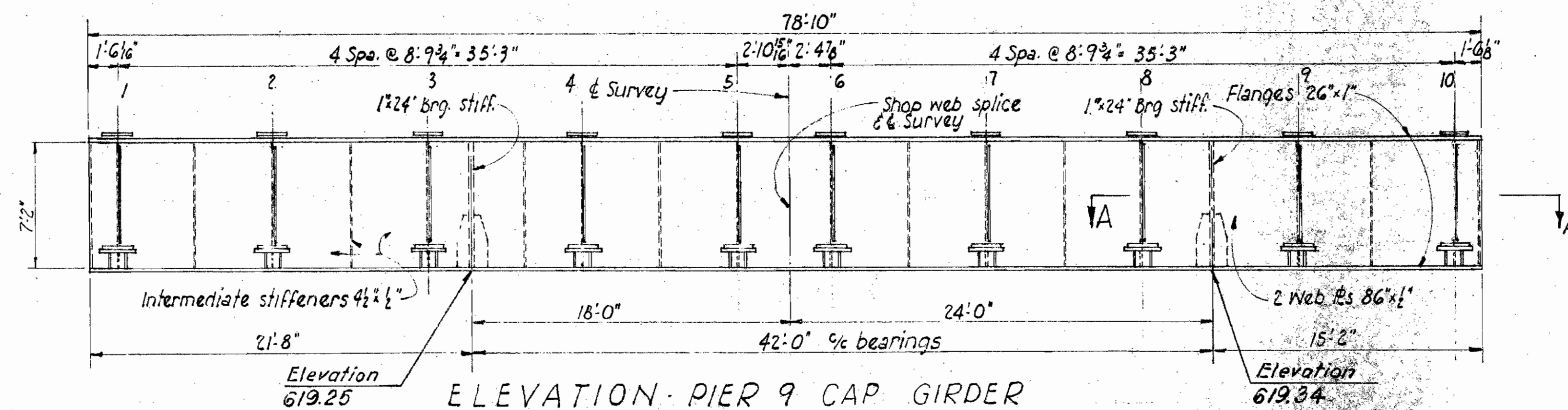
PIER 8 CAP GIRDER
BRIDGE NO. HAM-562-0150
NORWOOD LATERAL OVER
ROSS AVE. AND B. & O. R.R.

HAMILTON COUNTY STA. 79 + 47.35
STA. 93 + 52.25

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED	DATE
----------	-------	--------	---------	----------	------

J R	J R	J C P	666 2:20:68
-----	-----	-------	-------------

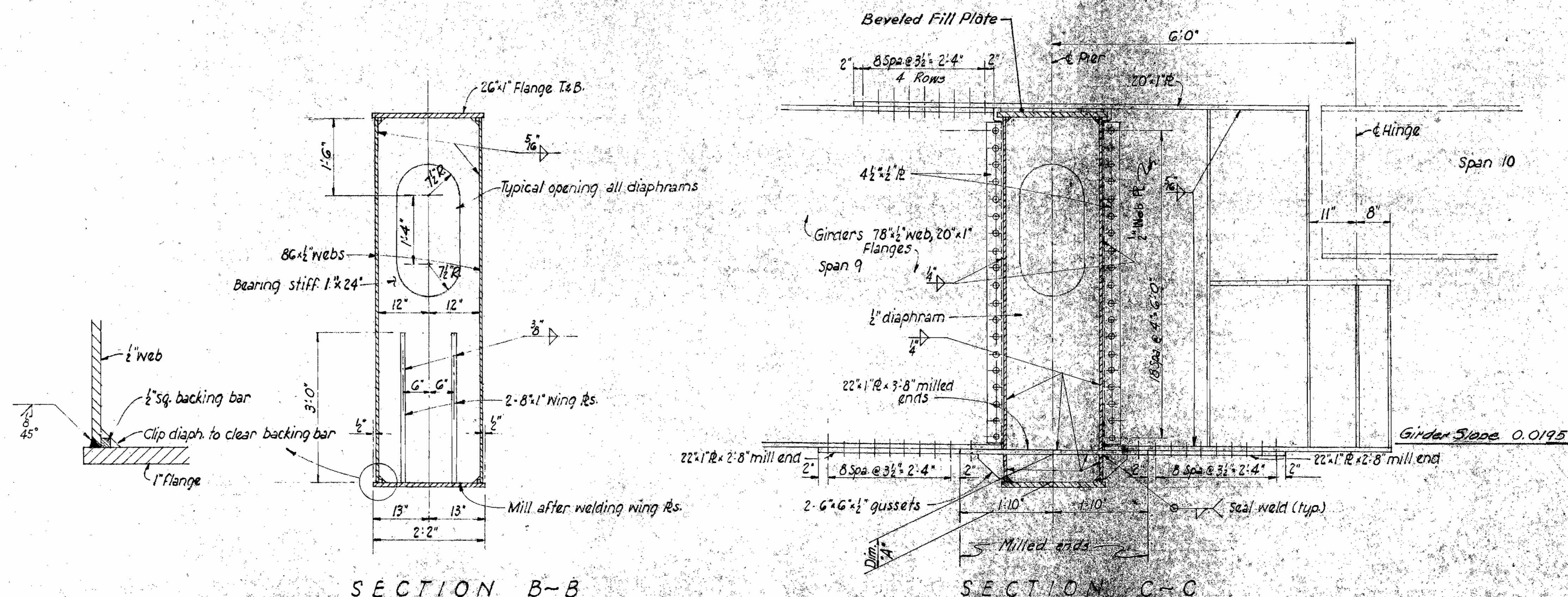
HAM - 562-1.14



END VIEW

NOTES FOR PIER CAP GIRDERS (Sheet 49 through 54/70)

1. Field paint shall be omitted from the inside of the box girder section.
2. In order to secure full bearing on the milled ends of the compression flanges of the longitudinal girders the compression plates and the girder flanges shall be sub-punched or sub-drilled in the shop and thereafter drilled full size in the field.



GIRDER No.	DIM. "A"
1	7' 15 1/16"
2	7' 1/8"
3	7"
4	6' 15 1/16"
5	6' 7/8"

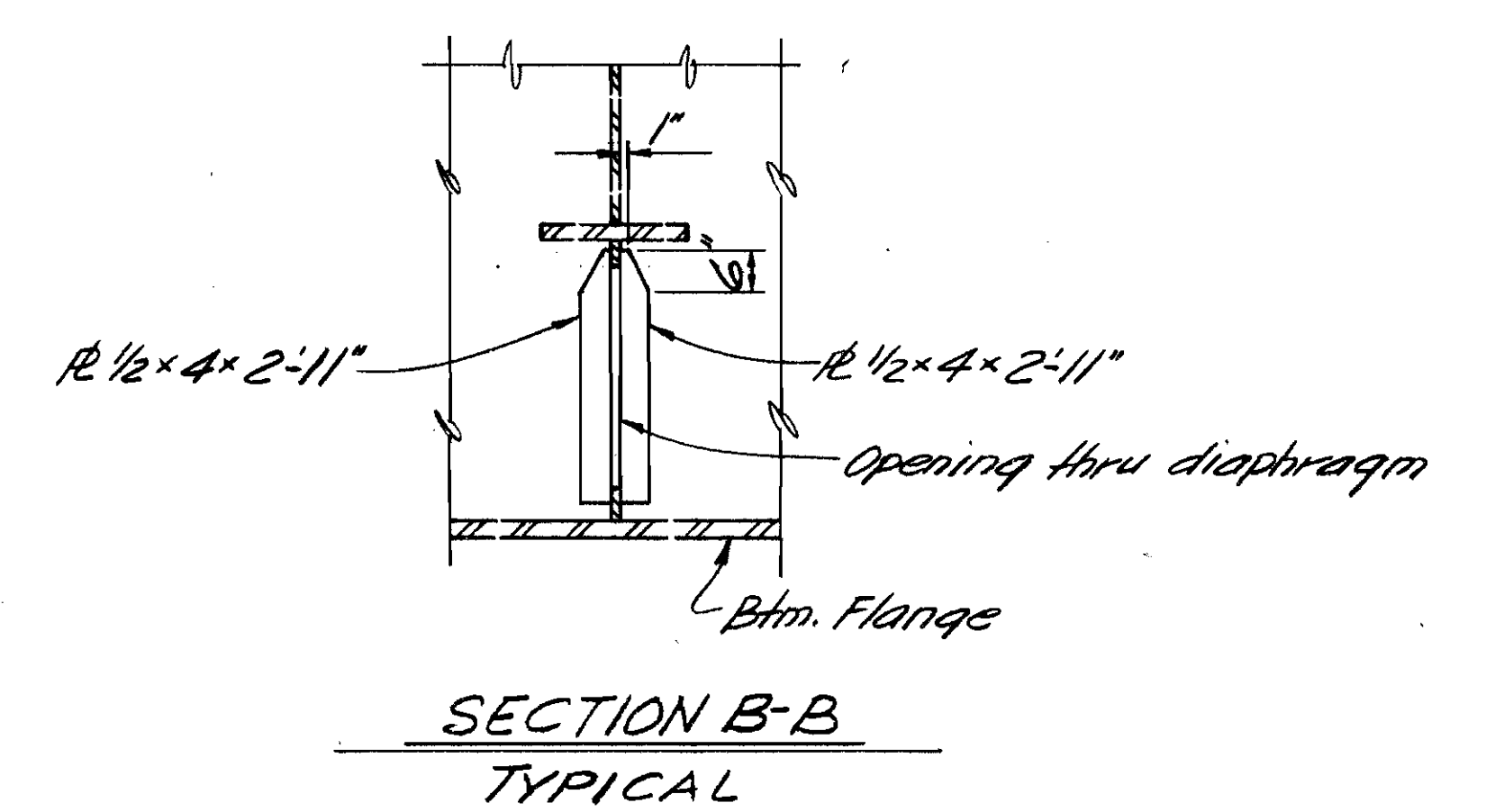
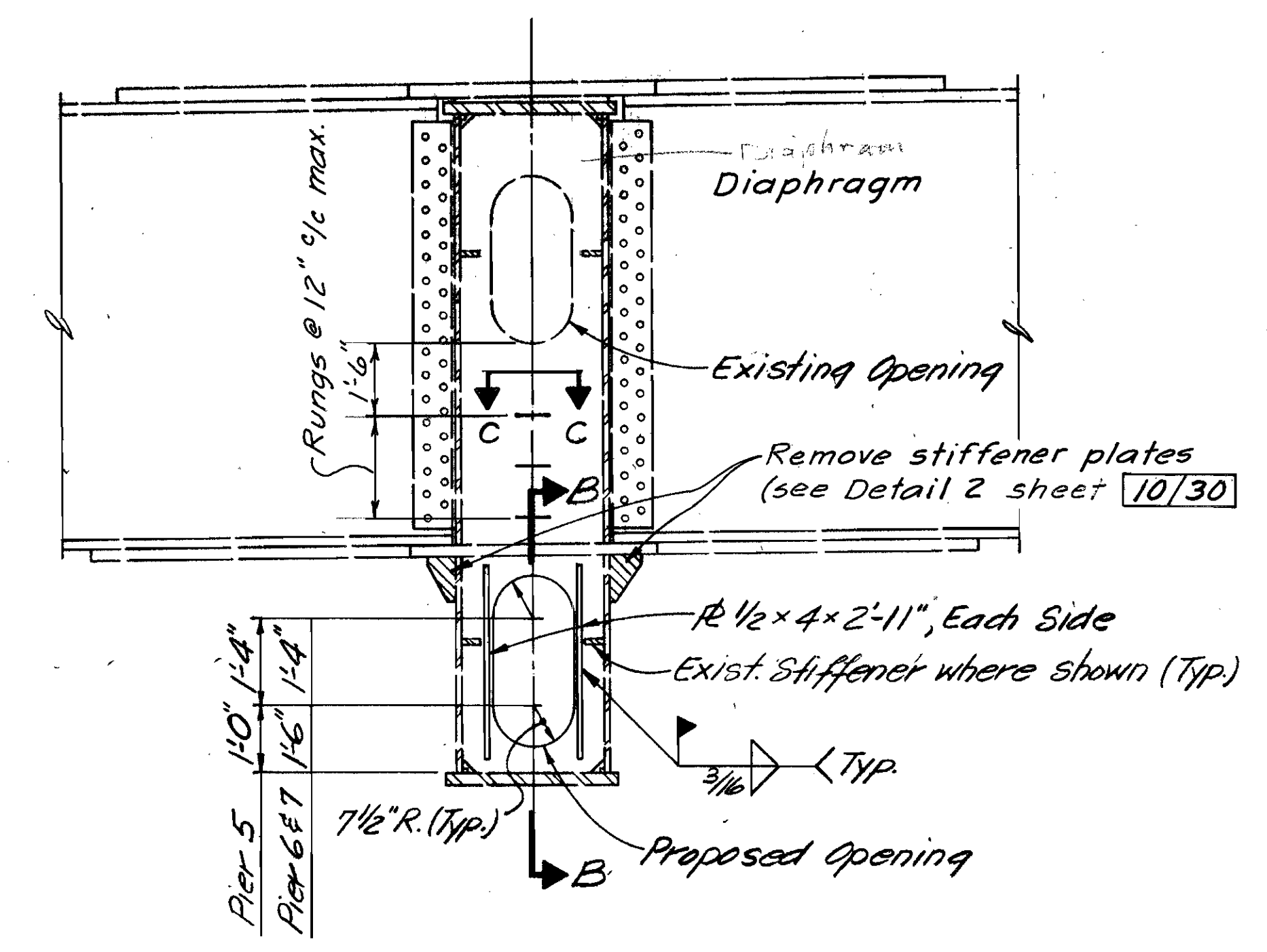
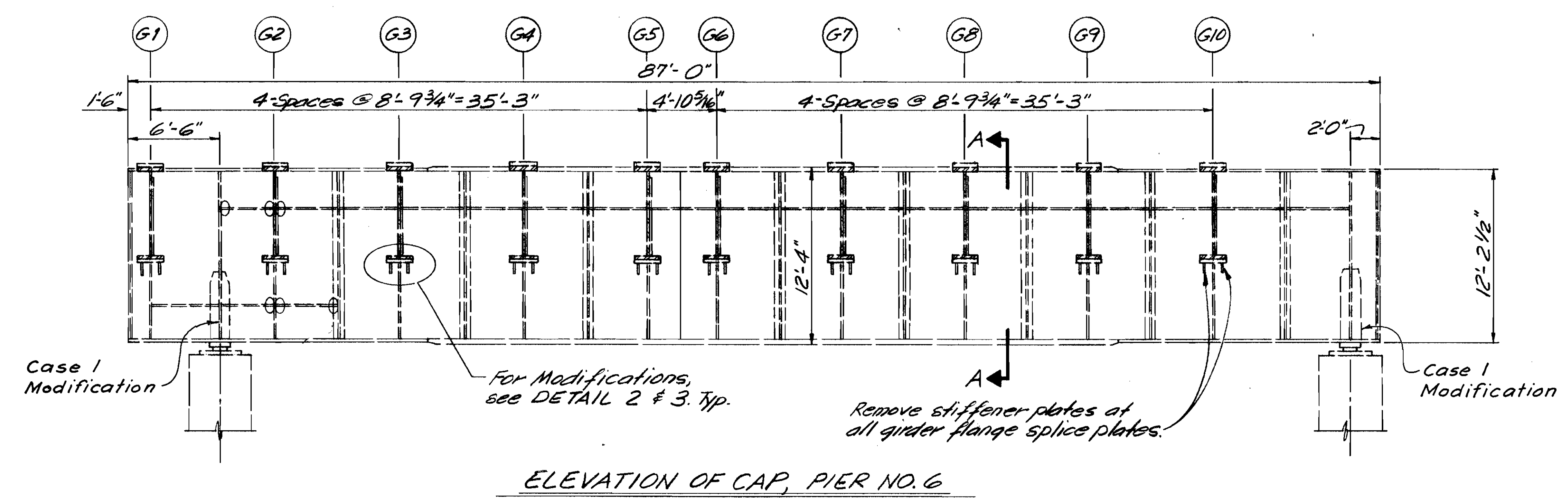
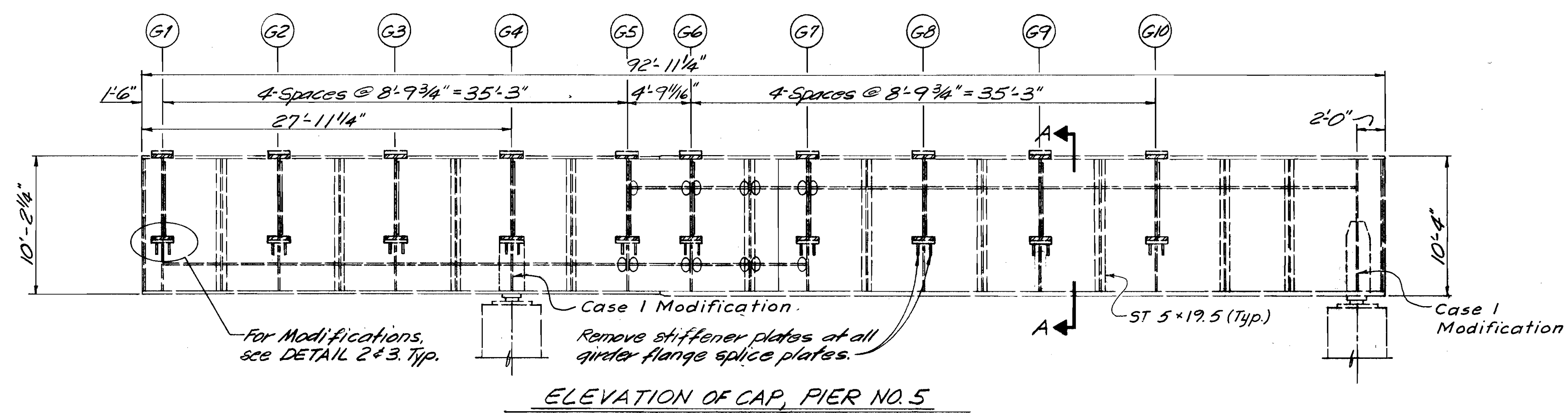
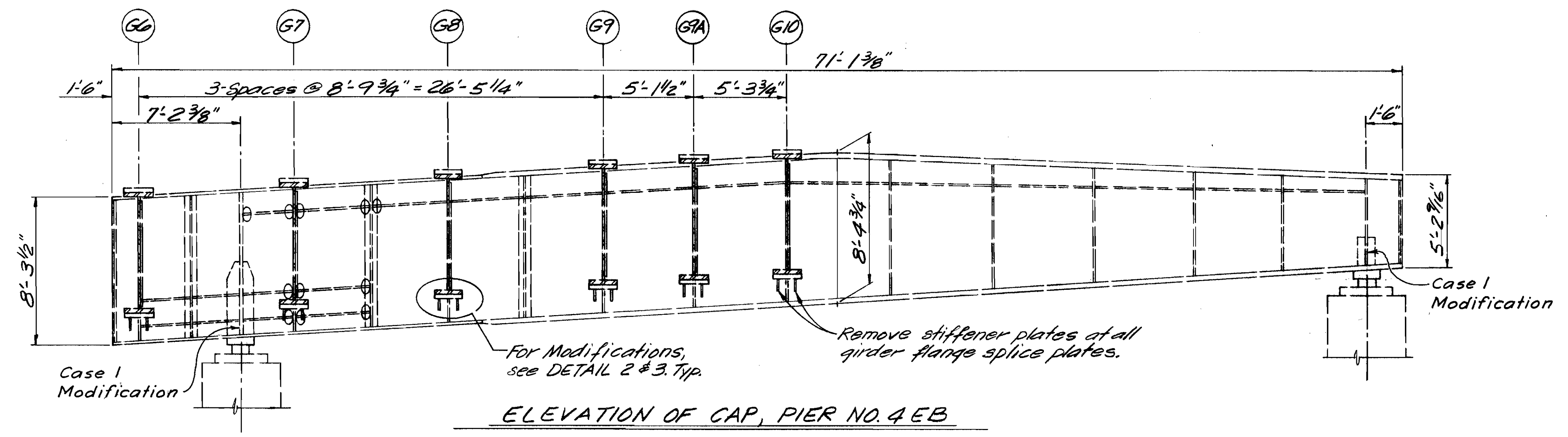
GIRDER No.	DIM. "A"
6	6' 1 1/16"
7	6' 1 1/16"
8	6' 3/4"
9	6' 13 1/16"
10	6' 15 1/16"

For joint preparations see 37/70

VOGT, IVERS, & ASSOCIATES ENGINEERS ARCHITECTS CINCINNATI CHICAGO			
PIER 9 CAP GIRDER BRIDGE NO. HAM-562-0150 NORWOOD LATERAL OVER ROSS AVE. AND B.O.R.R.			
HAMILTON COUNTY		STA. 79+47.35 STA. 93+52.25	
DESIGNED	DRAWN	CHECKED	APPROVED
J.R.	J.R.	J.C.P.	666
		22068	

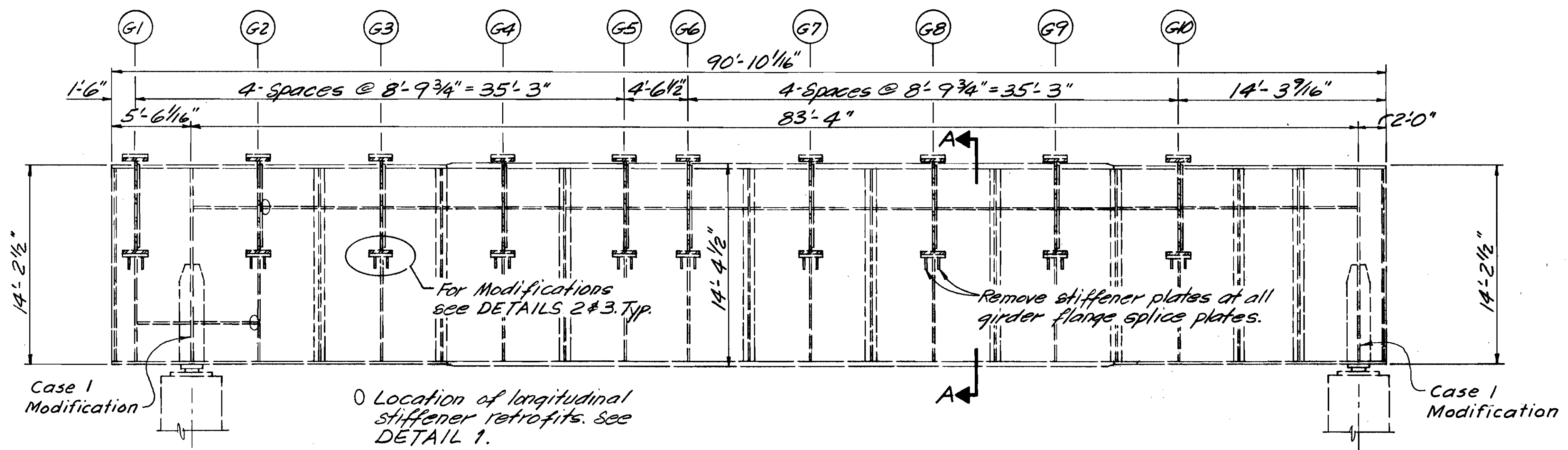
APPENDIX B

REHABILITATION PLANS

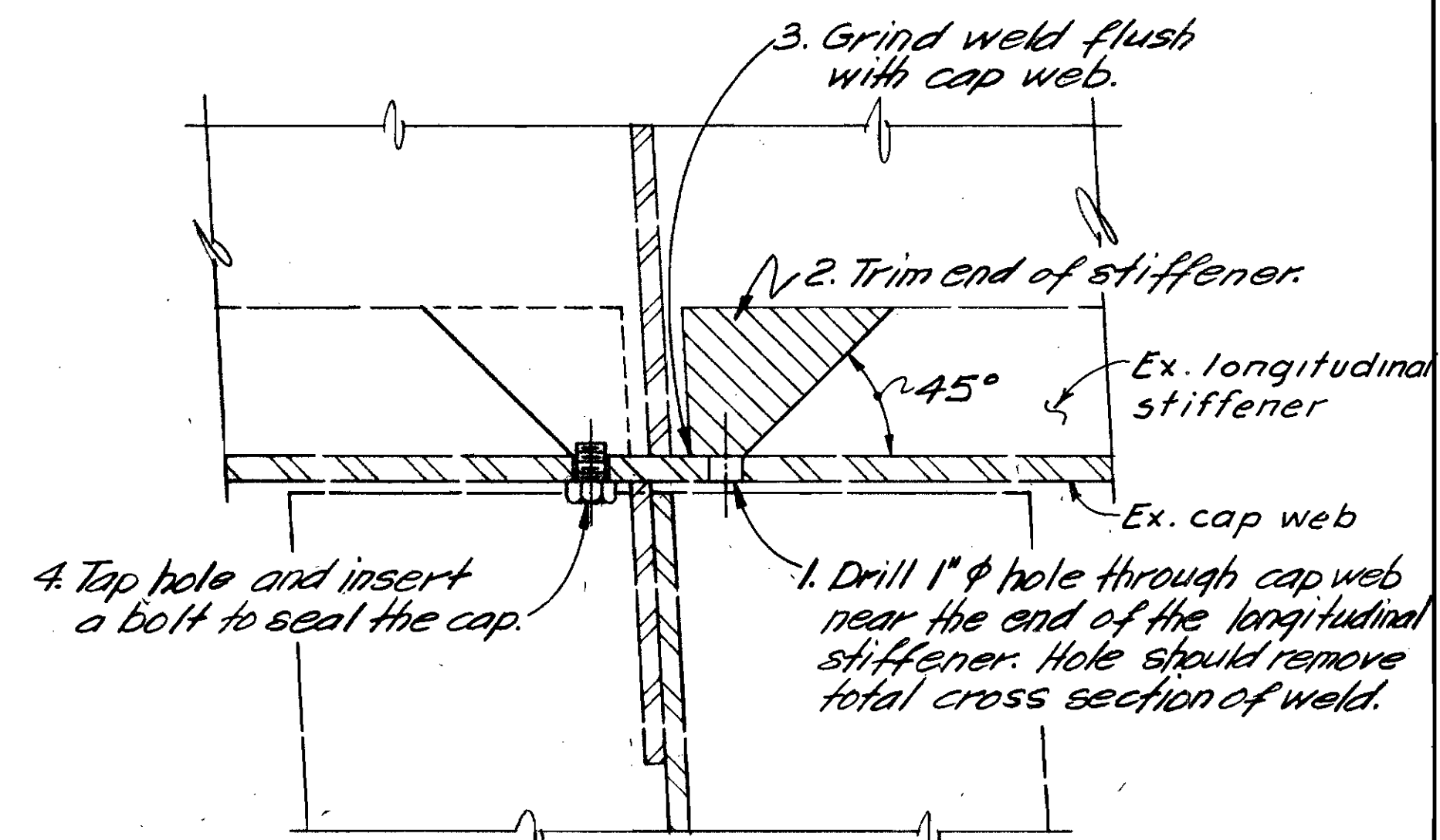


NOTES:
Unless noted otherwise, all diaphragm shall be modified per Case 2 detail as shown on sheet 10/30.
For Case 1 modification see Sht. 10/30.
O denotes location of longitudinal stiffener retrofits. See DETAIL 1 on Sheet 9/30.
For DETAIL 2 & 3, see Sht. 10/30.
For SECTION C-C see Sht. 10/30.

BALKE ENGINEERS 1848 SUMMIT RD. CINCINNATI, OHIO 45237		8/30
PIER CAP DETAILS BRIDGE NO. HAM-562-0147 NORWOOD LATERAL OVER ROSS AVE. AND B.&O. R.R.		
DESIGNED	DRAWN	TRACED
MRS	WJH	~
CHECKED	REVIEWED	DATE
VDG	GRS	3/93
REVISED		



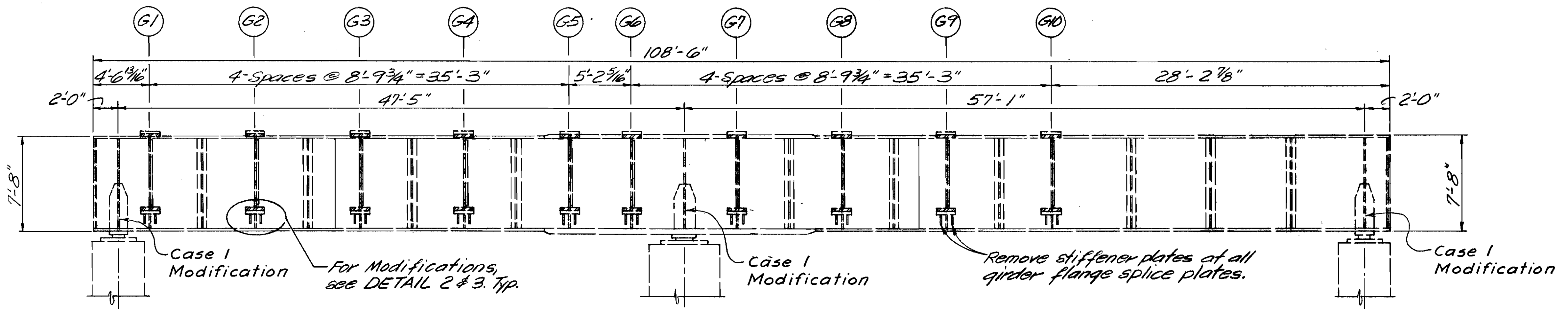
ELEVATION OF CAP, PIER NO. 7



PLAN

DETAIL 1

Retrofit detail for termination of longitudinal stiffener in tension zone of cap.



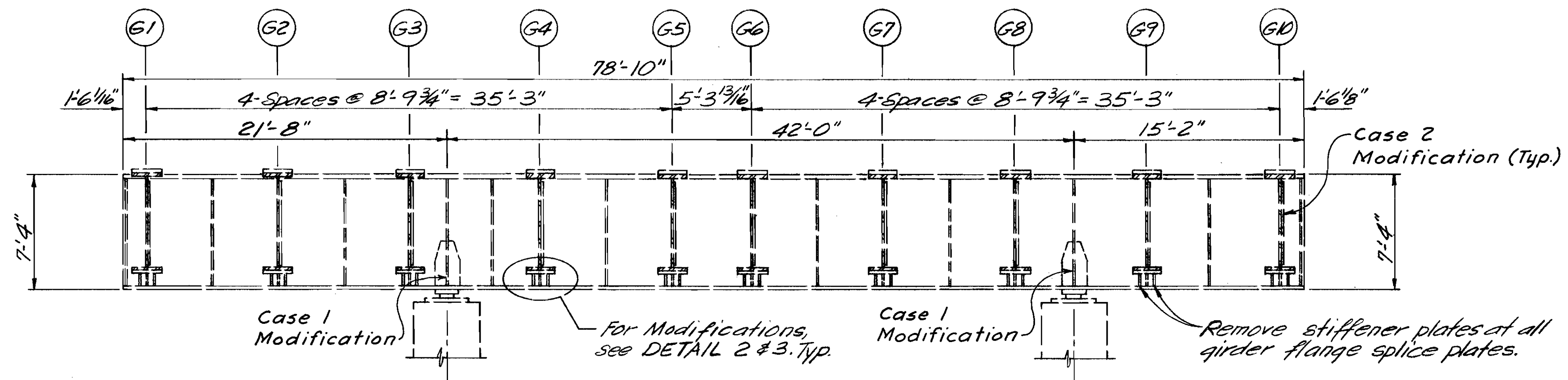
ELEVATION OF CAP, PIER NO. 8

NOTES
Unless noted otherwise, all diaphragms shall be modified per Case 2 detail as shown on sheet 10/30

For Case 1 modification see sheet 10/30

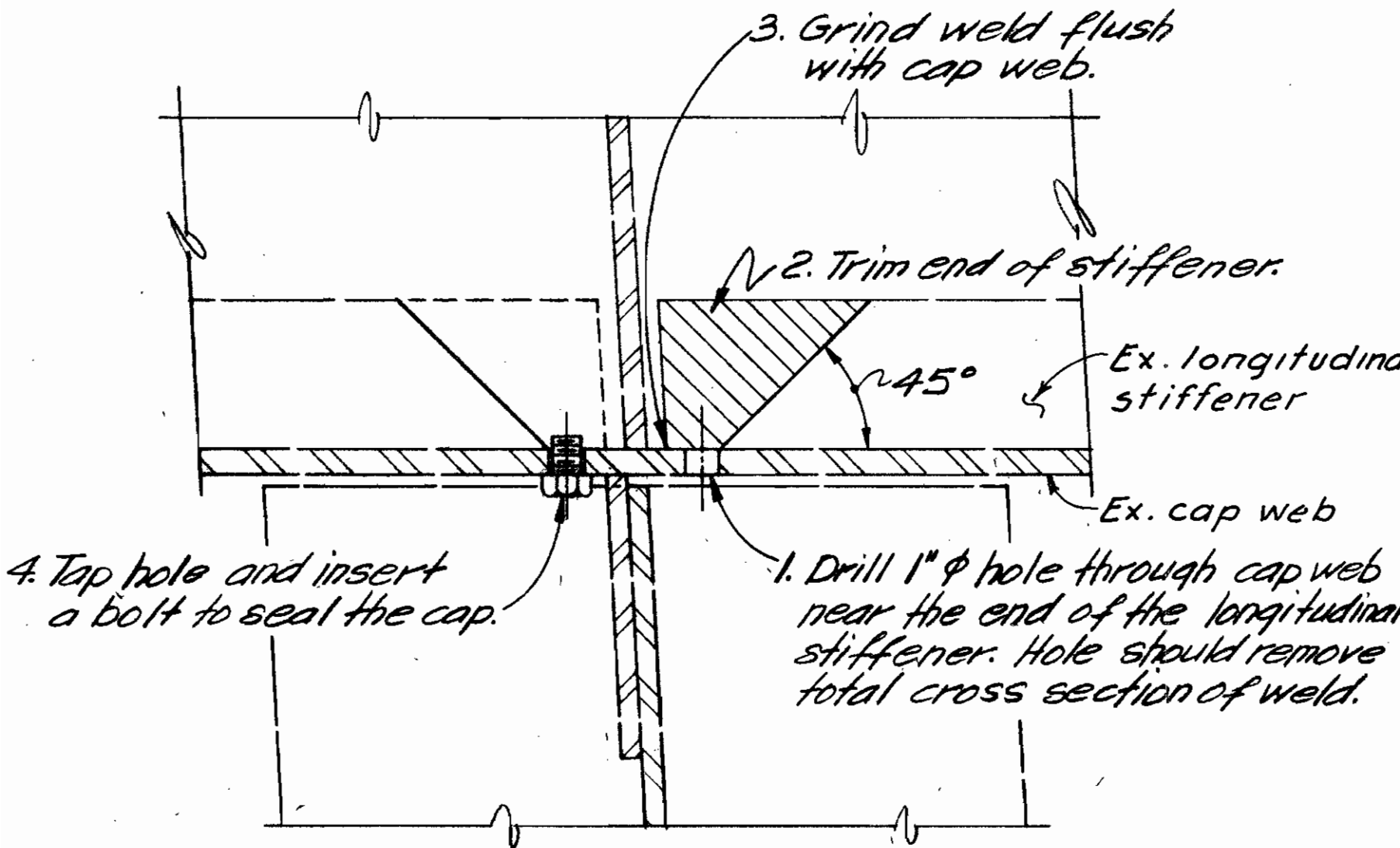
For SECTION A-A see sheet 8/30

For DETAIL 2 & 3 see sheet 10/30



ELEVATION OF CAP, PIER NO. 9

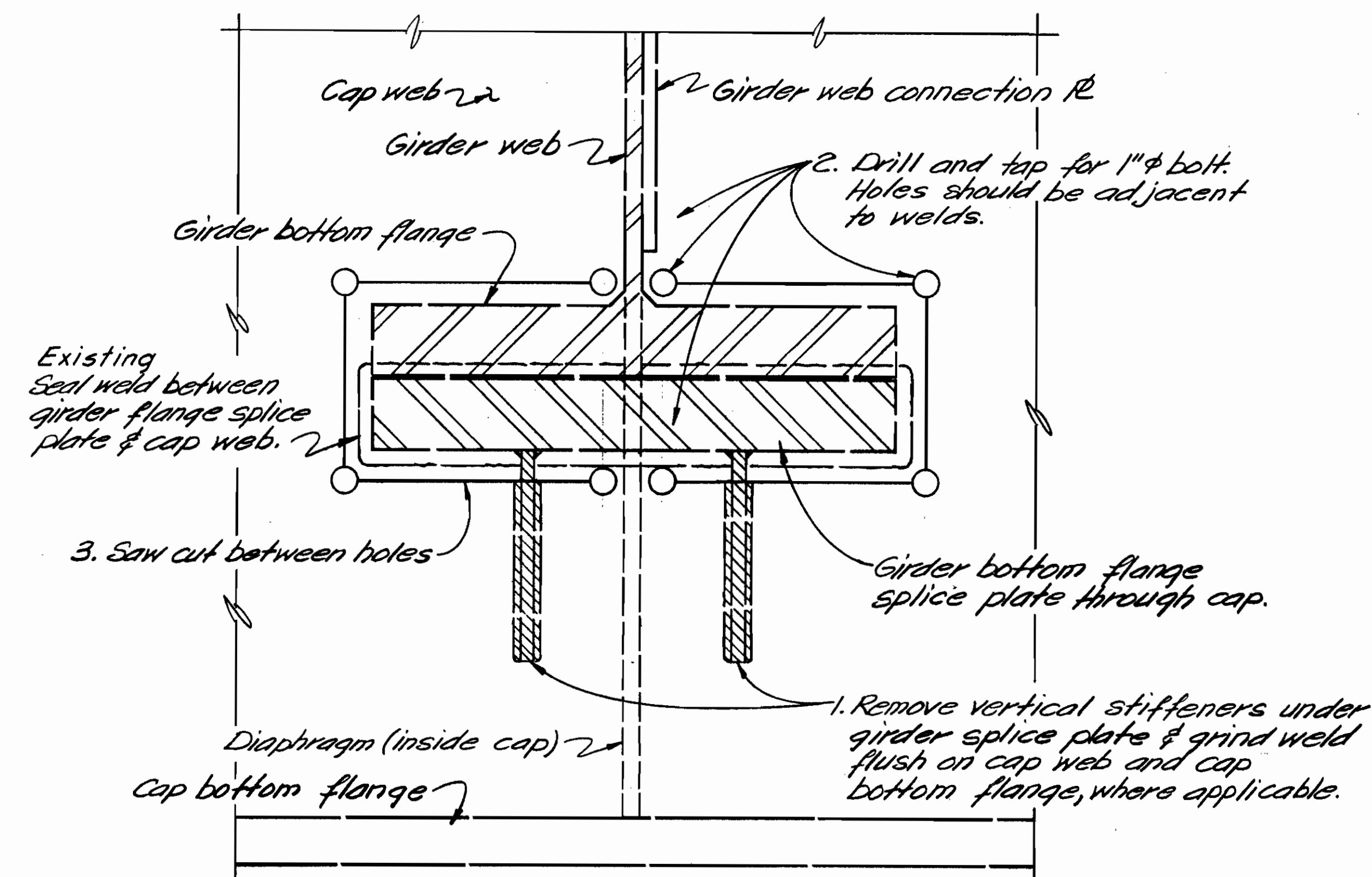
BALKE ENGINEERS 9/30 1848 SUMMIT RD. CINCINNATI, OHIO 45237					
PIER CAP DETAILS BRIDGE NO. HAM-562-0147 NORWOOD LATERAL OVER ROSS AVE. AND B. & O. R.R.					
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
MRS	WJH	~	VDG	GRS 3/93	



PLAN

DETAIL 1

Retrofit detail for termination of longitudinal stiffener in tension zone of cap.

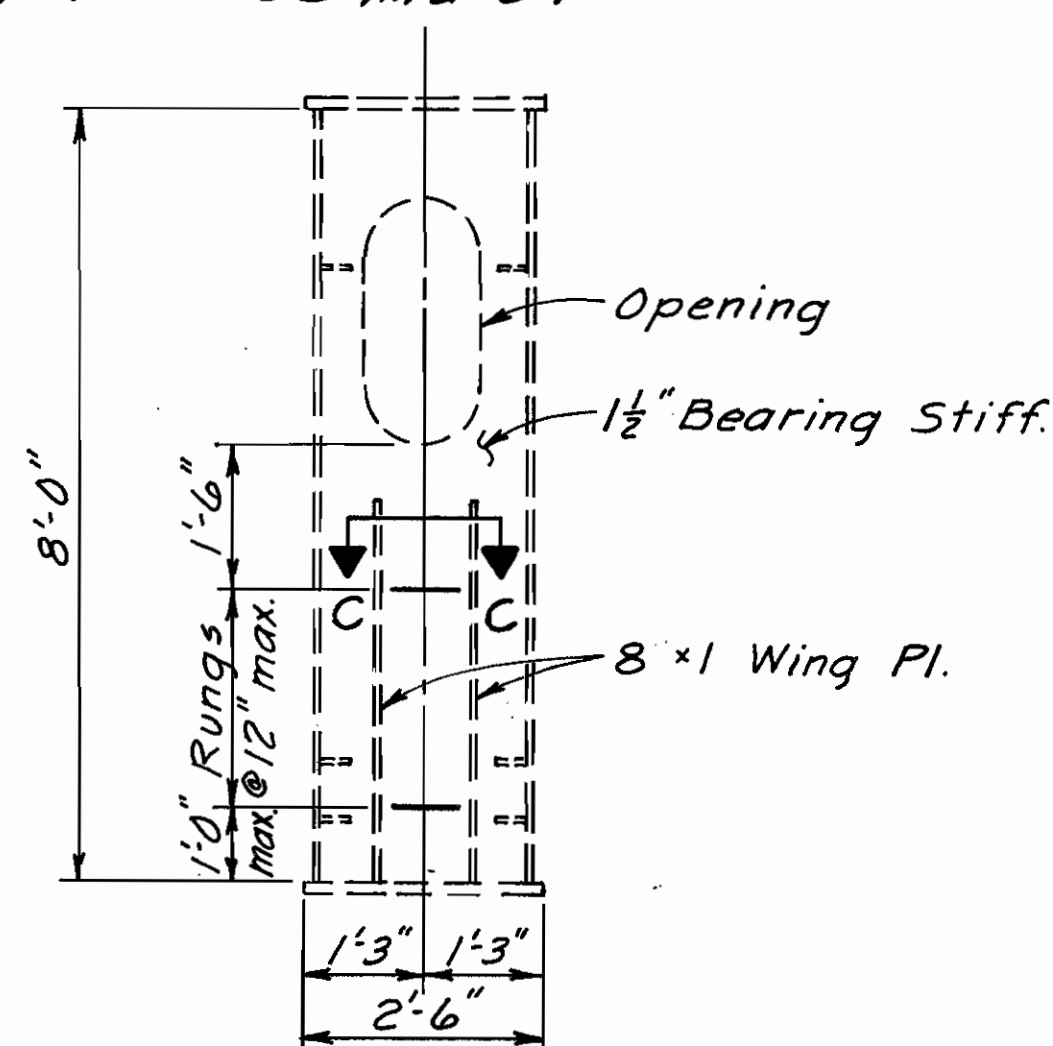


4. Place bolts in holes and caulk-in saw cut to seal the cap. Caulk shall be a two compound, 100% solids epoxy mastic. The material shall be Mark 24.4 from Poly-Carb, Sikador Injection Gel from Sika Chemical Corp., A-188 Splash Zone Compound from Koppers Co., Inc., or approved equal.

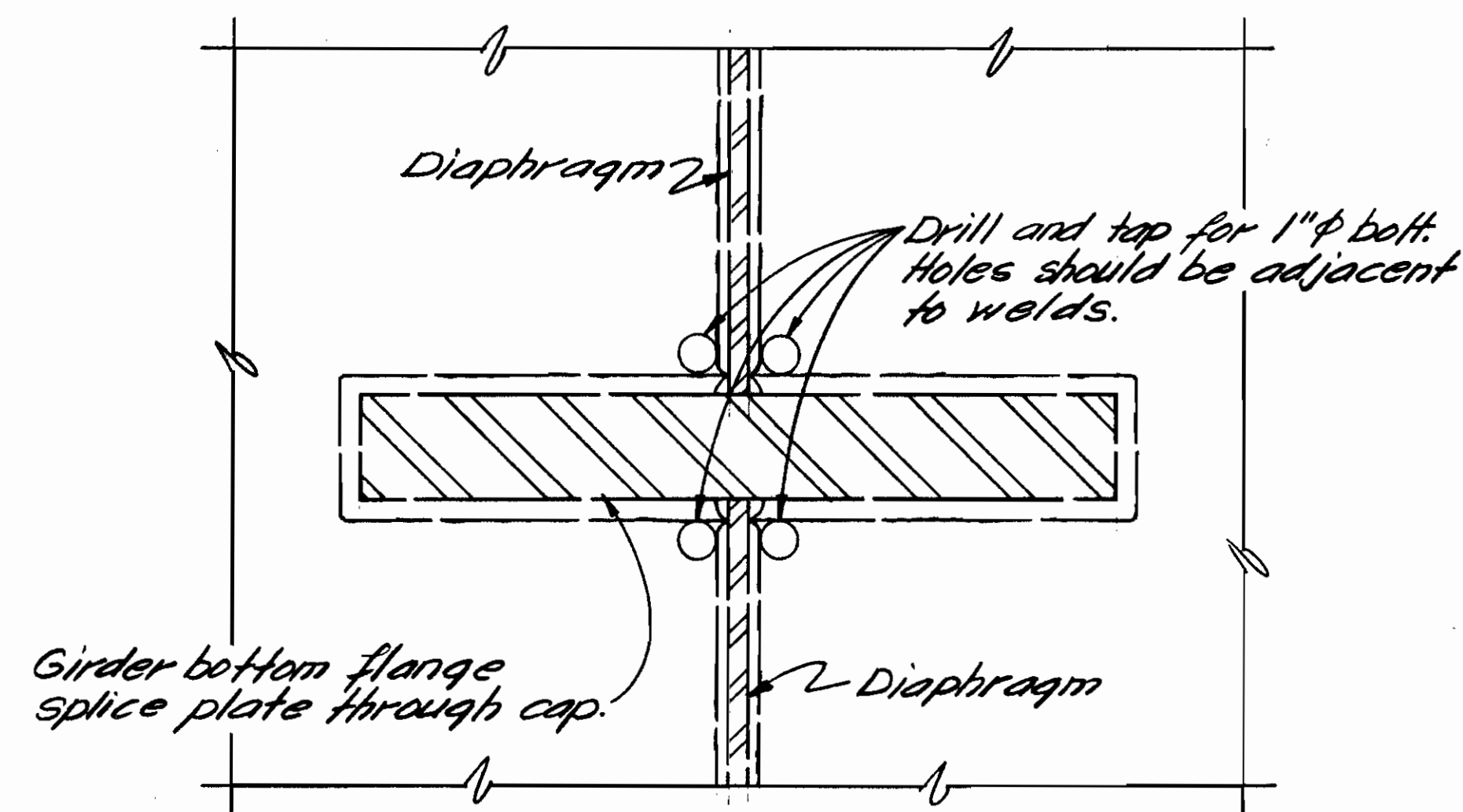
DETAIL 2

TYPICAL AS NOTED

Pier 4 E.B. : G8 thru G10
 Pier 5 : G5 thru G10
 Pier 6 : G3 thru G10
 Pier 7 : G1 thru G3
 Pier 8 : G1 thru G4, G8 thru G10
 Pier 9 : G5 thru G7



CASE 1
Stiffener Modification

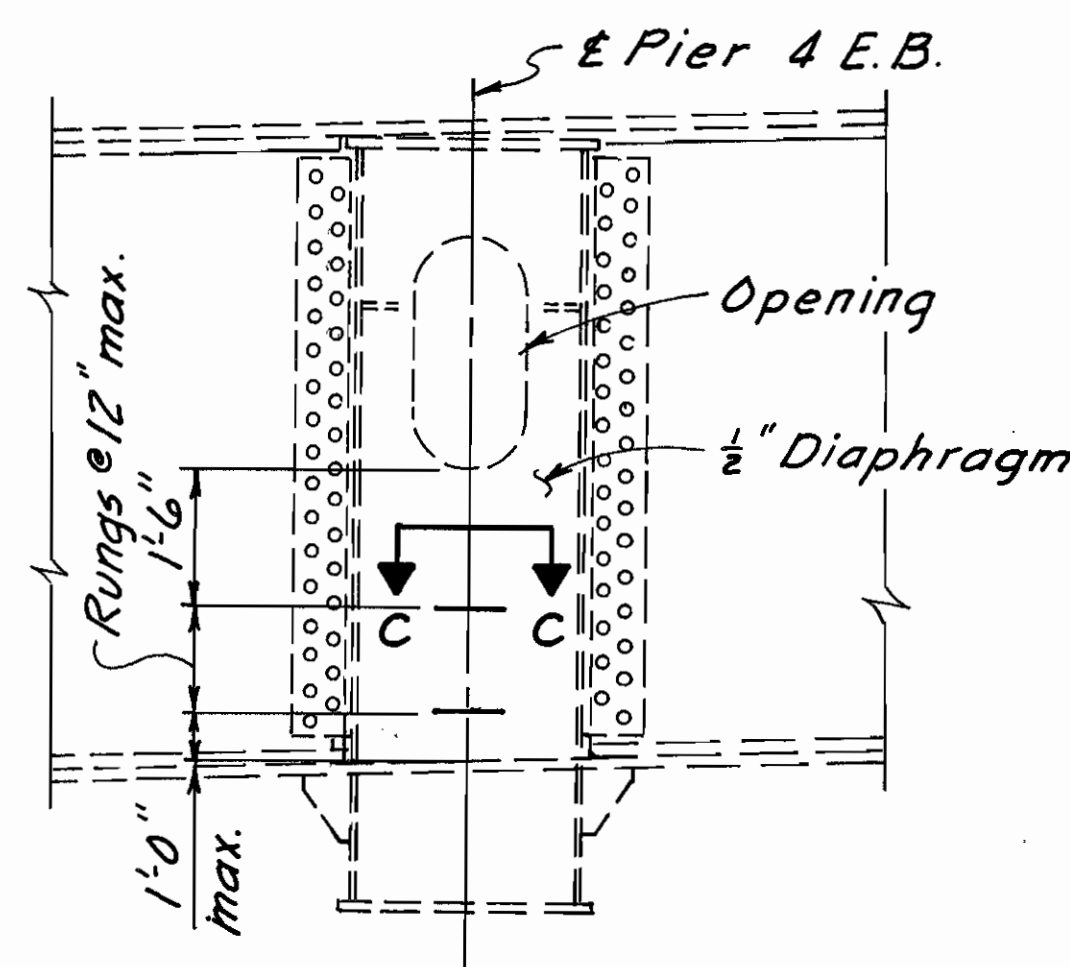


Note: View from inside cap.

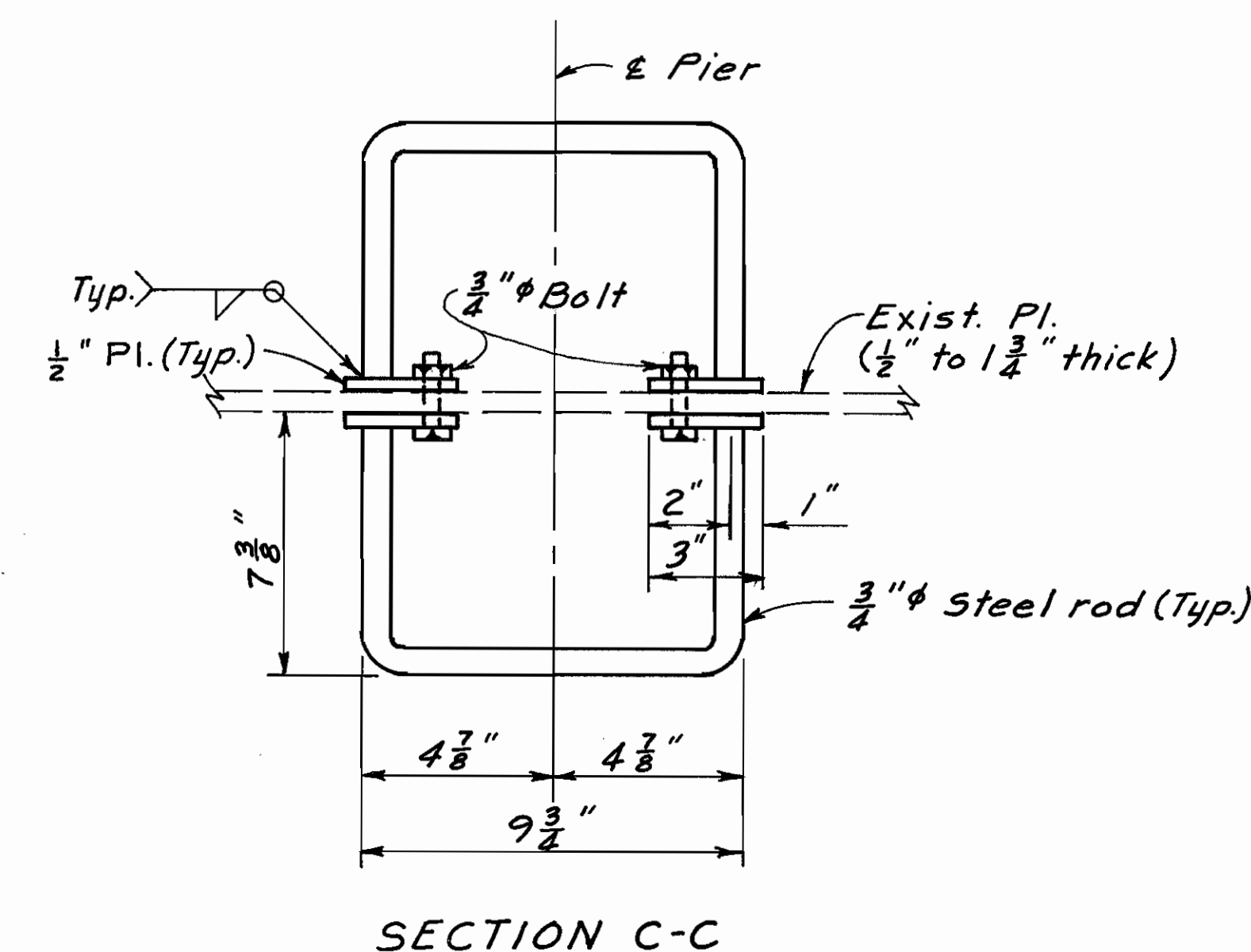
DETAIL 3

TYPICAL AS NOTED

Pier 4 E.B. : G6 & G7
 Pier 5 : G1 thru G4
 Pier 6 : G1 & G2
 Pier 7 : G4 thru G10
 Pier 8 : G5 thru G7
 Pier 9 : G1 thru G4, G8 thru G10



CASE 2
Diaphragm Modification



SECTION C-C

Notes

In addition to the work detailed on the plans, sheets 8-10, the following work is required on the box girder pier caps at Piers No. 4 E.B., 5, 6, 7, 8, and 9.

Remove pigeon droppings, debris and corrosion from exterior of all pier caps. Remove concrete between girder bottom flanges and cap web plates on all pier caps.

Remove rags and debris from the inside of all pier caps.

On cap of Piers No. 4 E.B., 5, 6, 7, 8 clean corroded and burned areas inside cap. Paint cleaned areas with primer coat of paint and apply final coat of paint, silver or white, to entire inside of cap, per System EEU.

On cap of Pier No. 4 E.B. replace deteriorated seal at north access hatch with elastomeric gasket of 1/8" thick neoprene closed cell sponge. Apply neoprene caulking around access hatch cover. Caulking should be applied to bare steel.

The cap of Piers No. 4 E.B. and 8 is bearing on anchor rod at south bearing device. Remove portion of anchor rod on which cap is bearing.

Clean and paint all bearings per System OZEU.

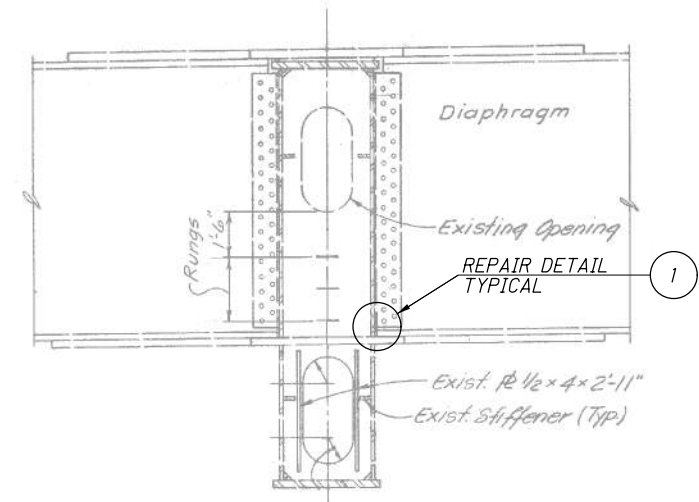
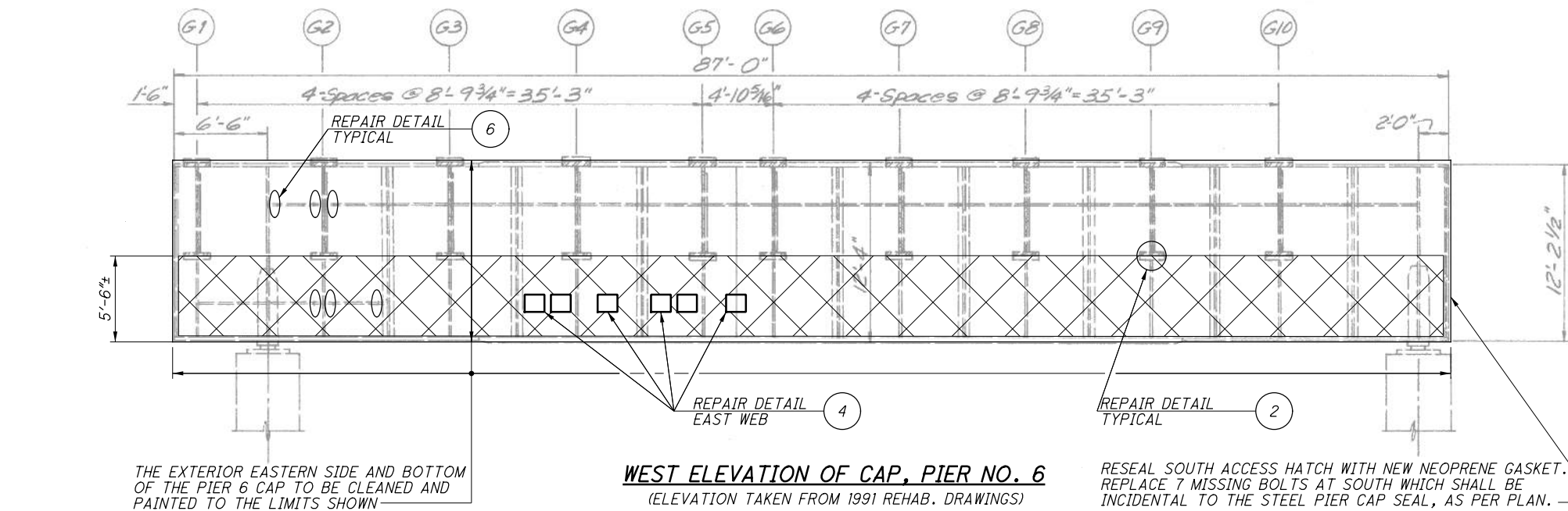
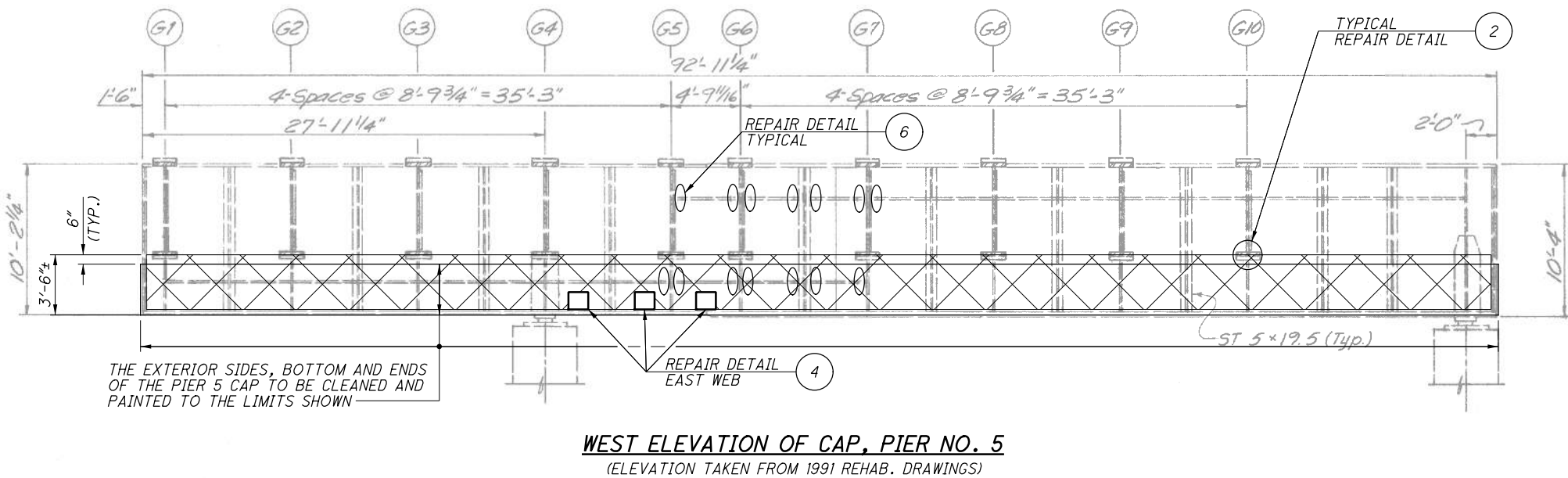
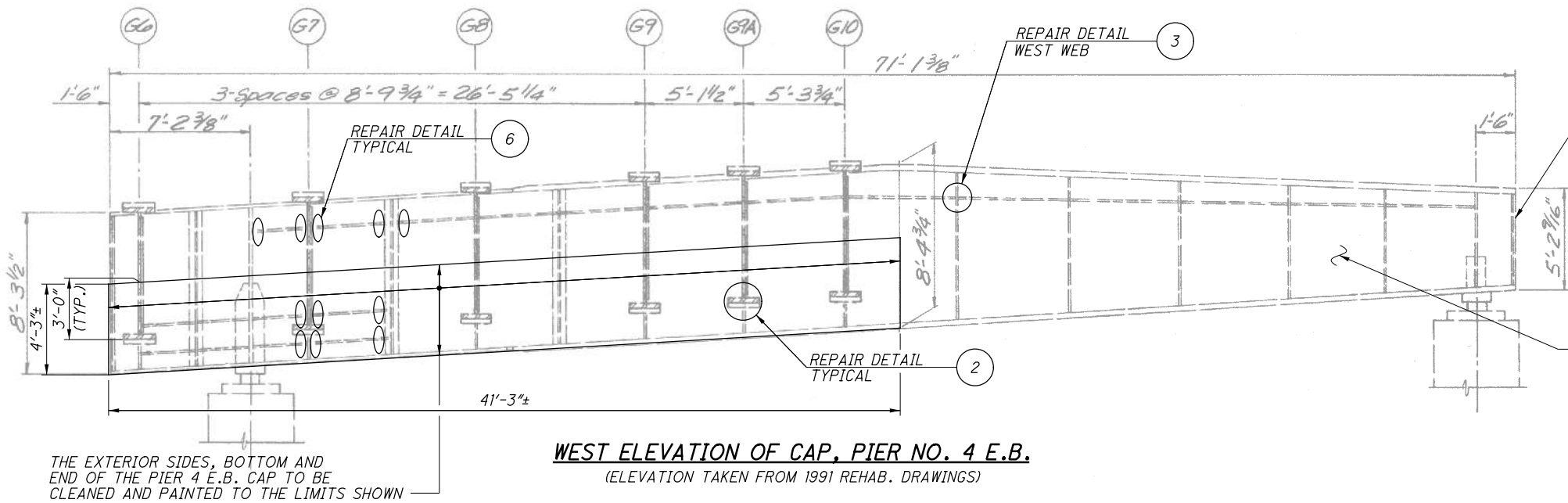
All labor, material and equipment necessary to execute the above work shall be included for payment in the unit price bid for Item 513 Structural steel misc. Repair of fracture-critical box girder pier cap.

BALKE ENGINEERS 10/30
 1848 SUMMIT RD.
 CINCINNATI, OHIO 45237

PIER CAP DETAILS
 BRIDGE NO. HAM-562-0147
 NORWOOD LATERAL OVER
 ROSS AVE. AND B.&O. R.R.

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
MRS	WUH	~	VDG	CBS 3/93	

G:\CL\0\0080\Bridge\13_(HAM-562-0147)\Sheets\93100SD01.dgn 6/12/2013 10:52:14 AM snlgnfelter



TYPICAL SECTION
PIERS 5, 6 AND 7 SHOWN
PIERS 4 E.B., 8 AND 9 SIMILAR
(SECTION TAKEN FROM 1991 REHAB. DRAWINGS)

LEGEND:



- INDICATES THE LIMITS OF INTERIOR ZONE PAINTING USING THE EEU PAINT SYSTEM AT PIERS 5 AND 6 ONLY (FOR LIMITS OF INTERIOR PAINTING AT PIER 4 E.B., SEE WEST ELEVATION OF CAP, PIER NO. 4 E.B.). CLEAN AND PAINT ALL SURFACES (DIAPHRAGMS, WEBS, STIFFENERS, ETC) FROM THE TOP OF THE TIE PLATES TO AND INCLUDING THE BOTTOM FLANGE.



- INDICATES REPAIR DETAIL 4

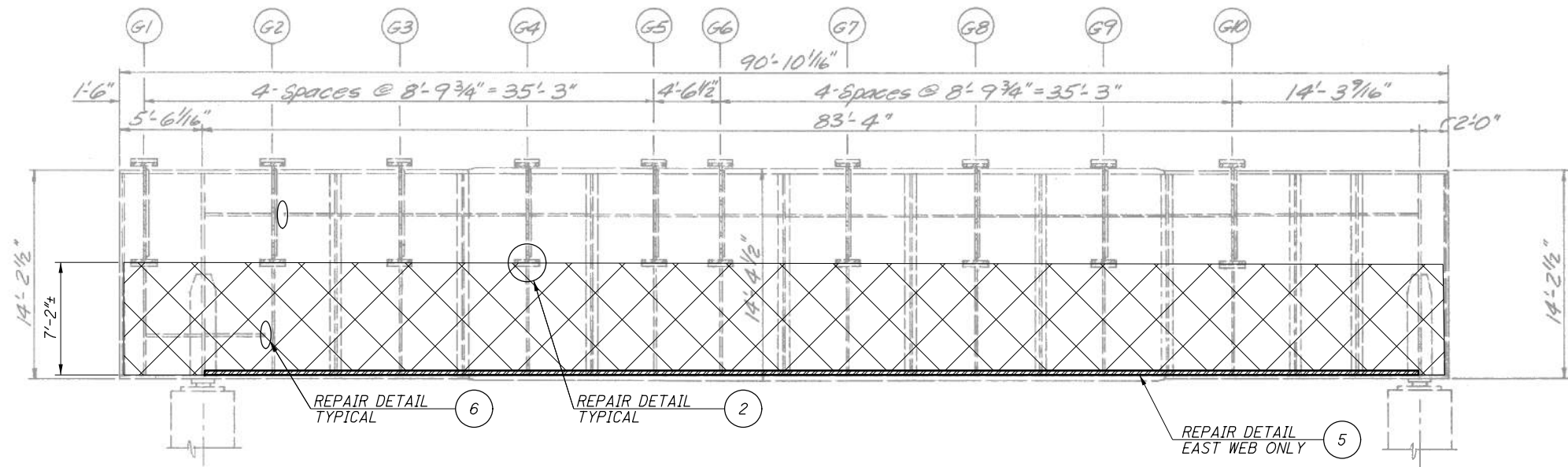


- INDICATES REPAIR DETAIL 6

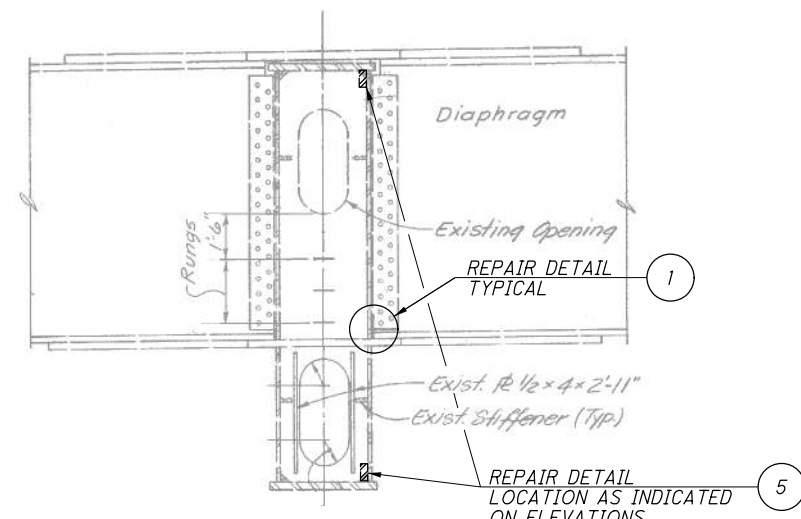
NOTES:

- FOR DETAILS AND PAYMENT FOR REPAIR DETAILS 1 THRU 4 AND 6, SEE SHEET 8/16.
- SEALING THE ACCESS HATCHES WITH NEW NEOPRENE GASKETS IS INCLUDED FOR PAYMENT UNDER ITEM SPECIAL STRUCTURE MISC.: STEEL PIER CAP SEAL. SEE THE STRUCTURE GENERAL NOTES ON SHEET 2/16.
- FOR NOTES AND PAYMENT INFORMATION ON THE EEU PAINT SYSTEM, SEE SHEET 2/16. ANY PAINT DISTURBED BY THE INTERIOR REPAIRS PERFORMED OUTSIDE OF THE ZONE PAINTING SHALL BE REPAIRED AND PAID FOR UNDER THE EEU PAINT SYSTEM PAY ITEMS.

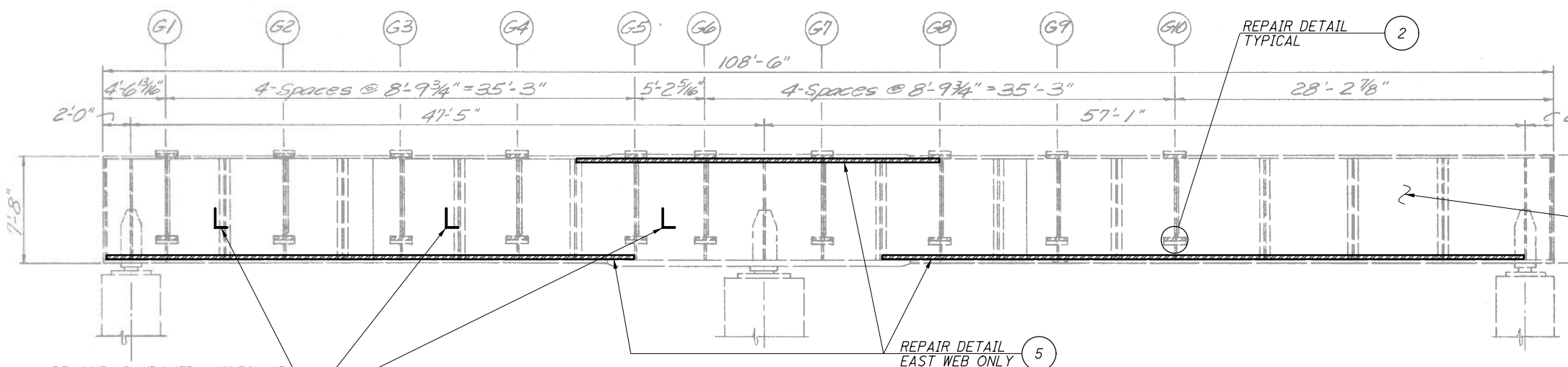
G:\CL10\0080\Bridge\13_(HAM-562-0147)\Sheets\93100SD02.dgn 6/12/2013 10:52:25 AM snlengenfeiter



WEST ELEVATION OF CAP, PIER NO. 7
(ELEVATION TAKEN FROM 1991 REHAB. DRAWINGS)



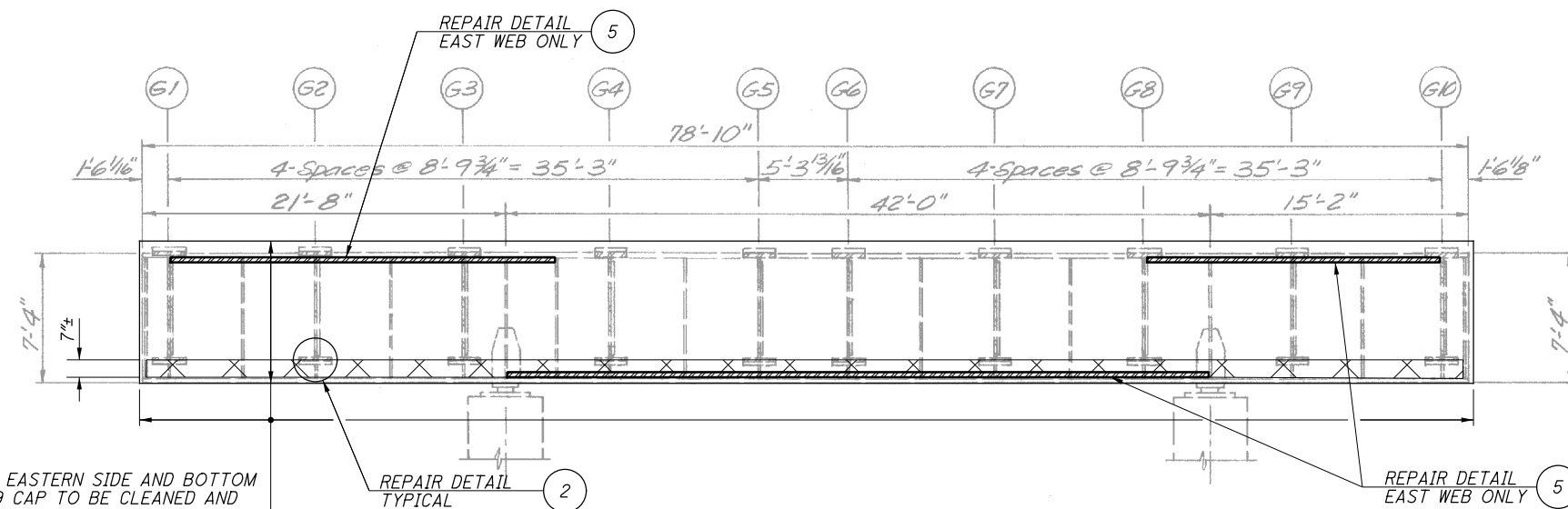
TYPICAL SECTION
PIERS 5, 6 AND 7 SHOWN
PIERS 4 E.B., 8 AND 9 SIMILAR
(SECTION TAKEN FROM 1991 REHAB. DRAWINGS)



WEST ELEVATION OF CAP, PIER NO. 8
(ELEVATION TAKEN FROM 1991 REHAB. DRAWINGS)

THE ENTIRE INTERIOR SURFACE AREA OF PIER 8 CAP TO BE CLEANED AND PAINTED USING THE EEU PAINT SYSTEM.

REMOVE ABANDONED ANGLES AND GRIND WELDS FLUSH ON THE EAST AND WEST WEB & EXTERIORS (SIX TOTAL)



WEST ELEVATION OF CAP, PIER NO. 9
(ELEVATION TAKEN FROM 1991 REHAB. DRAWINGS)

THE EXTERIOR EASTERN SIDE AND BOTTOM OF THE PIER 9 CAP TO BE CLEANED AND PAINTED TO THE LIMITS SHOWN

LEGEND:



- INDICATES THE LIMITS OF INTERIOR ZONE PAINTING USING THE EEU PAINT SYSTEM AT PIERS 7 AND 9 ONLY (FOR LIMITS OF INTERIOR PAINTING AT PIER 8, SEE WEST ELEVATION OF CAP, PIER NO. 8). CLEAN AND PAINT ALL SURFACES (DIAPHRAGMS, WEBS, STIFFENERS, ETC) FROM THE TOP OF THE TIE PLATES TO AND INCLUDING THE BOTTOM FLANGE.

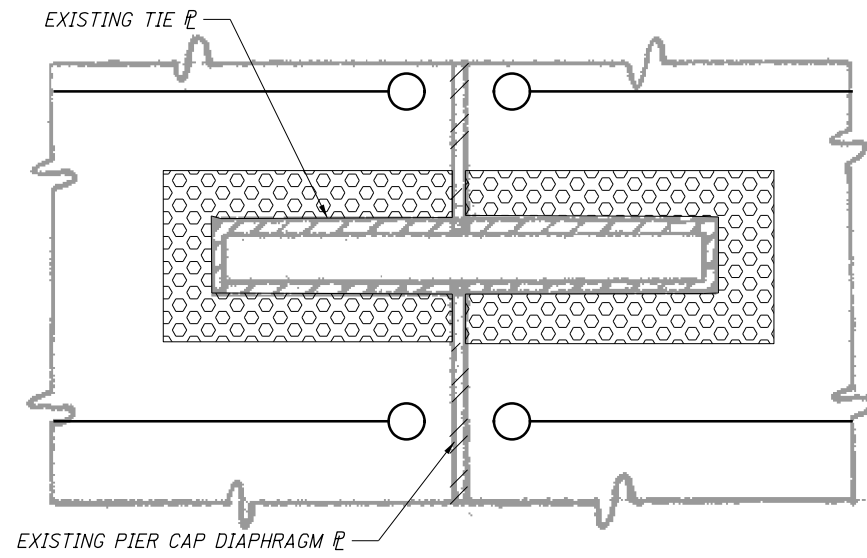


- INDICATES REPAIR DETAIL 6

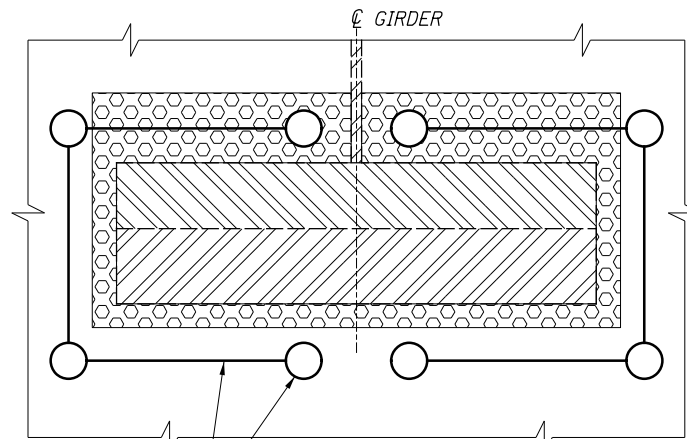
NOTES:

1. FOR DETAILS AND PAYMENT FOR REPAIR DETAILS 1, 2, 4, 5 AND 6, SEE SHEET 8/16.
2. GRINDING THE WELDS AT THE ABANDONED ATTACHMENTS IS INCLUDED FOR PAYMENT UNDER ITEM 513-STRUCTURAL STEEL, MISC.: GRINDING PER FOOT. SEE THE STRUCTURE GENERAL NOTES ON SHEET 1/16.
3. FOR NOTES AND PAYMENT INFORMATION ON THE EEU PAINT SYSTEM, SEE SHEET 2/16. ANY PAINT DISTURBED BY THE INTERIOR REPAIRS PERFORMED OUTSIDE OF THE ZONE PAINTING SHALL BE REPAIRED AND PAID FOR UNDER THE EEU PAINT SYSTEM PAY ITEMS.

G:\CL10\0080\Bridge\13_(HAM-562-0147)\Sheets\93100SD03.dgn 6/12/2013 10:52:37 AM snlengenfelder

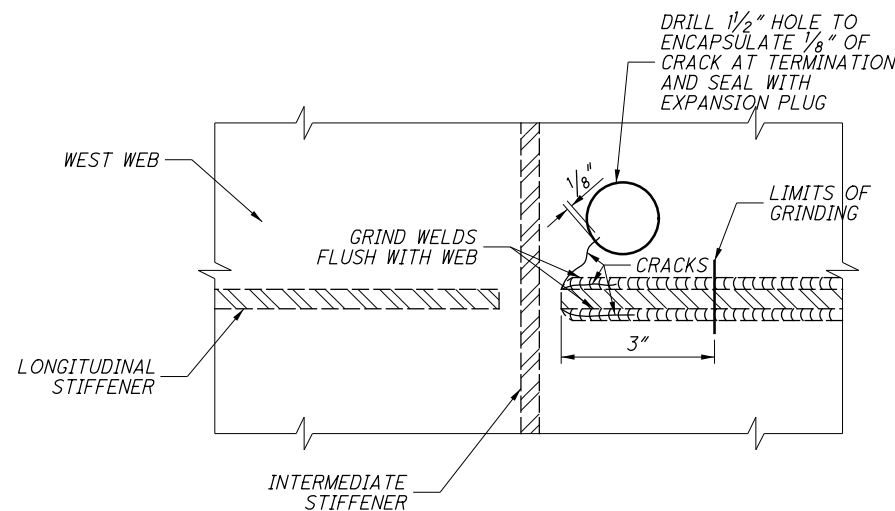


REPAIR DETAIL
INTERIOR TIE 1



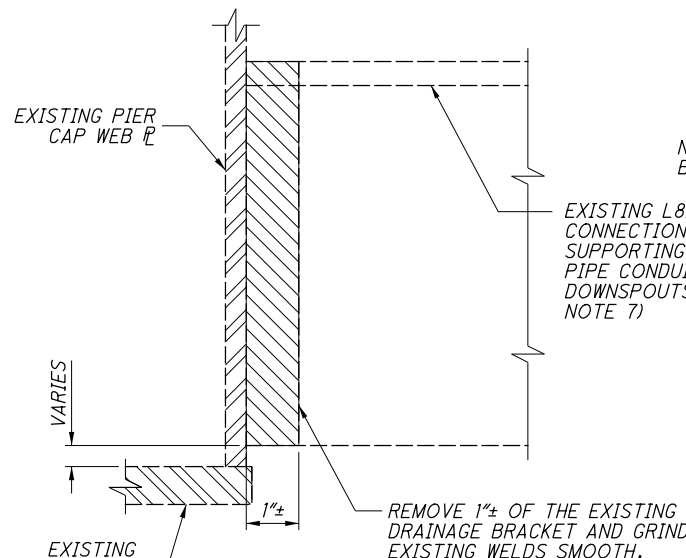
CLEAN AND RECAULK EX. SAW CUTS
AND REPLUG THE STRESS HOLES
WITH 1" EXPANSION PLUGS (TYP.)

REPAIR DETAIL
EXTERIOR TIE 2



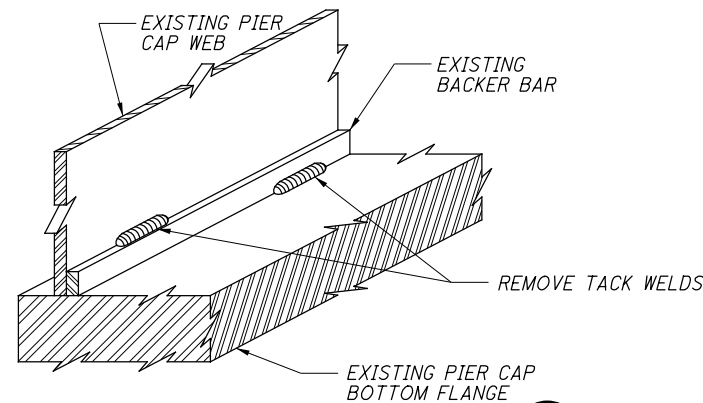
SECTION A-A

REPAIR DETAIL
3

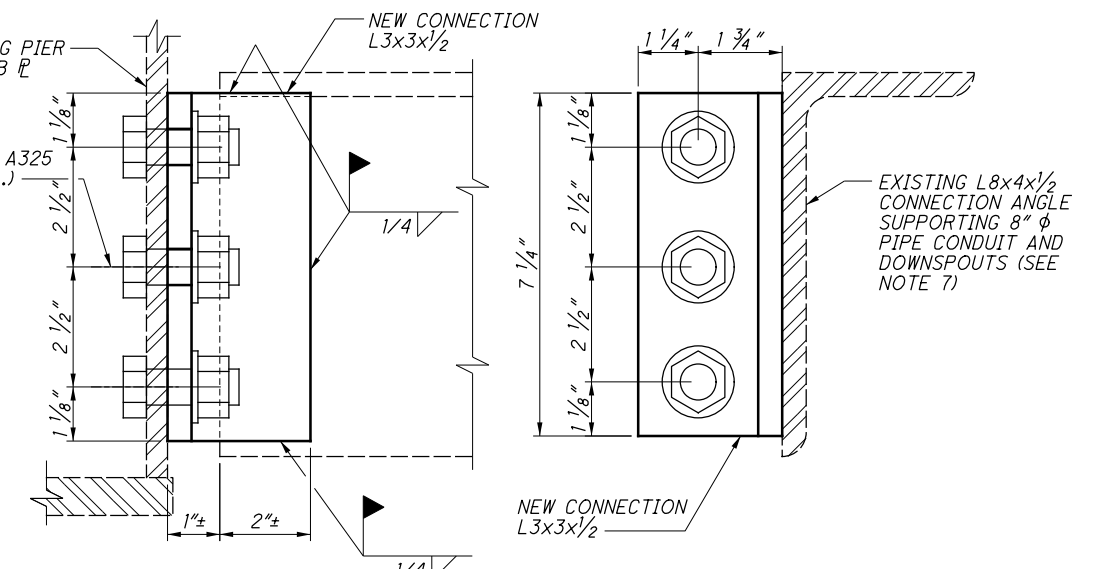


STEP 1 FOR REPAIR DETAIL 4

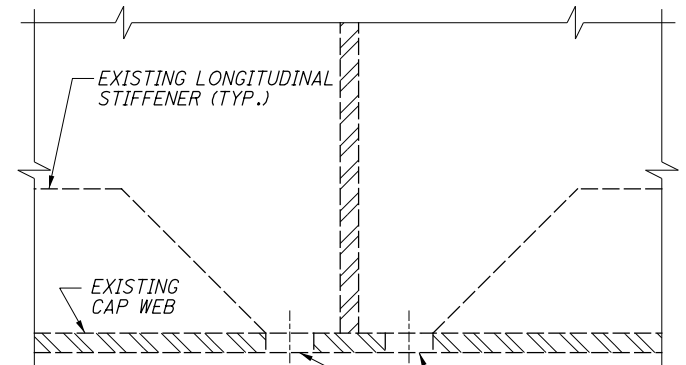
REPAIR DETAIL
DRAIN BRACKET RETROFIT 4



REPAIR DETAIL
BACKING BAR WELD REMOVAL DETAIL 5
(BOTTOM FLANGE SHOWN, TOP FLANGE SIMILAR)



STEP 2 FOR REPAIR DETAIL 4



REPAIR DETAIL
LONGITUDINAL STIFFENERS 6

LEGEND FOR REPAIR DETAILS 1 AND 2:

- LIMITS OF 1/2" WIDE ULTRASONIC IMPACT TREATMENT (UIT)

NOTES:

- FOR LOCATIONS OF REPAIR DETAILS 1 THRU 6, SEE SHEETS 6/16 AND 7/16. FOR THE GENERAL NOTES, SEE SHEETS 1/16 AND 2/16.
- THE ULTRASONIC IMPACT TREATMENT IS INCLUDED FOR PAYMENT UNDER ITEM STRUCTURAL STEEL, MISC.: ULTRASONIC IMPACT TREATMENT.
- THE CLEANING AND RE-CAULKING OF THE SAW CUTS AND PLUGGING THE STRESS RELIEF HOLES IS INCLUDED FOR PAYMENT UNDER ITEM SPECIAL MISC.: 1" RUBBER EXPANSION PLUGS.
- ALL WORK ASSOCIATED WITH THE CRACK REPAIR RETROFIT AT THE LONGITUDINAL STIFFENER AT PIER 4 E.B. IS INCLUDED FOR PAYMENT UNDER ITEM 513 - STRUCTURAL STEEL, MISC.: 1/2" STRESS RELIEF HOLE RETROFIT.
- THE NEW DRAINAGE BRACKET CONNECTIONS, INCLUDING GRINDING THE WELDS, NEW CONNECTION ANGLES AND THEIR BOLTED CONNECTIONS, WELDING THE EXISTING BRACKET TO THE NEW ANGLES AND TEMPORARY SUPPORT OF THE EXISTING DOWNSPOUTS AND DRAINAGE CONDUITS ARE INCLUDED IN ITEM 513 - STRUCTURAL STEEL MISC.: STRUCTURAL STEEL REHABILITATION.
- THE GRINDING OF THE BACKER BAR TACK WELDS IS INCLUDED IN ITEM 513 - STRUCTURAL STEEL, MISC.: GRINDING PER FOOT.
- THE CONTRACTOR SHALL ADEQUATELY SUPPORT THE EXISTING 8" φ PIPE CONDUIT AND DOWNSPOUTS DURING THESE REPAIRS TO THE SATISFACTION OF THE ENGINEER.



**GANNETT
FLEMING**

8890 Lyra Road, Suite 110
Columbus, OH 43240