

2023 IN-DEPTH INSPECTION REPORT
BRIDGE NO: HAM-71-0000R, SFN 3105970
VAR-DISTRICT 8 Bridge Inspections
Brent Spence Approach Bridges



Cincinnati, Ohio

September 11th – September 19th, 2023

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INTERNATIONAL



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Introduction

Bridge Description

The Brent Spence Bridge is a riveted and bolted double-deck cantilevered through truss with continuous adjacent steel girder spans on the north (Ohio) and south (Kentucky) approaches. The bridge carries eight lanes of vehicular traffic on I-71 and I-75 over the Ohio River between Covington, KY, and Cincinnati, OH. The upper deck carries the four southbound lanes and the lower deck carries the four northbound lanes.

HAM-71-0000R (SFN: 3105970) carries four northbound lanes of vehicular traffic from the lower deck of the Brent Spence Bridge to Interstate Route 75, Interstate Route 71 (Fort Washington Way), and Second Street (See Figure 1). The deck width and the number of travel lanes varies, as the different ramps converge towards other ramps. The structure was built by Peneker Construction and opened to traffic in 1963.

The bridge is a 25-span structure with a total length of approximately 2,160 feet and consists of seven units separated by expansion joints. The units consist of rolled or welded steel girders that support a reinforced concrete deck continuously between the expansion joints. Cross frames are welded or bolted to the transverse stiffeners at varied spacing in all spans. The steel girders bear on reinforced concrete substructures, including cap and column piers, and hammerhead piers all with deep concrete pile foundations. The pier columns of the first twelve piers starting from the river are reinforced concrete cap and column. See Appendix A for existing framing plans.

The bridge was built in 1961 and 1962. In 1988, the parapets were refaced, and a super-plasticized dense concrete overlay was placed on the deck. During the 1999 rehabilitation the last seven spans after Pier 20D were removed and a new five-span unit was constructed for the reconfiguration of I-71 and Second Street. The new spans consist of welded steel plate girders with a composite concrete deck supported on new reinforced concrete cap and column piers and the existing Pier 20D. The wearing surface on the non-composite portion of the bridge was removed in 2009 and replaced with a micro-silica concrete overlay. This rehabilitation also included minor deck repairs and the piers below the deck expansion joints were sealed. In 2004, piers 4 and 8 end cross frames were replaced and painted and expansion joints were repaired. In 2016, a rehabilitation project included concrete patching of the deck and piers, replacement of rocker bearings and end cross frames at the deck joints, cracked girder retrofit, zone painting of girders and end cross frames at expansion joints, replacing deck expansion joints, and the replacement of scupper downspouts. 14 spans were painted as part of the 2021 Brent Spence Bridge painting contract.

Orientation

The nomenclature for the bridge follows the original 1960 design plans and the 1999 reconfiguration plans. Spans, cross frames, and substructure units are labeled from south to north. For components of the bridge decks in all spans, locations are based on the alignment of the original bridge. Substructure units for the original structure are numbered from River Pier, Pier 1A to Pier 11A, Pier 12C to Pier 15C, Pier 16D to Pier 20D. The reconstructed spans are numbered from Pier 20D to Pier 1 through Pier 5.

Construction and Maintenance History

1988 Rehabilitation

- Parapets refaced.
Super-plasticized dense concrete overlay placed on deck.

1999 Rehabilitation

Reconfiguration of I-71 and Second Street Ramp

2004 Rehabilitation

Repair expansion joints.

- Replaced end cross frames at Piers 4 and 8.
Cleaned and replaced portions of bridge drainage. Installed drainage cleanouts.
Sealing of concrete piers. Zone painted structural steel.

2009 Rehabilitation

Placed micro-silica concrete overlay to non-composite portions of deck. Minor deck repairs.

Sealed piers below deck expansion joints. Cleaned out bridge drainage.

2016 Rehabilitation

- Replaced expansion joints at Piers 4, 8, 12C, 15C, and 20D.
Installed FRP wrap to the River Pier, Piers 4A 12C, 15C, 17C, and 20D. Zone painted structure steel ends at expansion joints.

2021 Painting Contract with the Brent Spence Bridge

Spans 1A-12A, 13C, and 14C were sand-blasted, primed, and painted.

Condition and Element Level Rating and Guidelines

National Bridge Inspection Standards (NBIS) guidelines for evaluating the condition of bridges have been developed to promote uniformity of bridge inspections performed by different teams over time. Table 1 contains the bridge inspection rating matrix established by the Federal Highway Administration (FHWA) In this report, the Summary Items: General Appraisal, Deck, Superstructure, Substructure, Approach Summaries and Protective Coating System ratings will follow the NBIS system.

Table 1 — NBIS Condition Rating Guidelines

Summary Items (NBIS)	Condition	Guidelines
9	Excellent	No Problems noted: no section loss, general deterioration.
8	Very Good	
7	Good	Some minor problems.
6	Satisfactory	Structural elements show some minor deterioration.
5	Fair	Structural elements show deterioration but are sound.
4	Poor	Advanced widespread deficiencies or a likely reduction in capacity. Usually, the load path appears to be affected for primary members or there are obvious structural changes since the as-built condition that are advanced.
3	Serious	Poor Condition <i>and</i> local failures possible.
2	Critical	Serious condition <i>and</i> unless closely monitored it may be necessary to close the bridge until corrective action is taken.
1	Imminent Failure	Critical <i>and</i> major deterioration is affecting stability. Bridge or lane(s) shall be closed to traffic, but corrective action may put bridge back into light service.
0	Failed	Imminent Failure <i>and</i> out of service, beyond corrective action.

(58) Deck Summary

The deck is in SATISFACTORY (6) condition overall, or a 6 on the NBIS condition rating guidelines. The deck underside exhibits multiple transverse hairline cracks with isolated areas of efflorescence, as well as spalling throughout, some with exposed reinforcement. Both bridge railings have moderate cracking some with efflorescence, spalls, areas of delamination and mineral buildup from sodium chloride spray throughout. The downspouts and deck joints were replaced in 2016 however defects were still noted.

12: Reinforced Concrete Deck

The reinforced concrete deck is in SATISFACTORY (6) condition overall. Transverse hairline to moderate cracks are present throughout the deck underside for the full width of the bays between girders. Majority of cracks exhibit evidence of water seepage and efflorescence. Crack intervals range from 2 or 3 cracks per bay per span up to typical cracking spaced at 4' on average for all bays for the entire span. This condition is typical for all spans. The deck underside in Span 17D exhibits a dark layer of soot due to the railroad tracks below the span.

There are isolated areas of delaminated concrete with spalls with exposed reinforcing in various spans. In Span 10A there is a 5' Long x 2' Wide deep spall with 2 exposed transverse bars in Bay 6 (See Photo 1). In Span 13C, Bay 1 there is a 32" Long x 20" Wide x 1" Deep spall. In Span 14C, Bay 1 there is a 42" x 24" x 3" Spall with 4 exposed transverse and 1 longitudinal bar. In Span 16D, near Pier 15C, Bay 4 there is a 24" x 24" spall with 2 exposed longitudinal reinforcing bars.

There are two large spalls with exposed reinforcement in Span 17D, Bay 4: 32" x 20" x 2 ½" and 36" x 20" x 2 ½". There is a spall with exposed reinforcement in Span 18D, Bay 2: 36" x 48" x 2 ½". There is also a 24" x 72" x 2" spall with 4 transverse and 4 longitudinal reinforcing bars exposed in Span 18D, Bay 1. There is a spall with exposed reinforcing in Span 20D, Bay 3: 64" x 52" x 2 ½" with 7 transverse and 3 longitudinal exposed reinforcing bars.

Full depth concrete patches 4' x 4' are typical at replaced expansion joints, some have become unsound or have adjacent cracking and spalling.

The edge of floor/slab (overhangs) exhibit hairline to moderate transverse cracking with efflorescence throughout. There are multiple locations of spalling with exposed rebar throughout. The largest spall is in Span 14C on the West overhang: 8' x 7" x 6" with 8 transverse reinforcing bars exposed (See Photo 6). There is a concrete spall 10' x 3' x 3" with exposed reinforcement on the East overhang over the full depth concrete repair at Pier 12C expansion joint, West overhang similar.



Photo 1- Bay 6, Span 10, Spalling with Exposed Rebar, 6SF



Photo 2- Span 11, Bay 4, 10SF Spall with Exposed Rebar



Photo 3- Span 12, Bay 4, 15 SF Spalling with Exposed Rebar



Photo 4- Span 12, Overhang, 6SF Spall with Exposed Rebar



Photo 5- Span 14, Typical Underside



Photo 6- Girder A, Span 14, 8'x7'x6" Spall with Exposed Rebar



Photo 7- Typical Underside, Span 16



Photo 8- Typical Underside, Span 20, Spalling with Exposed Rebar



Photo 9- Span 21, Typical Underside, Typical



Photo 10- Span 22, Typical Underside



Photo 11- Span 23, Typical Underside



Photo 12- Span 23, Transverse Crack, Leaking Water



Photo 13- Span 24, Typical Underside



Photo 14- Typical Underside, Span 25

510: Wearing Surface

The wearing surface is in SATISFACTORY (6) condition. The wearing surface was inspected visually from the sides using the boom lift. There were locations of hairline to moderate transverse, diagonal, and longitudinal cracks and minor pop-out spalls present throughout the surface of the wearing surface. The bridge deck was sounded by ODOT in December 2020, and multiple delaminated areas were found throughout the wearing surface (See Appendix B).



Photo 15- Typical Wearing Surface

300: Strip Seal Expansion Joints

The expansion joints are in FAIR (5) condition. Expansion joints are located at Piers 4A, 8A, 12C, 15C, and 17C and were replaced in 2016. The expansion joints at Pier 20D and Pier 5 (Reconstructed Spans) were constructed during the 1999 reconstruction. There is loosely packed debris in all expansion joints on the deck. The expansion joints at Pier 20D are leaking with debris on the pier caps below due to seal adhesion failure. There is a large tear on Pier 5 allowing free flow water through the joint (see photo 18). Leakage on cap is evident as well as active corrosion on the girders and bearings below these joints.



Photo 16- Truss Finger Joint at Pier 0



Photo 17- Pier 12 Joint, Typical



Photo 18- Pier 25C, Joint Tear, Free Flow Water

331: Reinforced Concrete Bridge Railing

The reinforced concrete bridge railings are in FAIR (5) condition. There are moderate to wide transverse cracks on the top and moderate width vertical cracks on the interior and exterior faces of both bridge railings. Cracks are spaced 1ft-3ft apart with most exhibiting efflorescence, rust staining, or moisture staining throughout all spans. There is heavy wide cracking in Span 2 (Reconstructed Span) in the west barrier for 20ft. There is a spall on the top portion of the west and east railing at the expansion joint at the River Pier. There is a concrete spall on the top portion of the East rail in Span 12A. There is a 24" x 3" x 1" spall in the inside corner of the west railing in Span 6. There is a similar 4ft long spall due to impact in the west rail in Span 16D.



Photo 19- Barrier, Typical Conditions



Photo 20- Typical Barrier Cracking



Photo 21- Span 10, Barrier, Typical Spalling and Cracking

815: Drainage

The drainage system is in SATISFACTORY (6) condition. In 2016 as part of the rehabilitation project, drains at various locations were replaced and scuppers were cleaned. All downspouts appeared open and functional except at Piers 6A and 8A where the bottom of the drainpipe is missing. The drainage pipes at pier 3 are leaking on the substructure (See Photo 23 & 24) The Column 2 drain pipe has been disconnected at Pier 4A; there is a hole at the base of the column that is 8' diameter x 4' deep (See Photo 25). The rubber boot at Pier 13D is offset. Pier 14D column 2 is similar. The expansion joint at Pier 20D and 5 are leaking and the trough is ripped open allowing water leakage onto the structure elements below.



Photo 22- Drainage, Span 1, Pier 2



Photo 23- Drainage, Leaking on Substructure, Pier 3



Photo 24- Drainage, Leaking on Substructure, Pier 3



Photo 25- Pier 4, Column 2, Drain Failure with 8' Diameter Erosion Hole up to 4' Deep



Photo 26- Drainage, Leaking on Substructure, Pier 25

(59) Superstructure Summary

The superstructure is in SATISFACTORY (6) condition overall, or a 6 on the NBIS condition rating guidelines. All girders as part of the original structure, north/east of the 2021 painting contract, exhibit paint failure and active corrosion. More advanced paint failure and corrosion are found along the fascia girders. There are concentrated areas of moderate corrosion, both laminar and recently painted-over, with up to 3/8" deep section loss to the top of the bottom flanges and bottoms of the webs, mainly found at the fascia girders. The majority of the pitting and section loss is 1/8" deep. The rocker bearings typically exhibit minor section loss. There is pack rust between the rockers and masonry plates in the unpainted spans. The pack rust has been blasted away in the recently painted spans, and some of the bearings are resting on the pintles.

107: Steel Open Girder/Beam

The girders are in SATISFACTORY (6) condition overall with isolated areas of rust laminations and section loss up to 3/8" deep. Spans 1A — 12A, 13C, and 14C were painted in 2021. All other beams typically exhibit minor surface corrosion and freckled rust where the pain system has failed, with more moderate corrosion present on the fascia girders from the original structure. The fascia girders typically exhibit isolated areas of moderate laminar corrosion with pitting and section loss, mainly concentrated to the bottom flange and at stiffener locations. In the spans that were painted, moderate to heavy painted-over pitting and section loss was evident on the top of the bottom flanges of Girders A and G, intermittent throughout. 1/8" deep pitting and section loss is common, with isolated areas up to 3/8" deep. There is non-active section loss on the web of Girder A and G at the River Pier (See Photo 27 &29).The rehabilitated portion of Girder A at the River Pier is in good condition. There is a drilled-out hole in the bottom of the web at this welded retrofit, approximately 4 feet from the bearing. (See Photo 28) The Girder G bottom flange cover plate in Span 6A has been blasted clear of pack rust, revealing the cover plate has separated from the bottom flange up to 3/8". (See Photo 37) There are 2 Fatigue Prone bottom flange welds on Girder D in Span 11A: 8' ahead of Pier 12A and 8' back from Pier 13A (See Photo 40). The girders on the reconstructed spans are in good condition. No significant signs of corrosion or section loss were noted during the inspection. The final 5 to 10 feet of the girders at the expansion joints at the River Pier and Piers, 4A, 8A, 12C, 15C, 17D, and 20D were cleaned and painted during the 2016 rehabilitation.



Photo 27- Girder A, Pier 0, Bottom Flange and Web, Up to 3/8" Section Loss, 9' L



Photo 28- Girder A, Span 1, Backing Plate on Bottom Flange



Photo 29- Girder A, Web, Hole, Near Pier 0



Photo 30- Girder G, Pier 0, Bottom Flange and Web, Up to 3/8" Section Loss, 9' L



Photo 31- Girder G, Pier 0, Bottom Flange and Web, Up to 3/8" Section Loss, 9' L



Photo 32- Girders at Pier 1, Typical Web Weld with Holes



Photo 33- Girder C, Span 2, Bottom Flange Plate with End Weld



Photo 34- Girder A, Bottom Flange at Pier 5, Section Loss 1/8" Web



Photo 35- Girder A, Span 5, Inboard, Typical Cross Frame Weld to Web



Photo 36- Girder A, Web at Pier 5, Section Loss 1/8" Web

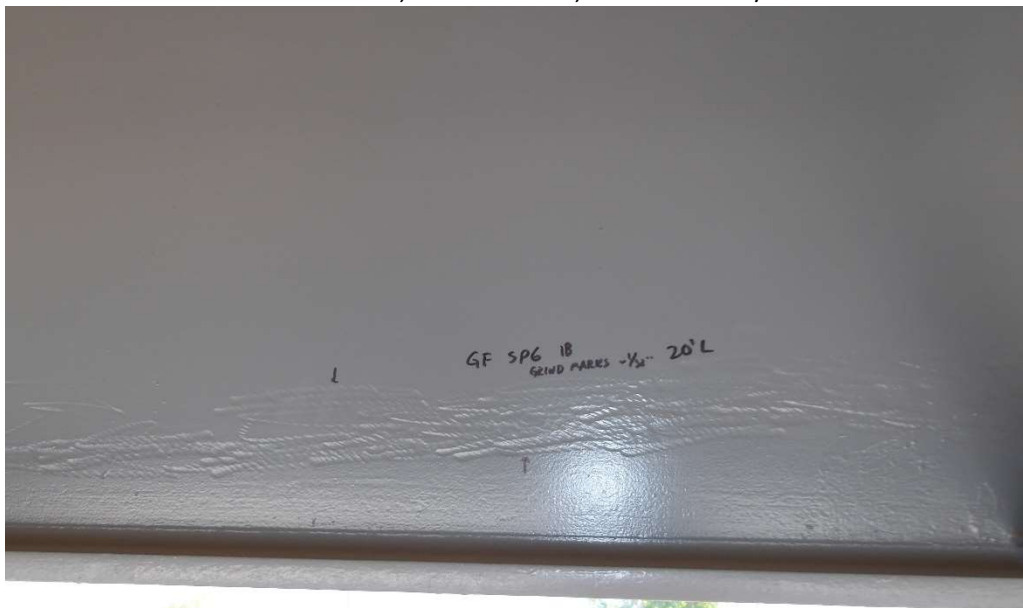


Photo 37- Girder F, Span 6, Grind Marks 20' L x 1/32" D



Photo 38- Girder G, Span 6, Completely Cracked End Weld on Bottom Flange



Photo 39- Girder A, Pier 11, Field Welds in Tension Flange



Photo 40- Girder C, Span 12, Typical Weld Remnants on Bottom Flange



Photo 41- Girder D, Span 12 at Pier 12 OB, Weld Remnants



Photo 42- Girder D, Span 12, Pores



Photo 43- Girder D, Span 12, Undercut Weld and Pores



Photo 44- Girder H, Bay 7, Span 14, Additional Girder Detail



Photo 45- Span 15, Typical Condition, Paint Failure



Photo 46- Span 19, Typical Condition, Paint Failure



Photo 47- Grounding Wire Detail, Span 24 Fascia at Splice Plate

310: Elastomeric Bearing

The Elastomeric Bearings are in GOOD (7) condition overall. There are elastomeric bearings at the River Pier, Piers 12C, 15C, and 17D that replaced steel rocker bearings as part of the 2016 Rehabilitation work.



Photo 48- Pier 0, Bearing G



Photo 49- Pier 12 Bearing G, Span 12



Photo 50- Pier 12 Bearing G, Span 13

311: Moveable Bearing

The Moveable Bearings are in FAIR (5) condition overall. The original steel rocker bearings typically exhibit moderate section *loss* below expansion joints. The rocker bearings south of Pier 14C were blast cleaned and painted as part of the 2021 painting contract. The active corrosion and pack rust between the rocker and masonry plate, previously noted, has been blasted away and painted. Intermittent areas of painted-over pitting exist (See Photos 51 & 52). There is pack rust between the rockers and masonry plates on the exterior bearings at Pier 19D.

At Pier 14C, the previously noted pack rust between the rockers and the masonry plates has been blasted away, and all 14 bearings exhibit pitting. The Girders B and C bearings have exposed pintles with a ½" gap between rockers and masonry plates, indicating the bearings could be resting on the pintles (See Photos 51). The rotation of the rockers varied from 1° to 7° and temperatures ranged from 50°F to 75°F (See Photo 56)



Photo 51- Pier 7 Bearing A, 1/8" Pitting



Photo 52- Pier 7 Bearing G, 3/16" Section Loss Masonry Plate



Photo 53- Pier 10, Bearing A, 1/16" Pitting Underneath

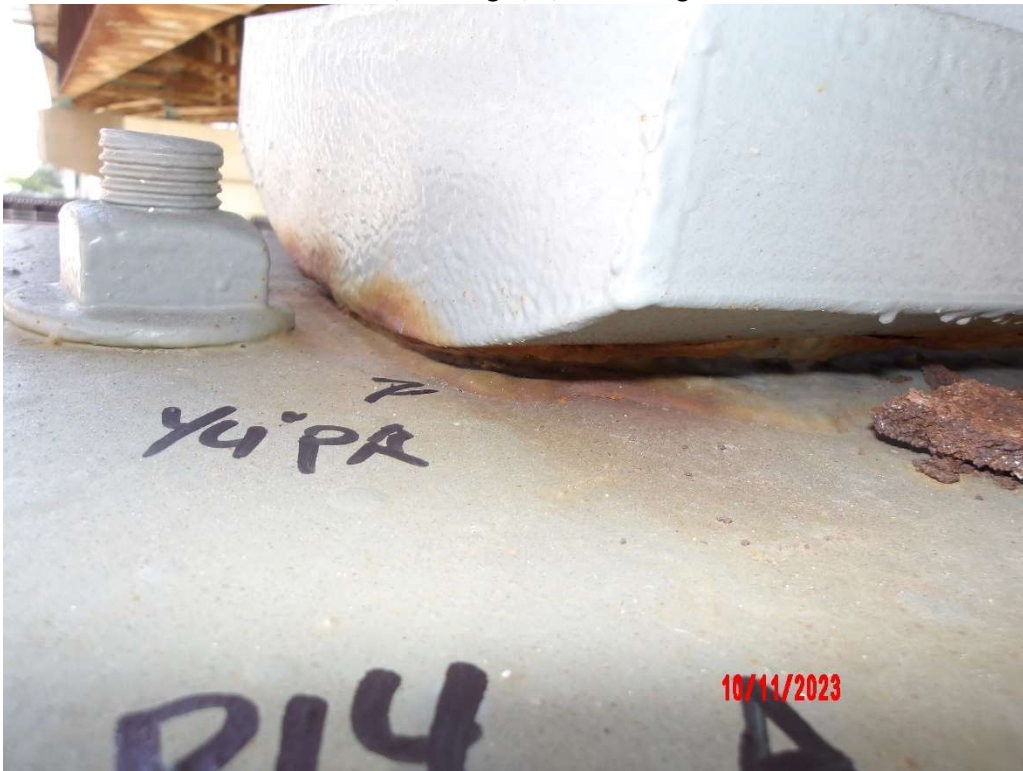


Photo 54- Pier 14, Bearing A, 1/4" Pack Rust



Photo 55- Pier 19D, Bearing E, Minor Corrosion



Photo 56- Pier 20D, Bearing B, Span 20, 7 degree in contraction.

313: Fixed Bearing

The Fixed Bearings are in SATISFACTORY (6) condition overall. The fixed bearings south of Pier 14C were painted as part of the 2021 paint contract. The remaining steel fixed bearings typically exhibit paint failure and moderate corrosion throughout. The fixed bearings at Pier 13C for Girders 8, C, D, and E have loose anchor nuts. (See Photo 58) Girder G fixed bearing at Pier 6A in Span 7A has pitting on the masonry plate. (See Photo 57)



Photo 57- Pier 6 Bearing G



Photo 58- Pier 13, Bearing C, Loose Anchor Bolts

314: Pot Bearing

The Pot Bearings are in FAIR (5) condition overall. The reconstructed spans' pot bearings typically exhibit minor paint failure and moderate corrosion throughout. There are a few instances of elastomeric bulging or “walking out”. There is active corrosion with section loss of the anchor plates on the pot bearings for Girders B, C, D, E, and F at Pier 20D. (See Photo 60).



Photo 59- Pier 20D, Bearing B, Span 21, Typical Condition



Photo 60- Pier 20D, Bearing D, Typical Laminar Rust, 1/8" SL Bearing Plate



Photo 61- Pier 1C, Bearings Typical Freckled Rust

515 – Steel Protective Coating

The Steel protective coating is in spans 1A-12A, 13C, 14C as part of the 2021 painting is in EXCELLENT condition. The remaining areas of protective coating are in FAIR (5) condition. As previously mentioned, Spans 1A-12A, 13C, and 14C were painted in 2021. In the areas not painted, Spans 15C to 20D, failures are typical on all girders with chalking, dulling, flaking, and peeling throughout. Surface corrosion is active at all locations where the paint has failed, and rust staining is evident on the protective system remaining. The fascia girders exhibit the most severe paint condition with complete paint failure to the bottom flanges and bottom portions of the web with areas of moderate to severe corrosion and laminating rust.

As part of the 2016 Rehabilitation, all steel members below the expansion joints at Piers 4A, 8A, 12C, 15C, and 20D were cleaned and painted.

The paint on the reconstructed spans, Spans 1-5, is in satisfactory condition with small areas of surface rust, and moderate corrosion concentrated to joint locations.

Non-inventoried Superstructure Items

The Steel cross-frames were in GOOD (7) condition during the inspection and no significant defects were noted. There was paint failure on the non-painted spans. Cross frame #5 on Span 14 is bent out of plane (See Photo 66-67) The curved girders are primary members in the curved girder spans and are included in the superstructure rating.



Photo 62- Cross Frames, Pier 0, Typical Section Loss



Photo 63- Cross Frame Detail, Span 12 Pier 12



Photo 64- Cross Frame, Pier 11, Span 12, Typical Welded Details, Missing Bolts



Photo 65- Pier 13, Span 14, Bay 6, Girder F, Typical Welded Cross Frame Details



Photo 66- Cross Frame #5, Span 14, Bent



Photo 67- Cross Frame #5, Span 14, Bent



Photo 68- Cross Frame Loose Connection, Bay 6, Span 14



Photo 69- Cross Frame Details, Span 19, Bay 4



Photo 70- Cross Frame, Span 24, Bay 3, Coping Detail with Paint Cracking

(60) Substructure Summary

The substructure is in SATISFACTORY (6) condition overall, or a 6 on the NBIS condition rating guidelines. The original bridge substructure consists of seventeen reinforced concrete pier bents and five hammerhead piers. The reconstructed spans consist of five reinforced pier bents. The piers typically exhibit minor to moderate vertical and horizontal cracking. There are isolated areas of wide cracking and spalling with exposed rebar. As part of the 2016 rehabilitation, most of the previously noted spalls and delaminations have been repaired with concrete patches and FRP wrapping. The FRP was added to the River Pier, Piers 4A, SA, 7A, 8A, 12C, 17D, and 20D.



Photo 71- Pier 1, Back Face



Photo 72- Pier 2, Front Face



Photo 73- Pier 5 Front Face



Photo 74- Pier 6, Front Face



Photo 75- Pier 7, Front Face



Photo 76- Pier 12, Back Face



Photo 77- Pier 13, Front Face



Photo 78- Pier 19D, Front Face

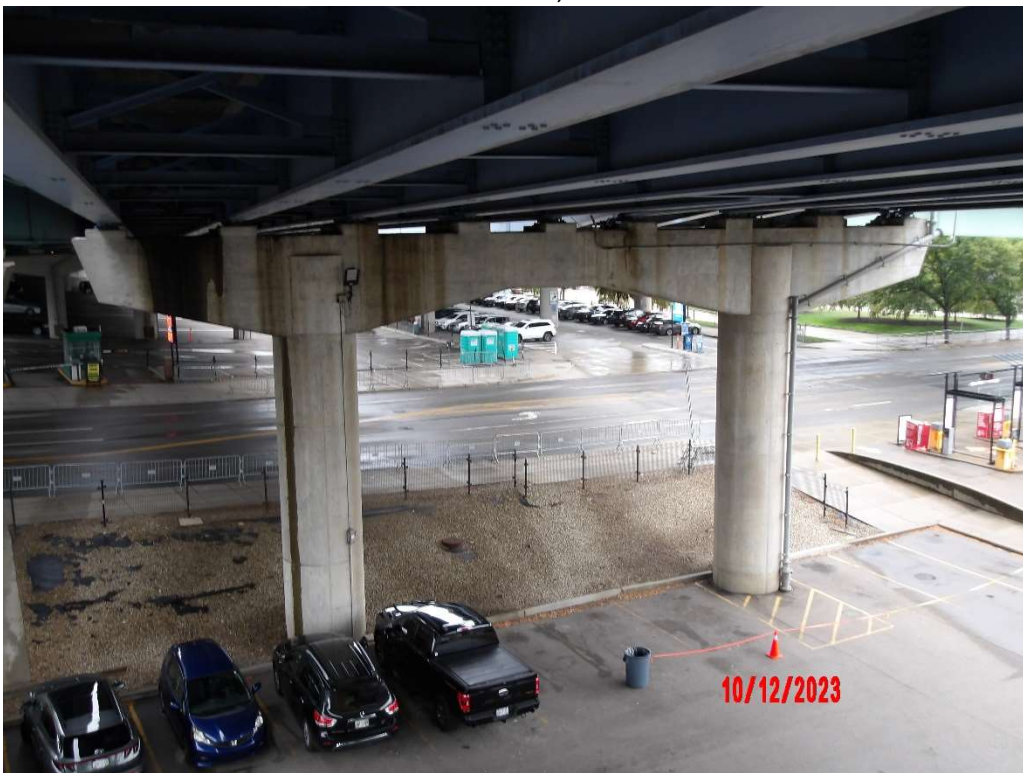


Photo 79- Pier 5C Back Face

205: Reinforced Concrete Column

The Pier Columns/bents are in GOOD (7) condition. As Part of the 2016 Rehabilitation work, many of the previously noted spalls and delaminations were patched and the River Pier, Piers 4A, 5A, 7A, 8A, 12C, and 15C were partially wrapped with a FRP wrapping.

At Pier 1, west column, there is wide map cracking 53” vertical x 6” wide at the southeast corner. There are various other small spalls without any exposed reinforcing mainly on the corners including Piers 1A, 5A, 6A, and 19D. There is also moderate cracking and exposed rebar due to lack of cover common throughout. Pier 3, Column 2 has vertical cracking extending from the cap (See Photo 81)



Photo 80- Pier 0, Front Face, FRP Wrap Delaminations and Staining

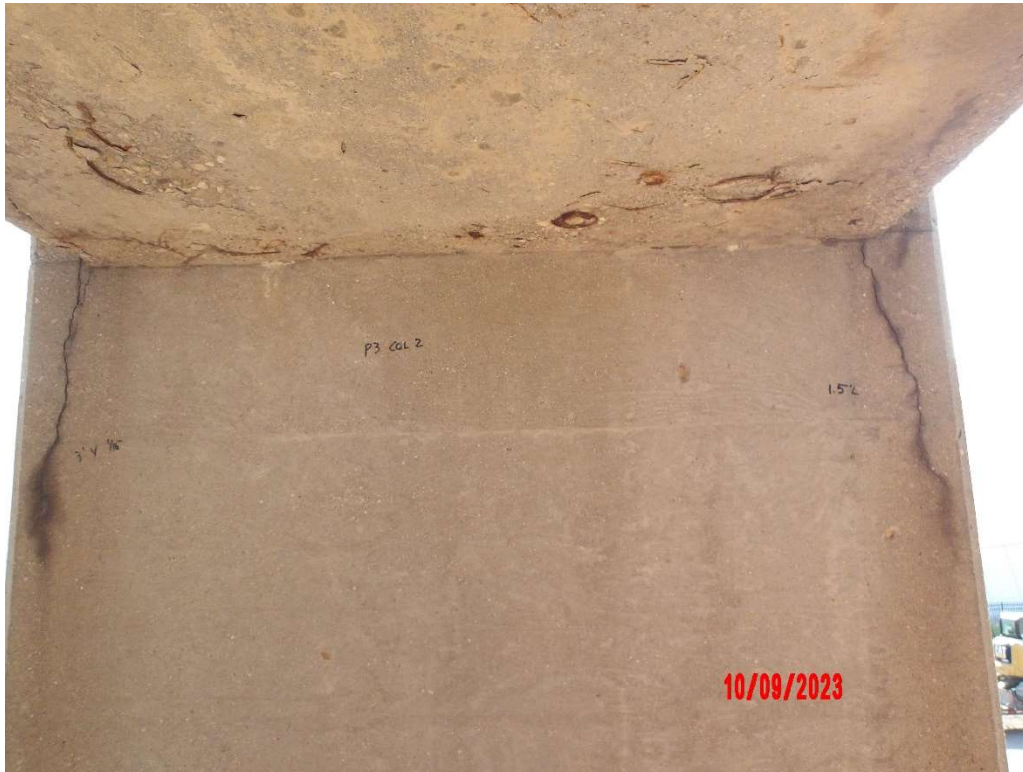


Photo 81- Pier 3, Column 2, Vertical Cracking 3'x1/16"W and 1 1/2' x 1/16"W



Photo 82- Pier 12 FF, FRP Wrap Delaminations



Photo 83- Pier 21D Back Face

210: Reinforced Concrete Pier Wall

Piers 16D, 17D, 19D, and 20D are hammerhead piers and they are in GOOD (7) condition. There are spalls with exposed rebar at the base of Piers 16D and 20D where protective guards used to be. Pier 20D has been patched with FRP wrap and there is rust staining coming through near the cap (See Photo 85).



Photo 84- Pier 20D Back Face, Note FRP Wrap Delaminations



Photo 85- Pier 20D Front Face, Note FRP Wrap Delaminations

234: Reinforced Concrete Pier Cap

The reinforced concrete pier caps are in GOOD (7) condition. As Part of the 2016 Rehabilitation work, many of the previously noted spalls and delaminations were patched. The River Pier and Piers 4A, 5A, 7A, 8A, 12C, 15C, 17D, and 20D were partially wrapped in FRP wrapping. There are areas on both faces of Pier 12C where the FRP is delaminating from the concrete. Half of the pier cap has sound FRP wrap, and the other half has unsound delaminations.

There are small concrete spalls with exposed reinforcing on the caps of Piers 1A, 3A, 5A, 10A, and 11A. The spall at Pier 1 is on the north face, east end and is approximately 12" wide x 12" horizontal x 1" deep. There are two spalls on the north face at each end of Pier 3. There is a spall on the underside of Pier 5 near the east column that has four exposed longitudinal bares and six shear bars. The pier cap at Pier 10 has a spall with exposed reinforcing between Girders G and H on the top of the cap. There are 2: 12" x 6" x 1" spalls with exposed reinforcing on the north face and underside of Pier Cap 11C.

There is a heavy spall on Pier 5 cap on the pedestal for Girder 8, as well as wide cracking in Girder A Pedestal (for the bridge just north of Span 5) and on the east nose of the cap. There is also moderate width cracking above Column 2. The cap has debris and evidence of a leaking joint above.



Photo 86- Pier 1, North Face Cap, Spall 2SF, Delaminations 5SF



Photo 87- Pier 3, North Face Cap, 2 SF Spall with Exposed Rebar



Photo 88- Pier 3, North Face Cap, 3 SF Delamination



Photo 89- Pier 3, Column 2, 4 SF Spall with Exposed Rebar



Photo 90- Pier 5 Cap at Column 2, 12 SF Spall with Exposed Rebar



Photo 91- Pier 6, Cap North Face, 6 SF Cracking $\sim 1/32$ " Wide



Photo 92- Pier 11, Girder A, Delamination 8 SF



Photo 93- Pier 11, Northface of Cap, 2 SF Spall with Exposed Rebar



Photo 94- Pier 11, Top Cap, Near Girder H, Spalling with Exposed Rebar 14SF



Photo 95- Pier 2C, Vertical Cracking 2' L at 2' Spacing



Photo 96- Disconnected Ground Wire on Pier 13

Sign/Utility Items

Signs

The signs on the structure are in GOOD (7) Condition with no significant problems notes. There are three overhead signs, eight light poles, one exit sign, and three-mile marker signs mounted to the bridge.

Sign Supports

The sign supports on the structure are in GOOD (7) condition with no significant problems noted to the supports or connections to the structure. (See Photo 97)



Photo 97- Sign Supports, Typical Good Condition



Photo 98- Sign Mount Bump Out

Utilities

The utilities on the structure are in GOOD (7) condition. There is an electrical conduit that is attached to Girder A from the River Pier to Pier 13C that has been painted as a result of the 2021 paint contract. There is a lighting conduit attached to the girders in Span 16D. There are lighting conduits that extend from the ground to the superstructure on the outside columns of Pier 14C. The steel conduit near Pier 12C on the west overhang has an open joint (See Photo 99). There is light surface rust on the electrical junction box and the bracket that's attached to Girder A at Pier 13C.



Photo 99- Span 12, Conduit Broken under Girder A

General Appraisal

Based on the 2023 In-Depth Inspection, the HAM-71-0000R bridge is in SATISFACTORY (6) condition overall based on the NBIS rating guidelines. The overall rating is based on the condition of both the superstructure and the substructure. The AssetWise Bridge Inspection Report is included in Appendix C.

Repair & Maintenance Recommendations

To properly maintain this structure, recommendations have been divided into four categories: Priority, Maintenance, Rehabilitation and Monitor.

- Priority: Repairs that should be completed as soon as possible to address an immediate safety hazard.
- Maintenance: On-going maintenance items that can be accomplished by an ODOT maintenance crew.
- Rehabilitation: Are repairs that are not immediate concerns but should be addressed in the next rehabilitation contract.
- Monitor: Are items that should be investigated and documented in subsequent inspections.

Priority:

Deck

- Repair spalls and delaminations on the underside of deck. Span 10A underside had delaminated concrete that was not able to be safely removed due to painters vehicles being parked underneath.

Superstructure

- Tighten loose anchor bolts for Girders B, C, D, and E at Pier 13C.
- Replace leaking strip seal expansion joints at Piers 20D and Pier 5.

Substructure

- Replace drainpipes and fix 8' diameter x 4' deep hole at Pier 4A Column 2.

Schedule:

Deck

- Repair spalls and delaminations in concrete wearing surface throughout the structure.
- Seal cracks and repair spalls/delaminations in parapets throughout the structure.
- Clean clogged drainpipes and scuppers.
- Replace the missing/damaged drainpipe boots at Piers 6A and 19D.

Superstructure

- Clean and paint the superstructure north/east of Span 14C.

Substructure

- Patch concrete spalls and seal wide concrete cracks on pier caps and pier columns.
- Clean Repair broken ground wire on Pier 13.

AA

Program:

Deck

- Seal cracks in wearing surface.

Routine:

Deck

- Remove debris from expansion joints.
- Remove debris from deck shoulders and near scuppers.

Prepared by:

Gustin Cleary, E.I.

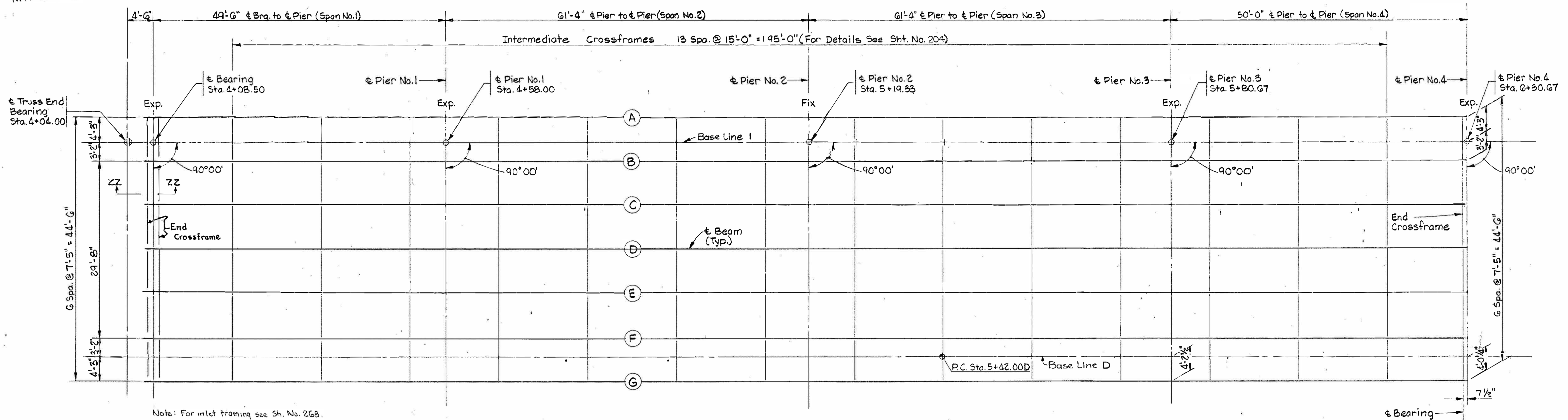
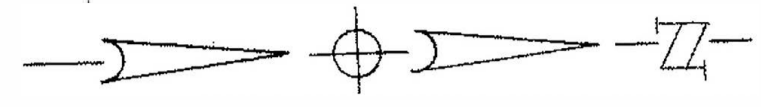
Reviewed by:

Cory Larkin, P.E.
Ohio P.E. # E-84081

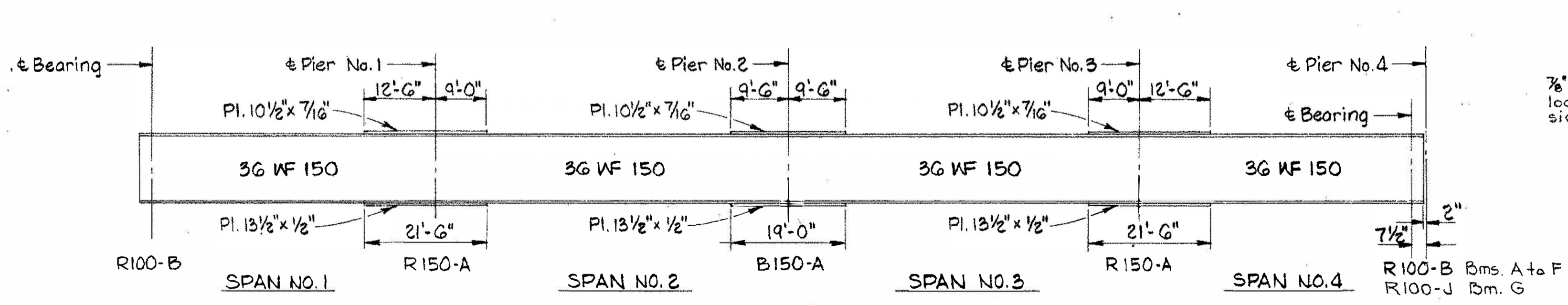
Appendix A – Selected Plan Sheets

HAM-25-0.04

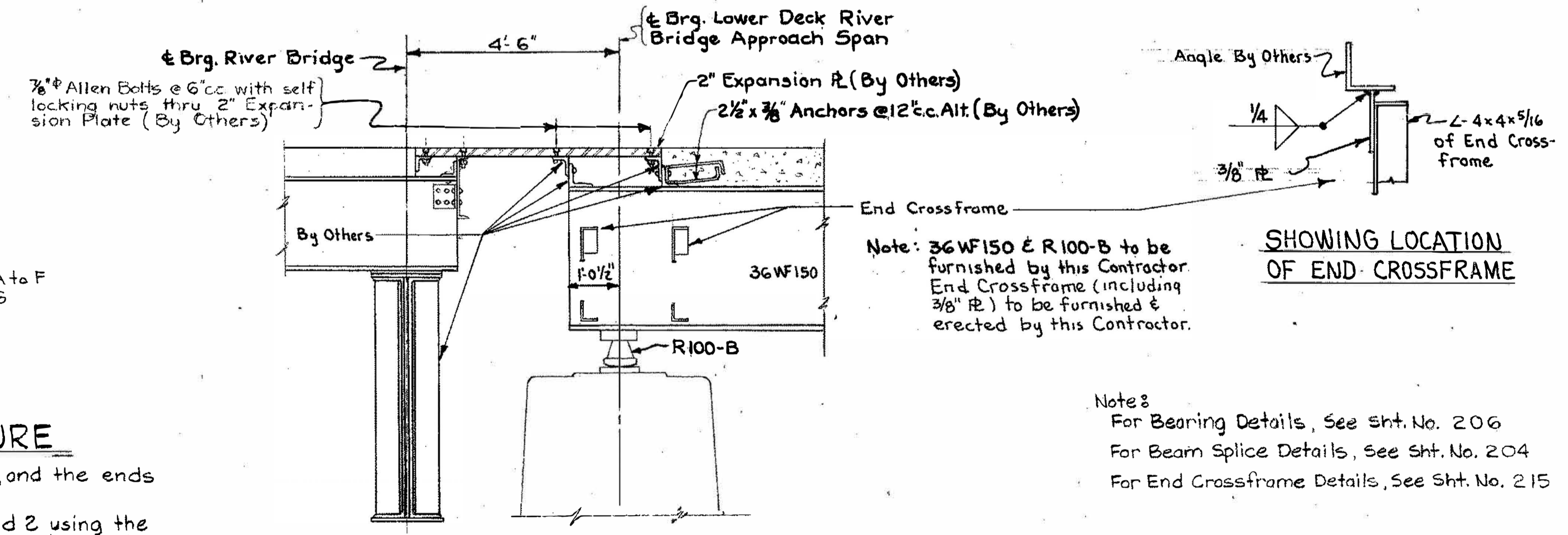
MAILED
OCT 23 1960
REPRODUCTION



FRAMING PLAN - LOWER DECK UNIT I



SIZE OF BEAMS AND COVER PLATES



SECTION ZZ-ZZ

BEAM SPlice WELDING PROCEDURE

- 1-Raise the ends of beams in Span No.1 at River Pier 3/4", and the ends of beams in Span No.3 at Pier No.3 1 3/16".
- 2-Butt-weld the beam flanges and web at Piers Nos.1 and 2 using the following sequence: make two passes on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
- 3-Weld the bottom and top moment plates at Piers Nos.1 and 2.
- 4-Lower beams to their final position.
- 5-Raise the ends of beams in Span No.4 at Pier No.4 1/2".
- 6-Repeat Step 2 at Pier No.3.
- 7-Weld the bottom and top moment plates at Pier No.3.
- 8-Lower beams to their final position.

DEAD LOAD DEFLECTIONS				
Location	Span No.1	Span No.2	Span No.3	Span No.4
Deflection Due To Weight Of Steel	0	1/16"	1/16"	0
Deflection Due To Remaining Dead Load	3/16"	3/16"	3/16"	3/16"

Note:
Where no camber is required, the beams shall be so fabricated that any curved beams will be placed with convex flange up.
No camber required for beams in Unit I (Lower Deck).

Note:
For Bearing Details, See Sht. No. 206
For Beam Splice Details, See Sht. No. 204
For End Crossframe Details, See Sht. No. 215

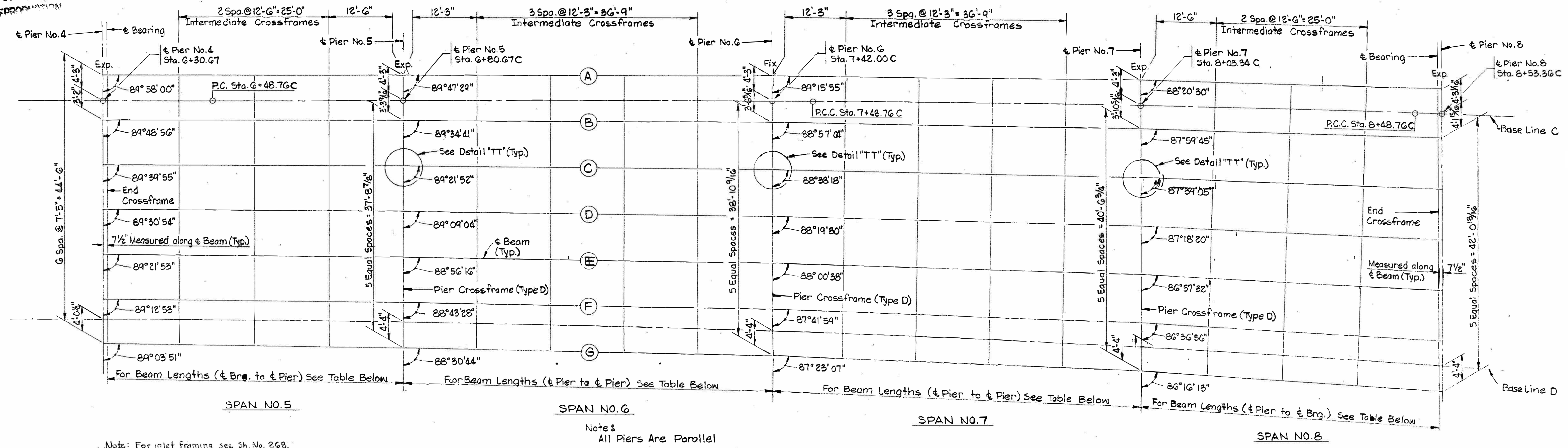
HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

STRUCTURAL STEEL DETAILS
UNIT I (LOWER DECK)

DESIGNED CPW	DRAWN JVK 7-26-60	TRACED	CHECKED JVK 9/20/60	REVIEWED DATE 10-14-60	REVISED
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HAM-25-0.04

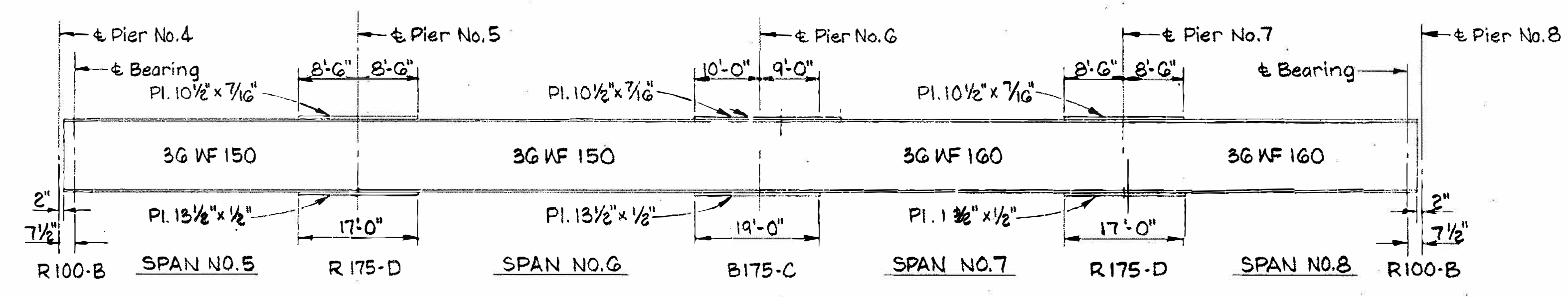
REPRODUCTION
OCT 23 1960



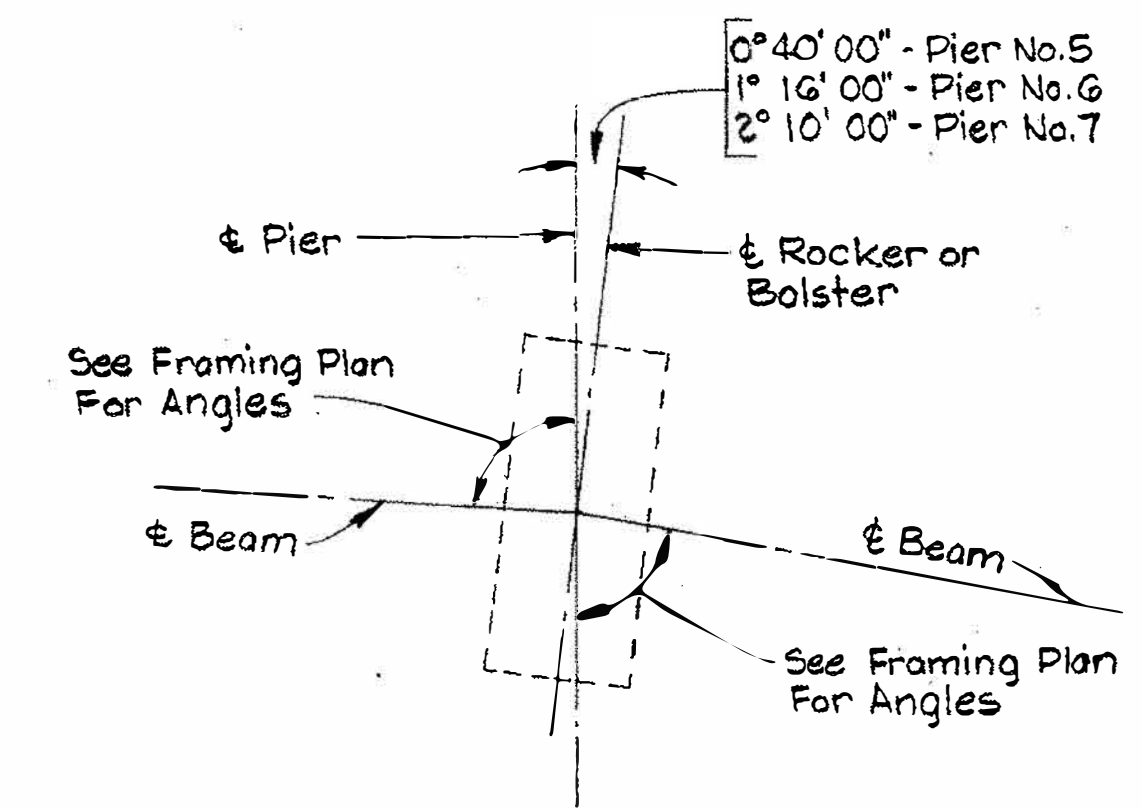
FRAMING PLAN - LOWER DECK UNIT 2

Note: For inlet framing see Sh. No. 268.

Note: All Piers Are Parallel



SIZE OF BEAMS AND COVER PLATES



DETAIL TT

BEAM SPLICE WELDING PROCEDURE

- 1-Raise the ends of beams in Span No.5 at Pier No.4 1/16", and the ends of beams in Span No.7 at Pier No.7 1 3/16".
- 2-Butt-weld the beam flanges and web at Piers Nos. 5 and 6 using the following sequence: make two passes on each flange, then two on the web; repeat, using one pass at each location, until welds are completed.
- 3-Weld the bottom and top moment plates at Piers Nos. 5 and 6.
- 4-Weld all pier crossframes at Piers Nos. 5 and 6.
- 5-Lower beams to their final positions.
- 6-Raise the ends of beams in Span No.8 at Pier No.8 1/2".
- 7-Repeat Step 2 at Pier No.7.
- 8-Weld the bottom and top moment plates at Pier No.7.
- 9-Weld all pier crossframes at Pier No.7.
- 10-Lower beams to their final positions.

Beam	Span No.5	Span No.6	Span No.7	Span No.8
A	49'-4 1/2"	61'-3 5/16"	61'-4 1/16"	49'-4 3/4"
B	do	61'-4"	61'-4 1/8"	49'-4 7/8"
C	do	do	61'-4 3/16"	49'-5"
D	do	61'-4 1/16"	61'-4 5/16"	49'-5 1/8"
E	49'-4 9/16"	do	61'-4 7/16"	49'-5 5/16"
F	do	61'-4 1/8"	61'-4 5/8"	49'-5 1/2"
G	do	61'-4 3/16"	61'-4 3/4"	49'-5 3/4"

Location	Span No.5	Span No.6	Span No.7	Span No.8
Deflection Due To Weight Of Steel	0	1/16"	1/16"	0
Deflection Due To Remaining Dead Load	1/4"	1/4"	1/4"	1/4"

Note: Where no camber is required, the beams shall be so fabricated that any curved beams will be placed with convex flange up.
No camber required for beams in Unit 2 (Lower Deck).

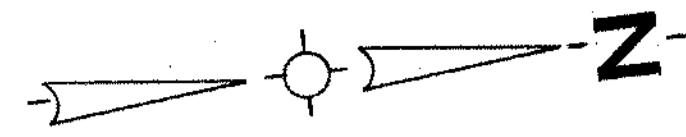
Note: For Bearing Details, See Sht. No. 206
For Beam Splice Details, See Sht. No. 204
For End Crossframe Details, See Sht. No. 215
For Intermediate Crossframe Details and Pier Crossframe (Type D) Details, See Sht. No. 204

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**STRUCTURAL STEEL DETAILS
UNIT 2 (LOWER DECK)**

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
CPW	JVK		JHO	10-14-60	

MICROFILMED
OCT 25 1999
REPRODUCTION

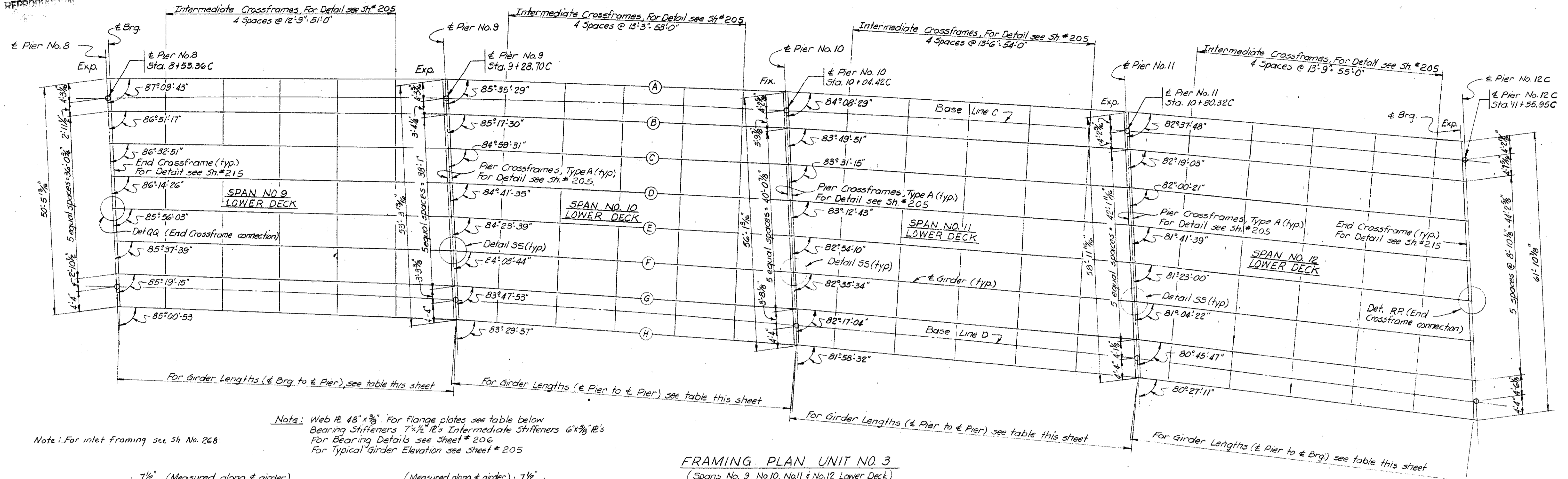


Note: Piers No. 8, No. 9, No. 10, No. 11 & No. 12 are parallel to each other.

FED. RD. DIV.	STATE	PROJECT	FISCAL YEAR
2	OHIO		

HAM-25-0.04

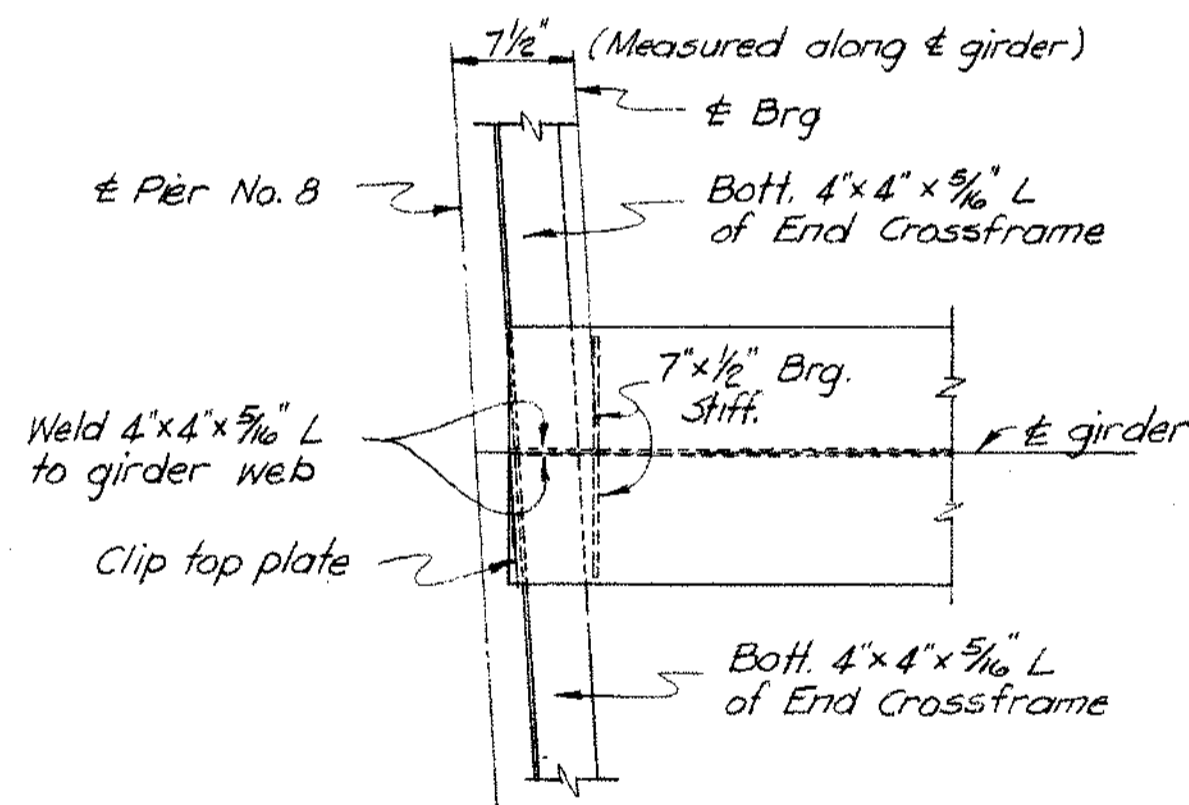
191



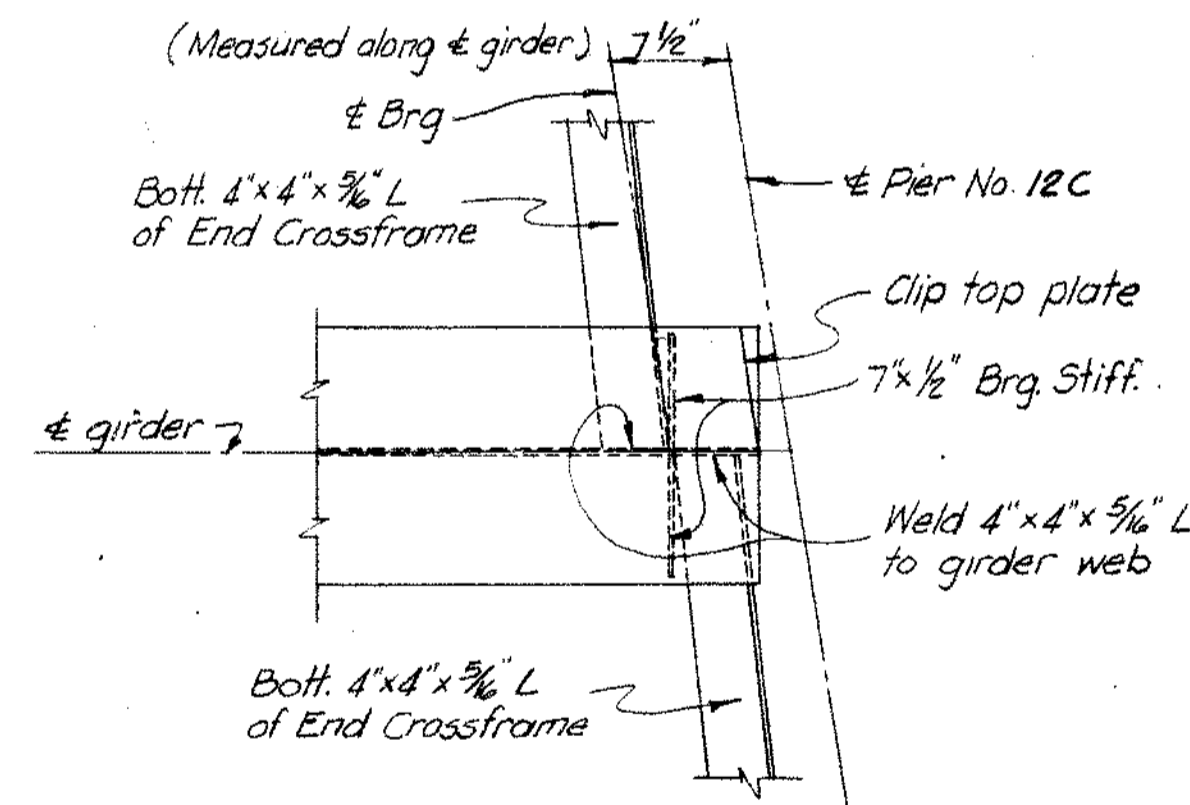
Note: For inlet framing see Sh. No. 268.

Note: Web 1/2 48" x 3/8". For flange plates see table below.
Bearing Stiffeners 7 1/2" 1/2" 1/2" Intermediate Stiffeners 6" x 3/8" 1/2"
For Bearing Details see Sheet # 206
For Typical Girder Elevation see Sheet # 205

FRAMING PLAN UNIT NO. 3
(Spans No. 9, No. 10, No. 11 & No. 12 Lower Deck)



DETAIL QQ
(End Crossframe connection at)
(Pier No. 8, Span No. 9)
Note: Work this detail with
"Part Plan of Expansion Joint"
Sheet No. 215.



DETAIL RR
(End Crossframe connection at)
(Pier No. 12C, Span No. 12)
Note: Work this detail with
"Part Plan of Expansion Joint"
Sheet No. 215.

	€ Pier No. 8	€ Pier No. 9	€ Pier No. 10	€ Pier No. 11	€ Pier No. 12C
	Span No. 9 (Lower Deck)	Span No. 10 (Lower Deck)	Span No. 11 (Lower Deck)	Span No. 12 (Lower Deck)	
	R100-T	R225-A	B 200-A	R250-A	R125-A
Flg. to Brg.	16" x 1 1/8"	16" x 1 3/8"	16" x 1 3/8"	16" x 1 3/8"	16" x 1 1/4"
Flg. to Web Weld		8'-6"	11'-6"	10'-6"	10'-6"
			12'-6"	8'-0"	
			3/16" weld		

TABLE OF FLANGE PLATES AND WELD SIZE

Girder	A	B	C	D	E	F	G	H
Span No. 9	74'-8 3/8"	74'-8 3/8"	74'-9 1/8"	74'-9 3/8"	74'-9 1/8"	74'-10 1/8"	74'-10 1/8"	74'-10 1/8"
Span No. 10	75'-8 1/8"	75'-9 1/4"	75'-9 3/8"	75'-9 3/8"	75'-10 3/8"	75'-10 3/8"	75'-11 3/8"	75'-11 3/8"
Span No. 11	75'-10 3/8"	75'-11 1/4"	75'-11 3/8"	76'-0 3/8"	76'-1"	76'-1 3/8"	76'-2 1/4"	76'-2 3/8"
Span No. 12	75'-0"	75'-0 3/8"	75'-1 3/8"	75'-2 1/8"	75'-2 3/4"	75'-3 3/8"	75'-4 3/8"	75'-5 1/8"

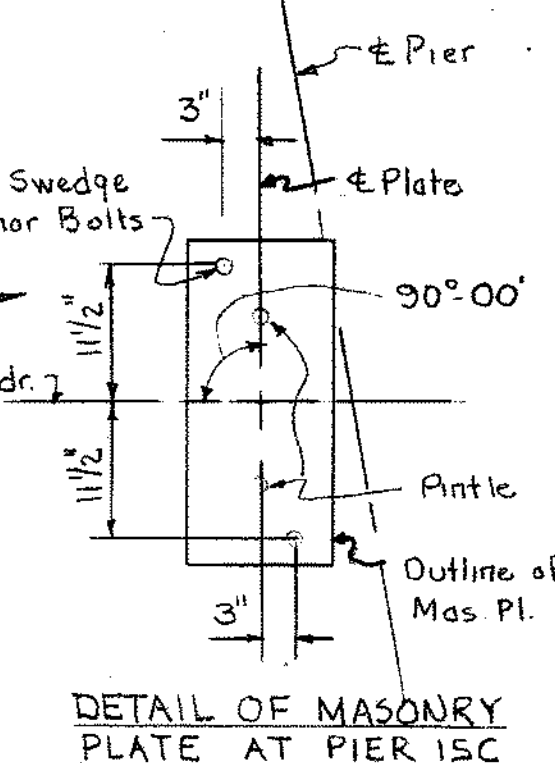
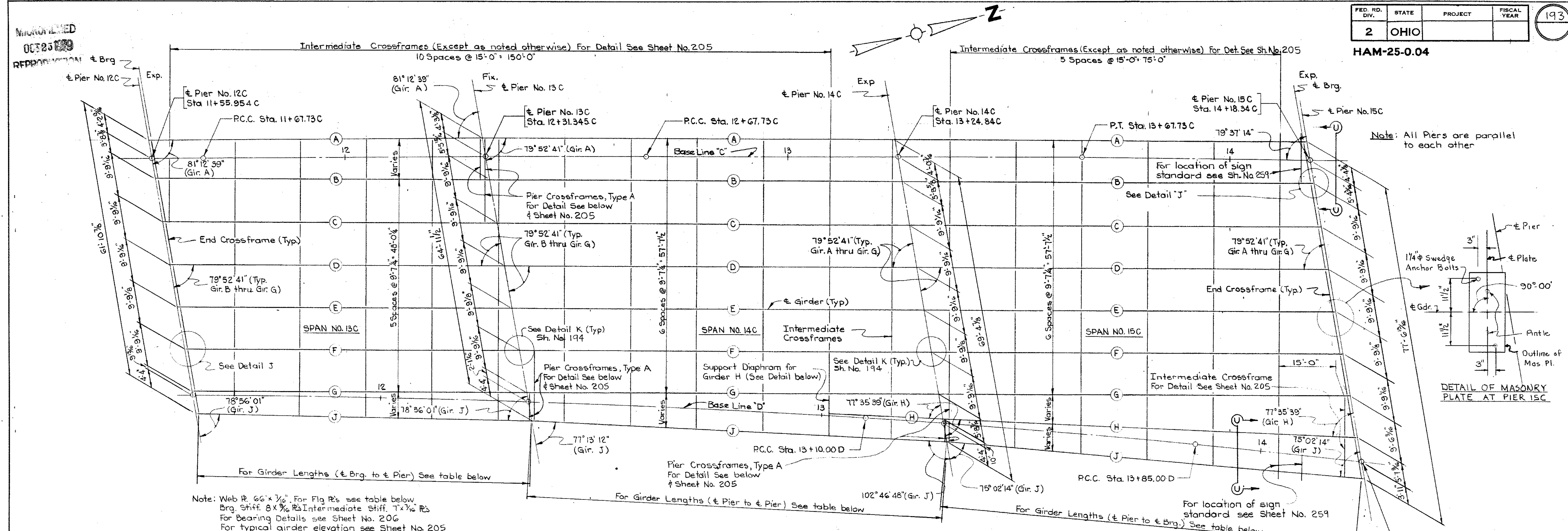
Work this sheet with Sheet No. 192

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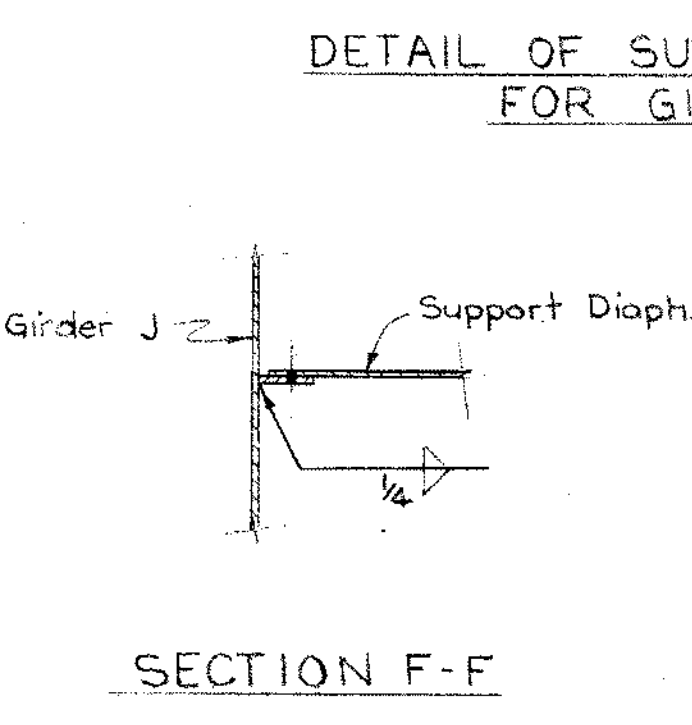
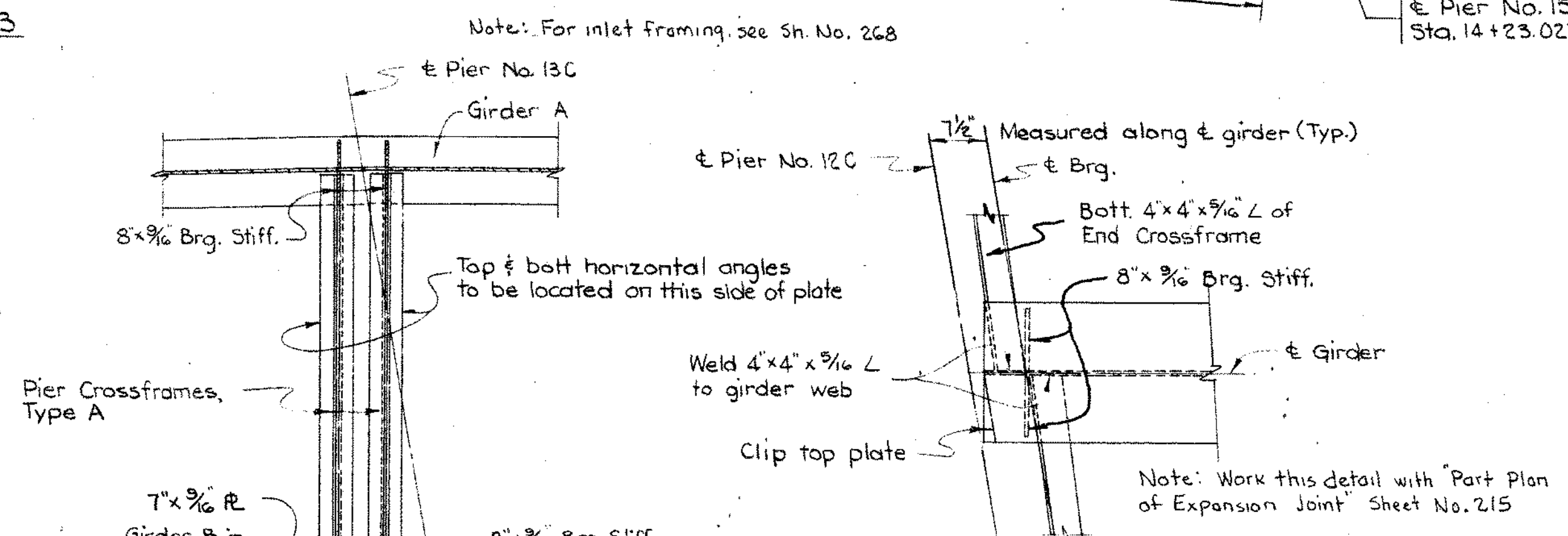
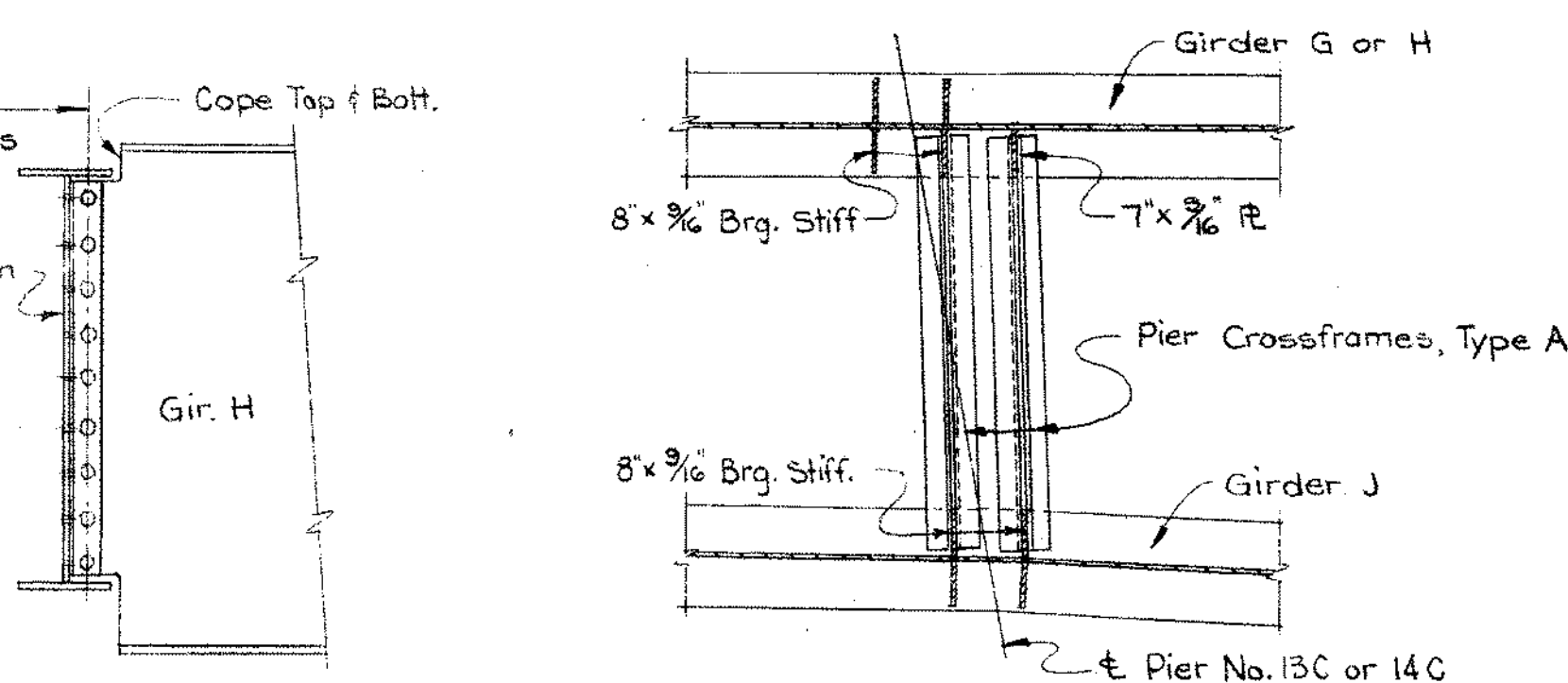
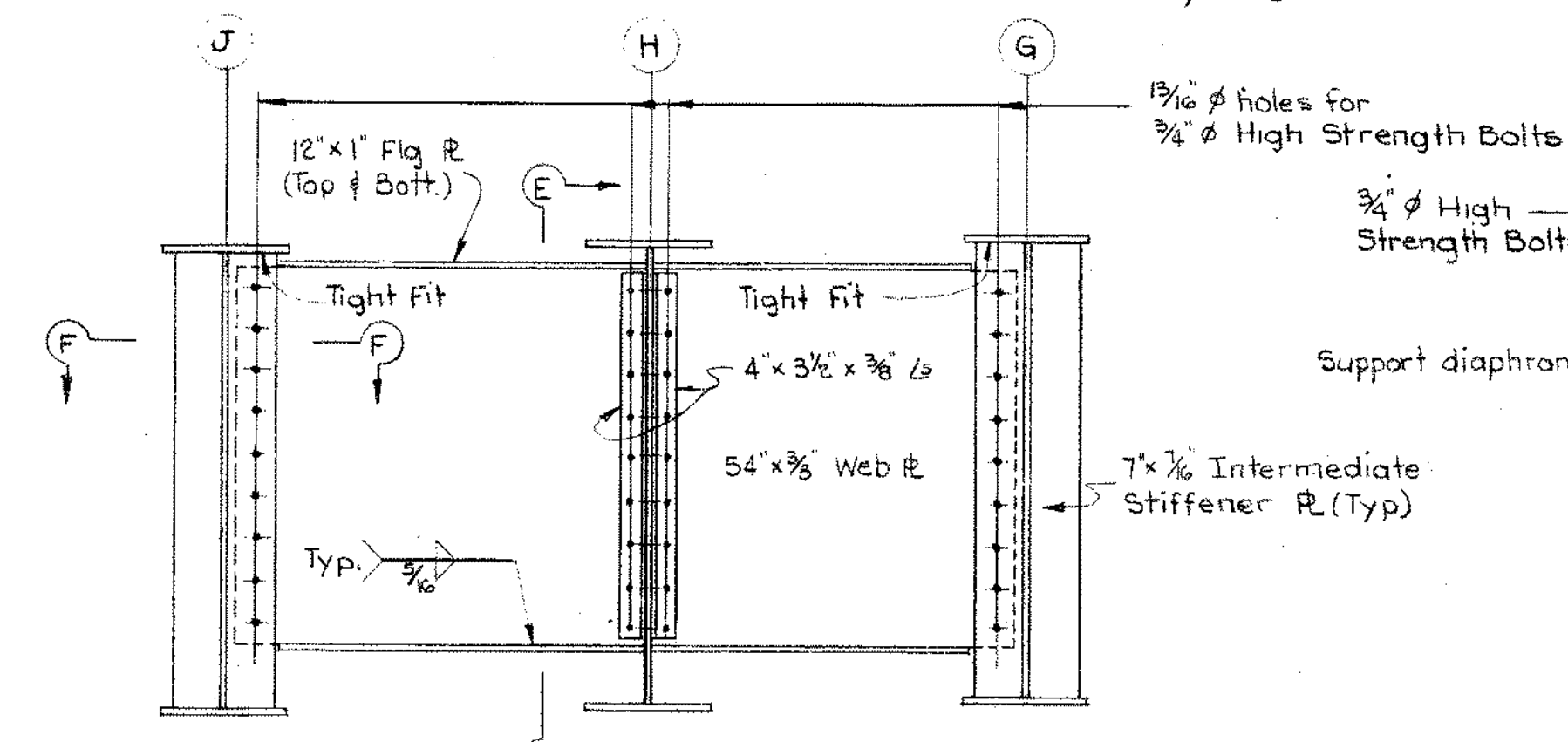
**STRUCTURAL STEEL DETAILS
UNIT 3 (LOWER DECK)**

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
C.P.W.	J.C.		J.H.O.	H.A.S.	
	7-21-60		7/27/60	10-14-60	

HAM-25-0.04



FRAMING PLAN UNIT NO. 13
(Spans No. 13C, 14C & 15C)



Span	€ Brg.	Span No. 13C	Span No. 14C	Span No. 15C	€ Brg.
R125-C		B275-A	R325-A		R150-B
	18' x 3/4"	18' x 1 1/2"	18' x 3/4"	18' x 1 1/2"	18' x 1 1/8"
		12'-0"	12'-0"	17'-0"	11'-0"
				18' x 3/4"	18' x 1 1/2"
				17'-0"	11'-0"
	1/4 Weld	5/16 Weld	1/4 Weld	5/16 Weld	
					Flg. R's Girders A thru G & J (Top & Bott.)
					Flg. R's Girder H (Top & Bott.)
					Flg. to Web Weld (Top & Bott.)

Girders	Span No. 13C	Span No. 14C	Span No. 15C
A	74'-9 1/8"	93'-6 7/8"	92'-9 1/8"
B thru G	75'-0 5/8"	93'-6 7/8"	92'-9 1/8"
H		*	93'-6 3/8"
J	75'-3 1/8"	94'-5 1/8"	94'-7"

* Girder lengths for girder shown by asterisk is from € Pier to crossframe. For location, see Framing Plan.

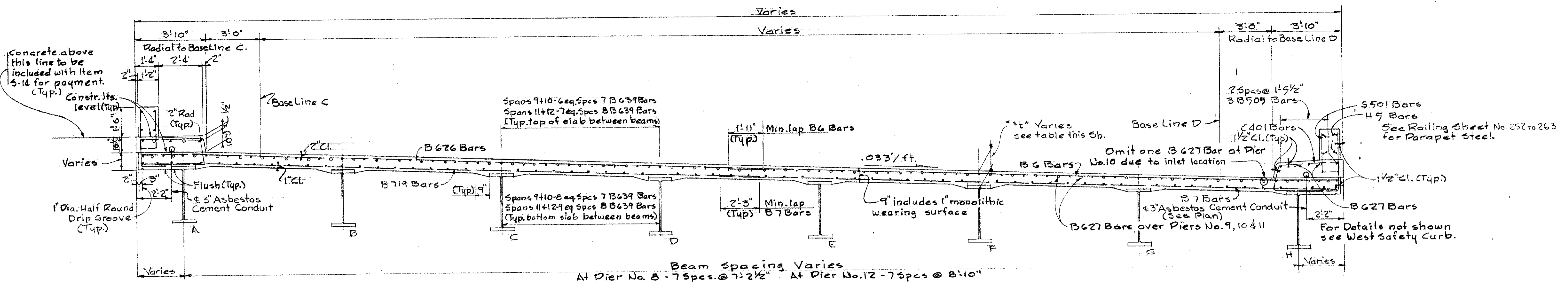
Work this sheet with Sheet No. 194

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**STRUCTURAL STEEL DETAILS
UNIT NO. 13.**

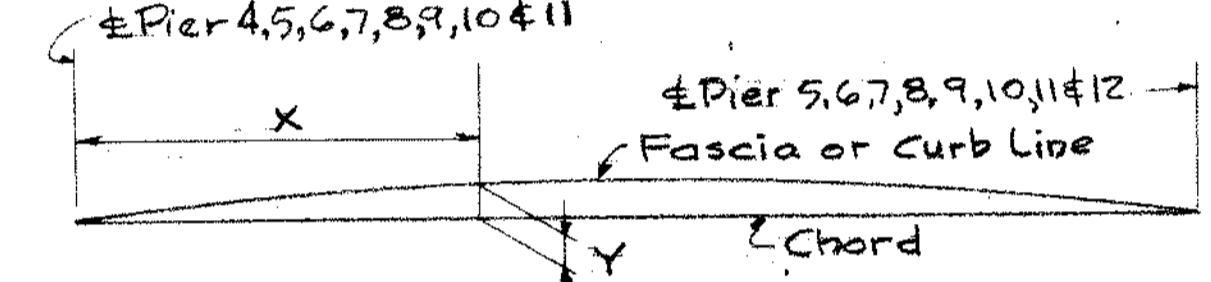
DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
CAF	J.C.		JHO	11.13.10-14-60	

HAM-25-0.04



• Indicates bars in section.
 ○ Indicates bars over piers.
 * See Sh. No. 216 for note.

TRANSVERSE SECTION UNIT 3 LOWER DECK



CHORD OFFSETS

UNIT 3 (Low Deck) SLAB THICKNESS "t"

Location	Beam	A	B thru G	H
SPAN 9	1/4 Pt. - Pier 8	9 7/8"	9 7/8"	10 1/2"
	1/4 Pt.	10 1/8"	10 1/4"	11"
	3/4 Pt.	10"	10 1/8"	10 3/4"
SPAN 10	1/4 Pt. - Pier 9	9 3/8"	9 7/8"	10 1/2"
	1/4 Pt.	9 3/8"	9 7/8"	10 1/2"
	3/4 Pt.	9 3/4"	10"	10 5/8"
SPAN 11	1/4 Pt. - Pier 10	9 3/8"	9 7/8"	10 1/2"
	1/4 Pt.	9 3/8"	9 7/8"	10 1/2"
	3/4 Pt.	9 3/4"	10"	10 3/4"
SPAN 12	1/4 Pt. - Pier 11	9 3/8"	9 7/8"	10 1/2"
	1/4 Pt.	10"	10 1/4"	10 3/4"
	3/4 Pt.	10 1/4"	10 3/8"	11"
	1/4 Pt. - Pier 12	9 5/8"	9 7/8"	10 1/2"

Note: "t" is measured from top of slab to bottom of flange plate @ Beam.
 See Note 1 Sheet No. 216.

UNIT 2 LOWER DECK SPAN 5

W. Fascia		W. Curb		E. Curb		E. Fascia	
Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y
26' 0 3/4"	1/8"	26' 0 3/4"	1/8"	5' 7 7/8"	3/8"	5' 7 3/4"	3/8"
				11' 3 3/4"	3/8"	11' 3 1/2"	3/8"
				20' 11 3/4"	1"	20' 11 1/2"	1"
				30' 7 3/4"	1"	30' 7 3/4"	1"
				40' 4"	5/8"	40' 3 3/4"	5/8"

UNIT 2 LOWER DECK SPAN 6

W. Fascia		W. Curb		E. Curb		E. Fascia	
Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y
10' 2 5/8"	1/8"	10' 2 5/8"	1/8"	10' 2 1/2"	3/8"	10' 2 1/8"	3/8"
20' 5 3/8"	1/4"	20' 5 3/8"	1/4"	20' 4 7/8"	1 1/2"	20' 4 3/8"	1 1/2"
30' 8"	3/8"	30' 8"	3/8"	30' 7 3/8"	1 5/8"	30' 6 7/8"	1 5/8"
40' 10 3/8"	1/4"	40' 10 3/8"	1/4"	40' 9 3/4"	1 1/2"	40' 8 3/4"	1 1/2"
51' 1 1/4"	1/8"	51' 1 1/4"	1/8"	51' 0 1/4"	7/8"	50' 10 7/8"	7/8"

UNIT 2 LOWER DECK SPAN 7

W. Fascia		W. Curb		E. Curb		E. Fascia	
Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y
6' 9 3/8"	3/8"	6' 9 3/8"	3/8"	7' 8 1/8"	1/8"	7' 8 1/8"	1/8"
15' 10 3/8"	1 1/4"	15' 10 1/2"	1 1/4"	15' 4 1/4"	1 1/2"	15' 4 1/4"	1 1/2"
24' 11 3/4"	1 1/2"	24' 11 5/8"	1 1/2"	23' 0 1/4"	1 7/8"	23' 0 1/4"	1 7/8"
34' 0 7/8"	1 5/8"	34' 0 3/4"	1 5/8"	30' 8 3/8"	2"	30' 8 3/8"	2"
43' 1 1/8"	1 3/8"	43' 1 7/8"	1 3/8"	38' 4 1/2"	1 3/8"	38' 4 1/2"	1 3/4"
52' 3"	7/8"	52' 3"	7/8"	46' 0 5/8"	1 1/2"	46' 0 5/8"	1 1/2"
				53' 8 3/8"	3/8"	53' 8 3/8"	7/8"

UNIT 2 LOWER DECK SPAN 8

W. Fascia		W. Curb		E. Curb		E. Fascia	
Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y
9' 1 3/8"	5/8"	9' 1 1/4"	5/8"	8' 4 1/4"	3/4"	8' 4 1/4"	3/4"
18' 3 1/8"	1"	18' 2 1/2"	1"	16' 8 1/2"	1 1/8"	16' 8 1/2"	1 1/8"
27' 4 3/4"	1 1/8"	27' 3 3/4"	1 1/8"	25' 0 5/8"	1 3/8"	25' 0 5/8"	1 3/8"
36' 6 3/8"	7/8"	36' 5 7/8"	7/8"	33' 4 7/8"	1 1/8"	33' 4 7/8"	1 1/8"
45' 7 7/8"	3/8"	45' 6 1/4"	3/8"	41' 9 1/8"	3/4"	41' 9 1/8"	3/4"

UNIT 3 LOWER DECK SPAN 9

W. Fascia		W. Curb		E. Curb		E. Fascia	
Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y
9' 5"	1 1/4"	9' 5"	1 1/4"	9' 5 1/4"	1 1/4"	9' 5 1/4"	1 1/4"
18' 10"	2 1/4"	18' 10"	2 1/4"	18' 10 3/8"	2 1/4"	18' 10 3/8"	2 1/4"
28' 3"	2 3/4"	28' 3"	2 3/4"	28' 3 3/8"	2 3/4"	28' 3 3/8"	2 3/4"
37' 8"	3"	37' 8"	3"	37' 9 1/8"	3"	37' 9 1/8"	3"
47' 1"	2 3/4"	47' 1"	2 3/4"	47' 2 1/4"	2 3/4"	47' 2 1/4"	2 3/4"
56' 6"	2 1/4"	56' 6"	2 1/4"	56' 7 3/4"	2 1/4"	56' 7 3/4"	2 1/4"
65' 11"	1 1/4"	65' 11"	1 1/4"	66' 1"	1 1/4"	66' 1"	1 1/4"

UNIT 3 LOWER DECK SPAN 10

W. Fascia		W. Curb		E. Curb		E. Fascia	
Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y
9' 5 5/8"	1 1/4"	9' 5 5/8"	1 1/4"	9' 6"	1 3/8"	9' 6"	1 3/8"
18' 11 1/8"	2 1/4"	18' 11 1/8"	2 1/4"	19' 0"	2 1/4"	19' 0"	2 1/4"
28' 4 3/4"	2 3/4"	28' 4 3/4"	2 3/4"	28' 6"	2 3/8"	28' 6"	2 3/8"
37' 10 1/4"	3"	37' 10 1/4"	3"	38' 0"	3"	38' 0"	3"
47' 3 3/8"	2 3/4"	47' 3 3/8"	2 3/4"	47' 6"	2 3/8"	47' 6"	2 3/8"
56' 9 1/2"	2 1/4"	56' 9 1/2"	2 1/4"	57' 0"	2 1/4"	57' 0"	2 1/4"
66' 3"	1 1/4"	66' 3"	1 1/4"	66' 6"	1 3/8"	66' 6"	1 3/8"

UNIT 3 LOWER DECK SPAN 11

W. Fascia		W. Curb		E. Curb		E. Fascia	
Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y
9' 5 3/8"	1 3/8"	9' 5 3/8"	1 3/8"	9' 6 3/8"	1 3/8"	9' 6 3/8"	1 3/8"
18' 11 3/8"	2 1/4"	18' 11 3/4"	2 1/4"	19' 0 3/4"	2 1/4"	19' 0 3/4"	2 1/4"
28' 5 1/2"	2 3/8"	28' 5 1/2"	2 3/8"	28' 7 1/8"	2 3/8"	28' 7 1/8"	2 3/8"
37' 11 3/4"	3"	37' 11 3/8"	3"	38' 1 3/8"	3"	38' 1 1/2"	3"
47' 5 1/4"	2 3/8"	47' 5 1/4"	2 3/8"	47' 7 3/4"	2 3/8"	47' 7 3/4"	2 3/8"
56' 11"	2 1/4"	56' 11 1/8"	2 1/4"	57' 2 1/8"	2 1/4"	57' 2 1/8"	2 1/4"
66' 4 7/8"	1 3/8"	66' 4 3/8"	1 3/8"	66' 8 1/2"	1 3/8"	66' 8 1/2"	1 3/8"

UNIT 3 LOWER DECK SPAN 12

W. Fascia		W. Curb		E. Curb		E. Fascia	
Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y	Dist. X	Offset Y
9' 5 3/8"	1 1/4"	9' 5 3/8"	1 1/4"	9' 6 1/8"	1 3/8"	9' 6 1/8"	1 3/8"
18' 10 3/8"	2 1/4"	18' 10 3/8"	2 1/4"	19' 0 1/8"	2 1/4"	19' 0 1/4"	2 1/4"
28' 4 1/4"	2 3/4"	28' 4 3/8"	2 3/4"	28' 6 1/4"	2 3/8"	28' 6 1/4"	2 3/8"
37' 9 3/4"	3"	37' 9 3/4"	3"	38' 0 3/8"	3"	38' 0 3/8"	3"
47' 3 3/8"	2 3/4"	47' 3 3/4"	2 3/4"	47' 6 1/2"	2 3/8"	47' 6 1/2"	2 3/8"
56' 8 3/8"	2 1/4"	56' 8 3/8"	2 1/4"	57' 0 1/2"	2 1/4"	57' 0 1/2"	2 1/4"
66' 2"	1 1/4"	66' 2 1/8"	1 1/4"	66' 6 3/8"	1 3/8"	66' 6 3/8"	1 3/8"

CHORD LENGTHS LOWER DECK

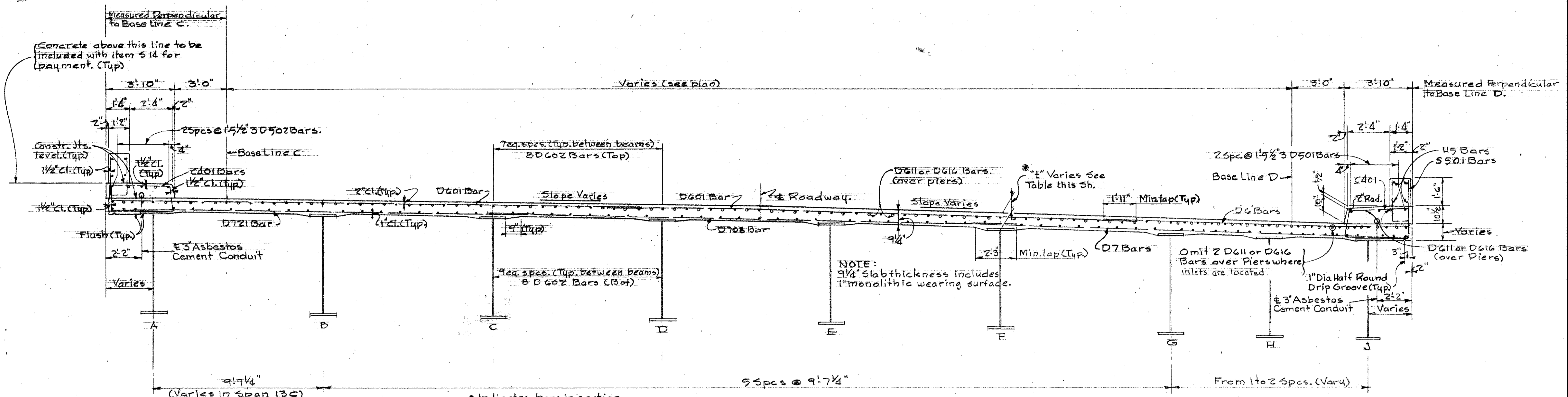
SPAN	W. Fascia	W. Curb	E. Curb	E. Fascia
5	50' 0"	50' 0"	50' 0"	50' 0"
6	61' 4"	61' 4"	61' 4 1/8"	61' 4 1/8"
7	61' 4 1/8"	61' 4 1/8"	61' 4 3/4"	61' 4 3/4"
8	50' 0 1/4"	50' 0 1/4"	50' 1 3/8"	50' 1 3/8"
9	75' 4"	75' 4"	75' 6 3/8"	75' 6 3/8"
10	75' 8 3/8"	75' 8 3/8"	76' 0"	76' 0"
11	75' 10 3/4"	75' 10 3/4"	76' 2 7/8"	76' 2 7/8"
12	75' 7 1/2"	75' 7 1/2"	76' 0 3/4"	76' 0 3/4"

HAZLET & ERDAL
 CONSULTING ENGINEERS
 CINCINNATI, OHIO

**SUPERSTRUCTURE DETAILS
 UNIT NO. 3 (LOW DECK).**

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
J.C.D.	J.C.D.		W.W.C.	10-6-60	
3-14-60			9-15-60		

HAM-25-0.04



• Indicates bars in section.
 ○ Indicates bars over piers.

* This is the nominal dimension. The quantity of deck concrete to be paid for shall be based on this dimension, even though deviation from it may be necessary because the top flange of the beam may not have the exact camber or conformation required to place it parallel to the finished grade.

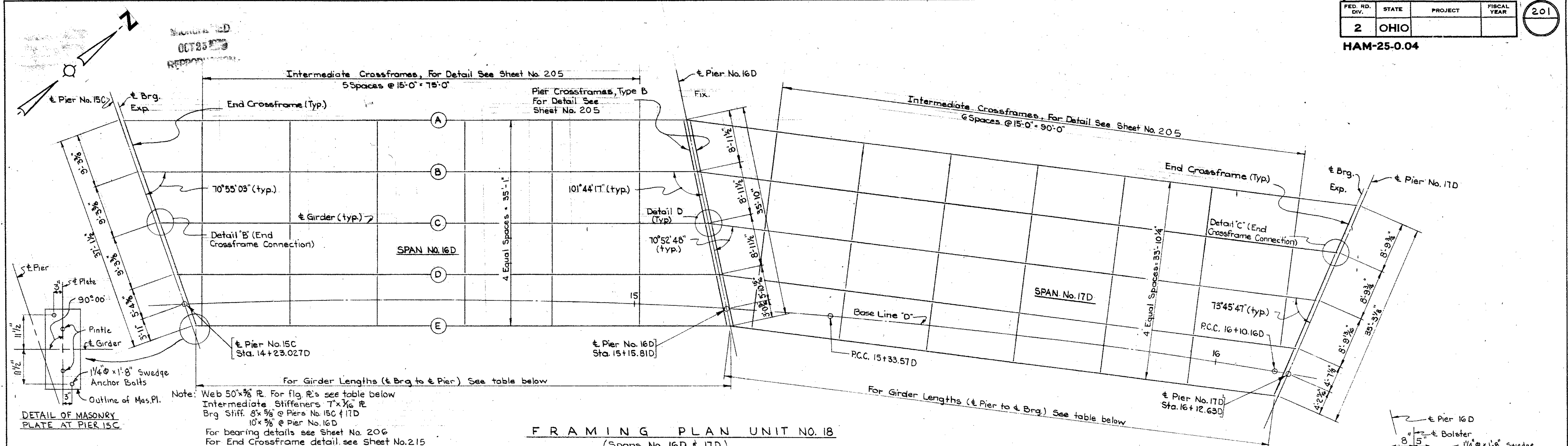
TRANSVERSE SECTION
 (TYPICAL FOR UNIT 13)

UNIT 13		SLAB THICKNESS "t"									
Location		A	B	C	D	E	F	G	H	J	
SPAN 13 C	± Brg - Pier 12 C	9 7/8"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"		10 7/8"	
	1/4 Pt.	10 1/8"	10 1/2"	10 1/2"	10 1/2"	10 5/8"	10 5/8"	10 5/8"		11 3/8"	
	± Span	10 1/4"	10 3/8"	10 3/8"	10 3/8"	10 3/4"	10 3/4"	10 3/4"		11 5/8"	
	3/4 Pt.	10 1/8"	10 1/2"	10 1/2"	10 1/2"	10 1/2"	10 1/2"	10 3/8"		11 1/2"	
	± Pier 13 C	9 7/8"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"		10 7/8"	
SPAN 14 C	± Pier 13 C	9 7/8"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"		10 7/8"	
	1/4 Pt.	10 1/8"	10 1/4"			10 1/8"	10"	10"		10 7/8"	
	± Span	10 1/8"	10 3/8"			10 1/4"	10 1/4"	10 1/8"		11"	
	3/4 Pt.	9 7/8"	10 1/4"			10 1/4"	10 1/4"	10 1/4"		11"	
	± Pier 14 C	9 7/8"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"		10 7/8"	
SPAN 15 C	± Pier 14 C	9 7/8"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 7/8"	
	1/4 Pt.	9 5/8"	10"	10 1/8"	10"	10 1/4"	10 1/8"	10 1/8"	10"	10 1/2"	
	± Span	9 7/8"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 7/8"	
	3/4 Pt.	10"	10 1/2"	10 1/2"	10 3/8"	10 3/8"	10 1/4"	10 1/4"	10 1/4"	11"	
	± Brg - Pier 15 C	9 7/8"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 1/4"	10 7/8"	

"t" is measured from top of slab to bottom of flange plate @ ± Beam.
 See Note 1 Sh. No. 216

Note: Work this sheet with Sh. No. 233

HAZELT & ERDAL CONSULTING ENGINEERS CINCINNATI, OHIO					
SUPERSTRUCTURE DETAILS UNIT NO. 13.					
DESIGNED	DRAWN	TRACED	CHECKED	REVISION DATE	REVISED
	J.C.D.		W.J.J.C.	11/1/60	
	5-19-60		9-16-60	10-9-60	

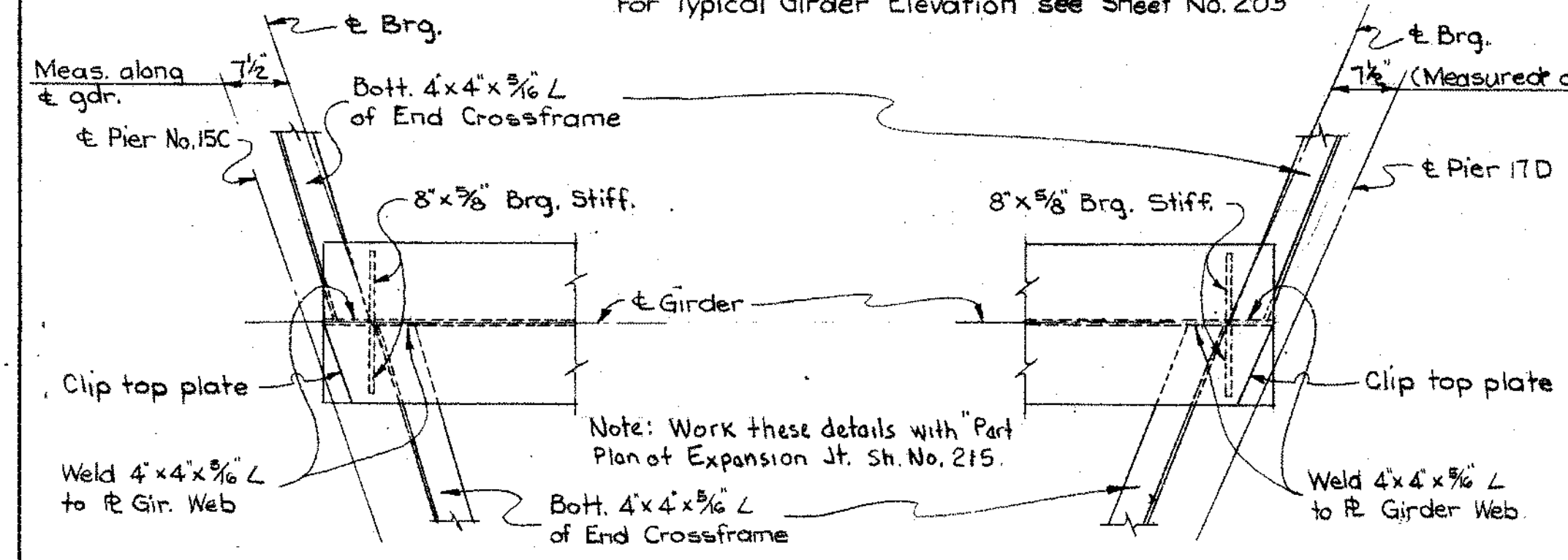


DETAIL OF MASONRY PLATE AT PIER 15C

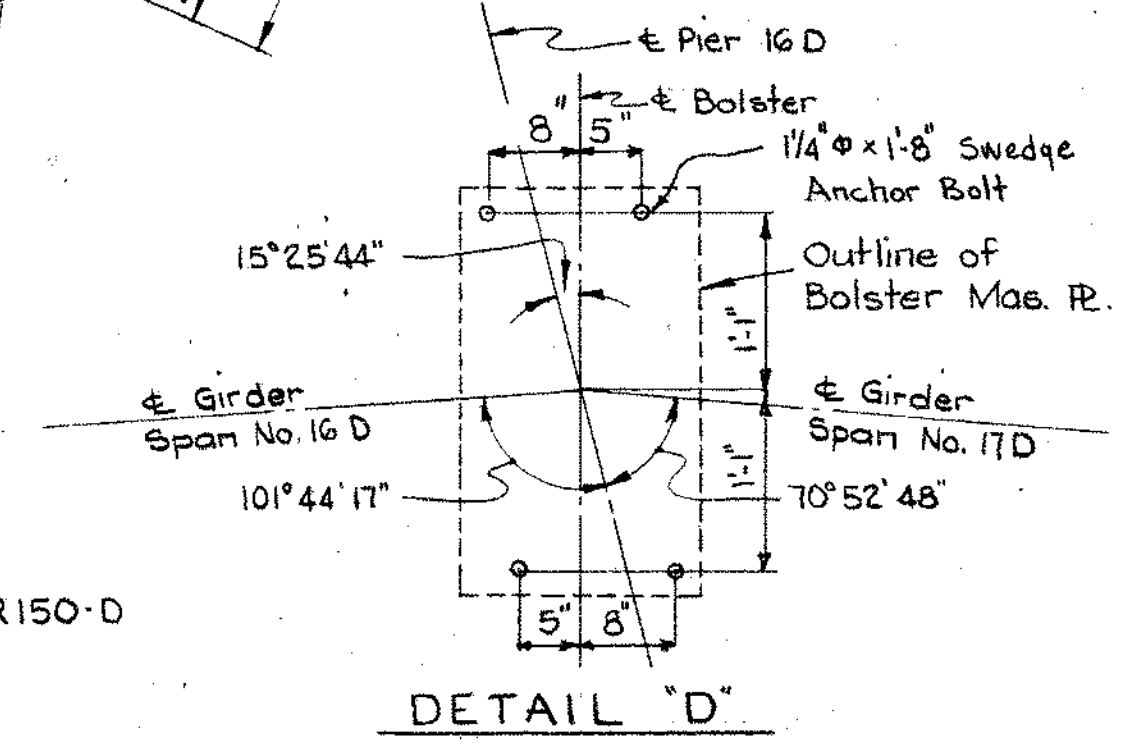
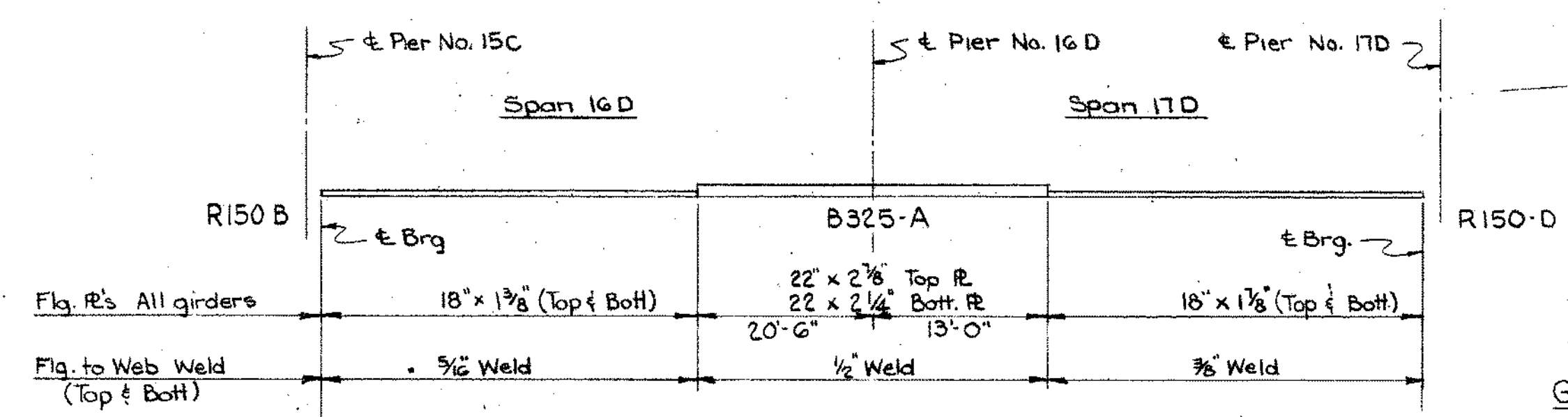
Note: Web 50x $\frac{3}{8}$ " R. For flg. R's see table below
Intermediate Stiffeners 7x $\frac{1}{2}$ " R
Brg Stiff. 8x $\frac{5}{8}$ " @ Piers No. 15C & 17D
10x $\frac{3}{8}$ " @ Pier No. 16D
For bearing details see Sheet No. 206
For End Crossframe detail see Sheet No. 215
For Typical Girder Elevation see Sheet No. 205

FRAMING PLAN UNIT NO. 18
(Spans No. 16D & 17D)

Note: For inlet framing see Sh. No. 268.



GIRDER LENGTHS		
Girder	Span 16D	Span 17D
A	96'-3 $\frac{1}{8}$ "	115'-6 $\frac{5}{16}$ "
B	95'-1 $\frac{1}{8}$ "	110'-1 $\frac{1}{8}$ "
C	93'-10 $\frac{3}{8}$ "	104'-8 $\frac{3}{4}$ "
D	92'-8 $\frac{1}{2}$ "	99'-3 $\frac{1}{8}$ "
E	91'-5 $\frac{3}{8}$ "	93'-11 $\frac{1}{16}$ "

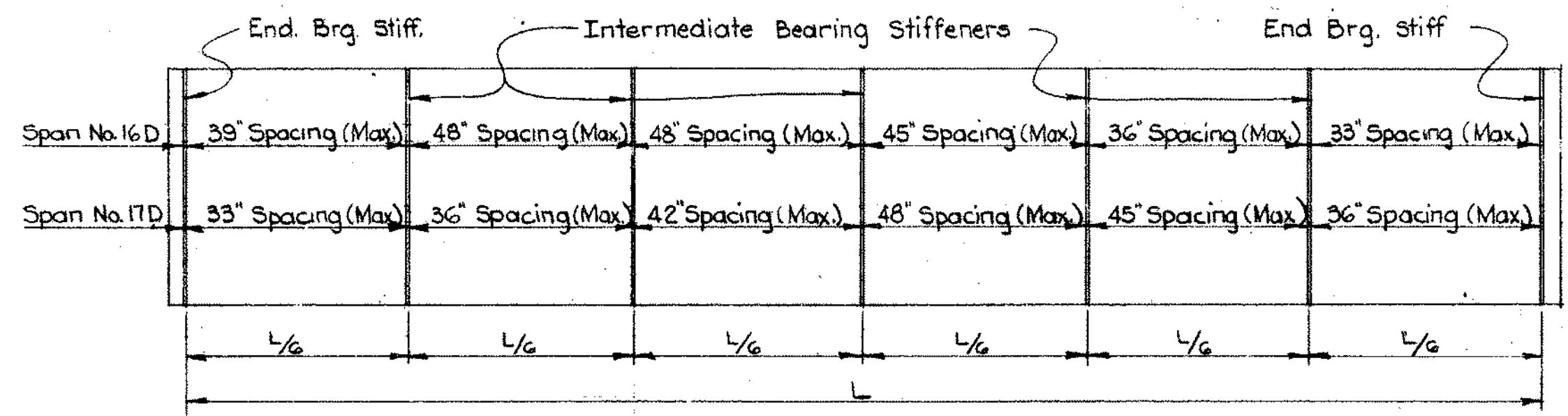


GIRDER SPLICE WELDING PROCEDURE

With the girders of Span 16D in their final positions, raise the ends of the girders in Span 17D, at Pier 17D, the following amounts: Bm. A-4 $\frac{1}{8}$ ", Bm. B-4 $\frac{1}{8}$ ", Bm. C-3 $\frac{1}{2}$ ", Bm. D-3", Bm. E-2 $\frac{3}{8}$ ".
Butt weld the girder flanges and webs at Pier 16D using the sequence outlined in Note A Sheet No. 181.
Weld all pier crossframes at Pier 16D into place.
Lower the girders into their final positions.

Span	DEFLECTION AND CAMBER									
	16D					17D				
Girder	A	B	C	D	E	A	B	C	D	E
Location	1/4	1/2	3/4	1	1 1/4	1/4	1/2	3/4	1	1 1/4
Deflection due to weight of steel	1/8	1/16	-	1/8	1/8	1/8	1/8	1/8	1/8	1/8
Deflection due to remaining Dead Load	1/2	3/4	1	1 1/4	1 1/2	1/2	3/4	1	1 1/4	1 1/2
Convexity (See note below)	1/8	1/4	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
Sum of deflection and convexity	1 1/4	2 1/8	1 1/8	2 1/4	2 1/4	1 1/4	2 1/8	2 1/8	2 1/8	2 1/8
Required Camber	2 3/8	2 3/8	2 3/8	2 3/8	2 3/8	5 1/4	5	2 3/4	2 3/4	2 3/4

Notes: Convexity includes variations due to vertical curvature, superelevation and horizontal curvature.
Girder web plates shall be cut to a parabolic crown



Note: Adjust intermediate stiffener spacing to conform to intermediate crossframe spacing

HAZELET & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

STRUCTURAL STEEL DETAILS
UNIT NO. 18

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
C.A.F.	J.C.		JHO	10-14-60	

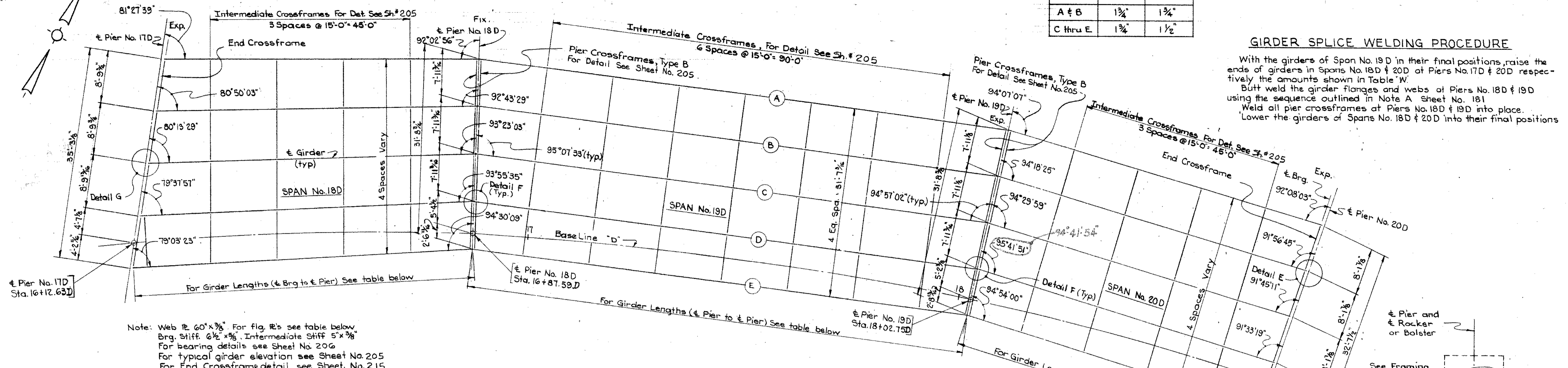
OCT 23 1960
REPRODUCTION

HAM-25-0.04

TABLE "W"		
Dimensions to raise girders for welding		
Girders	At Pier 17D	At Pier 20D
A & B	1 3/4"	1 3/4"
C thru E	1 3/4"	1 1/2"

GIRDER SPLICE WELDING PROCEDURE

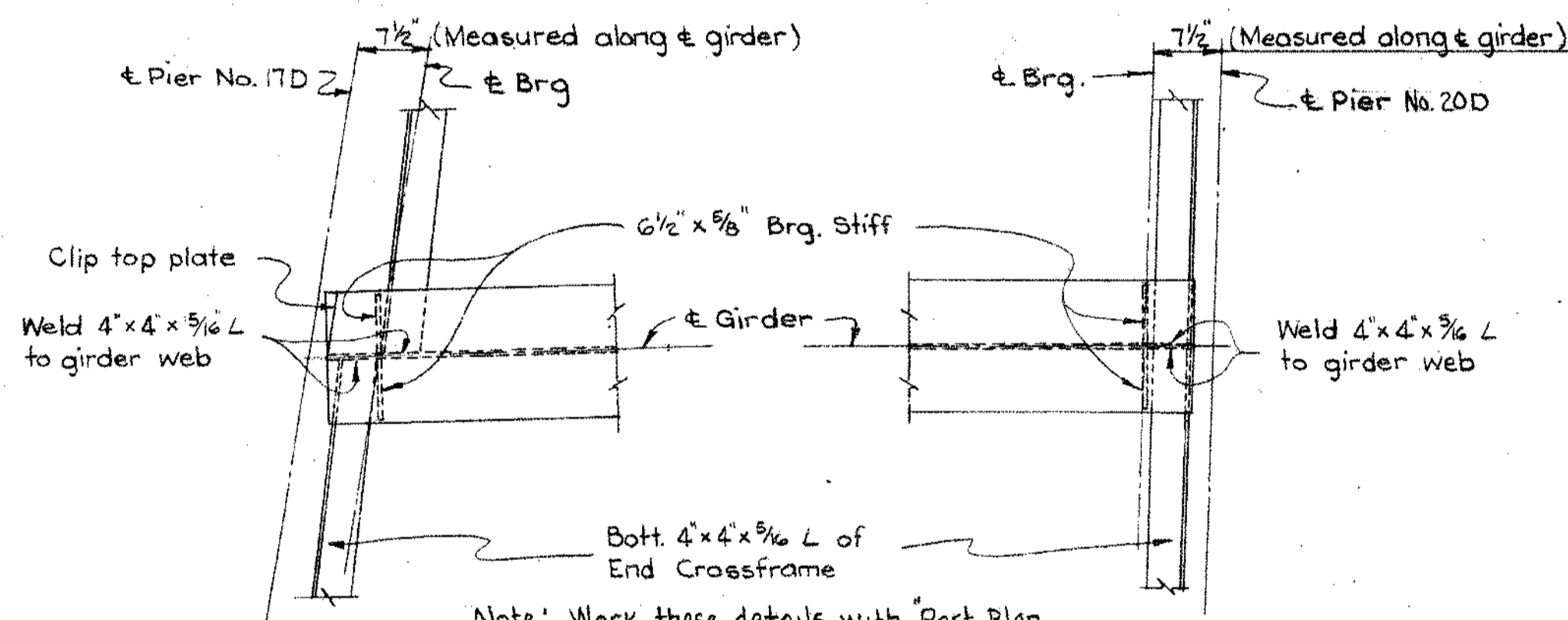
With the girders of Span No. 19D in their final positions, raise the ends of girders in Spans No. 18D & 20D at Piers No. 17D & 20D respectively the amounts shown in Table "W".
Butt weld the girder flanges and webs at Piers No. 18D & 19D using the sequence outlined in Note A Sheet No. 181.
Weld all pier crossframes at Piers No. 18D & 19D into place.
Lower the girders of Spans No. 18D & 20D into their final positions.



Note: Web Pl. 60"x 3/8". For fig. R's see table below.
Brg. Stiff. 6 1/2" x 5/8". Intermediate Stiff. 5" x 3/8".
For bearing details see Sheet No. 20G.
For typical girder elevation see Sheet No. 205.
For End Crossframes detail see Sheet No. 215.

FRAMING PLAN UNIT NO. 19
(Spans No. 18D thru 20D)

Girder	GIRDER LENGTHS		
	Span 18D	Span 19D	Span 20D
A	70'-8 3/8"	120'-1 1/2"	73'-10 3/8"
B	71'-9 1/8"	118'-8 3/8"	73'-0 3/8"
C	72'-9 1/2"	117'-4"	72'-1 1/8"
D	73'-10"	115'-11 1/4"	71'-3 1/8"
E	74'-10 3/8"	114'-6 3/8"	70'-5"



Note: Work these details with Part Plan of Expansion Joint Sheet No. 215

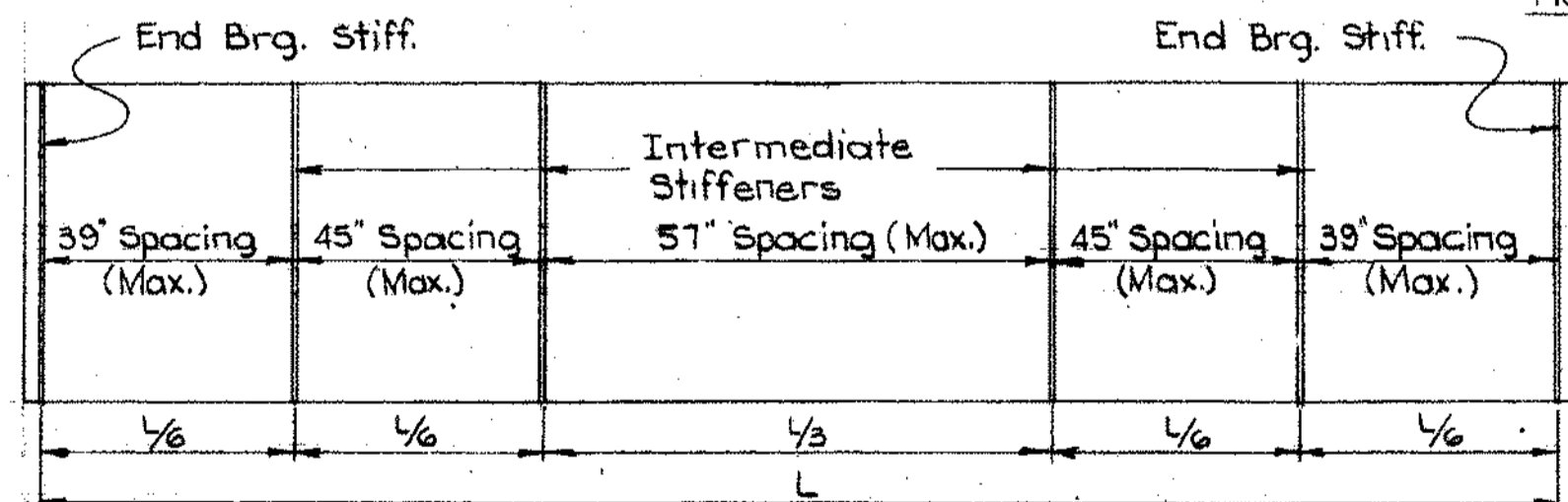
DETAIL "G"
(End Crossframe Connection)
(at Pier 17D, Span 18D)

DETAIL "E"
(End Crossframe Connection)
(at Pier 20D, Span 20D)

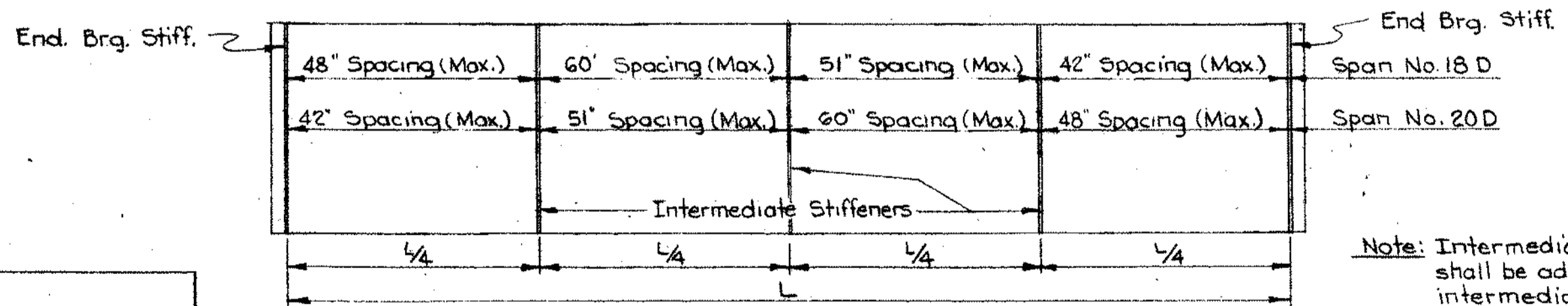
Note: For inlet framing see Sh. No. 268.

	Span No. 18D	Span No. 19D	Span No. 20D
Fig. R's all girders	14" x 3/4"	14" x 2 1/2" Top 14" x 1 3/8" Bott.	14" x 1 3/4" Top 14" x 1 3/8" Bott.
Fig. to Web weld	1/4" Weld (Top & Bott)	1/2" Weld Top 3/8" Weld Bott.	3/8" Weld (Top & Bott)

TABLE OF FLANGE PLATES AND WELD SIZES



INTERMEDIATE STIFFENER SPACING
(Span No. 19D)



INTERMEDIATE STIFFENER SPACING
(Spans No. 18D & 20D)

Note: Intermediate stiffener spacing shall be adjusted to conform to intermediate crossframe spacing.

Notes: Girder web plates shall be cut to a parabolic crown
Convexity includes variations due to vertical curvature, superelevation and horizontal curvature.

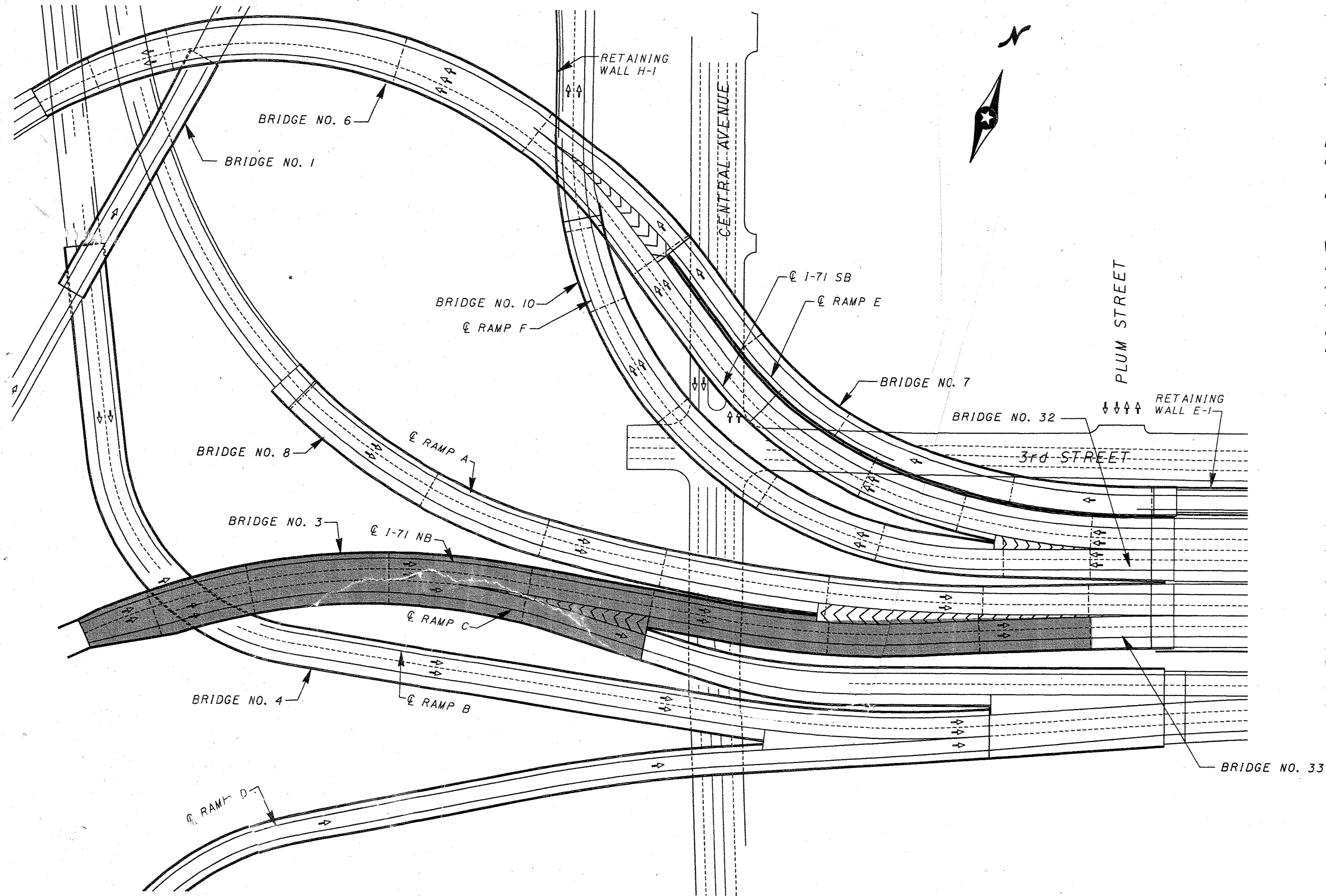
Span	D E F L E C T I O N A N D C A M B E R														
	18D					19D					20D				
Girder	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
Location	1/4	1/2	3/4	1	3/4	1/4	1/2	3/4	1	3/4	1/4	1/2	3/4	1	3/4
Deflection due to weight of steel	0	-1/16	-1/16	0	0	0	0	-1/16	0	0	0	0	-1/16	0	0
Deflection due to remaining Dead Load	0	3/16	-1/8	1/16	-1/16	0	1/8	1/8	0	3/16	0	1/8	1/8	0	3/16
Convexity (See note above)	1 1/2	1 1/2	1 1/8	3/4	-1/8	1 1/2	1 1/2	1 1/8	3/4	-1/8	1 1/2	1 1/2	1 1/8	3/4	-1/8
Sum of deflection and convexity	1 1/2	1 1/8	1/8	1/4	3/16	1 1/2	1 1/2	1 1/8	3/4	3/16	1 1/2	1 1/2	1 1/8	3/4	3/16
Required Camber	1 3/4	0	0	0	1 3/4	1 3/4	0	0	0	1 3/4	1 3/4	0	0	0	1 3/4

HAZELT & ERDAL
CONSULTING ENGINEERS
CINCINNATI, OHIO

STRUCTURAL STEEL DETAILS
UNIT NO. 19

DESIGNED	DRAWN	TRACED	CHECKED	REVIEWED DATE	REVISED
J.C.	J.C.		JHO	10-14-60	

AS-BUILTS



PROPOSED STRUCTURE

TYPE: Continuous Steel Plate Girders (A572M GR345) with Reinforced Concrete Deck and Substructure

SPAN: 24.600, 34.100, 48.115, 48.119, 42.957, 56.812, 53.687 & 36.077 measured along ϕ I-71 NB, ϕ to ϕ Bearings

ROADWAY: Varies
LIVE LOADING: MS 18 Case 1 and Alternate Military

DEAD LOAD: Includes 2.88 KN/sq m allowance for future wearing course

WEARING COURSE: Monolithic Concrete

APPROACH SLABS: None

ALIGNMENT: Curved

SUPERELEVATION: See Superelevation Plan

LATITUDE: 39° 05' 50"

LONGITUDE: 84° 31' 13"

EXISTING STRUCTURE

STRUCTURE FILE NO.: HAM-25-0.04
HAM-50-20.81

TYPE: Continuous Plate Girders with a Reinforced Concrete Deck and Substructure Supported on C.I.P. Reinforced Concrete Piles.

SPAN: Varies

ROADWAY: Varies

LIVE LOADING: MS 18 Case 1 and Alternate Military

LOADING: CF 2000 (57) Adequate for AASHTO Alternate Loading

SKEW: Varies

WEARING COURSE: 114 SPD Concrete

APPROACH SLABS: None

DATE OF CONSTRUCTION: 1961

FINAL FOR CONSTRUCTION


BRW HAZELET & ERDAL
 A BRW COMPANY

TITLE SHEET
BRIDGE NO. 3

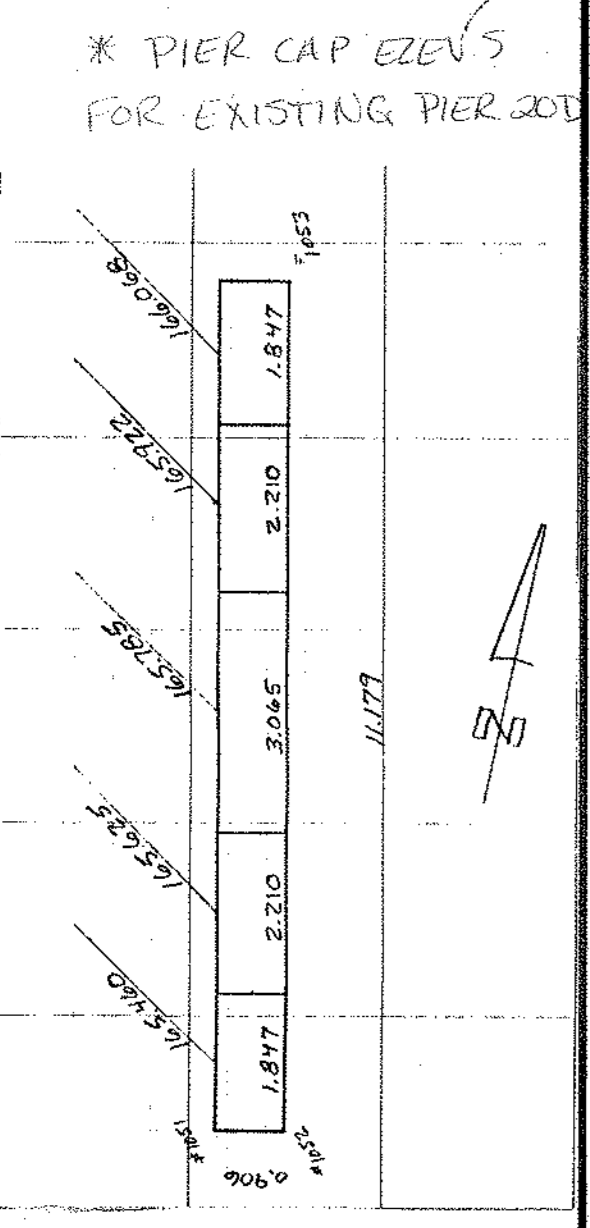
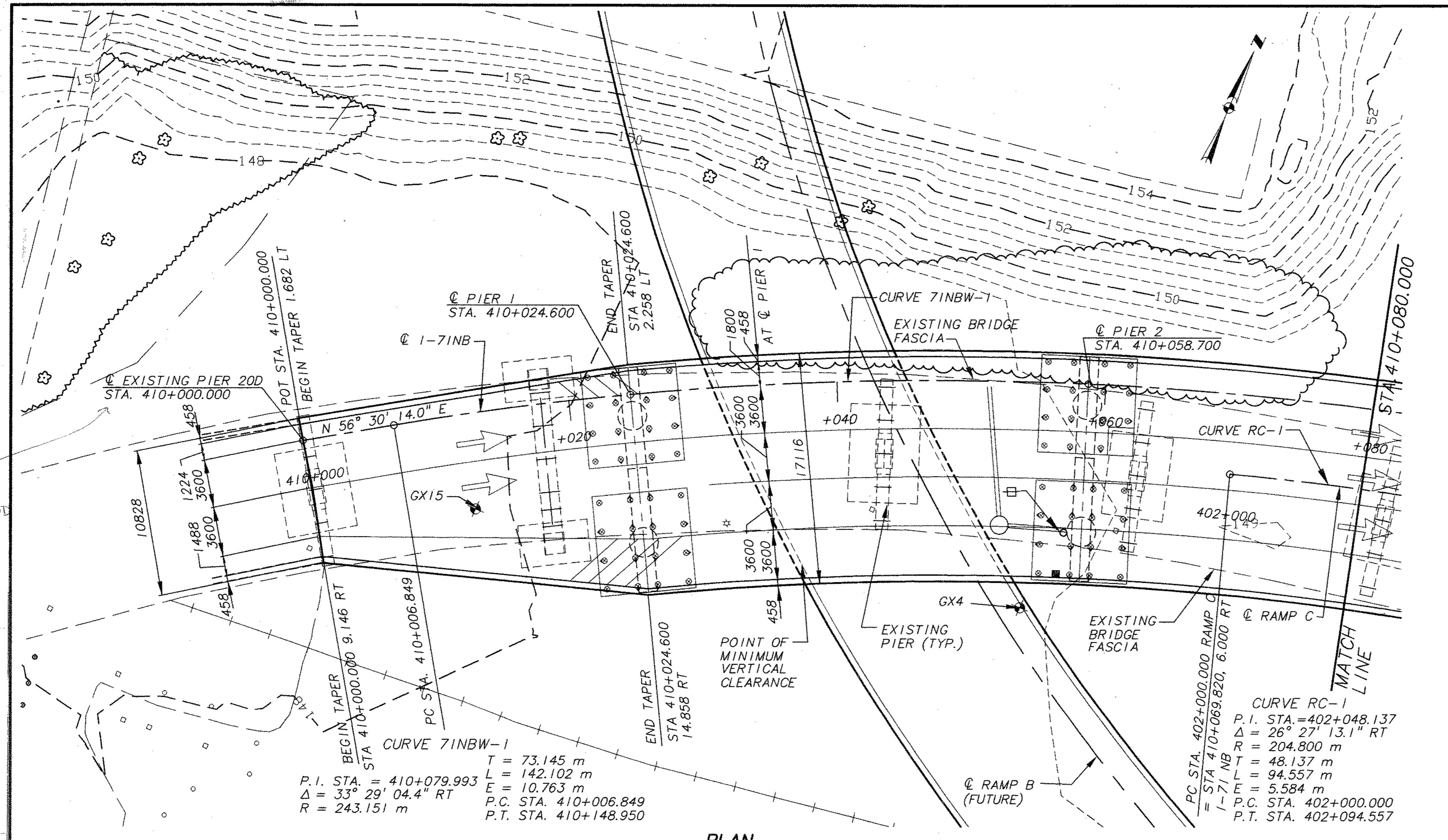
DRAWN	CHECKED	REVIEWED	DATED	CHECKED
1	LHC	MKM	07-07-98	MK.

BENCH MARK 4300
 E: 426108.061, N: 123772.053, ELEV. 161.508.
 LOCATED ON THE PLAZA LEVEL AT CINERGY FIELD
 IN THE NORTHWEST CORNER, A BRASS DISC 0.77m
 EAST OF THE WEST PARAPET WALL AND 5.0m SOUTH
 OF THE NORTH PARAPET WALL.

BENCH MARK 4301
 E: 426411.439, N: 123827.864, ELEV. 161.536.
 LOCATED ON THE PLAZA LEVEL AT CINERGY FIELD
 IN THE NORTHEAST CORNER, A BRASS DISC 0.81m
 SOUTH OF THE NORTH PARAPET WALL AND 3.1m
 WEST OF THE EAST PARAPET WALL.

CURRENT ADT=23420
 ADT (2020)=28105
 CURRENT ADTT=1874
 ADTT (2020)=2248

ADT (2020)
 CARS: 25857
 TRUCKS: 2248

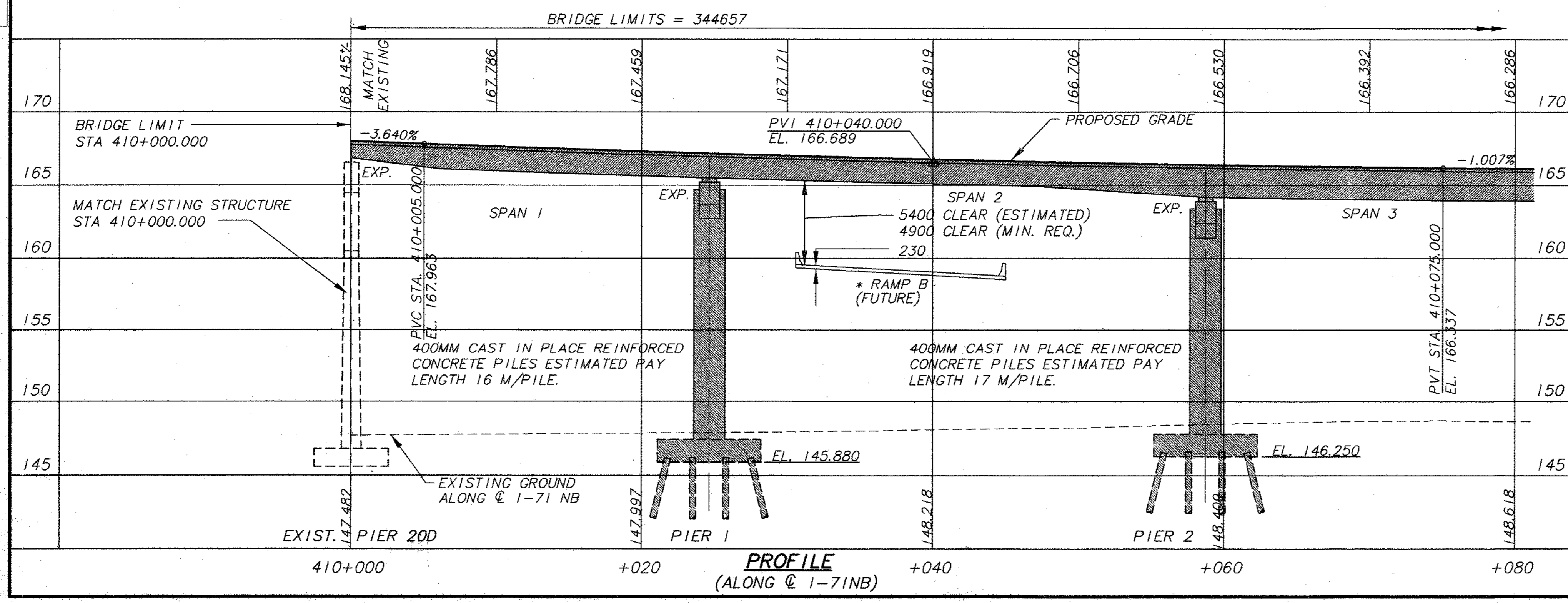


LEGEND

- ◆ BORING LOCATION
- ⊕ DOWNSPOUT
- SCUPPER

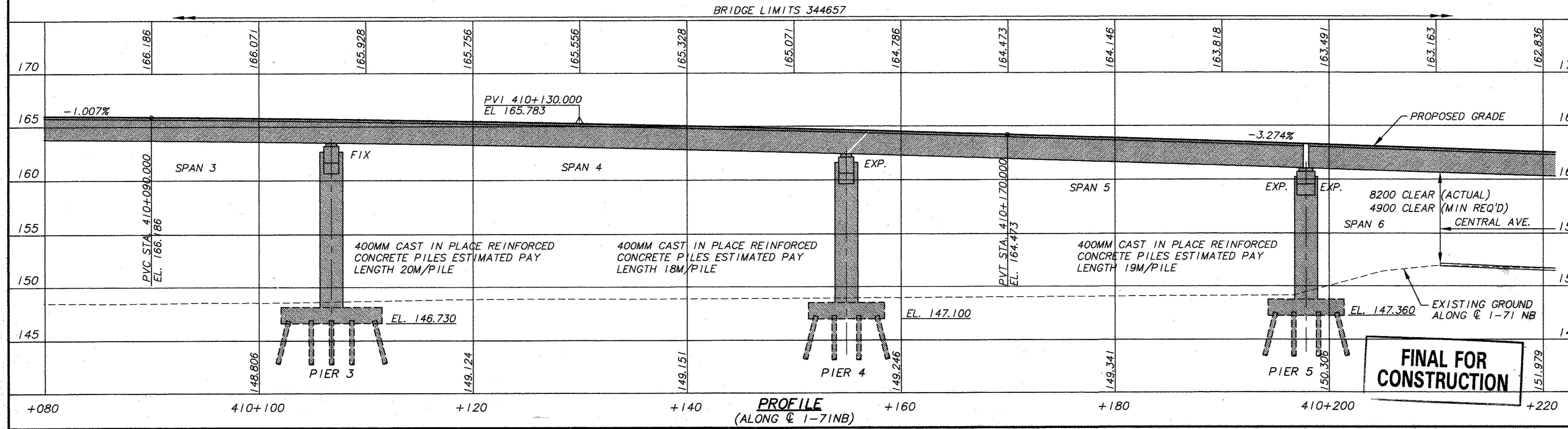
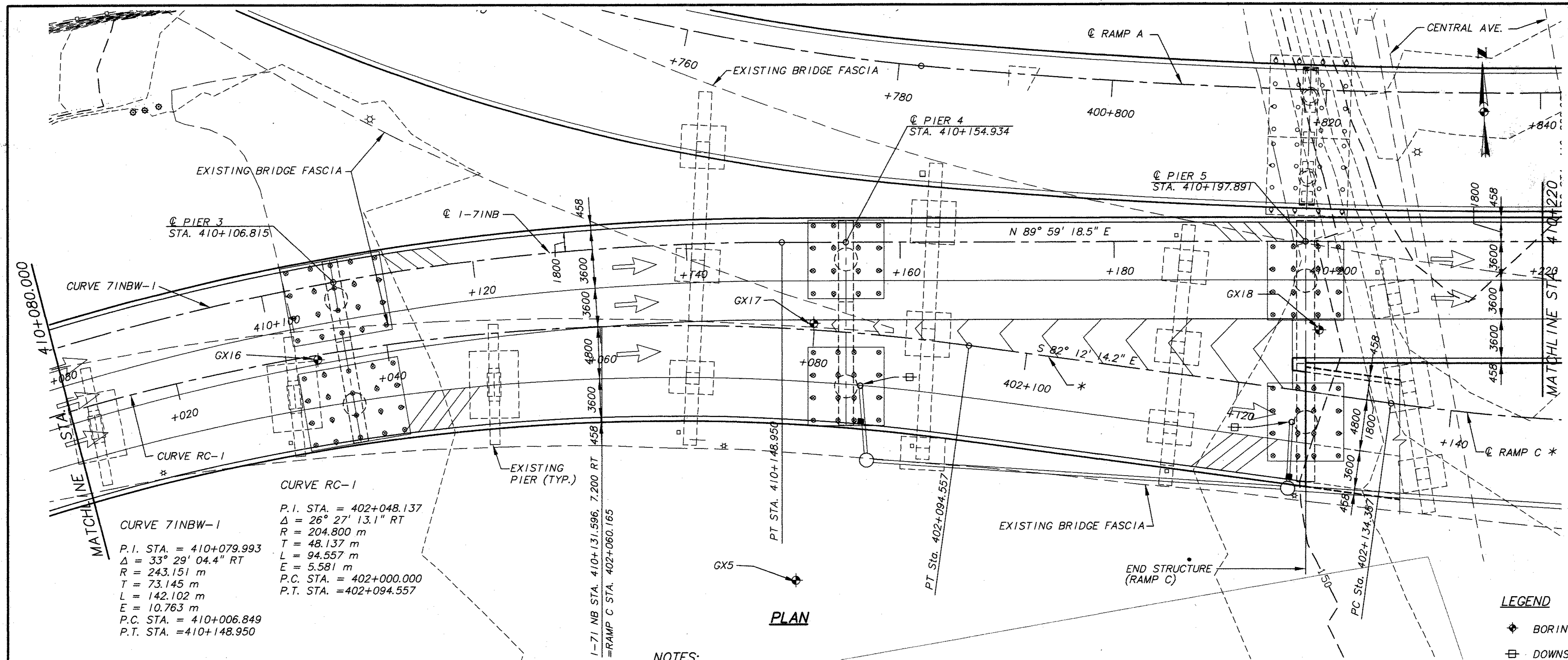
NOTES:

1. FOR SUPERELEVATIONS, SEE ROADWAY PLANS.
 2. PILE DESIGN LOADS (SAFE BEARING CAPACITY): SEE SHEETS 23 THRU 26 OF 64.
 3. FOR UTILITY INFORMATION, SEE ROADWAY PLANS.
 4. SITE PLAN INFORMATION SHOWN FOR BRIDGE 3 IS BASED UPON PRELIMINARY ROADWAY ALIGNMENT & PROFILE DESIGN INFORMATION FOR FUTURE RAMP B & C AVAILABLE AT THE TIME OF PLAN PREPARATION. THIS INFORMATION FOR RAMP B & C SHALL BE CONFIRMED FOR CONFLICTS WITH BRIDGE 3 BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
 5. TOPOGRAPHIC AND UTILITY INFORMATION SHOWN ON THE PLANS IS BASED UPON EXISTING CONDITIONS AT THE TIME OF PLAN PREPARATION. CONTRACTOR SHALL FIELD VERIFY PRIOR TO COMMENCEMENT OF WORK.
 6. SEE BRIDGE 8 & 33 SHEETS FOR ADDITIONAL INFORMATION.
 7. SEE SHEET 51 OF 64 FOR SCUPPER STATION LOCATIONS.
 8. EXISTING PIERS ARE LOCATED APPROXIMATELY ACTUAL LOCATIONS MAY VARY ± HORIZONTALLY AND VERTICALLY. CONTRACTOR SHALL FIELD VERIFY PRIOR TO COMMENCEMENT OF WORK.
 9. FOR DRAINAGE STRUCTURE DETAILS, REFERENCE DRAINAGE PLANS.
 10. ALL PIERS ON THIS SHEET ARE PERPENDICULAR OR RADIAL TO $\text{C}\&\text{I}-71$ NB.
 11. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS EXCEPT AS NOTED OTHERWISE. ALL ELEVATIONS, OFFSETS, AND STATIONS ARE IN METERS.
 12. ESTIMATED PAY LENGTH OF PILES IS BASED ON VERTICAL PILES FROM TIP ELEVATION TO CUT OFF ELEVATION. NO PRE-BORING IS CONSIDERED.
- * SUPER ELEVATION OF RAMP B (FUTURE) WAS ASSUMED TO BE 5% FOR CLEARANCE CALCULATION

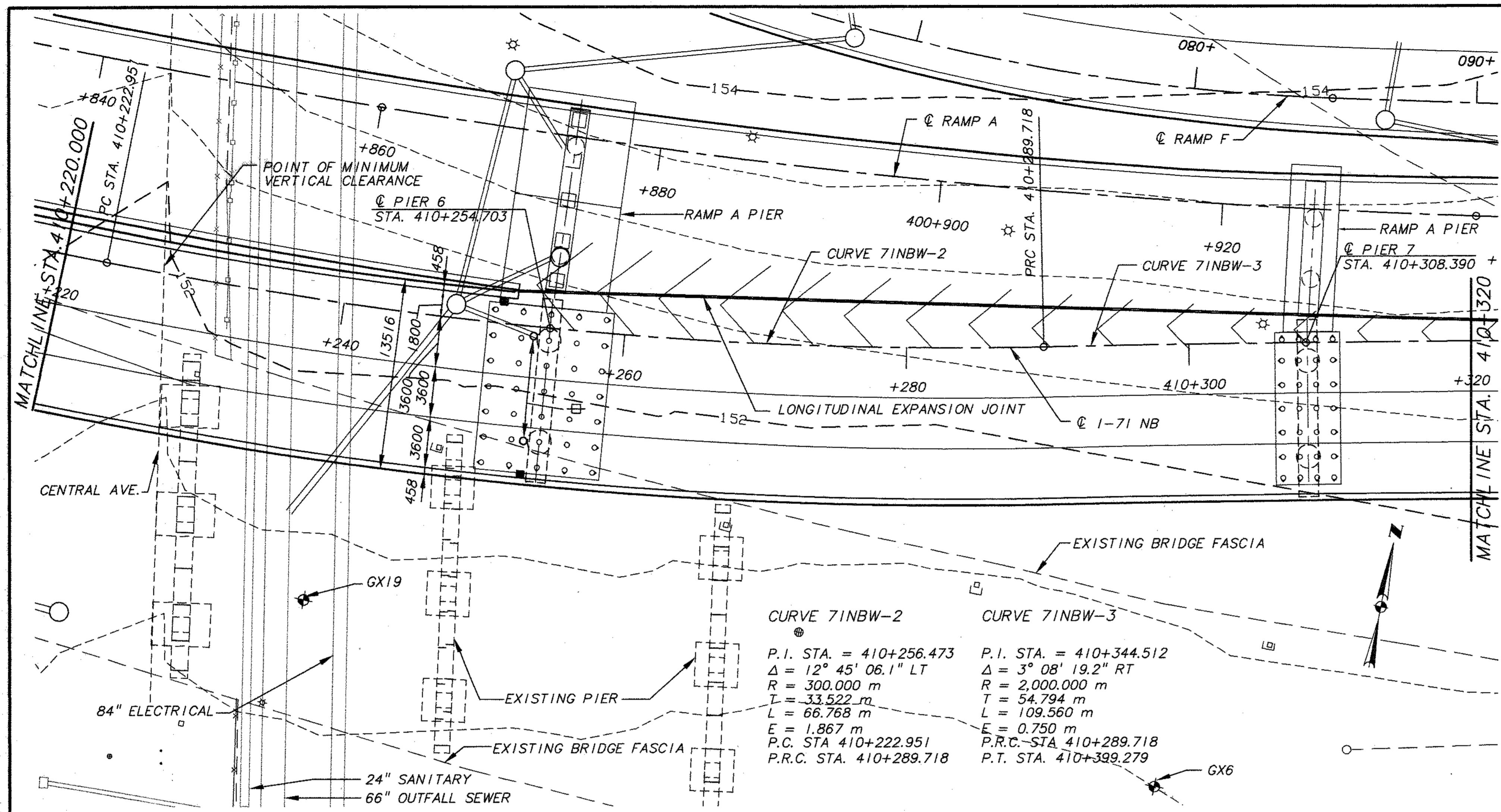


FINAL FOR CONSTRUCTION

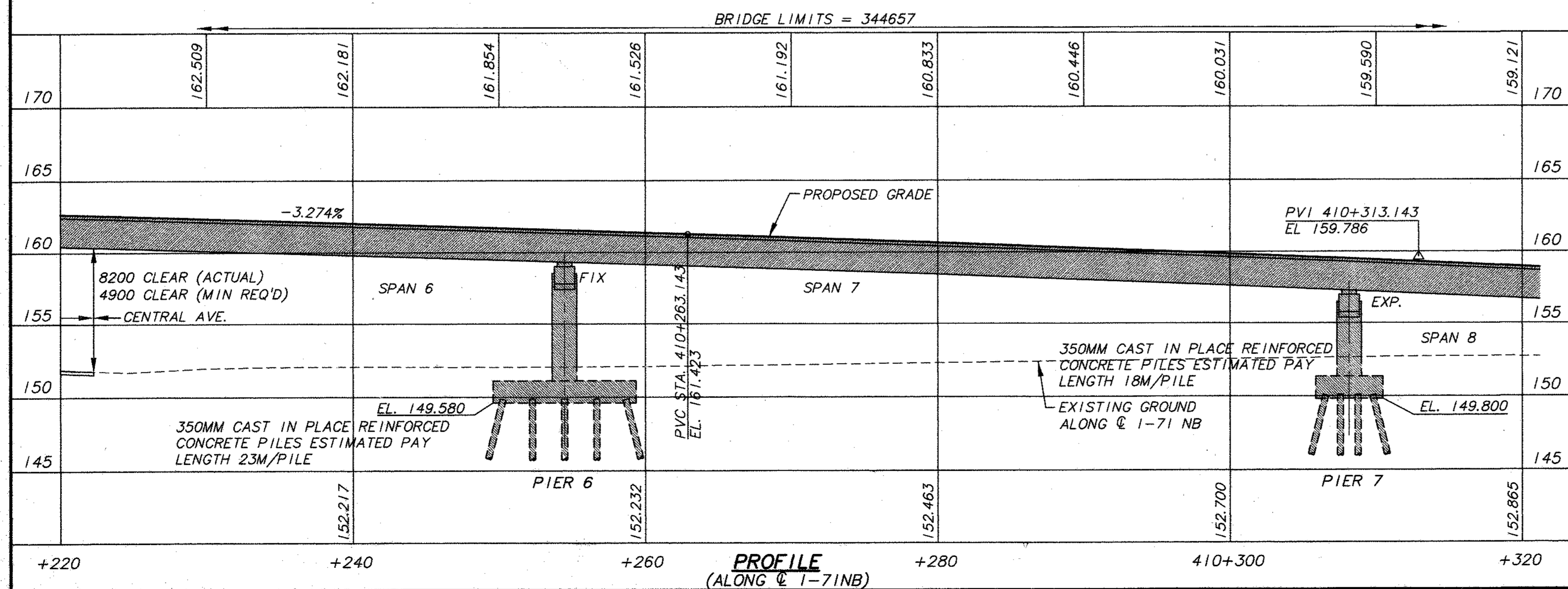
AUG 18 10:58
 BR3/1E1

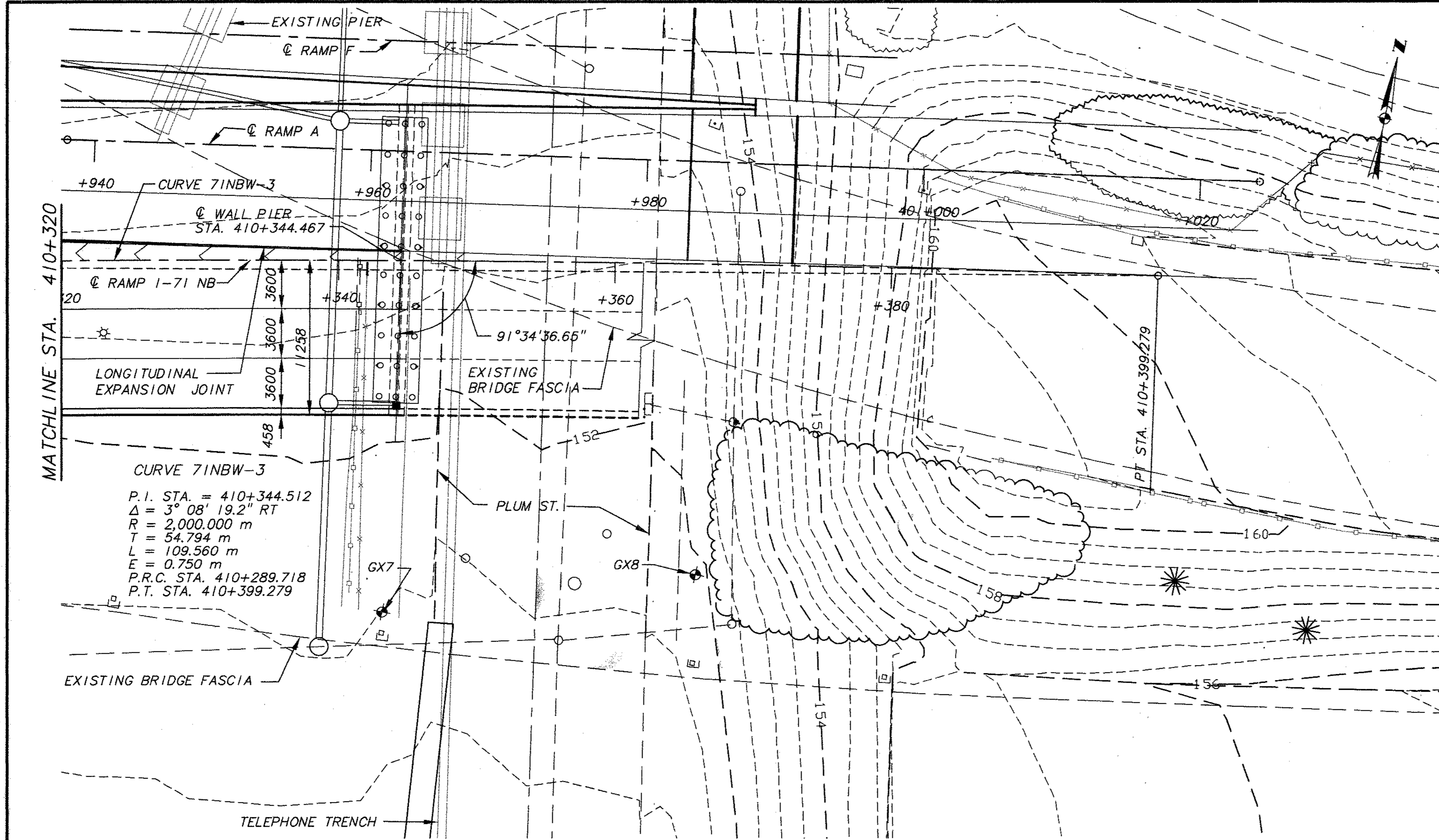


DESIGN AGENCY: BRW HAZLET & ERDAL
 DATE: 7/16/88
 STRUCTURE FILE NUMBER: BR33/TE2
 DESIGNED: JP
 CHECKED: SF
 DRAWN: SDS
 REVIEWED: BR33/TE2
 SITE PLAN 1-71 NB
 BRIDGE 3
 5/64
 415
 588



PLAN





LEGEND

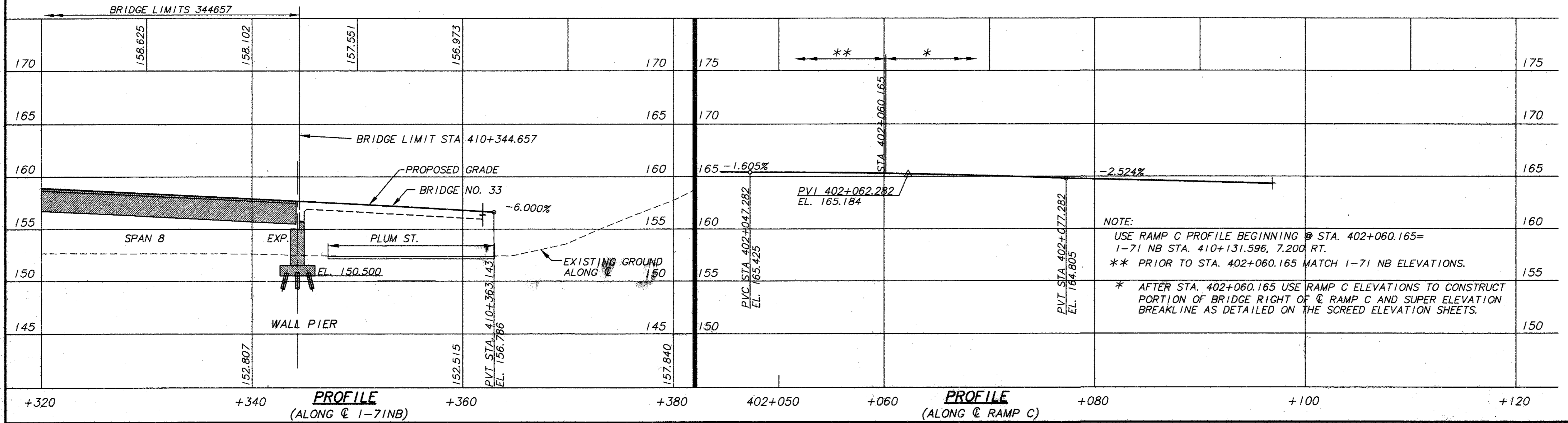
- ◆ BORING LOCATION
- SCUPPER

NOTES:

1. SEE NOTES 1 THRU 9 ON SHEET 4 OF 64.
2. WALL PIER IS SKEWED AS SHOWN. SEE BRIDGE 8 SHEET 15 & 29 FOR WALL PIER DETAILS.
3. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS EXCEPT AS NOTED OTHERWISE. ALL ELEVATIONS, OFFSETS AND STATIONS ARE IN METERS.

PLAN

FINAL FOR CONSTRUCTION



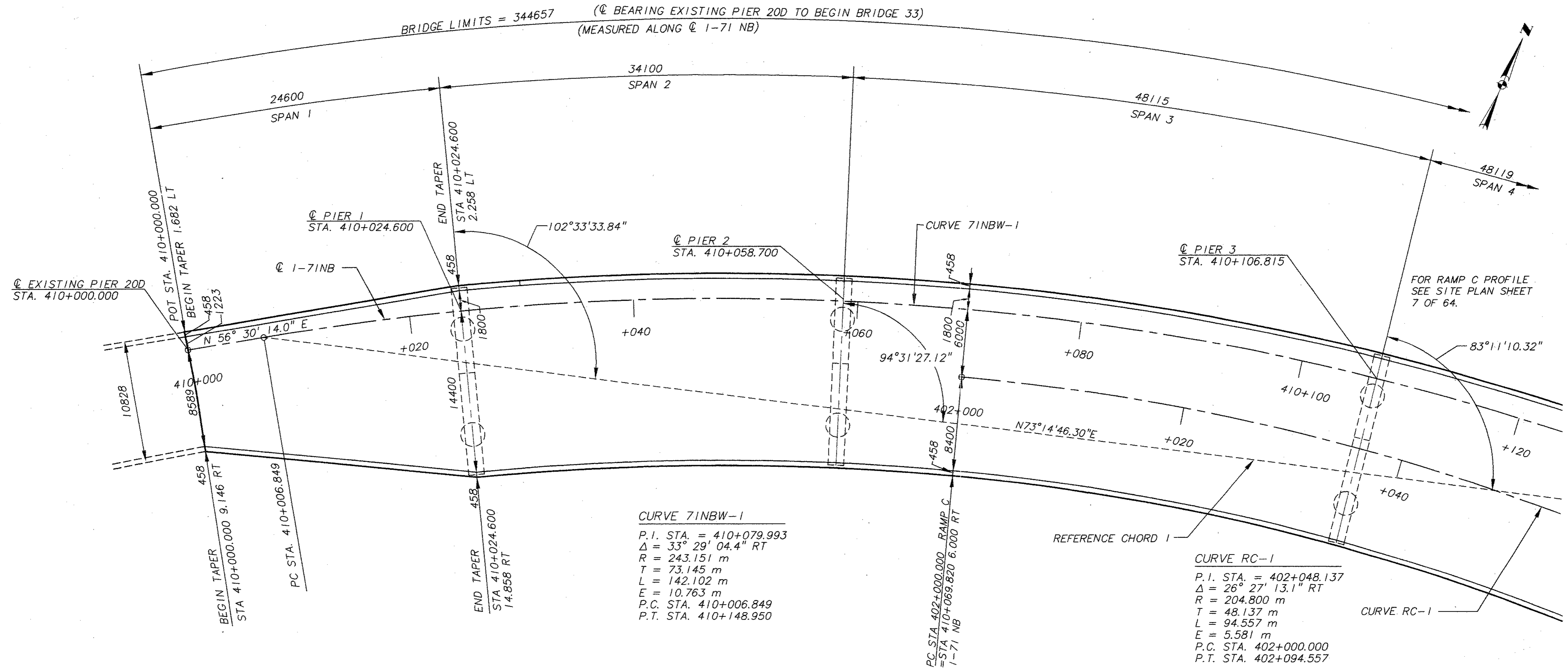
PROFILE (ALONG C 1-71NB)

PROFILE (ALONG C RAMP C)

NOTE:
 USE RAMP C PROFILE BEGINNING @ STA. 402+060.165= I-71 NB STA. 410+131.596, 7.200 RT.
 ** PRIOR TO STA. 402+060.165 MATCH I-71 NB ELEVATIONS.
 * AFTER STA. 402+060.165 USE RAMP C ELEVATIONS TO CONSTRUCT PORTION OF BRIDGE RIGHT OF C RAMP C AND SUPER ELEVATION BREAKLINE AS DETAILED ON THE SCREED ELEVATION SHEETS.

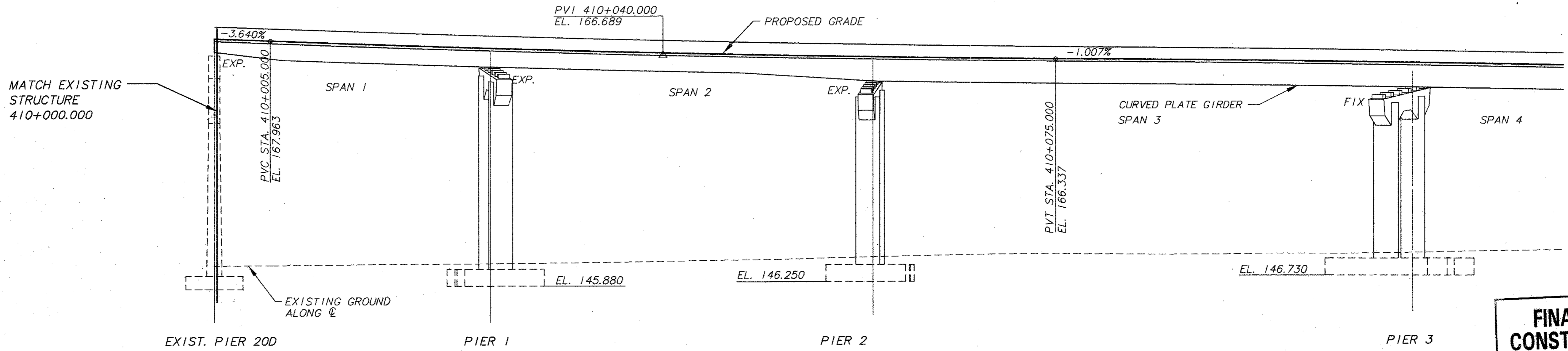
DESIGN AGENCY: **DRW HAZELLET & ERDAL**
 GROUP: **A RAY COMPANY**
 DATE: **DCM**
 STRUCTURE FILE NUMBER: **BR33ITE4**
 DRAWN BY: **BKH**
 CHECKED BY: **SWF/RAJ**
 DESIGNED BY: **JAP**
 REVIEWED BY: **SWF/RAJ**
 SITE PLAN: **1-71 NB**
 BRIDGE: **BRIDGE 3**
 SHEET: **7/64**
 ID: **417/588**

7/16/98
 BR33ITE4



GENERAL PLAN

NOTE:
WORK GENERAL PLAN SHEETS 8 THROUGH 10 WITH
GEOMETRIC LAYOUT SHEETS 11 THROUGH 13.



ELEVATION

FINAL FOR CONSTRUCTION

AUG 18 1998

BR3-CPI 8/18/98

DESIGN AGENCY: BRW HAZELT & ERDAL A BRW COMPANY

GROUP: BR3-CPI

STRUCTURE FILE NUMBER: BR3-CPI

DESIGNED: JAP/RAJ

CHECKED: JAP/RAJ

DRAWN: BKH

REVIEWED: BKH

DATE: 8/18/98

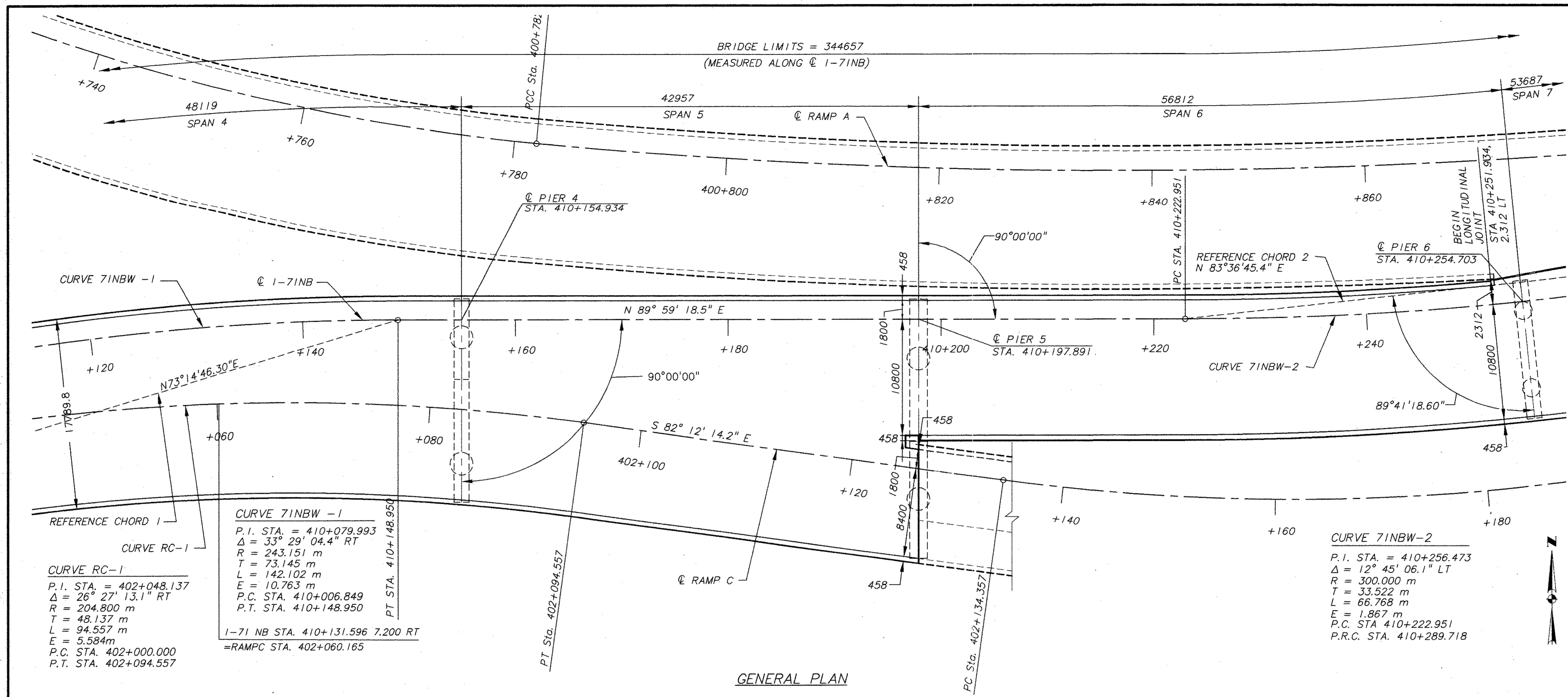
GENERAL PLAN 1-71 NB

BRIDGE 3

8/64

418

588

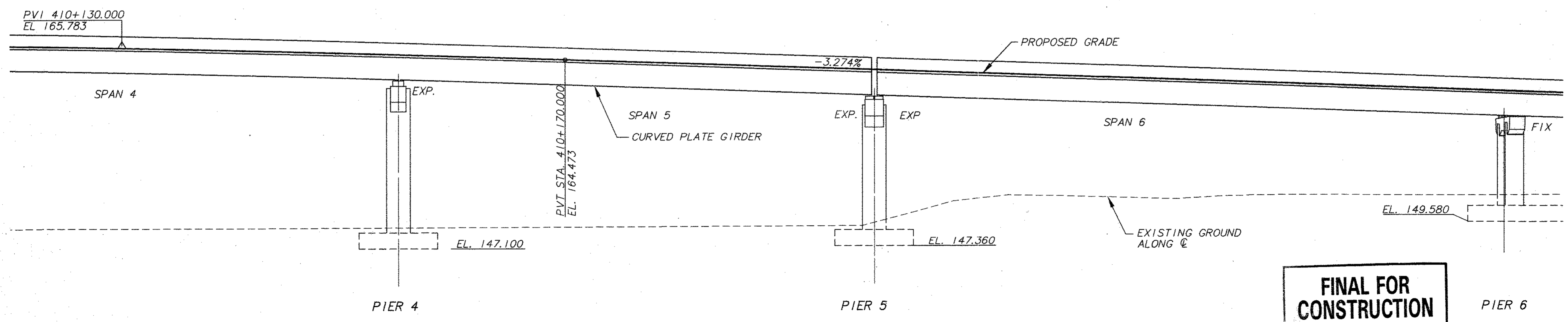


CURVE RC-1
 P.I. STA. = 402+048.137
 $\Delta = 26^\circ 27' 13.1''$ RT
 R = 204.800 m
 T = 48.137 m
 L = 94.557 m
 E = 5.584 m
 P.C. STA. 402+000.000
 P.T. STA. 402+094.557

CURVE 71NBW-1
 P.I. STA. = 410+079.993
 $\Delta = 33^\circ 29' 04.4''$ RT
 R = 243.151 m
 T = 73.145 m
 L = 142.102 m
 E = 10.763 m
 P.C. STA. 410+006.849
 P.T. STA. 410+148.950
 PT. STA. 410+148.950
 1-71 NB STA. 410+131.596 7.200 RT
 =RAMP C STA. 402+060.165

CURVE 71NBW-2
 P.I. STA. = 410+256.473
 $\Delta = 12^\circ 45' 06.1''$ LT
 R = 300.000 m
 T = 33.522 m
 L = 66.768 m
 E = 1.867 m
 P.C. STA. 410+222.951
 P.R.C. STA. 410+289.718

GENERAL PLAN



ELEVATION

FINAL FOR CONSTRUCTION

DESIGN AGENCY: BRW HAZELLET & ERDAL
 A BRW COMPANY

DESIGNED: SWF
 CHECKED: JAP/RAJ

DRAWN: BKH
 REVISED:

REVIEWED: DATE: STRUCTURE FILE NUMBER: BR3-GP2

GENERAL PLAN
 BRIDGE 3

9/64

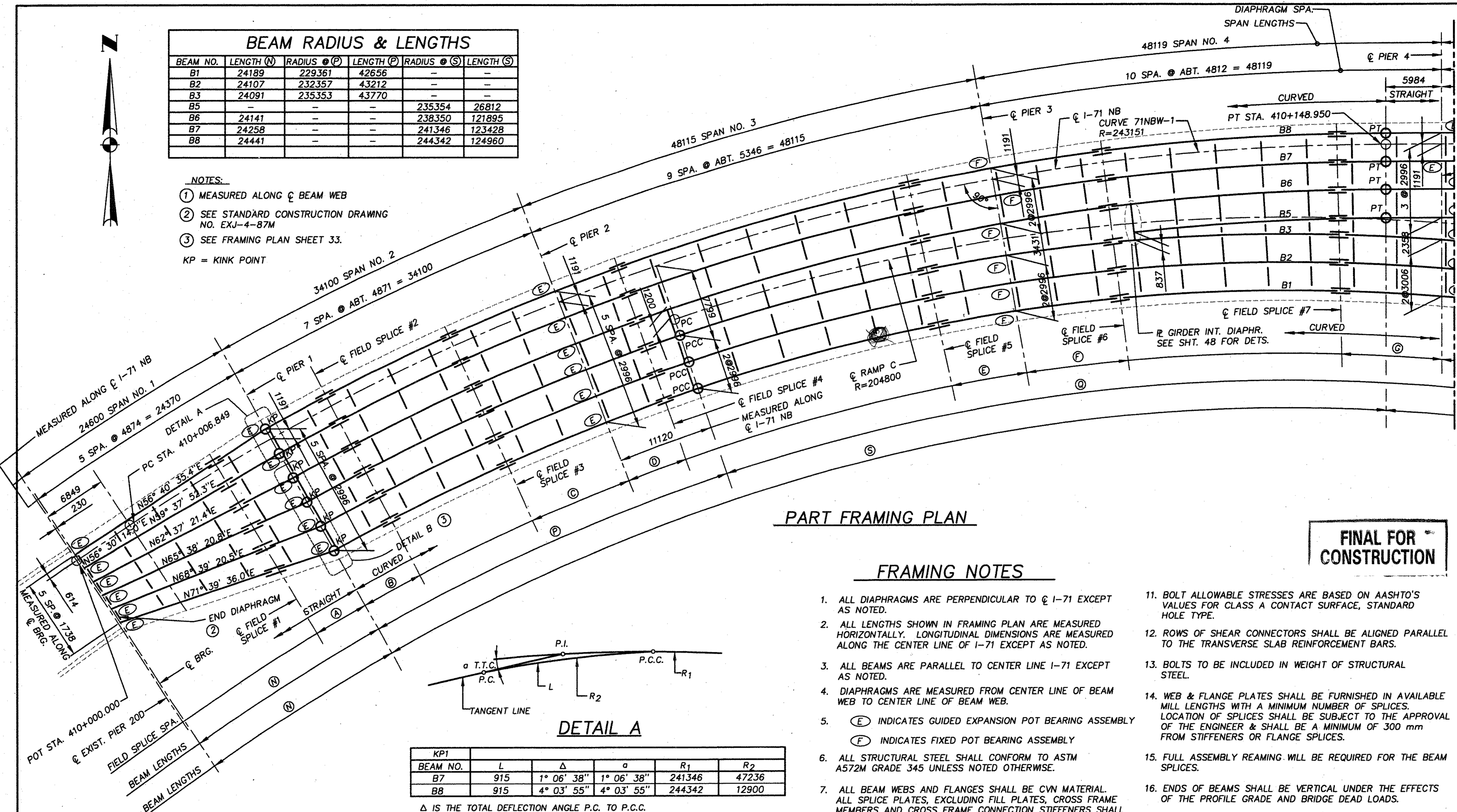
419
588

AUG 18 1998

BR3-GP2 8/18/98

BEAM RADIUS & LENGTHS					
BEAM NO.	LENGTH (N)	RADIUS (P)	LENGTH (P)	RADIUS (S)	LENGTH (S)
B1	24189	229361	42656	-	-
B2	24107	232357	43212	-	-
B3	24091	235353	43770	-	-
B5	-	-	-	235354	26812
B6	24141	-	-	238350	121895
B7	24258	-	-	241346	123428
B8	24441	-	-	244342	124960

NOTES:
 ① MEASURED ALONG ϕ BEAM WEB
 ② SEE STANDARD CONSTRUCTION DRAWING NO. EXJ-4-87M
 ③ SEE FRAMING PLAN SHEET 33.
 KP = KINK POINT

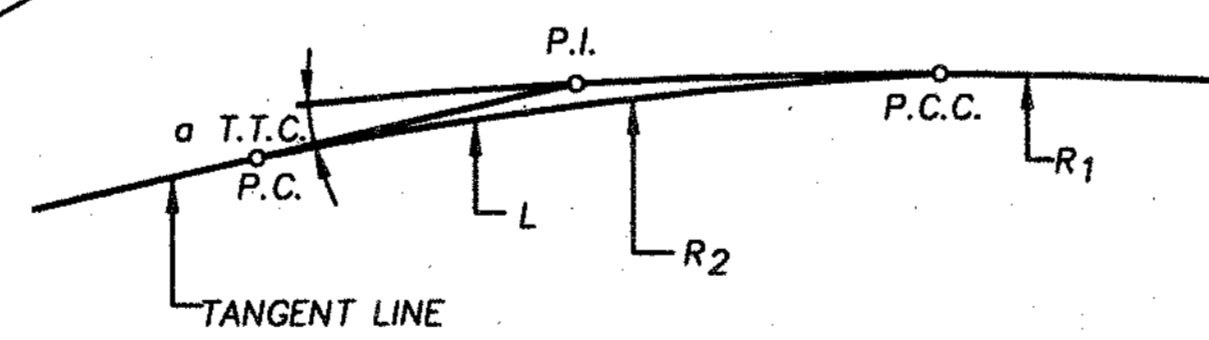


PART FRAMING PLAN

FINAL FOR CONSTRUCTION

FRAMING NOTES

- ALL DIAPHRAGMS ARE PERPENDICULAR TO ϕ I-71 EXCEPT AS NOTED.
- ALL LENGTHS SHOWN IN FRAMING PLAN ARE MEASURED HORIZONTALLY. LONGITUDINAL DIMENSIONS ARE MEASURED ALONG THE CENTER LINE OF I-71 EXCEPT AS NOTED.
- ALL BEAMS ARE PARALLEL TO CENTER LINE I-71 EXCEPT AS NOTED.
- DIAPHRAGMS ARE MEASURED FROM CENTER LINE OF BEAM WEB TO CENTER LINE OF BEAM WEB.
- (E) INDICATES GUIDED EXPANSION POT BEARING ASSEMBLY
(F) INDICATES FIXED POT BEARING ASSEMBLY
- ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A572M GRADE 345 UNLESS NOTED OTHERWISE.
- ALL BEAM WEBS AND FLANGES SHALL BE CVN MATERIAL. ALL SPLICE PLATES, EXCLUDING FILL PLATES, CROSS FRAME MEMBERS AND CROSS FRAME CONNECTION STIFFENERS SHALL BE CVN MATERIAL. CVN MATERIAL SHALL MEET THE SPECIFIED MINIMUM NOTCH TOUGHNESS REQUIREMENTS AS SPECIFIED IN 711.01.
- BEARING STIFFENERS SHALL BE VERTICAL.
- FIELD CONNECTIONS SHALL BE MADE WITH 22 mm ASTM A-325M HIGH STRENGTH BOLTS.
- ERECTION BOLTS: THE HOLE DIAMETER IN CROSS FRAMES AND BEAM STIFFENERS SHALL BE 4 mm LARGER THAN THE DIAMETER OF THE ERECTION BOLTS. UNLESS REPLACED BY PERMANENT HIGH STRENGTH BOLTS, ERECTION BOLTS SHALL REMAIN IN PLACE. LOCK WASHERS SHALL BE FURNISHED FOR OTHER THAN FULLY TORQUED HIGH STRENGTH ERECTION BOLTS. BOLTS SHALL BE FURNISHED AS PART OF ITEM 513.
- BOLT ALLOWABLE STRESSES ARE BASED ON AASHTO'S VALUES FOR CLASS A CONTACT SURFACE, STANDARD HOLE TYPE.
- ROWS OF SHEAR CONNECTORS SHALL BE ALIGNED PARALLEL TO THE TRANSVERSE SLAB REINFORCEMENT BARS.
- BOLTS TO BE INCLUDED IN WEIGHT OF STRUCTURAL STEEL.
- WEB & FLANGE PLATES SHALL BE FURNISHED IN AVAILABLE MILL LENGTHS WITH A MINIMUM NUMBER OF SPLICES. LOCATION OF SPLICES SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER & SHALL BE A MINIMUM OF 300 mm FROM STIFFENERS OR FLANGE SPLICES.
- FULL ASSEMBLY REAMING WILL BE REQUIRED FOR THE BEAM SPLICES.
- ENDS OF BEAMS SHALL BE VERTICAL UNDER THE EFFECTS OF THE PROFILE GRADE AND BRIDGE DEAD LOADS.
- FLANGE PLATES FOR BEAMS SHALL BE CUT TO PROPER CURVATURE.
- ALL STRUCTURAL STEEL SHALL BE PAINTED USING THE IZEU PAINT SYSTEM. PRIME COAT SHALL BE APPLIED IN THE FABRICATION SHOP. SPECIAL 3 COAT SYSTEM, REFER TO SUPPLEMENTAL SPECIFICATIONS.
- ALL BOLTS SHALL BE GALVANIZED WHEN USED IN CONJUNCTION WITH THE IZEU PAINT SYSTEM.
- KINK POINT TRANSITION CURVES (DETAILS A THRU C) ARE AT CONTRACTOR'S OPTION AND BEAM LENGTHS GIVEN IN "BEAM RADIUS & LENGTHS" TABLES ARE GIVEN TO THE UNTRANSITIONED KINK POINTS SHOWN ON THE PLAN VIEWS.



DETAIL A

KP1	BEAM NO.	L	Δ	α	R ₁	R ₂
	B7	915	1° 06' 38"	1° 06' 38"	241346	47236
	B8	915	4° 03' 55"	4° 03' 55"	244342	12900

Δ IS THE TOTAL DEFLECTION ANGLE P.C. TO P.C.C.

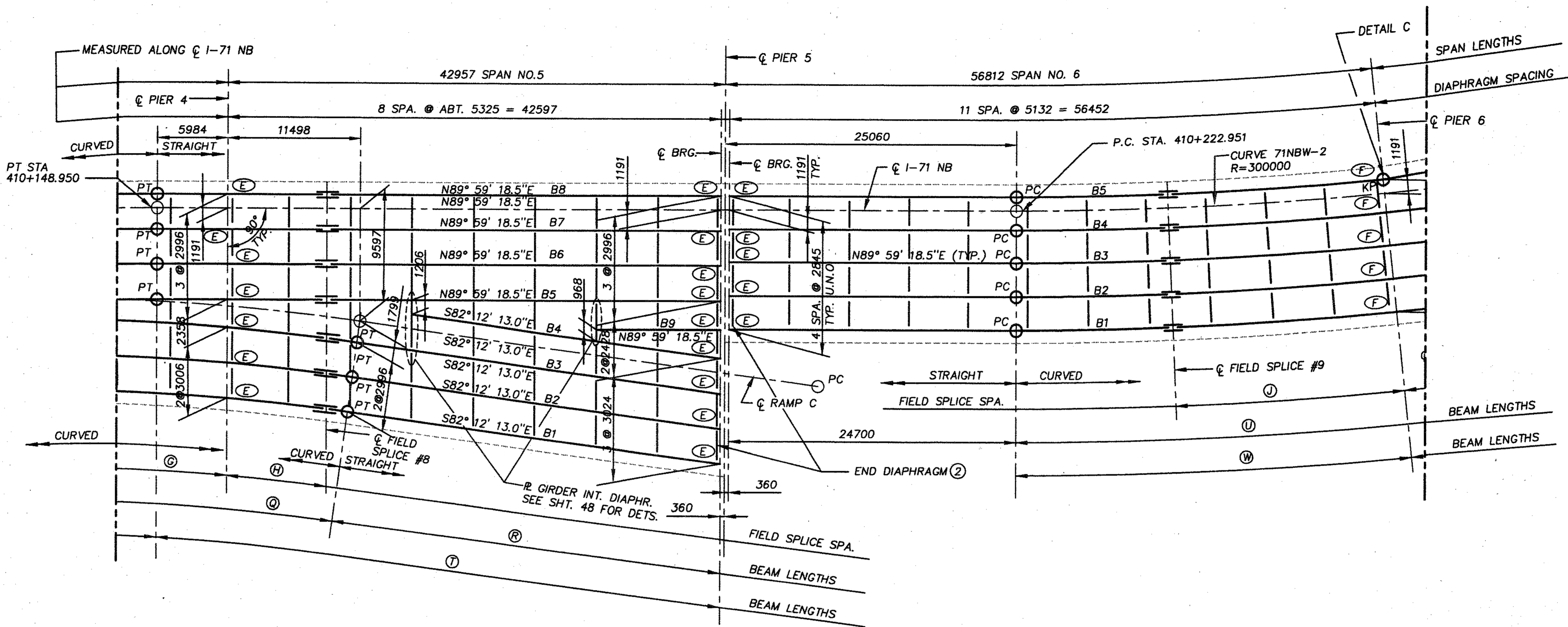
FIELD SPLICE DISTANCES ①

BEAM NO.	LENGTH (A)	LENGTH (B)	LENGTH (C)	LENGTH (D)	LENGTH (E)	LENGTH (F)	LENGTH (G)
B1	6287	6892	11487	6724	8394	11323	10911
B2	6305	6982	11637	6811	8504	11471	10975
B3	6339	7072	11787	6899	8614	11620	11039
B5	-	-	-	-	-	-	11060
B6	6390	7162	11937	6987	8734	11792	11125
B7	6459	7252	12087	7075	8844	11941	11189
B8	6545	7342	12237	7163	8954	12089	11254

BRW
 A DAMES & MOORE GROUP COMPANY
 DATE
 STRUCTURE FILE NUMBER
 DRAWN M.F.
 REVISION
 DESIGNED SA
 CHECKED MCM
 FRAMING PLAN
 171 N.B.
 BRIDGE 3
 31 / 64
 441
 588

AUG 18 1998

S-FRAME.DWG 8-18-98



PART FRAMING PLAN

FIELD SPLICE DISTANCES ①

BEAM NO.	LENGTH (H)	LENGTH (J)
B1	8648	19287
B2	8647	19110
B3	8645	18933
B4	-	18756
B5	8600	18579
B6	8600	-
B7	8600	-
B8	8600	-

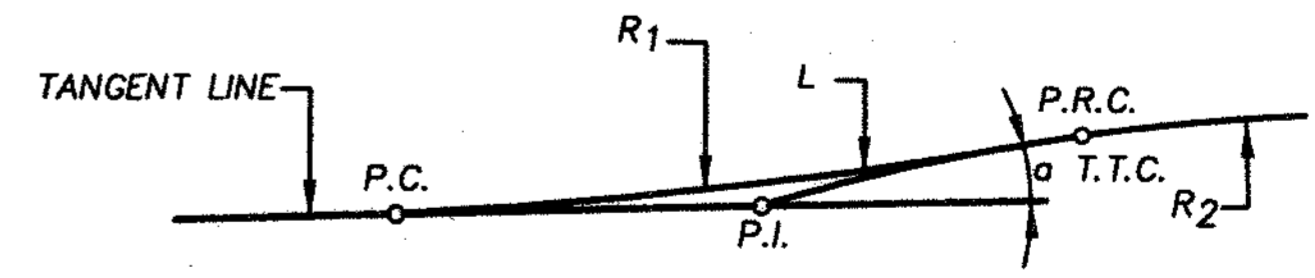
BEAM RADIUS & LENGTHS

BEAM NO.	RADIUS @ (Q)	LENGTH (Q)	LENGTH (T)	LENGTH (R)
B1	197009	90960	-	32462
B2	200005	92344	-	32051
B3	203001	93727	-	31640
B4	-	-	-	26871
B5	-	-	48581	-
B6	-	-	48581	-
B7	-	-	48581	-
B8	-	-	48581	-
B9	-	-	-	10649

- NOTES:**
- ① MEASURED ALONG ϕ BEAM WEB
 - ② SEE STANDARD CONSTRUCTION DRAWING NO. EXJ-4-87M
- KP = KINK POINT

WELD CHART

MAT. THICKNESS OF THICKER PART JOINED	MIN. SIZE OF FILLET WELD
TO 19 mm THICK INCLUSIVE	6 mm
OVER 19 mm THICK TO 38 mm INCL.	8 mm
OVER 38 mm THICK TO 57 mm INCL.	10 mm
OVER 57 mm THICK TO 152 mm INCL.	13 mm



DETAIL B

FINAL FOR CONSTRUCTION

BEAM NO.	L	Δ	a	R ₁	R ₂
B1	915	10° 54' 57"	10° 54' 57"	4803	229361
B2	915	7° 54' 45"	7° 54' 45"	6626	232357
B3	915	4° 53' 46"	4° 53' 46"	10706	235353
B6	915	1° 52' 46"	1° 52' 46"	27873	238350

Δ IS THE TOTAL DEFLECTION ANGLE P.C. TO P.R.C.

AUG 18 1998

BRW
A DANIEL MANN GROUP COMPANY

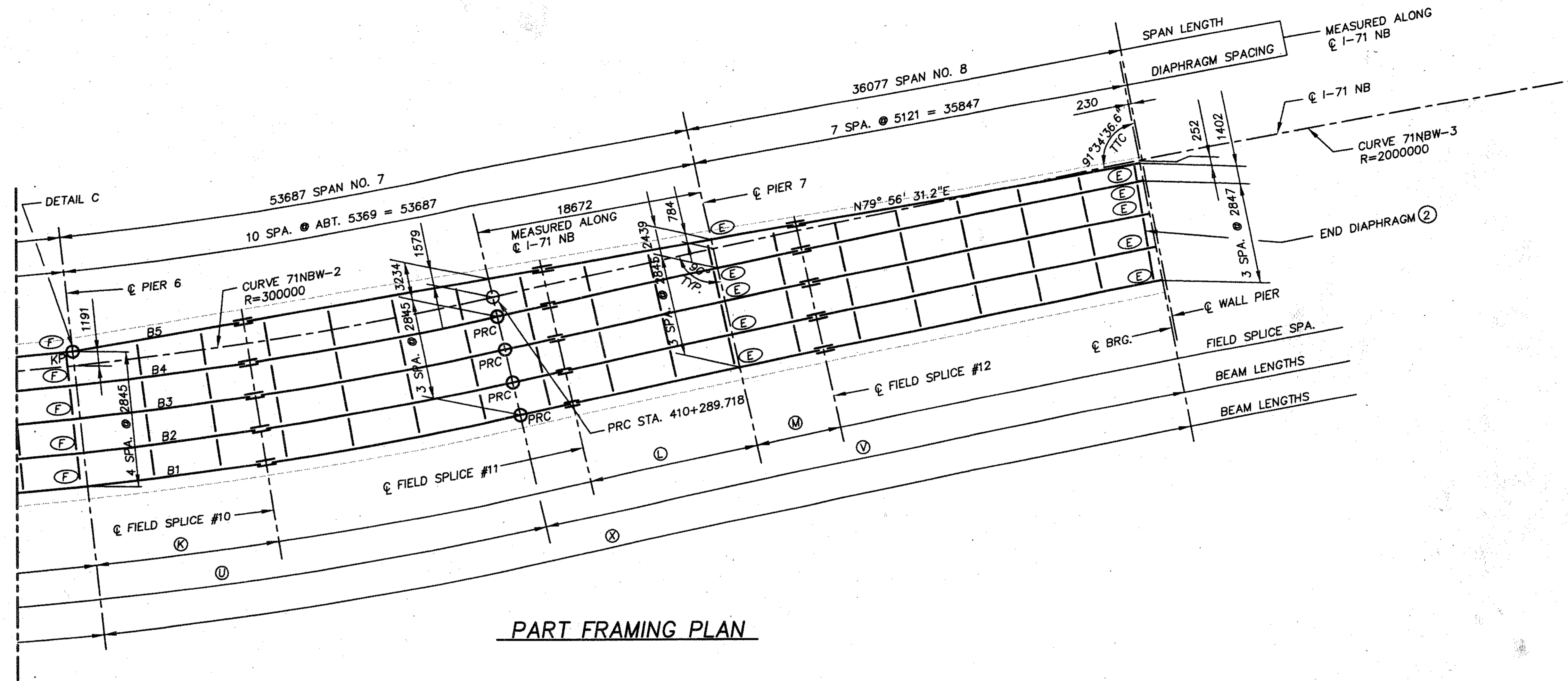
DESIGNED	CHECKED	DRAWN	REVIEWED	DATE
SA	MM	M.F.		
STRUCTURE FILE NUMBER				

FRAMING PLAN
171 N.B.

BRIDGE 3

32 / 64

442
588



FINAL FOR CONSTRUCTION

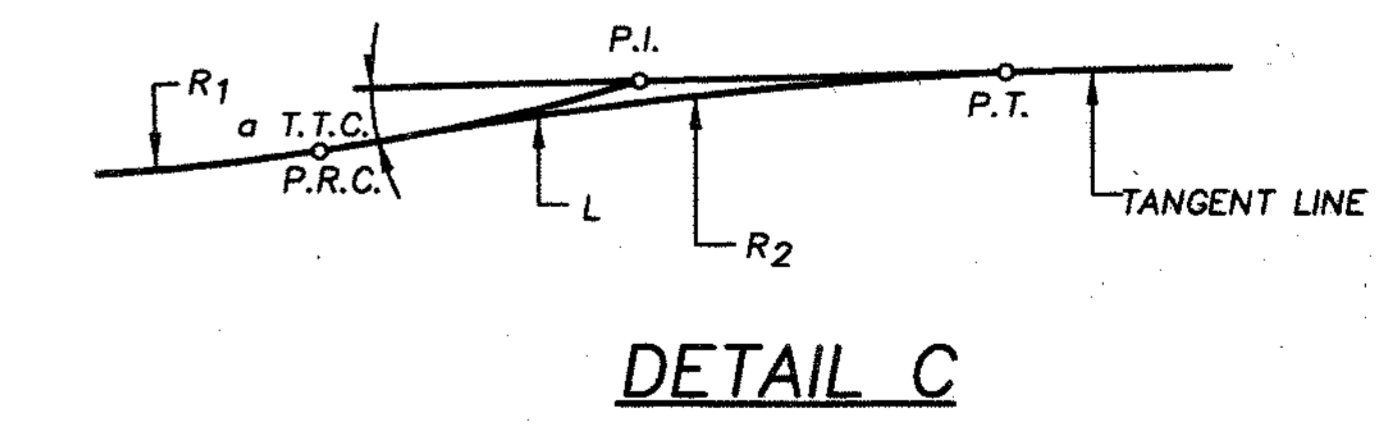
FIELD SPLICE DISTANCES ①

BEAM NO.	LENGTH (K)	LENGTH (L)	LENGTH (M)
B1	14892	14129	7024
B2	14755	14149	7034
B3	14619	14169	7044
B4	14482	14190	7054
B5	14344	14220	7067

BEAM RADIUS & LENGTHS

BEAM NO.	RADIUS ● (U)	LENGTH (U)	RADIUS ● (V)	LENGTH (V)	RADIUS ● (W)	LENGTH (W)	LENGTH (X)
B1	310191	69035	1989809	53965	-	-	-
B2	307345	68402	1992655	54120	-	-	-
B3	304500	67770	1995500	54274	-	-	-
B4	301654	67136	1998346	54428	-	-	-
B5	-	-	-	-	298809	31626	89395

- NOTES:**
- ① MEASURED ALONG C BEAM WEB
 - ② SEE STANDARD CONSTRUCTION DRAWING NO. EXJ-4-87M
- KP = KINK POINT

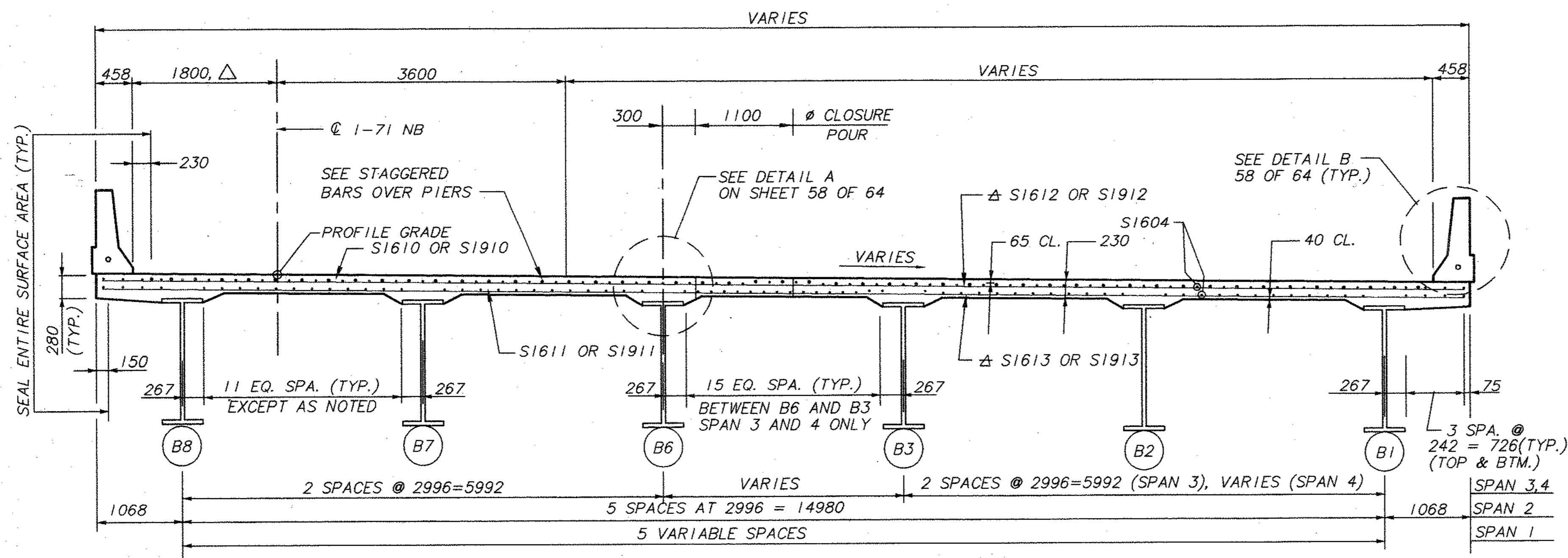


DETAIL C

BEAM NO.	L	Δ	α	R ₁	R ₂
B5	915	4° 04' 12"	4° 04' 12"	298809	13021

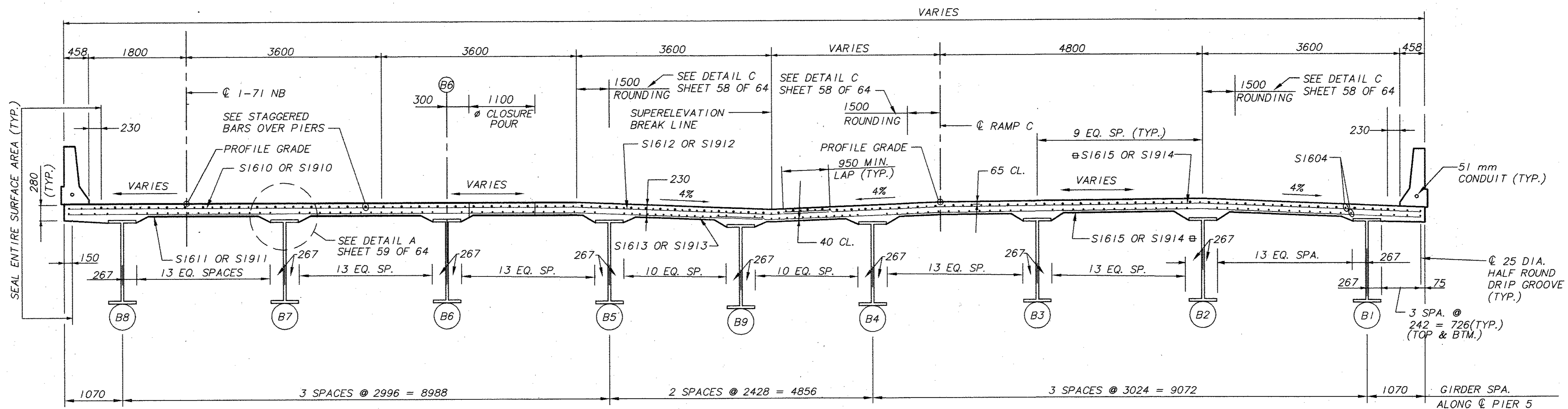
Δ IS THE TOTAL DEFLECTION ANGLE P.R.C. TO P.T.

△ VARIES 1223 - 1800 IN SPAN 1



TYPICAL SECTION
(STA. 410+000.000 TO STA. 410+121.500)
(SPANS 1,2,3, PORTION OF 4)

SUPERSTRUCTURE (SPANS 1,2,3,4,5) REINFORCING STEEL LIST			
MARK	TOTAL NO.	LENGTH	TYPE
S1604	3030	12000	STR
S1606	868	2130	I
S1610	666	7310	STR
S1611	666	7310	STR
S1612	666	12000	STR
S1613	666	12000	STR
S1614	203	8200	STR
S1615	288	3800	STR
S1901	868	765	J
S1902	868	855	J
S1910	661	7310	STR
S1911	661	7310	STR
S1912	661	12000	STR
S1913	661	12000	STR
S1914	286	3800	STR



TYPICAL SECTION
(STA. 410+121.5 TO STA. 410+197.891)
(PORTION SPAN 4, 5)

- △ CUT S1612, S1613, S1912, S1913 TO FIT.
- ∅ SEE SECTION B-B SHEET 52 OF 64
- ⊞ CUT S1615 OR S1914 TO FIT. MULTIPLE LAPS ARE ALLOWED PER BAR LINE. LAP TOP BARS MIDWAY BETWEEN GIRDERS AND BTM. BARS OVER GIRDERS.

NOTES:

1. TRANSVERSE BARS TO BE PLACED RADIAL TO 1-71 NB ALIGNMENT.
2. FOR SUPERELEVATION RATES, REFERENCE SUPERELEVATION PLANS.

FINAL FOR CONSTRUCTION

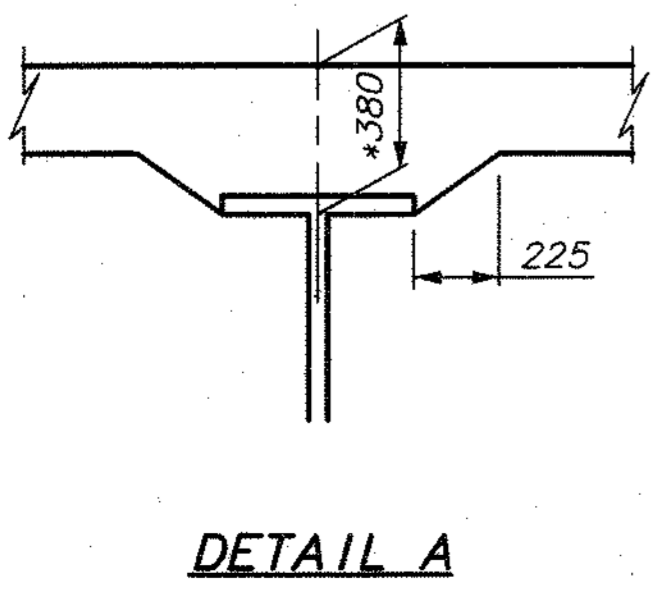
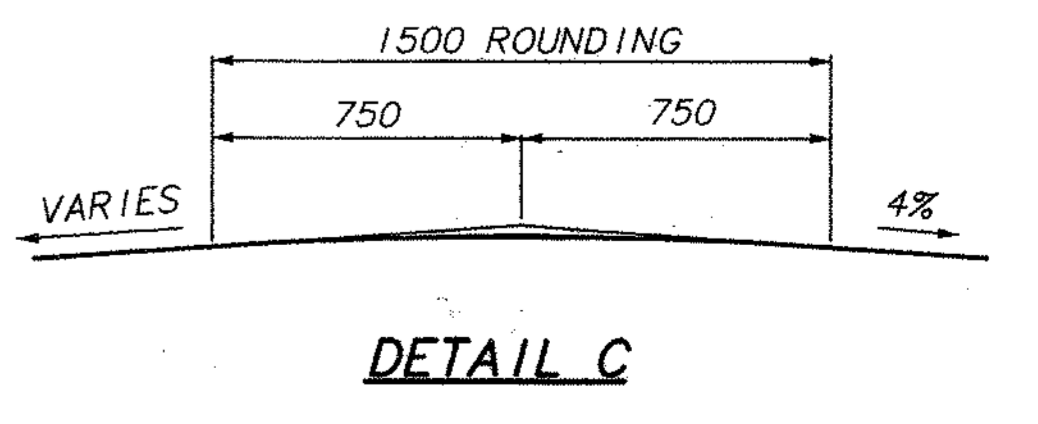
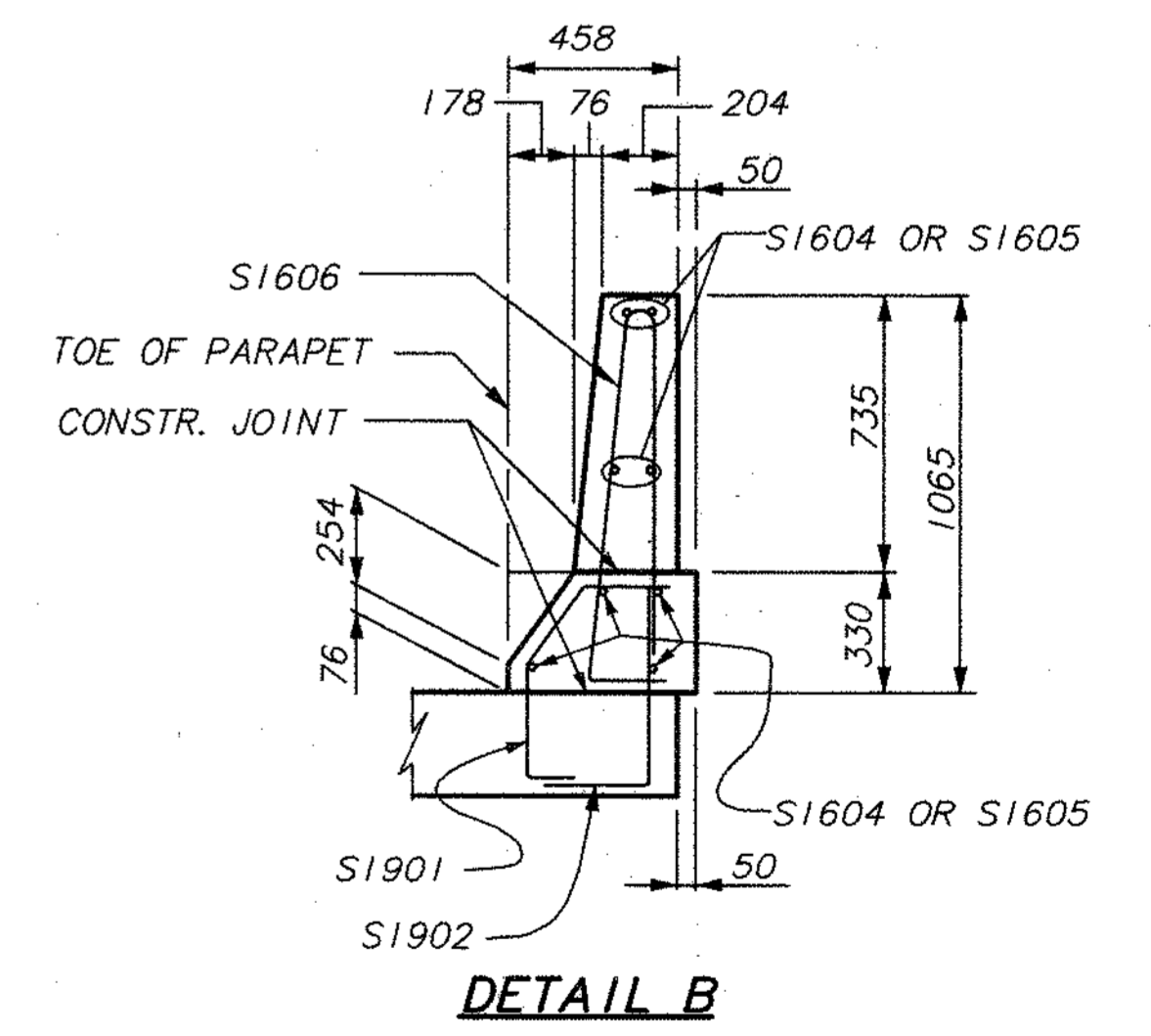
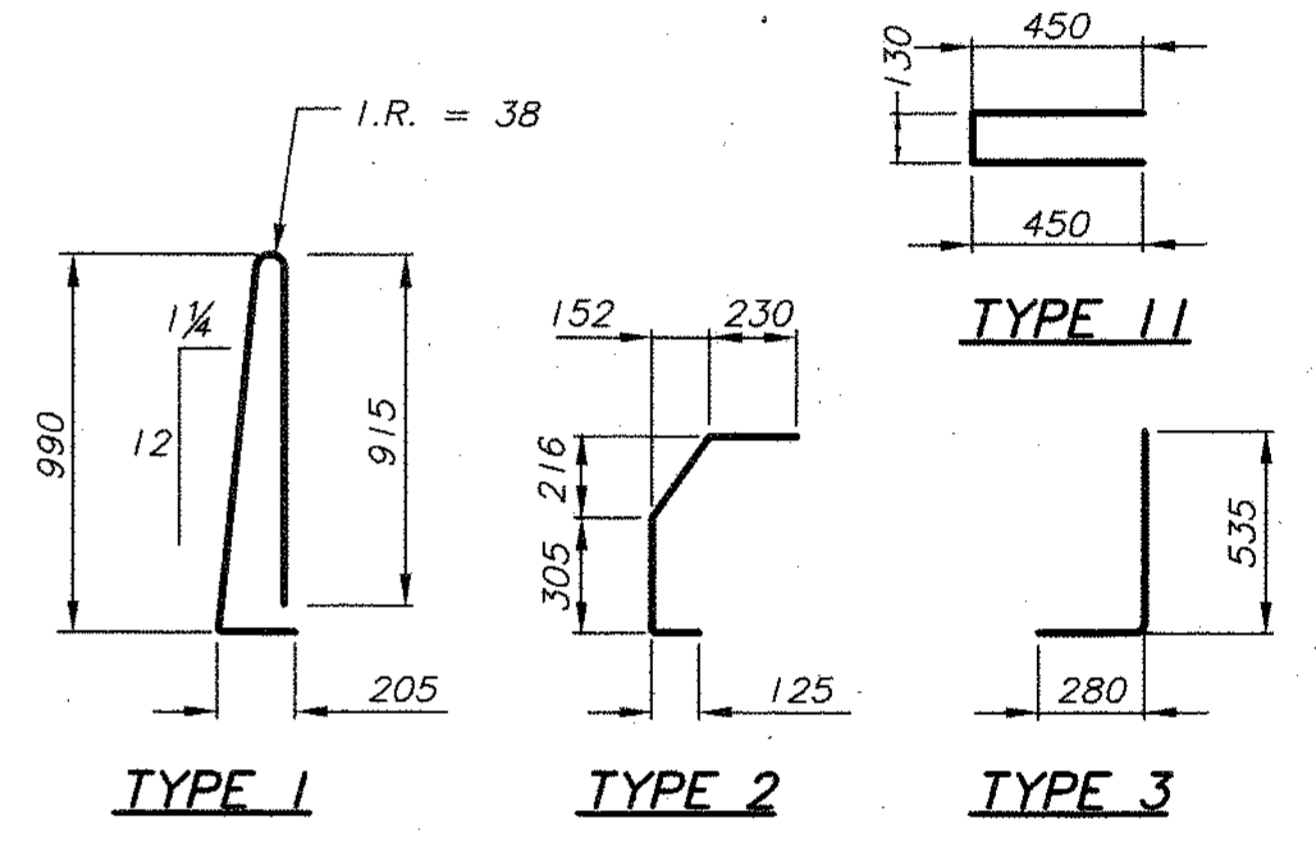
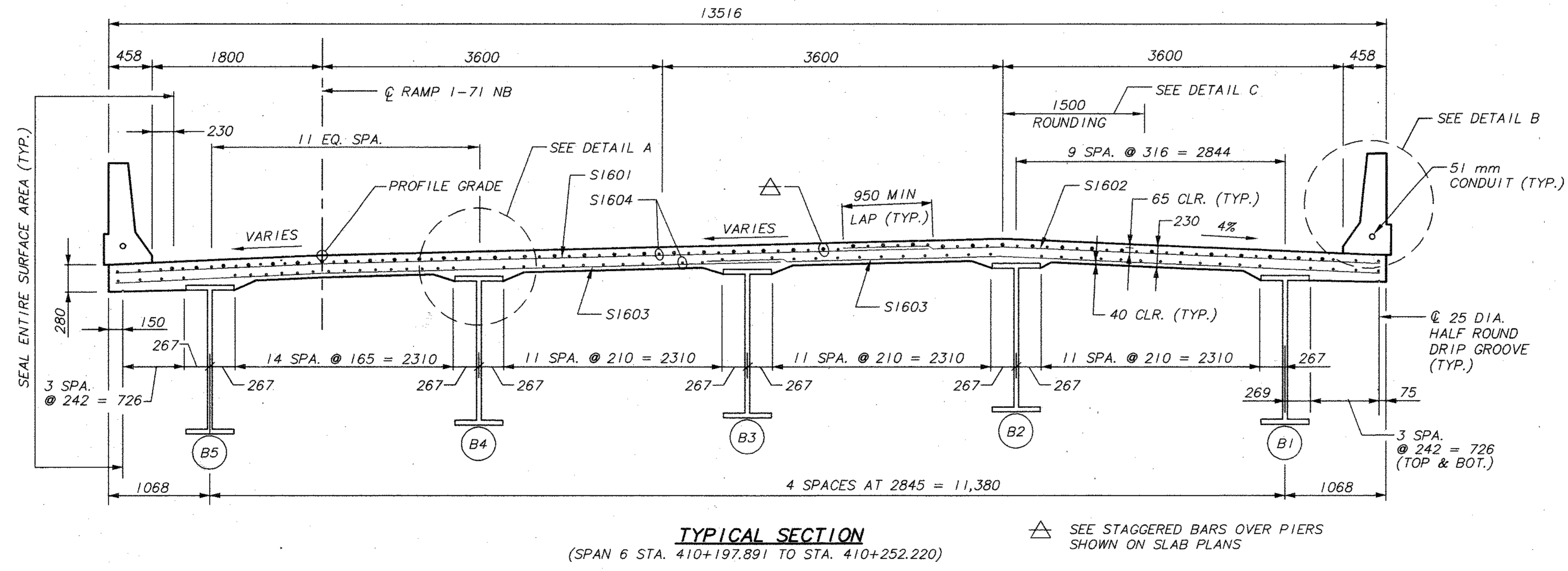
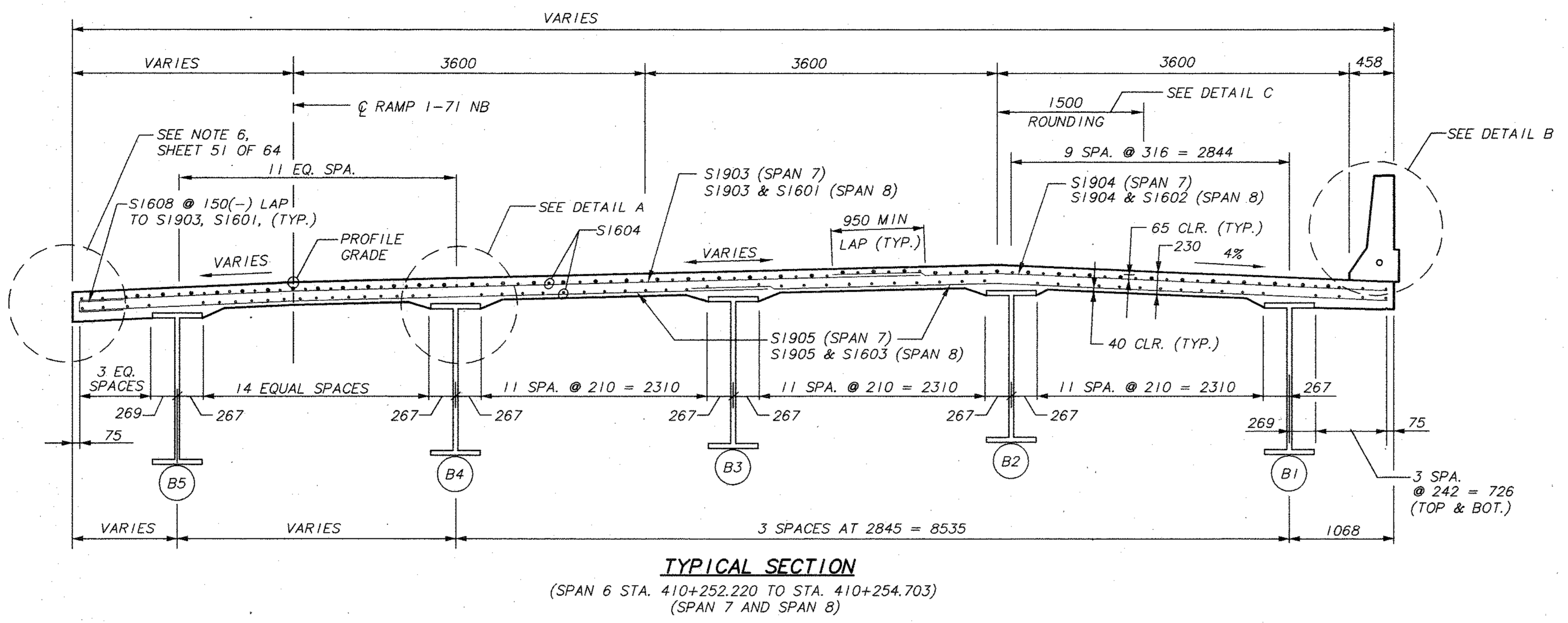
AUG 18 1998

BR3-TTY2

DESIGN AGENCY: BRW HAZLET & ERDAL
 GROUP: A BRW COMPANY
 DATE: 8/18/98
 REVIEWED: JAP
 STRUCTURE FILE NUMBER: BR3-TTY2
 DRAWN: RCS
 CHECKED: SWF
 TYPICAL SECTIONS: 1-71 NB
 BRIDGE 3
 58/64
 468
 588

SUPERSTRUCTURE (SPANS 6,7,8) REINFORCING STEEL LIST

MARK	TOTAL NO.	LENGTH	TYPE
S1601	507	8700	STR.
S1602	507	5800	STR.
S1603	1014	7300	STR.
S1604	1608	12000	STR.
S1605	112	11400	STR.
S1606	444	2130	I
S1607	84	12000	STR.
S1608	615	1030	II
S1901	444	765	3
S1902	444	855	2
S1903	487	9400	STR.
S1904	487	5700	STR.
S1905	974	7600	STR.



* DECK SLAB DEPTH: THE DISTANCE SHOWN FROM TOP OF DECK SLAB TO TOP OF STEEL GIRDER WEB IS THE DESIGN DIMENSION. THE QUANTITY OF DECK CONCRETE TO BE PAID FOR SHALL BE BASED ON THIS DIMENSION, EVEN THOUGH DEVIATION FROM IT MAY BE NECESSARY BECAUSE THE TOP FLANGE OF THE BEAM MAY NOT HAVE THE EXACT CAMBER OR CONFORMATION REQUIRED TO PLACE IT PARALLEL TO THE FINISHED GRADE.

- NOTES:**
1. TRANSVERSE BARS TO BE PLACED RADIAL TO 1-71 NB ALIGNMENT.
 2. FOR SUPERELEVATION RATES, REFERENCE SUPERELEVATION PLANS.

FINAL FOR CONSTRUCTION

AUG 18 1998
 6/18/98
 BR3-TTY1

Appendix B – ODOT Concrete Wearing Surface Delamination Identification

WEARING SURFACE DELAMINATIONS, IDENTIFIED BY ODOT DECEMBER 2020



A MATCHLINE A



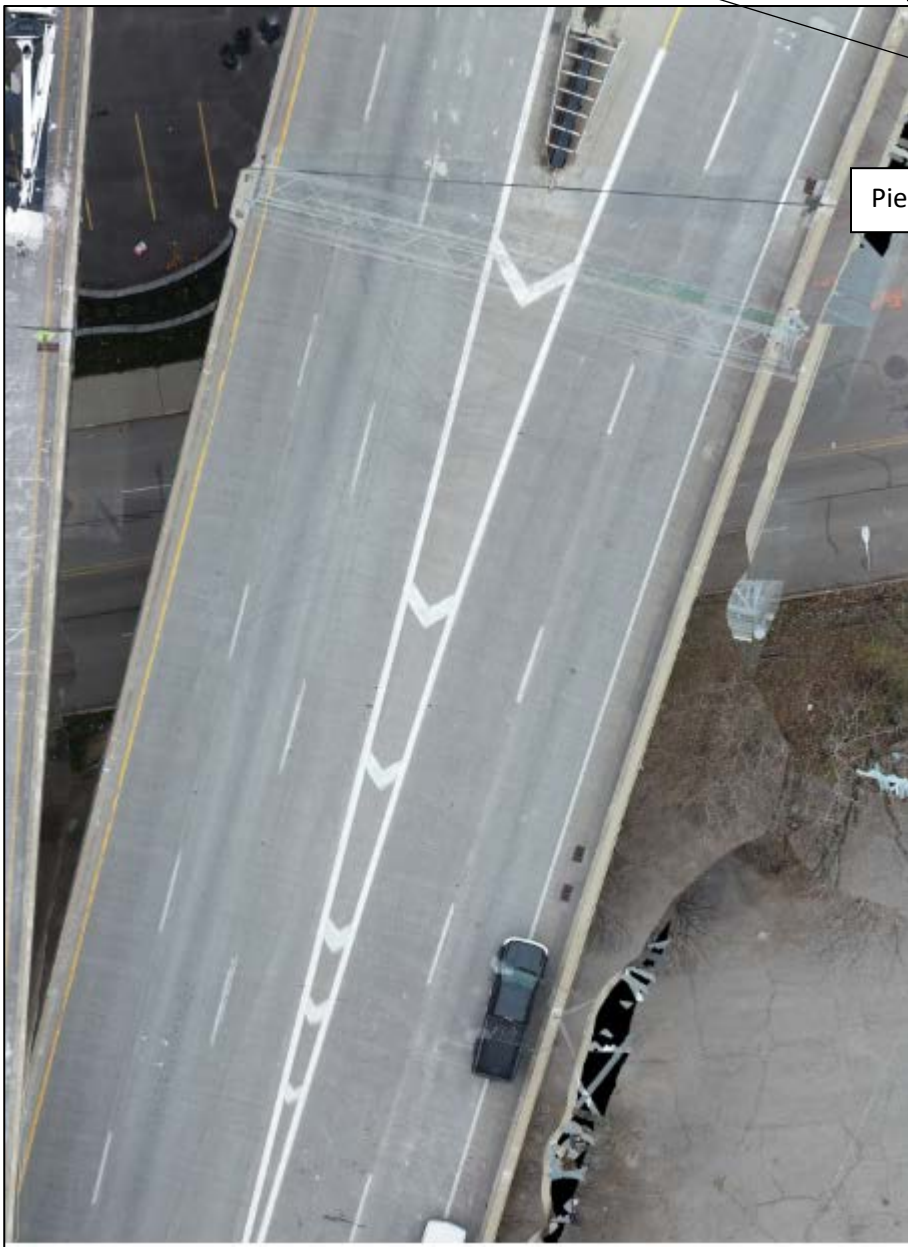
Pier 8A

B MATCHLINE B



A MATCHLINE A

Pier 12C



Pier 15C

C MATCHLINE C

B MATCHLINE B

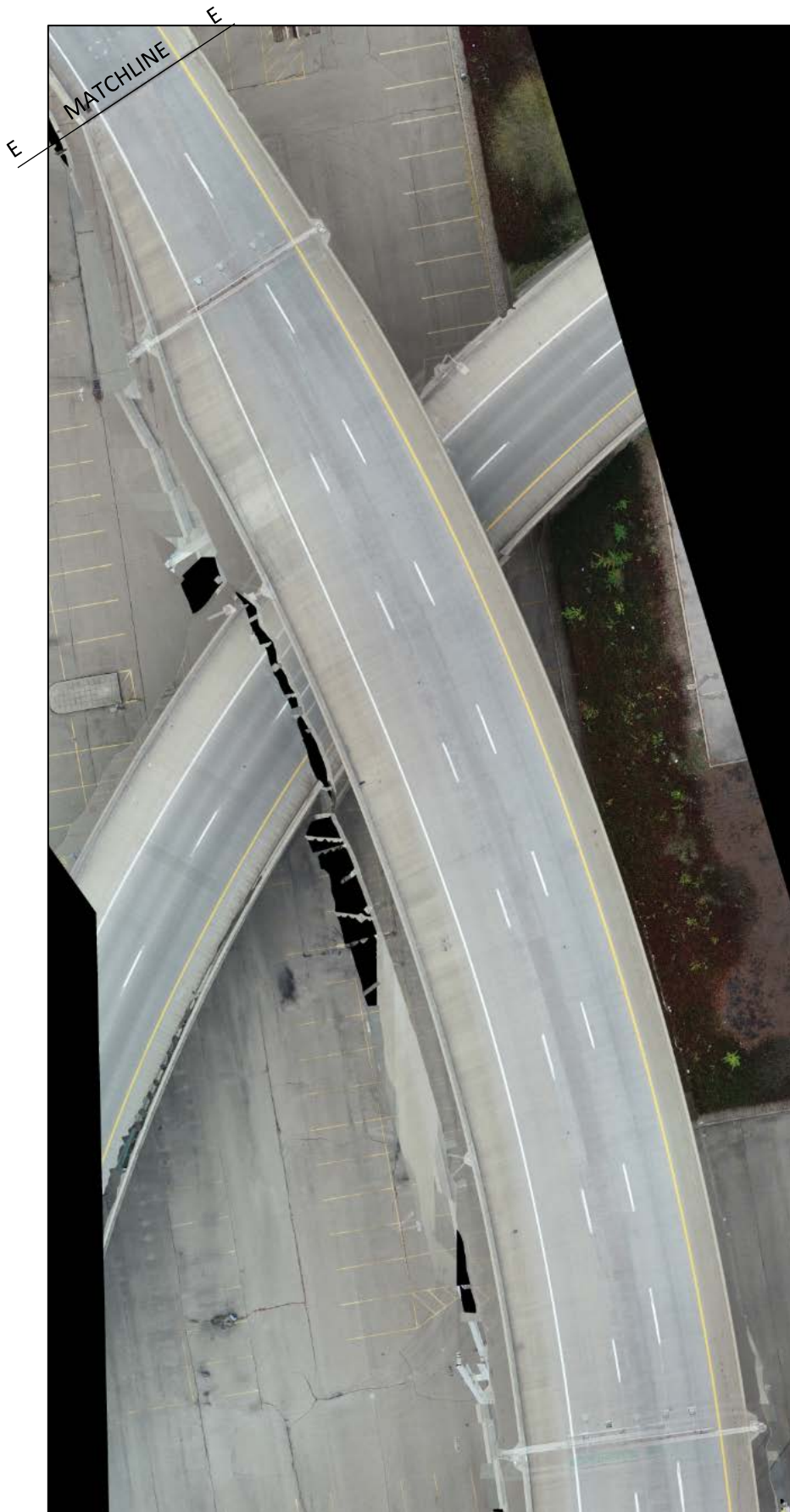




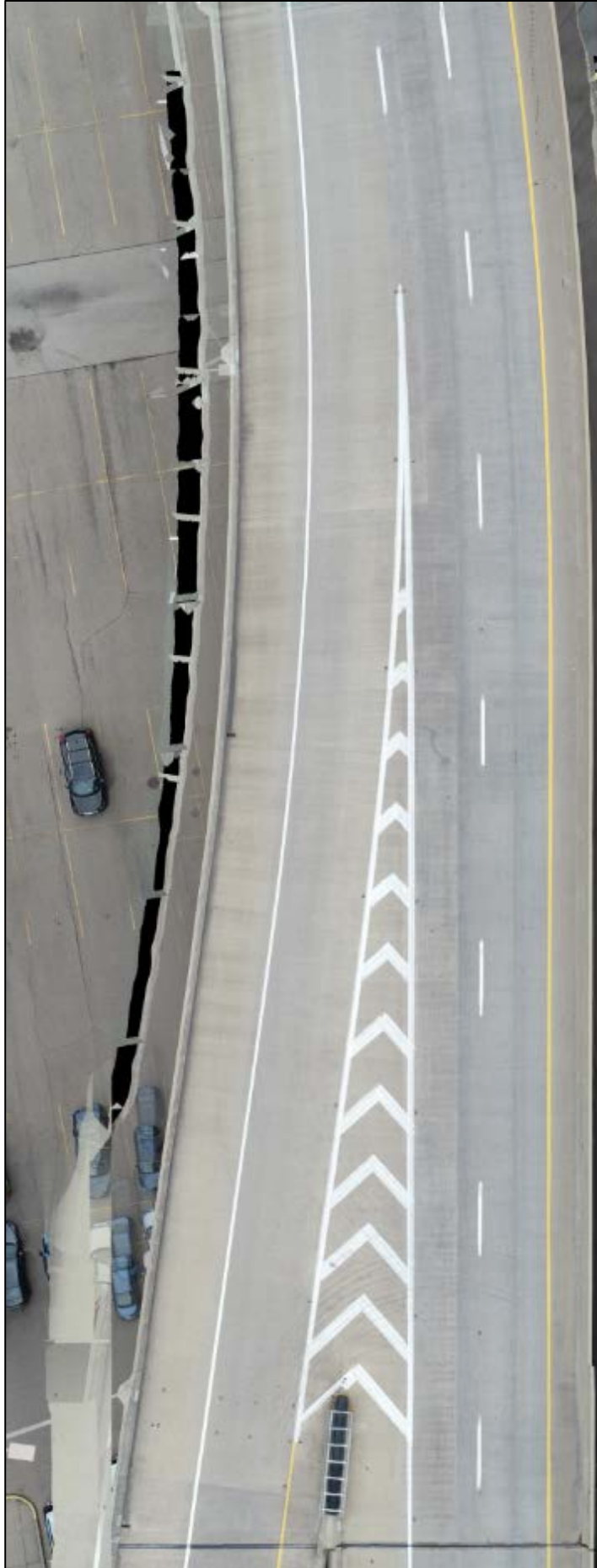
E
MATCHLINE

Pier 20D

D
MATCHLINE
D



F MATCHLINE F



Pier 5

Appendix C – AssetWise Bridge Inspection Report

Inspector: Larkin,Cory
 Inspection Date: 09/11/2023

Structure Number: 3105970
 Facility Carried: NB IR 71

Ohio Bridge Inspection Summary Report

HAM-00071-0000R (3105970)

2: District 15000 - CINCINNATI (HAM county)
 District 08

5A: Inventory Route 1 00071

21: Major Maint A/B 01 - State Highway Agency /
 225 Routine Main A/B 01 - State Highway Agency /
 221 Inspection A/B 01 - State Highway Agency /
 220: Inv. Location DISTRICT 08

7: Facility On NB IR 71
 6: Feature Ints 3RR;USR 27;IR 75; USR 42
 9: Location OH-KY STATE LINE
 Lat, Lon 39.093042 , -84.522431

Condition	Structure Type
-----------	----------------

58: Deck **6 - Satisfactory Condition**
 58.01 Wearing Surface 6 - Satisfactory (1-10% distress)
 58.02 Joint 5- Fair (obvious leaking, 1" offset)
59: Superstructure **6 - Satisfactory Condition**
 59.01 Paint & PCS 5 - Fair (10-15% corr.)
60: Substructure **6 - Satisfactory Condition**
61: Channel **N**
61.01 Scour **N - Not Applicable**
62: Culverts **N - Not Applicable**

43: Bridge Type 4 - Steel continuous
 02 - Stringer/Multi-beam or Girder
 N- Not Applicable
 45: Spans Main / Approach 35 / 0
 107: Deck Type 1 - Concrete Cast-in-Place
 408: Composite Deck U - Unknown
 414A Joint Type 1 2 - Sliding Metal Plate Angle
 414B: Joint Type 2 8 - Elastomeric Strip Seal
 108A: Wearing Surface 2 - Integral Concrete (separate non-modified layer of concrete added to structural deck)
 2- MicroSilica

67.01 GA 6

Appraisal	Inspection
-----------	------------

Sufficiency Rating 73.0 SD/FO 2 - FO
 36: Rail, Tr, Gd, Term Std 1 N N N
 72: Approach Alignment 8 - Equal to present desirable criteria
 113: Scour Critical N - Not over waterway
 71: Waterway Adequacy N - Not Applicable

422: WS Date 07/01/2007
 423: WS Thick (in) 2.8
 482: Protective Coating 4 - Paint System B
 483: PCS Date 01/01/1978
 453: Bearing Type 1 2 - Rockers & Bolsters
 455: Bearing Type 2 C - Elastomeric (laminated)
 528: Foundn: Abut Fwd N - None (Such as most Culverts)
 533: Foundn: Abut Rear N - None (such as most Culverts)
 536: Foundn: Pier 1 2 - Cast-in-Place Reinforced Concrete Piles (Other diameter)
 539: Foundn: Pier 2 N - None (Such as most Culverts)

Geometric	Age and Service
-----------	-----------------

48: Max Span Length (ft) 186.4
 49: Structure Length (ft) 3042.8
 52: Deck Width, Out-To-Out (ft) 47.8
 424: Deck Area (sf) 145445.84
 32: Appr Roadway Width (ft) 30.2
 51: Road Width, Curb-Curb (ft) 39.6
 50A: Curb/SW Width: Left (ft) 0
 50A: Curb/SW Width: Right (ft) 0
 34: Skew (deg) 0
 33: Bridge Median 0 - No median
 54B: Min Vert Underclearance (ft) 18
 336A: Min Vert Clrnce IR Cardinal (ft) 14.917
 336B: Min V Clr IR Non-Cardinal (ft) 0
 578: Culvert Length (ft) 0

Age and Service	Inspections
-----------------	-------------

27: Year Built/ 106 Rehab 1963 / 0000
 42A: Service On 1 - Highway
 42B: Service Under 4 - Highway - railroad
 28A: Lanes on 03
 28B: Lanes Under 08
 19: Bypass Length 0
 29: ADT 67393
 109: % Trucks (%) 15

Load Posting	Inspections
--------------	-------------

41: Op/Post/Closed A - Open
 70: Posting 5 - Equal to or above legal loads
 70.01: Date
 70.02: Sign Type
 734: Percent Legal (%) 150
 704: Analysis Date 07/01/2013
 63: Analysis Method 7 - Allowable Stress (AS) rating reported by rating factor (RF) method using MS18 loading.

Inspections	Inspections
-------------	-------------

	Months	
90: Routine Insp.	12	09/11/2023
92A: FCM Insp.	N 12	
92B: Dive Insp.	N 0	
92C: Special Insp.	N 0	
92D: UBIT Insp.	N 0	
92E: Drone Insp.	N 0	

Inspector Larkin,Cory

Inspector: Larkin,Cory
 Inspection Date: 09/11/2023

Structure Number: 3105970
 Facility Carried: NB IR 71

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12-Reinforced Concrete Deck	3 - Mod.	108784	sq. ft.	81316	27196	272	0
<p>CS2: -Transverse hairline to moderate width cracks with efflorescence are present throughout the deck underside for the full width of the bay between girders, typically at 4' on center. -Cracks and efflorescence are much more prevalent in the reconstructed spans, with cracks spaced at 1' or less in some areas. -The deck overhangs exhibit hairline to moderate width transverse cracking with efflorescence throughout.</p> <p>CS3: -In Span 10A there is 5' L x 2' W x 2" D spalling with 2 exposed transverse bars in Bay 7. -In Span 13C, Bay 1 there is a 32" L x 20" W x 1" D spall. -In Span 14C, Bay 1 there is a 42" x 24" x 3 1/2" Spall with 4 exposed transverse and 1 longitudinal bars. -In Span 16D, near Pier 15C, Bay 4 there is a 24" x 24" spall with 2 exposed longitudinal reinforcing bars. -There are two large spalls with exposed reinforcement in Span 17D, Bay 4: 32" x 20" x 2 1/2" and 36" x 20" x 2 1/2". -There is a spall with exposed reinforcement in Span 18D, Bay 2: 36" x 48" x 2 1/2". There is also a 24" x 72" x 2" spall with 4 transverse and 4 longitudinal reinforcing bars exposed in Span 18D, Bay 1. -There is a spall with exposed reinforcing in Span 20D, Bay 3: 64" x 52" x 2 1/2" with 7 transverse and 3 longitudinal exposed reinforcing bars. -Full depth 4' x 4' concrete patches are typical at replaced expansion joints, and some have become unsound or have adjacent cracking and spalling. -There is 8' x 2' x 3" with 8 transverse reinforcing bars exposed in Span 14C west overhang. -There is a concrete spall 10' x 3' x 3" with exposed reinforcement on the East overhang over the full depth concrete repair at Pier 12C expansion joint. -A concrete spall of 6' x 2' x 4" with exposed reinforcement is present on the West overhang at Pier 11A. -There are spalls with exposed reinforcement in the East overhang of Span 5 . -There is a 1 SF spall with exposed reinforcement in the east overhang of Span 7.</p>							
510-Wearing Surfaces		108645	sq. ft.	96674	11951	20	0
<p>CS2: -There are locations of hairline to moderate transverse, diagonal, longitudinal cracks and minor pop-out spalls present throughout the surface of the wearing surface. -The wearing surface was sounded by ODOT in 2020, and multiple delaminated areas were found.</p> <p>CS3: -There is a small spall in Span 3 (reconstructed spans) due to a missing raised pavement marker.</p>							

Inspector: Larkin,Cory
 Inspection Date: 09/11/2023

Structure Number: 3105970
 Facility Carried: NB IR 71

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
107-Steel Open Girder/Beam	3 - Mod.	14228	ft.	10578	3234	416	0
<p>CS2: -Girders in Spans 15C- 20C typically exhibit minor surface corrosion and freckled rust where the paint system has failed, with moderate surface corrosion present on the fascia girders of the original structure. -There are grid marks approximately 20'L and 1/32" deep on Girder F in Span 6. -There are undercut welds and porosity in Span 12, Girder D between web and top flange.</p> <p>CS3: -The fascia girders typically exhibit isolated areas of moderate laminar corrosion with section loss up to 3/8" deep, mainly concentrated to the bottom flange and at stiffener locations . -In the spans that were painted, painted-over section loss is present on the top of the bottom flanges of Girders A and G, intermittent throughout; this section loss is typically 1/8" deep, with isolated areas up to 3/8" deep. -There is inactive section loss up to 3/8" deep on the webs of Girders A and G near the River Pier. -There is painted-over pitting on the web, bottom flange, and stiffeners at the bearings in all Span 15C girders at Pier 15C. -There is 6" wide x 3/8" deep active section loss on the bottom flange of Girder A in Span 17D, approximately 1/4 span from Pier 16D (7% flange LOS). -There is 3" wide x 3/8" deep inactive section loss on the bottom flange of Girder A in Span 1A, approximately 1/3 span from the River Pier. -The Girder G bottom flange cover plate in Span 6A was blasted clear of pack rust in 2021, revealing the cover plate has separated from the bottom flange up to 3/8". -There is a 3" diameter corrosion hole in the web of Girder B and a 1/2' diameter corrosion hole in web of Girder H in Span 9A; both holes are inactive and are located behind the bearings at Pier 8.</p>							
515-Steel Protective Coating		187414	sq. ft.	161761	8909	4744	12000
<p>CS2: -In Spans 15C-20D, paint failures are typical on all girders with chalking, dulling, flaking, and peeling throughout.</p> <p>CS3: -The paint on the reconstructed spans (Spans 1-5) has small areas of surface corrosion throughout</p> <p>CS4: -Surface corrosion is active at all locations where the paint has failed and rust staining is evident on the protective system remaining. -The fascia girders exhibit the most severe paint condition with complete paint failure to the bottom flanges and bottom portions of the web with areas of moderate to severe corrosion and laminating rust. -There are isolated areas of laminating corrosion near joints.</p>							
205-Reinforced Concrete Column	3 - Mod.	49	each	18	28	3	0
<p>CS2: -At Pier 1, Column 1, there is a 53" high x 6" wide area of wide map cracking at the southeast corner. -There are various other small spalls with no exposed reinforcing, mainly on the corners, including at Piers 1A, 5A, 6A, and 19D. -There is also moderate cracking and exposed rebar due to lack of cover common throughout.</p> <p>CS3: -There are spalls at the corner armor of the Pier 15C columns. -Pier 2, Column 2 has vertical cracking extending from the cap into the column.</p>							
210-Reinforced Concrete Pier Wall	3 - Mod.	46	ft.	38	6	2	0
<p>CS2: -There is isolated hairline cracking throughout.</p> <p>CS3: -There are spalls with exposed rebar at the base of Piers 16D and 20D around the corner armor. -Pier 20D has been patched with FRP wrap and there is rust staining coming through near the cap.</p>							
234-Reinforced Concrete Pier Cap	3 - Mod.	1330	ft.	1088	190	52	0

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	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
	CS2: -There is moderate width cracking above Column 2 of Pier 5. -There is a 3'x1' delamination on the North Face of Pier Cap 3. CS3: -There are areas on both faces of Pier Cap 12C where the FRP is delaminating from the concrete. -There are wide horizontal cracks and a 12" tall x 18" wide x 1" deep spall with exposed rebar on the north face at east end of Pier Cap 1A. -There are two spalls on the north face at each end of Pier Cap 3A. -There is a 4' long x 3' wide x 2" deep spall on the underside of Pier Cap 5A near the east column that has expose longitudinal and transverse reinforcement with section loss. -There is 3'x2' cracking, 1/32" wide on the north face of Pier Cap 6 below Girder G. -There is a 4.5' long x 3' wide x 2" deep spall with exposed longitudinal and transverse reinforcement with section loss on the top of Pier Cap 10A between Bearings G and H. -There is a 4'x2' delamination under Girder A on the North Face of Pier Cap 11A. -There are two reinforcing bars exposed due to shallow cover on the north face and underside of Pier Cap 11A. -There is map cracking on east end of Pier Cap 15C. -There is a 1' x 1' x 1" spall on Girder B pedestal of the Pier 5 (reconstructed spans) cap , as well as wide cracking in Girder A Pedestal (for the bridge just north of Span 5) and on the east nose of the cap.						
300-Strip Seal Expansion Joint	3 - Mod.	463	ft.	168	282	3	10
	CS2: -There is loosely packed debris in all expansion joints on the deck. CS3: -There are small spalls along the Pier 20D joint armor. CS4: -The expansion joints at Pier 20D are leaking with debris on the pier caps below due to tears in the joint failure. -The expansion joint at Pier 5 (reconstructed span) has a large tear in the joint, allowing free flow water through the joint.						
310-Elastomeric Bearing	3 - Mod.	36	each	35	1	0	0
	CS2: -There is rust staining on the Pier 0, Bearing leaking from the elastomeric reinforcement.						
515-Steel Protective Coating		36	sq. ft.	36	0	0	0
311-Movable Bearing	3 - Mod.	97	each	61	11	25	0
	CS2: -Span 20D Bearing B at Pier 20D was rotated south 7°. All other bearings at these locations showed minimal rotation. CS3: -Intermittent areas of painted-over pitting exist on the rockers, masonry plates, and anchor rods, particularly under expansion joints. -There is painted-over pack rust between the rockers and masonry plates of Bearing G at Piers 5A, 6A, and 7A. -There is active pack rust between the rockers and masonry plates on the exterior bearings at Pier 19D. -Several of the bearings painted in 2021 have gaps up to 1/2" wide between the rocker and masonry plate with exposed pintles, likely due to pack rust being removed during blast cleaning; these bearings may be resting on the pintles. Affected bearings include Span 4A Bearing C at Pier 4A, Bearing F at Pier 7A, Span 9A Bearing G at Pier 8A, and Span 14C Bearings B and C at Pier 14C. -There is a 1" diameter corrosion hole in Bearing A, Span 8A at Pier 8A; this bearing visibly bounces under live load.						
515-Steel Protective Coating		97	sq. ft.	61	0	36	0
	CS3: -Bearings (North of Pier 14C) typically exhibit paint failure and surface corrosion throughout.						
313-Fixed Bearing	3 - Mod.	46	each	31	14	1	0

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Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4	
CS2: -The fixed bearings north of Pier 14C typically exhibit paint failure and moderate surface corrosion throughout. -There are loose anchor rod nuts at Bearing D at Pier 6A and Bearings B-E at Pier 13C. CS3: -There is painted over pitting in the masonry plates of Bearing G at Pier 6 and Span 7A Bearing G at Pier 6A.							
515-Steel Protective Coating	46	sq. ft.	31	0	15	0	
CS3: -Bearings (North of Pier 14C) typically exhibit paint failure and surface corrosion throughout.							
314-Pot Bearing	3 - Mod.	40	each	12	23	5	0
CS2: -The reconstructed spans' pot bearings typically exhibit minor paint failure and moderate surface corrosion throughout. -There are a few instances of the elastomer bulging or walking out of the bearing pot. CS3: -There is also active laminating corrosion with section loss on Span 1 Bearings B-F at Pier 20D. -There is a missing anchor bolt at Bearing E, Span 1 at Pier 20D.							
515-Steel Protective Coating	40	sq. ft.	12	0	28	0	
CS3: -The pot bearings typically exhibit minor paint failure and moderate surface corrosion throughout.							
331-Reinforced Concrete Bridge Railing	3 - Mod.	4204	ft.	0	4084	120	0
CS2: -There are moderate vertical cracks in both railings throughout, as well as horizontal cracks in the railings of the reconstructed spans. Cracks are spaced 1'-3' apart with most exhibiting efflorescence throughout all spans. CS3: -There is heavier cracking, including some wide horizontal cracks up to 20' long, as well as some exposed rebar in the west railing in Spans 1 and 2 (reconstructed spans). -There are spalls on the top portion of the railings at the expansion joint at the River Pier. -There is a 6" diameter x 1" spall in the top of the east railing near Pier 10A. -There is a 6' x 1' x 2" spall with exposed rebar on the top portion of the east rail in Span 12A. -There is a 24" x 3" x 1" spall in the inside corner of the west railing in Span 6A. -There is a 4' long spall due to impact in the west rail in Span 16D. -Some cracks exhibit rust staining. -There are wide vertical cracks throughout both railings.							
815-Drainage	3 - Mod.	22	each	10	0	11	1
CS3: -There are missing/disconnected drainpipes at the base of Piers 6A and 8A. -The rubber boots connecting section of pipe at Piers 2A, Pier 3A, 16D, 19D, and Pier 25D, are bulged out and leaking. -The rubber boots at Piers 13C and 14C are offset. -There is a corrosion hole in the drain pipe at Pier 10A. -There is vegetation growing in the east drain near Pier 16D. -The drain in the east gutter near Pier 10A is fully clogged. CS4: -The drainpipe is disconnected at the base of Pier 4A, Column 2 and there is a large, 8' Diameter x 4' Deep, erosion hole at the base of the column.							

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HAM-00071-0000R_(3105970)

ODOT District: District 08

Major Maint: 01 - State Highway Agency

Routine Maint: 01 - State Highway Agency

FIPS Code: 15000 - CINCINNATI (HAM county)

Facility Carried: NB IR 71

Feature Inters: 3RR;USR 27;IR 75; USR 42

Inspector Larkin,Cory

Location: DISTRICT 08

Inspection Date 09/11/2023

Traffic On: 1 - Highway

Traffic Under: 4 - Highway - railroad

OH-KY STATE LINE

Reviewer Not Approved

Date Built: 07/01/1963

Rehab Date:

Insp. Resp A: 01 - State Highway Agency

Insp Resp B:

Inspector Comments - Deck and Approach

Deck

Reinforced Concrete Deck

The deck underside in Span 17D exhibits a dark layer of soot due to the railroad tracks below the span.

Bridge Wearing Surface

The wearing surface was inspected visually using the boom lift.

Expansion Joint

The expansion joints located at Piers 4A, 8A, 12C, 15C, and 17D were replaced in 2016. The expansion joints at Pier 20D and Pier 5 (Reconstructed Spans) were constructed during the 1999 reconstruction.

Bridge Railing

The bridge railing was inspected visually using the boom lift. The impact attenuator at the I-71/I-75 split near Pier 15C exhibits impact damage.

Deck Drainage

As part of the 2016 rehabilitation project, drains at various locations were replaced and scuppers were cleaned.

Approach

Signs

The signs on the structure are in Good Condition with no significant problems noted. There are three overhead signs, eight light poles, one exit sign, and three mile-marker signs mounted to the bridge. Complete inspection of the overhead sign structures was outside the scope of this inspection.

Sign Supports

The sign supports on the structure are in Good condition with no significant problems noted for the supports or connections to the structure.

Utilities

All utilities are in Good condition. There is an electrical conduit that is attached to Girder A from the River Pier to Pier 13C that has been painted as a part of the 2021 paint contract. There is a lighting conduit attached to the girders in Span 16D. There are lighting conduits that extend from the ground to the superstructure on the outside columns of Pier 14C. The steel conduit near Pier 12C on the west overhang has an open joint. The conduit in span 12 is broken under Girder A.

Inspector Comments - General Appraisal

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Superstructure

Steel Open Beams/Girders

There is a 4' section of Girder A at the River Pier where the bottom flange and part of the web was replaced; this rehabilitated section is in good condition. There is a drilled-out hole in the bottom of the web at this welded retrofit, approximately 4' from the bearing. There are two fatigue prone bottom flange welds on Girders C-H in Span 11A: 8' ahead of Pier 11A and 8' back from Pier 12.

Moveable Bearing

There is abrasion dust present on several of the bearings at Pier 8A.

Protective Coating System

The paint in Spans 1A- 12A, 13C AND 14C were painted in 2021 and the paints in these spans is in excellent condition. The end 5'-10' of the girders near the expansion joints at Piers 15C, 17C, and 20D were cleaned and painted during the 2016 rehabilitation; the paint in these areas is in good condition.

Diaphragm/ X-Frames

There was paint failure and surface corrosion on the cross-frames in the non-painted original spans. The lower member of the cross-frame between Girders A and B in Span 14C near Pier 14C is bent. At Pier 8A, there is 16" x 3.5" corrosion hole in the bottom member of the end cross-frame at Girder G of Span 8A. Also at Pier 8A, there is a 2" diameter corrosion hole in the end cross-frame diagonal at Girder A, Span 8A. Some of the clip angles have been removed from the end cross-frames at Pier 8A during previous rehabilitations. Cross frame #5 in Span 4, Bay 1, between Girder A and B, is bent on the lower angle.

Substructure

Reinforced Concrete Column

As part of the 2016 rehabilitation, concrete patches and FRP wrapping were applied to parts of the River Pier and Piers 4A, 5A, 7A, 8A, 12C, and 15C. The protective coating on the FRP is beginning to peel in several areas.

Reinforced Concrete Pier Cap

As part of the 2016 rehabilitation, concrete patches and FRP wrapping were applied to parts of the River Pier and Piers 4A, 5A, 7A, 8A, 12C, 15C, 17D, and 20D. The protective coating on the FRP is beginning to peel at several piers.

Culvert

N/A

Inspector Comments - Waterway

Waterway Adequacy

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N/A

Channel

N/A

Scour Critical

N/A

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Bridge Inspection Report

Pictures