



FRACTURE CRITICAL PIER CAP INSPECTION REPORT

SFN3103811 (HAM-50-2910)

US-50 OVER NORFOLK SOUTHERN,
INDIANA AND OHIO RAILROAD, DUCK
CREEK, AND RED BANK ROAD
HAMILTON COUNTY, OH
DISTRICT 8

March 2024

Prepared for:



Prepared by:

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EXECUTIVE SUMMARY

- Project:** VAR-District 8 Bridge Inspections No. 2023-4 (PID No. 105476)
- Purpose of Project:** To perform a fracture critical / nonredundant steel tension member (NSTM) and NBIS routine inspection of fracture critical members of the HAM-50-2910 structure for the Ohio Department of Transportation, District 8.
- Inspection Team:** Team Leader – Michael Seal, P.E. – Collins Engineers, Inc.
Team Member – Nicholas Lane – Collins Engineers, Inc.
- Inspection Date(s):** March 8th and 19th, 2024

Summary of Findings:

- Wearing Surface
 - The wearing surface typically exhibited scattered spalls, potholes, and cracks in the traffic lanes.
 - Longitudinal cracks the full length of the bridge were observed near the concrete railings at the cantilevered area of the deck.
- Deck
 - The deck soffit exhibited large areas of spalling with extensive exposed rebar. Spalled areas were extensive and deep on the soffit. Rebar section loss was up to 100%. The deck is currently scheduled for a repair, and at the time of the inspection the contract had been let but work has not started.
 - The joints were not fully sealed and exhibited gaps and gouges from traffic impact. This is causing leaking and debris accumulation onto the steel below.
 - The concrete railings typically exhibited minor cracks and spalls.
- Superstructure
 - The superstructure paint condition was good overall with areas of previous section loss painted over. There was little to no corrosion present on the girders.
 - Isolated areas of pack rust were observed throughout the superstructure components.
 - The ends of the girders and bearings exhibited surface corrosion due to leaking from the above damaged joints.
- Substructure
 - The abutments and piers exhibited scattered spalls with exposed reinforcing bars. These areas are not structural concerns at this time.
 - The right rear abutment backwall exhibited a spall 6 ft vertical by 18 in. wide by up to 2.5 in. deep with 1 exposed vertical reinforcing bar.
 - Scattered cracks with efflorescence were observed throughout the concrete substructure units.

Summary of Recommendations:

- Patch the spalls and delamination in the substructure units to cover/protect exposed reinforcing steel.

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NBI Ratings:

Item ID	Description	Condition Rating	Summary
B.C.01	Deck	3-Serious	Heavy delamination, exposed reinforcing steel with section loss, spalls
B.C.02	Superstructure	8-Very Good	No major defects.
B.C.03	Substructure	7-Good	Spalls, exposed reinforcement, some rust staining
B.C.05	Bridge Railings	5-Fair	Minor cracking
B.C.06	Bridge Railings Transitions	8-Very Good	No major defects.
B.C.07	Bridge Bearings	7-Good	Corrosion, loose and missing nuts
B.C.08	Bridge Joints	4-Poor	Loss of section, tears, leakage
B.C.09	Channel	8-Very Good	Minor erosion
B.C.14	NSTM	7-Good	Isolated surface corrosion. No major defects overall.

AASHTO National Bridge Element (NBE) Ratings:

Element #	Description	Units	Total	Condition State			
				1	2	3	4
12	Reinforced Concrete Deck	SF	33,120	15385	6350	11385	0
510	Wearing Surfaces	SF	30,240	15897	13425	918	0
107	Steel Open Girder	LF	1,728	1572	81	75	0
113	Steel Stringer	LF	3,456	2961	495	0	0
152	Steel Floor Beam	LF	4,560	4500	45	15	0
515	Steel Protective Coating	SF	30,870	30765	105	0	0
310	Elastomeric Bearings	EA	8	4	4	0	0
311	Movable Bearings	EA	8	7	1	0	0
205	Reinforced Concrete Columns	EA	8	4	3	1	0
215	Reinforced Concrete Abutment	LF	154	145	6	0	3
234	Reinforced Concrete Cap	LF	54	50	4	0	0
300	Strip Seal Expansion Joint	LF	152	0	54	98	0
321	Reinforced Concrete Approach Slab	SF	3,600	3283	225	92	0
331	Reinforced Concrete Railing	LF	864	782	71	11	0
815	Drainage	EA	24	16	8	0	0
830	Abutment Backwall	LF	154	99	44	11	0

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

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1.0 INTRODUCTION

1.1 Purpose and Scope

This report consists of the results of a detailed inspection of non-redundant steel tension members (fracture critical) performed at the US-50 Bridge over Norfolk Southern, Indiana and Ohio Railroad, Duck Creek, and Red Bank Road in Hamilton County, OH. Collins Engineers, Inc. (Collins) conducted the fracture critical (NSTM) inspection for the Ohio Department of Transportation (ODOT), District 8 on March, 8th and 19th, 2024.

1.2 General Description of the Structure

The SFN3103811 (HAM-50-2910) Bridge is a dual three-span riveted steel plate girder structure with a reinforced concrete deck that carries the Columbia Parkway over two railroads (Norfolk Southern Railroad and the Indiana and Ohio Railroad), Duck Creek, and Red Bank Road (see Figure 1). For this report, this bridge is inventoried in a west to east direction following roadway stationing, and girders and stringers are labeled from left to right looking east (north to south). The side-by-side bridges are connected by a non-structural compression seal, so they are essentially two independent fractural critical bridges under the same structure file number (SFN). Each direction is comprised of two haunched riveted plate girders that vary in depth from 78 in. to 126 in. deep. The girders support a floor beam and stringer system. There are 34 floor beams spaced at 26 to 30 feet apart with a bracing frame (labeled as XF1 in the plans) midway between floor beams. The span lengths are 132 ft, 164 ft, and 132 ft, respectively. The spans are laid out on a mild 2-degree curve, and the girders are kinked at the two web field splice locations to accommodate for the curve. Fatigue prone details consist of riveted and welded connections.

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Figure 1: General Bridge Location

The fracture critical members for this structure are the riveted plate girders, the W30 floor beams, and the overhang brackets labeled as BR1, BR2, BR3, and BR4 in the plans. While not typically considered fracture critical, the exterior stringers labeled as Stringers 1, 4, 5, and 8 are inspected as fracture critical as the slab due to the large tributary area (9 ft overhang x 30 ft spaced floor beam) that it solely supports. The floor beams and brackets are labeled from west to east as Floor Beam and Bracket 1 through 9. The brackets extend outside the girders in-line with the floor beams as a cantilever to support the exterior stringers. The girders and stringers are labeled from left to right as Girder 1 through 4 and Stringer 1 through 8. The independent girder systems are each supported by two piers and two abutments with expansion joints at the abutments and are labeled Rear Abutment, Pier 1, Pier 2, and Forward Abutment with bearings labeled Bearing 1 through 4. The stringer and girder designation shown on the design plans were used in the inspection of the three pier caps. Refer to Photographs 1 and 2 below for overall views of the bridge.

This bridge will soon undergo a replacement of the concrete deck, railing, drainage system, and expansion joints. That project has currently been let by ODOT and the contractor is in the process of project

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mobilization. Current conditions are described and condition states for the affected elements were recorded as conditions existing during the inspection; naturally, the following inspection will need to update element quantities and condition states after the replacement of the above-mentioned categories.



Photograph 1: General elevation, looking southwest.



Photograph 2: General endview, looking west.

1.3 Method of Investigation

Collins Engineers, Inc. performed a fracture critical and NBIS routine inspection of the girders, floor beams, stringers, and associated deck and substructure components of Bridge SFN3103811 (HAM-50-2910) on March 19th, 2024. A two-person team consisting of a professional engineer and NBI team leader (Michael A. Seal, P.E.) and technician Nicholas Lane (Collins) conducted this inspection. Access to the bridge was accomplished from the ground, from walking the deck, and with adapted fall protection/climbing techniques. No traffic control was required to access the bridge for this inspection.

Field measurements were taken using tape measures, calipers, and an ultrasonic thickness gauge to verify dimensions. Observed deficiencies were recorded on bridge-specific field inspection forms and drawings. Digital photographs were taken of deteriorated areas and typical conditions.

1.4 Condition Ratings

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

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CODE	CONDITION	DESCRIPTION
N	NOT APPLICABLE	Component does not exist.
9	EXCELLENT	Isolated inherent defects.
8	VERY GOOD	Some inherent defects.
7	GOOD	Some minor defects.
6	SATISFACTORY	Widespread minor or isolated moderate defects.
5	FAIR	Some moderate defects; strength and performance of the component are not affected.
4	POOR	Widespread moderate or isolated major defects; strength and/or performance of the component is affected.
3	SERIOUS	Major defects; strength and/or performance of the component is seriously affected. Condition typically necessitates more frequent monitoring, load restrictions, and/or corrective actions.
2	CRITICAL	Major defects; component is severely compromised. Condition typically necessitates frequent monitoring, significant load restrictions, and/or corrective actions in order to keep the bridge open.
1	IMMINENT FAILURE	Bridge is closed to traffic due to component condition. Repair or rehabilitation may return the bridge to service.
0	FAILED	Bridge is closed due to component condition, and is beyond corrective action. Replacement is required to restore service.

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

1. Manual of Bridge Inspection, Ohio Department of Transportation (ODOT), 2014.
2. Manual for Bridge Element Inspection, AASHTO, 2019.
3. Bridge Inspector's Reference Manual, U.S. Department of Transportation, 2002 (rev 2012).
4. Inspection of Fracture Critical Bridge Members, U.S. Department of Transportation, 1986.
5. Specifications for the National Bridge Inventory, U.S. Department of Transportation, 2022.

2.0 EXISTING CONDITIONS

2.1 Reinforced Concrete Deck

Transverse cracks spaced from 5 ft to over 20 ft with scattered efflorescence were present on the soffit for the full length of the bridge. Hairline to medium cracking was present along the soffit. Saturation was

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observed around the scupper drains and the centerline joint. Saturation measuring 3 ft wide was observed along the entire length of the center joint.

Extensive full depth repairs were present along the centerline and in various areas throughout spans. Formwork from deck repairs was observed left in place along the right edge of Span 3. Small shallow spalls generally 2 to 4 square feet were observed along the girders and stringers of Spans 2 and 3. Span 3 typically exhibited the delamination and spalls along Stringer 2. Heavy delamination and spalls with exposed reinforcing steel with rust and section loss visible were observed between the girders and along the median area. Numerous areas of wide delamination were observed randomly throughout all spans, predominately under the westbound lanes. Large areas of unsound concrete were removed by the contractor over Redbank Rd. in 2020. All transverse reinforcing bars in this area were not engaged with the soffit, and the reinforcing bars exhibited section loss with one bar fully severed. This condition was similar between Stringers 2 and 3 of Span 3.

As noted above, the concrete deck will be replaced soon after this inspection and the deteriorated deck and deficient exposed reinforcing steel will not be present during the next inspection.



Photograph 3: Typical Span 2 soffit, looking west.



Photograph 4: Typical condition and configuration of the soffit between the two bridges from Pier 2, looking northeast.

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Photograph 5: Span 3 soffit near Girder 1 south side between Floor Beams 2 and 3, looking west. Note: all transverse reinforcing bars were not engaged with the soffit, and section loss was observed on each with 1 bar fully severed.



Photograph 6: Typical exterior deck condition, looking south.

2.2 Wearing Surfaces

Random longitudinal cracking spaced 2 ft to 8 ft was observed throughout the wearing surface of the eastbound and westbound lanes. Transverse cracks were present along the bridge and were spaced at an average 8 to 10 ft throughout both the eastbound and westbound wearing surface. No changes were observed since the last inspection. Saturation, cracking, rust stains, and unsound areas were observed on the westbound lanes along the median parapet. There were two areas in Span 2 and four areas in Span 1 with extensive localized deterioration at the top up to a few square feet in shape. Spalls were observed throughout the eastbound wearing surface along a crack 2 ft from the south parapet wall running longitudinally for the full length of the bridge. The spalls were most severe at the scuppers in the eastbound wearing surface. Delamination was observed along the shoulder area at the rail in eastbound lanes with spalls up to 18 in. diameter by 2 in. deep with exposed reinforcing steel around scupper drains. The eastbound left lane exhibited two 2 square ft asphalt patches. Approximately 62 square ft of deteriorated patched areas were observed in the westbound right lane. The Span 1 westbound right lane exhibited a patch coming undone. The pavement exhibited deterioration and heaving approximately 30 ft from the west end of the bridge at the westbound west approach.

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Photograph 7: Typical wearing surface condition (westbound Span 3 shown), looking southwest.	Photograph 8: Cracks and popouts along longitudinal crack 2 ft from eastbound parapet, looking west.
	
Photograph 9: Longitudinal crack along cantilevered portion, Span 2 WB shown, looking west.	Photograph 10: General example of patch on deck, westbound Span 2 right lane shown, looking southwest.

2.3 Steel Open Girder (NSTM)

The girders typically exhibited localized painted over pitting up to 1/16 in. deep on the knee brace web plates at the angle connections to the girders. The support bracing typically exhibited painted over pitting up to 1/16 in. deep. Pack rust was present between the girders and the masonry plates, causing minor distortion. This is heaviest at the Rear Abutment and is not a concern at this time. The previously noted small area of corrosion from leakage in Girder 2 in Span 2 had been painted over. The beam ends of Girders 2 through 4 at the Rear Abutment exhibited corrosion from leakage through the joints. Isolated locations of pack rust up to 1/4 in. was present between the deck on the girder top flanges; this has been caused by deck leakage.

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The center of the Span 1 built-up straight girder bottom flange plates has edges tack welded together on 2 ft spacing. Spans 2 and 3 do not have these tack welds. No tack weld cracks were observed during this inspection. Most of the C-channel diaphragm connecting angles are tack welded to girder webs and outside stringer webs (not riveted).

Girder 2 at Pier 2 exhibited 2 missing bolts with 2 loose bolts below the missing bolts and missing rivets at the top of stiffener at the floor beam connection. This is an old comment and has not changed. The vertical stiffener at the south face of Girder 2 was bent 2.5 ft above the bottom flange located four stiffeners south of Pier 2 in Span 2. This is an old comment and has not changed. Several brackets at the centerline area on the floor beam ends were bent slightly, and a few brackets exhibited light corrosion at floor locations. This is not a significant concern.



Photograph 11: Typical exterior floor beam cantilever configuration and condition (Span 2 north exterior shown), looking west.



Photograph 12: Typical girder configuration, looking east.



Photograph 13: Typical localized painted over pitting of 1/16 in. on the knee brace web plates at angle connections to the girders (Span Girder 1 at Forward Abutment shown), looking east.



Photograph 14: Typical example of tack welds between bottom flanges and plates, looking south.

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Photograph 15: General view of the superstructure, looking east.



Photograph 16: Close up of vertical stiffener bent approximately 2.5 ft above the bottom flange (Span 2 Girder 2 south face), looking north.

2.4 Steel Stringer

Corrosion was observed at the top flanges of the stringers along the median joint. Several stringers located at downspouts exhibited painted over loss of section up to 1/16 in. deep to the bottom flange and lower web due to drainage splash. This is an old comment and has not changed. Small areas of pack rust were observed between stringer top flanges and the deck due to deck leakage. No “pumping” was observed, but gaps and edge spalling along the stringer top flange was present.



Photograph 17: Typical stringer condition (Span 3 near Floor Beam 1 shown), looking southwest.

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2.5 Steel Floor Beams (NSTM)

Painted over pitting up to 1/16 in. deep was observed on the girders under the abutment joints (past the bearings) due to past joint leakage. Floor beam connections exhibited painted over pitting up to 1/16 in. deep with no active corrosion.



Photograph 18: Typical floor beam and floor beam connection condition in Span 3 near Floor Beam 1 shown, looking west. Note: no major defects.



Photograph 19: Typical floor system steel and paint condition (Span 3 near Floor Beam 1 shown), looking southwest. Note: no major defects.

2.6 Steel Protective Coating

The superstructure was painted in 2013 and remains in good condition overall. Active corrosion and rust staining is present under the abutment joints due to the leaking joint. Light rust was visible on girder ends at the abutments, floor beams, and stringers due to deck leakage. Minor corrosion was observed at the top flanges of stringers at the median joint, with some pack rust on the top flanges in small, random areas. This is not structurally significant at this time.

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Photograph 20: Girder 2 Rear Abutment bearing with typical example of rust staining on beam and bearing, looking south.

2.7 Bearings

The piers supported steel rocker bearings, and the abutments supported elastomeric bearings. Surface corrosion with no section loss was present at small, localized locations on the masonry plates on the backside of the Rear Abutment bearings due to leaking joints. The east side of Pier 1 Girder 1 bearing, there was an anchor nut that was not fully seated. There has been no change from 2013. The Pier 2 Column 4 bearing exhibited one loose nut at the masonry plate.



Photograph 21: Girder 1 bearing at Pier 1 with an improperly seated anchor nut, looking north.



Photograph 22: Loose nut at the Girder 4 bearing at Pier 2, looking south.

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2.8 Reinforced Concrete Column

Column 1 of Pier 1 exhibited two shallow spalls measuring 5 in. diameter by up to 1.5 in. deep located 2 ft above the ground. Columns 1 and 3 of Pier 1 exhibited small spalls; Column 3 exhibited 3 small spalls with exposed reinforcing steel due to lack of cover for the horizontal bars. Column 2 of Pier 2 exhibited four shallow spalls measuring 5 in. diameter by up to 1.5 in. deep located 2 ft above the ground. Column 4 of Pier 2 exhibited a spall located at the left edge of the bearing seat 4 ft long by 10 in. vertical by 3 in. deep with one exposed horizontal reinforcing bar and seven exposed vertical reinforcing bars with approximately 20% section loss.



Photograph 23: Typical pier configuration (Pier 2 shown), looking east.



Photograph 24: Pier 1 Column 1 shallow spall, looking south.



Photograph 25: Pier 2 Column 4 spall near the bearing seat, looking south.

2.9 Reinforced Concrete Abutment

A couple random hairline cracks were observed extending into the bearing seat areas. A few vertical cracks had been epoxy injected on the breastwall. Six studs were left in the Rear Abutment face, one on the

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bearing seat and five on the breastwall. The breastwalls typically exhibited rust staining from the leaking joint above.



Photograph 26: Overall view of Rear Abutment, looking west.



Photograph 27: Overall view of Forward Abutment, looking east.

2.10 Reinforced Concrete Cap

No major defects were observed.

2.11 Strip Seal Expansion Joint

The Rear Abutment joint was failed through 20% of its length. The Forward Abutment joint failed through 90% of its length, and adjacent deck headers exhibited spalls and delamination up to 3 in. deep over the full length of the header. The bottom of the joints exhibited section loss with a few gouges from impact.

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Photograph 28: Forward Abutment deck header spalling and joint failure, looking east.



Photograph 29: Failed westbound left lane joint seal at the Rear Abutment, looking south.



Photograph 30: Close up view of torn and fallen joint seal (Forward Abutment westbound right lane shown), looking south.

2.12 Reinforced Concrete Railing

The railings exhibited scattered hairline vertical cracks with efflorescence on the exterior. The left rail exhibited an area of heavy cracking with a few areas of map cracking and a large, sealed spall in Span 2. The exteriors of the railing exhibited isolated spalls and exposed reinforcing bars along the lower edges. Spalled locations over Red Bank Road have been removed to prevent loose concrete falling on traffic.

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Photograph 31: Typical rail configuration, north rail in Span 3 westbound shown, looking northwest.



Photograph 32: Typical approach rail transition configuration, looking northeast.

2.13 Reinforced Concrete Approach Slab

The eastbound right lane exhibited a pothole around an unsound patch 24 in. diameter by up to 2 in. deep, and the asphalt overlay exhibited raveling at the eastbound pothole. A few potholes and areas of failing asphalt patches were observed along header joints in the rear and forward slabs. Patches in the header joints in the eastbound lanes appeared sound. Overall, there were no major changes from the previous inspection.



Photograph 33: Eastbound end view, looking west.



Photograph 34: Westbound end view, looking east.

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Photograph 35: Eastbound east joint with potholes, looking north.



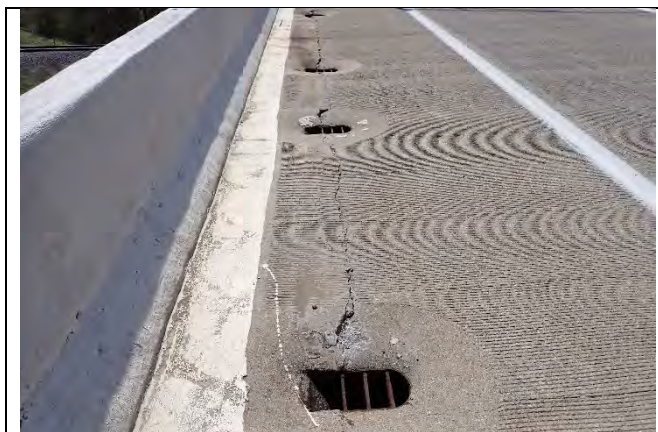
Photograph 36: Typical approach crack (eastbound shown), looking north.



Photograph 37: Approach cracks and potholes (westbound shown), looking north.

2.14 Drainage

Areas around a few scuppers exhibited delaminations, spalls, and cracks. The drains were clear overall.



Photograph 38: Typical scupper, looking west.

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2.15 Abutment Backwall

The backwalls exhibited vertical, diagonal, and random cracks with minor efflorescence. Both abutments have had a sealant installed and prior spalls patched. The south Rear Abutment backwall exhibited a spall 6 ft vertical by 18 in. wide by up to 2.5 in. deep with 1 exposed vertical reinforcing bar. The Rear Abutment backwall exhibited spalls up to 3.5 ft vertical by 3 ft wide on the south end of the backwall with two reinforcing bars exposed located at the wingwall spall. The Forward Abutment exhibited a spall at the center and the north end. Shallow but wider spalls were observed along the top of the breastwall under the joint armor. Overall, there were no major changes since the previous inspection.



Photograph 39: Rear Abutment backwall, typical, looking west.



Photograph 40: Spall in Rear Abutment backwall, looking west.

2.16 Other Inspection Comments / Non-Element Comments

- Lateral Bracing
 - One bolt was loose in the connection plate at Girder 3 located at the second lateral rear of Pier 2. This is not structurally significant at this time.
- Utilities
 - Six light poles were present on the bridge, four on the westbound and two on the eastbound. Some map cracking was observed in the concrete pedestals. This is not a significant concern.
- Slope Protection
 - Some minor erosion under the scuppers was observed at the forward slope. Erosion troughs are forming up to 1 ft deep. This is not significant at this time, and slope and fill are stable.

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- Bridge Median
 - A few vertical cracks with efflorescence, random cracking, and delaminations were observed in the bridge median. This has not changed since the previous inspection.
- Approach Wearing Surface
 - Unsealed longitudinal and transverse cracks were observed in all approaches. Some map cracking was observed at the left rear inside lane.
- Approach Embankment
 - No deficiencies were observed.
- Approach Guardrail
 - Vertical through cracks were observed in the rear median approach rail.
- Wingwalls
 - There was a large, spalled area on the top of the southwest wingwall corner. This currently measures up to 6 ft vertical by 3 ft wide with wire mesh and four reinforcing bars exposed. This is an increase in size since the last inspection. The top right rear wingwall was leaning outward approximately 3 in. at the abutment corner. This appears to be as built with no change for this inspection.
 - A few hairline to minor vertical cracks were present.
 - Porous backfill material was depositing through the left rear (northwest) weep hole. There was no change during this inspection.



Photograph 41: Typical bridge light, looking southwest.



Photograph 42: West approach median parapet cracking, looking north.

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Photograph 43: General example of map/random cracking and deterioration of median (Span 1 westbound shown), looking south.



Photograph 44: View of joint along median for eastbound bridge, looking west. This is where the leakage between the bridges is coming through.



Photograph 45: Spalled area at top corner of southwest wingwall at the abutment with exposed rebars and wire mesh, looking northwest.

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3.0 EVALUATION AND RECOMMENDATIONS

Based on this inspection, the fracture critical/NSTM components of SFN3103811 were in Good Condition (7) overall. It is recommended to abrasively clean and paint the bearings and ends of the girders to inhibit corrosion continuing and creating loss to the steel. Patch the spalls in the columns and wingwall to cover/protect the exposed reinforcing steel. Due to an upcoming replacement of the rail, deck, and joints, no additional recommendations are made in regards to those components.

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

Respectfully Submitted,
COLLINS ENGINEERS, INC.

A handwritten signature in blue ink, reading 'Michael Seal', is positioned above the printed name.

Michael Seal, P.E.

Project Manager/Team Leader

Originated by:

Kevin Mitchell, E.I.T.

Assistant Project Manager

FRACTURE CRITICAL INSPECTION

US-50 over Norfolk Southern, Indiana and Ohio Railroad, Duck Creek, and Red Bank Road
SFN3103811 (HAM-50-2910) • Hamilton County, OH • March 2024



EXHIBIT 1 – ASSETWISE REPORT

Inspector: Seal,Michael

Inspection Date: 03/19/2024

Structure Number: 3103811

Facility Carried:

Ohio Bridge Inspection Summary Report**HAM-00050-2910 (3103811)**2: District 25942 - FAIRFAX (HAM county)
ict
08

5A: Inventory Route 1 00050

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 087: Facility On
6: Feature Ints
9: Location 1.4 MI E OF SR561
Lat, Lon 39.13625 , -84.403914

Condition		Structure Type	
58: Deck	3 - Serious Condition	43: Bridge Type	3 - Steel
58.01 Wearing Surface	6 - Satisfactory (1-10% distress)		03 - Girder and Floorbeam System
58.02 Joint	4- Poor (heavy leaking, offset)		N- Not Applicable
59: Superstructure	8 - Very Good Condition	45: Spans Main / Approach	3 / 0
59.01 Paint & PCS	7 - Good (1-5% corr.)	107: Deck Type	1 - Concrete Cast-in-Place
60: Substructure	7 - Good Condition	408: Composite Deck	U - Unknown
61: Channel	8	414A Joint Type 1	8 - Elastomeric Strip Seal
61.01 Scour	7 - Good	414B: Joint Type 2	N - None
62: Culverts	N - Not Applicable	108A: Wearing Surface	2 - Integral Concrete (separate non-modified layer of concrete added to structural deck)

67.01 GA 7

Appraisal	
Sufficiency Rating	91.0 SD/FO 1 - SD
36: Rail, Tr, Gd, Term Std	1 1 1 1
72: Approach Alignment	8 - Equal to present desirable criteria
113: Scour Critical	5 - Scour within limits of footing or piles
71: Waterway Adequacy	8 - Bridge Above Approaches

422: WS Date	08/01/1989
423: WS Thick (in)	2.0
482: Protective Coating	5 - Paint System OZEU
483: PCS Date	07/01/2013
453: Bearing Type 1	C - Elastomeric (laminated)
455: Bearing Type 2	2 - Rockers & Bolsters
528: Foundn: Abut Fwd	1 - Steel H Piles (Other size)
533: Foundn: Abut Rear	1 - Steel H Piles (Other Size)
536: Foundn: Pier 1	1 - Steel H Piles (Other size)
539: Foundn: Pier 2	N - None (Such as most Culverts)

Geometric	
48: Max Span Length (ft)	164.0
49: Structure Length (ft)	432.0
52: Deck Width, Out-To-Out (ft)	76.7
424: Deck Area (sf)	33134.4
32: Appr Roadway Width (ft)	72.0
51: Road Width, Curb-Curb (ft)	70.0
50A: Curb/SW Width: Left (ft)	0
50A: Curb/SW Width: Right (ft)	0
34: Skew (deg)	4
33: Bridge Median	3 - Closed median with non-mountable barriers
54B: Min Vert Underclearance (ft)	22.5
336A: Min Vert Clrnce IR Cardinal (ft)	99
336B: Min V Clr IR Non-Cardinal (ft)	0
578: Culvert Length (ft)	0

Age and Service

27: Year Built/ 106 Rehab	1962 / 0000
42A: Service On	1 - Highway
42B: Service Under	8 - Highway - waterway - railroad
28A: Lanes on	04
28B: Lanes Under	02
19: Bypass Length	0
29: ADT	17030
109: % Trucks (%)	1

Load Posting

41: Op/Post/Closed	A - Open
70: Posting	5 - Equal to or above legal loads
70.01: Date	
70.02: Sign Type	
734: Percent Legal (%)	150
704: Analysis Date	07/01/1973
63: Analysis Method	6 - Load Factor (LF) rating reported by rating factor (RF) method using MS18 loading.

Inspections

90: Routine Insp.	12	03/19/2024
92A: FCM Insp.	Y	12 03/19/2024
92B: Dive Insp.	N	0
92C: Special Insp.	N	0
92D: UBIT Insp.	Y	24 03/03/2022
92E: Drone Insp.	N	0

Inspector Seal,Michael

Inspector: Seal,Michael
Inspection Date: 03/19/2024

Structure Number: 3103811
Facility Carried:

Inspector: Seal, Michael
Inspection Date: 03/19/2024

Structure Number: 3103811
Facility Carried:

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
12-Reinforced Concrete Deck	3 - Mod.	33120	sq. ft.	15385	6350	11385	0
CS2 -Transverse cracks spaced from 5 ft to over 20 ft with scattered efflorescence were present on the soffit for the full length of the bridge. Hairline to medium cracking was present along the soffit. -Saturation was observed around the scupper drains and the centerline joint. Saturation measuring 3 ft wide was observed along the entire length of the center joint. -Extensive full depth repairs were present along the centerline and in various areas throughout spans. -Formwork from deck repairs was observed left in place along the right edge of Span 3. -Small shallow spalls generally 2 to 4 square feet were observed along the girders and stringers of Spans 2 and 3. -Span 3 typically exhibited the delamination and spalls along Stringer 2. -Numerous areas of wide delamination were observed randomly throughout all spans, predominately under the westbound lanes. -Large areas of unsound concrete were removed by the contractor over Redbank Rd. in 2020. CS3 -Heavy delamination and spalls with exposed reinforcing steel with rust and section loss visible were observed between the girders and along the median area. -All transverse reinforcing bars in this area were not engaged with the soffit, and the reinforcing bars exhibited section loss with one bar fully severed. This condition was similar between Stringers 2 and 3 of Span 3. -The concrete deck will be replaced soon after this inspection and the deteriorated deck and deficient exposed reinforcing steel will not be present during the next inspection.							
510-Wearing Surfaces		30240	sq. ft.	15897	13425	918	0
CS2 -Random longitudinal cracking spaced 2 ft to 8 ft was observed throughout the wearing surface of the eastbound and westbound lanes. -Transverse cracks were present along the bridge and were spaced at an average 8 to 10 ft throughout both the eastbound and westbound wearing surface. No changes were observed since the last inspection. -Saturation, cracking, rust stains, and unsound areas were observed on the westbound lanes along the median parapet. -There were two areas in Span 2 and four areas in Span 1 with extensive localized deterioration at the top up to a few square feet in shape. -Spalls were observed throughout the eastbound wearing surface along a crack 2 ft from the south parapet wall running longitudinally for the full length of the bridge. The spalls were most severe at the scuppers in the eastbound wearing surface. CS3 -Delamination was observed along the shoulder area at the rail in eastbound lanes with spalls up to 18 in. diameter by 2 in. deep with exposed reinforcing steel around scupper drains. -The eastbound left lane exhibited two 2 square ft asphalt patches. -Approximately 62 square ft of deteriorated patched areas were observed in the westbound right lane. -The Span 1 westbound right lane exhibited a patch coming undone. -The pavement exhibited deterioration and heaving approximately 30 ft from the west end of the bridge at the westbound west approach.							
107-Steel Open Girder/Beam	3 - Mod.	1728	ft.	1572	81	75	0

Inspector: Seal, Michael
Inspection Date: 03/19/2024

Structure Number: 3103811
Facility Carried:

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
	CS2 -Pack rust was present between the girders and the masonry plates, causing minor distortion. This is heaviest at the Rear Abutment and is not a concern at this time. -The previously noted small area of corrosion from leakage in Girder 2 in Span 2 had been painted over. -The beam ends of Girders 2 through 4 at the Rear Abutment exhibited corrosion from leakage through the joints. -Isolated locations of pack rust up to 1/4 in. was present between the deck on the girder top flanges; this has been caused by deck leakage. -Girder 2 at Pier 2 exhibited 2 missing bolts with 2 loose bolts below the missing bolts and missing rivets at the top of stiffener at the floor beam connection. This is an old comment and has not changed. -The vertical stiffener at the south face of Girder 2 was bent 2.5 ft above the bottom flange located four stiffeners south of Pier 2 in Span 2. This is an old comment and has not changed. -Several brackets at the centerline area on the floor beam ends were bent slightly, and a few brackets exhibited light corrosion at floor locations. This is not a significant concern. CS3 -The girders typically exhibited localized painted over pitting up to 1/16 in. deep on the knee brace web plates at the angle connections to the girders. -The support bracing typically exhibited painted over pitting up to 1/16 in. deep. -The center of the Span 1 built-up straight girder bottom flange plates has edges tack welded together on 2 ft spacing. Spans 2 and 3 do not have these tack welds. No tack weld cracks were observed during this inspection. -Most of the C-channel diaphragm connecting angles are tack welded to girder webs and outside stringer webs (not riveted).						
515-Steel Protective Coating		30870	sq. ft.	30765	105	0	0
	-The superstructure was painted in 2013 and remains in good condition overall. CS2 -Active corrosion and rust staining is present under the abutment joints due to the leaking joint. -Light rust was visible on girder ends at the abutments, floor beams, and stringers due to deck leakage. -Minor corrosion was observed at the top flanges of stringers at the median joint, with some pack rust on the top flanges in small, random areas. This is not structurally significant at this time.						
113-Steel Stringer	3 - Mod.	3456	ft.	2961	495	0	0
	CS2 -Corrosion was observed at the top flanges of the stringers along the median joint. -Several stringers located at downspouts exhibited painted over loss of section up to 1/16 in. deep to the bottom flange and lower web due to drainage splash. This is an old comment and has not changed. -Small areas of pack rust were observed between stringer top flanges and the deck due to deck leakage. No “pumping” was observed, but gaps and edge spalling along the stringer top flange was present.						
152-Steel Floor Beam	3 - Mod.	4560	ft.	4500	45	15	0
	CS2/3 -Painted over pitting up to 1/16 in. deep was observed on the girders under the abutment joints (past the bearings) due to past joint leakage. -Floor beam connections exhibited painted over pitting up to 1/16 in. deep with no active corrosion.						
205-Reinforced Concrete Column	3 - Mod.	8	each	4	3	1	0

Inspector: Seal, Michael
Inspection Date: 03/19/2024

Structure Number: 3103811
Facility Carried:

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
	CS2 -Column 1 of Pier 1 exhibited two shallow spalls measuring 5 in. diameter by up to 1.5 in. deep located 2 ft above the ground. -Columns 1 and 3 of Pier 1 exhibited small spalls; Column 3 exhibited 3 small spalls with exposed reinforcing steel due to lack of cover for the horizontal bars. -Column 2 of Pier 2 exhibited four shallow spalls measuring 5 in. diameter by up to 1.5 in. deep located 2 ft above the ground. CS3 -Column 4 of Pier 2 exhibited a spall located at the left edge of the bearing seat 4 ft long by 10 in. vertical by 3 in. deep with one exposed horizontal reinforcing bar and seven exposed vertical reinforcing bars with approximately 20% section loss.						
215-Reinforced Concrete Abutment	3 - Mod.	154	ft.	145	9	0	0
	CS2 -A couple random hairline cracks were observed extending into the bearing seat areas. -A few vertical cracks had been epoxy injected on the breastwall. -Six studs were left in the Rear Abutment face, one on the bearing seat and five on the breastwall. -The breastwalls typically exhibited rust staining from the leaking joint above.						
234-Reinforced Concrete Pier Cap	2 - Low	54	ft.	52	2	0	0
	Overall, no major defects were observed. A few localized cracks are present.						
300-Strip Seal Expansion Joint	3 - Mod.	152	ft.	0	54	98	0
	CS2/3 -The Rear Abutment joint was failed through 20% of its length. -The Forward Abutment joint failed through 90% of its length, and adjacent deck headers exhibited spalls and delamination up to 3 in. deep over the full length of the header. -The bottom of the joints exhibited section loss with a few gouges from impact.						
310-Elastomeric Bearing	3 - Mod.	8	each	4	4	0	0
	-The abutments are supported by elastomeric bearings. CS2 -Surface corrosion with no section loss was present at small, localized locations on the masonry plates on the backside of the Rear Abutment bearings due to leaking joints.						
311-Movable Bearing	2 - Low	8	each	6	2	0	0
	CS2 -The east side of Pier 1 Girder 1 bearing, there was an anchor nut that was not fully seated. There has been no change from 2013. -The Pier 2 Column 4 bearing exhibited one loose nut at the masonry plate.						
321-Reinforced Concrete Approach Slab	3 - Mod.	3600	sq. ft.	3283	225	92	0
	CS2 -A few potholes and areas of failing asphalt patches were observed along header joints in the rear and forward slabs. -Patches in the header joints in the eastbound lanes appeared sound. Overall, there were no major changes from the previous inspection. CS3 -The eastbound right lane exhibited a pothole around an unsound patch 24 in. diameter by up to 2 in. deep, and the asphalt overlay exhibited raveling at the eastbound pothole.						
331-Reinforced Concrete Bridge Railing	3 - Mod.	864	ft.	782	71	11	0

Structure Number: 3103811
Facility Carried:

	Environment	Total Quantity	Units	Condition State 1	Condition State 2	Condition State 3	Condition State 4
	CS2 -The railings exhibited scattered hairline vertical cracks with efflorescence on the exterior. -The left rail exhibited an area of heavy cracking with a few areas of map cracking and a large, sealed spall in Span 2.						
	CS3 -The exteriors of the railing exhibited isolated spalls and exposed reinforcing bars along the lower edges. -Spalled locations over Red Bank Road have been removed to prevent loose concrete falling on traffic.						
815-Drainage	3 - Mod.	24	each	16	8	0	0
	CS2 -Areas around a few scuppers exhibited delaminations, spalls, and cracks. The drains were clear overall.						
830-Abutment Backwall	3 - Mod.	154	ft.	99	44	11	0
	CS2 -The backwalls exhibited vertical, diagonal, and random cracks with minor efflorescence. Both abutments have had a sealant installed and prior spalls patched. -The Rear Abutment backwall exhibited spalls up to 3.5 ft vertical by 3 ft wide on the south end of the backwall with two reinforcing bars exposed located at the wingwall spall. -The Forward Abutment exhibited a spall at the center and the north end. Shallow but wider spalls were observed along the top of the breastwall under the joint armor.						
	CS3 -The south Rear Abutment backwall exhibited a spall 6 ft vertical by 18 in. wide by up to 2.5 in. deep with 1 exposed vertical reinforcing bar. Overall, there were no major changes since the previous inspection.						

Inspector: Seal,Michael

Structure Number: 3103811

Inspection Date: 03/19/2024

Facility Carried:

ODOT District: District 08

HAM-00050-2910 __(3103811)

Date Built: 07/01/1962

Major Maint: 01 - State Highway Agency

Facility Carried:

Traffic On: 1 - Highway

Rehab Date:

Routine Maint: 01 - State Highway Agency

Feature Inters:

Traffic Under: 8 - Highway - waterway - railroad

Insp. Resp A: 01 - State Highway Agency

FIPS Code: 25942 - FAIRFAX (HAM county)

Location: DISTRICT 08

1.4 MI E OF SR561

Insp
Resp B:

Inspector

Seal,Michael

Inspection Date 03/19/2024

Reviewer Not Approved

Inspector Comments - Deck and Approach

Deck

Bridge Median

A few vertical cracks with efflorescence, random cracking, and delaminations were observed in the bridge median. This has not changed since the previous inspection.

Deck Drainage

Areas around a few scuppers exhibited delaminations, spalls, and cracks. The drains were clear overall.

Approach

Approach Wearing Surface

Unsealed longitudinal and transverse cracks were observed in all approaches. Some map cracking was observed at the left rear inside lane.

Approach Embankment

No Deficiencies Observed.

Approach Guardrail

Vertical through cracks were observed in the rear median approach rail.

Inspector Comments - General Appraisal

Superstructure

Lateral Bracing

One bolt was loose in the connection plate at Girder 3 located at the second lateral rear of Pier 2. This is not structurally significant at this time.

Utilities

Six light poles were present on the bridge, four on the westbound and two on the eastbound. Some map cracking was observed in the concrete pedestals. This is not a significant concern.

Substructure

Wingwalls

There was a large, spalled area on the top of the southwest wingwall corner. This currently

Inspector: Seal, Michael

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Inspection Date: 03/19/2024

Facility Carried:

measures up to 6 ft vertical by 3 ft wide with wire mesh and four reinforcing bars exposed. This is an increase in size since the last inspection. The top right rear wingwall was leaning outward approximately 3 in. at the abutment corner. This appears to be as built with no change for this inspection.

A few hairline to minor vertical cracks were present.

Porous backfill material was depositing through the left rear (northwest) weep hole. There was no change during this inspection.

Slope Protection

Some minor erosion under the scuppers was observed at the forward slope. Erosion troughs are forming up to 1 ft deep. This is not significant at this time, and slope and fill are stable.

Culvert

Inspector Comments - Waterway

Waterway Adequacy

Channel

Scour Critical

Inspector: Michael Seal
Inspection Date: 03/19/2024

Structure Number: 3103811
Facility Carried:

Bridge Inspection Report

Pictures

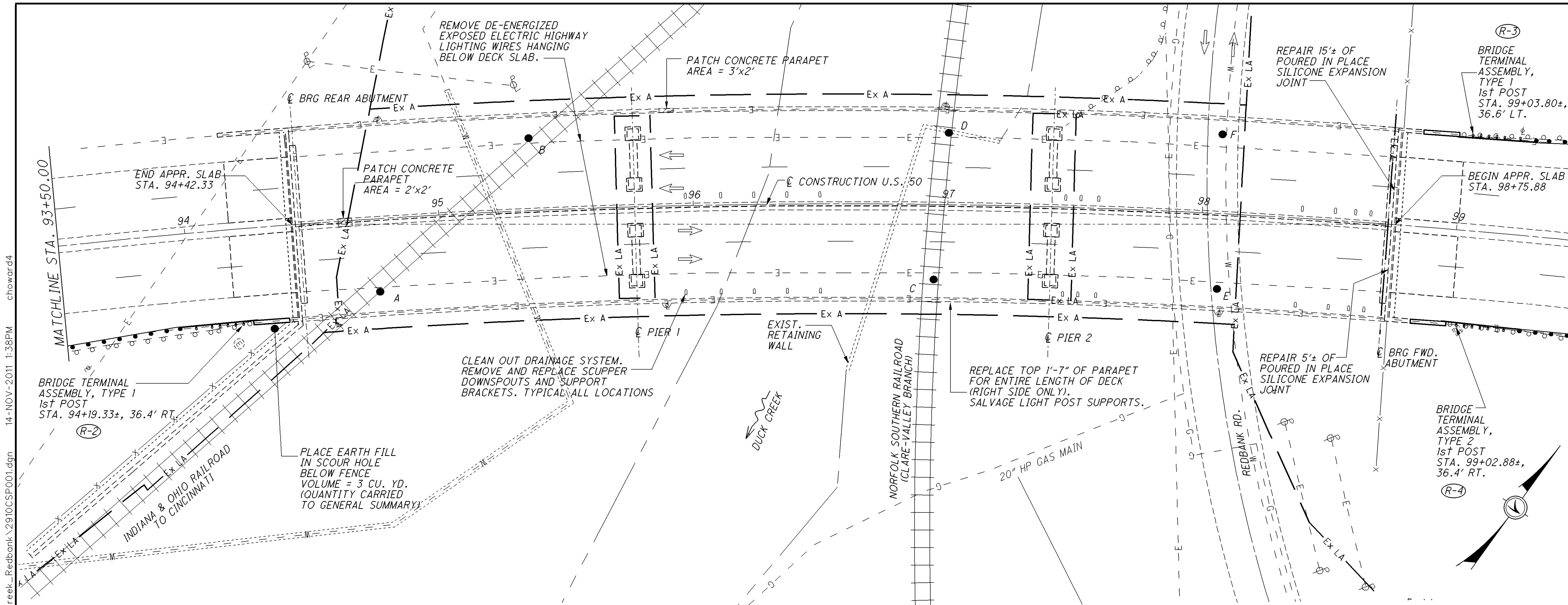
FRACTURE CRITICAL INSPECTION

US-50 over Norfolk Southern, Indiana and Ohio Railroad, Duck Creek, and Red Bank Road
SFN3103811 (HAM-50-2910) • Hamilton County, OH • March 2024



EXHIBIT 2 – EXISTING BRIDGE PLANS

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BENCHMARK INFORMATION (NAVD88 GROUND COORDINATES)			
NORTHING	EASTING	ELEVATION	DESCRIPTION
419697.2361	148758.846	508.44	IRON PIN
41983.5599	1148632.600	511.01	IRON PIN

US 50 CURVE DATA:

P.I. = Sta. 101+56.69
 $\Delta = 44^{\circ} 40' 01''$ (RT)
 $D = 2^{\circ} 00' 00''$
 $T_s = 1,277.13'$
 $R_c = 2,864.79'$
 $L_c = 2,033.35'$
 $\theta_s = 2^{\circ} 00' 00''$
 $L_s = 200.00'$

EXISTING VERTICAL CLEARANCES

LOCATION 'A' = 26.68'± BOTTOM OF GIRDER TO R.R. TRACK
LOCATION 'B' = 28.70'± BOTTOM OF GIRDER TO R.R. TRACK
LOCATION 'C' = 22.33'± BOTTOM OF GIRDER TO R.R. TRACK
LOCATION 'D' = 24.57'± BOTTOM OF GIRDER TO R.R. TRACK
LOCATION 'E' = 22.57'± BOTTOM OF GIRDER TO REDBANK RD.
LOCATION 'F' = 24.77'± BOTTOM OF GIRDER TO REDBANK RD.

EXISTING STRUCTURE

TYPE: CONTINUOUS, VARIABLE DEPTH RIVETED & BOLTED STEEL PLATE GIRDERS WITH ROLLED STEEL FLOOR BEAMS AND STRINGERS WITH REINFORCED CONCRETE DECK AND SUBSTRUCTURE.

SPANS: 132'-0"±, 164'-0"±, 132'-0"±

ROADWAY: 73'-4"± TOE/TOE OF EXTERIOR PARAPETS

LOADING: CF 2000 (57)

SKREW: ALL SUBSTRUCTURE UNITS ARE RADIAL

APPROACH SLABS: AS-1-54 (25'-0"± LONG)

ALIGNMENT: 2°00'00" CURVE RIGHT

SUPERELEVATION: 0.047 FT/FT

STRUCTURAL FILE NUMBER: 3103811

DATE BUILT: 1960

DISPOSITION: BRIDGE IN GOOD CONDITION. MINOR REHAB REQUIRED

COORDINATES: LATITUDE N 39°08'11"

LONGITUDE W84°24'13"

NOTES:

- SEE SHEET 26 OF 74 FOR PROPOSED WORK.
- SEE SHEET 10 OF 74 FOR ROADWAY QUANTITIES.
- SEE SHEET 27 OF 74 FOR SCUPPER DETAILS.
- REPLACE BRIDGE TERMINALS AND 50 FEET OF APPROACH GUARDRAIL.

LEGEND

 ITEM 519 - PATCHING CONCRETE STRUCTURES

ESTIMATED QUANTITY FOR 519 PATCHING

LOCATION	QUANTITY (S.F.)
SUPERSTRUCTURE PARAPETS	10
10% CONTINGENCY	1
TOTAL	11

REMOVE EXISTING TYPE 'A' ANCHOR ASSEMBLY AND REPLACE WITH TYPE 'E' ANCHOR ASSEMBLY. REMOVE AND REPLACE AN ADDITIONAL 25 FEET OF GUARDRAIL.

DESIGN AGENCY STATE OF OHIO DEPARTMENT OF TRANSPORTATION DISTRICT 8 BRIDGE OFFICE	DATE 11-14-11
	REVIEWED SCS
DRAWN CAH	STRUCTURE FILE NUMBER 3103811
	CHECKED RSK
HAMILTON COUNTY STA. 94+42.33 STA. 98+75.88	DESIGNED CAH
GENERAL PLAN BRIDGE No.: HAM-50-2910 OVER NORFOLK SOUTHERN AND INDIANA & OHIO RAILROADS, DUCK CREEK AND RED BANK RD.	REVISIONS 1 / 15
HAM-50-27.73 PID No. 80758	51 74

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HAM-50-2910 ESTIMATED QUANTITIES									
ITEM	ITEM EXT.	TOTAL	UNIT	DESCRIPTION	GENERAL	SUPERSTRUCTURE	PIERS	ABUTMENTS/ RET. WALL	SEE SHEET
202	11203	LUMP		PORTIONS OF STRUCTURE REMOVED, OVER 20' SPAN, AS PER PLAN	LUMP				23 / 74
509	10001	3,399	POUND	EPOXY COATED REINFORCING STEEL, AS PER PLAN		1,669		1,730	23 / 74
509	20001	100	POUND	REINFORCING STEEL, REPLACEMENT OF EXISTING REINFORCING STEEL, AS PER PLAN				100	23 / 74
510	10000	220	EACH	DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT				220	
511	34400	38	CU YD	CLASS S CONCRETE , SUPERSTRUCTURE		26			
511	45700	12	CU YD	CLASS C CONCRETE , ABUTMENT				12	
512	10100	1,768	SQ YD	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)		210	621	937	
512	10600	37	FT	CONCRETE REPAIR BY EPOXY INJECTION				37	
512	74001	967	SQ YD	REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN			196	771	
513	21600	1,330	POUND	STRUCTURAL STEEL FOR REHABILITATION, AS PER PLAN		1,330			23 / 74
514	00050	146,660	SQ FT	SURFACE PREPARATION OF EXISTING STRUCTURAL STEEL		146,660			
514	00056	146,660	SQ FT	FIELD PAINTING OF EXISTING STRUCTURAL STEEL, PRIME COAT		146,660			
514	00060	146,660	SQ FT	FIELD PAINTING OF STRUCTURAL STEEL, INTERMEDIATE COAT		146,660			
514	00066	146,660	SQ FT	FIELD PAINTING OF STRUCTURAL STEEL, FINISH COAT		146,660			
514	00504	120	MAN HOUR	GRINDING FINIS, TEARS, SLIVERS ON EXISTING STRUCTURAL STEEL		120			
514	10000	50	EACH	FINAL INSPECTION REPAIR		50			
514	27700	1,010	SQ FT	FIELD PAINTING, MISC: SURFACE PREPARATION (EEU)		1,010			
514	27700	1,010	SQ FT	FIELD PAINTING, MISC: SPOT PRIME (EPOXY)		1,010			
514	27700	1,010	SQ FT	FIELD PAINTING, MISC: FULL PRIME (EPOXY)		1,010			
514	27700	1,010	SQ FT	FIELD PAINTING, MISC: COMPLETE COAT FINISH (URETHANE)		1,010			
516	14600	20	FT	STRUCTURAL JOINT OR JOINT SEALER, MISC.: POURABLE BRIDGE SEAL EXPANSION JOINT WITH BACKER ROD		20			24 / 74
516	44401	8	EACH	ELASTOMERIC BEARING WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN		8			52 / 74
516	45305	2	EACH	REFURBISH BEARING DEVICE, AS PER PLAN			2		24 / 74
516	47001	LUMP		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN	LUMP				24 / 74
518	12701	12	EACH	SCUPPER, VERTICAL EXTENSION, AS PER PLAN				12	27 / 74
518	63300	LUMP		STRUCTURE DRAINAGE, MISC.: CLEANING BRIDGE DRAINAGE SYSTEM					23 / 74
519	11101	49	SQ. FT.	PATCHING CONCRETE STRUCTURE, AS PER PLAN		11		38	25 / 74
SPECIAL	530 00200	LUMP		STRUCTURE, MISC: POWER WASHING STRUCTURE CONCRETE	LUMP				23 / 74
SPECIAL	530 00300	20	POUND	STRUCTURE, MISC: FILLING EXPANSION JOINT VOIDS WITH HIGH DENSITY POLYURETHANE				20	25 / 74
SPECIAL	690 98400	LUMP		MISC.: ASBESTOS ABATEMENT	LUMP				5 / 74

DESIGN AGENCY
STATE OF OHIO
DEPT. OF TRANSPORTATION
DISTRICT 8 BRIDGE DEPT.

DATE
11-14-11

REVIEWED
SCS

DRAWN
CAH

DESIGNED
CAH

STRUCTURE FILE NUMBER
3103811

REVISED

CHECKED
RSK

BRIDGE ESTIMATED QUANTITIES

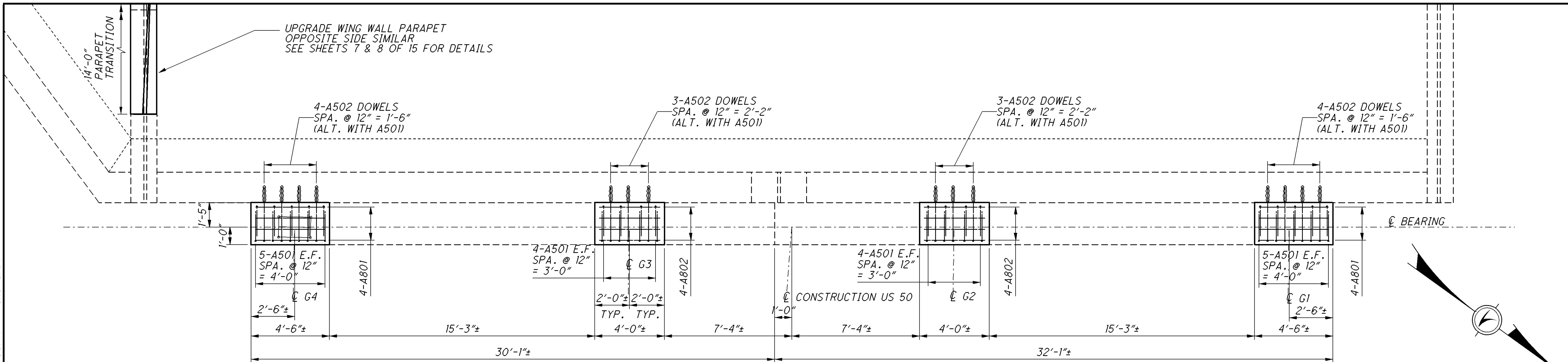
BRIDGE No.: HAM-50-2910 OVER NORFOLK SOUTHERN AND INDIANA & OHIO RAILROADS, DUCK CREEK AND REDBANK RD.

HAM-50-27.73
PID No. 80758

2 / 15

52
74

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REAR ABUTMENT GIRDER SEAT ADJUSTMENT TABLE							
GIRDER No.	A	B	C	D	E	F	G (SEE NOTE #1)
	FIELD MEASURED BEARING HEIGHT (BTM OF FLANGE TO BEAM SEAT)	PROPOSED BEARING THICKNESS	REQUIRED BTM. LOAD PLATE THICKNESS	REQUIRED HP SUPPORT POST HEIGHT (MEAS. @ CL BRG.)	REQUIRED SOLE PLATE THICKNESS	ANTICIPATED BEARING COMPRESSIVE DEFLECTION	HEIGHT OF BEARING SEAT ADJUSTMENT G=A-(B+C+D+E)+F
1	24"±	5.172"	2"	6 ¹ / ₁₆ "	1"	¹ / ₈ "	9.89"±
2	24.84"±	5.172"	2"	6 ¹ / ₁₆ "	1"	¹ / ₈ "	10.73"±
3	24.84"±	5.172"	2"	6 ¹ / ₁₆ "	1"	¹ / ₈ "	10.73"±
4	24.96"±	5.172"	2"	6 ¹ / ₁₆ "	1"	¹ / ₈ "	10.85"±

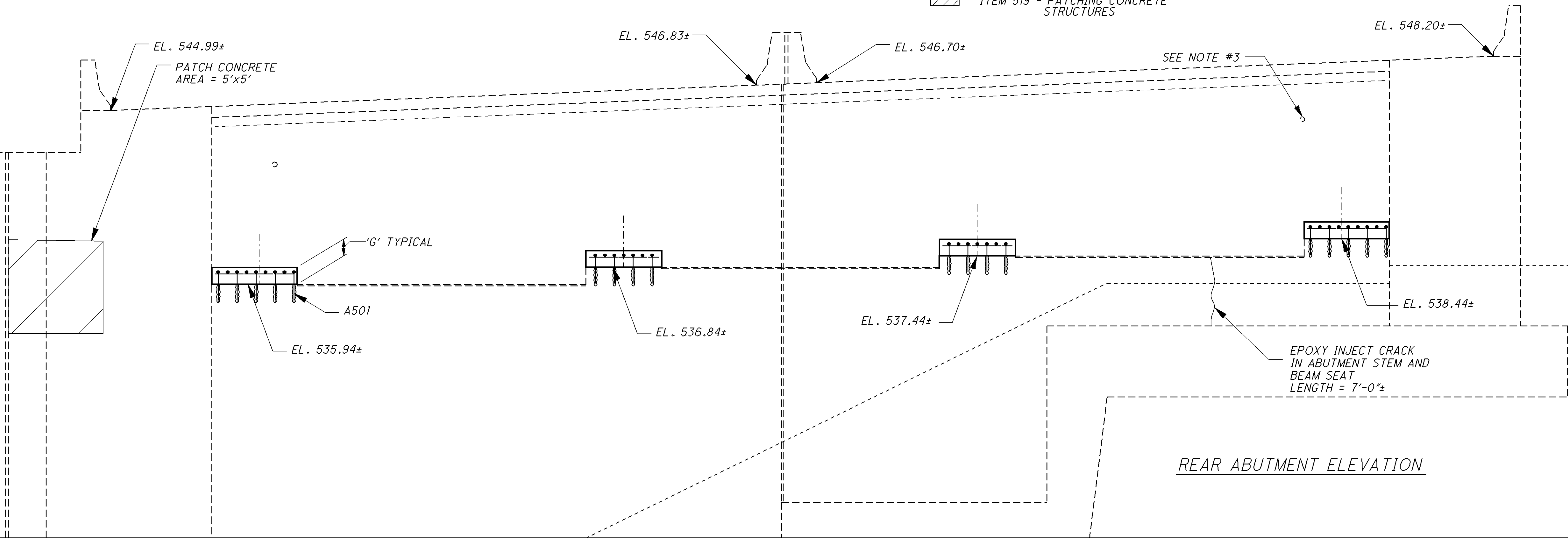
ESTIMATED QUANTITY FOR 519 PATCHING	
LOCATION	QUANTITY (S.F.)
REAR ABUTMENT	25
10% CONTINGENCY	3
TOTAL	28

LEGEND

ITEM 519 - PATCHING CONCRETE STRUCTURES

NOTES:

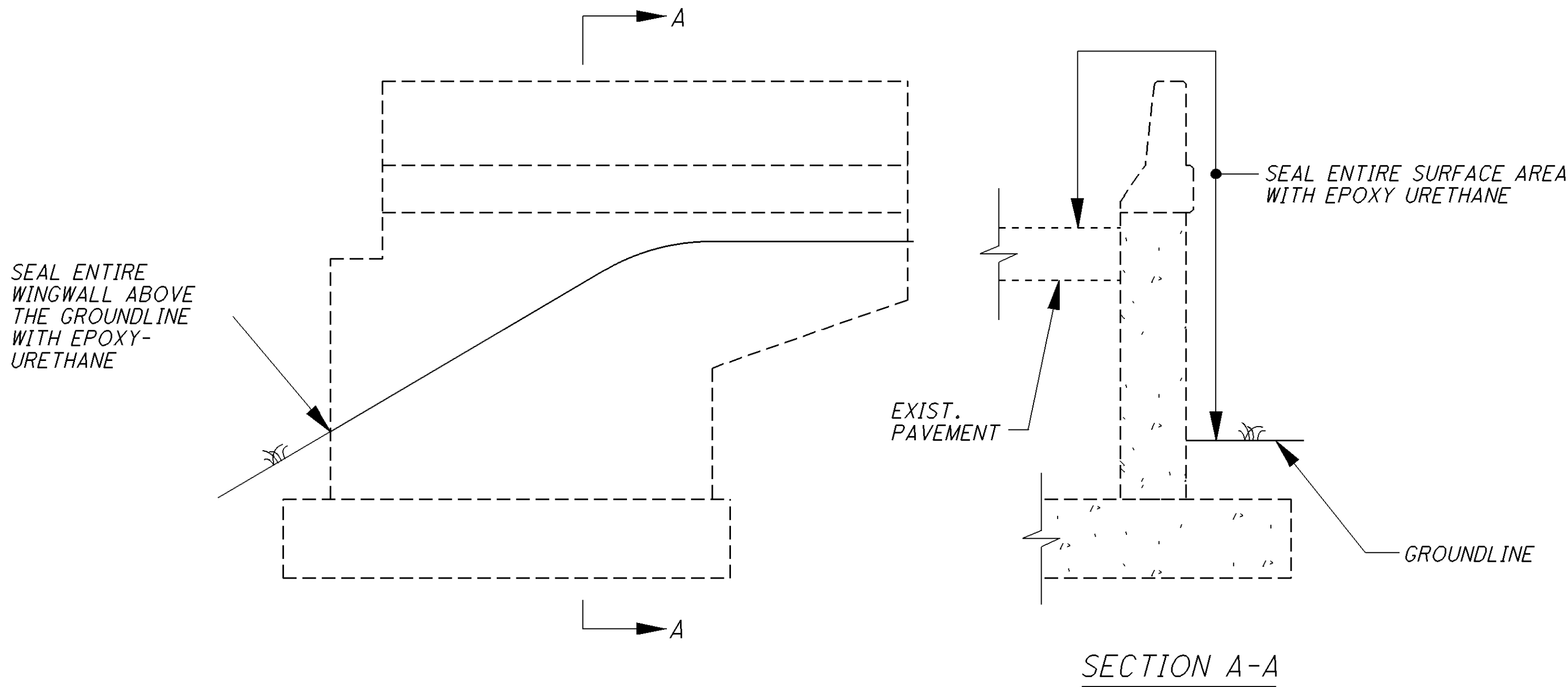
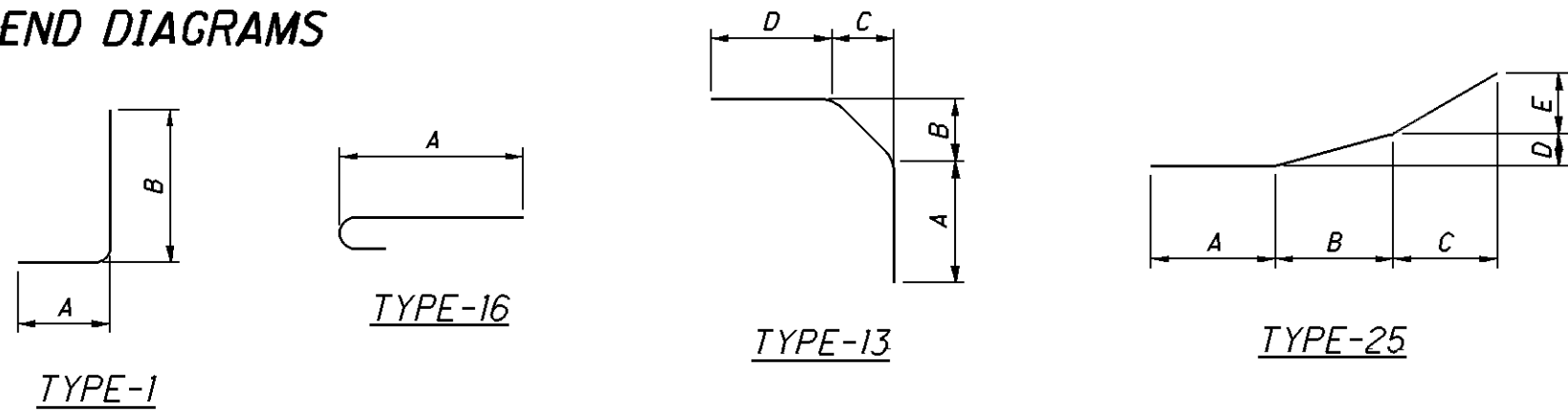
- BEARING SEAT ADJUSTMENT HEIGHTS SHOWN SHALL BE CONSIDERED APPROXIMATE. THE CONTRACTOR SHALL VERIFY EXISTING AND PROPOSED BEARING DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONSTRUCT THE ABUTMENT CONCRETE TO ENSURE A SNUG FIT-UP WITH THE PROPOSED BEARING AND THAT NO BEARING ARE FLOATING. SEE BEARING NOTES ON SHEET 11 OF 15 FOR ADDITIONAL INFORMATION.
- SEAL ALL EXPOSED CONCRETE SURFACES OF ABUTMENTS AND RETAINING WALL WITH EPOXY-URETHANE. DO NOT SEAL BELOW BEARINGS.
- ONCE EXISTING HIGHWAY LIGHTING IS REMOVED FROM UNDERSIDE OF DECK, PLUG ENDS OF EXISTING ASBESTOS CONDUITS RUNNING THROUGH THE ABUTMENT BACKWALLS WITH NONSHRINK, NONMETALLIC GROUT TO PREVENT FUTURE CONTAMINATION. INCLUDED WITH 519 CONCRETE PATCHING FOR PAYMENT.



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MARK	NUMBER			LENGTH	WEIGHT	TYPE	DIMENSIONS						
	REAR ABUTMENT	FORWARD ABUTMENT	TOTAL				A	B	C	D	E	R	INC
ABUTMENT REINFORCING STEEL													
A501	36	36	72	3'-2"	238	1	1'-8"	1'-8"					
A502	14		14	3'-5"	50	16	2'-10"						
A503		14	14	3'-7"	52	16	3'-0"						
A801	8	8	16	4'-2"	178	STR							
A802	8	8	16	3'-8"	157	STR							
R501	30	30	60	2'-11"	183	1	0'-8"	2'-5"					
R502	4	4	8	13'-11"	116	25	10'-0"	2'-5"	1'-5"	0'-1 1/4"	0'-5"		
R503	12	12	24	13'-8"	342	STR							
R601	24	24	48	2'-9"	198	13	1'-3"	0'-8 1/2"	0'-6"	0'-8"			
R602	36	36	72	2'-0"	216	STR							
TOTAL					1,730								

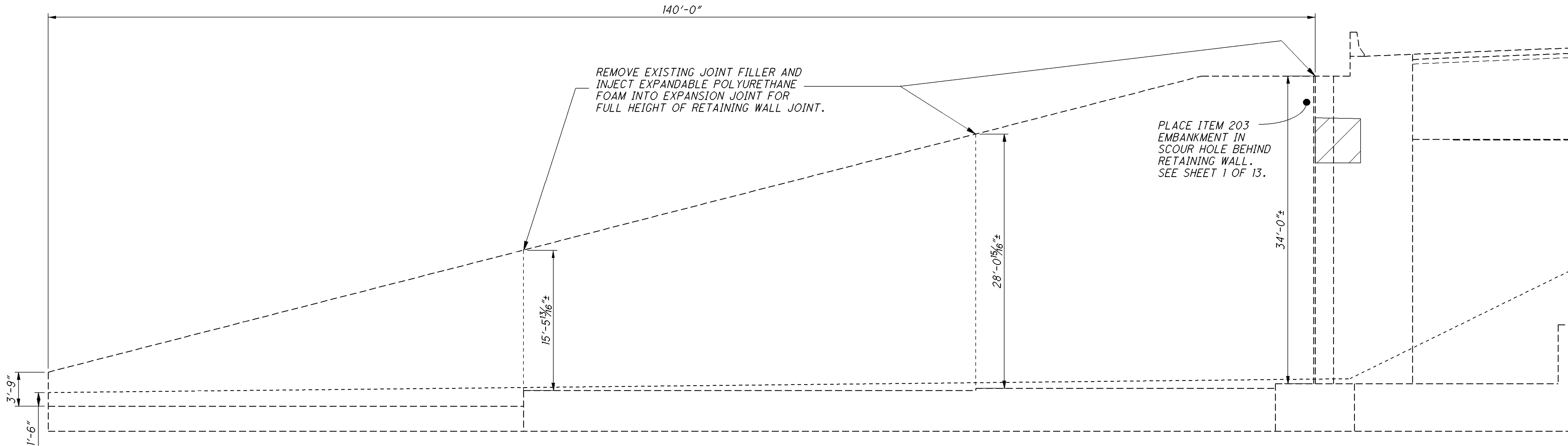
REBAR BEND DIAGRAMS



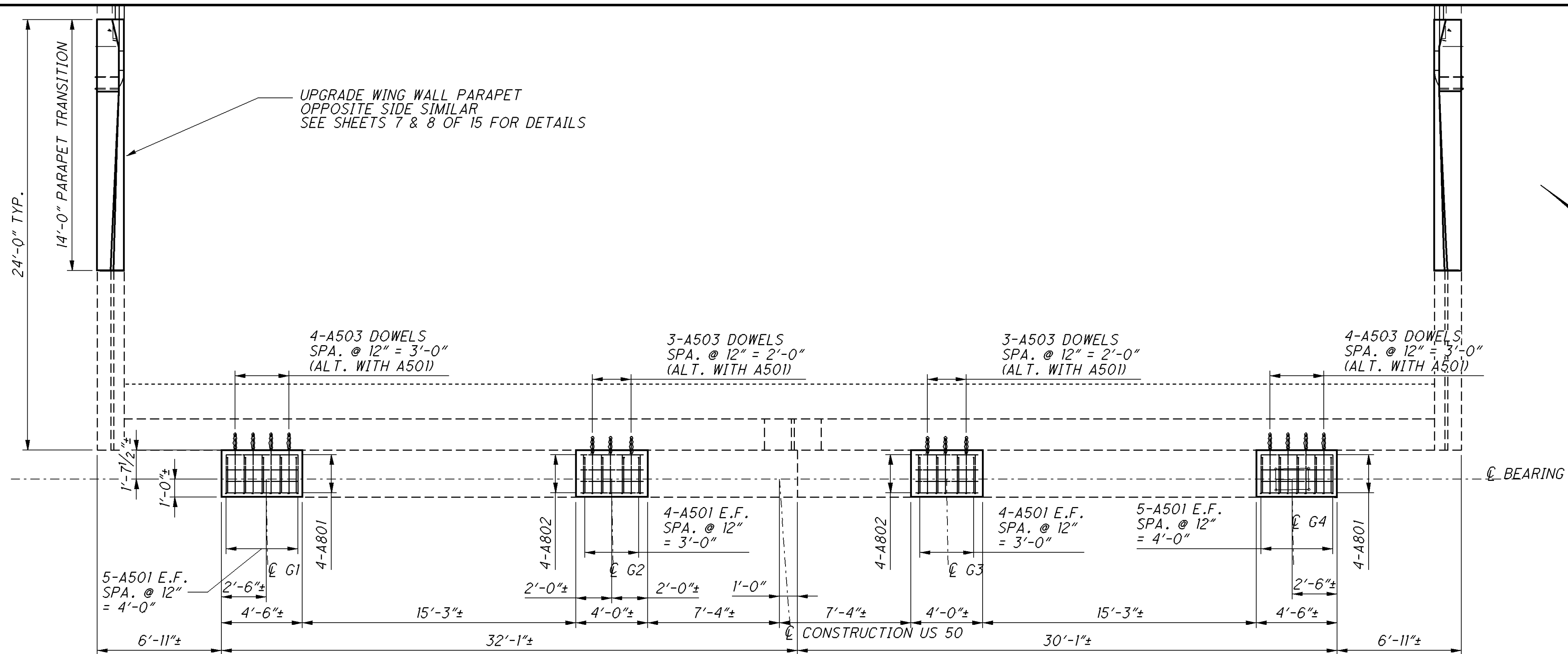
TYPICAL ABUTMENT WINGWALL SEALING LIMITS

NOTES:

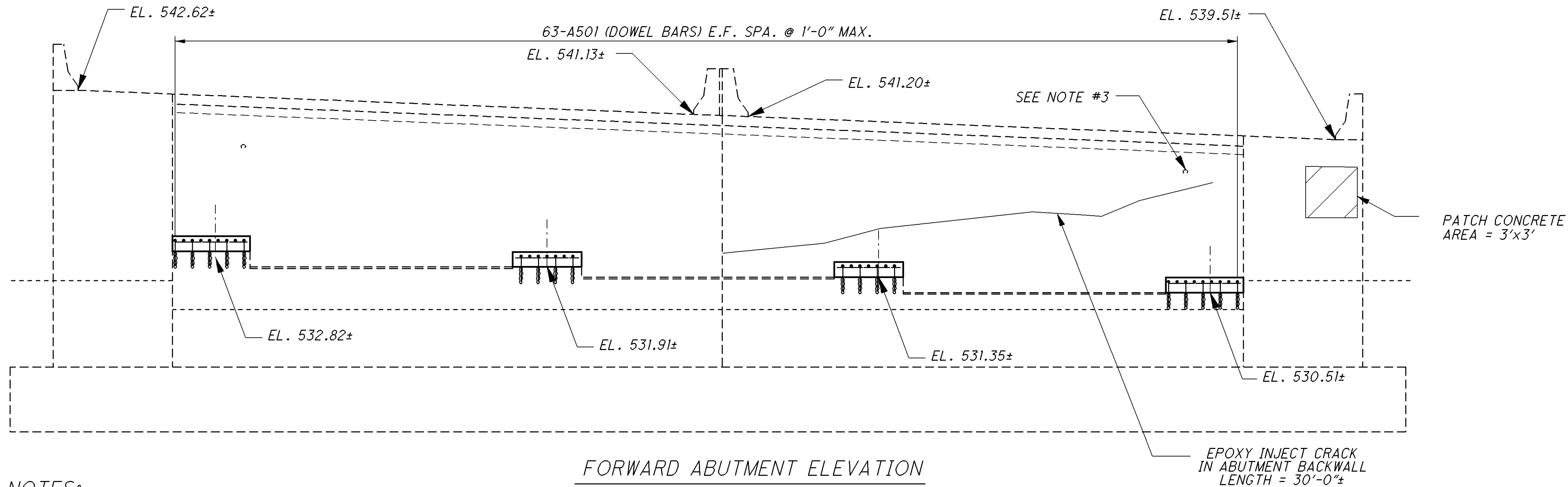
1. SEAL ALL EXPOSED CONCRETE SURFACES OF RETAINING WALL WITH EPOXY-URETHANE.



REAR ABUTMENT & RETAINING WALL ELEVATION

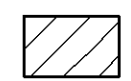


FORWARD ABUTMENT PLAN



FORWARD ABUTMENT ELEVATION

LEGEND

 ITEM 519 - PATCHING CONCRETE STRUCTURES

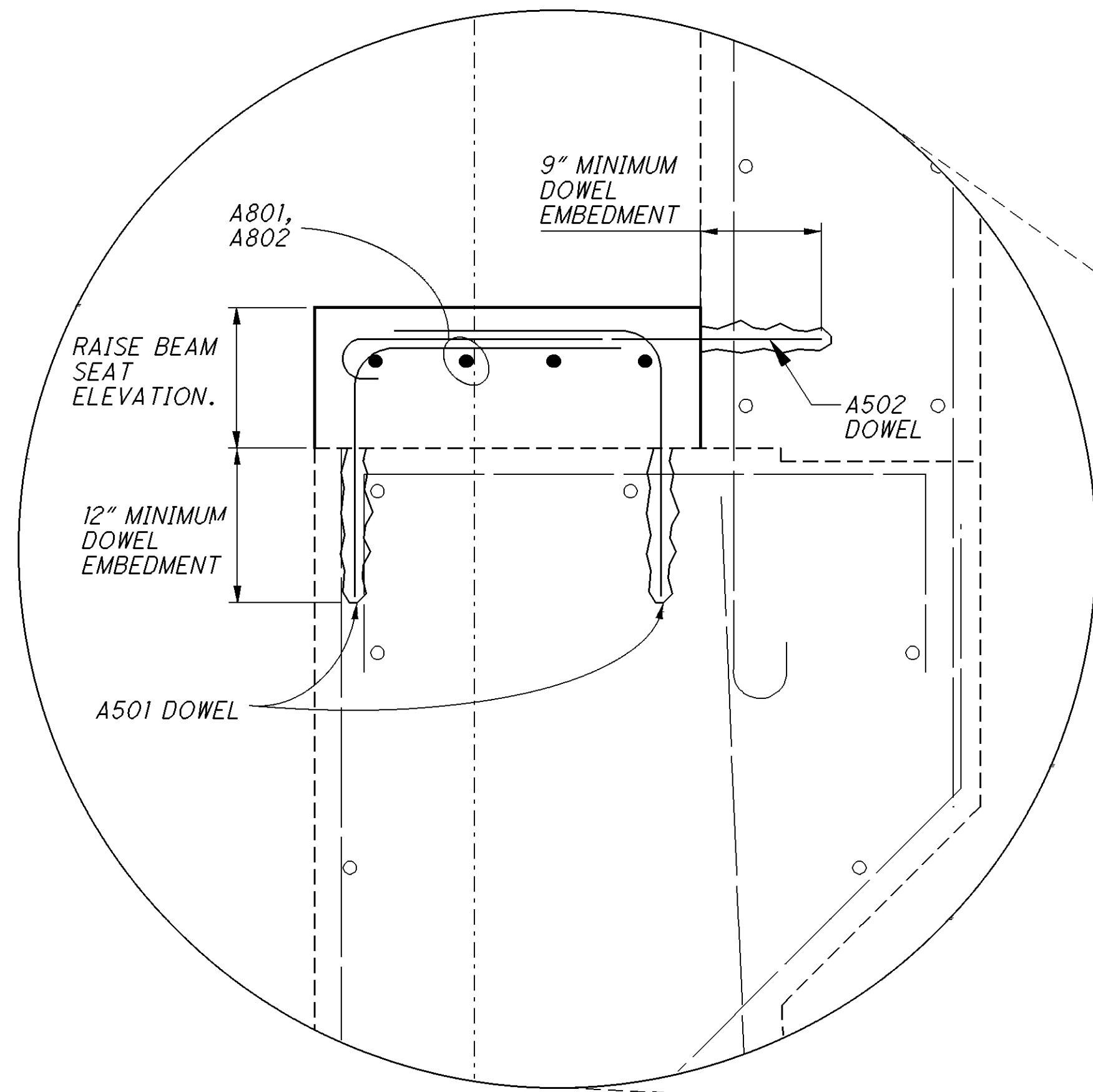
ESTIMATED QUANTITY FOR 519 PATCHING	
LOCATION	QUANTITY (S.F.)
FORWARD ABUTMENT	9
10% CONTINGENCY	1
TOTAL	10

NOTES:

- BEARING SEAT ADJUSTMENT HEIGHTS SHOWN SHALL BE CONSIDERED APPROXIMATE. THE CONTRACTOR SHALL VERIFY EXISTING AND PROPOSED BEARING DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONSTRUCT THE ABUTMENT CONCRETE TO ENSURE A SNUG FIT-UP WITH THE PROPOSED BEARING AND THAT NO BEARINGS ARE FLOATING. SEE BEARING NOTES ON SHEET 11 OF 15 FOR ADDITIONAL INFORMATION.
- SEAL ALL EXPOSED CONCRETE SURFACES OF THE ABUTMENT AND RETAINING WALL WITH EPOXY-URETHANE.
- ONCE EXISTING HIGHWAY LIGHTING IS REMOVED FROM UNDERSIDE OF DECK, PLUG ENDS OF EXISTING ASBESTOS CONDUITS RUNNING THROUGH THE ABUTMENT BACKWALLS WITH NONSHRINK, NONMETALLIC GROUT TO PREVENT FUTURE CONTAMINATION. INCLUDED WITH 519 CONCRETE PATCHING FOR PAYMENT.

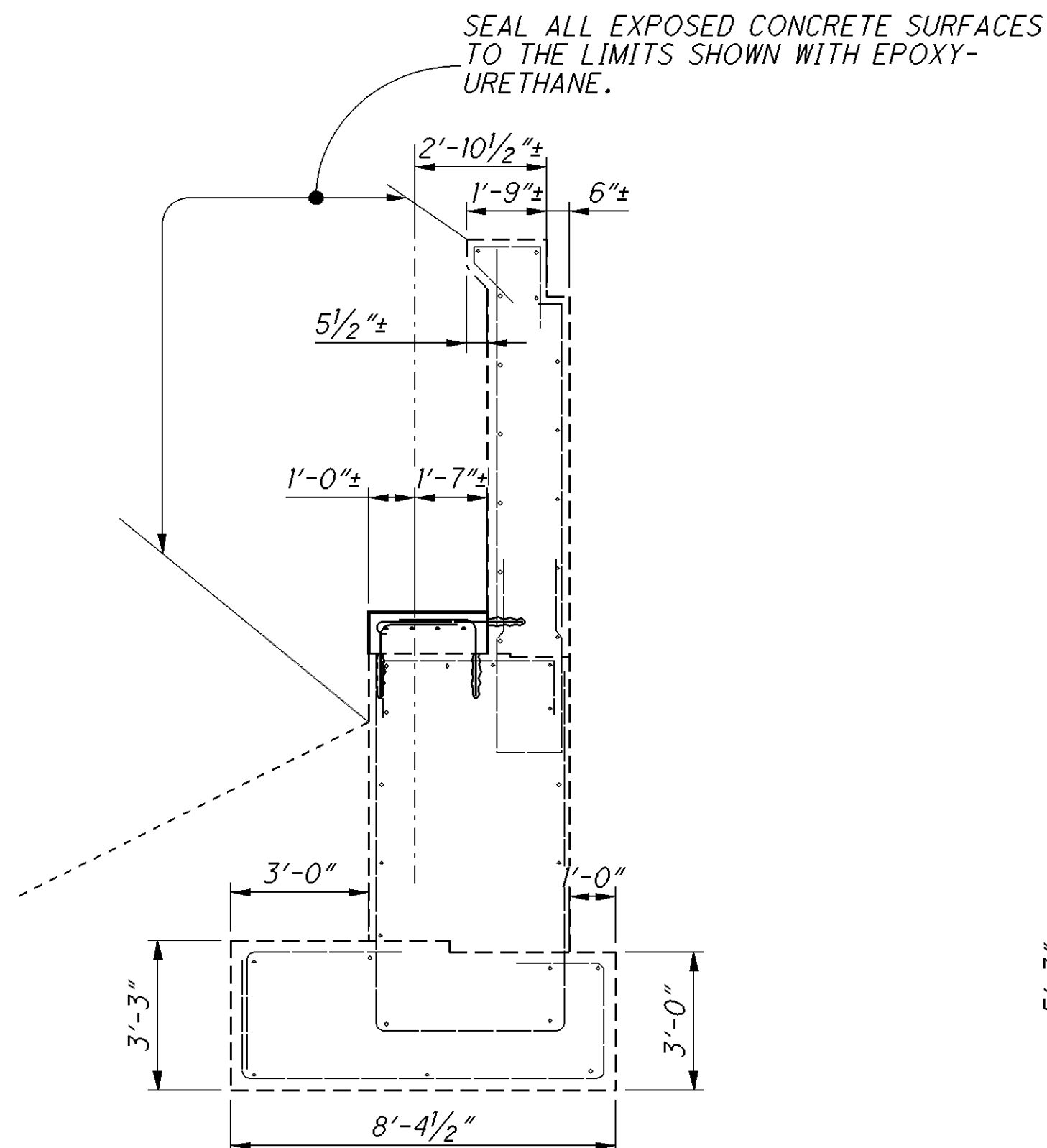
FORWARD ABUTMENT GIRDER SEAT ADJUSTMENT TABLE							
GIRDER No.	A	B	C	D	E	F	G (SEE NOTE #1)
	FIELD MEASURED BEARING HEIGHT (BTM OF FLANGE TO BEAM SEAT)	PROPOSED BEARING THICKNESS	REQUIRED BTM. LOAD PLATE THICKNESS	REQUIRED HP SUPPORT POST HEIGHT (MEAS. @ C BRG.)	REQUIRED SOLE PLATE THICKNESS	ANTICIPATED BEARING COMPRESSIVE DEFLECTION	HEIGHT OF BEARING SEAT ADJUSTMENT $G=A-(B+C+D+E)+F$
1	25.2"±	5.172"	2"	6 ¹ / ₁₆ "	1"	1 ¹ / ₈ "	11.09"±
2	24.72"±	5.172"	2"	6 ¹ / ₁₆ "	1"	1 ¹ / ₈ "	10.61"±
3	25.08"±	5.172"	2"	6 ¹ / ₁₆ "	1"	1 ¹ / ₈ "	10.97"±
4	24.96"±	5.172"	2"	6 ¹ / ₁₆ "	1"	1 ¹ / ₈ "	10.85"±

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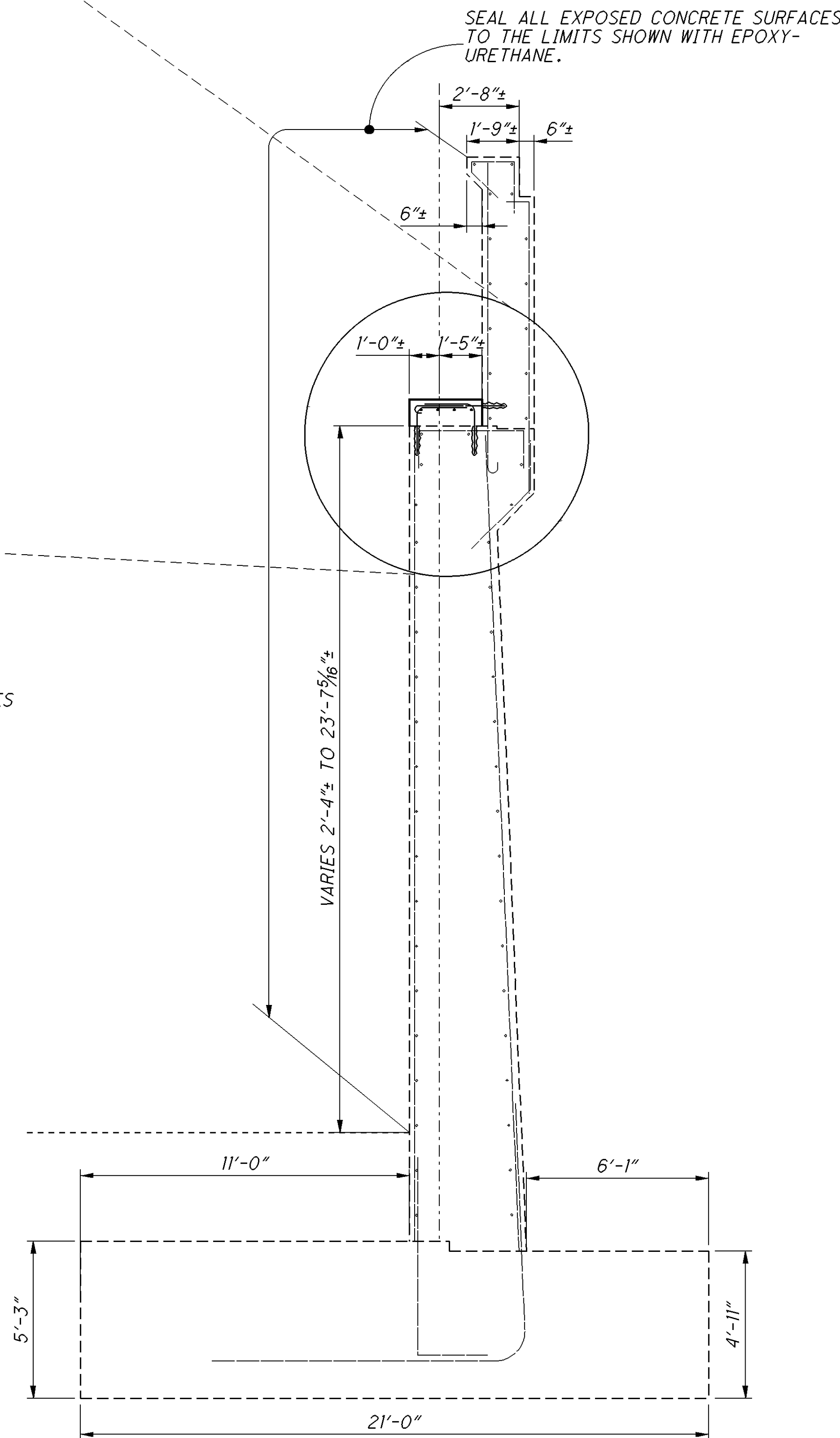


BEAM SEAT DETAIL

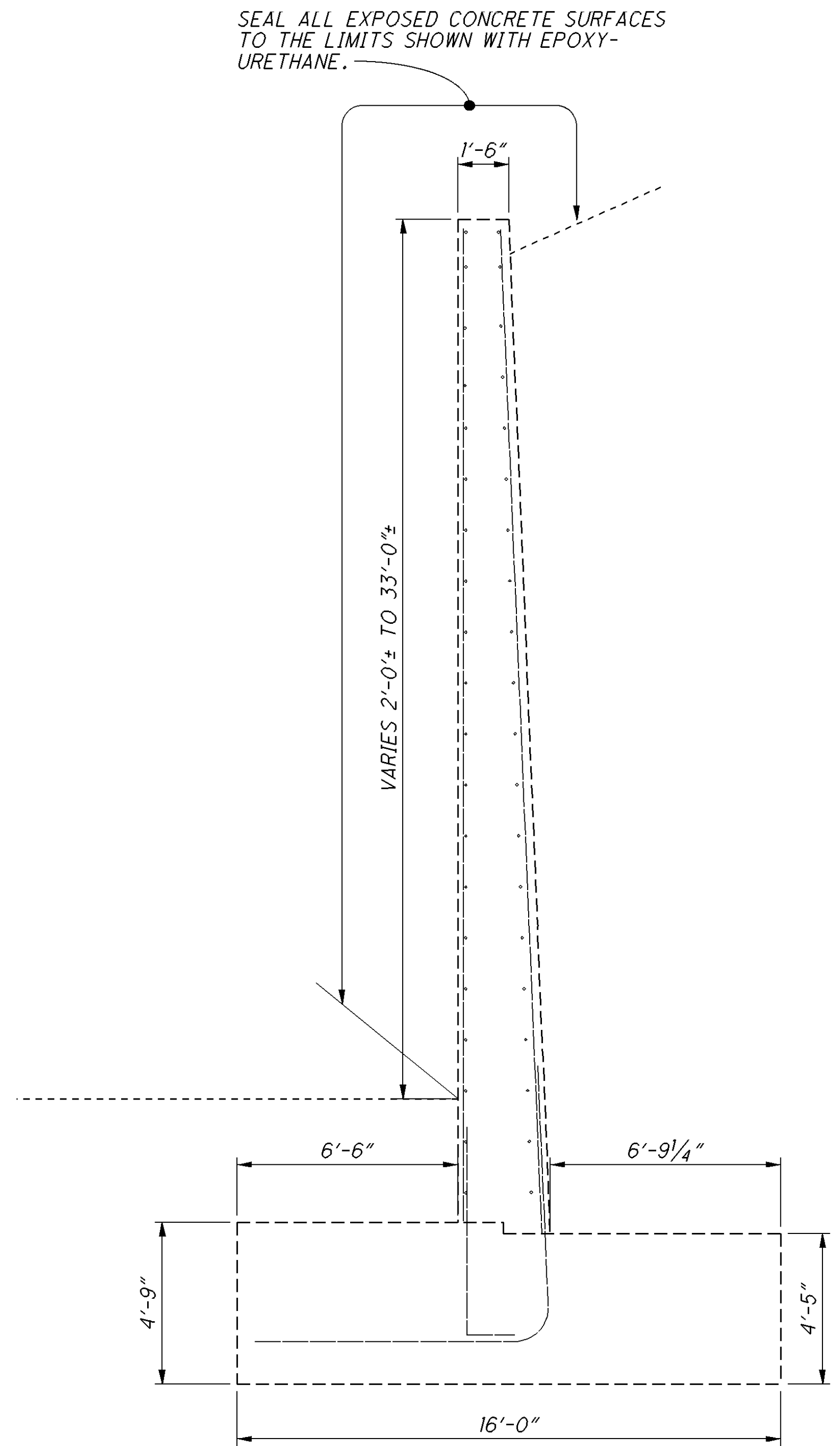
REAR ABUTMETN SHOWN,
FORWARD ABUTMENT SIMILAR



FORWARD ABUTMENT SECTION



REAR ABUTMENT SECTION



RETAINING WALL SECTION

NOTES:

1. SEE SHEET 3 AND 5 OF 15 FOR ABUTMENT BEAM SEAT WORK.
2. POWERWASH EXISTING ABUTMENT SEATS.
3. ROUGHEN EXISTING BEAM SEATS PRIOR TO CONCRETE PLACEMENT
4. DOWEL HOLES SHALL MAINTAIN A 4" MINIMUM CLEARANCE FROM THE FRONT FACE OF ABUTMENTS.
5. REMOVE EXISTING GRAFITTI AND RUST STAINS FROM CONCRETE PRIOR TO APPLICATION OF EPOXY-URETHANE SEALER. INCLUDED UNDER ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN FOR PAYMENT.

DESIGN AGENCY
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT 8 BRIDGE OFFICE

DATE
11-14-11
REVIEWED
SCS
STRUCTURE FILE NUMBER
3103811

DRAWN
CAH
CHECKED
CAH
REVISED
RSK

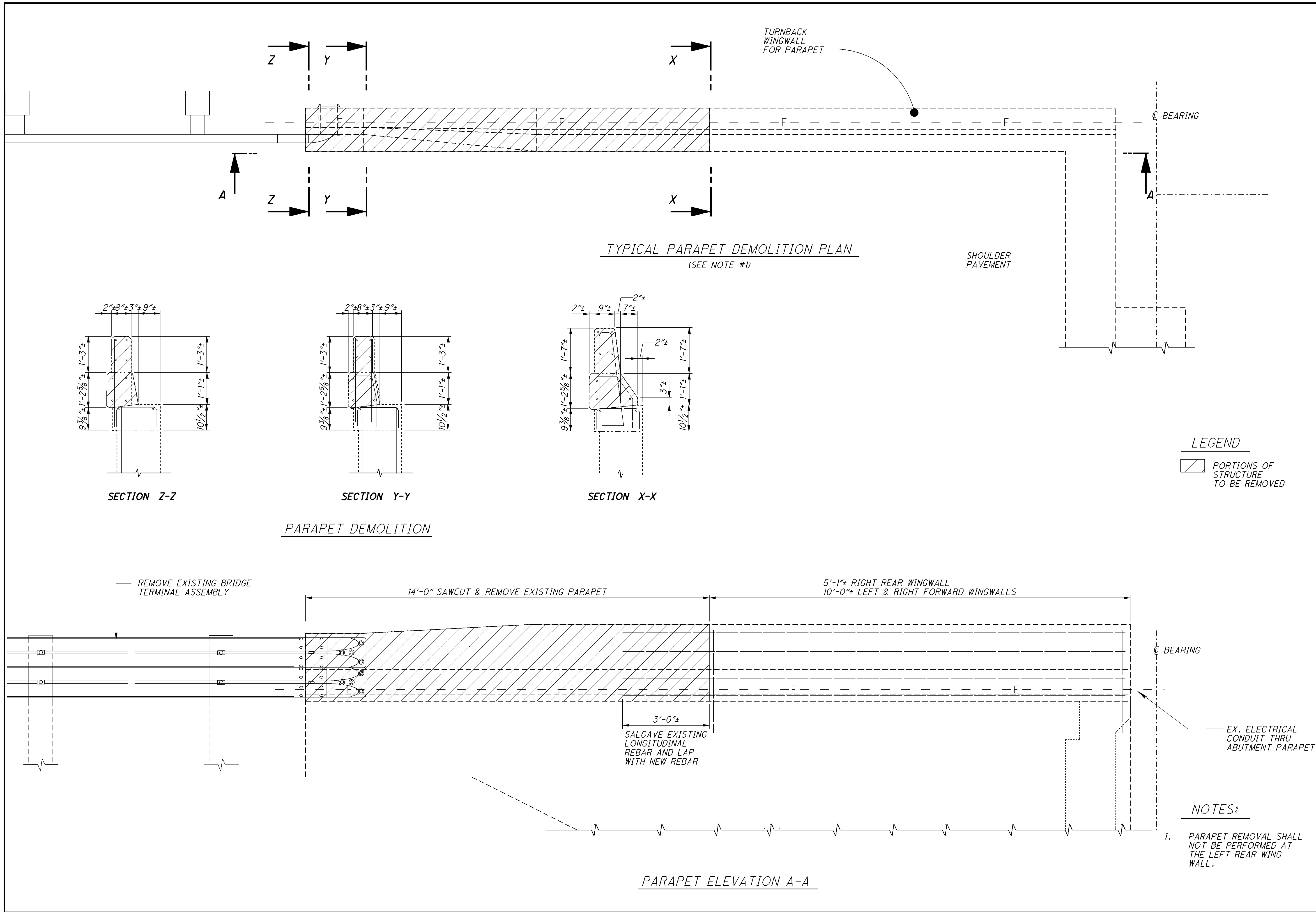
ABUTMENT DETAILS

BRIDGE No.: HAM-50-2910 OVER NORFOLK SOUTHERN AND
INDIANA & OHIO RAILROADS, DUCK CREEK, AND REDBANK RD.

HAM-50-27.73
PID No. 80758

6 / 15

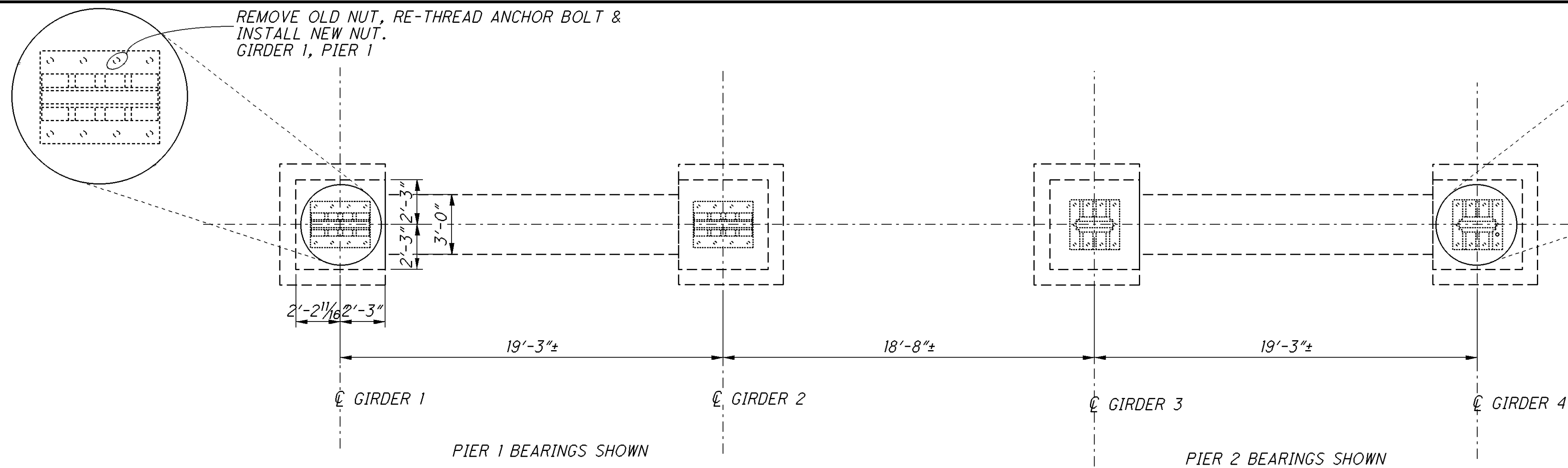
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DESIGN AGENCY STATE OF OHIO DEPT. OF TRANSPORTATION DISTRICT 8 BRIDGE OFFICE	DATE 11-14-11	REVIEWED SCS	DRAWN CWW	CHECKED CAH	STRUCTURE FILE NUMBER 3103811
SUPERSTRUCTURE PARAPET DETAILS					
BRIDGE No.: GRE-675-0895					
U.S. 50 OVER INDIANA & OHIO RAILROAD, DUCK CREEK AND REDBANK RD.					
HAM-50-27.73	PID No. 80758				
56A	7 / 15				
74					



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NOTES:

1. REPAIR PIER BEARING ANCHOR BOLTS AS SHOWN. REMOVALS INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN FOR PAYMENT.
2. SEAL ALL EXPOSED CONCRETE SURFACES OF PIERS WITH EPOXY-URETHANE.
3. ANCHOR BOLT RE-THREADING, NUT REPLACEMENT AS WELL AS DRILLING AND SETTING OF NEW ANCHOR BOLTS SHALL BE INCLUDED WITH ITEM 516 - REFURBISHING BEARING DEVICE, AS PER PLAN FOR PAYMENT.
4. REMOVE EXISTING GRAFFITI AND RUST STAINS FROM CONCRETE PRIOR TO APPLICATION OF EPOXY-URETHANE SEALER. INCLUDED UNDER ITEM 512 - REMOVAL OF EXISTING COATINGS FROM CONCRETE SURFACES, AS PER PLAN FOR PAYMENT.

TYPICAL PIER CAP PLAN

EX. 1/2" DIAM. x 3'-2 1/2"±
SWEDGE ANCHOR BOLT w/
HEX NUT AND 3" DIAMETER
WASHER. (30"± EMBEDMENT)

BEAM SEAT

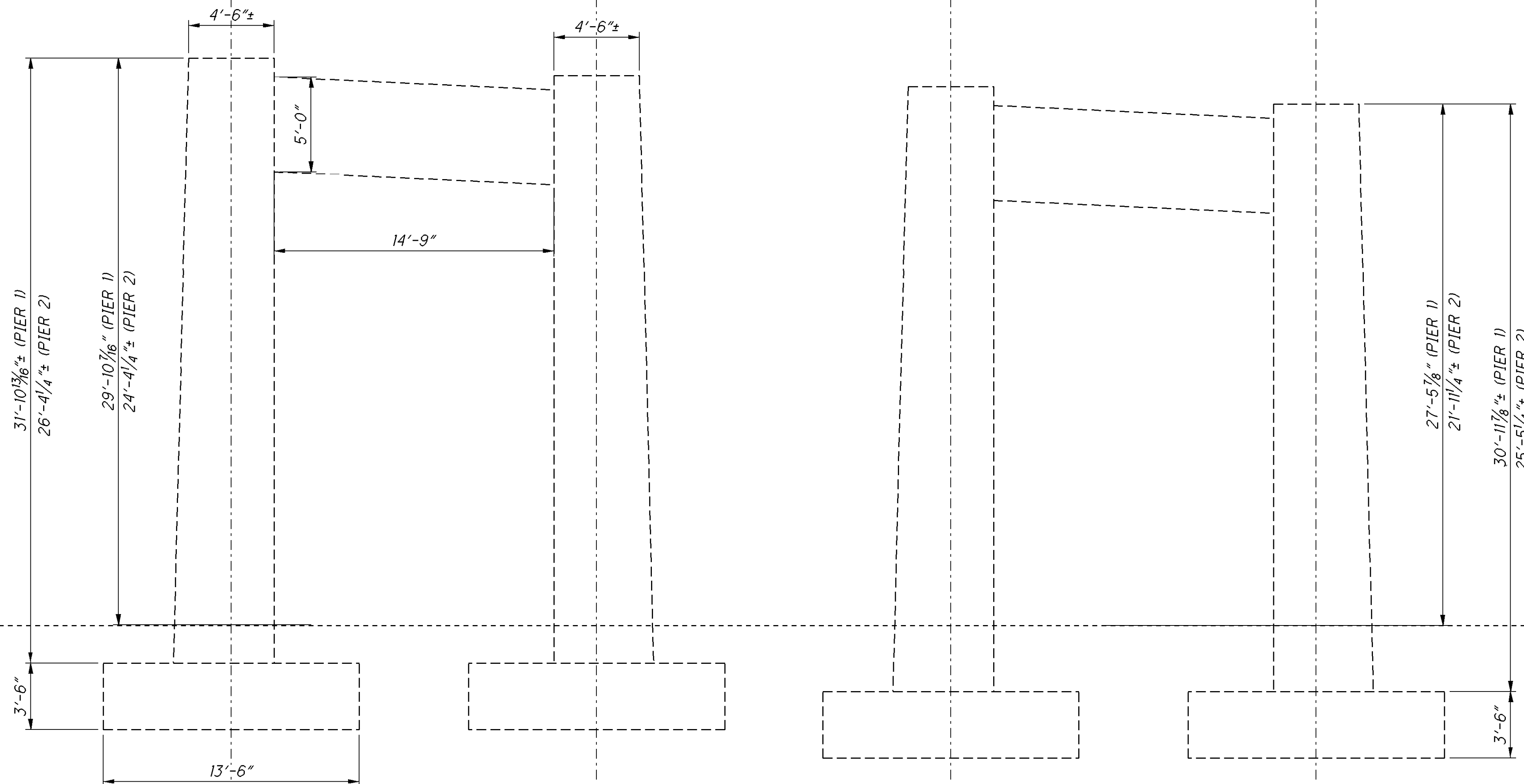
PIER 1 BEARING DETAIL

DRILL NEW 1 5/8" DIAM.
BOLT HOLE THROUGH
BEARING PLATE AND
INTO PIER CONCRETE.
GROUT NEW 1 1/2" DIAM.
ASTM F1554, GRADE 36
GALVANIZED ANCHOR
BOLT w/ HEX NUT AND
3" WASHER. USE
NONSHRINK, NON-
METALLIC GROUT.

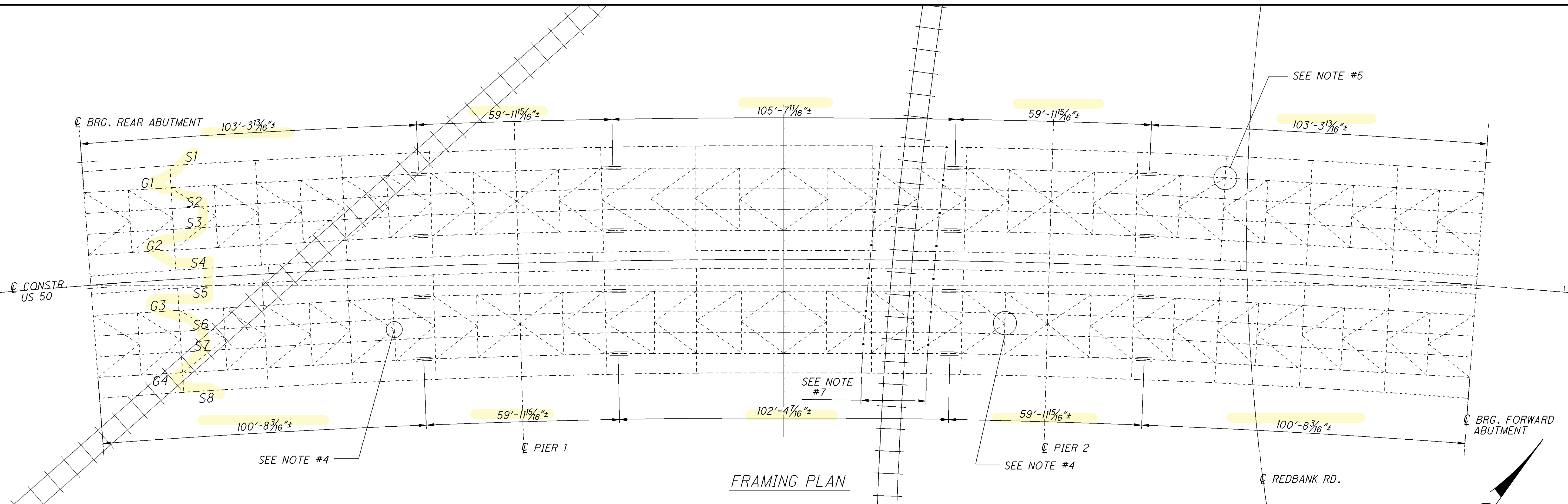
EX. 1/2" DIAM. x 3'-0"±
SWEDGE ANCHOR BOLT w/
HEX NUT AND 3" DIAMETER
WASHER. (30"± EMBEDMENT)

BEAM SEAT

PIER 2 BEARING DETAIL

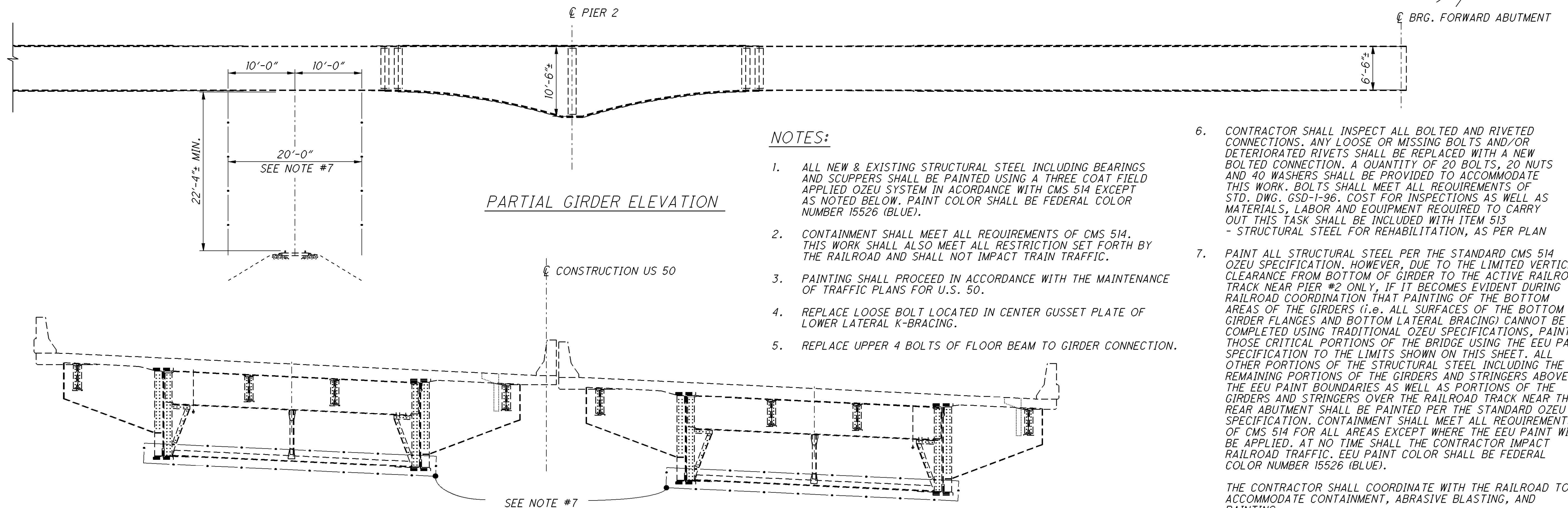


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LEGEND:

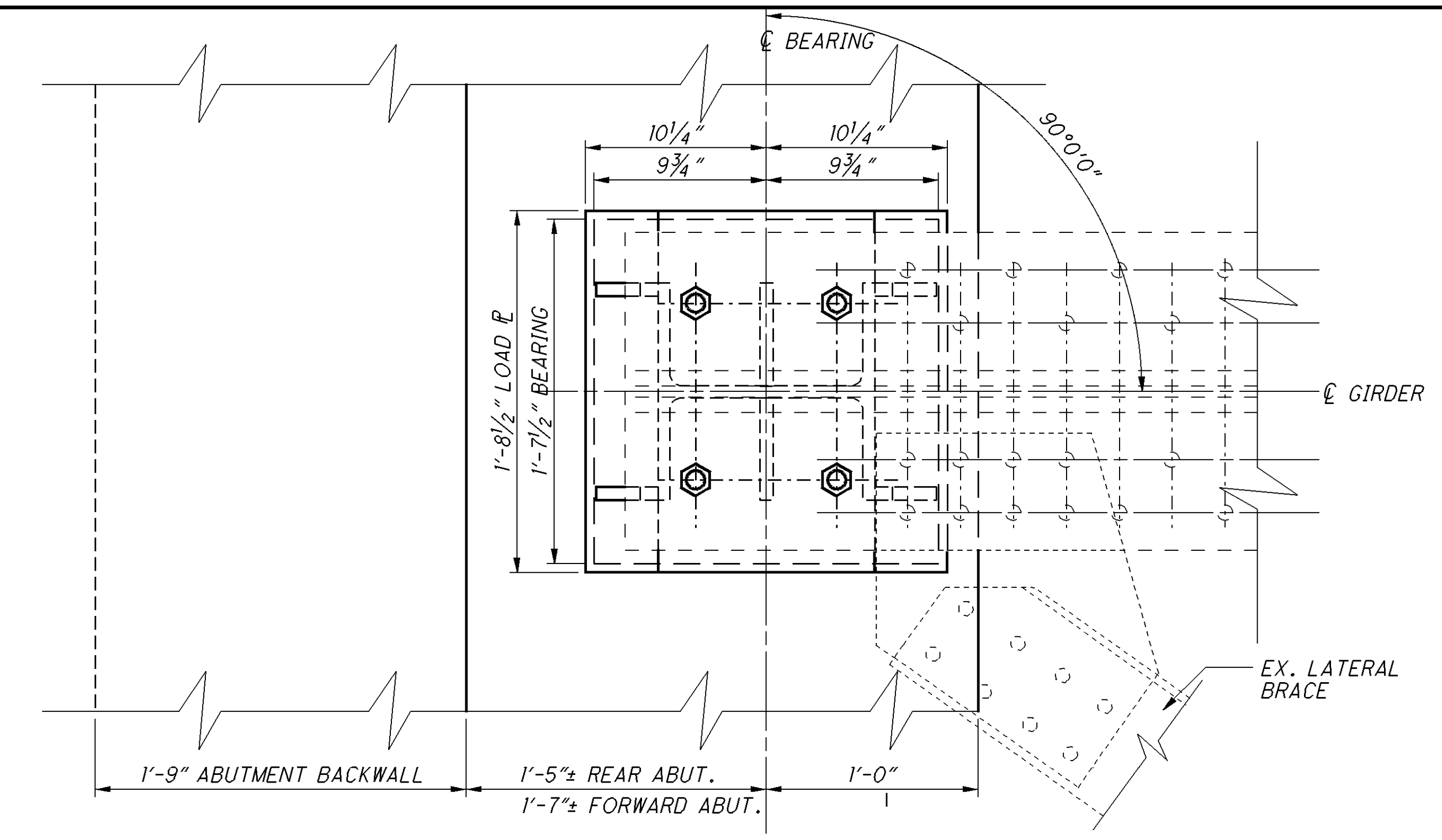
— · — LIMITS OF PAINTING STRUCTURAL STEEL PER EEU SPECIFICATION



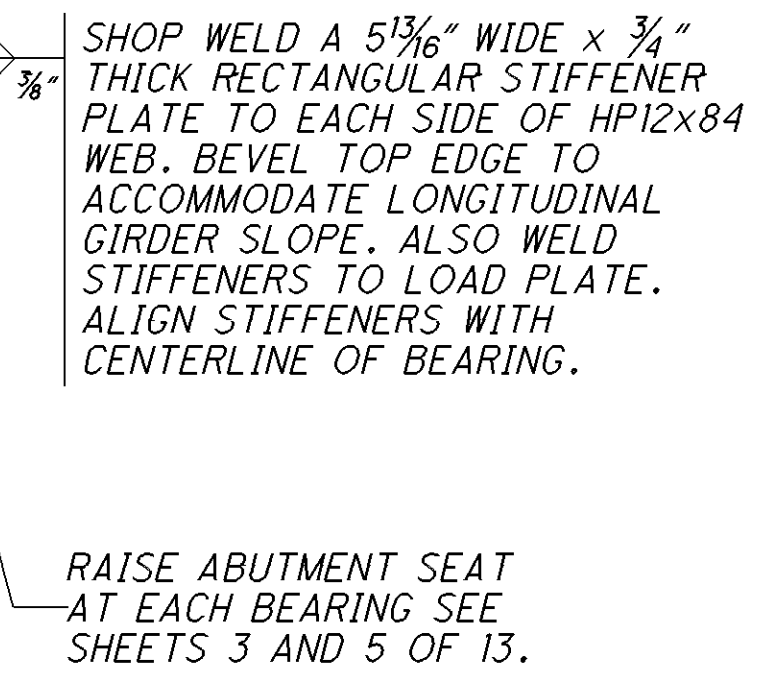
NOTES:

- ALL NEW & EXISTING STRUCTURAL STEEL INCLUDING BEARINGS AND SCUPPERS SHALL BE PAINTED USING A THREE COAT FIELD APPLIED OZEU SYSTEM IN ACORDANCE WITH CMS 514 EXCEPT AS NOTED BELOW. PAINT COLOR SHALL BE FEDERAL COLOR NUMBER 15526 (BLUE).
- CONTAINMENT SHALL MEET ALL REQUIREMENTS OF CMS 514. THIS WORK SHALL ALSO MEET ALL RESTRICTION SET FORTH BY THE RAILROAD AND SHALL NOT IMPACT TRAIN TRAFFIC.
- PAINTING SHALL PROCEED IN ACCORDANCE WITH THE MAINTENANCE OF TRAFFIC PLANS FOR U.S. 50.
- REPLACE LOOSE BOLT LOCATED IN CENTER GUSSET PLATE OF LOWER LATERAL K-BRACING.
- REPLACE UPPER 4 BOLTS OF FLOOR BEAM TO GIRDER CONNECTION.
- CONTRACTOR SHALL INSPECT ALL BOLTED AND RIVETED CONNECTIONS. ANY LOOSE OR MISSING BOLTS AND/OR DETERIORATED RIVETS SHALL BE REPLACED WITH A NEW BOLTED CONNECTION. A QUANTITY OF 20 BOLTS, 20 NUTS AND 40 WASHERS SHALL BE PROVIDED TO ACCOMMODATE THIS WORK. BOLTS SHALL MEET ALL REQUIREMENTS OF STD. DWG. GSD-1-96. COST FOR INSPECTIONS AS WELL AS MATERIALS, LABOR AND EQUIPMENT REQUIRED TO CARRY OUT THIS TASK SHALL BE INCLUDED WITH ITEM 513 - STRUCTURAL STEEL FOR REHABILITATION, AS PER PLAN
- PAINT ALL STRUCTURAL STEEL PER THE STANDARD CMS 514 OZEU SPECIFICATION. HOWEVER, DUE TO THE LIMITED VERTICAL CLEARANCE FROM BOTTOM OF GIRDER TO THE ACTIVE RAILROAD TRACK NEAR PIER #2 ONLY, IF IT BECOMES EVIDENT DURING RAILROAD COORDINATION THAT PAINTING OF THE BOTTOM AREAS OF THE GIRDERS (i.e. ALL SURFACES OF THE BOTTOM GIRDER FLANGES AND BOTTOM LATERAL BRACING) CANNOT BE COMPLETED USING TRADITIONAL OZEU SPECIFICATIONS, PAINT THOSE CRITICAL PORTIONS OF THE BRIDGE USING THE EEU PAINT SPECIFICATION TO THE LIMITS SHOWN ON THIS SHEET. ALL OTHER PORTIONS OF THE STRUCTURAL STEEL INCLUDING THE REMAINING PORTIONS OF THE GIRDERS AND STRINGERS ABOVE THE EEU PAINT BOUNDARIES AS WELL AS PORTIONS OF THE GIRDERS AND STRINGERS OVER THE RAILROAD TRACK NEAR THE REAR ABUTMENT SHALL BE PAINTED PER THE STANDARD OZEU SPECIFICATION. CONTAINMENT SHALL MEET ALL REQUIREMENTS OF CMS 514 FOR ALL AREAS EXCEPT WHERE THE EEU PAINT WILL BE APPLIED. AT NO TIME SHALL THE CONTRACTOR IMPACT RAILROAD TRAFFIC. EEU PAINT COLOR SHALL BE FEDERAL COLOR NUMBER 15526 (BLUE).

THE CONTRACTOR SHALL COORDINATE WITH THE RAILROAD TO ACCOMMODATE CONTAINMENT, ABRASIVE BLASTING, AND PAINTING.



REMOVE EXISTING ABUTMENT
EXPANSION BEARINGS AND
RETAINER PLATES. CUT
EXISTING ANCHOR BOLTS
OFF 1/4" BELOW GIRDER
SEAT AND PATCH HOLES
WITH NONSHRINK, NONMETALLIC
GROUT. GROUT INCLUDED WITH
ITEH 519 CONCRETE PATCHING
FOR PAYMENT. BEARING REMOVAL
INCLUDED WITH ITEM 202 -
PORTIONS OF STRUCTURE REMOVED,
OVER 20 FOOT SPAN, AS PER
PLAN FOR PAYMENT.



11. TO AVOID WELD INTERFERENCE WITH THE BOLTS CONNECTING THE SOLE PLATE TO THE GIRDER FLANGE, PROVIDE A 45 DEGREE BEVELED EDGE ALONG THE EXTERIOR FACE OF THE FLANGES AT THE TOP OF THE HP12x84 TO ACCOMMODATE COMPLETE PENETRATION WELDING OF THE HP SECTION TO THE SOLE PLATE. FILLET WELD THE WEB OF HP12x84 TO THE SOLE PLATE AND FILLET WELD THE ENTIRE BOTTOM OF THE HP12x84 TO THE LOAD PLATE. WELDS TO BE COMPLETED IN THE SHOP.

1. STEEL FOR BEARING LOAD PLATES SHALL BE A709 GRADE 50. LOAD PLATE SHALL BE PAINTED SIMILAR TO GIRDERS. PAYMENT INCLUDED IN ITEM 514.
2. THE ELASTOMER FOR THE ELASTOMERIC BEARINGS SHALL HAVE A HARDNESS OF 50 DUROMETER. THE BEARINGS WERE DESIGNED UNDER DIVISION I, SECTION 14.6.6 (METHOD A) OF THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
3. THE STEEL LOAD PLATE SHALL BE BONDED BY VULCANIZATION TO THE ELASTOMER DURING THE MOLDING PROCESS.
4. SEE SHEET 2 OF 15 FOR QUANTITIES AND SHEET 10 OF 15 FOR FRAMING PLAN.
5. THE CONTRACTOR SHALL VERIFY THAT THERE IS A SMOOTH TRANSITION FROM THE APPROACH SLAB AND ABUTMENT BACKWALL ONTO THE DECK AT EACH END OF THE BRIDGE ONCE THE BEARING AND ABUTMENT WORK IS COMPLETED.
6. WELDING OF THE LOAD PLATE TO THE HP SECTION SHALL BE CONTROLLED SO THAT THE PLATE TEMPERATURE AT THE ELASTOMERIC BONDED SURFACE DOES NOT EXCEED 300°F AS DETERMINED BY USE OF PYROMETRIC STICKS OR OTHER TEMPERATURE MONITORING DEVICES.

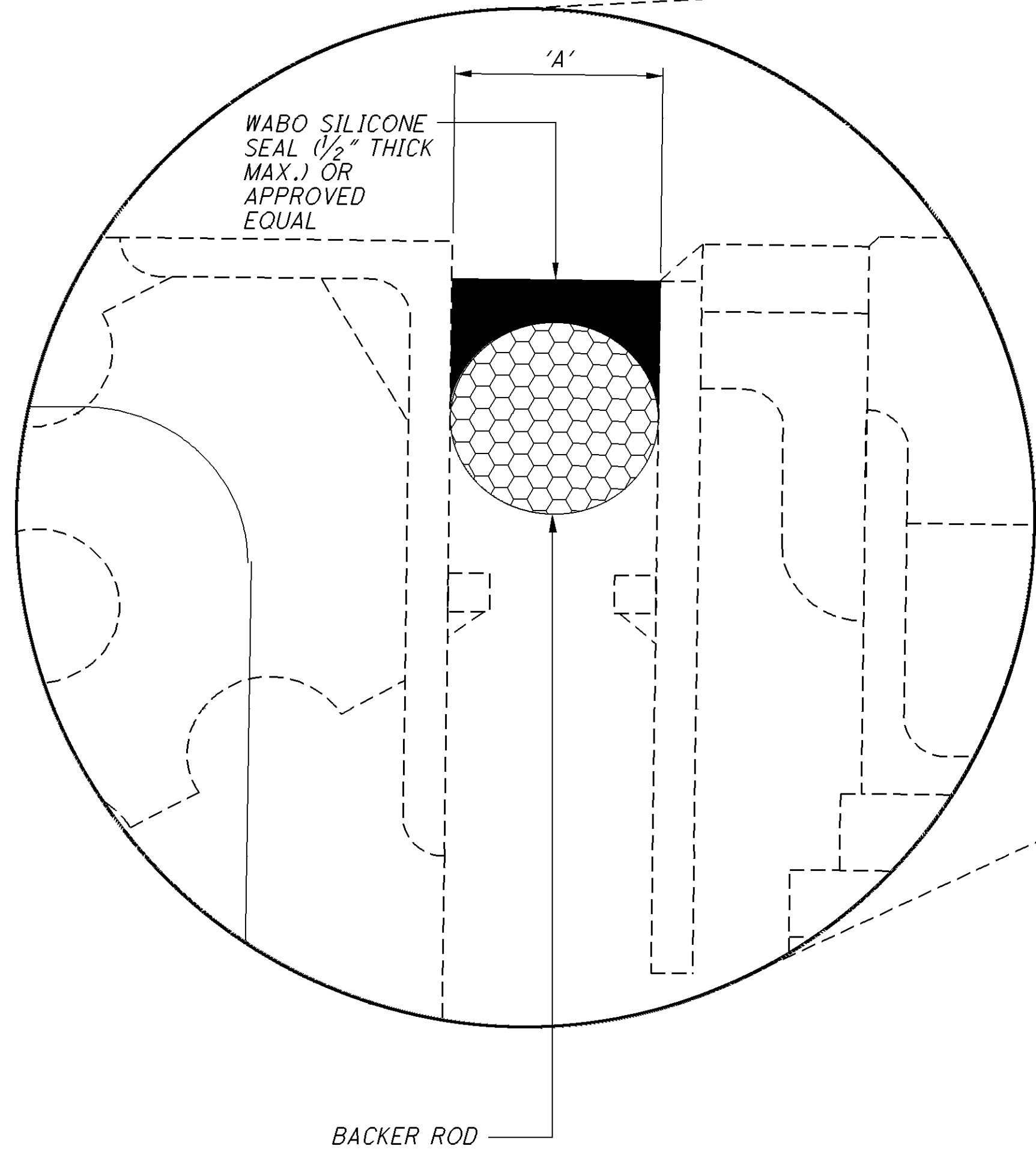
7. LONGITUDINAL ROADWAY SLOPE SHALL BE ACCOMMODATED THROUGH BEVEL OF THE ENTIRE TOP OF THE HP SUPPORT SECTIONS AND WEB STIFFENERS.
8. IN ADDITION TO THE REQUIREMENTS OF 516 AND THE DETAILS SHOWN ON THESE PLANS, THE CONTRACTOR SHALL PROVIDE AND INSTALL ANY NECESSARY SHIMS TO PROVIDE A SNUG FIT BETWEEN THE BEARING DEVICE AND BEARING SEAT. THE BEARING SHIMS PROVIDED SHALL BE THE SAME MATERIAL AND FOOT PRINT DIMENSIONS AS THE PROPOSED STEEL SOLE PLATE.

THE CONTRACTOR SHALL ASSURE THAT ALL BEARINGS ARE SHIMMED ADEQUATELY AND THAT NO BEAMS OR BEARING DEVICES ARE FLOATING. PRIOR TO BEARING PLACEMENT THE CONTRACTOR SHALL GRIND SMOOTH ALL EXISTING WELDS ON THE BOTTOM FLANGE OF THE GIRDER.
9. THE GIRDER SEAT HEIGHTS LISTED IN THE PLANS ARE PROVIDED FOR INFORMATION PURPOSES ONLY AND SHALL BE CONSIDERED TENTATIVE. THE CONTRACTOR IS REQUIRED TO FIELD VERIFY THE EXISTING BOTTOM OF GIRDER AND GIRDER SEAT ELEVATIONS PRIOR TO THE JACKING OPERATIONS. THE CONTRACTOR IS TO SUBMIT THE VERIFIED ELEVATIONS TO THE DISTRICT 8 ENGINEER PRIOR TO THE JACKING OPERATIONS. APPROVAL OF THE ELEVATIONS IS NOT REQUIRED.

THE CONTRACTOR IS TO DETERMINE THE HEIGHT OF THE GIRDER SEAT ADJUSTMENT BY SUBTRACTING THE PROPOSED SOLE PLATE, HP SECTION, LOAD PLATE AND ELASTOMERIC BEARING THICKNESSES FROM THE CONTRACTOR MEASURED DIFFERENCE BETWEEN BOTTOM OF EXISTING GIRDER ELEVATION AND EXISTING GIRDER SEAT ELEVATION AT EACH BEARING LOCATION. THE CONTRACTOR SHALL THEN INCREASE THE GIRDER SEAT ADJUSTMENT HEIGHT BY $\frac{1}{8}$ " TO ACCOUNT FOR COMPRESSIVE DEFLECTION OF THE BEARINGS. THE FINAL GIRDER SEAT ADJUSTMENTS ARE CONTRACTOR CALCULATED VALUES. ANY SHIMS NEEDED AS A RESULT OF THE CONTRACTOR'S ERROR WILL BE PROVIDED AT THE CONTRACTOR'S EXPENSE AND WILL NEED TO BE APPROVED BY THE ENGINEER. IF REQUIRED, ONLY ONE BEARING SHIM WILL BE ALLOWED PER BEARING AND MUST BE INSTALLED ABOVE THE SOLE PLATE.

ALL COSTS FOR MATERIALS, LABOR, EQUIPMENT AND INCIDENTALS (i.e. SURVEY, ETC.) NECESSARY TO FURNISH AND INSTALL THE LAMINATED ELASTOMERIC BEARINGS WITH VULCANIZED LOAD PLATES SHALL BE INCLUDED IN THE UNIT BID PRICE FOR PAYMENT. PAYMENT WILL BE MADE AT THE CONTRACT PRICE FOR ITEM 516 ELASTOMERIC BEARING PADS WITH INTERNAL LAMINATES AND LOAD PLATE (NEOPRENE), AS PER PLAN. THE HP SECTIONS, STIFFENER PLATES AND SOLE PLATES SHALL BE INCLUDED WITH ITEM 513 - STRUCTURAL STEEL FOR REHABILITATION, AS PER PLAN FOR PAYMENT.

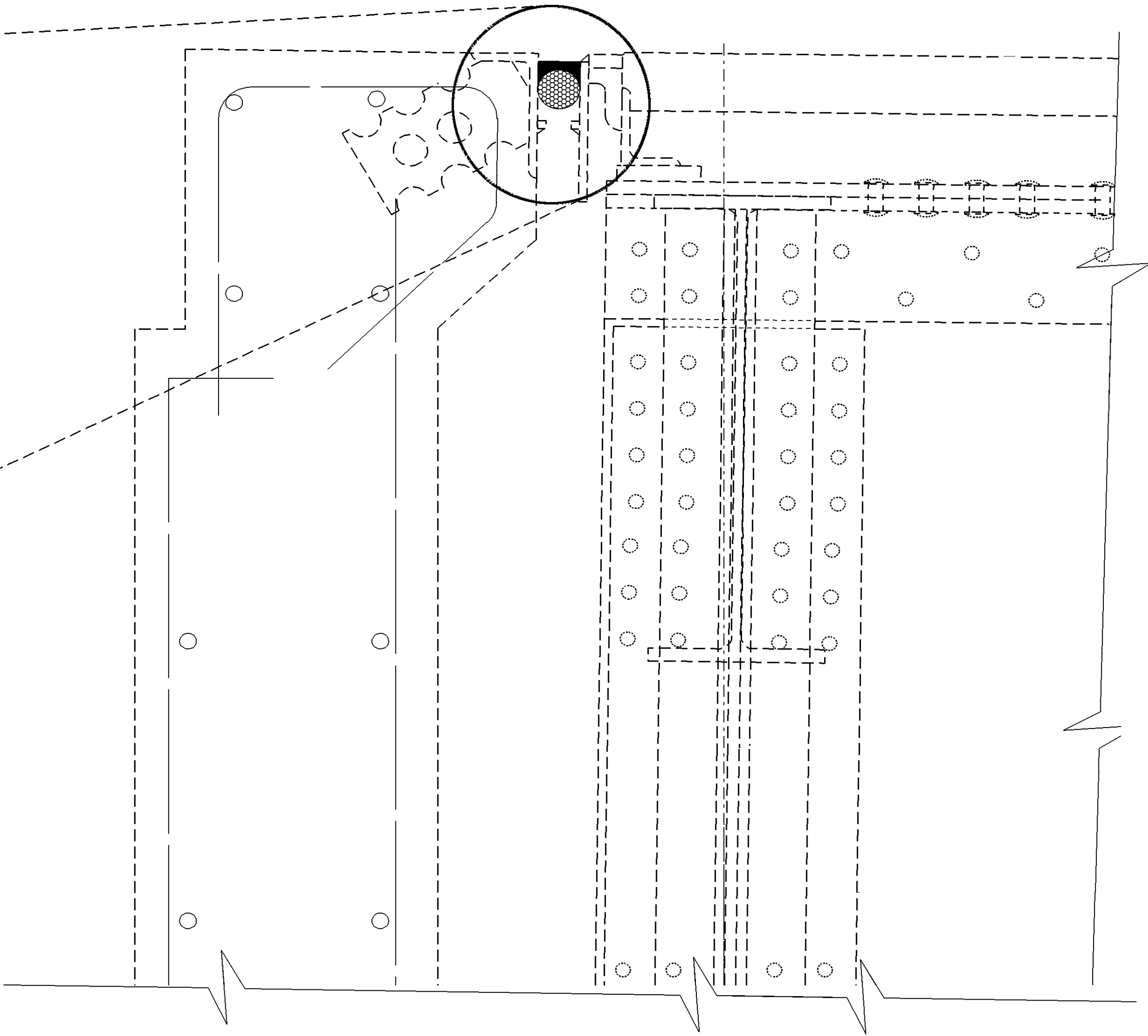
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BACKER ROD

TEMPERATURE TABLE DIMENSION "A"		
	REAR ABUTMENT	FORWARD ABUTMENT
30°	—	2 ¹¹ / ₁₆ "
40°	—	2 ⁵ / ₈ "
50°	—	2 ¹ / ₂ "
60°	—	2 ³ / ₈ "
70°	—	2 ⁵ / ₁₆ "
80°	—	2 ³ / ₁₆ "
90°	—	2 ¹ / ₁₆ "

MINIMUM JOINT OPENING (DIMENSION 'A') AT THE TIME OF EXPANSION JOINT SEAL INSTALLATION SHALL NOT BE LESS THAN 2¹/₁₆". IF THE JOINT OPENING IS LESS, INSTALLATION SHALL BE POSTPONED UNTIL THE TEMPERATURE DROPS A SUFFICIENT AMOUNT TO ALLOW THE 2¹/₁₆" OPENING.



NOTES:

1. REMOVED EXISTING EXPANSION JOINT IN AREAS WHERE EXPANSION JOINT REPAIRS WILL BE PERFORMED. INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN FOR PAYMENT.
2. EXISTING STEEL RETAINERS SHALL BE SANDBLASTED OR POWER GROUND TO WHITE STEEL CONDITION.
3. MAINTAIN 1/2" CLEARANCE BETWEEN TOP OF SEALANT AND DECK SURFACE.
4. SEALANT SHALL BE POURED TO 1/2" MAXIMUM THICKNESS.
5. CLEANUP OF EXISTING RETAINERS AND PLACEMENT OF NEW POURABLE JOINTS SHALL BE INCLUDED WITH ITEM 516 - STRUCTURAL JOINT OR JOINT SEALER, MISC.: POURABLE BRIDGE SEAL EXPANSION JOINT WITH BACKER ROD FOR PAYMENT.

HAM-50-27.73
PID No. 80758

EXPANSION JOINT DETAILS
BRIDGE No.: HAM-50-2910 OVER NORFOLK SOUTHERN AND INDIANA & OHIO RAILROADS, DUCK CREEK AND REDBANK RD.

DESIGN AGENCY
STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DISTRICT & BRIDGE OFFICE

DESIGNED
CAH
CHECKED
RSK

DRAWN
CAH
REVISED

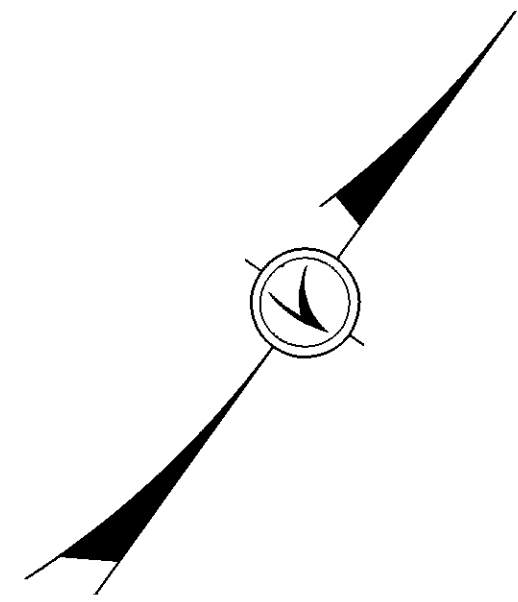
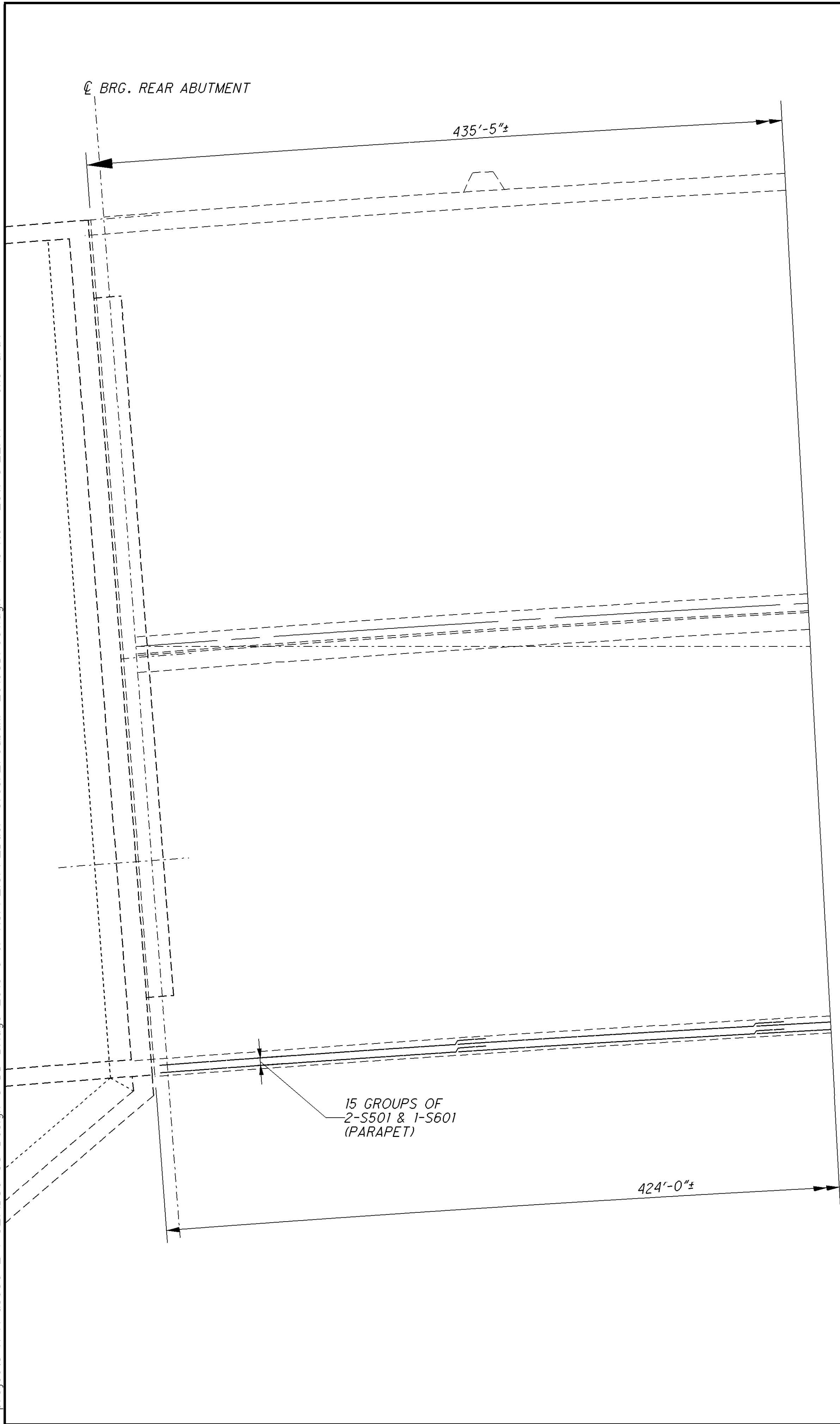
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DATE
11-14-11

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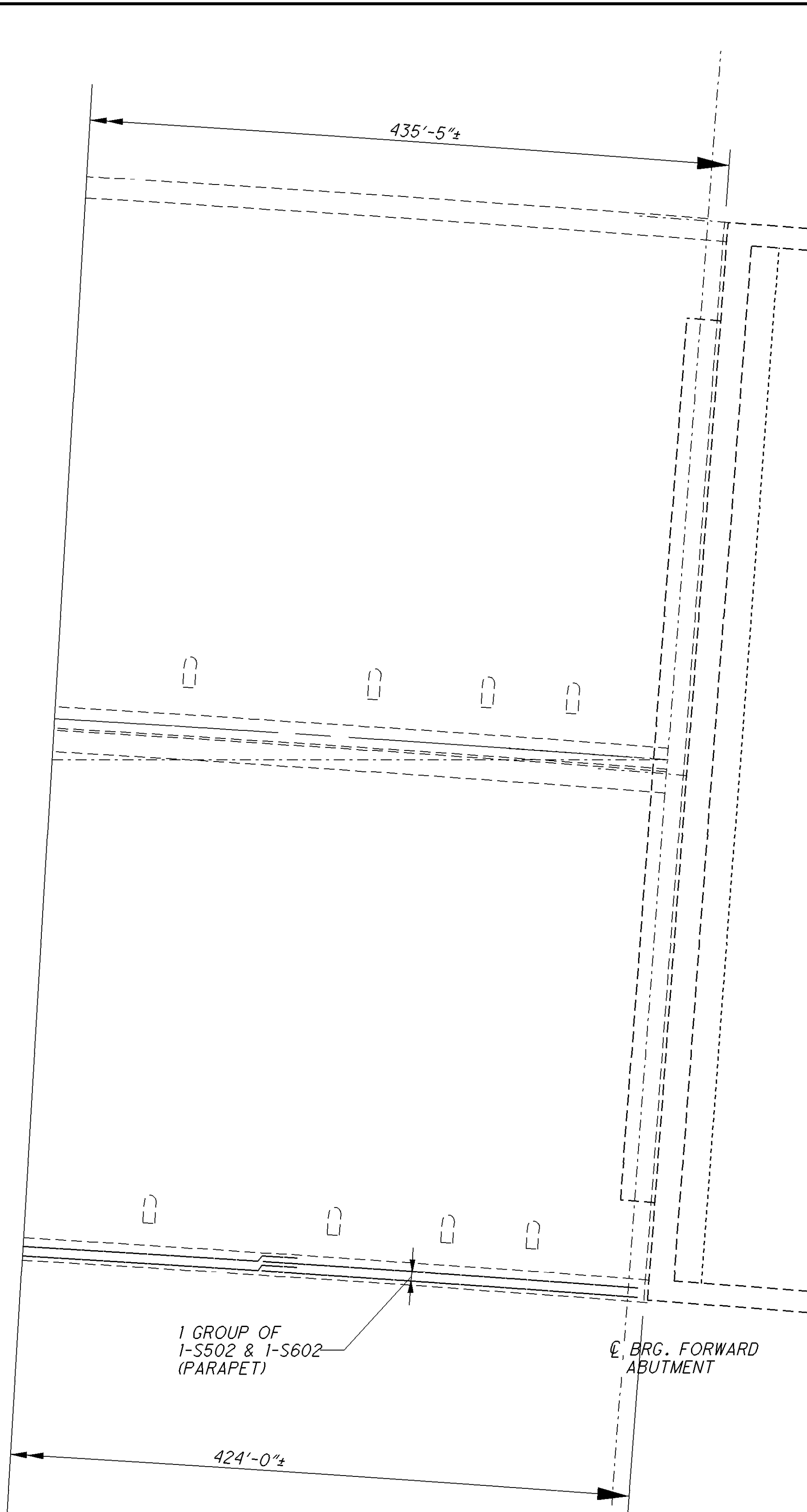
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REINFORCING STEEL SCHEDULE							
MARK	NUMBER	LENGTH	WEIGHT	TYPE	A	B	C
	TOTAL						
S501	30	29'-0"	908	STR			
S502	2	26'-6"	56	STR			
S601	15	29'-6"	665	STR			
S602	1	26'-6"	40	STR			
TOTAL			1,669	POUNDS			

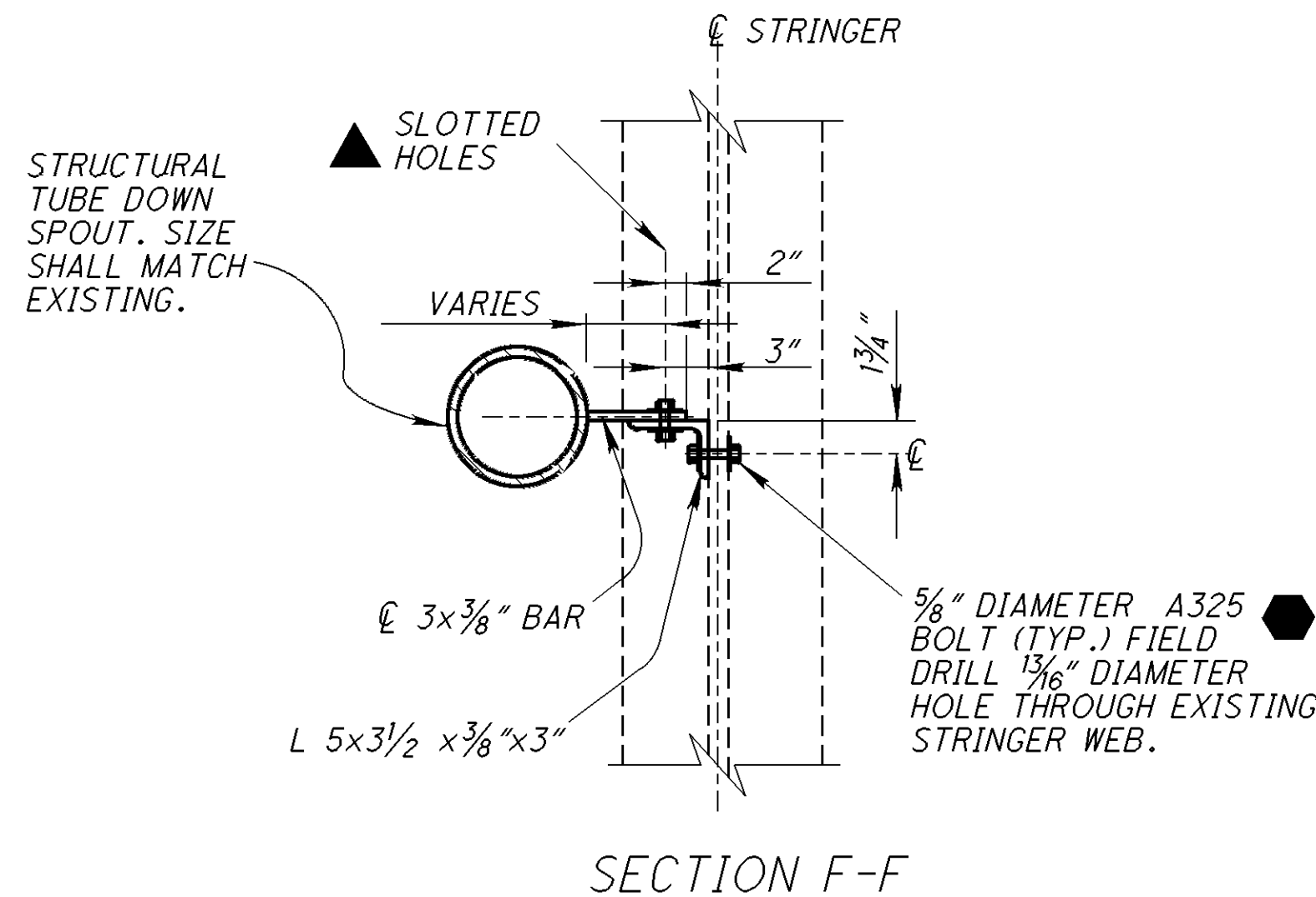
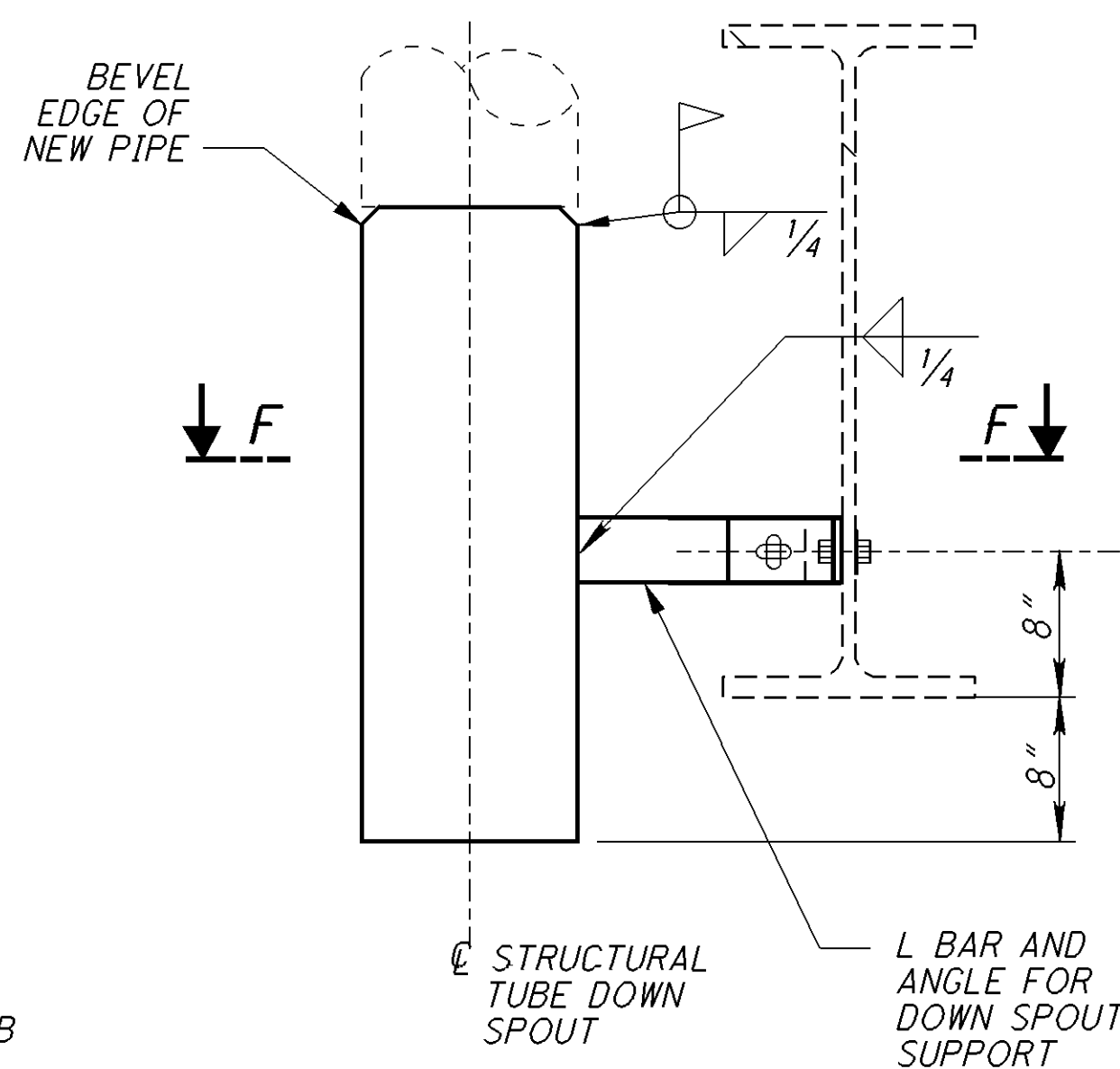
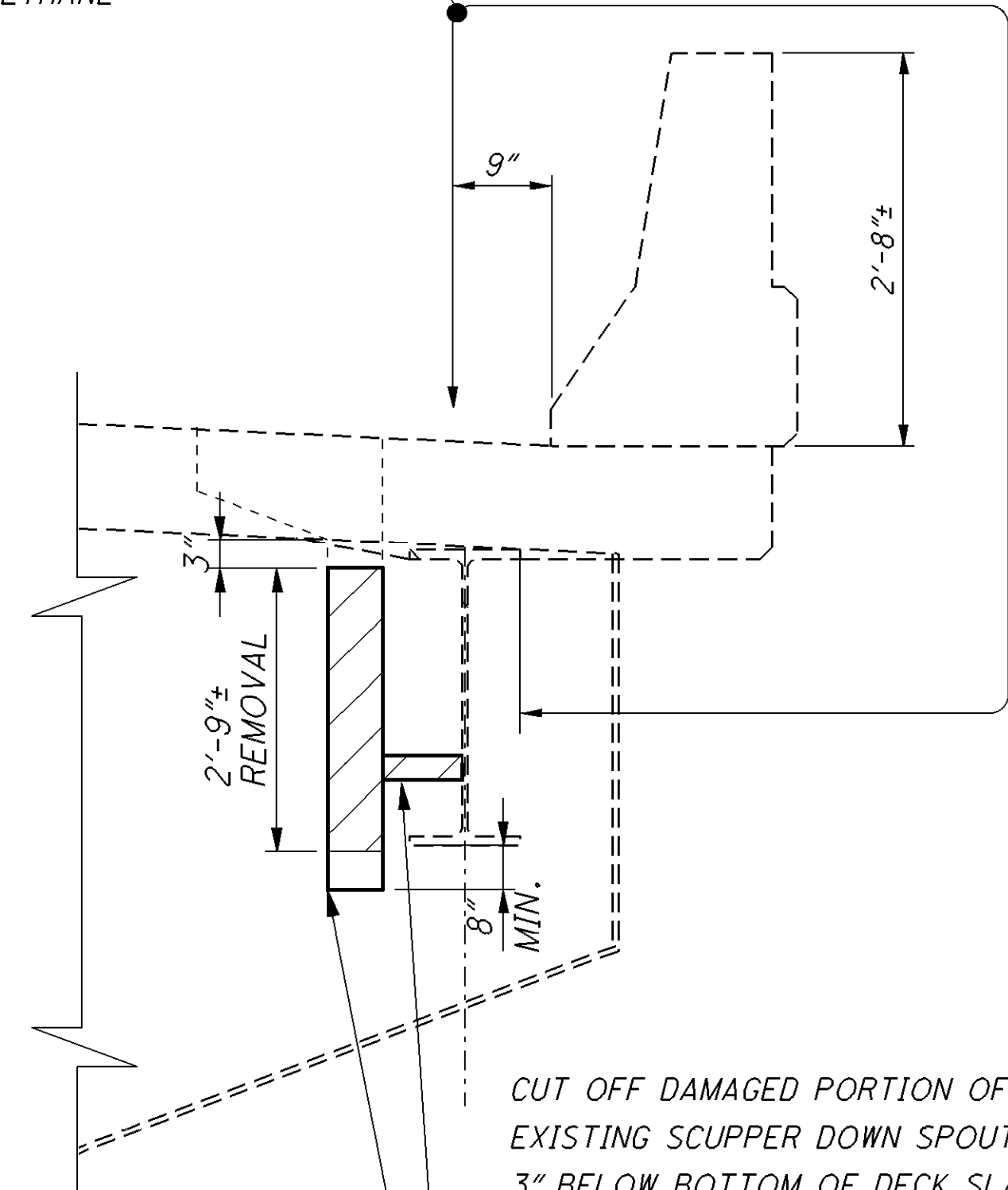
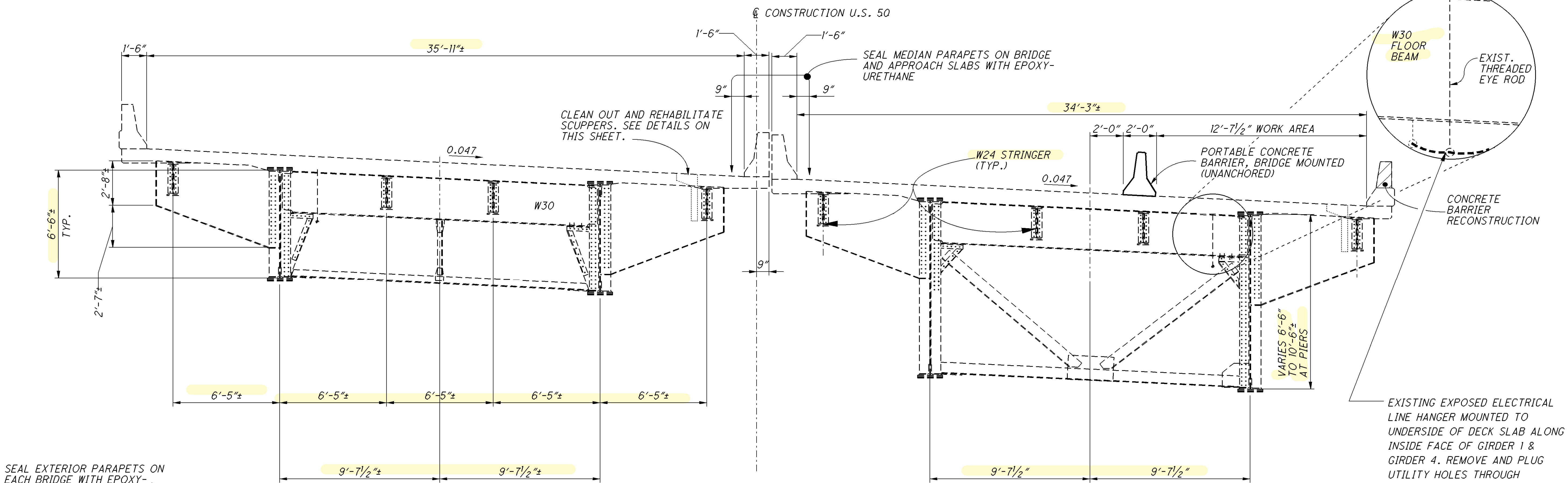
MINIMUM REBAR LAP
#5 BAR = 2'-6"
#6 BAR = 3'-0"



NOTES:

- SEE SHEET 15 OF 15 FOR PARAPET DETAILS.
- REQUIRED VOLUME OF CLASS 'S' CONCRETE = 21 CU YD.
- SEE SHEET 14 OF 15 FOR SUPERSTRUCTURE CONCRETE SEALING LIMITS.

I:\projects\HAM\us050\27.73_PID80758\Design\CADD\Bridge_2910 over NSRR_IORR_Duck Creek_Redbank_2910\CTS001.dgn 10-NOV-2011 3:23PM choward4



LEGEND

- ▲ - SEE FASTENER NOTE 1.
- - SEE FASTENER NOTE 2.

ITEM 202 - PORTIONS OF EXISTING STRUCTURE REMOVED

NOTES:

FURNISH STRUCTURAL STEEL TUBING ACCORDING TO CMS 707.10. TOUGHNESS TESTING IN ACCORDANCE WITH ASTM E436 IS NOT REQUIRED. ALL OTHER MATERIAL SHALL BE ASTM A709 GRADE 50. GALVANIZE SUPPORT ANGLES, BARS, BOLTS, NUTS AND WASHERS IN ACCORDANCE WITH 711.02

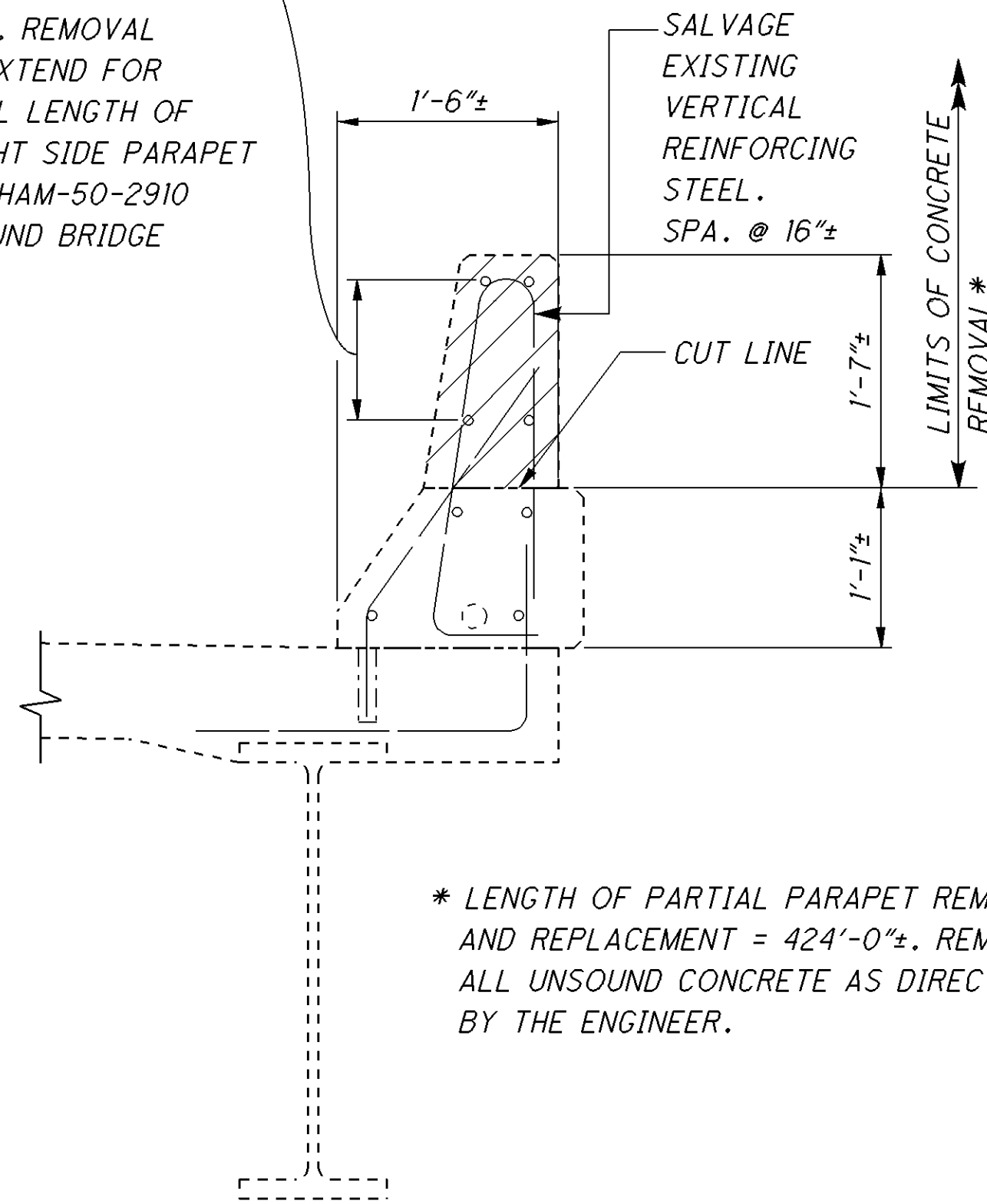
FASTENER NOTES:

1. THE SIZE OF THE SLOTTED HOLES SHALL BE 1 1/16" x 1 1/16". THE SLOT SHALL BE HORIZONTAL IN THE 3" x 3/8" BAR AND VERTICAL IN THE ANGLE. BOLTS SHALL BE 5/8" DIAMETER A325 TYPE 1, GALVANIZED, WITH HEX NUT AND TWO WASHERS. TIGHTEN ACCORDING TO CMS 513.
2. THE BOLTS SHALL BE 5/8" DIAMETER A325 TYPE 1 GALVANIZED FOR PAINTED STRUCTURES. EACH ASSEMBLY SHALL INCLUDE A BOLT, NUT AND TWO WASHERS. TIGHTEN ACCORDING TO 513. FIELD DRILL THE 1 3/16" DIAMETER HOLE IN THE WEB.

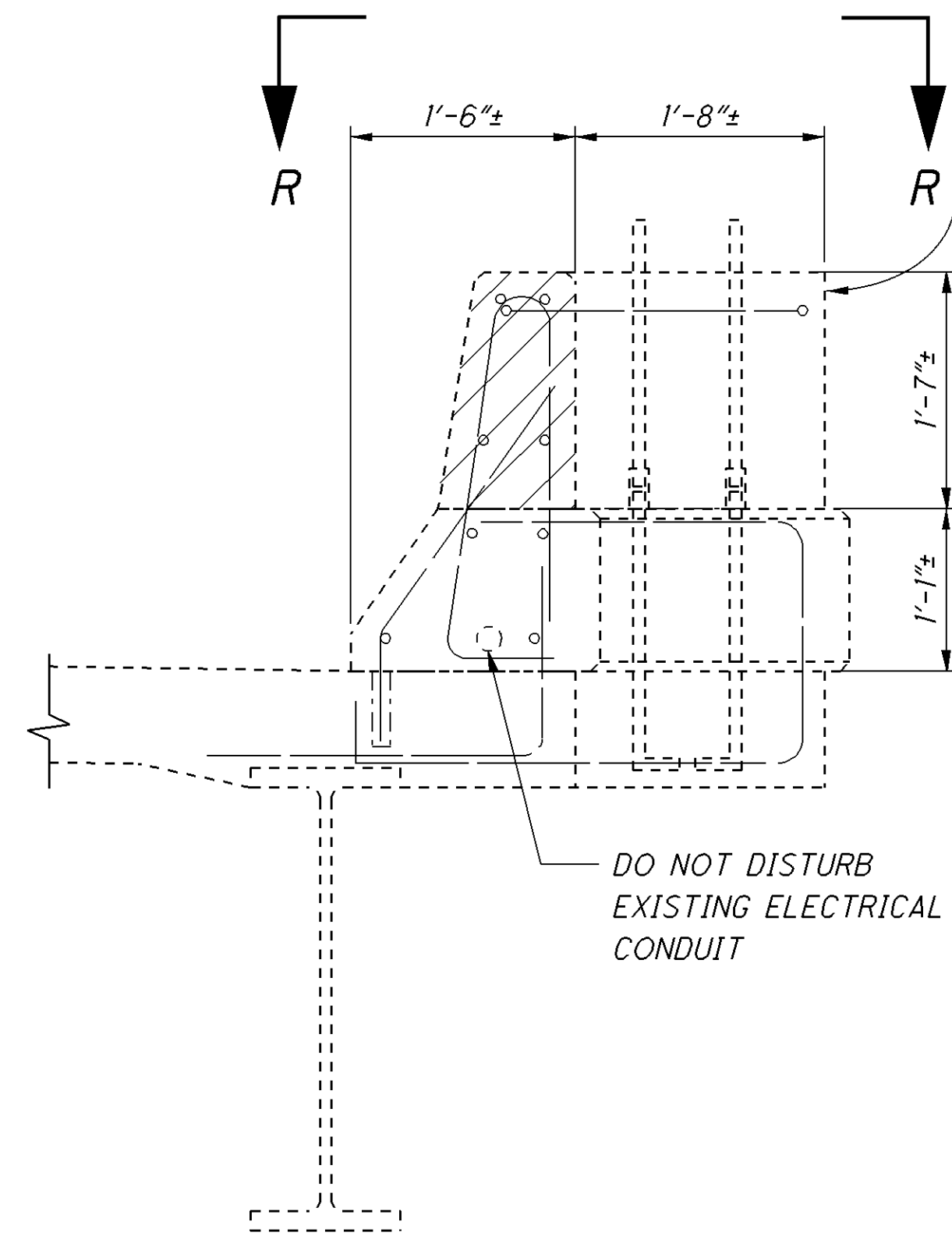
PAYMENT FOR THE STRUCTURAL TUBE STEEL, WELDING, STRUCTURAL STEEL, BOLTED CONNECTIONS AND FIELD DRILLING OF THE BEAM WEB SHALL BE INCLUDED WITH ITEM 518 - SCUPPER, VERTICAL EXTENSION, AS PER PLAN.

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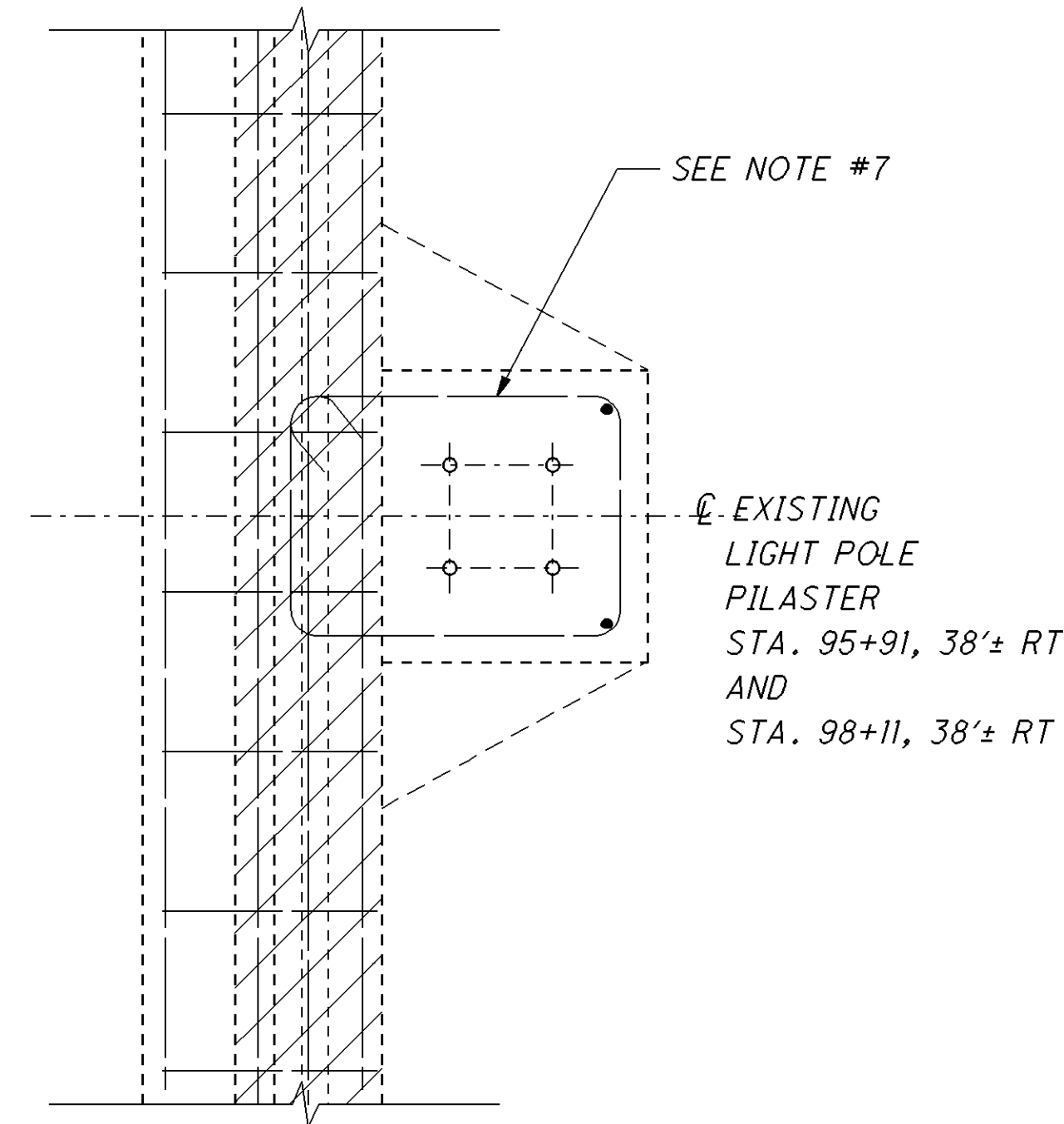
EXISTING HORIZONTAL REINFORCING TO BE REMOVED ABOVE CUTLINE. REMOVAL SHALL EXTEND FOR THE FULL LENGTH OF THE RIGHT SIDE PARAPET ON THE HAM-50-2910 EASTBOUND BRIDGE ONLY.



EXISTING PARAPET AND LIGHT PILASTER DEMOLITION DETAILS



REMOVE EXISTING PARAPET IN FRONT OF LIGHT POLE SUPPORTS. EXISTING LIGHT POLES AND SUPPORT CONCRETE SHALL REMAIN UNDISTURBED. SEE NOTE #7

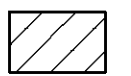


VIEW R-R

NOTES:

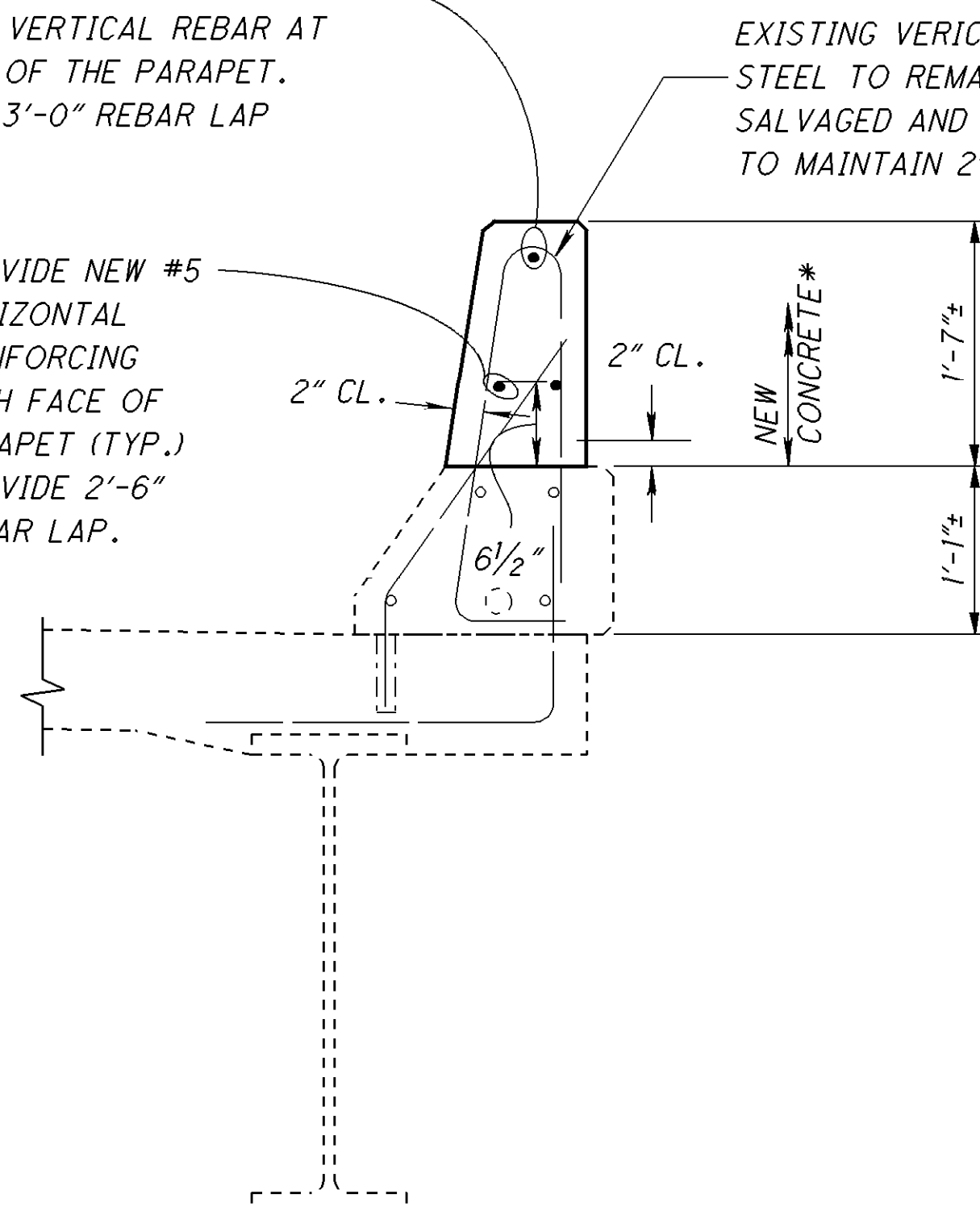
1. PAYMENT FOR THE REMOVAL OF EXISTING CONCRETE AND REINFORCING STEEL SHALL BE MADE ON A LUMP SUM BASIS AND INCLUDED WITH ITEM 202 - PORTIONS OF STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN FOR PAYMENT.
2. REPLACEMENT REINFORCING STEEL TO BE $F_y = 60$ KSI AND EPOXY COATED.
3. NEW CONCRETE FOR SUPERSTRUCTURE PARAPET TO BE CLASS "S" CONCRETE.
4. ANY EXISTING REINFORCING STEEL DESIGNATED TO REMAIN MAY BE REPLACED WITH NEW REINFORCING STEEL DRILLED AND GROUTED AT NO ADDITIONAL COST TO THE PROJECT.
5. SAW CUT THE NEW PARAPET AT THE SAME LOCATION OF EXISTING JOINTS IN ACCORDANCE WITH STANDARD DRAWING BR-1.
6. EXISTING REINFORCING STEEL AND/OR CONCRETE DESIGNATED TO BE SALVAGED THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT HIS EXPENSE.
7. EXISTING LIGHT POLE SUPPORT CONCRETE SHALL BE LEFT IN PLACE AND THE SUPPORT CONCRETE REBAR SALVAGED AND CLEANED UP FOR RE-USE WHERE IT EXTENDS INTO THE PARAPET.
8. SEE SHEET 13 OF 15 FOR DECK PLAN AND PARAPET REINFORCING STEEL LIST.

LEGEND

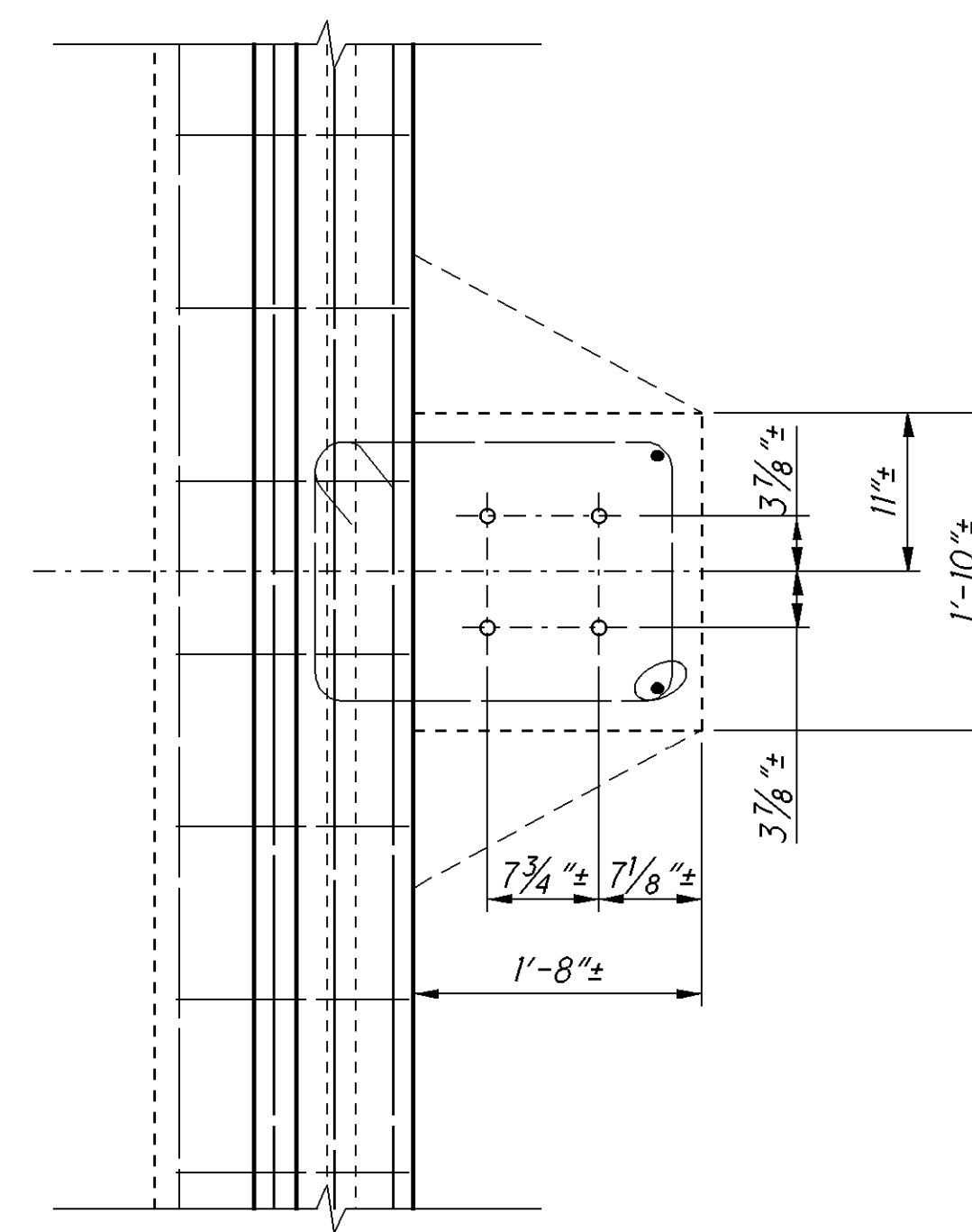
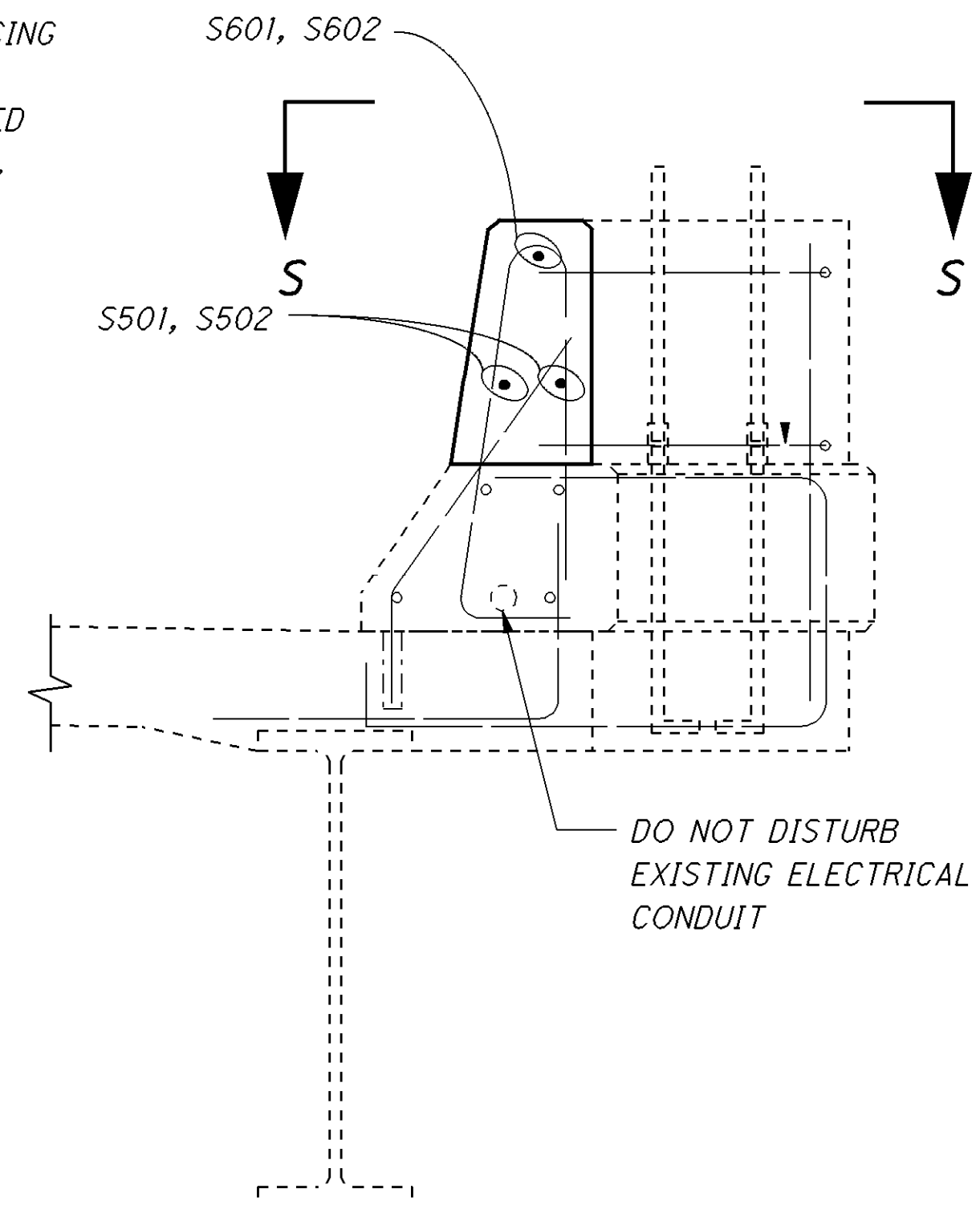
 ITEM 202 - PORTIONS OF EXISTING STRUCTURE TO BE REMOVED

PROVIDE NEW #6 HORIZONTAL REINFORCING (TYP.) INSIDE THE PARAPET VERTICAL REBAR AT THE TOP OF THE PARAPET. PROVIDE 3'-0" REBAR LAP

PROVIDE NEW #5 HORIZONTAL REINFORCING EACH FACE OF PARAPET (TYP.) PROVIDE 2'-6" REBAR LAP.



PARAPET AND LIGHT PILASTER REHABILITATION DETAILS



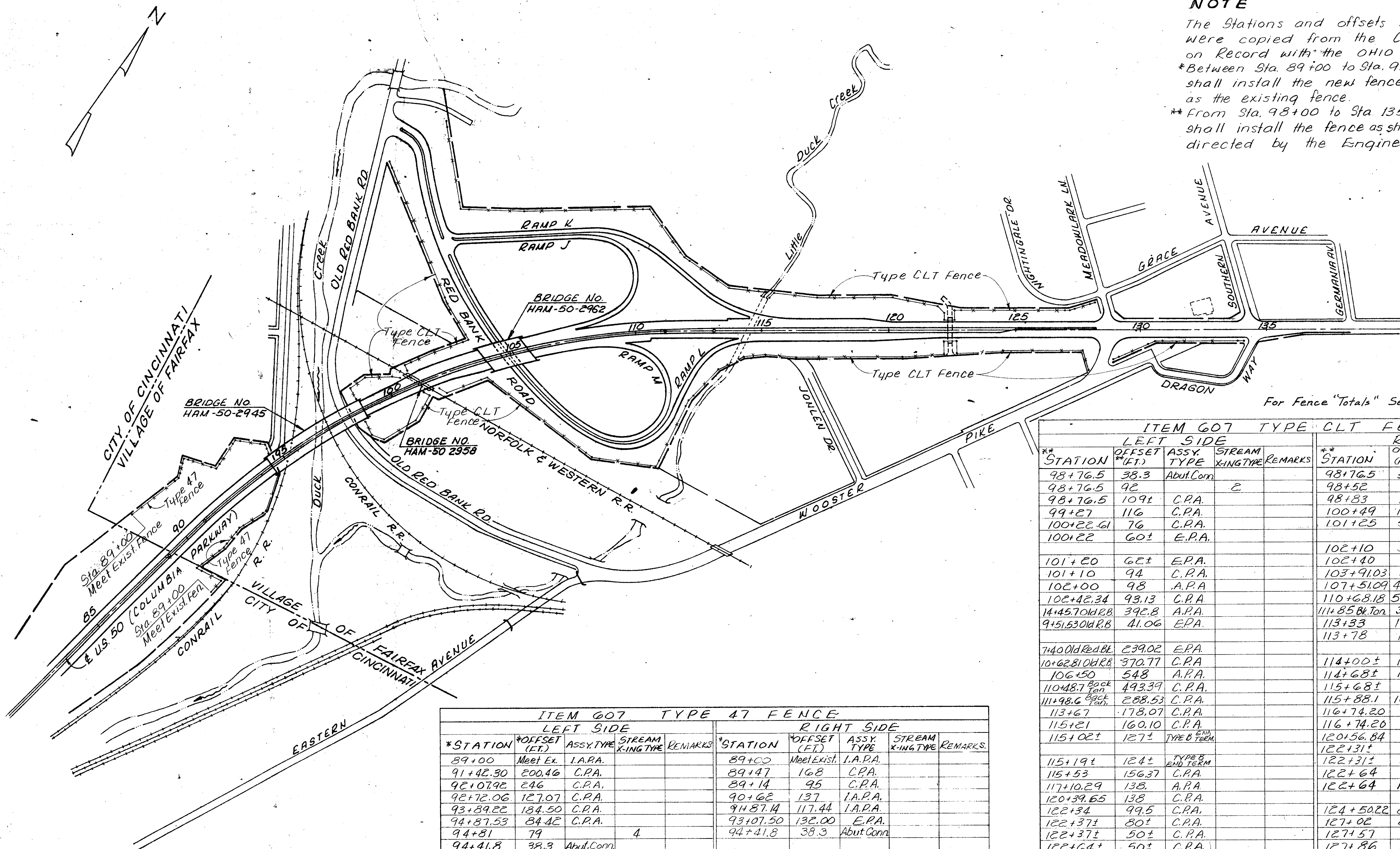
VIEW S-S

NOTE

The Stations and offsets shown in this Plan were copied from the Contract Drawings on Record with the OHIO DEPT. OF TRANSPORTATION

*Between Sta. 89+00 to Sta. 95+00, the Contractor shall install the new fence in the same location as the existing fence.

**From Sta. 98+00 to Sta. 135+00, the Contractor shall install the fence as shown in Table below or as directed by the Engineer.



For Fence "Totals" See Sheet No. 44.

ITEM 607 TYPE 47 FENCE									
LEFT SIDE					RIGHT SIDE				
*STATION	*OFFSET (FT.)	ASSY. TYPE	STREAM X-ING TYPE	REMARKS	*STATION	*OFFSET (FT.)	ASSY. TYPE	STREAM X-ING TYPE	REMARKS
89+00	Meet Ex.	I.A.P.A.			89+00	Meet Ex.	I.A.P.A.		
91+42.30	200.46	C.P.A.			89+47	168	C.P.A.		
92+07.92	246	C.P.A.			89+14	95	C.P.A.		
92+72.06	127.07	C.P.A.			90+62	137	I.A.P.A.		
93+89.22	184.50	C.P.A.			91+87.14	117.44	I.A.P.A.		
94+87.53	84.42	C.P.A.			93+07.50	132.00	E.P.A.		
94+81	79		4		94+41.8	38.3	Abut. Conn.		
94+41.8	38.3	Abut. Conn.							

ITEM 607 TYPE CLT FENCE									
LEFT SIDE					RIGHT SIDE				
*STATION	*OFFSET (FT.)	ASSY. TYPE	STREAM X-ING TYPE	REMARKS	*STATION	*OFFSET (FT.)	ASSY. TYPE	STREAM X-ING TYPE	REMARKS
98+76.5	38.3	Abut. Conn.			98+76.5	38.3	Abut. Conn.		
98+76.5	92		C		98+52	118	C.P.A.		
98+76.5	109±	C.P.A.			98+83	146±	C.P.A.		
99+27	116	C.P.A.			100+49	133	C.P.A.		
100+22.61	76	C.P.A.			101+25	51±	E.P.A.		
100+22	60±	E.P.A.							
101+20	62±	E.P.A.			102+10	58±	E.P.A.		
101+10	94	C.P.A.			102+40	79	C.P.A.		
102+00	98	A.P.A.			103+9103	88	C.P.A.		
102+42.34	93.13	C.P.A.			107+5109	483.23	C.P.A.		
104+57010RB	392.8	A.P.A.			110+68.18	540.63	C.P.A.		
9+51530ARB	41.06	E.P.A.			114+85010RB	370	C.P.A.		
					113+33	164.26	C.P.A.		
					113+78	129	TYPE B END TERM		
7+40010RB	239.02	E.P.A.							
10+62810ARB	370.77	C.P.A.			114+00±	124	TYPE B END TERM		
106+50	548	A.P.A.			114+68±	108±	C.P.A.		
110+48.7	493.39	C.P.A.			115+68±	91±	A.P.A.		
111+98.6	288.53	C.P.A.			115+88.1	103.21	C.P.A.		
113+67	178.07	C.P.A.			116+74.20	108	A.P.A.		
115+21	160.10	C.P.A.			116+74.20	113	A.P.A.		
115+02±	127±	TYPE B END TERM			120+56.84	113	A.P.A.		
					122+131±	102	C.P.A.		
115+19±	124±	TYPE B END TERM			122+131±	50	C.P.A.		
115+53	156.37	C.P.A.			122+64	50	C.P.A.		
117+10.29	138	A.P.A.			122+64	102	C.P.A.		
120+39.65	138	C.P.A.							
122+34	99.5	C.P.A.			124+5022	89.37	E.P.A.		
122+137±	80±	C.P.A.			127+02	89.37	C.P.A.		
122+137±	50±	C.P.A.			127+57	70.00	C.P.A.		
122+164±	50±	C.P.A.			127+86	173	E.P.A.		
122+64±	94	C.P.A.							
126+03.04	94	C.P.A.			128+9350	124.52	E.P.A.		
127+08.12	89.73	A.P.A.			130+59.61	48	C.P.A.		
128+14.27	119.90	E.P.A.			134+18	48	E.P.A.		

GENERAL NOTES

REFERENCE

REFERENCE SHALL BE MADE TO THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS:

EPOXY COATED REINFORCING STEEL	824	DATED 10-08-82
CONCRETE CURING AND PROTECTIVE MEMBRANE	836	DATED 11-12-85
BRIDGE DECK REPAIR AND OVERLAY WITH LATEX MODIFIED CONCRETE	845	DATED 02-25-86
ELASTOMERIC COMPRESSION SEALS FOR STRUCTURAL STEEL JOINTS	849	DATED 12-24-85
GROUT ANCHORING WITH NON-SHRINKING EPOXY MORTAR	853	DATED 06-26-78
PREFORMED POLYCHLOROPRENE ELASTOMERIC JOINT SEALS FOR STRUCTURAL STEEL JOINTS	949	DATED 09-26-86
LATEX FOR CONCRETE MODIFICATION	953	DATED 08-21-80
NON-SHRINKING EPOXY MORTAR FOR GROUT ANCHORING	956	DATED 06-26-78
BRIDGE DECK REPAIR AND OVERLAY WITH SUPERPLASTICIZED DENSE CONCRETE	850	DATED 2-25-86

DESIGN SPECIFICATIONS:

THE REPAIR OF THESE STRUCTURES CONFORMS TO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 1983 INCLUDING THE 1984 AND 1985 INTERIM SPECIFICATIONS AND THE OHIO "SUPPLEMENT" TO THESE SPECIFICATIONS.

DESIGN DATA:

DESIGN LOADING	HS20-44 AND THE ALTERNATE MILITARY LOADING
CONCRETE CLASS S	COMPRESSIVE STRENGTH 4500 P.S.I., FC = 1800 P.S.I.
REINFORCING STEEL	ASTM A615, A616, OR A617 MINIMUM YIELD STRESS, 60,000 P.S.I., FS = 24,000 P.S.I.

EXISTING STRUCTURE VERIFICATION

DETAILS, STATIONS AND DIMENSIONS SHOWN ON THESE PLANS PERTAINING TO THE EXISTING STRUCTURE HAVE BEEN OBTAINED FROM PLANS OF THE EXISTING STRUCTURE AND/OR FROM FIELD OBSERVATIONS AND MEASUREMENTS. CONSEQUENTLY, THEY ARE INDICATIVE OF THE EXISTING STRUCTURE AND THE PROPOSED WORK BUT THEY SHALL BE CONSIDERED TENTATIVE AND APPROXIMATE. THE CONTRACTOR IS REFERRED TO CMS SECTIONS 102.05, 105.02 AND 513.02. CONTRACT BID PRICES SHALL BE BASED UPON A RECOGNITION OF THE UNCERTAINTIES DESCRIBED ABOVE AND UPON A PREBID EXAMINATION OF THE EXISTING STRUCTURE BY THE CONTRACTOR. HOWEVER, ALL PROJECT WORK SHALL BE BASED UPON ACTUAL DETAILS AND DIMENSIONS WHICH HAVE BEEN VERIFIED BY THE CONTRACTOR IN THE FIELD.

DEFLECTION JOINTS MEDIAN BARRIER (HAM-50-2945 & HAM-50-2962) AND PARAPET (HAM-50-2945)

THE CONSTRUCTION JOINT IN THE PROPOSED BARRIER OR PARAPET IS OPTIONAL. THE PREFORMED EXPANSION JOINT FILLER IN THE DEFLECTION JOINTS MAY BE EITHER 1/4" GRAY SPONGE RUBBER OR 1/4" GRAY CELLULAR POLYVINYL CHLORIDE (PVC) SPONGE. IF RUBBER IS USED IT SHALL MEET THE REQUIREMENTS OF AASHTO M-153. ALTERNATELY THE PARAPET OR BARRIER MAY BE CAST AT ONE TIME AND THE NECESSARY DEFLECTION JOINTS CUT INTO THE PARAPET OR BARRIER AT EACH PROPOSED DEFLECTION JOINT BY SAW CUTTING AFTER FORM REMOVAL. THE SUBSEQUENT JOINTS SHALL THEN BE SEALED WITH A SILICONE OR POLYURETHANE CAULKING MEETING FEDERAL SPECIFICATIONS TT-5-230-A.

ITEM 202 - PORTIONS OF STRUCTURES REMOVED

THE CONTRACTOR SHALL CAREFULLY REMOVE THE EXISTING STRUCTURE DOWN TO THE CONSTRUCTION JOINTS AS CALLED OUT IN PLANS. THE CONTRACTOR SHALL REMOVE EXISTING ALUMINUM RAILINGS AND NEATLY STACK ALONG THE RIGHT-OF-WAY FOR SUBSEQUENT PICKUP BY THE STATE FORCES. AT LOCATIONS DESIGNATED IN THE PLANS, THE CONTRACTOR SHALL CAREFULLY PRESERVE (IN-SITU) ALL DESIGNATED REINFORCING STEEL PROJECTING FROM EXISTING CONCRETE INTO THE CONCRETE TO BE REMOVED.

ITEM 510 - DOWEL HOLES, AS PER PLAN

6" DEEP HOLES SHALL BE DRILLED OR FORMED INTO THE DECK AND SUBSTRUCTURE AS SHOWN IN THE PLANS. A MINIMUM EDGE DISTANCE OF 6" SHALL BE MAINTAINED. DRILLED OR FORMED HOLES SHALL BE 3/4" DIAMETER. THE HOLES SHALL BE THOROUGHLY CLEANED OF ALL DUST AND OTHER DELETERIOUS MATTER. CARE SHALL BE TAKEN TO PREVENT "PUNCH THROUGH" OF DECK IN DRILLING. THE GROUT ANCHORING SHALL CONFORM TO SUPPLEMENTAL SPECIFICATION 853. PAYMENT FOR THE ABOVE WORK SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 510 - DOWEL HOLES, AS PER PLAN.

ITEM 516 - STRUCTURAL EXPANSION JOINTS INCLUDING ELASTOMERIC COMPRESSION SEALS, INCH WIDTH

THIS ITEM SHALL INCLUDE THE FURNISHING OF ALL MATERIALS (NOT INCLUDING CLASS S CONCRETE AND REINFORCING STEEL), LABOR, EQUIPMENT, TOOLS AND INCIDENTALS NECESSARY TO MODIFY OR REPLACE EXISTING END DAMS AND ABUTMENT ANGLES IN ACCORDANCE WITH THE PLAN DETAILS AND PLAN NOTES. THE FIELD PAINTING (NEW STEEL) SHALL COMPLY WITH CMS 514.05 SYSTEM B. THE ELASTOMERIC COMPRESSION SEAL WILL COMPLY WITH SUPPLEMENTAL SPECIFICATION 849 AND 949. STEEL BAR STOCK OR PLATES UTILIZED IN THIS ITEM MAY BE ANY WELDABLE GRADE OF LOW OR MILD CARBON STEEL AVAILABLE COMMERCIALY; THIS STEEL IS TO BE EXCLUDED FROM THE REQUIREMENTS OF CMS 501.07 FOR TEST REPORTS.

ITEM 517 - RAILING, FACED AS PER PLAN

THE CONCRETE SAFETY CURB AND THE REMAINING VERTICAL LEG OF THE BULB ANGLE WHICH PROTRUDES ABOVE THE SCARIFIED DECK SHALL BE REMOVED. 1" DIAMETER HOLES, 6" DEEP (MIN.) SHALL BE DRILLED AT 15" C/C AND AT 2'6" C/C AS SHOWN ON THE DRAWING. THE HOLES SHALL BE THOROUGHLY CLEANED OF ALL DUST AND OTHER DELETERIOUS MATERIAL.

THE GROUT SHALL CONSIST OF CEMENT AND WATER USING TYPE I, TYPE III, OR SHRINKAGE COMPENSATING CEMENT. CLEAN HOLES SHALL BE SATURATED THOROUGHLY WITH WATER FOR A MINIMUM OF 5 MINUTES PRIOR TO PLACING GROUT. IMMEDIATELY PRIOR TO GROUTING, ALL FREE STANDING WATER SHALL BE REMOVED FROM HOLES. AFTER INITIAL MIXING, THINNING OR RETEMPERING OF GROUT WITH EXTRA WATER SHALL NOT BE ALLOWED. HARDENED OR SET GROUT WHICH HAS BECOME TOO STIFF OR DRY TO PROVIDE A GOOD BOND SHALL BE DISCARDED. DOWELS SHALL NOT BE INSTALLED IF THE MEAN AIR OR GROUT TEMPERATURES ARE LESS THAN 45°F FOR 72 HOURS, AND AT NOT LESS THAN 40°F FOR AN ADDITIONAL 4 DAYS. THE TEMPERATURE OF THE MIXED GROUT, IMMEDIATELY BEFORE PLACING, SHALL BE NOT LESS THAN 50°F NOR MORE THAN 90°F. THE CEMENT GROUT SHALL BE CURED CONTINUOUSLY WITH EITHER WET RAGS OR A SATISFACTORY CURING COMPOUND (WHICH MUST BE SUBSEQUENTLY REMOVED) FOR A MINIMUM PERIOD OF 3 DAYS WITHOUT DISTURBING THE DOWELS.

GROUT ANCHORING USING EPOXY AS PER SS 853 AND 956 MAY BE USED IN LIEU OF THE ABOVE REQUIREMENTS WITH THE EXCEPTION THAT THE HOLE SIZE WILL REMAIN AT 1" DIAMETER.

ALL LOOSE AND UNSOUND CONCRETE IN THE AREA OF THE PARAPET TO BE FACED, SHALL BE REMOVED. ALL REMAINING SOUND CONCRETE SHALL THEN BE MECHANICALLY SCARIFIED 1/4" DEEP. THE MINIMUM THICKNESS FOR THE PROPOSED FACING SHALL BE 4". ALL RESTEEL SHALL BE EPOXY COATED AS PER SS 824. EPOXY COATED RESTEEL WHICH IS DAMAGED DUE TO CUTTING, BENDING, ETC., SHALL BE REPAIRED AS PER SS 824. CONCRETE COVER OVER ALL RESTEEL SHALL BE 2". THE CONCRETE SURFACES TO BE FACED SHALL BE THOROUGHLY DRENCHED WITH CLEAN WATER AND ALLOWED TO DRY TO A DAMP CONDITION JUST BEFORE PLACING THE CONCRETE. THE EXISTING DEFLECTION JOINTS SHALL BE EXTENDED COMPLETELY THROUGH THE PROPOSED FACING AND SHALL BE MADE BY FORMING OR SAWCUTTING THE HARDENED CONCRETE WITHIN 3 DAYS AFTER POURING. THE 1/4" JOINTS SHALL BE SEALED 3/4" DEEP (MIN.) WITH AN IMPREGNATED PRECOMPRESSED EXPANDING FOAM SEALANT TAPE KNOWN AS WILL-SEAL, MANUFACTURED BY ILLBRUCK/USA INC., MINNEAPOLIS OR A LOW DENSITY, CLOSED CELL, CROSSLINKED ETHYLENE VINYL ACETATE FOAM KNOWN AS EVASOTE 50, MANUFACTURED BY E-POXY INDUSTRIES, INC., RAVENNA, NEW YORK.

EXTRA REINFORCING AND CONCRETE USED AT THE BEGINNING AND END OF THE PARAPET (NECESSARY TO INSTALL STRUCTURAL EXPANSION JOINTS) SHALL BE INCLUDED IN THIS ITEM.

MATERIALS SHALL BE:

CONCRETE AS PER 511, CLASS S
REINFORCING STEEL AS PER 509 & SS 824

ALL OF THE ABOVE WORK AND RELEVANT PLAN NOTES SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 517 - RAILING, FACED, AS PER PLAN.

ESTIMATED QUANTITIES

ITEM	TOTAL	UNIT	DESCRIPTION	HAM-50-2945				HAM-50-2962			
				ABUT 1	ABUT 2	SUPR	GEN'L	ABUT 1	ABUT 2	SUPR	GEN'L
202	LUMP	SUM	Portions of Structures Removed, As per plan								
503	LUMP	SUM	Cofferdams, Cribbs and Sheeting								
503	25	Cu.Yd.	Unclassified Excavation	10	10			2	3		
509	2330	Lb.	Reinforcing Steel, Grade 60	1165	1165						
202	LUMP	SUM	Asphalt wearing course removed								
510	1078	Lin.Ft.	Dowel Holes, as per plan	3	3	878		2	2	190	
511	214	Cu.Yd.	Class S concrete, Superstructure, as per plan			164				50	
511	62	Cu.Yd.	Class S concrete, Substructure, as per plan	23	23			8	8		
516	317	Lin.Ft.	Structural Expansion Joints, including		76			119	122		
516	76	Lin.Ft.	Elastomeric Compression Seals, 4 inch width								
516	76	Lin.Ft.	Structural Expansion Joints, including		76						
516	614	Lin.Ft.	Elastomeric Compression Seals, 6 inch width								
516	21	Sq.Ft.	Elastomeric Compression Seals, 1 3/4 inch width			430				184	
516	21	Sq.Ft.	1 inch Preformed Expansion Joint Filler	6	6			2	7		
517	368	Lin.Ft.	Railing, Faced as per plan							368	
518	12	Each	Vertical extension of Scuppers			12					
519	450	Sq.Ft.	Patching Concrete Structures +				300				150
824	36844	Lb.	Epoxy Coated Reinforcing Steel, Grade 60	1006	1015	24715		879	889	8340	
850	165	Cu.Yd.	Superplasticized dense concrete overlay (variable thickness) * *			165					
845	68	Cu.Yd.	Latex Modified Concrete Overlay (Variable thickness), A							68	
845	17	Cu.Yd.	Full Depth Repair A							17	
850	20	Cu.Yd.	Full Depth Repair			20					
SPECIAL	1489	Sq.Yd.	Sealing of Concrete Surfaces *	50	51	977		43	42	326	
SPECIAL	36	Each	Refurbishing, Modifying, Alignment and Resetting of Bearing Devices.	4	4			14	14		
514	LUMP	SUM	Field Painting of Existing Steel, Surface Preparation, System A							LUMP	SUM
514	LUMP	SUM	Field Painting of Existing Steel, Complete Coat Prime, System A							LUMP	SUM
514	LUMP	SUM	Field Painting of Existing Steel, Complete Coat Finish, System A							LUMP	SUM
850	3393	Sq.Yd.	Superplasticized dense concrete overlay (1 3/4 inch thick) * *			3393					
845	2119	Sq.Yd.	Latex Modified Concrete Overlay (1 1/4 inch thick), A							2119	
SPECIAL	LUMP	SUM	Field Painting of Existing Steel, System A, Intermediate Coat, Complete *							LUMP	SUM
SPECIAL	20	Lin.Ft.	Surface Preparation for Epoxy Injection, and Finishing * +	20							
SPECIAL	20	Lin.Ft.	Epoxy Injection * +	20							
SPECIAL	22	Each	Scupper Modification			12				10	

* See Proposal Note

+ 50 % Federal Participation

** See proposal note titled "Concrete Bridge Deck Surface Using Hydrodemolition" and proposal note 106-87

Δ See proposal note 106-87

CINCINNATI		KING & GAVANIS CONSULTING ENGINEERS, INC.		OHIO	
GENERAL NOTES (1/2) AND ESTIMATED QUANTITIES BRIDGE NO. HAM - 50 - 2945 STA. 94 + 42.33 TO STA. 98 + 75.88 OVER DUCK CREEK VALLEY BRIDGE NO. HAM - 50 - 2962 STA. 103 + 76.13 TO STA. 105 + 63.06 OVER RED BANK ROAD HAMILTON COUNTY					
DESIGNED P.M.	DRAWN V.S.	CHECKED V.S.	REVIEWED V.L.L. 3/87	DATE 3/87	REVISION

REVISED 5/6/88

GENERAL NOTES

ITEM 516 - ELASTOMERIC COMPRESSION SEALS, 1-3/4" WIDE

THE SEALS AND INSTALLATION PROCEDURE SHALL CONFORM TO SUPPLEMENTAL SPECIFICATIONS 849 & 949. DISREGARD NONCONFORMING TITLE WORDING OF SUPPLEMENTAL SPECIFICATIONS 849 & 949, OMIT SECTIONS 849.01 (LAST EIGHT WORDS ONLY), 849.03 (PARAGRAPHS 1 AND 2), 949.01 (ALL) AND 949.03 (PARAGRAPHS 5 THRU 8). CONCRETE AGAINST WHICH SEAL IS TO BE ATTACHED SHALL BE SMOOTH, FREE OF DELETERIOUS MATERIAL AND THOROUGHLY DRY PRIOR TO APPLICATION OF ADHESIVE.

THE AREA WHERE THE 1-3/4" WIDE ELASTOMERIC COMPRESSION SEAL ABUTS THE ABUTMENT COMPRESSION SEALS SHALL BE CAULKED WITH A SILICONE OR POLYURETHANE CAULKING MEETING FEDERAL SPECIFICATIONS TT-5-230-A.

THE PAYMENT FOR THE CAULK, COMPRESSION SEAL, ADHESIVE, OTHER NECESSARY MATERIALS, ASSOCIATED LABOR AND RELEVANT PLAN REQUIREMENTS SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 516 - ELASTOMERIC COMPRESSION SEALS, 1-3/4" WIDE.

ITEM 518 - VERTICAL EXTENSION OF SCUPPERS

THE SCUPPER EXTENSIONS DETAILED IN THE PLANS SHALL BE GALVANIZED, CMS 711.02, PRIOR TO FIELD WELDING TO EXISTING SCUPPER. BAR STOCK UTILIZED FOR THIS ITEM MAY BE ANY WELDABLE GRADE OF LOW OR MILD CARBON STEEL AVAILABLE COMMERCIALY. THIS STEEL IS TO BE EXCLUDED FROM THE REQUIREMENTS OF 501.07 FOR TEST REPORTS.

ITEM 519, PATCHING CONCRETE STRUCTURES

THIS ITEM SHALL BE PERFORMED AS DIRECTED BY THE ENGINEER.

ITEM 845 - LATEX MODIFIED CONCRETE OVERLAY, AS PER PLAN, (1-1/4 INCHES THICK)

LONGITUDINAL JOINTS IN THE CONCRETE OVERLAY ARE PERMITTED BUT ONLY TO THE EXTENT NECESSARY TO ACCOMMODATE THE WIDTH OF THE FINISHING MACHINE AND TO PERMIT MAINTENANCE OF VEHICULAR TRAFFIC. EXCEPT AS APPROVED BY THE ENGINEER, JOINTS SHALL NOT BE USED ADJACENT TO THE CURBS.

ON THIS PROJECT THE LATEX MODIFIED CONCRETE OVERLAY SHALL BE PLACED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 845 WITH THE FOLLOWING EXCEPTIONS:

1. IN LIEU OF THE SPECIFIED GROOVING OF THE PLASTIC CONCRETE, TEXTURE SHALL BE SAWED INTO THE OVERLAY AFTER THE OVERLAY HAS CURED FOR THE REQUIRED TIME. PAYMENT FOR THE SAWED GROOVING WILL BE IN ACCORDANCE WITH THE PROPOSAL.
2. AFTER THE LATEX MODIFIED CONCRETE HAS BEEN FINISHED TO A UNIFORM SMOOTH, DENSE AND EVEN SURFACE, THE SURFACE SHALL BE GIVEN AN ARTIFICIAL TURF DRAG APPROVED BY THE ENGINEER. THE SURFACE SHALL HAVE A UNIFORM GRITTY TEXTURE.
3. THE TURF DRAG SHALL BE ATTACHED TO THE FINISHING MACHINE SO AS TO TEXTURE THE SURFACE IMMEDIATELY AFTER PASSAGE OF THE FINISHING MACHINE. THE DRAG SHALL BE OPERATED IN THE LONGITUDINAL OR TRANSVERSE DIRECTION.
4. THE FINISHING MOVEMENT AND RESULTING PROGRESS OF THE DRAG SHALL BE UNIFORM TO PREVENT RIDGES FORMING ON THE CONCRETE SURFACE. THE TURF DRAG SHALL BE WEIGHTED AND THE SIZE OF THE CONTACT AREA ADJUSTED AS NECESSARY TO PRODUCE A UNIFORM TEXTURE ACCEPTABLE TO THE ENGINEER.
5. THE ARTIFICIAL TURF SHALL BE CLEANED PERIODICALLY AS DIRECTED BY THE ENGINEER TO REMOVE ANY HARDENED CONCRETE PARTICLES. THE ABOVE TEXTURE SHALL STOP WITHIN 9 TO 12 INCHES FROM THE SAFETY CURB OR PARAPET.
6. FOLLOWING THE TURF DRAG THE SURFACE SHALL BE CHECKED WITH THE 10 FT. STRAIGHT EDGE AND COVERED WITH WET BURLAP AND WHITE OPAQUE POLYETHYLENE AND CURED IN ACCORDANCE WITH SUPPLEMENTAL SPECIFICATION 845.
7. THE COST OF THE TURF DRAG SHALL BE INCLUDED IN THE PRICE BID FOR LATEX MODIFIED CONCRETE, AS PER PLAN (1-1/4 INCHES THICK).

ITEM 845 - LATEX MODIFIED CONCRETE, OVERLAY, VARIABLE THICKNESS, AS PER PLAN

INCLUDED IN THIS ITEM IS THE REMOVAL OR CUTTING AS NECESSARY AND CLEANING OF THE EXISTING BULB ANGLE GUTTERS.

ITEM SPECIAL - SEALING OF CONCRETE SURFACES

A CONCRETE SEALER SHALL BE APPLIED TO THE NEW CONCRETE SURFACES WHICH INCLUDE ALL CURBS, PARAPETS AND MEDIAN BARRIER.

ITEM SPECIAL - SCUPPER MODIFICATION

ALL SCUPPERS ON BRIDGE HAM-50-2962 AND NON-MEDIAN SCUPPERS ON BRIDGE HAM-50-2945 SHALL BE MODIFIED IN ACCORDANCE WITH DETAIL U ON SHEET 7/12. ALL OF THE ABOVE WORK IS INCLUDED FOR PAYMENT UNDER ITEM SPECIAL, EACH, SCUPPER MODIFICATION.

ITEM SPECIAL - REFURBISHING, MODIFYING, ALIGNING AND RESETTNG OF BEARING DEVICES

THIS ITEM INCLUDES ALL WORK AND MATERIAL NECESSARY TO PROPERLY ALIGN AND RESET BRIDGE BEARINGS AS WELL AS THEIR CLEANING, MODIFYING AND PAINTING. INCLUDED SHALL BE: THE REQUIRED JACKING AND TEMPORARY SUPPORT, DISASSEMBLY OF THE BEARING, HAND CLEANING (GRINDING IF NECESSARY TO ACHIEVE SMOOTH FRICTION SURFACE), SANDBLASTING, LUBRICATING, AND PAINTING (SYSTEM A) AS REQUIRED BY 514, REPLACEMENT OF ANY DAMAGED OR UNDERSIZED SHEET LEAD (711.19), REALIGNMENT OF THE UPPER BEARING PLATE (HAM-50-2962) BY REMOVING EXISTING WELDS AND REWELDING SO THAT THE BEARINGS ARE ALIGNED AT 60° F, REASSEMBLY OF THE BEARINGS CUTTING EXISTING ANCHOR BOLTS FLUSH WITH ABUTMENT (HAM-50-2945), EPOXY GROUTING OLD ANCHOR BOLT HOLES IN BEARING DEVICES, FURNISHING AND INSTALLING (CMS510) OF ANCHOR BOLTS, AND REMOVAL OF THE JACKS. ALL WORK SHALL BE TO THE SATISFACTION OF THE PROJECT ENGINEER. THE CONTRACTOR SHALL SUBMIT HIS METHOD OF JACKING THE BEARINGS FOR PRIOR APPROVAL. PAYMENT FOR ALL THE ABOVE-DESCRIBED LABOR AND MATERIALS WILL BE MADE AT THE CONTRACT PRICE BID FOR ITEM SPECIAL - EACH - REFURBISHING, MODIFYING, ALIGNING AND RESETTNG BEARING DEVICES.

ITEM SPECIAL - TRANSVERSE SAWCUT GROOVING OF CONCRETE BRIDGE DECK OVERLAYS

DESCRIPTION - THIS WORK SHALL CONSIST OF SAWCUTTING GROOVES INTO THE SURFACE OF A NEWLY PLACED CONCRETE BRIDGE DECK OVERLAY. THIS WORK SHALL BE PERFORMED AFTER THE OVERLAY HAS BEEN CURED FOR THE SPECIFIED TIME. ANY CRACKING IN THE OVERLAY FOLLOWING THE CURE PERIOD SHALL BE DOCUMENTED AND CORRECTED AFTER THE GROOVING OPERATION IS COMPLETE UNLESS FULL REMOVAL AND REPLACEMENT IS REQUIRED.

EQUIPMENT - ONLY MULTIBLADED DIAMOND SAW EQUIPMENT USING CIRCULAR SAW BLADES WILL BE PERMITTED. THE ENGINEER MAY ALLOW SINGLE BLADE, CIRCULAR SAW EQUIPMENT WHERE HE DETERMINES SUCH EQUIPMENT IS NECESSARY TO COMPLETE THE WORK AS REQUIRED. THE EQUIPMENT THE CONTRACTOR PROPOSES TO USE WILL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

LIMITATIONS - NO GROOVING SHALL BE DONE TO ANY CONCRETE SURFACE UNTIL IT HAS BEEN CURED FOR THE SPECIFIED TIME. ALL GROOVING SHALL BE DONE PRIOR TO OPENING TO TRAFFIC. NO GROOVING SHALL BE DONE IN TEMPERATURE LESS THAN 32 DEGREES F.

GROOVES SHALL BE CUT PERPENDICULAR TO THE CENTERLINE OF THE ROADWAY.

GROOVES SHALL BE RECTANGULAR IN SHAPE AND THEY SHALL BE APPROXIMATELY 1/8 INCH WIDE AND 1/4 INCH DEEP AND SHALL BE SPACED AT 5/8 INCH (PLUS OR MINUS 1/8 INCH) CENTERS. THE CUTTING OF GROOVES OVER AN AREA WHICH HAS BEEN PREVIOUSLY GROOVED WILL NOT BE PERMITTED. NO CUTTING BLADE SHALL BE INTRODUCED INTO AN ALREADY ESTABLISHED GROOVE.

DURING THE GROOVING OPERATION, SHOULD THE ENGINEER DETERMINE THAT THE MINIMUM GROOVE DEPTH IS NOT BEING ACHIEVED OR THAT GROOVES ARE TOO DEEP, THE CONTRACTOR SHALL STOP GROOVING OPERATIONS AND MAKE ALL NECESSARY ADJUSTMENTS TO ACHIEVE THE SPECIFIED DEPTH. THE CONTRACTOR SHALL PROVIDE THE ENGINEER WITH TWO EASILY READABLE GAGES WITH WHICH TO VERIFY GROOVE DEPTH (TIRE TREAD GAGES WILL BE SUFFICIENT TO ACCOMPLISH THIS).

GROOVING SHALL TERMINATE 1 FOOT (PLUS OR MINUS 3 INCHES) FROM ANY VERTICAL FACE (SAFETY CURB, PARAPET OR BARRIER). GROOVING SHALL BE KEPT THE SAME DISTANCE AWAY FROM BRIDGE SCUPPERS OR DRAINS. GROOVING SHALL BE DONE AS CLOSE TO ENDDAMS AND INTERMEDIATE EXPANSION JOINTS AS POSSIBLE. ANY JOINT SYSTEM OR BRIDGE SEAL DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED AT HIS COST.

SLURRY OR DEBRIS FROM THE GROOVING OPERATION SHALL BE PERMITTED TO ACCUMULATE. RESIDUE SHALL BE CONTINUOUSLY REMOVED AND NOT BE PERMITTED TO HARDEN. SLURRY OR DEBRIS SHALL NOT BE DISPOSED OF ON STRUCTURE OR HIGHWAY, DRAINAGE SYSTEM OR THE ROADWAY SLOPES. IT SHALL BE DISPOSED OF IN A MANNER SATISFACTORY TO THE ENGINEER.

METHOD OF MEASUREMENT - THE WORK SHALL BE MEASURED AS THE NUMBER OF SQUARE YARDS OF SURFACE AREA GROOVED AS PER THE ABOVE SPECIFICATIONS.

BASIS OF PAYMENT - PAYMENT SHALL BE MADE AT THE CONTRACT BID PRICE FOR WORK COMPLETED IN ACCORDANCE WITH THIS SPECIFICATION ON THE BASIS OF:

ITEM	UNIT	DESCRIPTION
SPECIAL	SQUARE YARD	TRANSVERSE SAWCUT GROOVING OF CONCRETE BRIDGE DECK OVERLAY

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

HAM-50-29.35



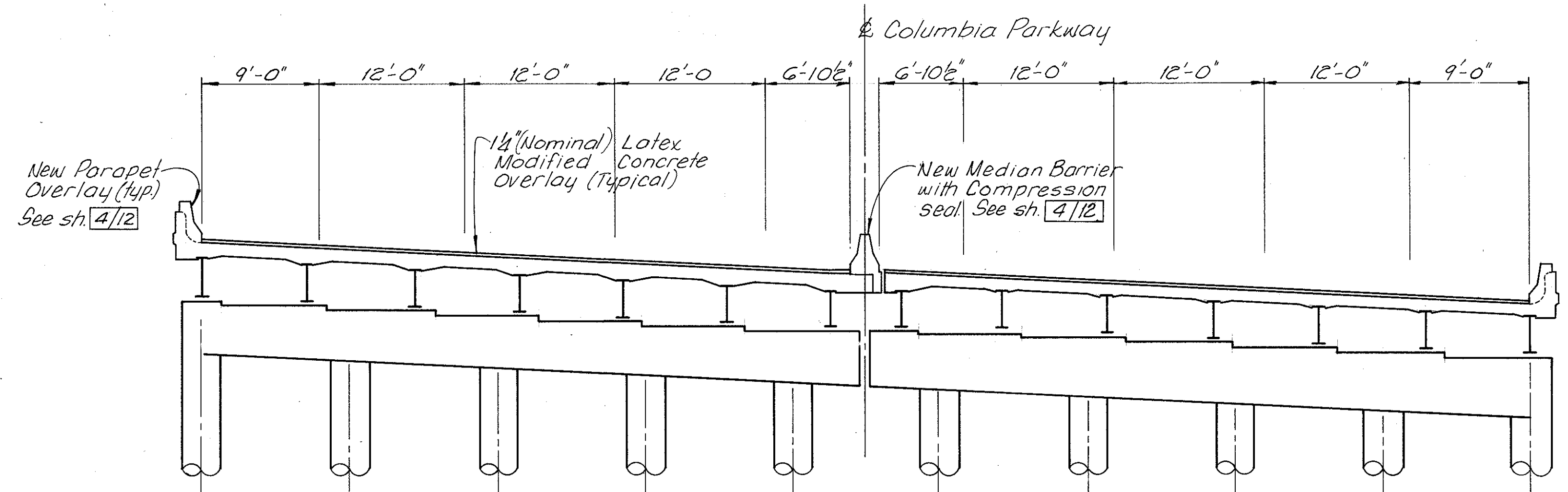
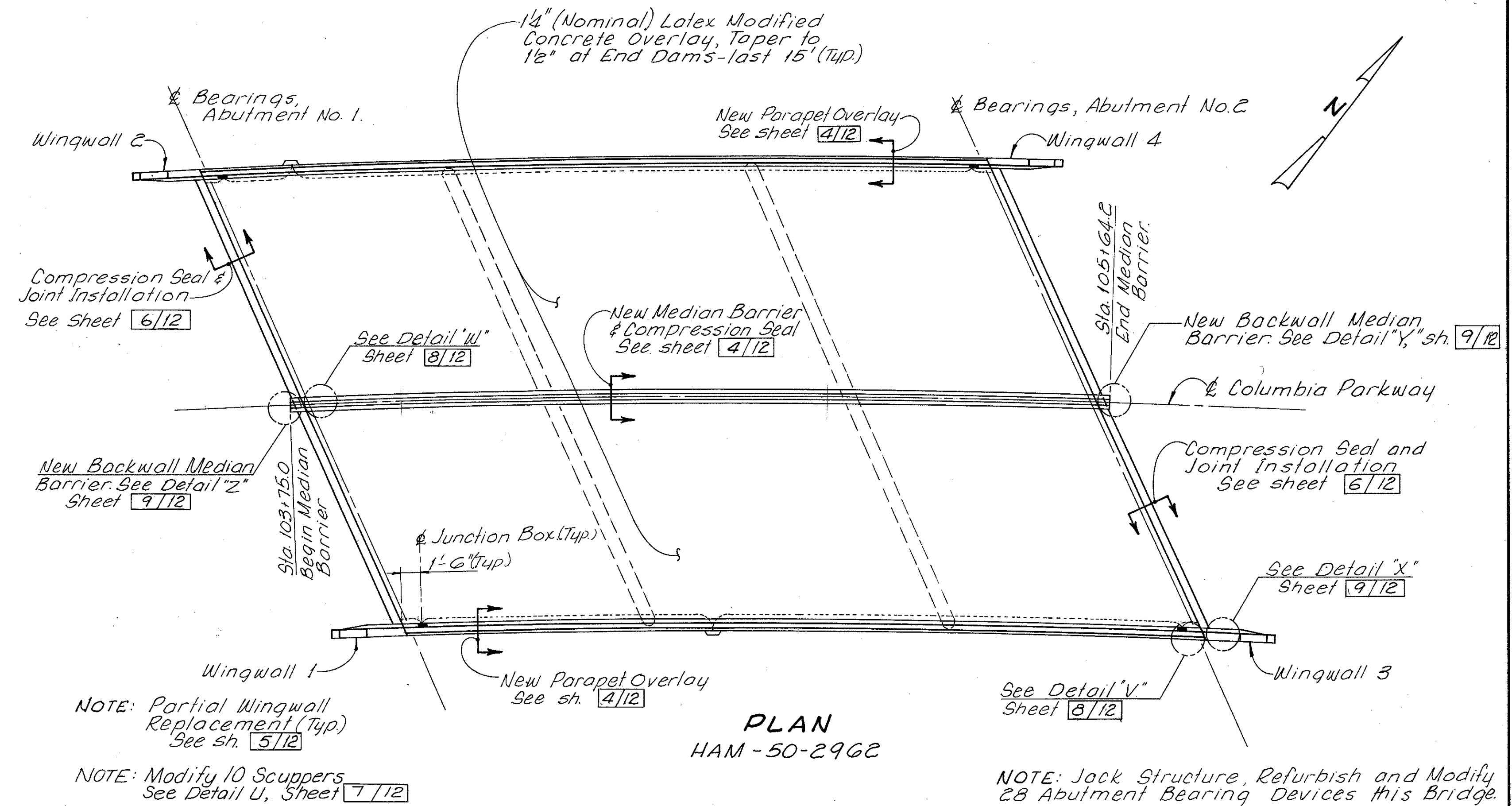
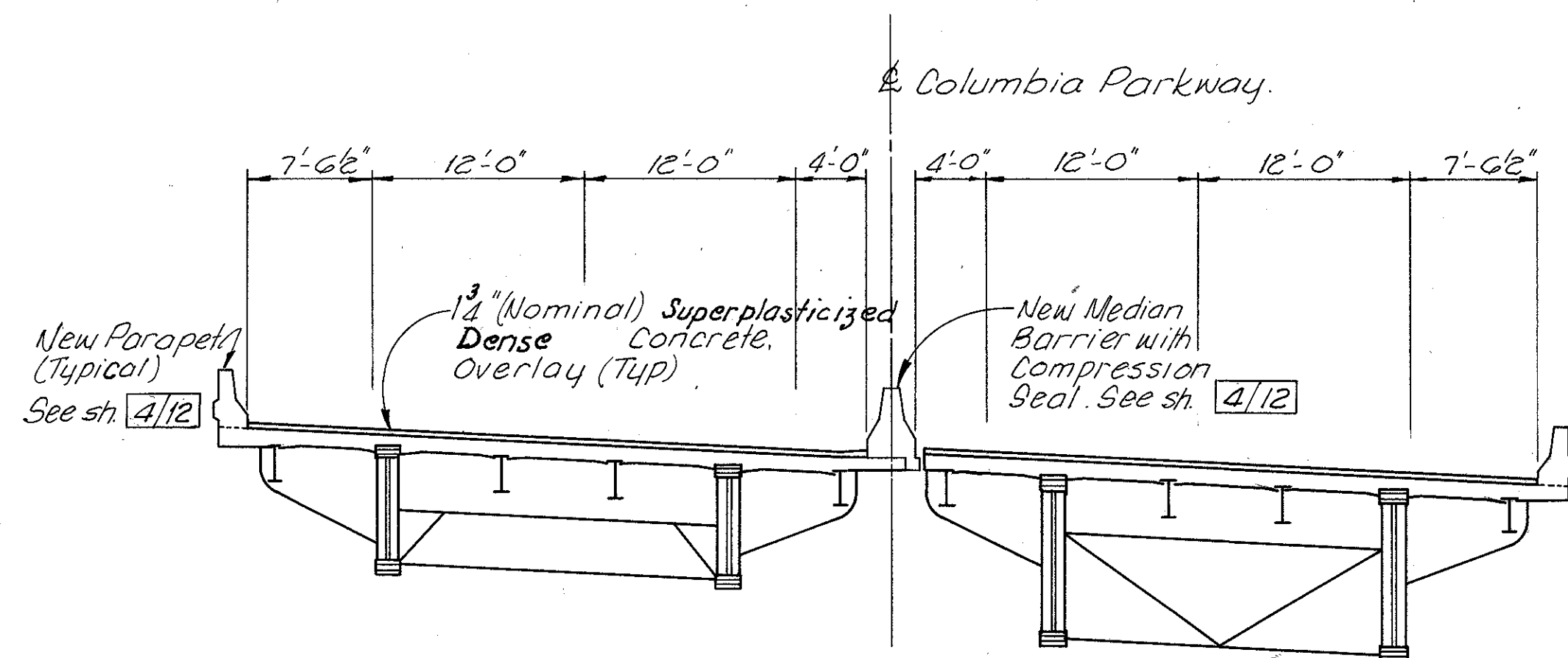
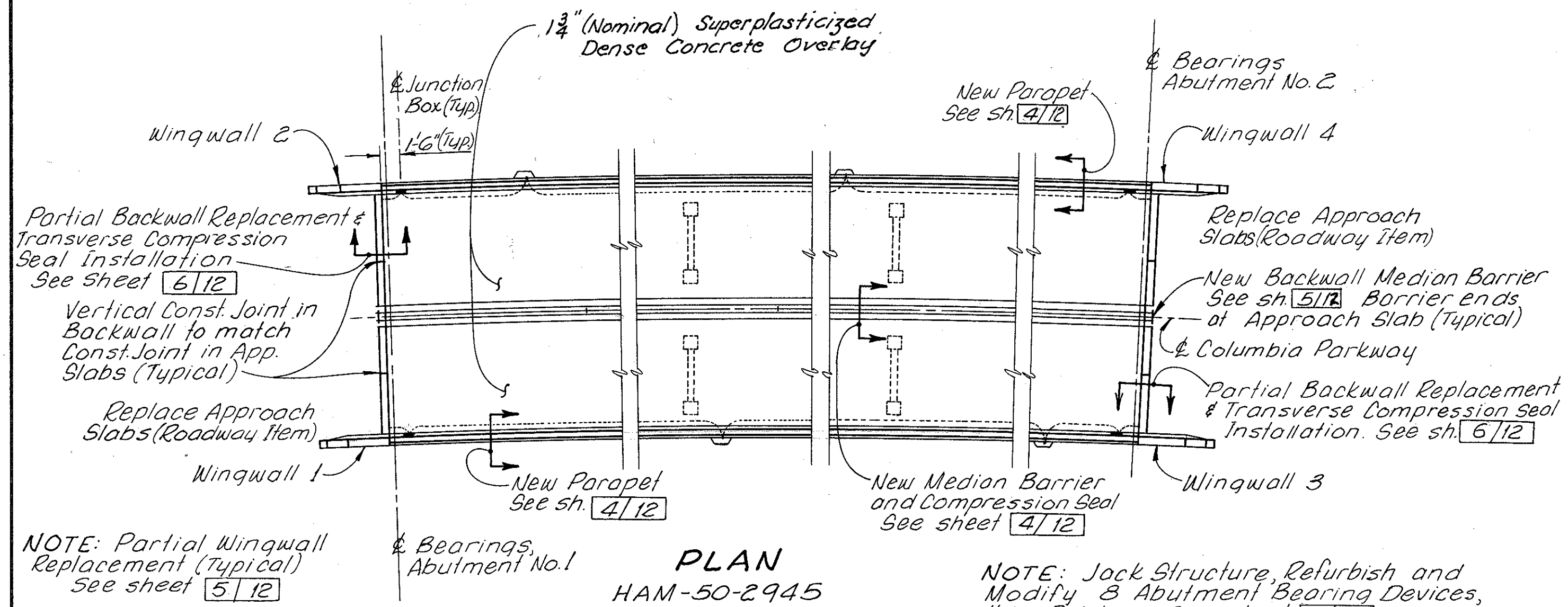
KING & GAVARIS CONSULTING ENGINEERS, INC. CINCINNATI OHIO						2/12
GENERAL NOTES (2/2)						
BRIDGE NO. HAM-50-2945 OVER DUCK CREEK VALLEY BRIDGE NO. HAM-50-2962 OVER RED BANK ROAD						
DESIGNED P.M.	DRAWN	TRACED V.S.	CHECKED V.S.	REVIEWED J.L.L.	DATE 3/87	REVISION

REVISED 5/10/88

RECORDED
MAY 26 1988

F.H.W.A. REGION	STATE	PROJECT	
5	OHIO		107 116

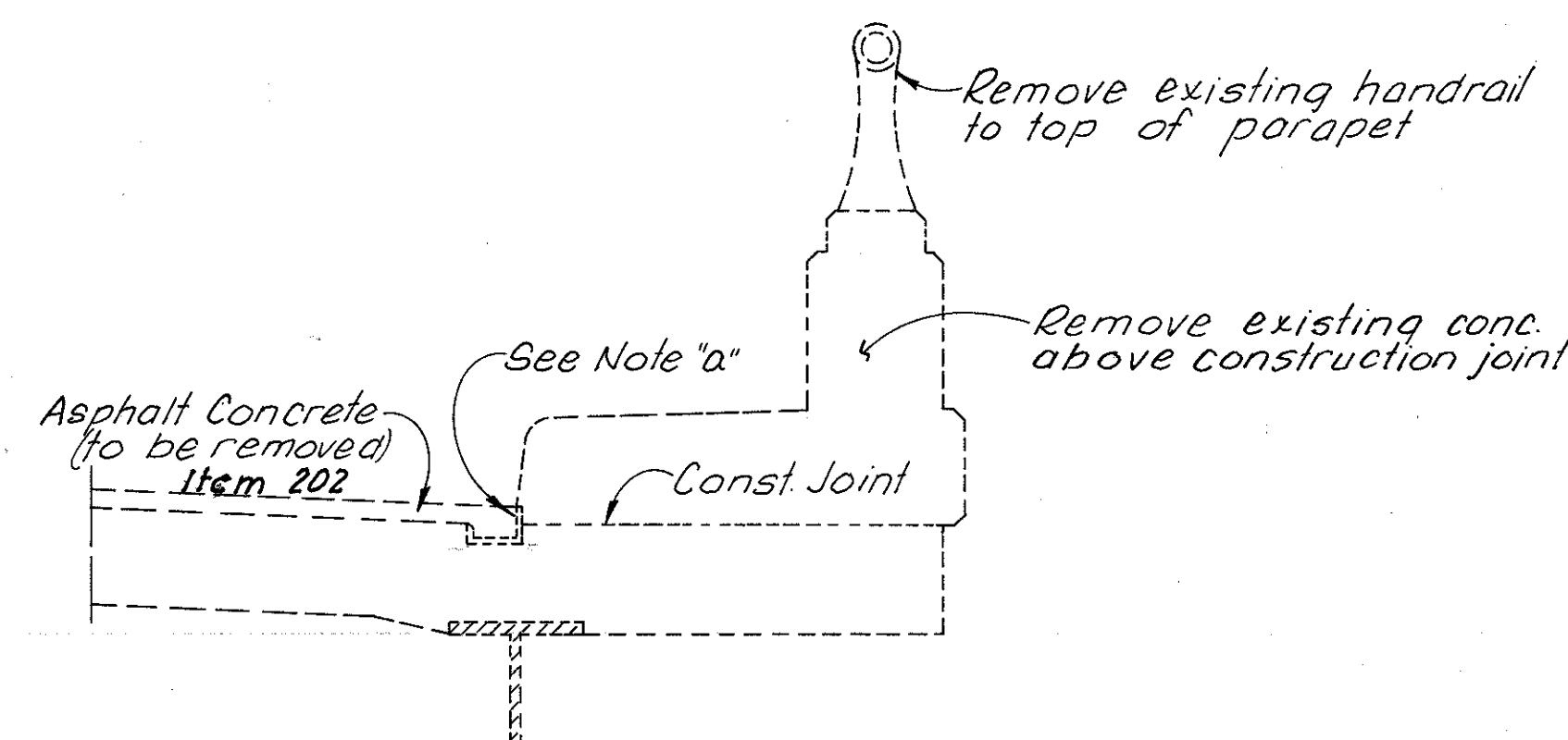
HAM-50-29.35



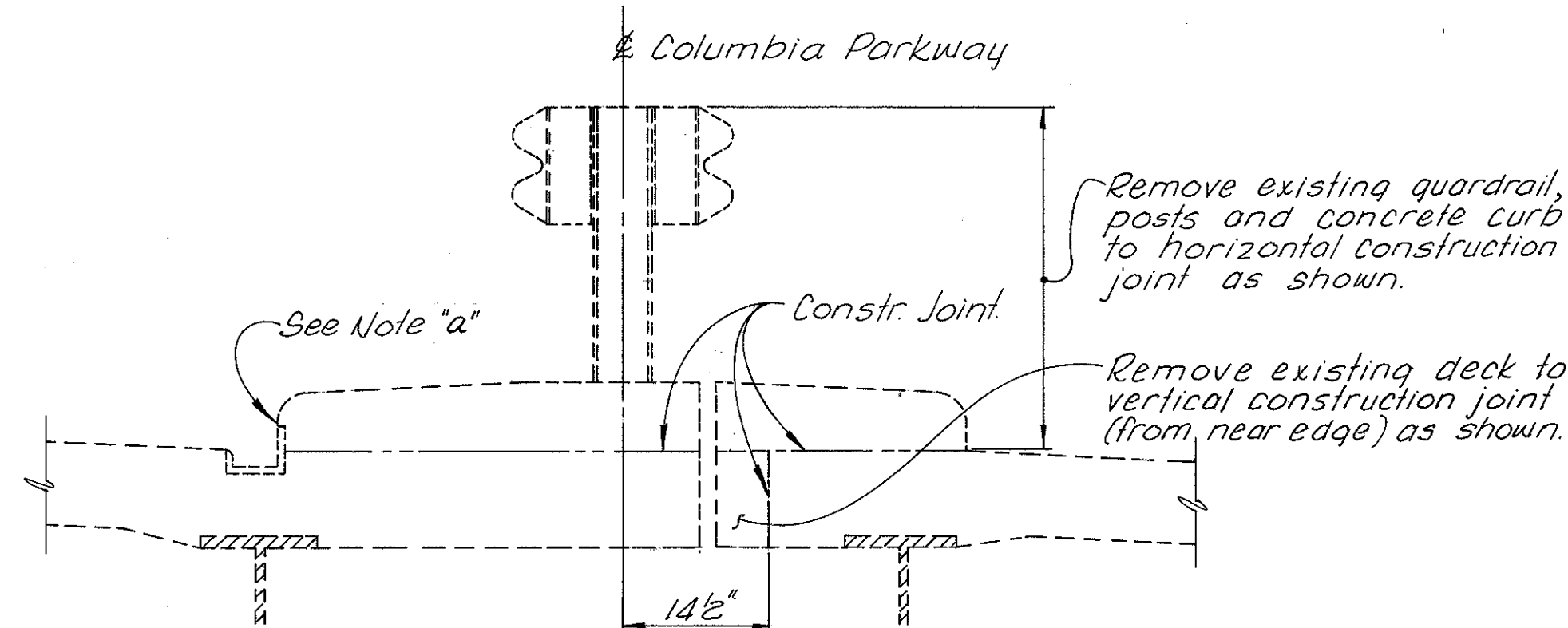
KING & GAVARIS CONSULTING ENGINEERS, INC. CINCINNATI OHIO						3/12
PROPOSED PLAN AND SECTION						
BRIDGE NO. HAM-50-2945						
OVER DUCK CREEK VALLEY						
BRIDGE NO. HAM-50-2962						
OVER RED BANK ROAD						
DESIGNED P.M.	DRAWN R.R.	TRACED R.R.	CHECKED V.S.	REVIEWED V.J.L.	DATE 3/87	REVISED

Revised 5-6-88

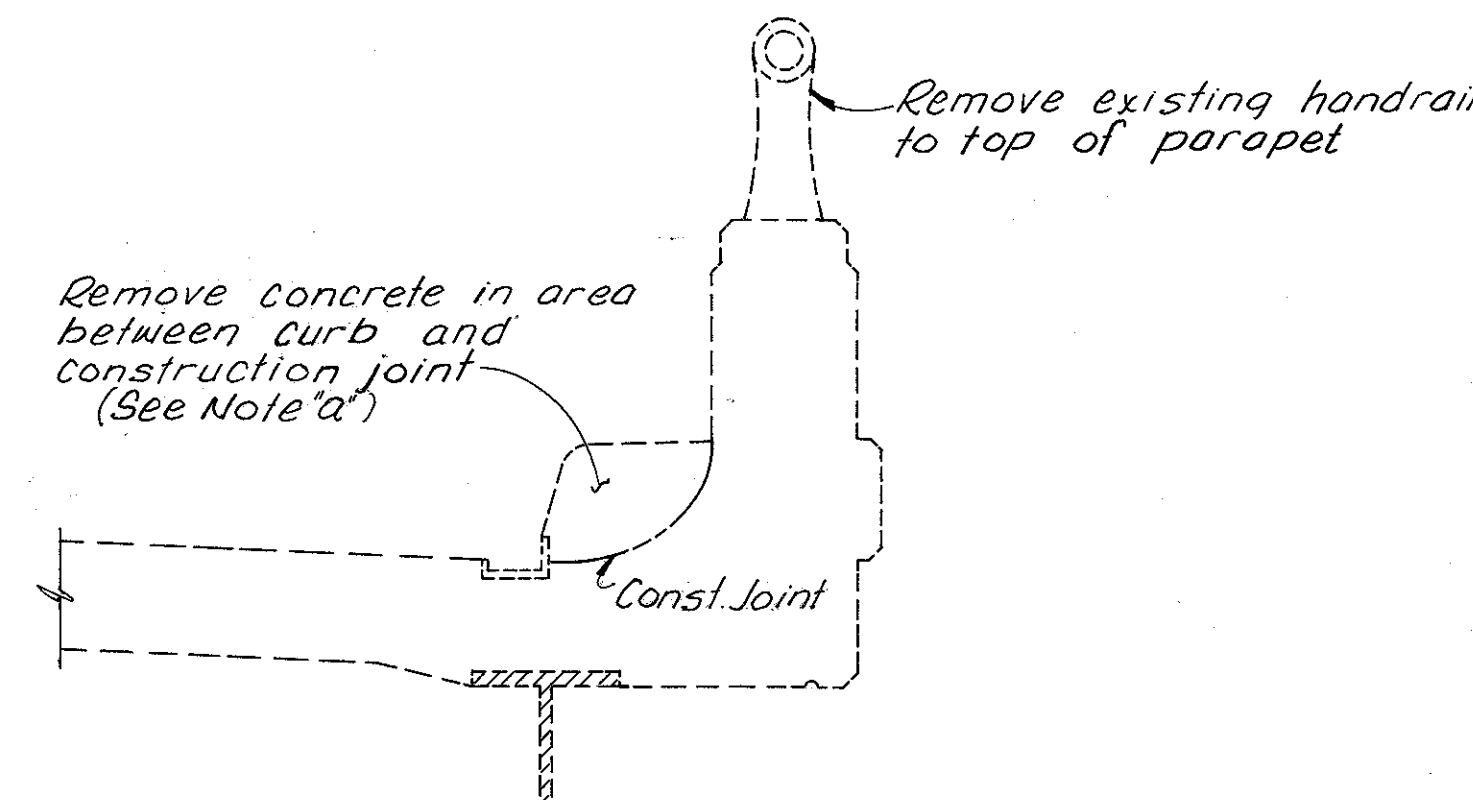
HAM-50-29.35



EXISTING PARAPET
HAM-50-2945

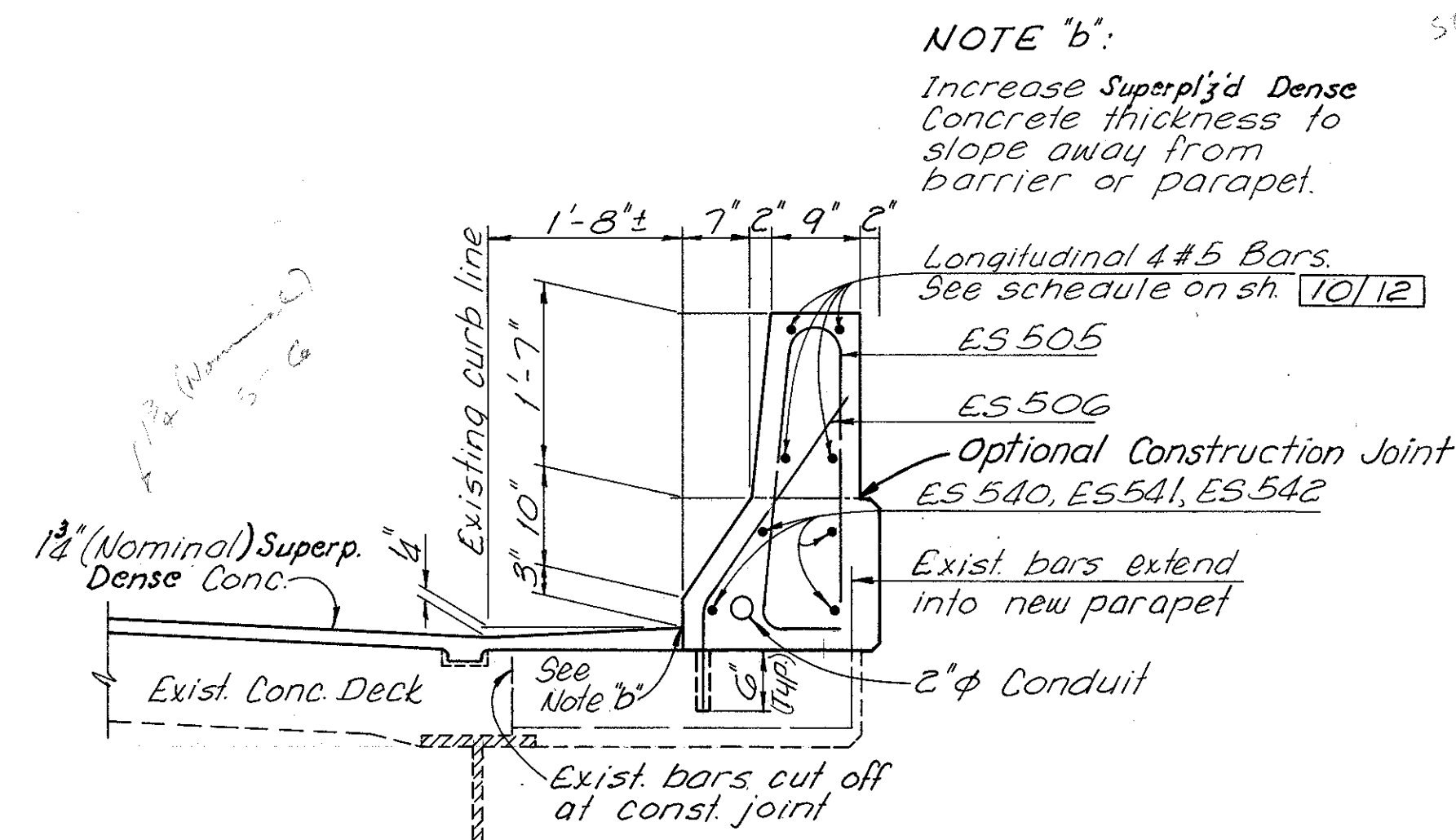


EXISTING MEDIAN
HAM-50-2945 & HAM-50-2962

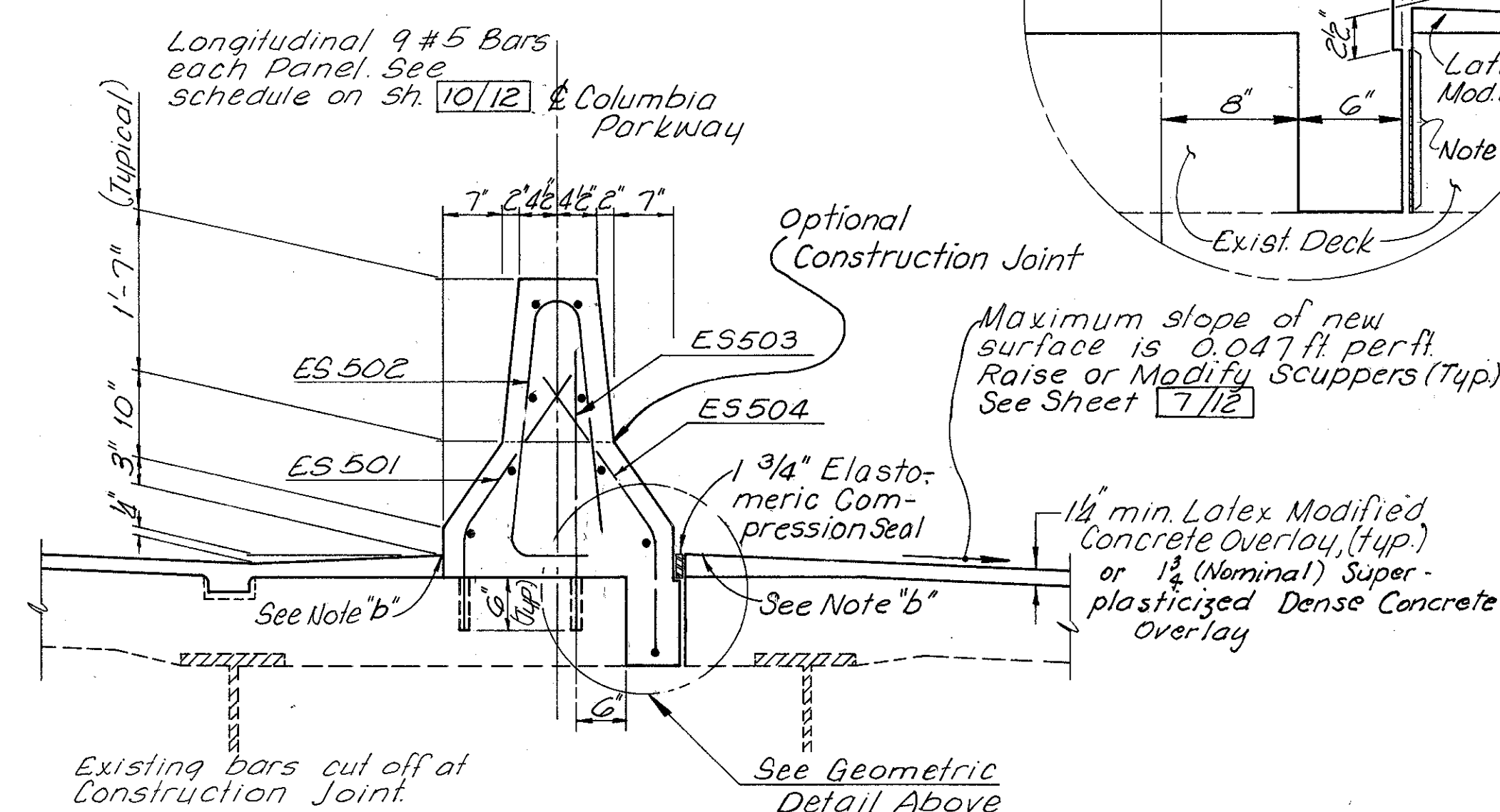


EXISTING PARAPET
HAM-50-2962

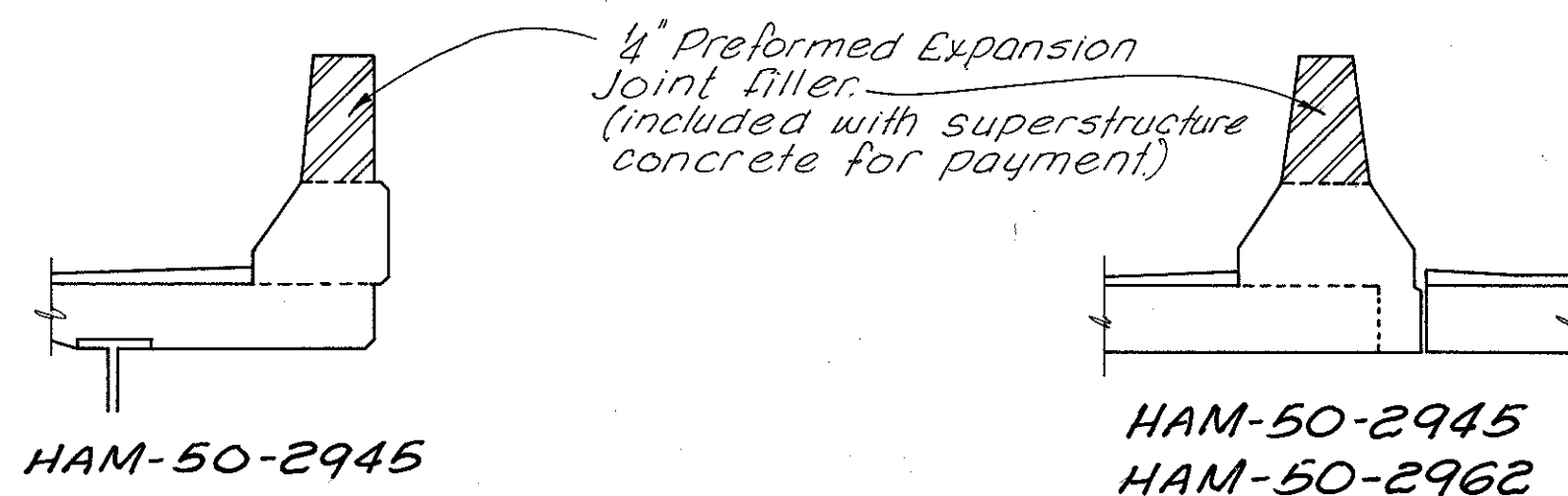
NOTE "a":
Cut Bulb Angle to top of existing Deck. Clean before Resurfacing. Bulb angle not present at all curblines. Include with Item 202, Portions of Structure Removed, for payment.



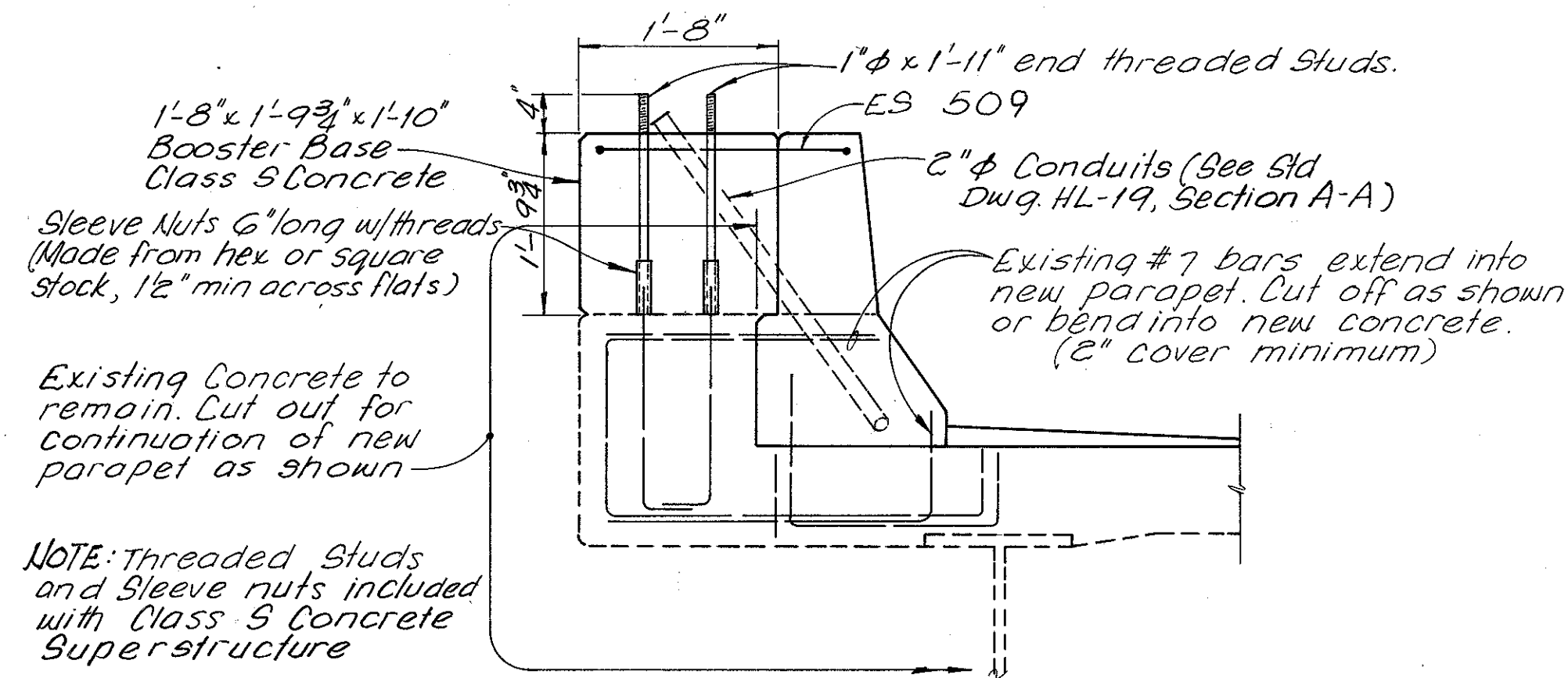
NEW PARAPET
HAM-50-2945



NEW MEDIAN BARRIER-with
LONGITUDINAL COMPRESSION SEAL
HAM-50-2945 & HAM-50-2962



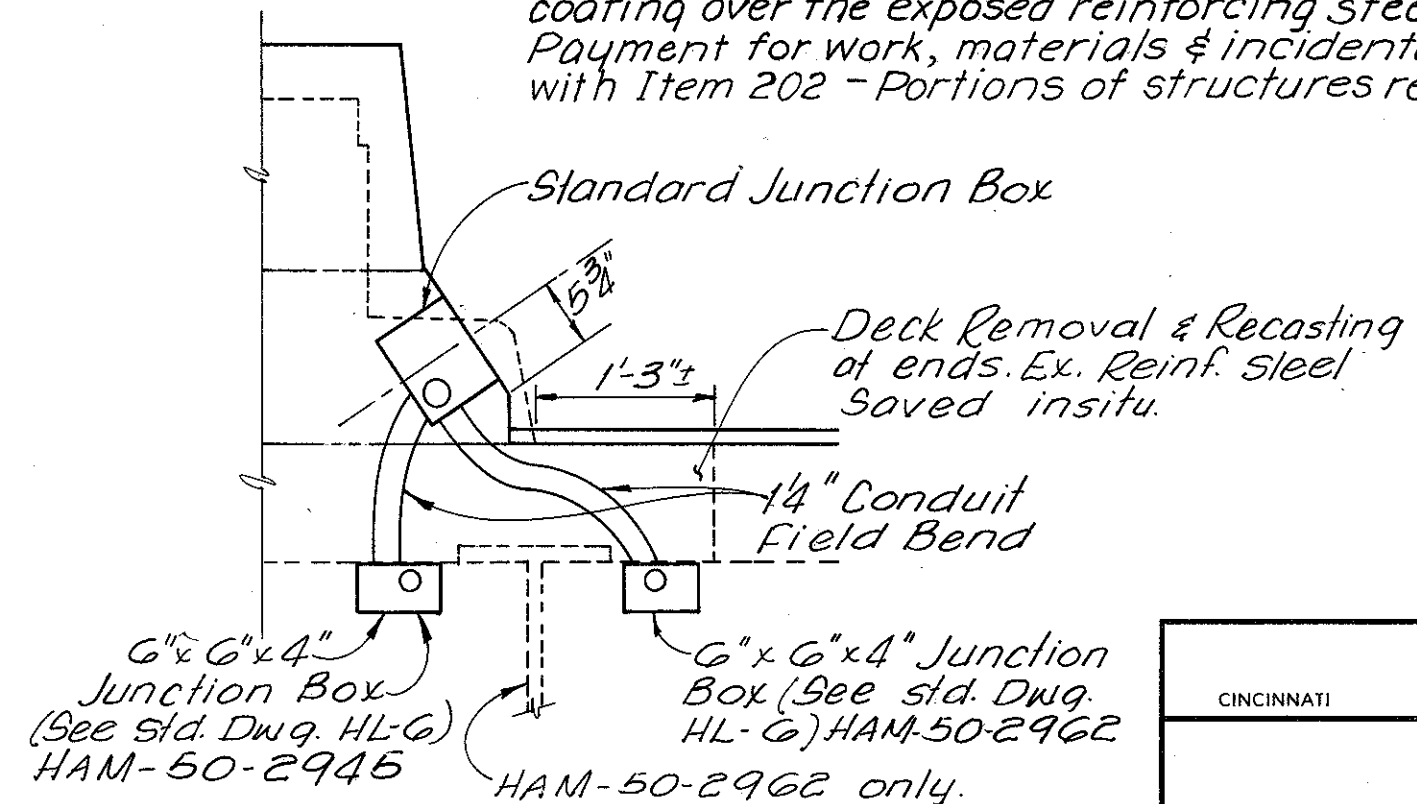
DETAIL SHOWING DEFLECTION JOINTS



SECTION AT EXISTING LIGHT STANDARD BRACKET
HAM-50-2945

NOTE: HAM-50-2962, Install 2" φ Conduits, Booster Base, Sleeve Nuts, & Threaded Studs as detailed above. Chip through existing parapet as necessary, preserve existing reinforcing steel in situ. Recast Concrete.

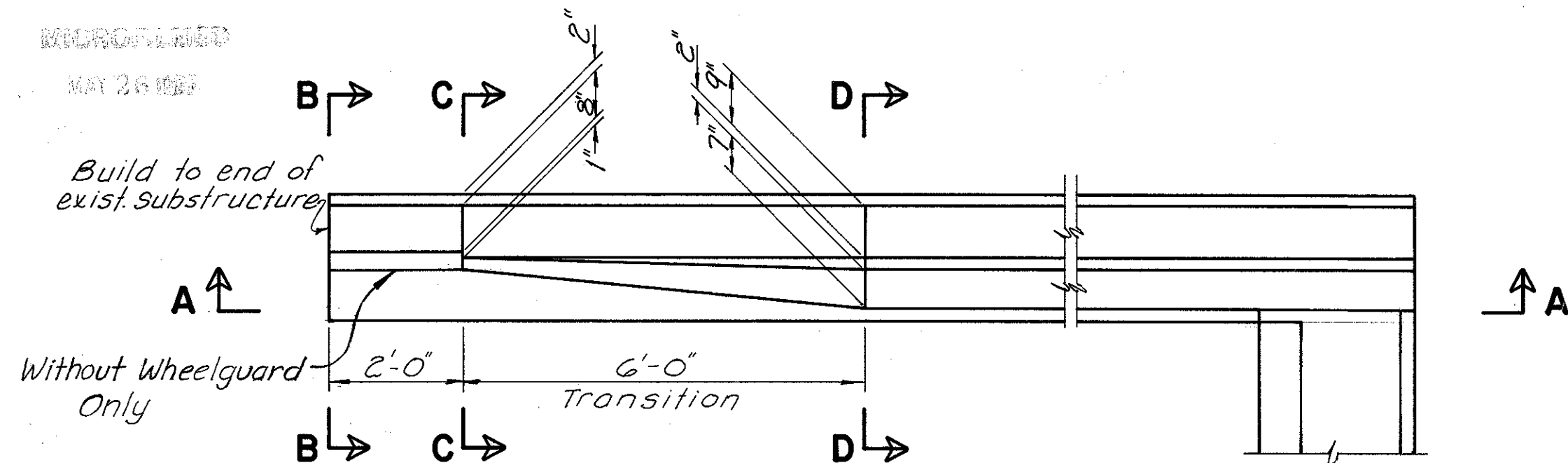
NOTE "1":
Median edge of Eastbound Decks shall be prepared so as to remove all forms of oil and other deleterious material and then be coated with a two-component epoxy sealer of at least 50% Solids content. The performance of the epoxy shall be equal to or surpass the performance of Epoxy Sample 16-E of NCHRP Report 244. The epoxy shall be uniformly applied with proper workmanship to ensure a coating over the exposed reinforcing steel sufficient to prevent corrosion. Payment for work, materials & incidentals in this note shall be included with Item 202 - Portions of structures removed.



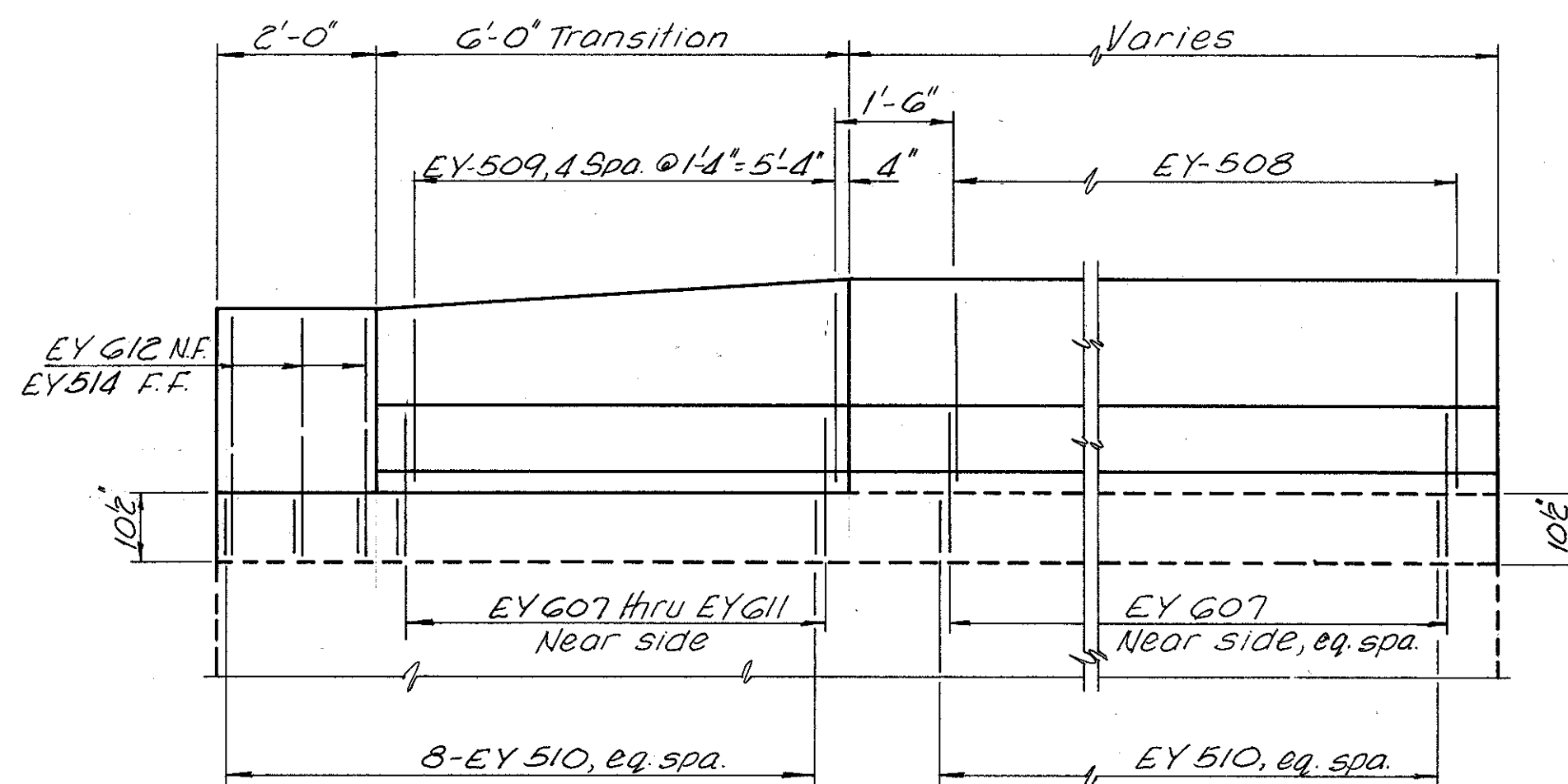
JUNCTION BOX & CONDUIT LOCATION
AT ENDS OF BRIDGES

KING & GAVARIS CONSULTING ENGINEERS, INC.		4/12	
CINCINNATI	OHIO		
PARAPET AND MEDIAN DETAILS BRIDGE NO. HAM-50-2945 OVER DUCK CREEK VALLEY BRIDGE NO. HAM-50-2962 OVER RED BANK ROAD			
DESIGNED P.M.	DRAWN P.M.	TRACED R.R.	CHECKED V.S.
REVIEWED V.J.L.		DATE 3/87	REVISED

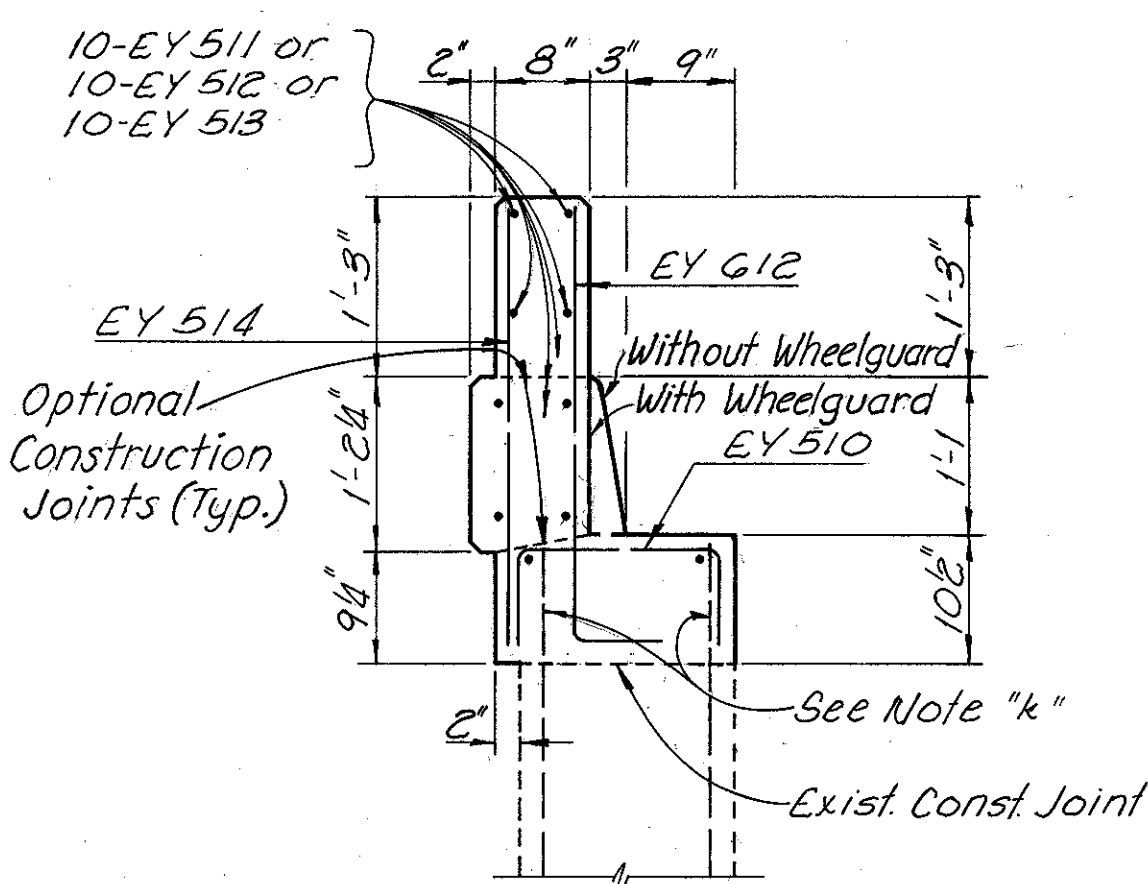
HAM - 50 - 2935



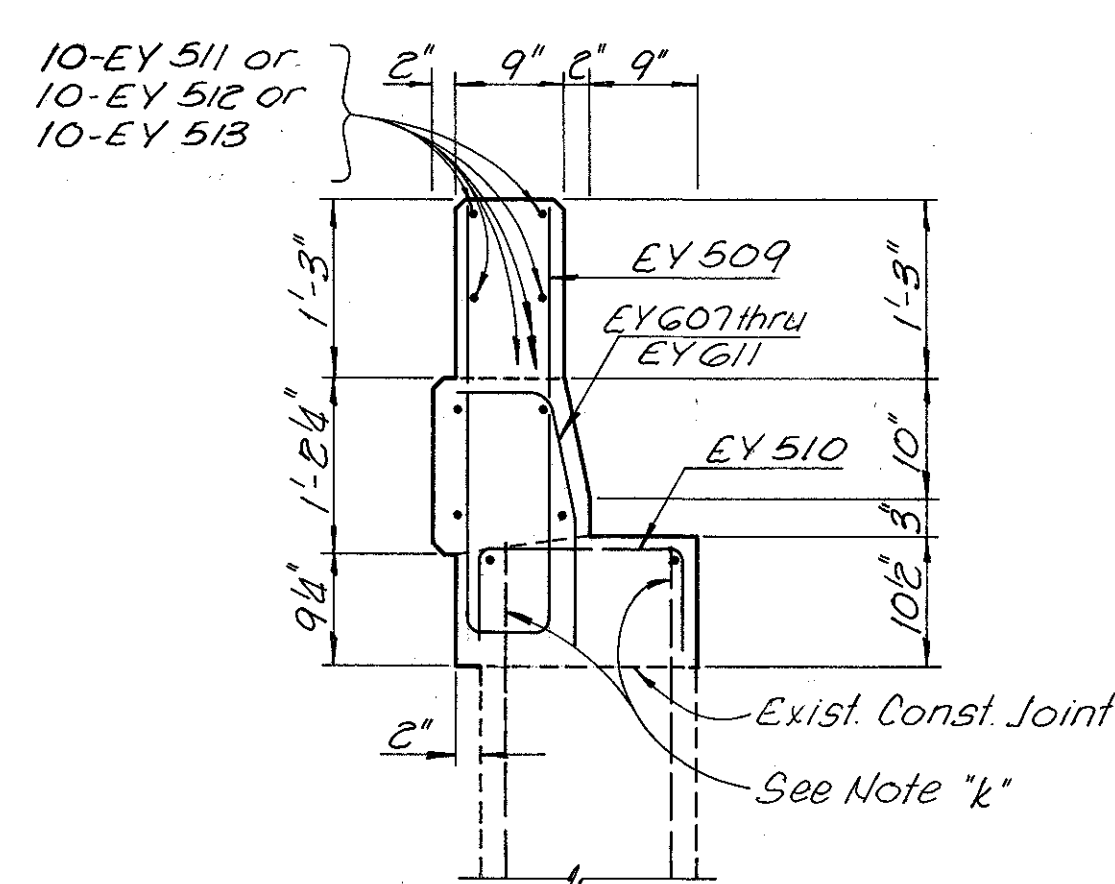
PLAN OF PROPOSED WINGWALL (TYPICAL)
HAM - 50 - 2945



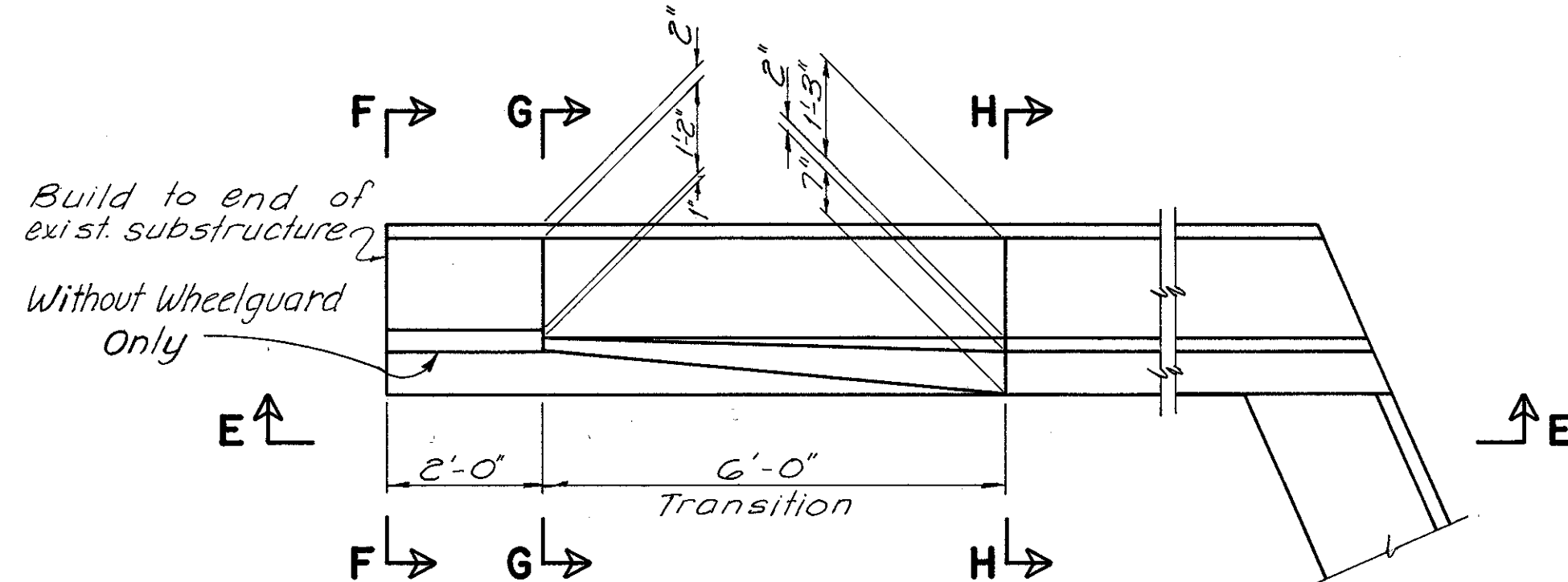
SECTION A-A



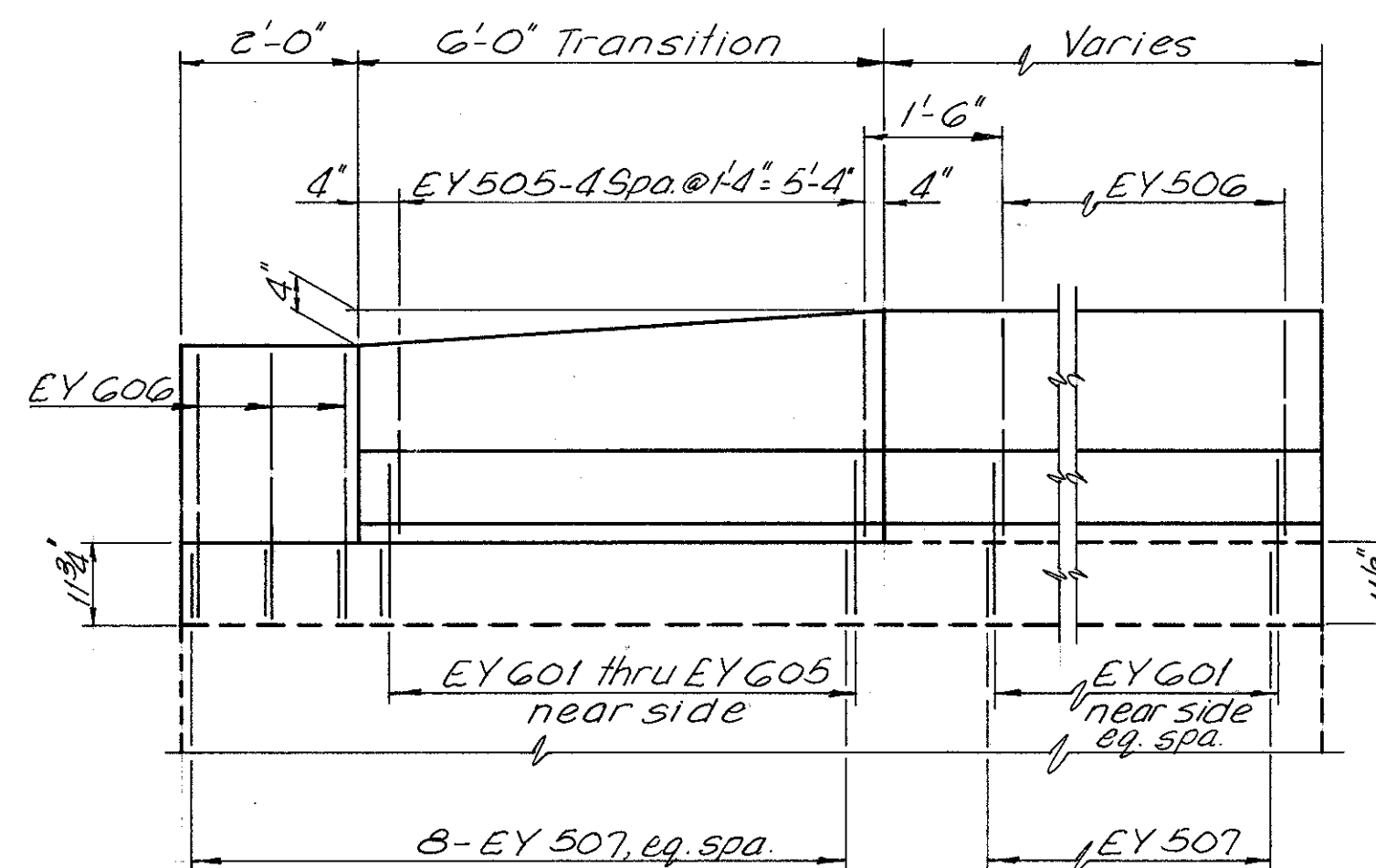
SECTION B-B



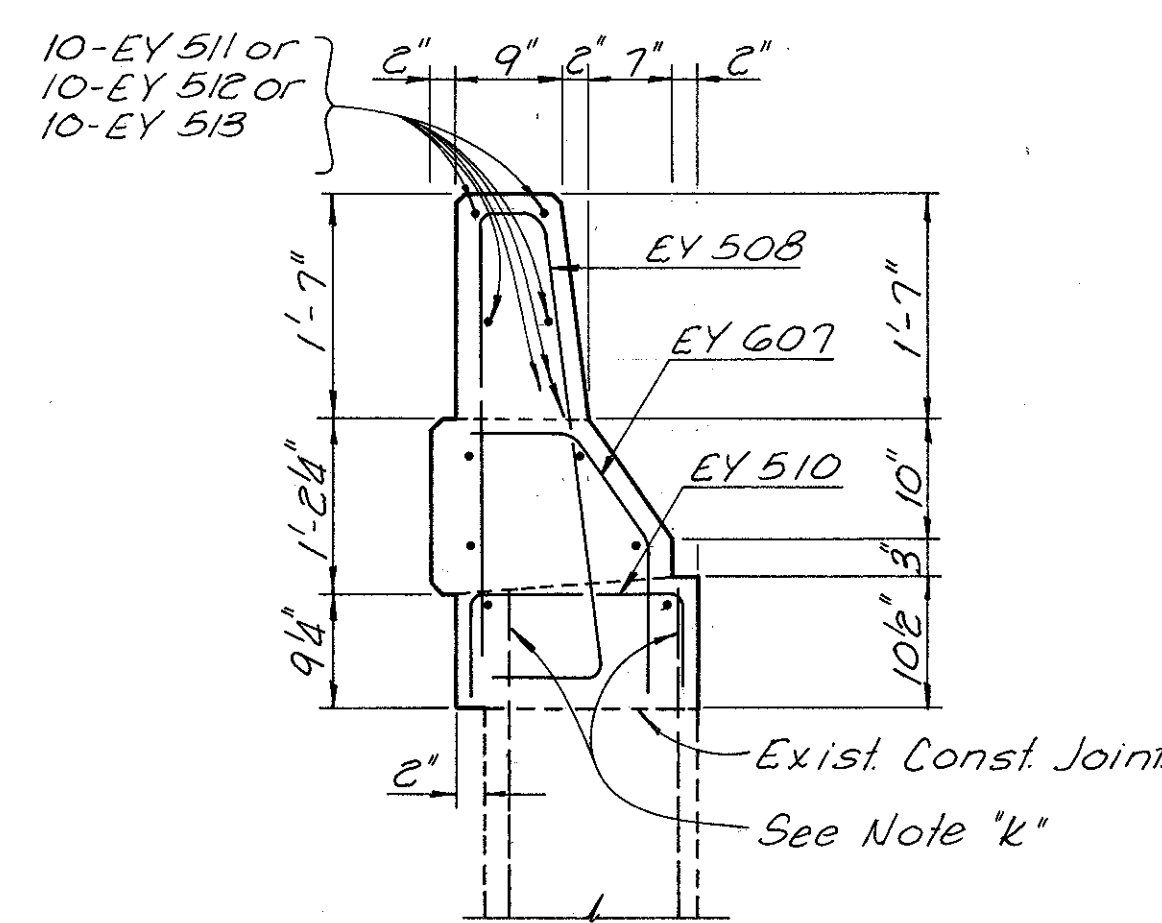
SECTION C-C



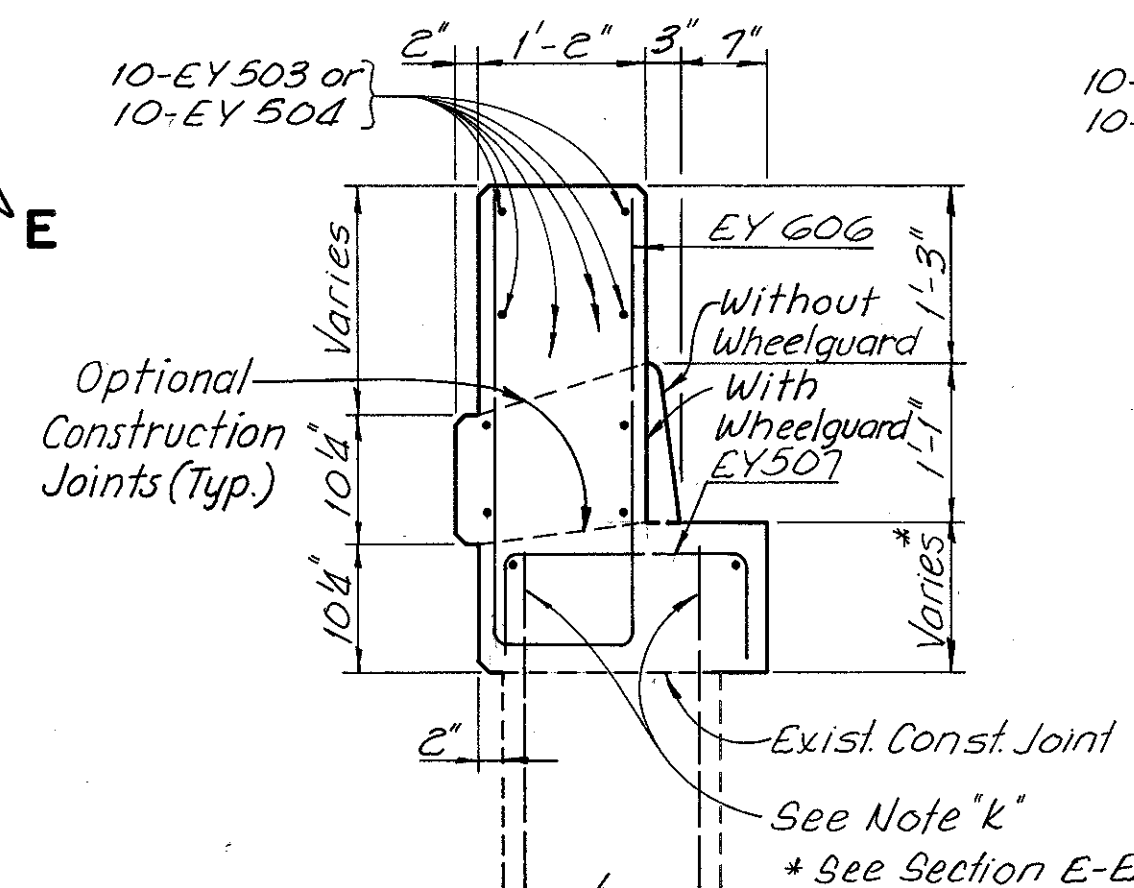
PLAN OF PROPOSED WINGWALL (TYPICAL)
HAM - 50 - 2962



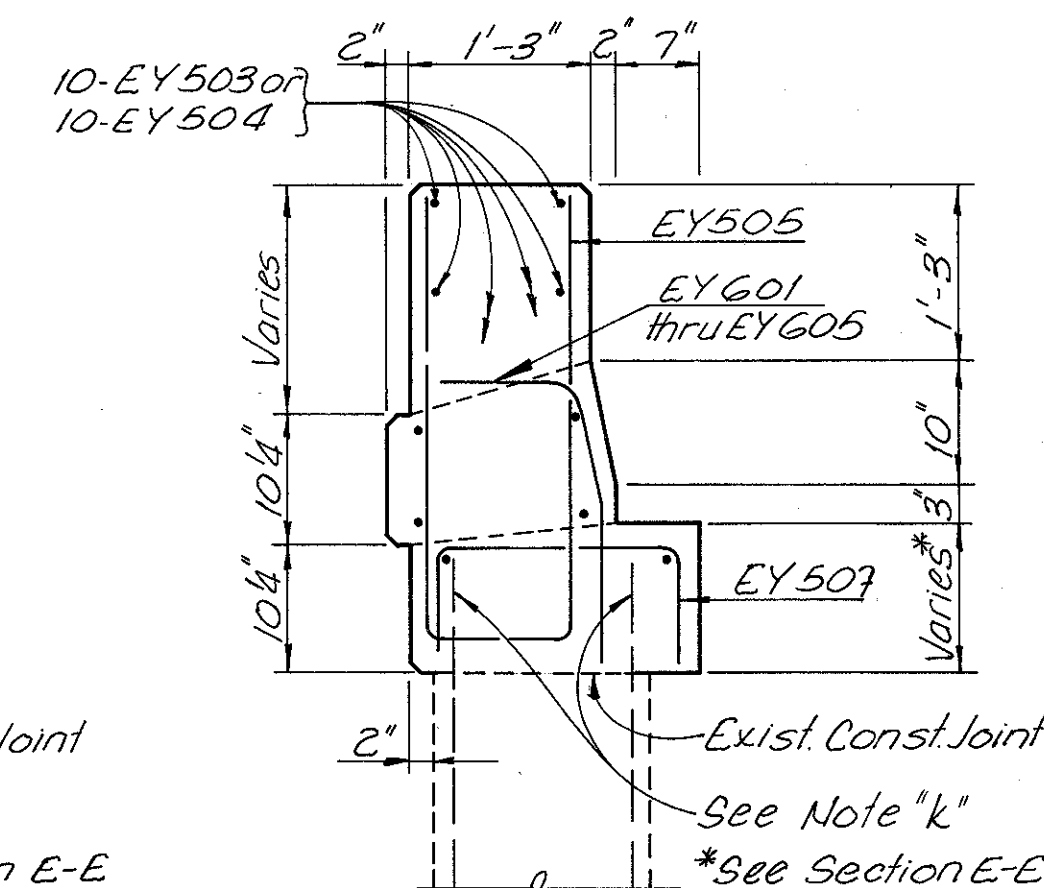
SECTION E-E



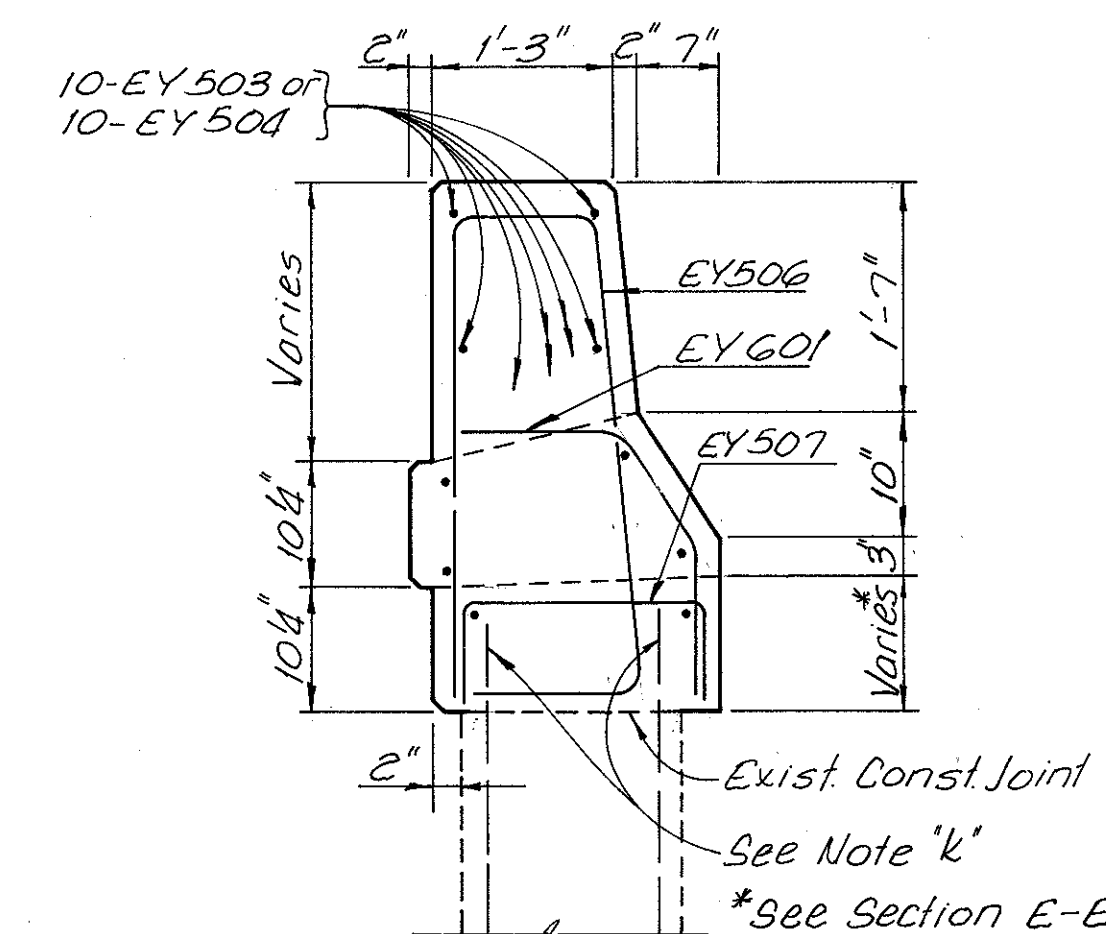
SECTION D-D



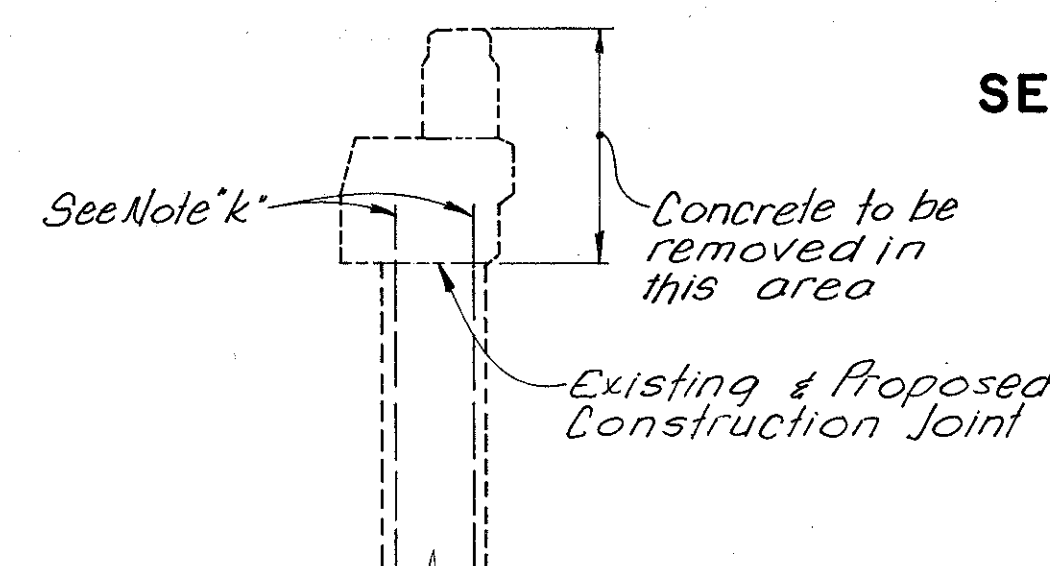
SECTION F-F



SECTION G-G



SECTION H-H



EXISTING WINGWALL SECTION
HAM-50-2945 & HAM-50-2962

NOTES

Concrete insert anchor assembly as shown on Std. Dwg. GR-1 and GR-3, shall be provided for the attachment of guardrail terminal connector (included with abutment concrete for payment)

N.F. = Near Face

F.F. = Far Face

Note "k": Existing Vertical Reinforcing steel to be preserved in situ.

Contractor shall verify required lengths for longitudinal parapet reinforcing steel prior to fabrication; Contractor is referred to CMS 105.02.

WINGWALL REINFORCING BAR COUNT HAM - 50 - 2945

	APPROX. W.W. LENGTH	EY 508	EY 509	EY 510	EY 607	EY 608	EY 609	EY 610	EY 611	EY 612	LONGITUDINAL	EY 514
WINGWALL 1	19'-1"	8	5	16	9	1	1	1	1	3	10-EY 511	3
WINGWALL 2	28'-1"	14	5	22	15	1	1	1	1	3	10-EY 512	3
WINGWALL 3	24'-0"	11	5	19	12	1	1	1	1	3	10-EY 513	3
WINGWALL 4	24'-0"	11	5	19	12	1	1	1	1	3	10-EY 513	3

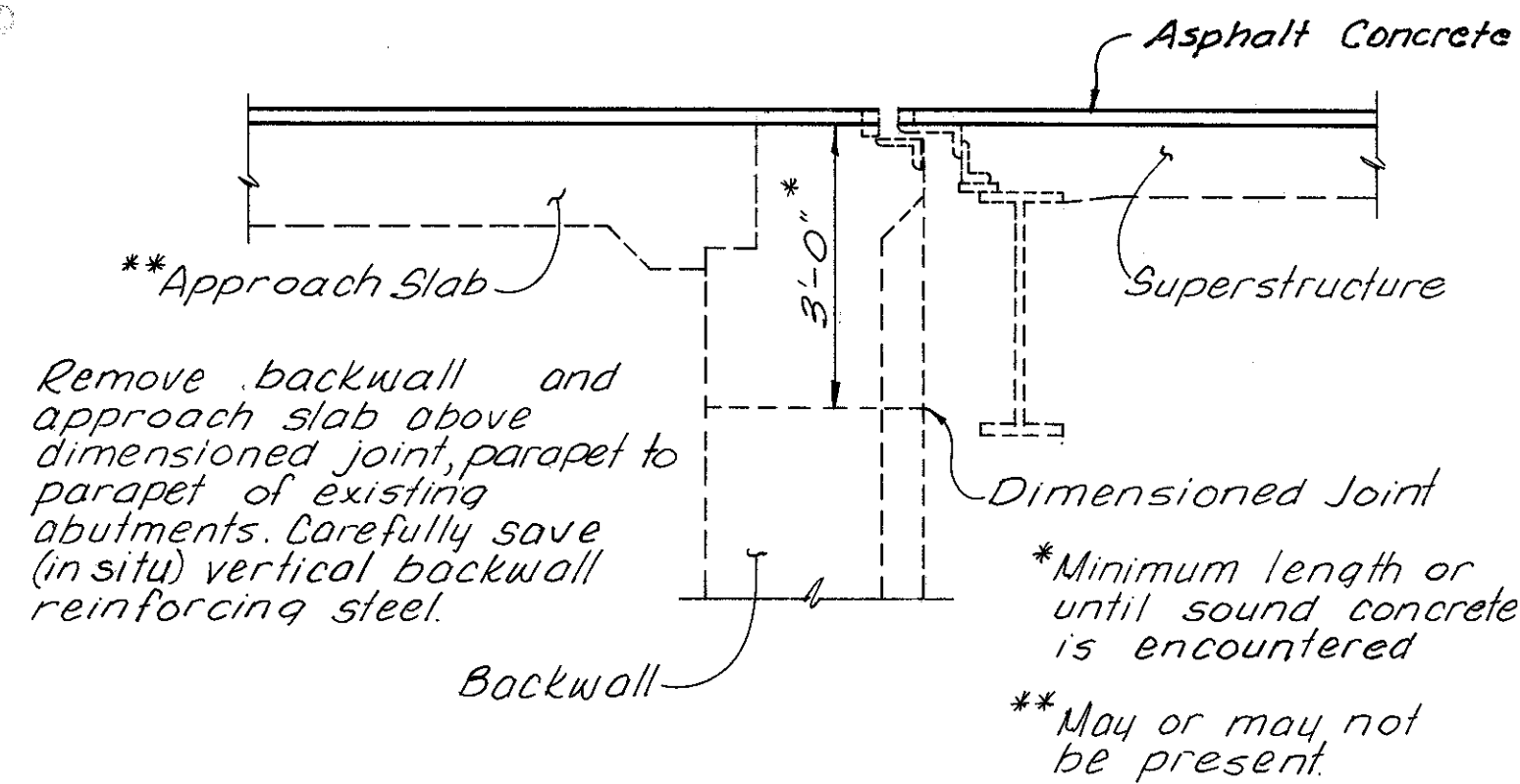
**Measured along Outside Face

WINGWALL REINFORCING BAR COUNT HAM - 50 - 2962

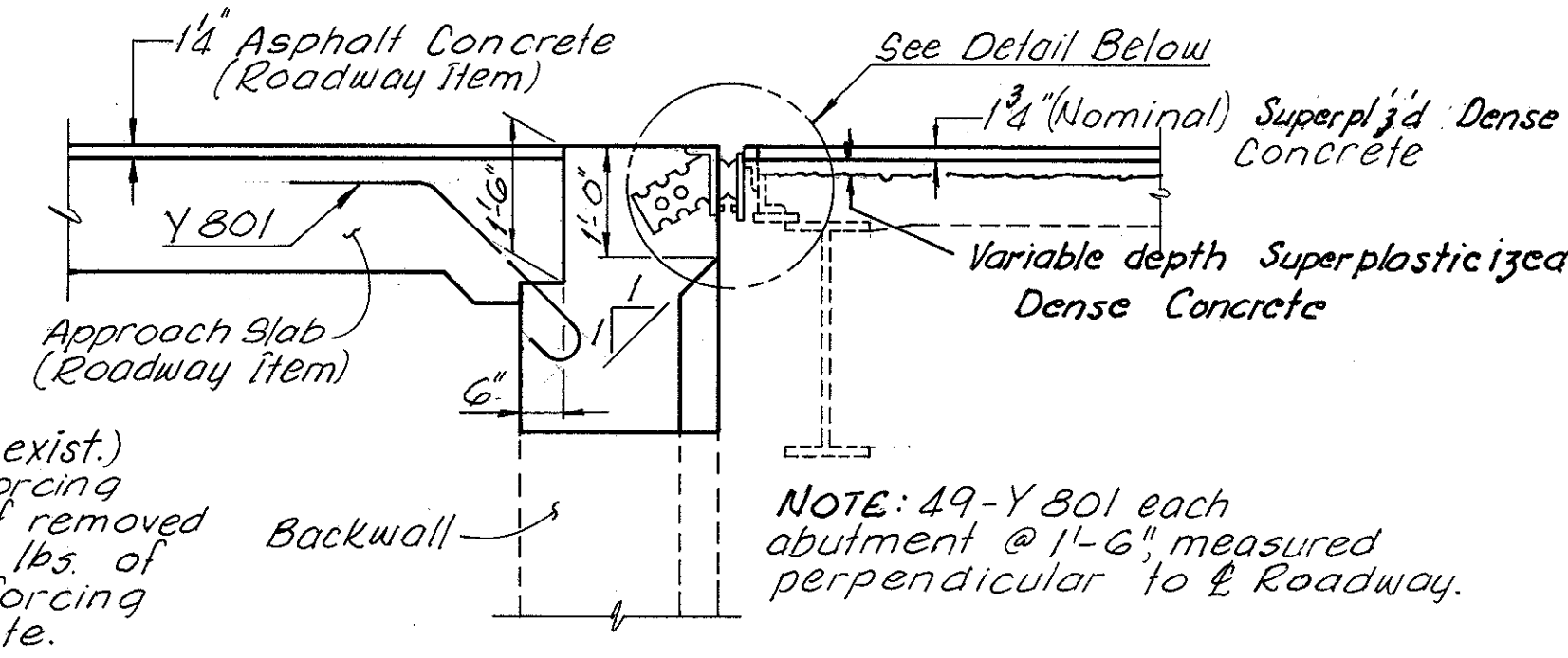
	APPROX. W.W. LENGTH	EY 501	EY 502	EY 503	EY 504	EY 505	EY 506	EY 507	EY 601	EY 602	EY 603	EY 604	EY 605	LONGITUDINAL	EY 606
WINGWALL 1	18'-5"	3	2	5	7	15	8	1	1	1	1	1	1	10-EY 504	3
WINGWALL 2	17'-7 1/4"	3	2	5	7	15	8	1	1	1	1	1	1	10-EY 503	3
WINGWALL 3	17'-6 3/8"	3	2	5	7	15	8	1	1	1	1	1	1	10-EY 503	3
WINGWALL 4	18'-5 5/8"	3	2	5	7	15	8	1	1	1	1	1	1	10-EY 504	3

**Measured along Outside Face.

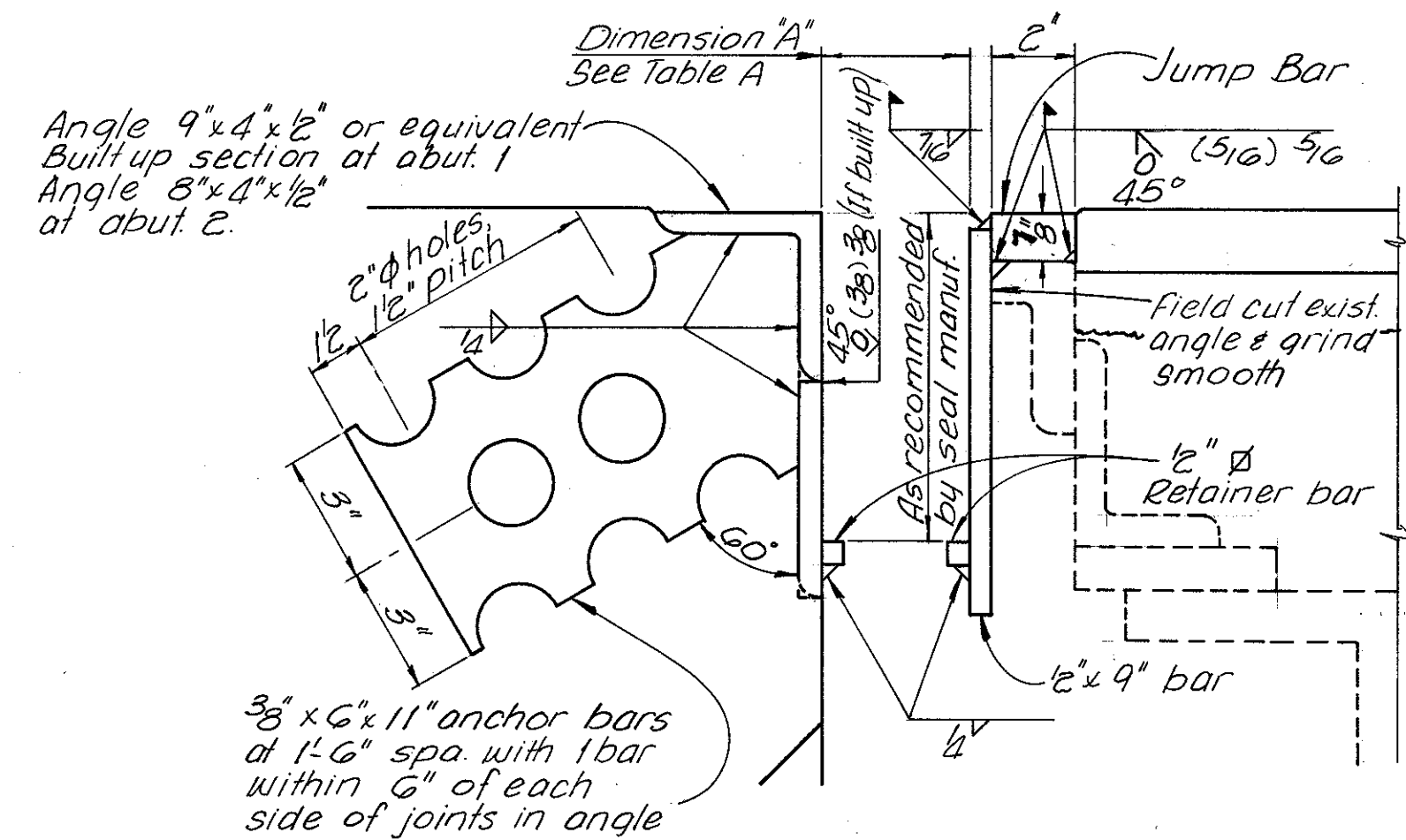
KING & GAVARIS CONSULTING ENGINEERS, INC.		5/12
CINCINNATI	OHIO	
WINGWALL DETAILS		
BRIDGE NO. HAM - 50 - 2945 OVER DUCK CREEK VALLEY		
BRIDGE NO. HAM - 50 - 2962 OVER RED BANK ROAD		
DESIGNED P.M.	DRAWN P.M.	CHECKED R.R.
REVIEWED V.S.	DATE 3/87	REVISOR



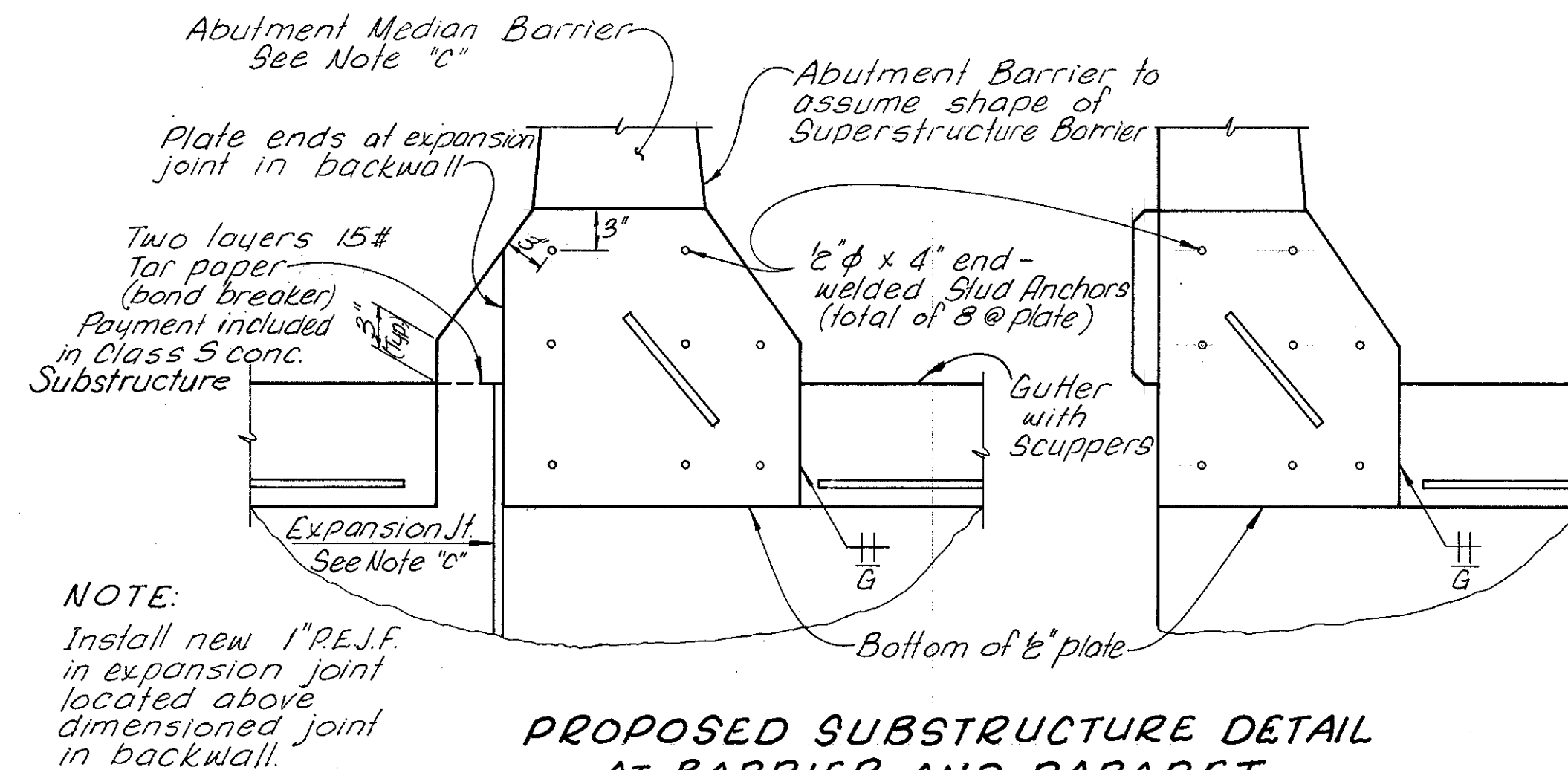
EXISTING BACKWALL AND JOINT SECTION
HAM-50-2945



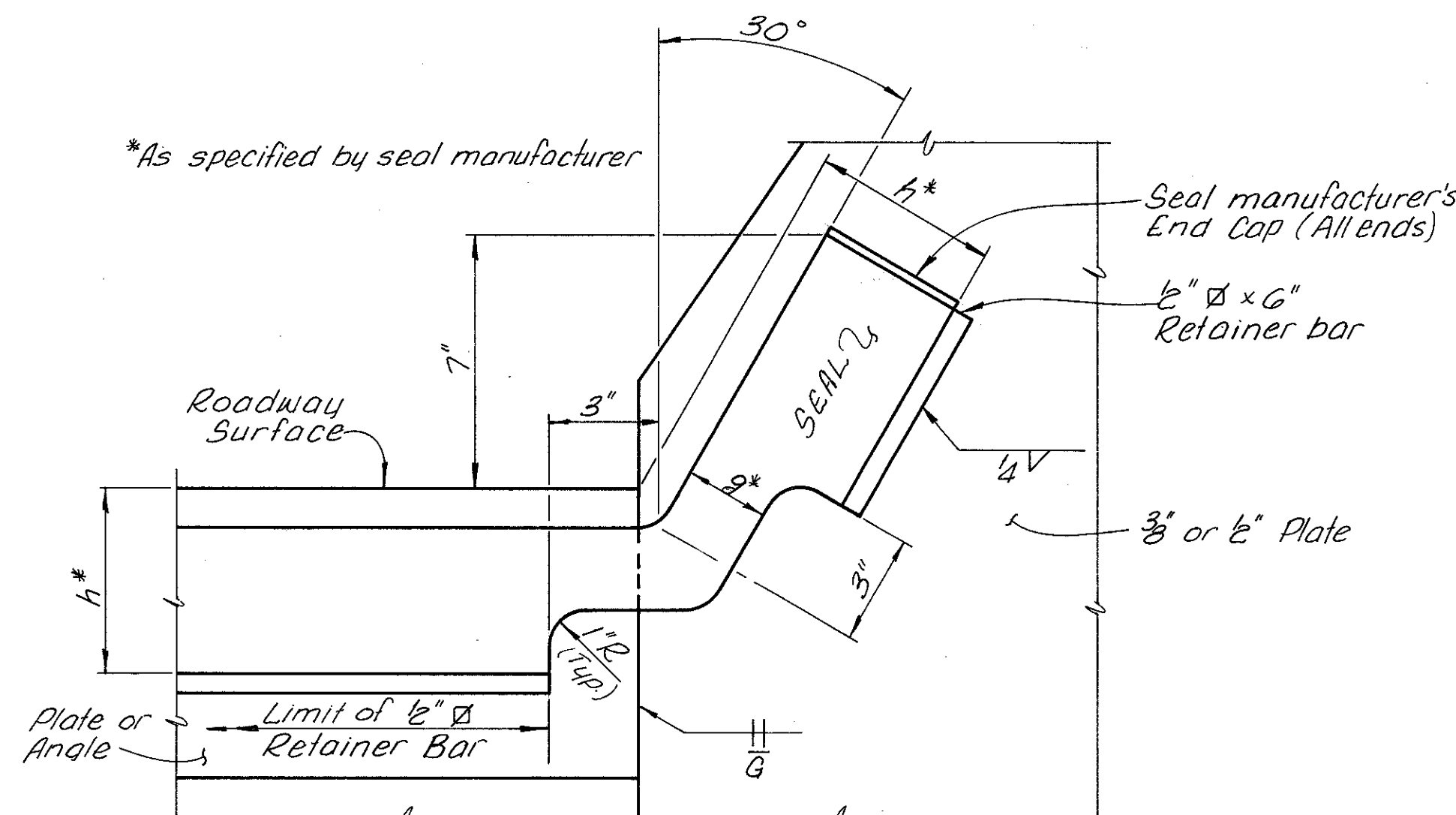
PROPOSED BACKWALL AND JOINT SECTION
HAM-50-2945



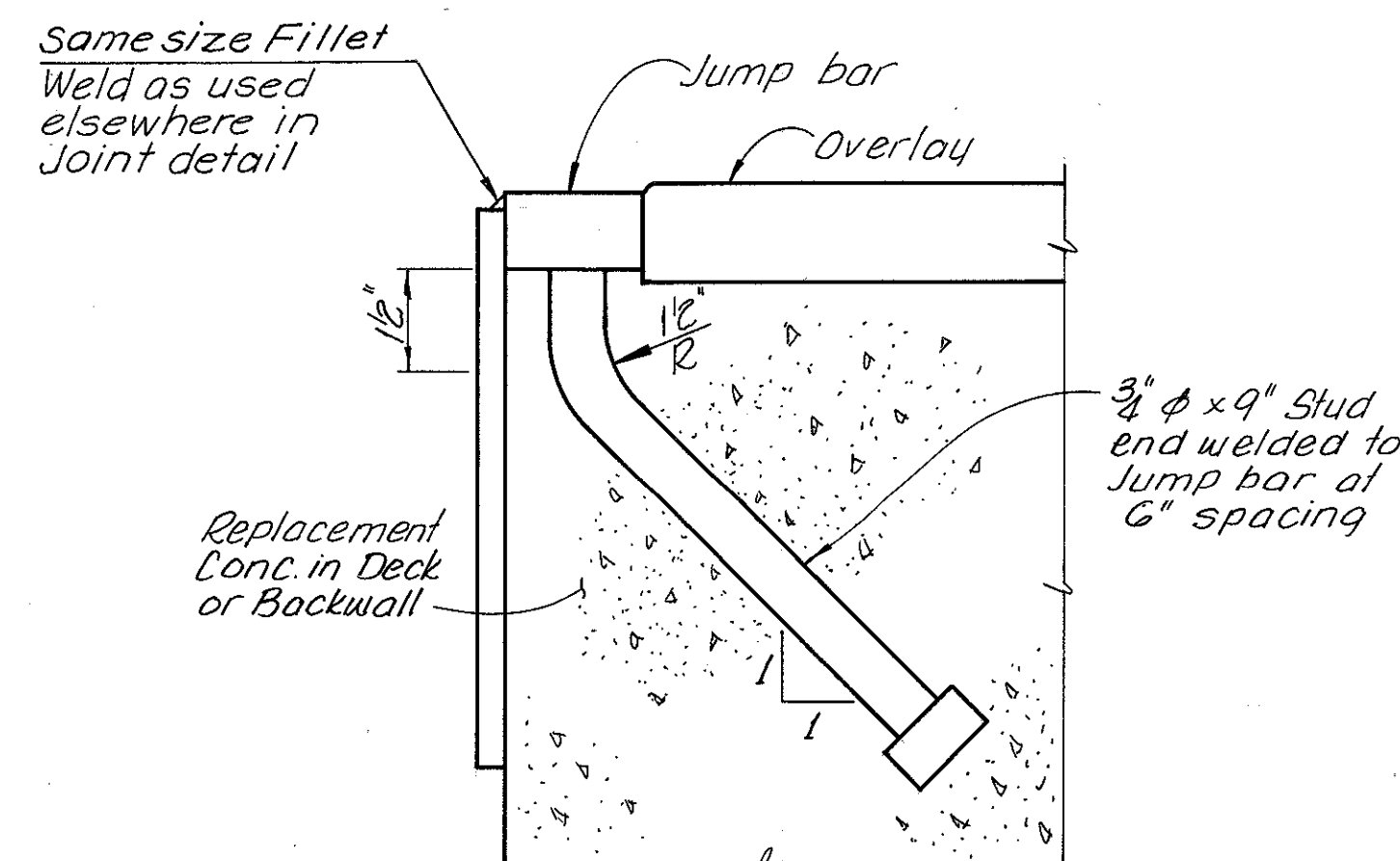
PROPOSED JOINT DETAIL
HAM-50-2945



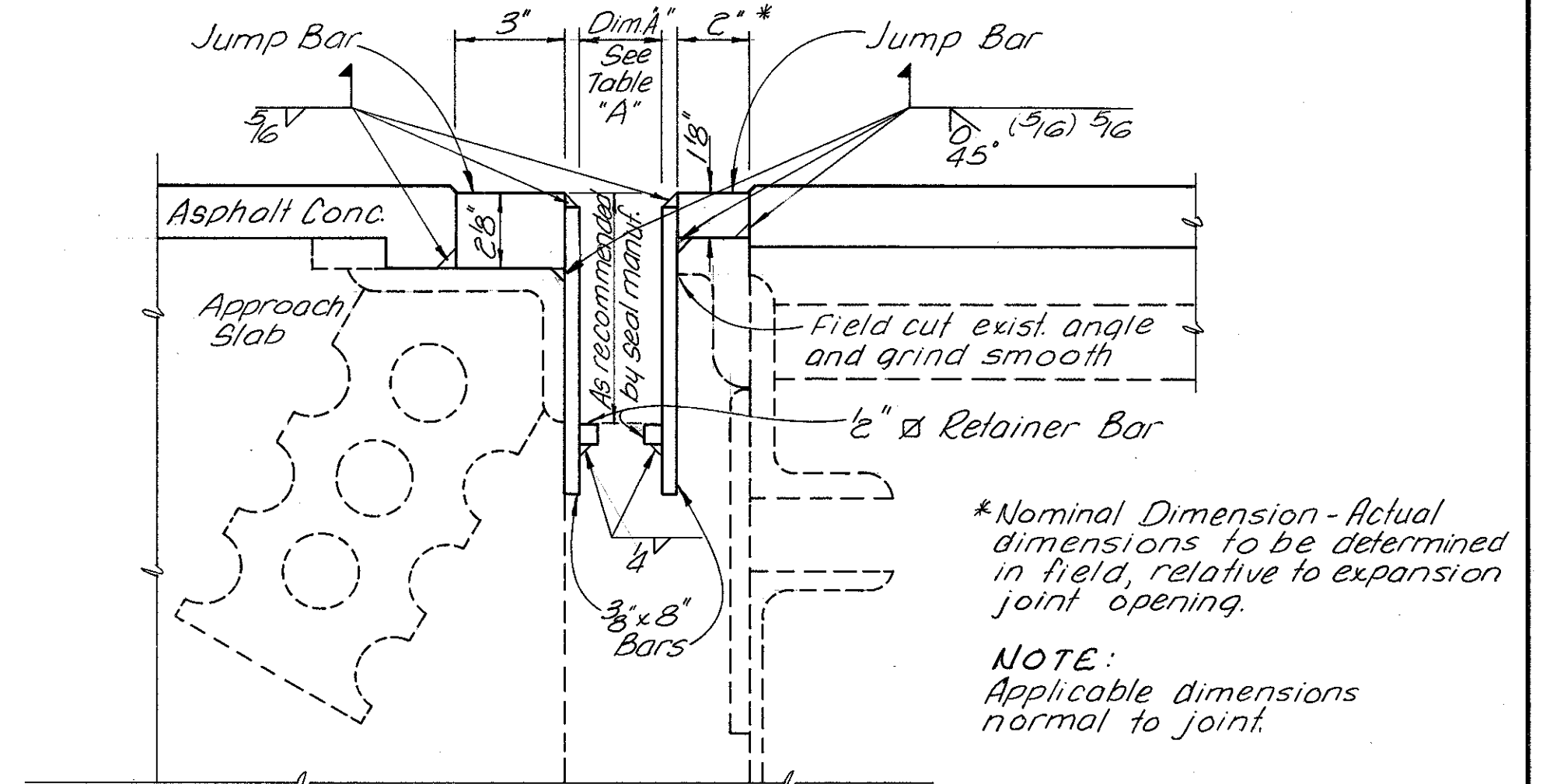
PROPOSED SUBSTRUCTURE DETAIL AT BARRIER AND PARAPET
HAM-50-2945



DETAIL "Q"
SEAL AND HARDWARE TREATMENT AT CURB
HAM-50-2945 AND HAM-50-2962



DETAIL "R"
JUMP BAR STUDS
HAM-50-2945 AND HAM-50-2962



PROPOSED JOINT DETAIL
HAM-50-2962

NOTES

JOINTS IN END DAMS STEEL: Transverse Joints in Jump Bars shall have complete penetration Butt welds. Transverse Joints in abutment angle; 3/8" x 8" bars and 2" x 9" bars shall be closely butted with a minimum of 6'-0" between Joints. Welds in contact with seal shall be ground flush.

HAM-50-2945

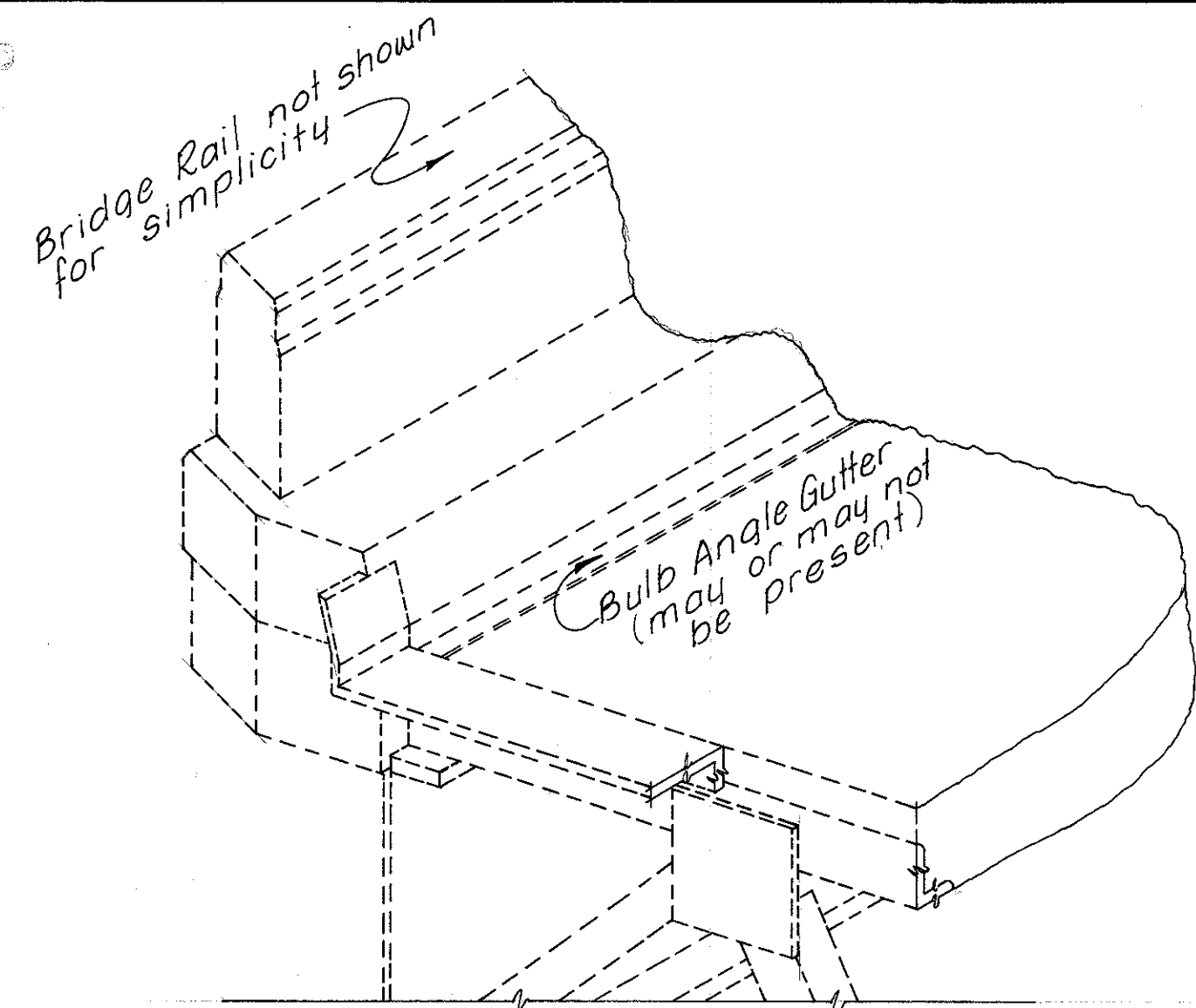
NOTE "C": Abutment Median Barrier to have two sets Transverse Reinforcing Bars (EY 515, EY 516, EY 517 & EY 518) which are similar to Superstructure Median Barrier Reinforcing Bars. Holes (7/8" deep) may be drilled or formed. Eight Longitudinal Bars EY 519 (located at top of superstructure Median Barrier) are in the Abutment Median Barrier. New Expansion Joint in Backwall shall be continuous with existing expansion joint, but may shift location to allow placing of above reinforcing steel.

TEMPERATURE (°F)	DIMENSION "A" (INCHES)			
	HAM-50-2945		HAM-50-2962	
	ABUTMENT 1	ABUTMENT 2	ABUTMENT 1	ABUTMENT 2
20	4 1/8	2 13/16	2 7/16	2 5/8
30	3 3/8	2 11/16	2 3/8	2 2
40	3 1/16	2 5/8	2 5/16	2 1/16
50	3 1/16	2 2	2 5/16	2 5/16
60	3 3/16	2 3/8	2 4	2 4
70	2 15/16	2 5/16	2 3/16	2 3/16
80	2 3/4	2 3/16	2 3/16	2 1/16
90	2 2	2 1/16	2 1/8	2
100	2 4	2	2 1/16	1 3/8

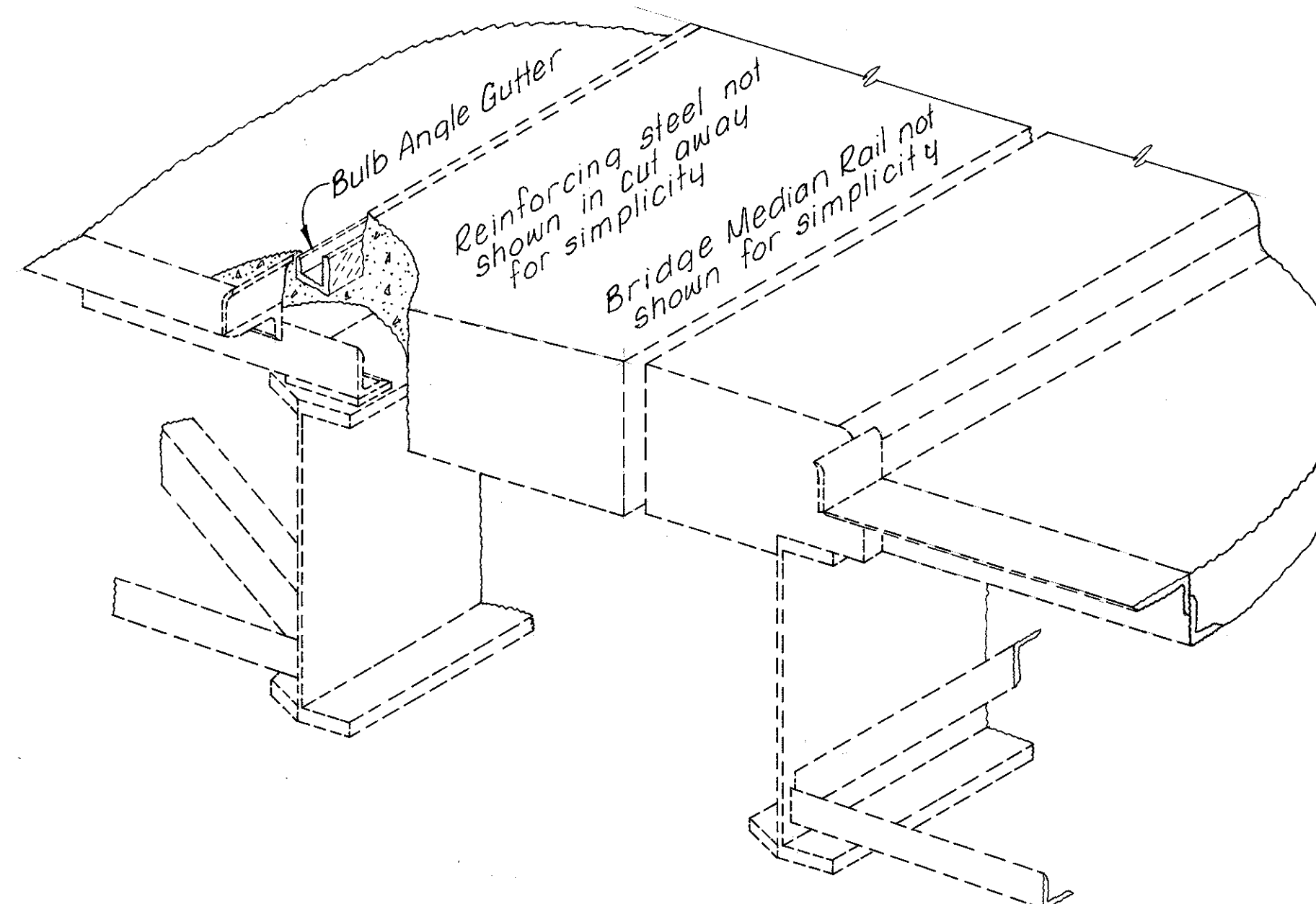
TABLE A Interpolate linearly as field Conditions require.

BRIDGE	SEAL LOCATION	NOMINAL WIDTH
HAM-50-2945	LONGITUDINAL	1 3/4"
	ABUTMENT 1	6"
	ABUTMENT 2	4"
HAM-50-2962	LONGITUDINAL	1 3/4"
	ABUTMENT 1	4"
	ABUTMENT 2	4"

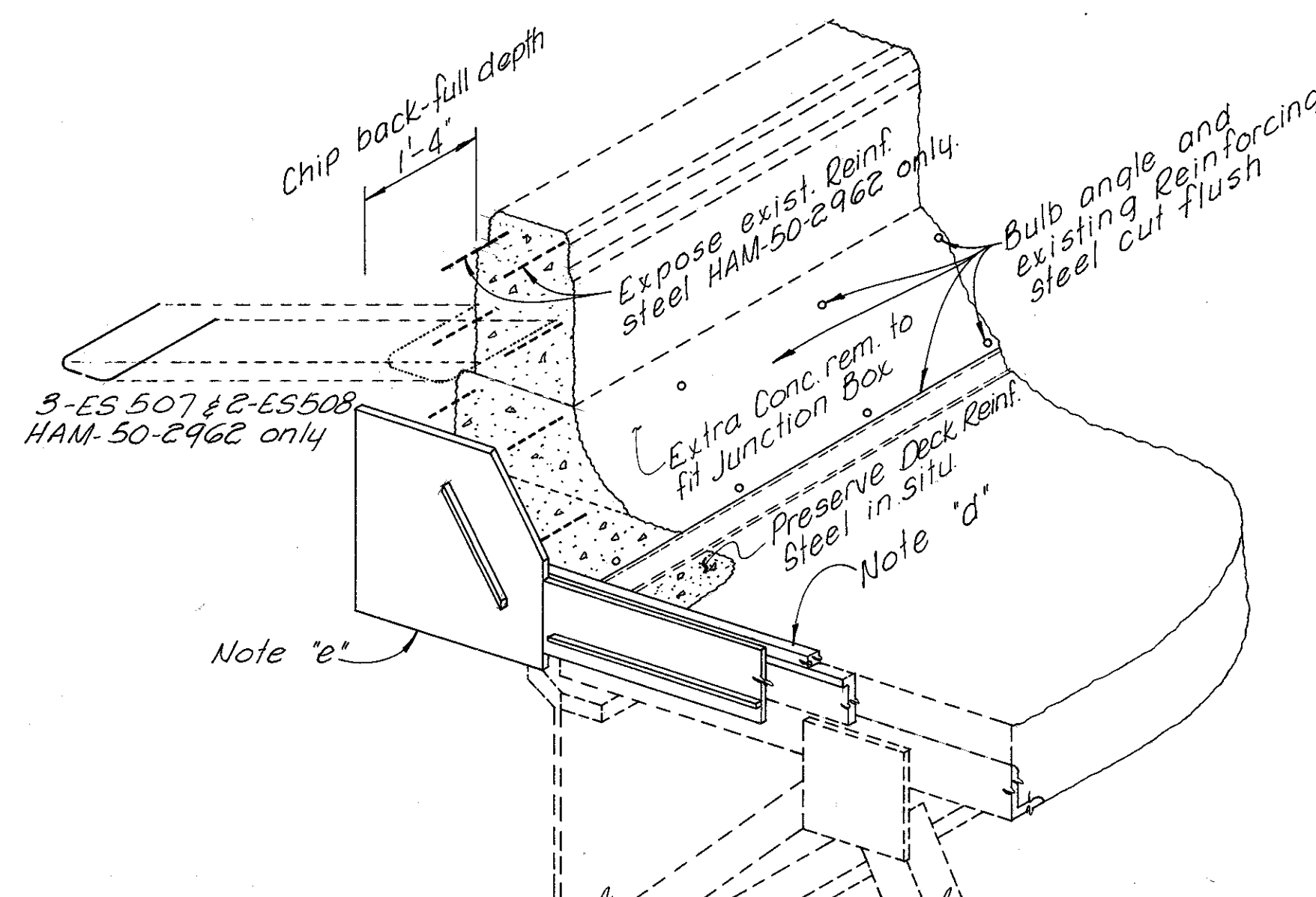
KING & GAVARIS		6 / 12
CONSULTING ENGINEERS, INC.		OHIO
ABUTMENT JOINTS AND SEAL DETAILS BRIDGE NO. HAM-50-2945 OVER DUCK CREEK VALLEY BRIDGE NO. HAM-50-2962 OVER RED BANK ROAD		
DESIGNED	DRAWN	TRACED
P.M.	P.M.	R.R.
CHECKED	REVIEWED	DATE
V.S.	V.J.L.	3/87
REVIS		



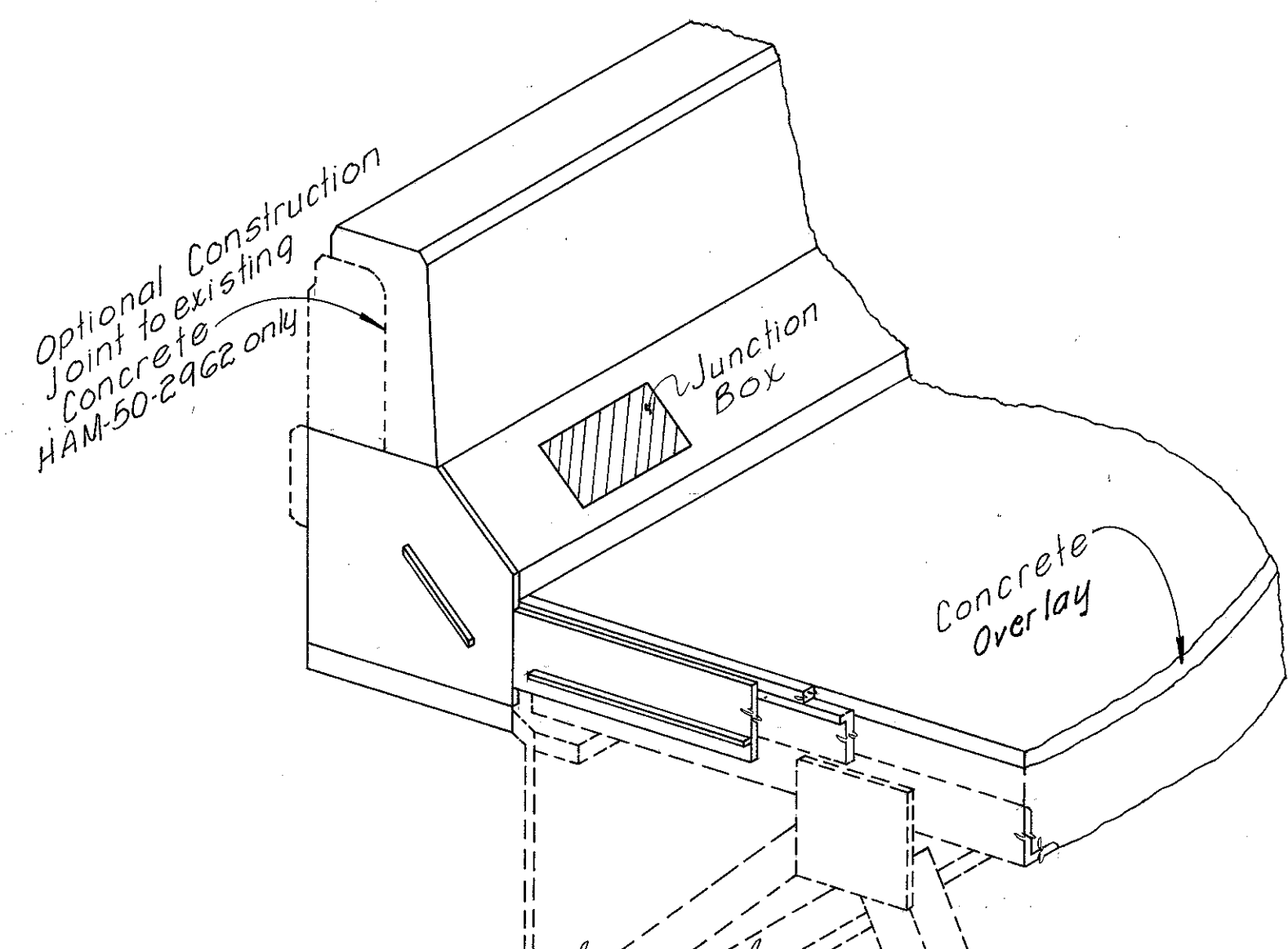
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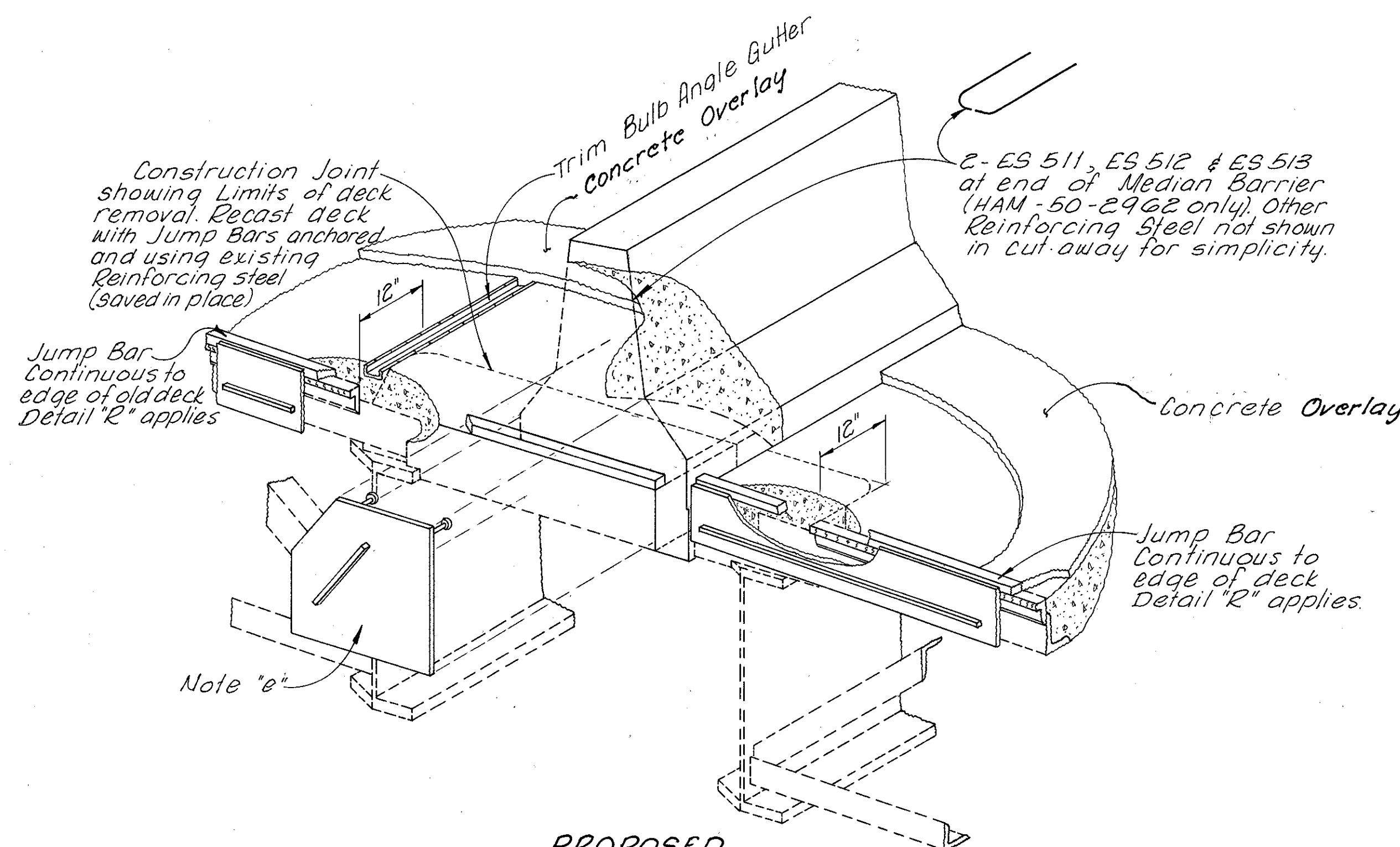
EXISTING



INTERMEDIATE



PROPOSED
DETAIL "V"
HAM-50-2962 (HAM-50-2945 SIMILAR)



PROPOSED
DETAIL "W"
HAM-50-2962 (HAM-50-2945 SIMILAR)
MEDIAN NEAR ABUTMENT No. 1 SHOWN
(MEDIAN NEAR ABUTMENT No. 2 OBLVERSE DETAIL)

NOTES

"d" Jump Bar Continues to within 3" of fascia. In areas where Jump Bar is placed against new concrete, Detail "R" applies.

"e": 1/2" Plate (HAM-50-2945) or 3/8" Plate (HAM-50-2962) field welded 1/4" fillet to Jump Bar. Plate to be butt welded (full penetration and ground smooth) to compression seal Retainer Bar at curb line. Two 1/2" x 4" end studs welded near top two corners of plate (3" clearance to edges). Detail "Q" applies.

"f": Median Barrier on Backwall to have two sets Transverse Reinforcing Bars (EY 515, EY 516, EY 517 & EY 518) which are similar to superstructure Median Barrier Reinforcing Bars. Holes, 6" deep, may be drilled or formed. Eight Longitudinal Bars-EY 519 (located as in Upper Superstructure Median Barrier).

"g": Two layers 15# Tar Paper Bond Breaker as shown. Payment included with Class 5 concrete - Substructure.

"h": Jump Bar Continues to within 1" of new curb. Install piece of 1" Preformed Expansion Joint Filler between end of Jump Bar and Curb. Detail "R" applies to Jump Bar.

"i": Jump Bar continues to Expansion Joint. Detail "R" applies.

"j": Construction Joint (Normal) through to back face of Backwall indicates limits of concrete removal. Existing reinforcing to remain in situ.

Work this sheet with sheets 2,3,4,6,9/12

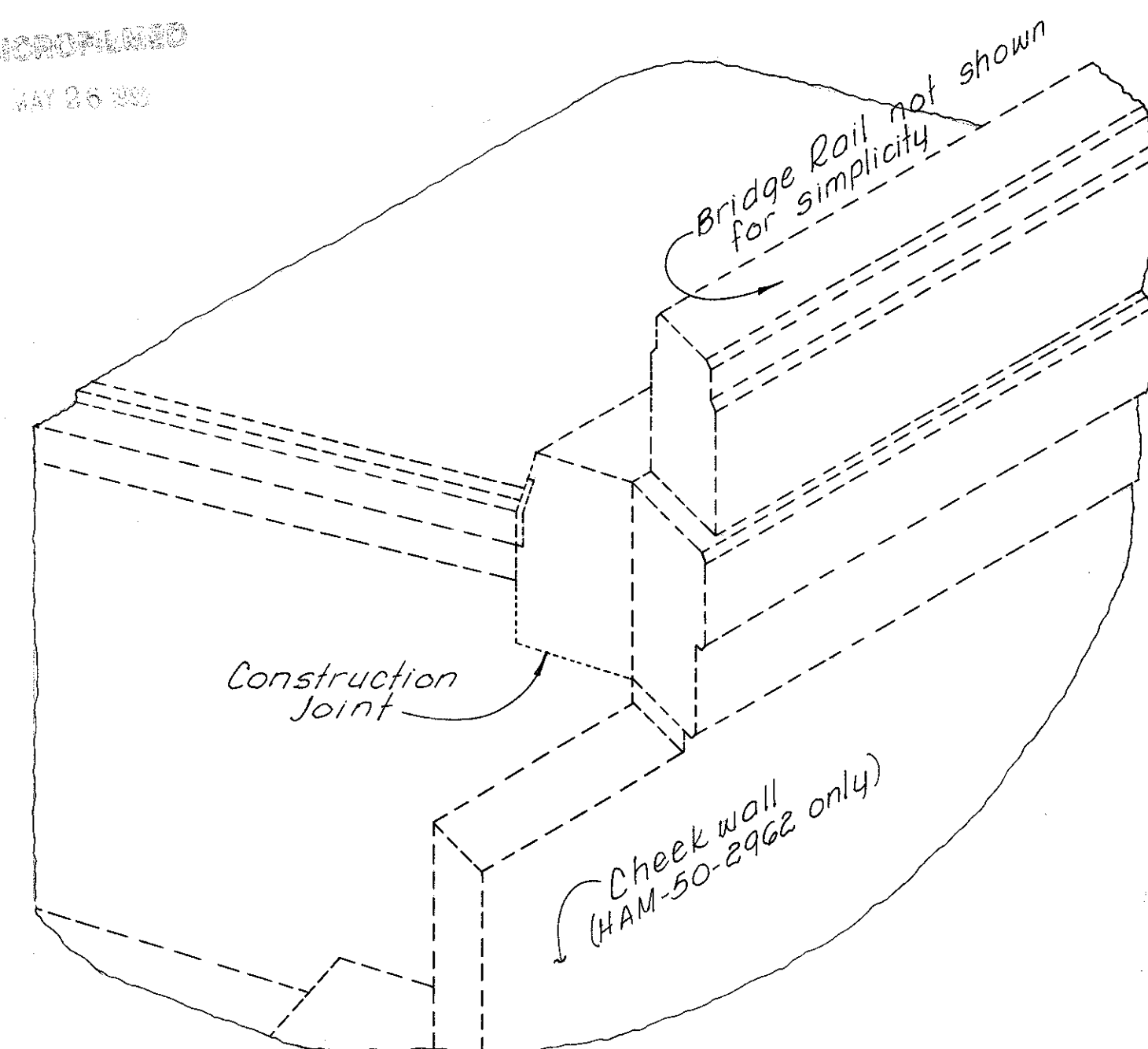
KING & GAVARIS CONSULTING ENGINEERS, INC.		8/12
CINCINNATI	OHIO	
SUPERSTRUCTURE DETAILS		
BRIDGE NO. HAM - 50 - 2945 OVER DUCK CREEK VALLEY		
BRIDGE NO. HAM - 50 - 2962 OVER RED BANK ROAD		
DESIGNED P.M.	DRAWN P.M.	TRACED R.R.
CHECKED V.S.	REVIEWED V.J.L.	DATE 3/87
REVISED		

REPRODUCTION
JUL 26 88

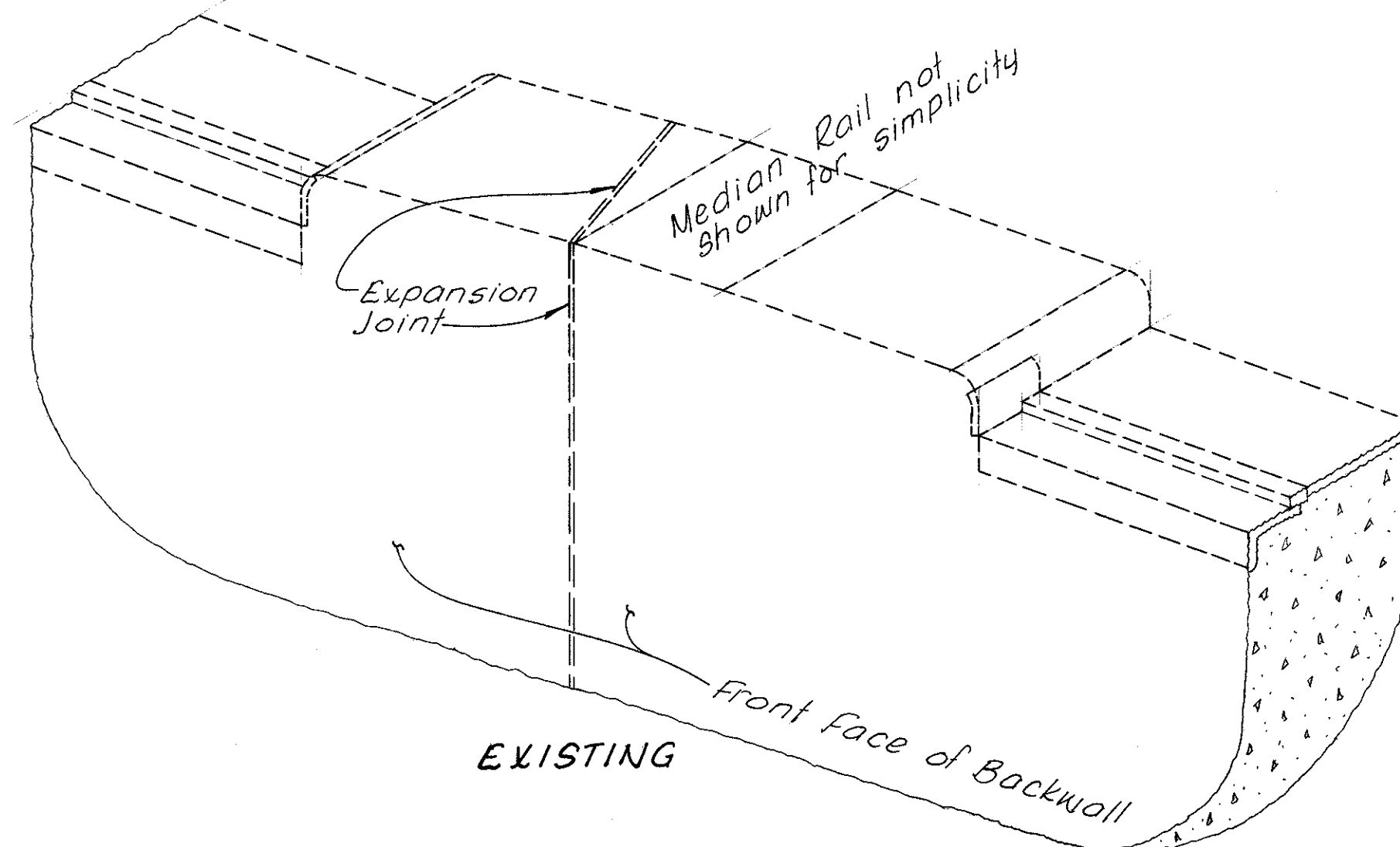
F.H.W.A. REGION	STATE	PROJECT
5	OHIO	

HAM-50-29.35

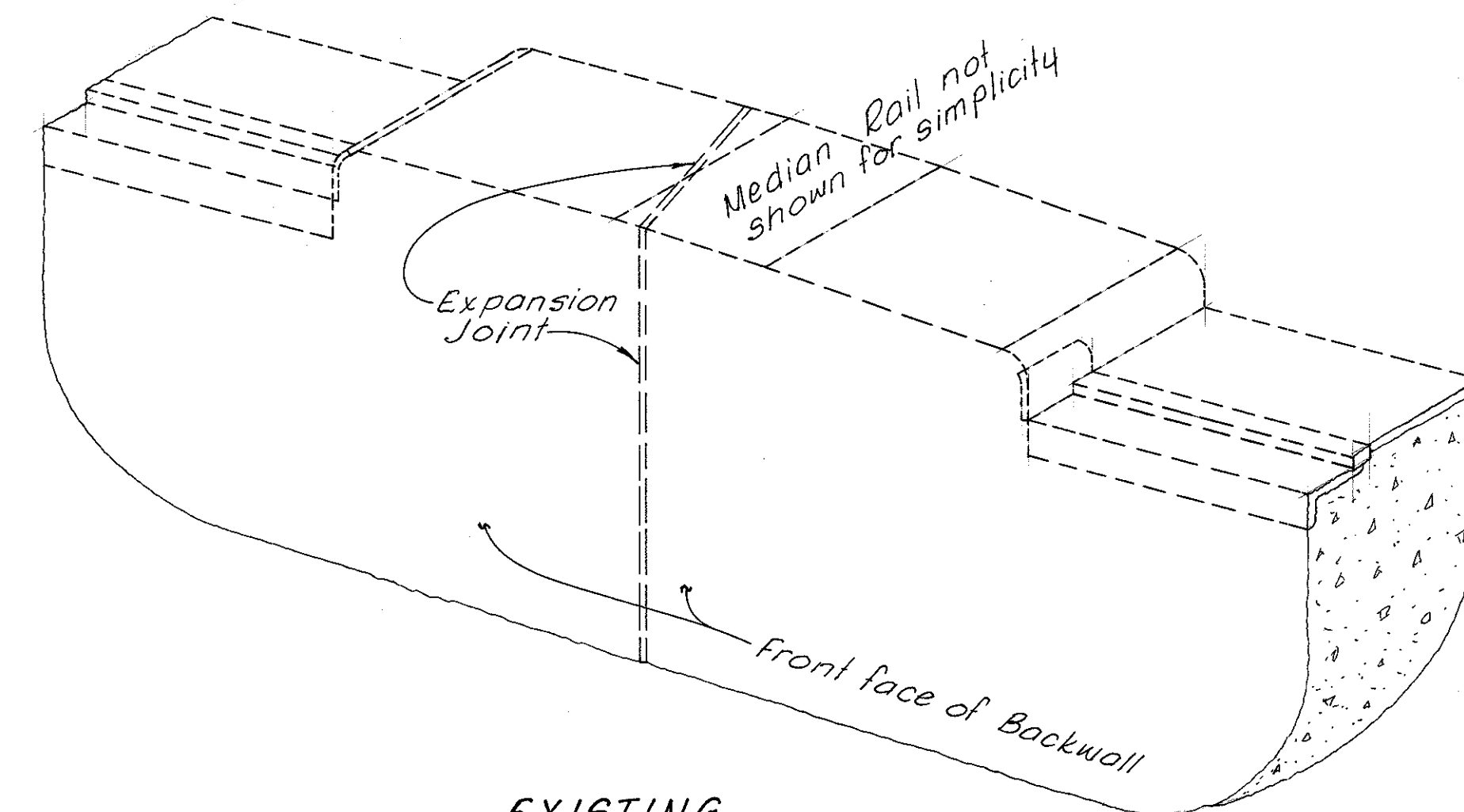
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116



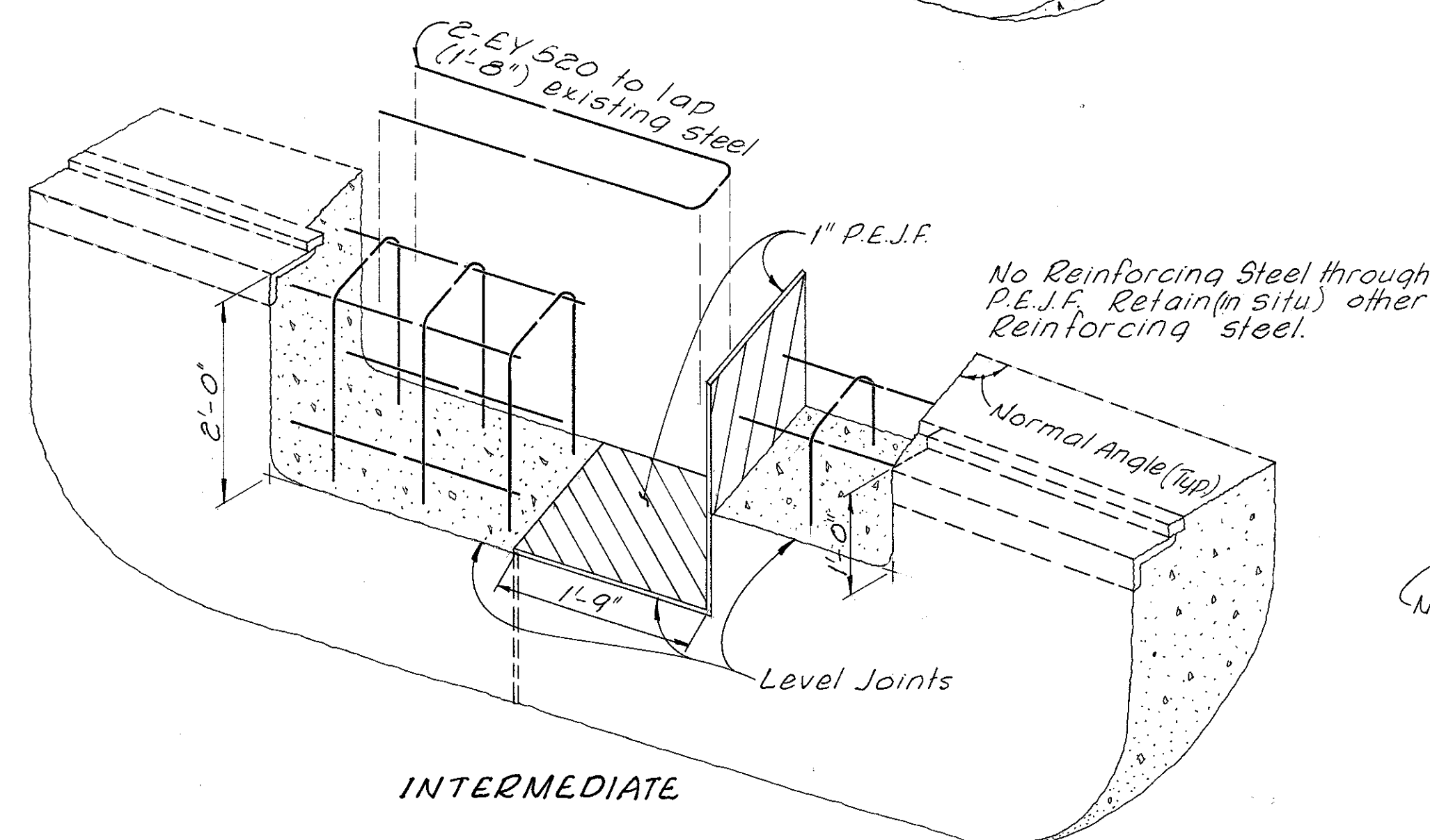
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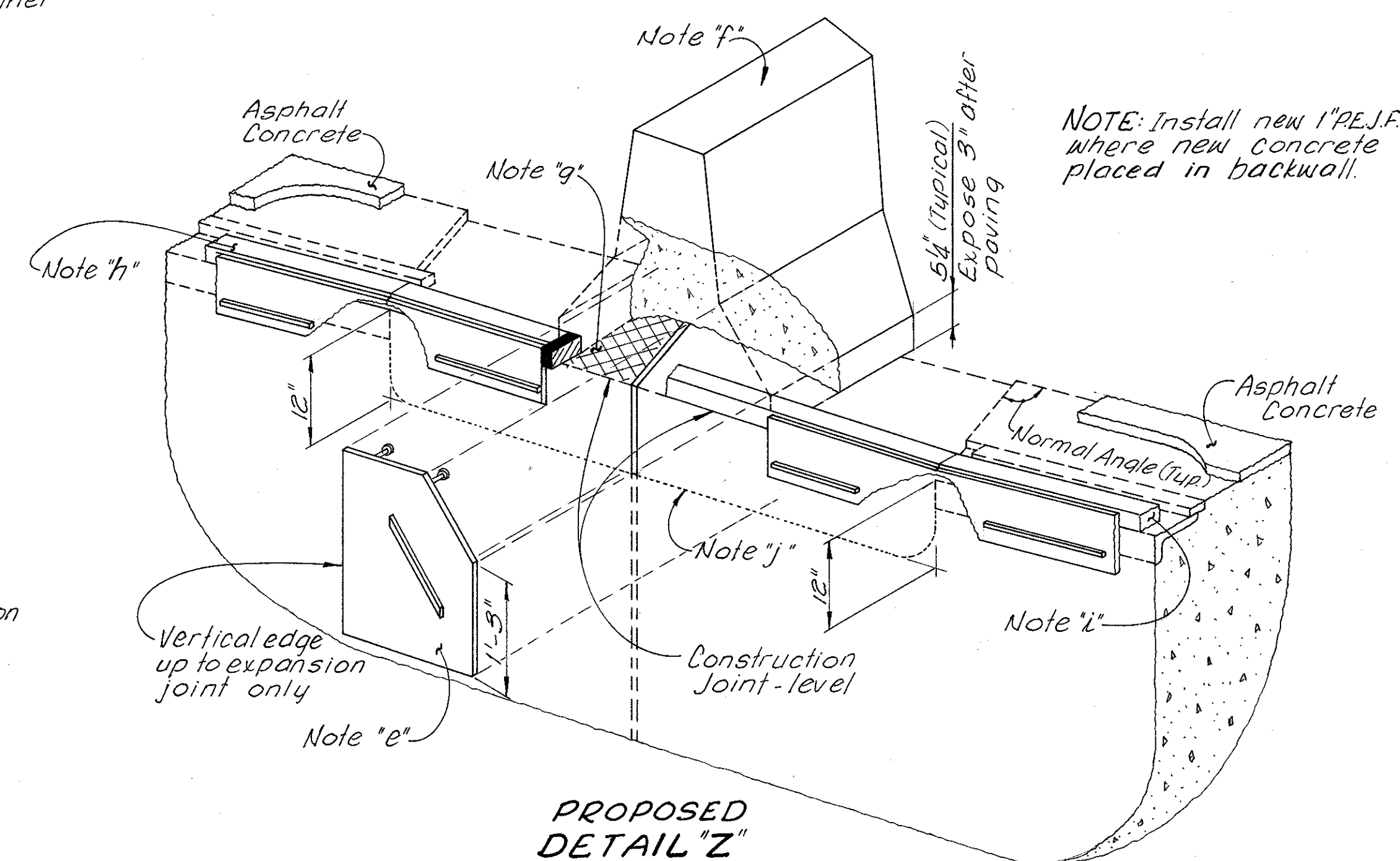
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EXISTING

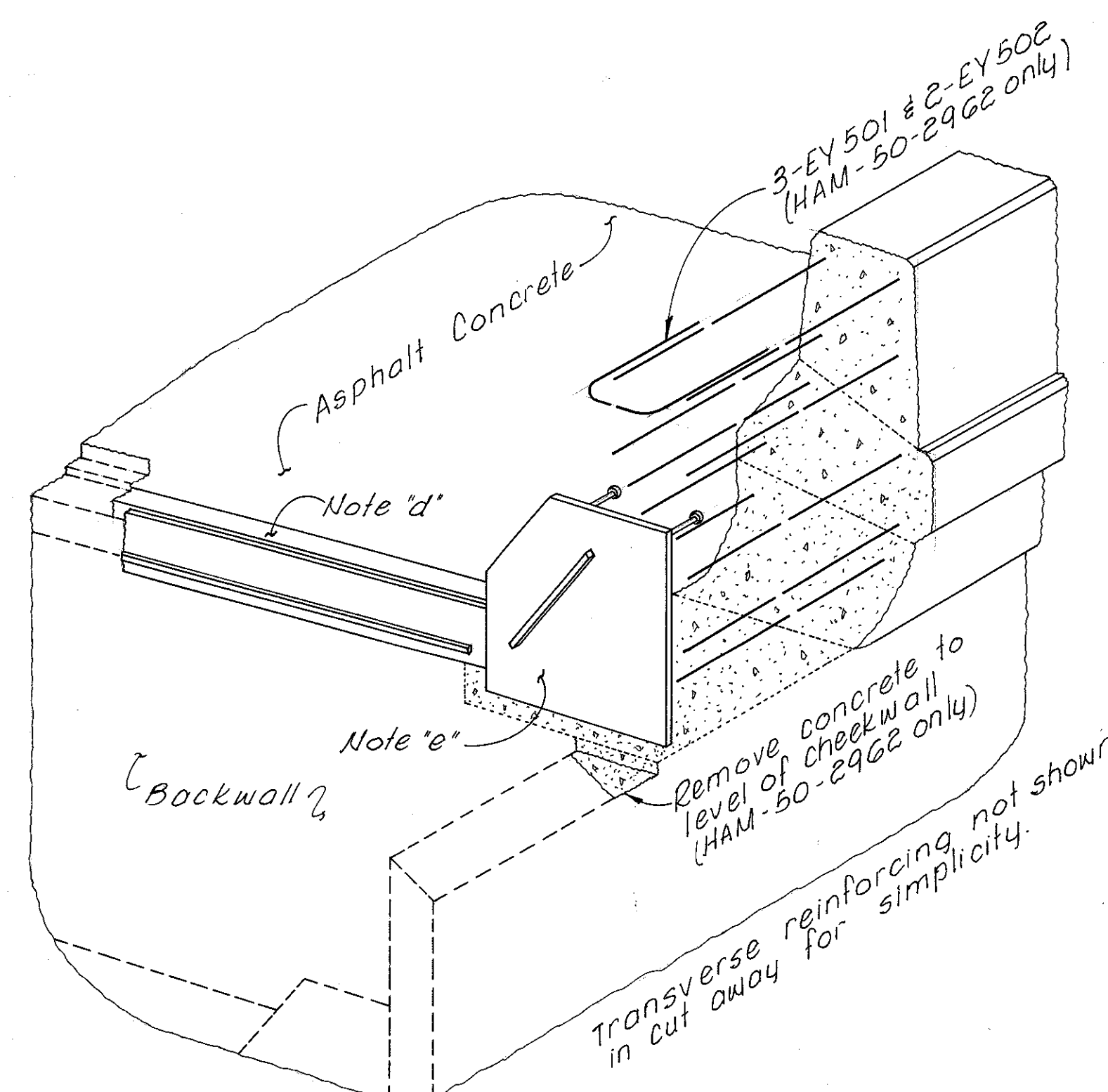


INTERMEDIATE

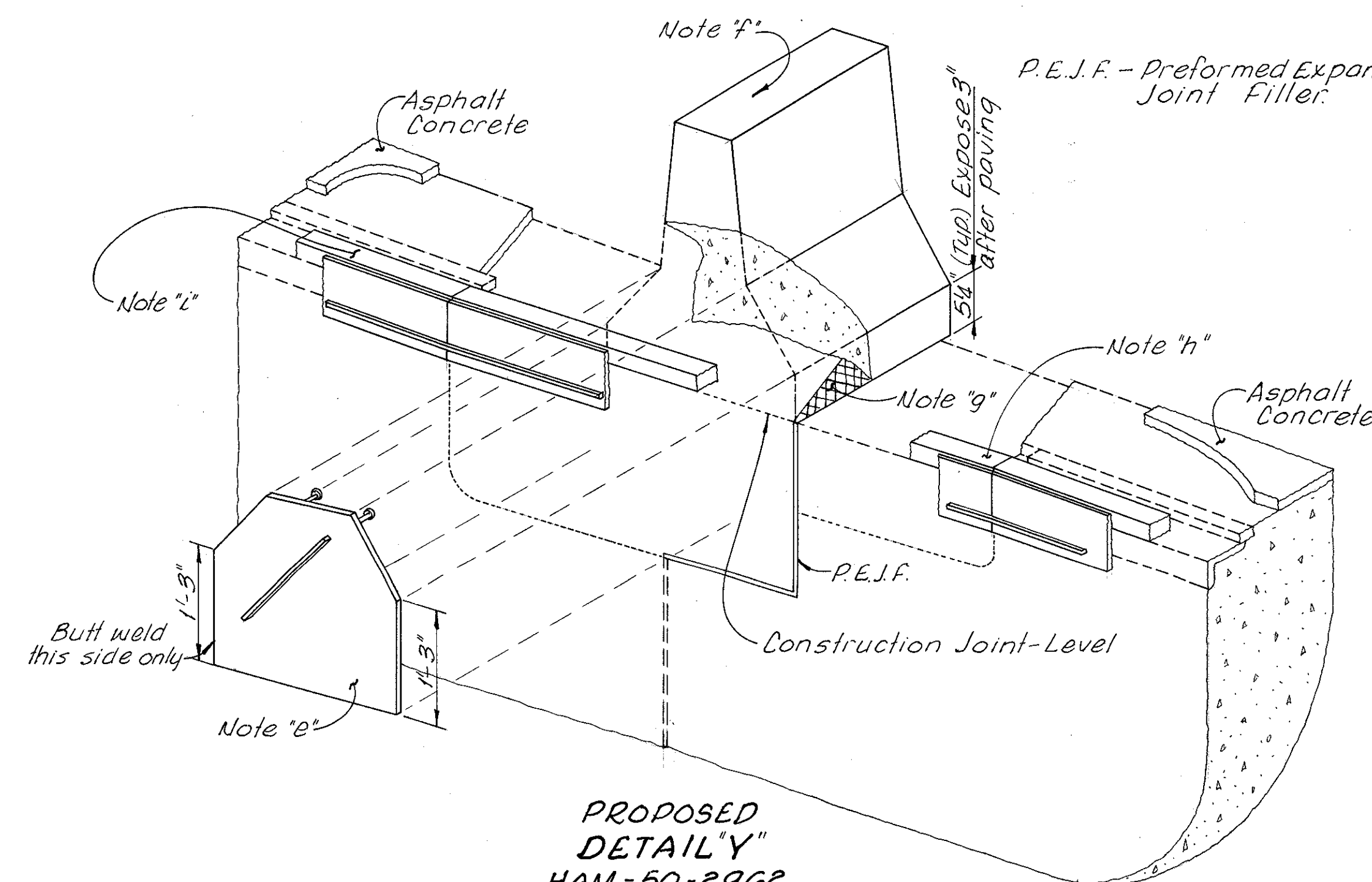


PROPOSED
DETAIL "Z"
HAM-50-2962
ABUTMENT No. 1 AT MEDIAN

NOTE: Install new 1" P.E.J.F. where new concrete placed in backwall.



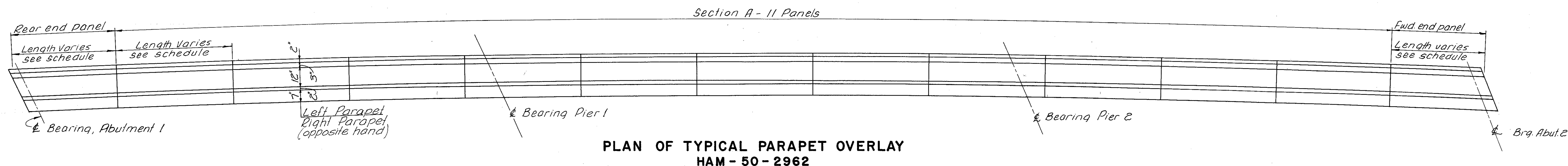
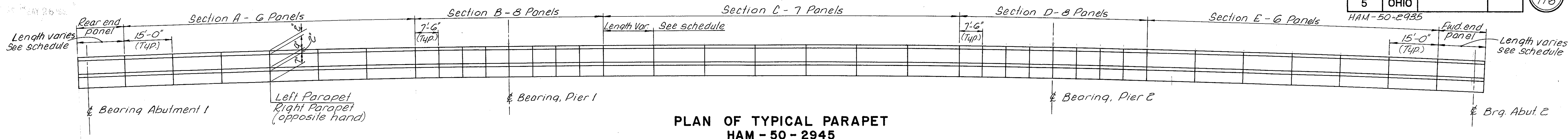
PROPOSED
DETAIL "X"
HAM-50-2962 (HAM-50-2945 SIMILAR)



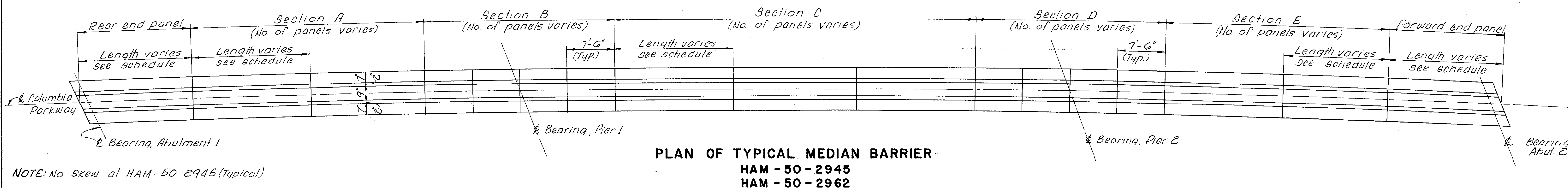
PROPOSED
DETAIL "Y"
HAM-50-2962
ABUTMENT No. 2 AT MEDIAN

See sheet 8/12 for Notes.
Work this sheet with sheets 2, 3, 4, 6, 8/12

KING & GAVARIS CONSULTING ENGINEERS, INC.		9/12
CINCINNATI	OHIO	
SUBSTRUCTURE DETAILS		
BRIDGE NO. HAM-50-2945 OVER DUCK CREEK VALLEY		
BRIDGE NO. HAM-50-2962 OVER RED BANK ROAD		
DESIGNED P.M.	DRAWN P.M.	TRACED R.R.
CHECKED V.S.	REVIEWED V.J.L.	DATE 3/87
		REVISED



PARAPET SCHEDULE																						
BRIDGE NO.		REAR END PANEL			SECTION A			SECTION B			SECTION C			SECTION D			SECTION E			FORWARD END PANEL		
		PANEL SIZE	REINFORCING STEEL		PANEL SIZE	REINFORCING STEEL		PANEL SIZE	REINFORCING STEEL		PANEL SIZE	REINFORCING STEEL		PANEL SIZE	REINFORCING STEEL		PANEL SIZE	REINFORCING STEEL		PANEL SIZE	REINFORCING STEEL	
			LONGIT.	TRANSVERSE		LONGIT.	TRANSVERSE		LONGIT.	TRANSVERSE		LONGIT.	TRANSVERSE		LONGIT.	TRANSVERSE		LONGIT.	TRANSVERSE		LONGIT.	TRANSVERSE
HAM-50-2946*	LI.	14'-5 3/4"	4-ES 514	15 Set "a"	15'-0"	4-ES 515	15 Set "a"	7'-6"	4-ES 516	8 Set "a"	15'-2"	4-ES 517	15 Set "a"	7'-6"	4-ES 516	8 Set "a"	15'-0"	4-ES 518	15 Set "a"	14'-8 1/4"	4-ES 519	15 Set "a"
	RI.	10'-11 1/4"	4-ES 520	11 Set "a"	15'-0"	4-ES 521	15 Set "a"	7'-6"	4-ES 516	8 Set "a"	14'-6 1/2"	4-ES 522	15 Set "a"	7'-6"	4-ES 516	8 Set "a"	15'-0"	4-ES 521	15 Set "a"	11'-1 3/4"	4-ES 523	11 Set "a"
HAM-50-2962	LI.	11'-10 1/2"	4-ES 524	10 Set "c"; 1 Set "e" & 5-ES 602	14'-6"	4-ES 525	12 Set "c" & 6-ES 602													11'-10 1/2"	4-ES 526	10 Set "c"; 1 Set "e" & 5-ES 602
	RI.	11'-11 1/2"	4-ES 527		14'-7 1/4"	4-ES 528														11'-11 1/2"	4-ES 529	



MEDIAN SCHEDULE																					
BRIDGE NO.	REAR END PANEL			SECTION A			SECTION B			SECTION C			SECTION D			SECTION E			FORWARD END PANEL		
	PANEL DESC.	REINFORCING STEEL LONGIT.	REINFORCING STEEL TRANSVERSE	PANEL DESC.	REINFORCING STEEL LONGIT.	REINFORCING STEEL TRANSVERSE	PANEL DESC.	REINFORCING STEEL LONGIT.	REINFORCING STEEL TRANSVERSE	PANEL DESC.	REINFORCING STEEL LONGIT.	REINFORCING STEEL TRANSVERSE	PANEL DESC.	REINFORCING STEEL LONGIT.	REINFORCING STEEL TRANSVERSE	PANEL DESC.	REINFORCING STEEL LONGIT.	REINFORCING STEEL TRANSVERSE	PANEL DESC.	REINFORCING STEEL LONGIT.	REINFORCING STEEL TRANSVERSE
HAM-50-2945	1@12'-8"	9-ES 530	13 Set "b"	6@15'-0"	9-ES 531	15 Set "b"	8@7'-6"	9-ES 516	8 Set "b"	7@14'-10 1/4"	9-ES 532	15 Set "b"	8@7'-6"	9-ES 516	8 Set "b"	6@15'-0"	9-ES 533	15 Set "b"	1@12'-11"	9-ES 534	13 Set "b"
HAM-50-2962	1@13'-10 1/2"	9-ES 535	14 Set "b", 1 Set "d"	2@14'-0"	9-ES 536	14 Set "b"	4@7'-6"	9-ES 516	8 Set "b"	3@13'-4"	9-ES 537	14 Set "b"	4@7'-6"	9-ES 516	8 Set "b"	2@14'-0"	9-ES 538	14 Set "b"	1@13'-10 1/2"	9-ES 539	14 Set "b", 1 Set "d"

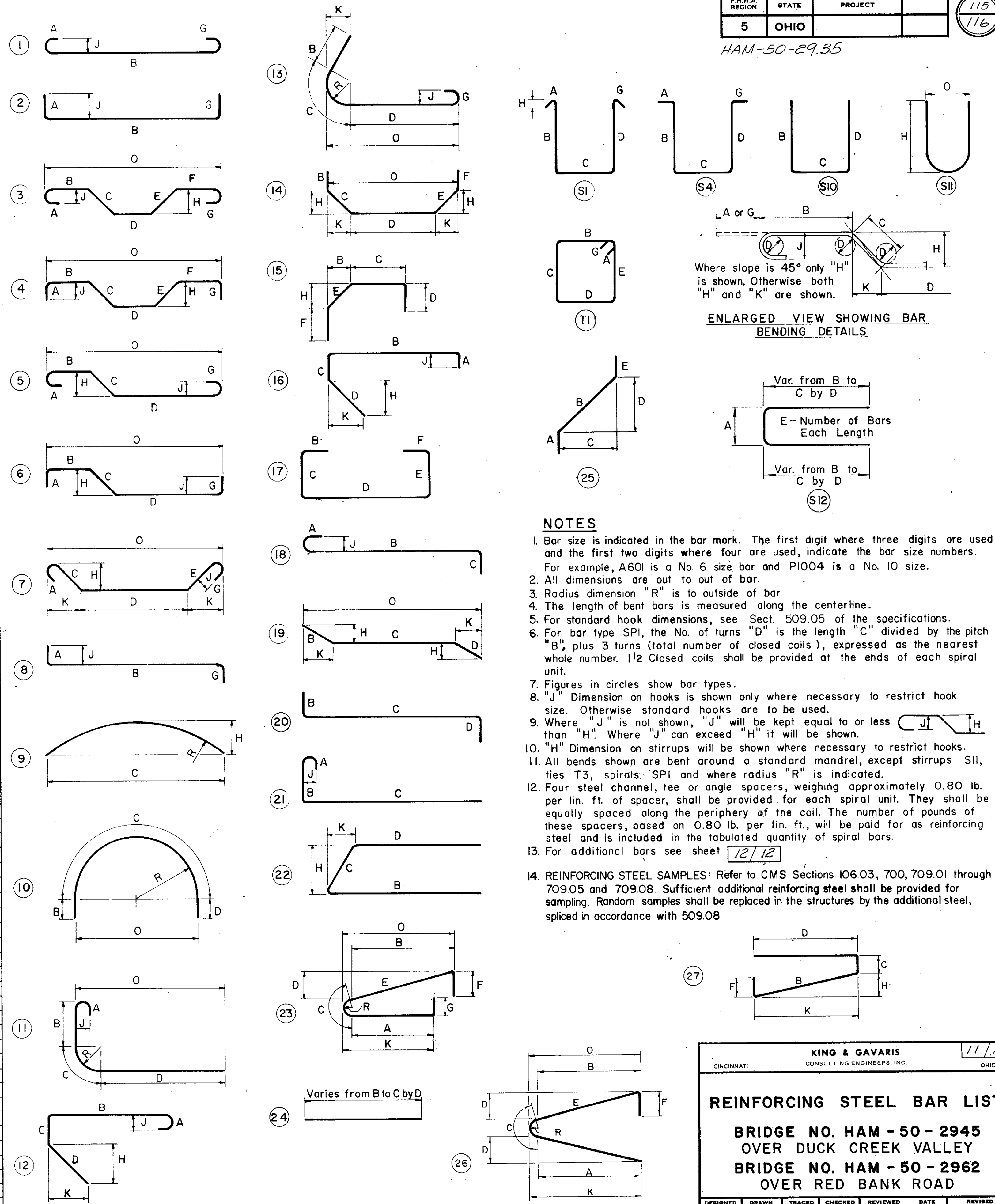
Set "a" 1-ES 505 and 1-ES 506
Set "b" 1-ES 401, 1-ES 501, 1-ES 502, 1-ES 503 & 1-ES 504
Set "c" 1-ES 601 & 1-ES 603
Set "d" 2-ES 511, 1-ES 512 & 1-ES 513
Set "e" 3-ES 507 & 2-ES 508

Bars in set "a", set "b", set "c" and Bar ES 602 are typically equally spaced in the panel length, and are 6 inches to the panel end. Contractor shall verify required lengths for longitudinal parapet and median reinforcing steel prior to fabrication; Contractor is referred to CMS 105.02.

*HAM-50-2945 takes 4 Sets 15-ES 540 and 1-ES 541 Left Parapet, and 4 Sets 14-ES 540 and 1-ES 542 Right Parapet, located longitudinally below construction joint in Parapet.
Bars ES 540, ES 541, & ES 542 lap 1'-10"

HAM-50-29.35

HAM-50-2945																	
MARK	NO.	LENGTH	WT.	TYPE	A	B	C	D	E	F	G	H	J	K	O	R	NOTES
SUPERSTRUCTURE																	
ES 501	439	2'-9"	1259	19		10"	2'-0"					5 1/2"		8 1/2"			
ES 502	439	5'-5"	2480	26	2'-2"	2'-4"	8 1/2"	3"	2'-2 1/2"	6"				2'-5"	2'-4"	2 1/2"	
ES 503	439	2'-10"	1244	Str.													
ES 504	439	3'-0"	1374	19		1'-1"	2'-0"					7"		10 1/2"			
ES 505	878	5'-3"	4610	23	2'-0"	2'-3"	7 1/2"	2 3/4"	2'-3"	7 1/2"				2'-2 1/2"	2'-5 1/2"		
ES 506	878	2'-9"	2518	19		10"	2'-0"					5 1/2"		8 1/2"			
ES 509	4	7'-5"	31	T1	5 1/2"	2'-1"	1'-6"	2'-1"	1'-6"		5 1/2"						
ES 514	4	14'-1"	59	Str.													
ES 515	24	14'-8"	367	Str.													
ES 516	272	7'-2"	2033	Str.													
ES 517	28	14'-10"	433	Str.													
ES 518	24	14'-8"	367	Str.													
ES 519	4	14'-4"	60	Str.													
ES 520	4	10'-7"	44	Str.													
ES 521	48	14'-8"	734	Str.													
ES 522	28	14'-2"	414	Str.													
ES 523	4	10'-9"	45	Str.													
ES 530	9	12'-4"	116	Str.													
ES 531	54	14'-8"	826	Str.													
ES 532	63	14'-6"	953	Str.													
ES 533	54	14'-8"	826	Str.													
ES 534	9	12'-7"	118	Str.													
ES 540	116	30'-0"	3630	Str.													
ES 541	4	12'-6"	52	Str.													
ES 542	4	29'-3"	122	Str.													
TOTAL					24,715	(EPOXY COATED REINFORCING STEEL, GRADE 60)											
ABUTMENT 1																	
EY 508	22	6'-9"	155	23	2'-9"	3'-0"	6 1/2"	3 3/4"	3'-0"	7 1/2"				2'-11 1/2"	3'-2 1/2"	2 1/2"	
EY 509	10	5'-11"	62	S10			2'-10 1/2"	5"	2'-10 1/2"								
EY 510	38	2'-6"	99	S10			8 1/2"	1'-4"	8 1/2"								
EY 511	10	18'-9"	196	Str.													
EY 512	10	27'-9"	289	Str.													
EY 514	6	2'-10"	18	Str.													
EY 515	2	2'-9"	9	19		10"	2'-0"					5 1/2"		8 1/2"			
EY 516	2	5'-5"	11	26	2'-2"	2'-4"	8 1/2"	3"	2'-2"	6"				2'-5"	2'-4"	2 1/2"	
EY 517	2	2'-10"	6	Str.													
EY 518	2	3'-0"	6	19		1'-1"	2'-2"					1'-9"		1'-3"			
EY 519	8	1'-2"	10	Str.													
EY 607	24	2'-5"	87	15		6"	9"		10 1/2"	11"		8 1/2"					
EY 608	2	2'-3"	7	15		5"	8"		10"	11"		8 1/2"					
EY 609	2	2'-3"	7	15		4"	8"		9 1/2"	11"		8 1/2"					
EY 610	2	2'-2"	7	15		3"	7"		9"	11"		8 1/2"					
EY 611	2	2'-2"	7	15		2"	7"		8 3/4"	11"		8 1/2"					
EY 612	6	3'-8"	33	20		12"	2'-10"										
TOTAL					1,006	(EPOXY COATED REINFORCING STEEL, GRADE 60)											
Y 801	49	5'-1"	665	3	11"	2'-10"	1'-5"					8"					
		Varies	500	Str.													
TOTAL					1,165	(REINFORCING STEEL, GRADE 60)											



MICROFILM
MAR 1 1983

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

230
558

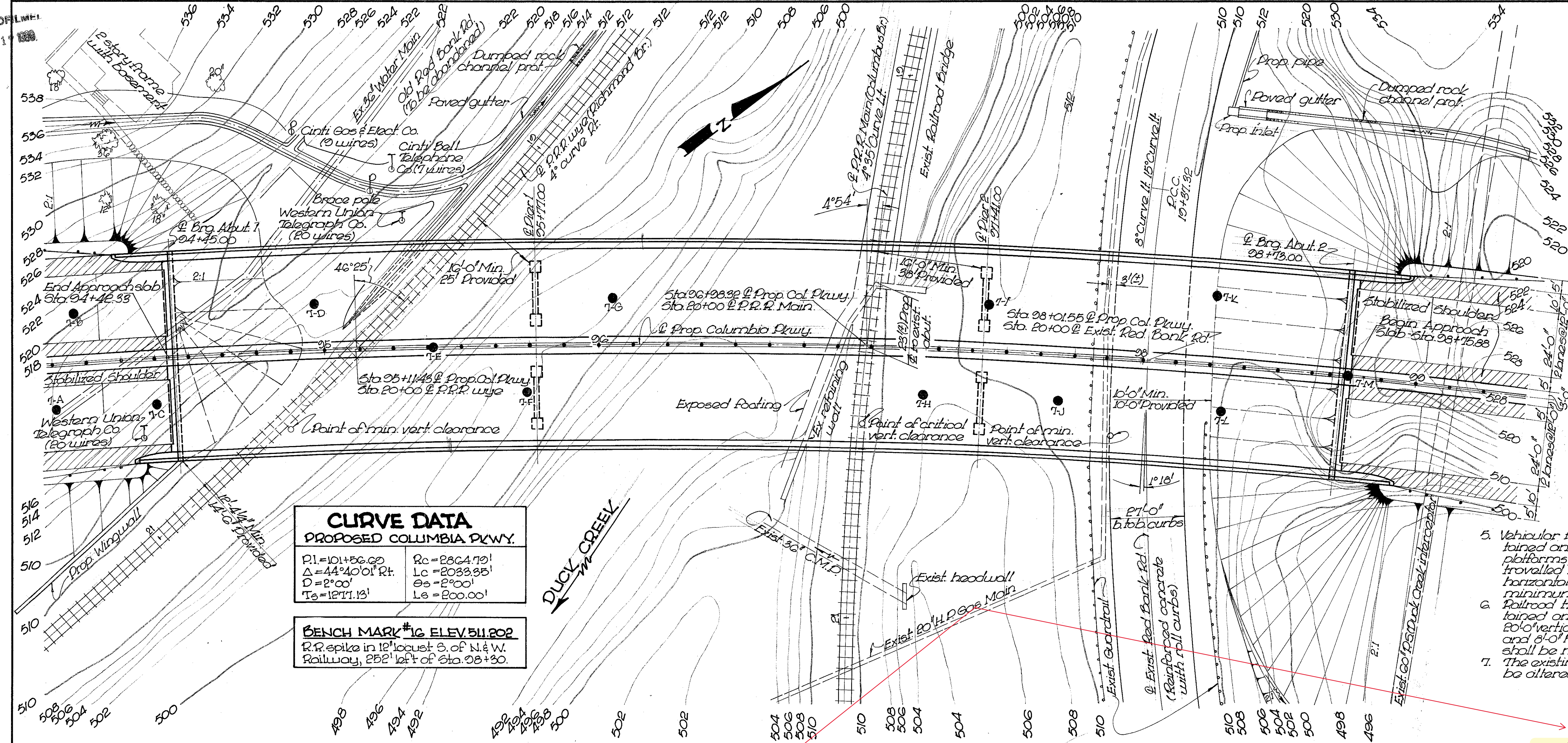
HAMILTON COUNTY
HAM-50 (28.13-29.83)

PROPOSED STRUCTURE

TYPE: Continuous riveted hunched plate girder with rolled steel floor beams and stringers. Deck and sub-structure shall be reinforced concrete.
SPANS: 132'-0", 164'-0" and 132'-0"
ROADWAY: 74'-4" face to face of parapets
LOAD FREQUENCY: CF=2000 (57)
Adequate for AASHTO alternate loading.
SKEW: All substructure units are radial.
WEARING SURFACE: 1" Monolithic concrete.
APPROACH SLABS: AS-1-54 (25' long)
ALIGNMENT: 2° Curve-Right
SURERELEVATION: .0471/ft.

NOTES

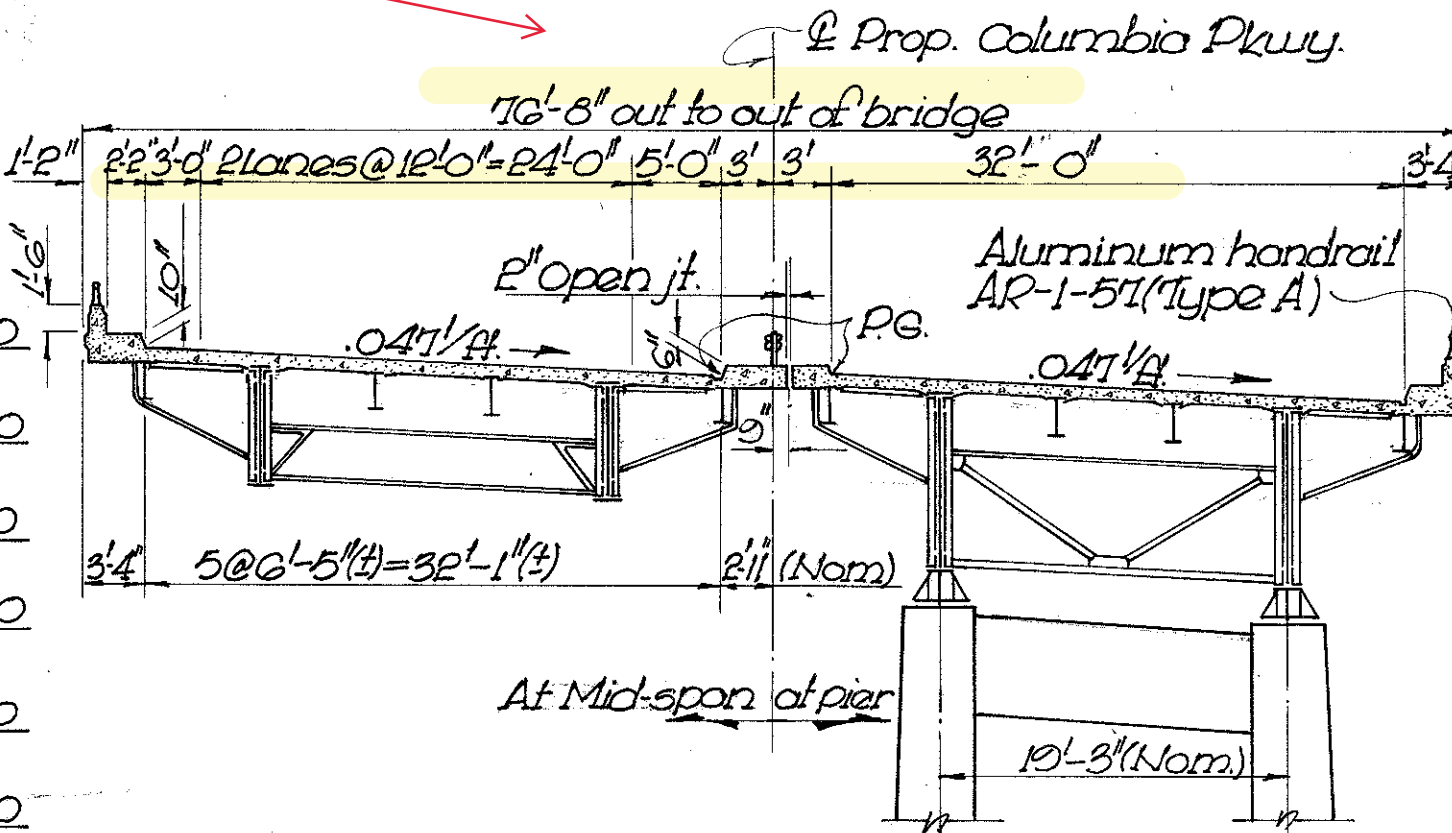
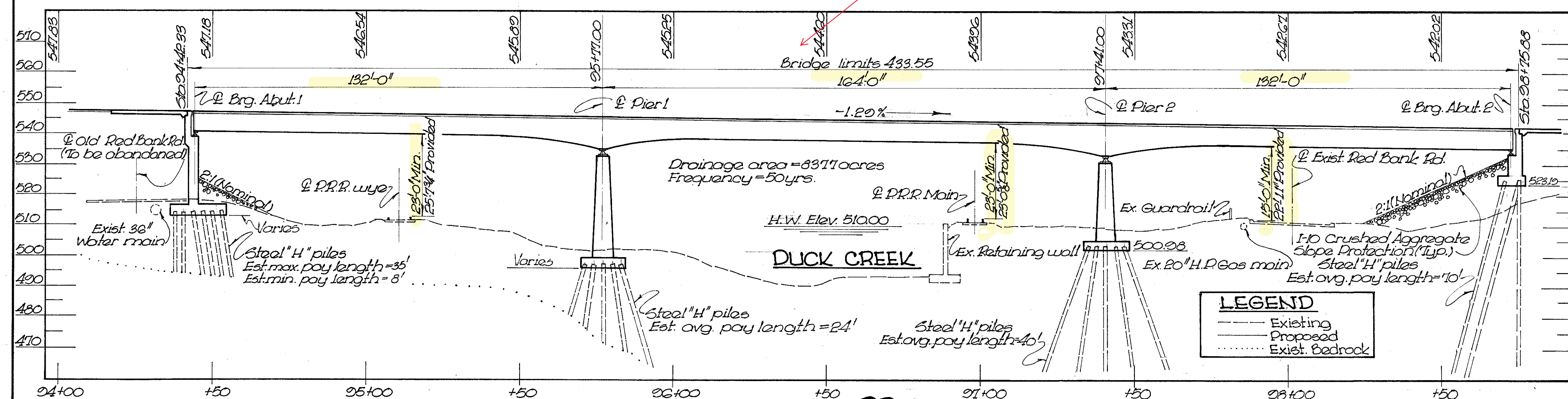
1. Test boring denoted thus: ●
2. Test boring data is on Sheets 231 and 232
3. Foundation design and foundation quantities are based on a study of test borings and soil samplings made at the site. This sounding information may be inspected in the office of the Bureau of Bridges in Columbus, or in an obridged form in the division office, but the state assumes no responsibility for the accuracy thereof.
4. Top of rail elev. were taken in March, 58.
5. Vehicular traffic on Red Bank Rd. shall be maintained and protected. The contractor shall provide platforms, nets or other suitable protection above travelled lanes. During construction, minimum horizontal roadway opening shall be 33'-0" and minimum vertical clearance shall be 13'-0".
6. Railroad traffic on the two tracks shall be maintained and protected. Construction clearance of 20'-0" vertically above the top of the railroad rails and 8'-0" horizontally from the center of tracks shall be maintained at all times.
7. The existing pavement of Red Bank Rd. is not to be altered.



CURVE DATA PROPOSED COLUMBIA PKWY.	
P1=101+52.00	Rc=2824.70'
Δ=44°40'01" Rt.	Lc=2033.35'
D=2°00'	Es=2°00'
Ts=1271.13'	Ls=200.00'

BENCH MARK #16 ELEV. 511.202
R.R. spike in 12" locust S. of N. & W. Railway, 252' left of Sta. 28+30.

PLAN

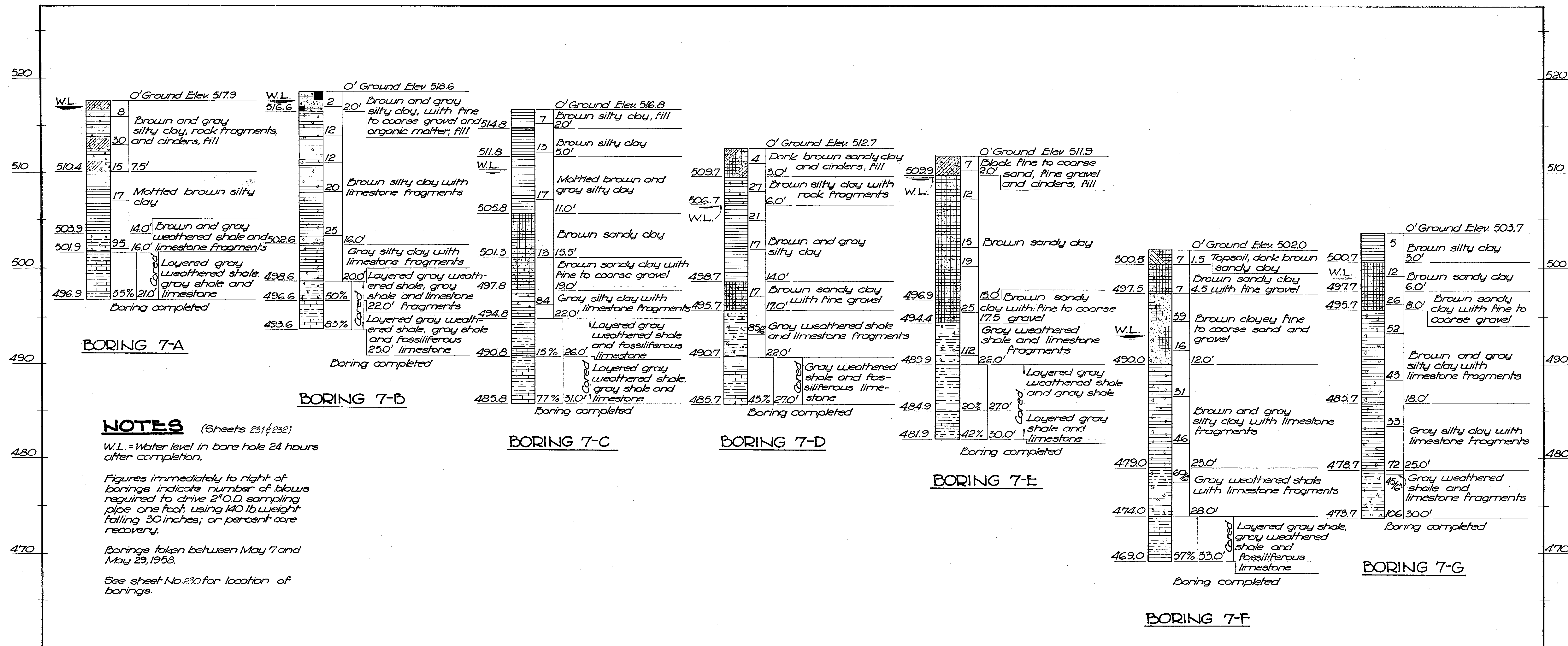


SECTION

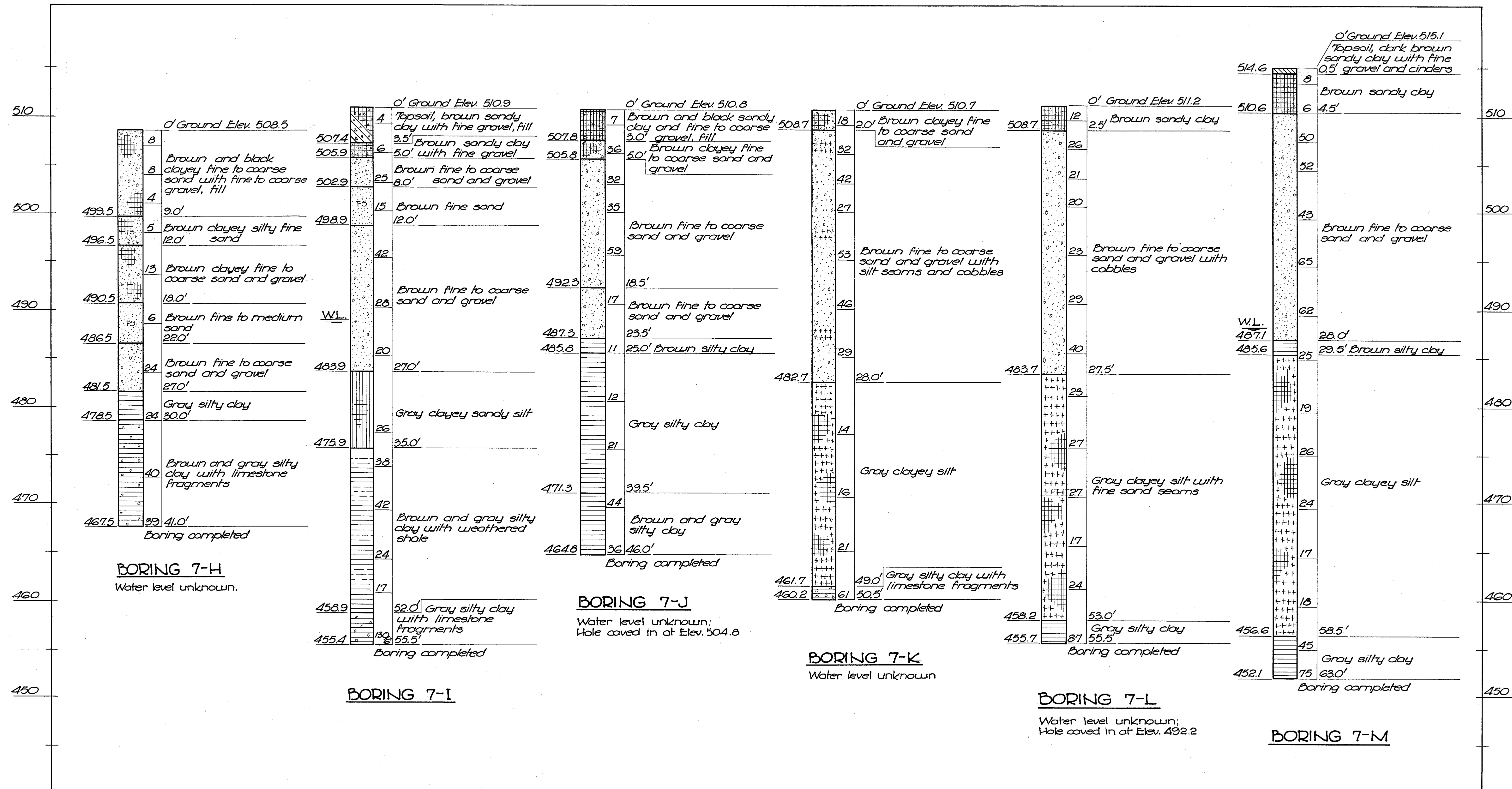
VOGT, IVERS, SEAMAN & ASSOCIATES
ENGINEERS ARCHITECTS
CHICAGO

SITE PLAN
BRIDGE NO. HAM-50-2307
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA. 24+42.33 TO
STA. 28+75.88

PRESENT TOPOGRAPHY		PROPOSED WORK			
SURVEYED	DRAWN	DESIGNED	DRAWN	CHECKED	REVISIONS
C.G.	R.H.H.	R.H.H.	J.R.R.	R.J.M.	



BORINGS



BORINGS

VOGT, IVERS, SEAMAN & ASSOCIATES ENGINEERS CINCINNATI				ARCHITECTS CHICAGO	
BORINGS					
BRIDGE NO. HAM-50-2967 PROPOSED COLUMBIA PKWY. OVER DUCK CREEK VALLEY HAMILTON COUNTY STA. 24+42.33 TO STA. 28+75.88					
DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
—	J.R.P.	J.R.R.	R.H.H.	J.A.D. Aug. 59	

GENERAL NOTES**DESIGN SPECIFICATIONS** to which this structure conforms:

"Design Specifications for Highway Structures" of the State of Ohio, Dept. of Highways dated 9-1-57 together with current revisions thereof; supplemented by allowable bearing stress on rockers from paragraph 1.4.2 of "Standard Specifications for Highway Bridges" of the American Association of State Highway Officials, dated 1957 along with the "Specifications for Assembly of Structural Joints using High Strength Steel Bolts" of the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation, approved February, 1954.

PILE CAPACITY REQUIRED by pier and abutment design:

Maximum load of 30 tons per pile (abut. 1 and pier 1)
Maximum load of 40 tons per pile (abut. 2 and pier 2)

PILE CAPACITY, ATTAINMENT:

Piles shall be driven with a hammer having a minimum rating of 11,000 ft.-lb., to a firm contact with shale. Since the length of penetration will be variable at Abutment 1, the firm contact shall be considered to be attained when the capacity according to the formula in Sec. 5-18.05 is not less than that shown on the chart on sheet 234 of the plans. If the length of penetration is at least 19' at Pier 1, 35' at Pier 2 and 60' at Abut. 2, the firm contact shall be considered as attained when the capacity according to the formula of Sec. 5-18.05 is not less than the following value for a pile hammer of the indicated rating:

Pier 1

44 tons per pile using an 11,000 ft.-lb. hammer (min.)

39 tons per pile using a 15,000 ft.-lb. hammer

Pier 2

52 tons per pile using an 11,000 ft.-lb. hammer (min.)

43 tons per pile using a 15,000 ft.-lb. hammer

Abutment 2

52 tons per pile using an 11,000 ft.-lb. hammer (min.)

44 tons per pile using a 15,000 ft.-lb. hammer

If the energy rating of the hammer is between the ratings shown above, the required formula capacity shall be determined by interpolation.

REFERENCE shall be made to the following standard drawings:

1. A5-1-54, revised 12-1-54 (Approach slabs)
2. AR-1-57, revised 2-2-59 (Aluminum Railing)
3. C5B-2-50, sheets 2 and 3 of 6, revised 2-2-59 (End Dams, Scuppers)
4. I-15 No. 2-A, dated 5-21-59 (Guardrail)

CONSTRUCTION CLEARANCE which shall be provided at all times for the maintenance of traffic:

For each railroad track, 20'-0" vertically and 16'-0" horizontally.
For existing Red Bank Rd., 13'-0" vertically and 33'-0" horizontally, with suitable protection above travelled lanes.

EXCAVATION PROCEDURE:

Abutment 1

The embankment shall be placed and compacted up to the "ground line" shown on the "ELEVATION" on sheet 235 and extended horizontally downstation until it intersects existing ground; then excavation shall be made for the 5 wingwall and abutment and then the piles shall be driven. Before the backwall is placed the embankment shall be placed and compacted up to the level of the subgrade, for a distance of 200 ft. back of the abutment, with a 1:1 slope from the bridge seat to the subgrade.

Abutment 2

The embankment shall be placed and compacted up to the finished spill-thru slope and to the level of the subgrade for a distance of 200' back of the abutment; then excavation shall be made for the abutment and then the piles shall be driven.

SHEETING AND BRACING:

Before construction is started, eight sets of prints showing details of the sheeting and bracing to be used for excavation adjacent to the railroad tracks shall be submitted to the Director for approval by the Dept. of Highways and by the Railroad Company.

ALIGNING RAILROAD TRACKS:

After the Contractor has completed all excavation and backfill adjacent

to the railroad tracks in compliance with Sec. E-2.04 and E-2.08 of the Construction and Material Specifications, subject to the supervision of the Railroad Co., nothing in Sec. E-2.04, E-2.08 or G-8.07 of the Specifications shall be construed to hold the Contractor liable for aligning or re-surfacing the railroad tracks.

PAINTING:

After erection and after the shop coat has been cleaned and, where necessary, repainted in accordance with Sec. 8.04, an additional coat of the same paint as used in the shop shall be applied over the outside face and all sides of the bottom flange of girders G1 and G4 and stringers S1 and S8. The brackets attached to G1 and G4 shall also receive this additional coat.

In addition to the above one field coat of paint, of the same kind as the shop coat shall be applied to the structural steel in the track spans before the application of the aluminum paint, except to those surfaces which are to be in direct contact with concrete.

PAINTING AT STIFFENER CRIMPS:

The requirement of the last portion of the last sentence in Sec. 5-7.14 of the Construction and Material Specifications which states "...and any remaining openings shall be filled with a metallic compound of a non-shrinking type before the shop coat is applied" shall not apply and the following requirement shall be substituted therefor: "Prior to the assembly of a girder the web plate, the flange angle and the stiffener angle at the location of the crimp in the stiffener angle shall be given a shop coat of paint."

UTILITY LINES:

All labor and expense involved in relocating (installing) the affected utility lines shall be borne by the owners. The Contractor and Owners are requested to cooperate by arranging their work in such a manner that inconvenience to either will be held to a minimum.

RAILROAD AERIAL LINES shall be relocated by the Railroad Co. The Contractor shall use all precautions necessary to see that the lines are not disturbed during the construction stage and shall cooperate with the Railroad Co. in the relocation of these lines. The cost of the work shall be included in the railroad force account work.

NOTES

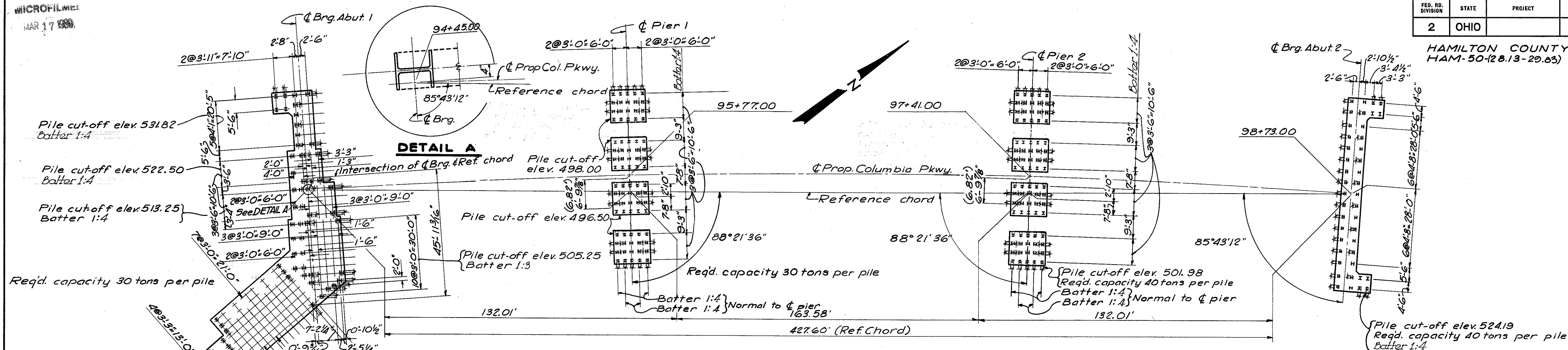
1. Item E-2, Unclassified Excavation, includes the removal of fill material necessary for the construction of the abutments. The upper pay limit at Abut. 1 shall be the same "ground line" as described under "EXCAVATION PROCEDURE" of the General Notes.
2. Item 5-7, Structural Steel, includes high strength low alloy rocker inserts (A.S.T.M. A-242), steel casting bearing shoes, and sheet lead bearing shoe pads.
3. Item 5-14, Railing, includes parapet concrete above the safety curb on abutments and superstructure, reinforcing bars as noted on the steel list, and guardrail anchors, along with standard rail, post and accessories shown on AR-1-57.
4. Item 5-14, Guardrail, includes, within bridge limits, the standard double rail of Std. Dwg. I-15 (No. 2-A) and the special posts and accessories detailed on sheet 259.
5. Item 5-25, Lighting, includes the quantities tabulated on sheet 259.
6. The division between UG-582(14) and U-582(14)-FAIRFAX for this structure shall be 50% to each.

ESTIMATED QUANTITIES									
ITEM	TOTAL	UNIT	DESCRIPTION	ABUTS.	PIERS	SUPERST	GENERAL	A5	BUILT
E-2		Lump Sum	Cofferdams, Cribbs and sheeting				Lump Sum		
E-2	2094	Cu. Yds.	Unclassified Excavation	1,478	616				
S-1	1,004	Cu. Yds.	Class "C" Concrete - Superstructure			1,004			
S-1	244	Cu. Yds.	Class "C" Concrete - Piers above footings		244				
S-1	643	Cu. Yds.	Class "E" Concrete ~ Abutments above footings	643					
S-1	811	Cu. Yds.	Class "E" Concrete ~ Abutment & Pier footings	601	210				
S-3	229	Lin. Ft.	Waterproofing, Premolded Sealing Strip	229					
S-4	481,266	Lbs.	Reinforcing Steel	88,229	82,070	310,967	Revised As-Built		
S-7	1,880,000	Lbs.	Structural Steel			1,880,000			
S-8	1,880,000	Lbs.	Field painting of Structural Steel, as per plan			1,880,000			
S-9	276	Sq. Ft.	1" Preformed Expansion Joint Filler	276					
S-14	949	Lin. Ft.	Railing, Aluminum with Concrete Parapet	89		860			
S-14	430	Lin. Ft.	Guardrail, Type I-15.13 Double-faced with galv. steel post & bolts			430			
S-16		Lump Sum	First test pile				Lump Sum		
S-17		Lump Sum	First pile test load				Lump Sum		
S-17	3	Each	Subsequent Pile test loads				3		
S-18	4,420	Lin. Ft.	Steel Piles, 12 BP53	6,300	5,120		CO. - 5 - 508.23	109 11.77	
S-25			(See Note 5)						
S-29	374	Cu. Yds.	Porous Backfill	374					
S-29	140	Lin. Ft.	8" ϕ bituminous coated, perforated corrugated metal pipe.	140					
I-10	799	Sq. Yds.	Crushed Aggregate Slope Protection				799		

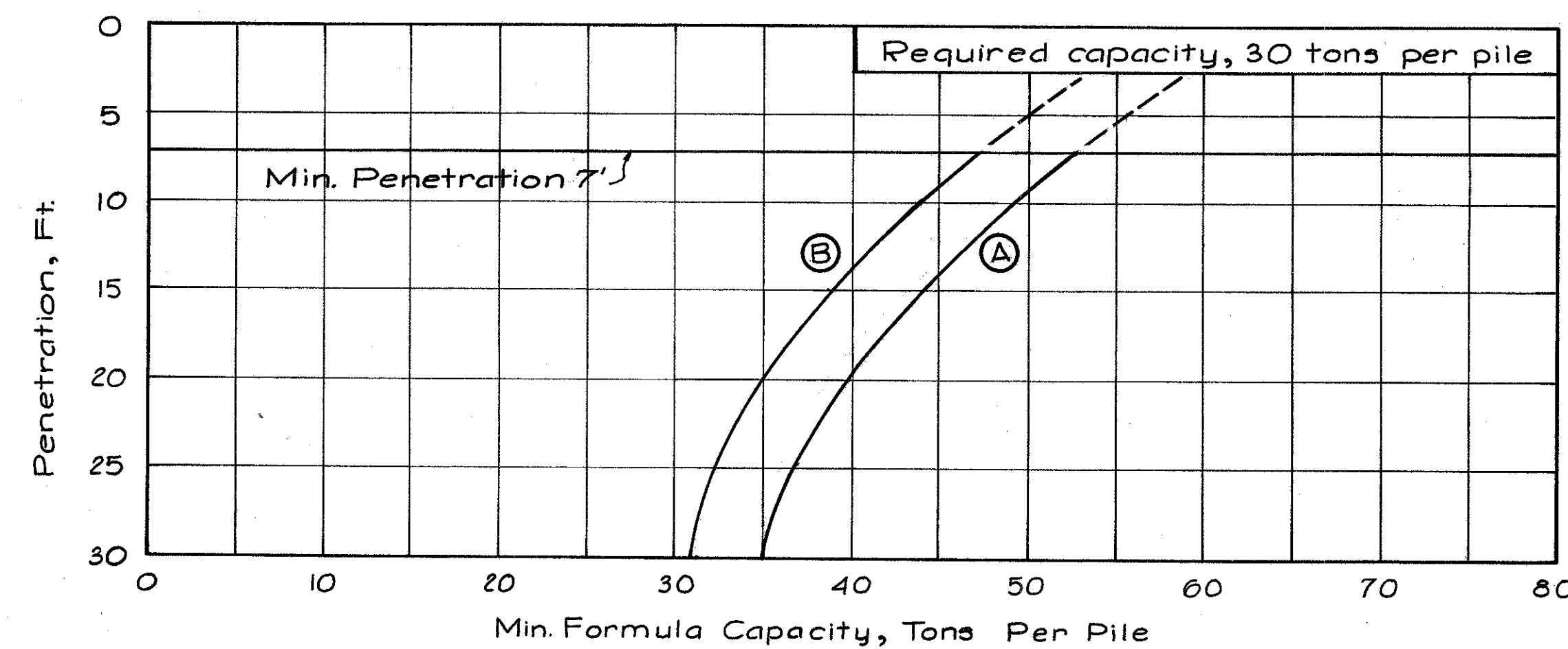
(1) Revised As-Built

VOGT, IVERS, SEAMAN & ASSOCIATES ENGINEERS CINCINNATI				ARCHITECTS CHICAGO	
GENERAL NOTES AND ESTIMATED QUANTITIES					
BRIDGE NO. HAM-50-2967 PROPOSED COLUMBIA PARKWAY OVER DUCK CREEK VALLEY HAMILTON COUNTY					
				STA. 94+42.33 TO STA. 98+75.88	
DESIGN	DR.	TR.	CHKD.	REVIEWED DATE	REVISED
R.H.H.	R.H.H.	J.H.K.	R.J.M.	J.A.D. Aug. 59	

(1) Revised As-Built CAM



GENERAL PLAN - PILING LAYOUT



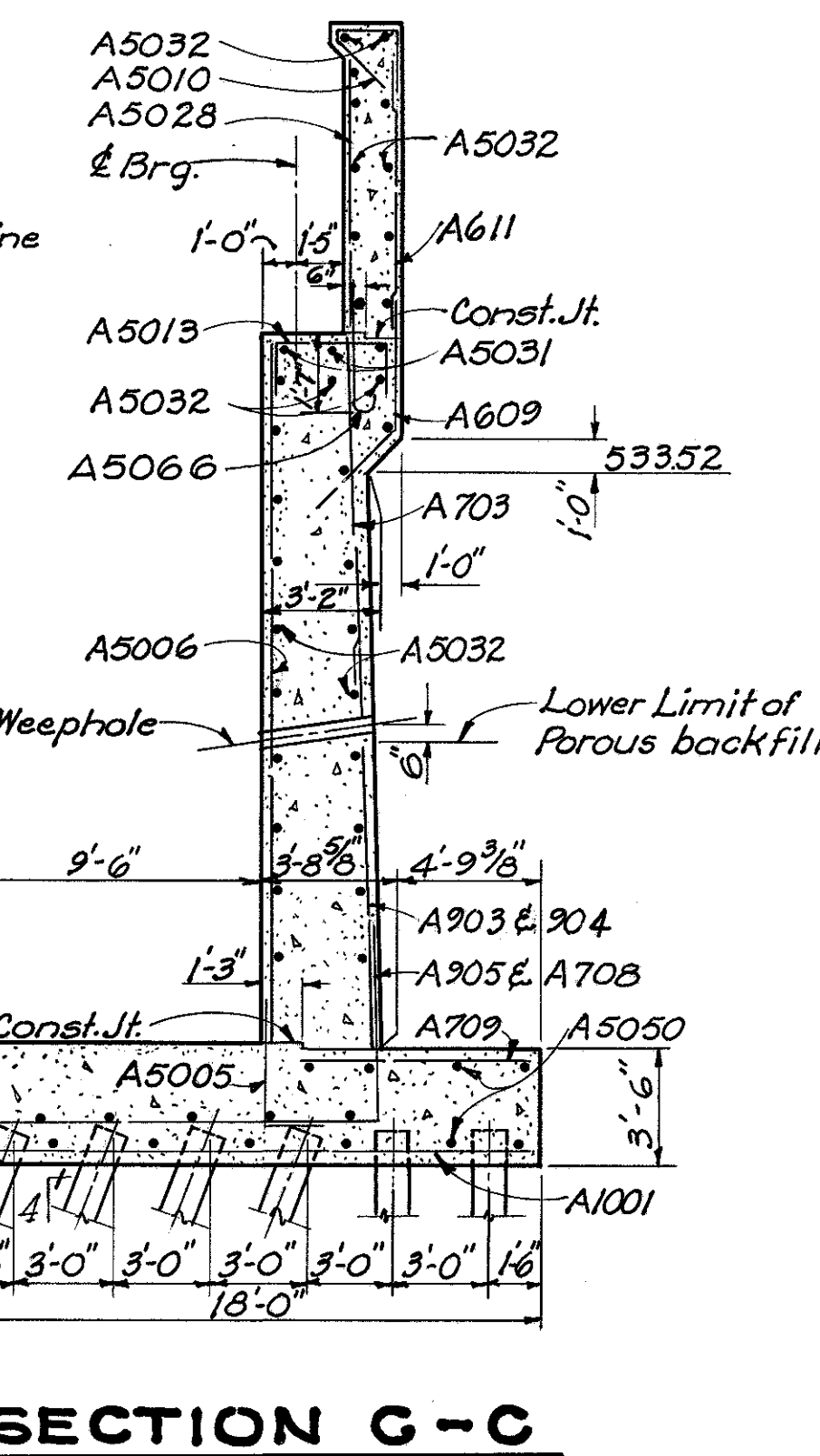
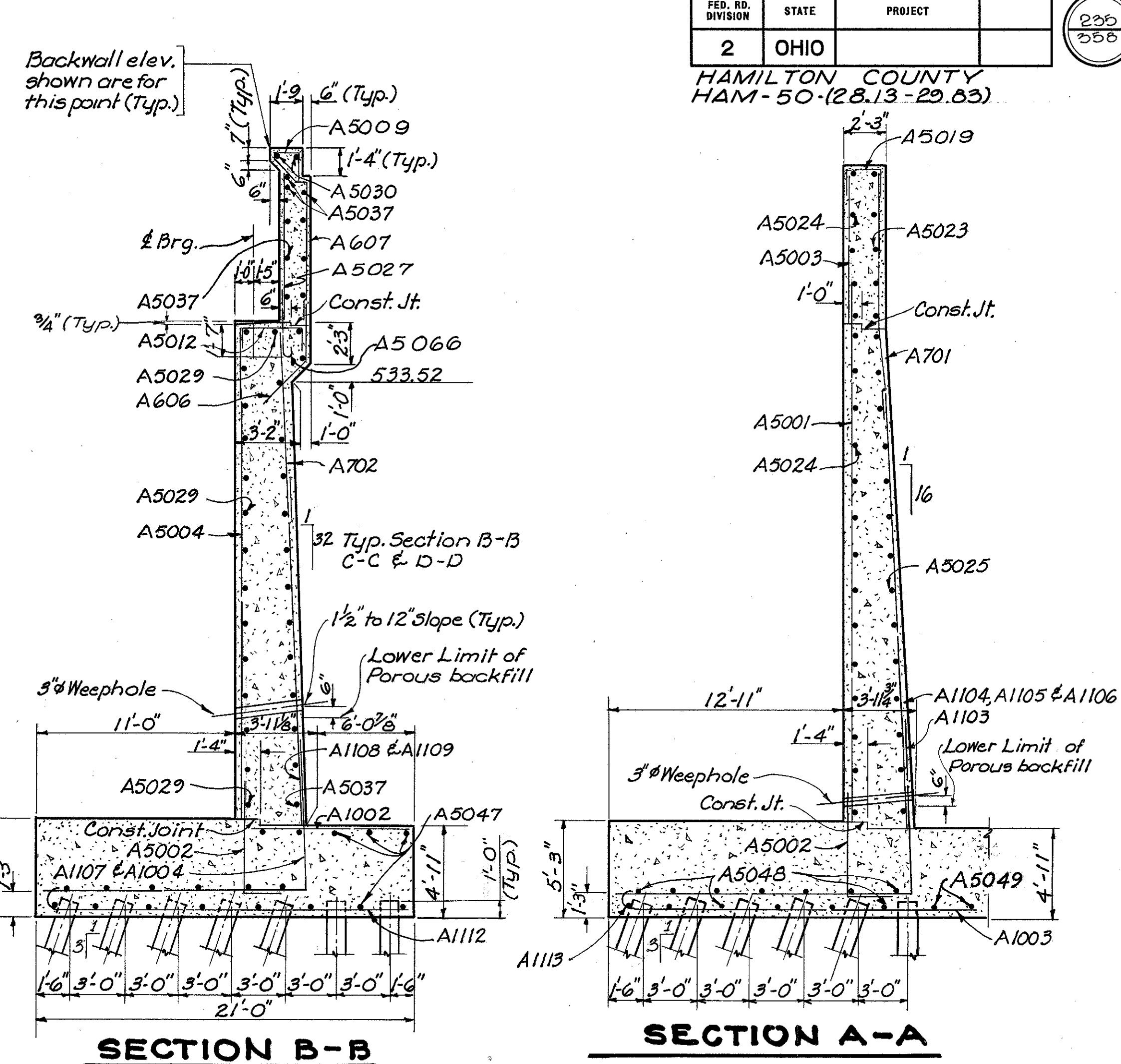
PILE DRIVING CHART

(Abutment 1)

NOTES:

- The above chart shows the relationship between required pile capacity and the necessary formula capacity by Sec. 5-18.05 (Const. and Material Specifications) for 12BP53 steel "H" piles driven to firm contact with shale.
- Curve "A" is for a pile hammer rated at 11,000 FT.-LB.; curve "B" is for a pile hammer rated at 15,000 FT.-LB. For hammers of other ratings, an interpolation or extrapolation may be used, subject to the engineer's approval.
- For the 30-Ton piles at Abutment 1, if the 7' minimum penetration is not possible to attain, then the Director's written approval will be required for shorter penetrations and corresponding formula capacities.
- Of the piles battered 1:3 at Abut. 1, the first seven of such piles to be driven for the south wingwall, and the first five to be driven for the abutment proper, shall be driven to 125% of the value indicated on the chart.

VOGT, IVERS, SEAMAN & ASSOCIATES ENGINEERS CINCINNATI				ARCHITECTS CHICAGO			
GENERAL PLAN & PILING							
BRIDGE NO. HAM-50-2907 PROPOSED COLUMBIA PKWY. OVER DUCK CREEK VALLEY HAMILTON COUNTY STA. 94+42.33 TO STA. 98+75.88							
DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED		
R.J.M.	J.R.R.	H.W.S.	R.H.H.	J.A.O. Aug. 59			

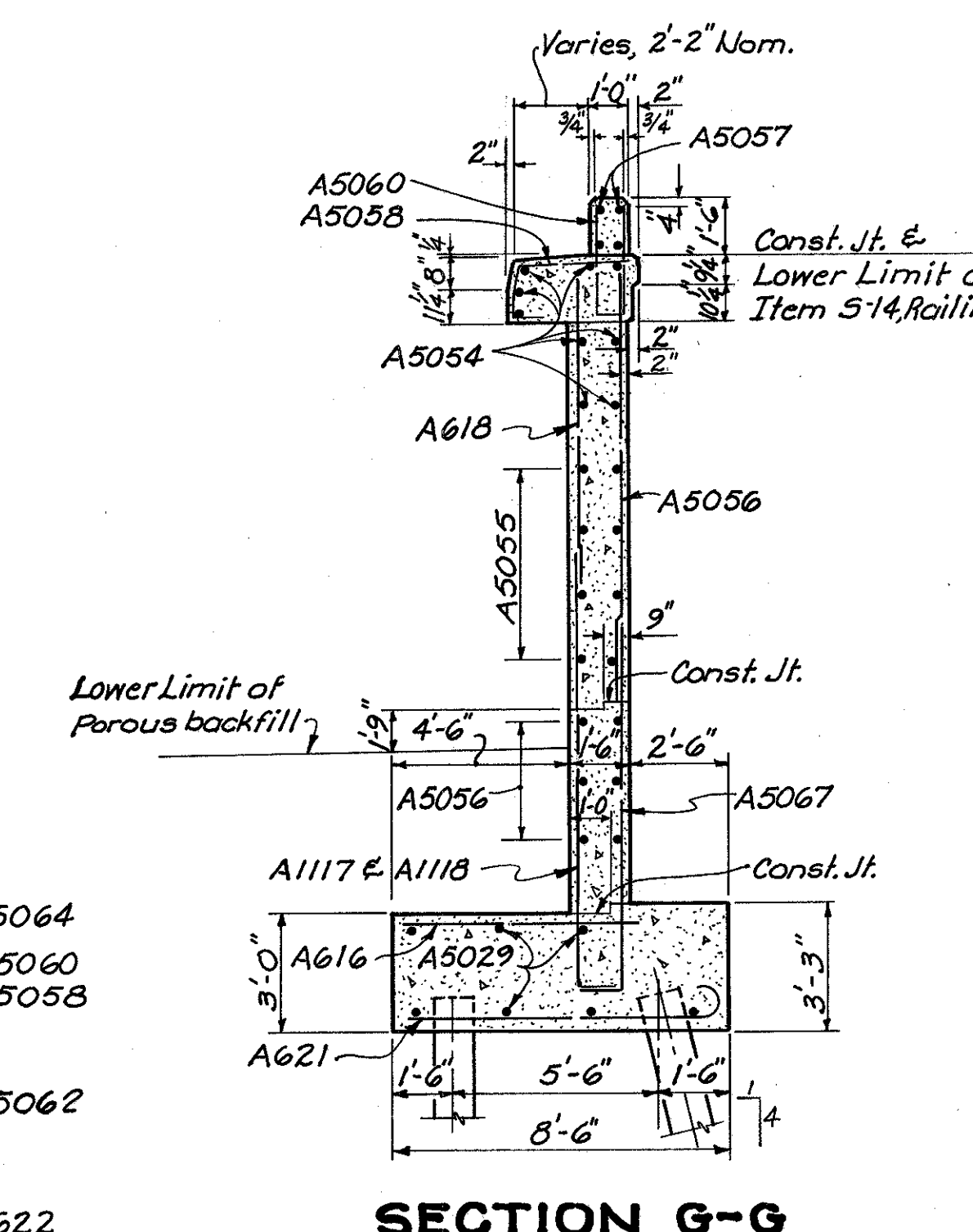
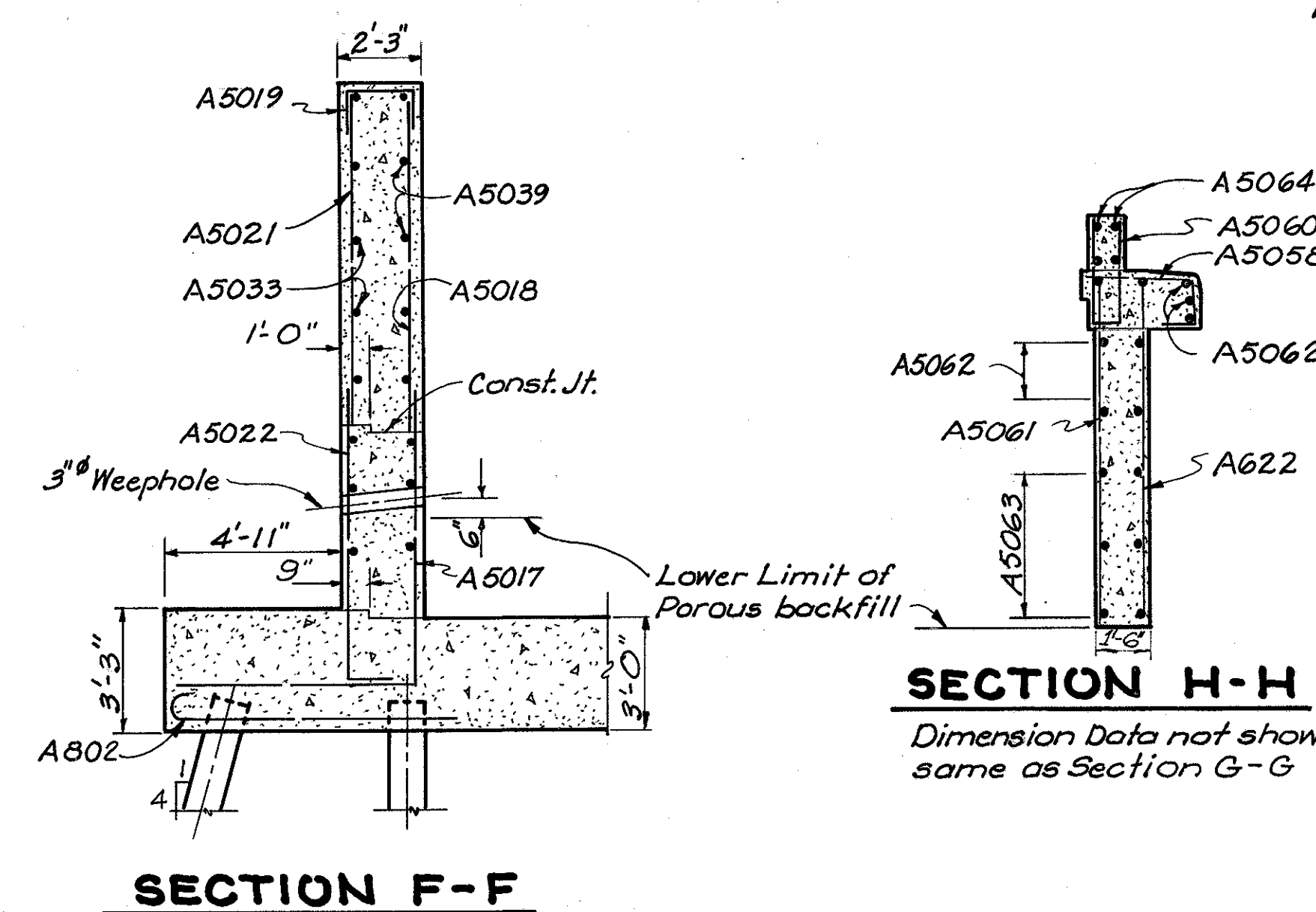
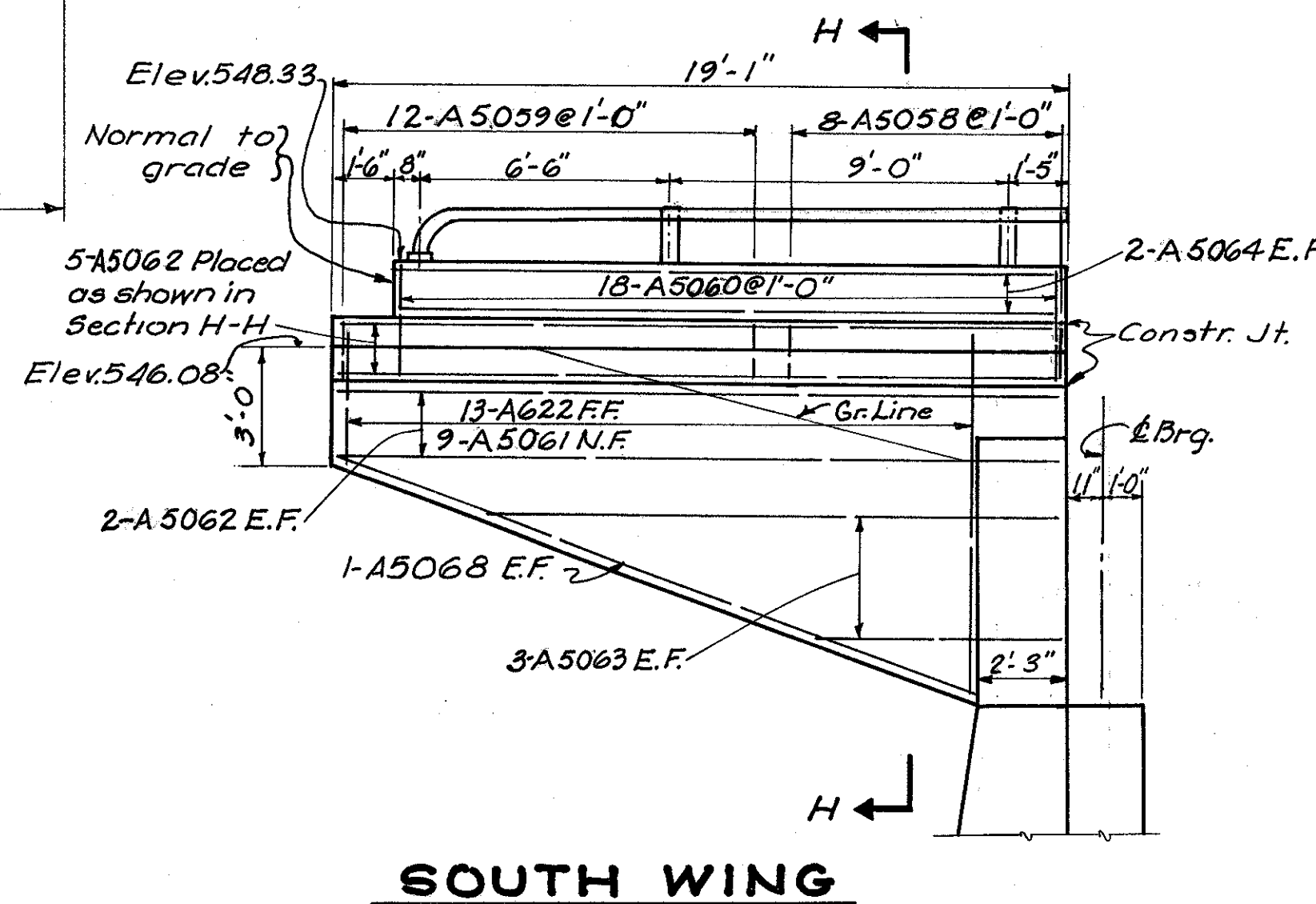
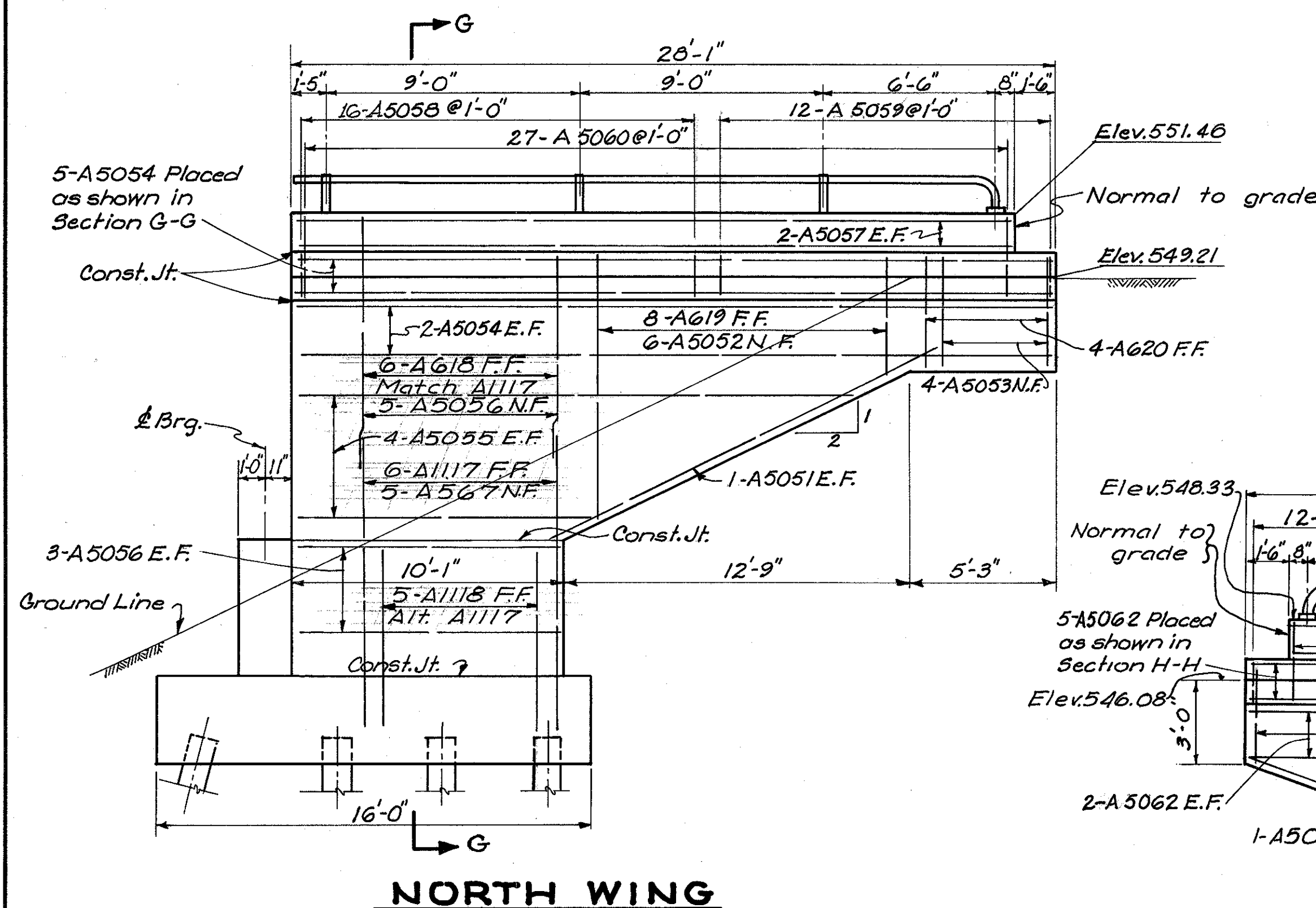
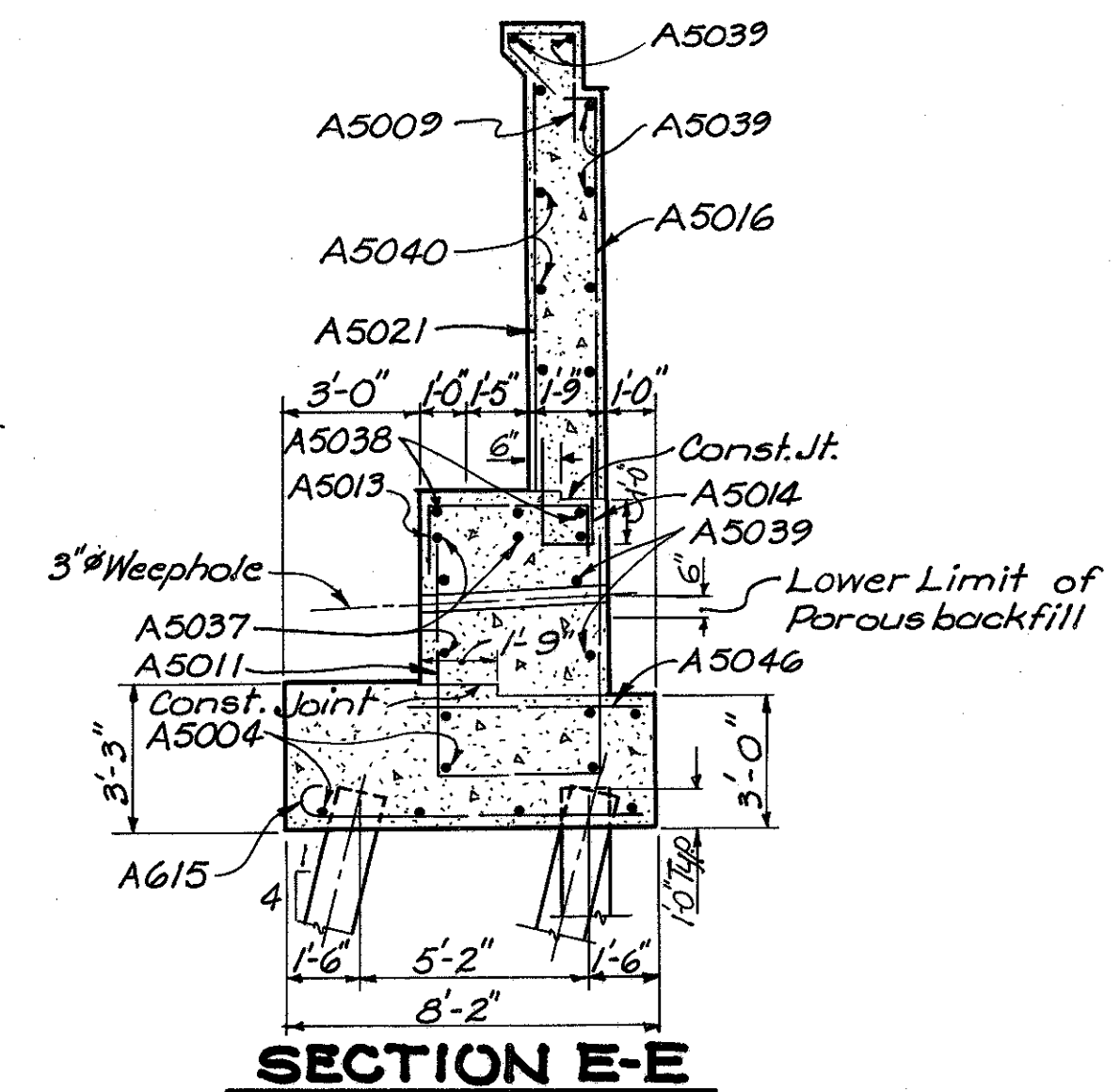
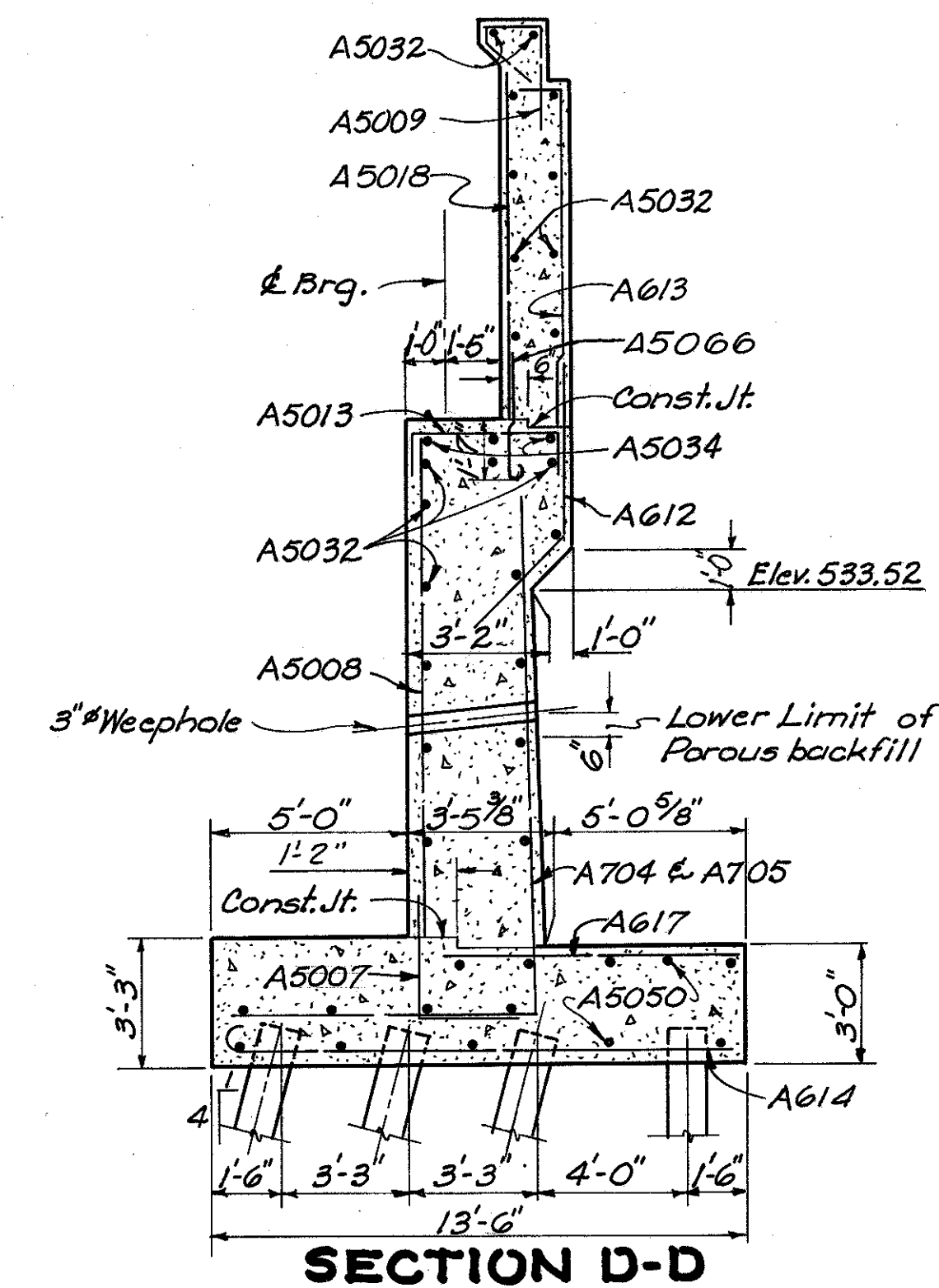
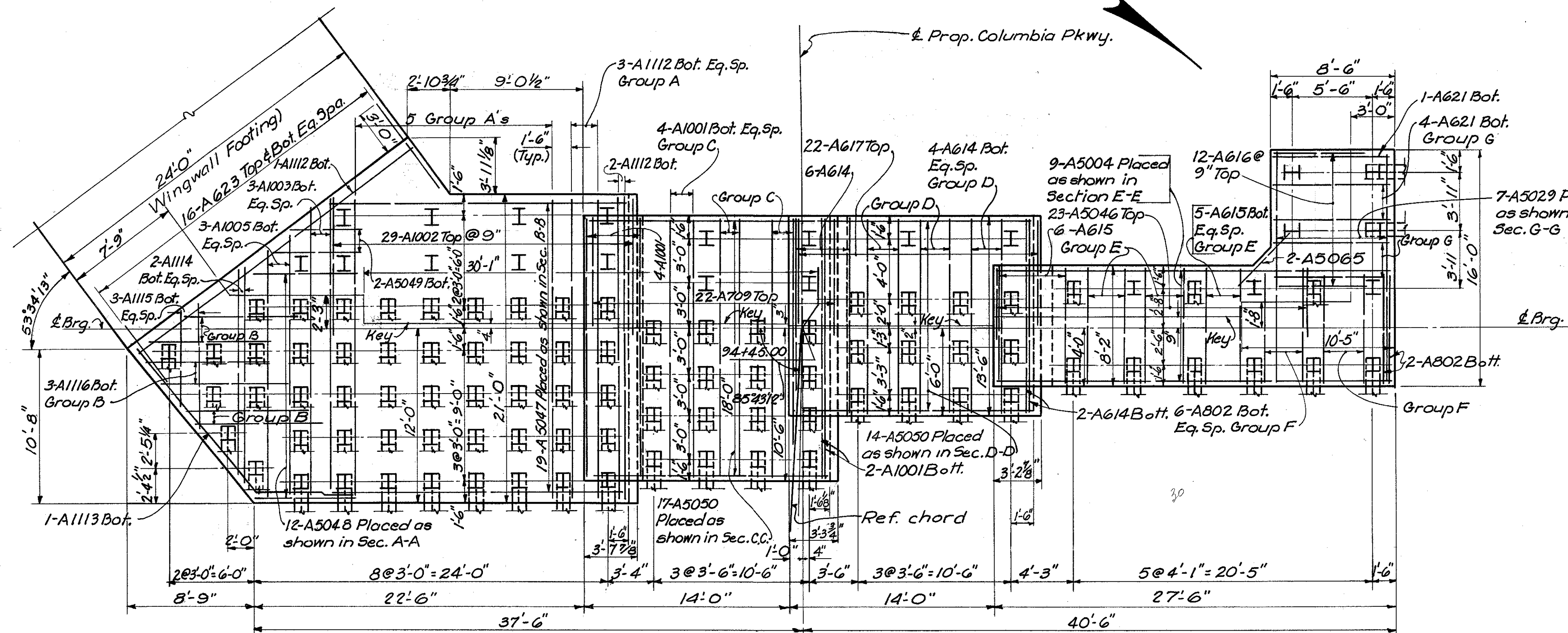


- ## NOTES
1. Dimensions of median are with DECK SLAB, Sh. 24".
 2. "E.F." denotes "each face" for reinforcing bar locations; "N.F." denotes "near face"; "F.F." denotes "far face"; "T. & B." denotes "top & bottom."
 3. Guardrail anchor is detailed on Sh. 259.
 4. Parous backfill shall be 2'-0" in thickness and shall have the following pay limits: Horizontally, full length of abutment and wing. Vertically, upward, to underside of approach slab or of stabilized slope. Vertically, downward, to elevation shown on Sections, following shape to
 5. Anchor bolts shall be 1/4" & 2'-0" long. Lower 1'-6" shall be swaged and embedded. Upper 3/2" shall be threaded and provided with hex. nut and 3" std. plate washer.
 6. Reinforcing bars in beam seats shall be placed so as not to interfere with drilling of holes for anchor bolts.
 7. Piles shall be steel "H", I2BP53.
 8. Before construction is started, eight sets of prints showing details of sheeting and bracing to be used for excavation adjacent to railroad tracks shall be submitted to the Director for approval by the Department of Highways and by the Railroad Company.

VOGT, IVERS, SEAMAN & ASSOCIATES
ENGINEERS ARCHITECTS
CINCINNATI CHICAGO

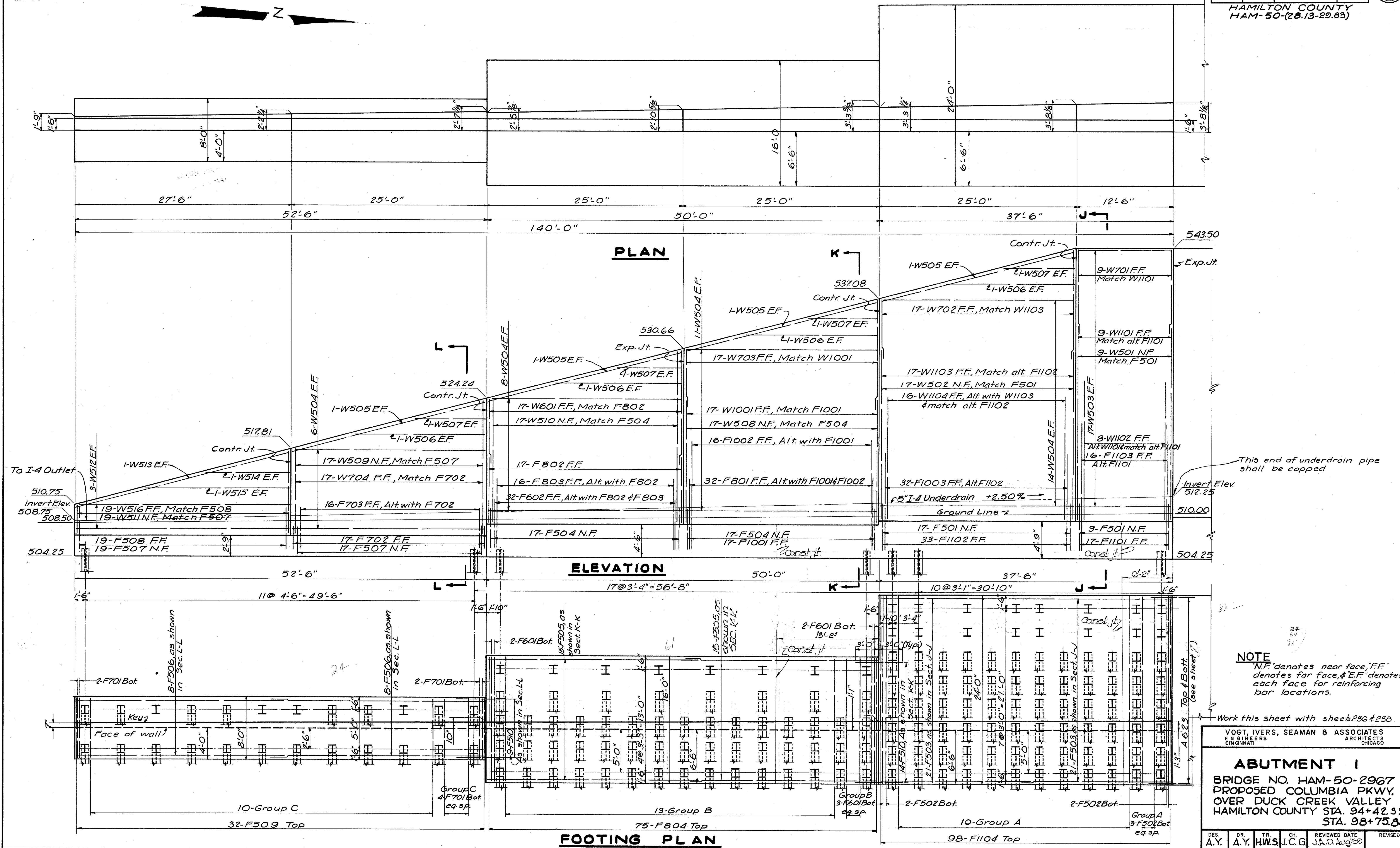
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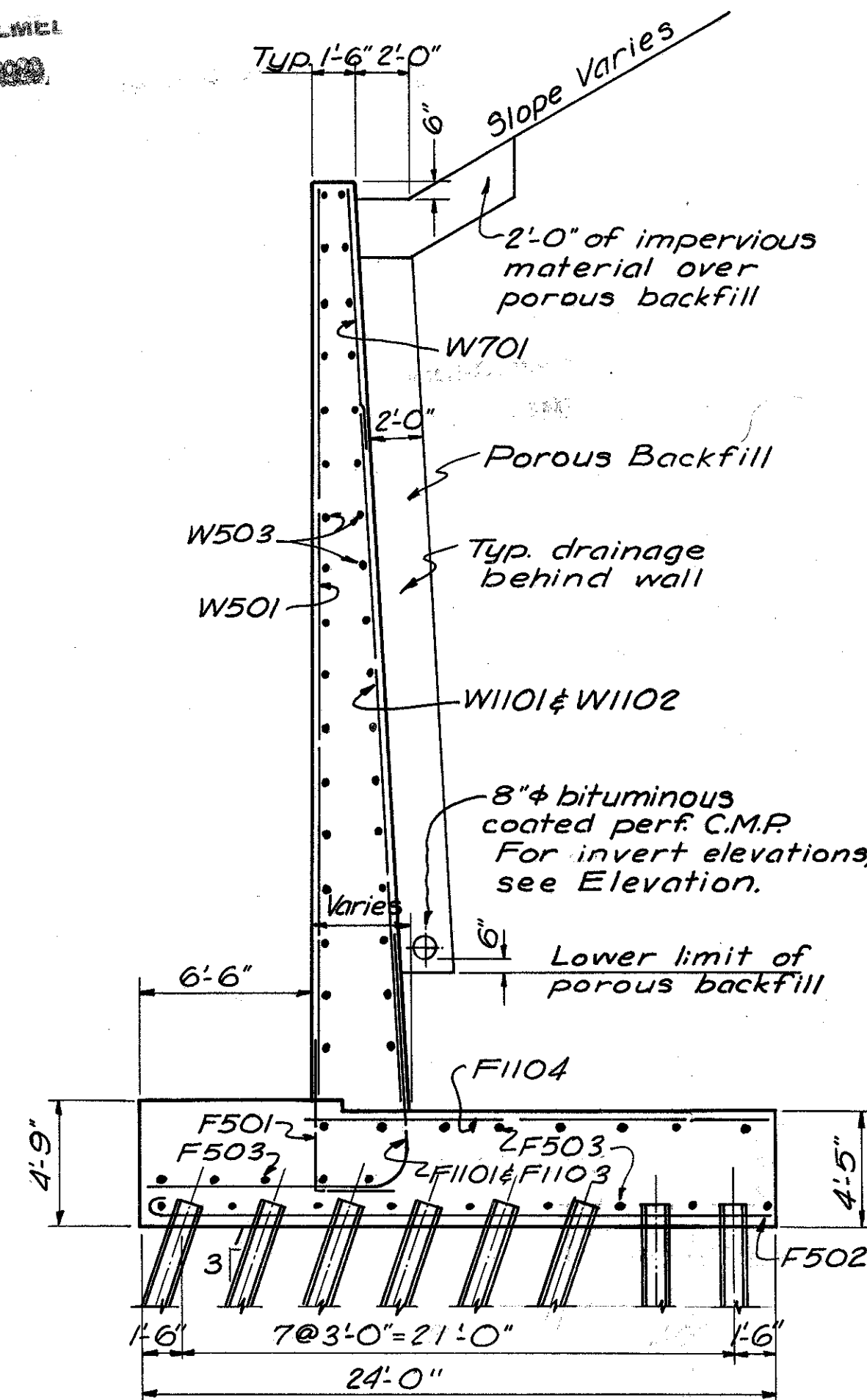
BRIDGE NO. HAM-50-2967
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA. 94+42.33
STA. 98+75.88



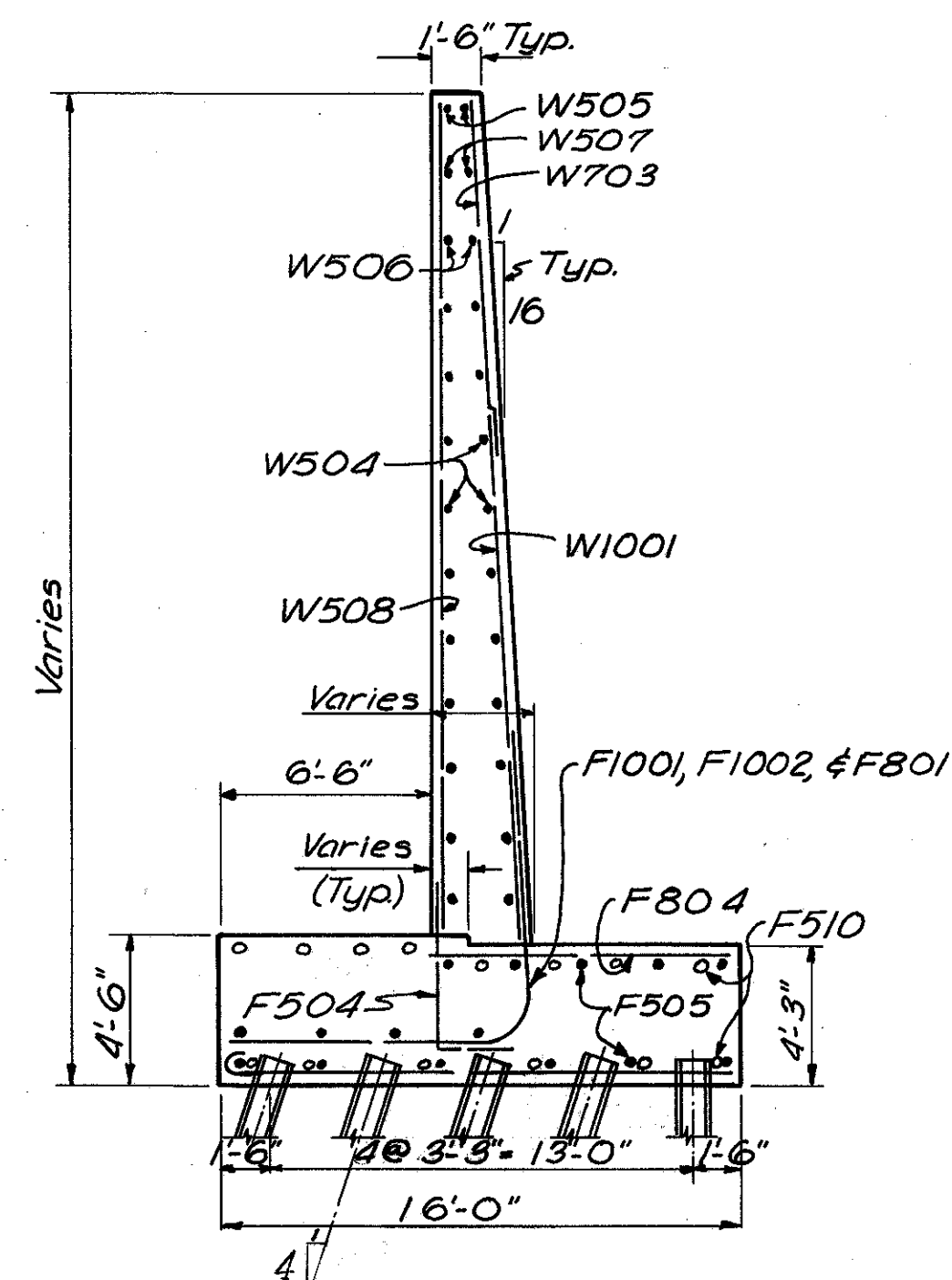
SECTION H-H
Dimension Data not shown
same as Section G-G

VOGT, IVERS, SEAMAN & ASSOCIATES ENGINEERS ARCHITECTS CINCINNATI CHICAGO				
ABUTMENT I				
BRIDGE NO. HAM-50-2967 PROPOSED COLUMBIA PKWY. OVER DUCK CREEK VALLEY HAMILTON COUNTY STA. 94+42.33 STA. 98+75.88				
DES. A.Y.	DR. A.Y.	TR. K.L.	CH. J.C.G.	REVIEWED DATE J.A.D. Aug 59
				REVISED

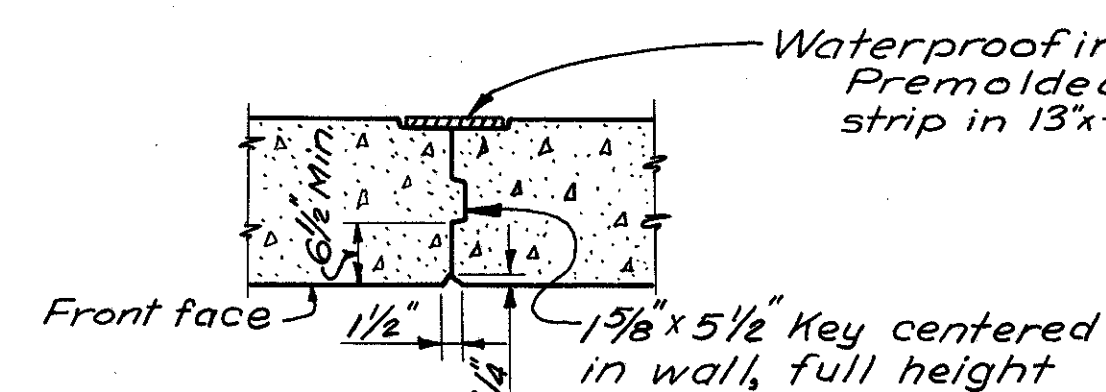




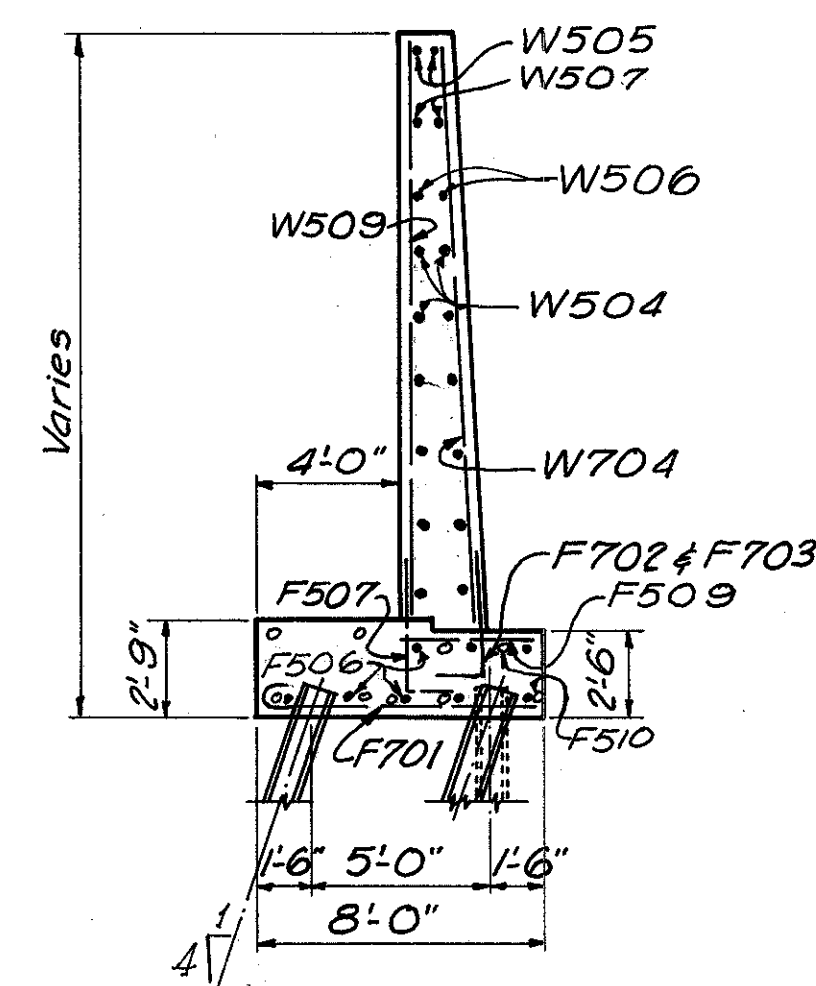
SECTION J-J



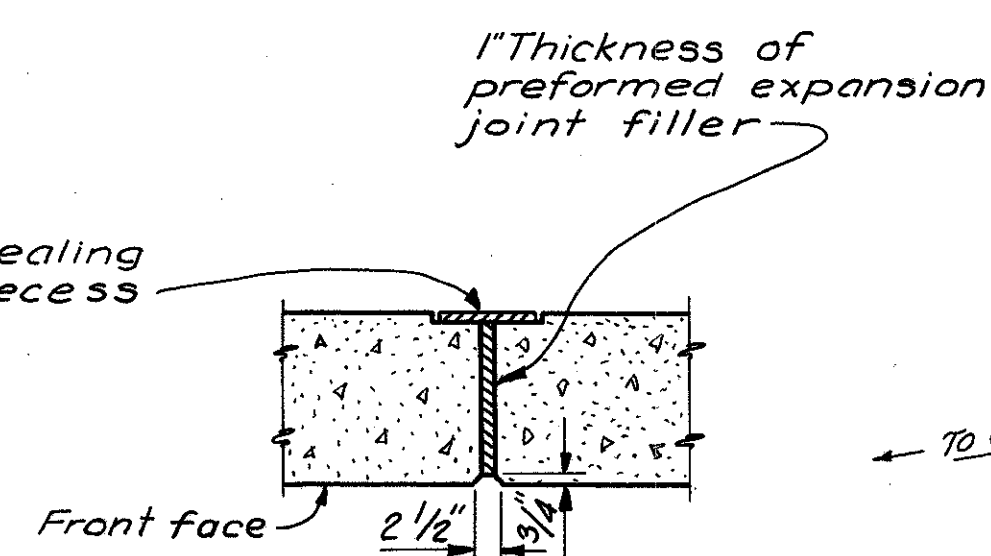
SECTION K-K



CONTRACTION JOINT



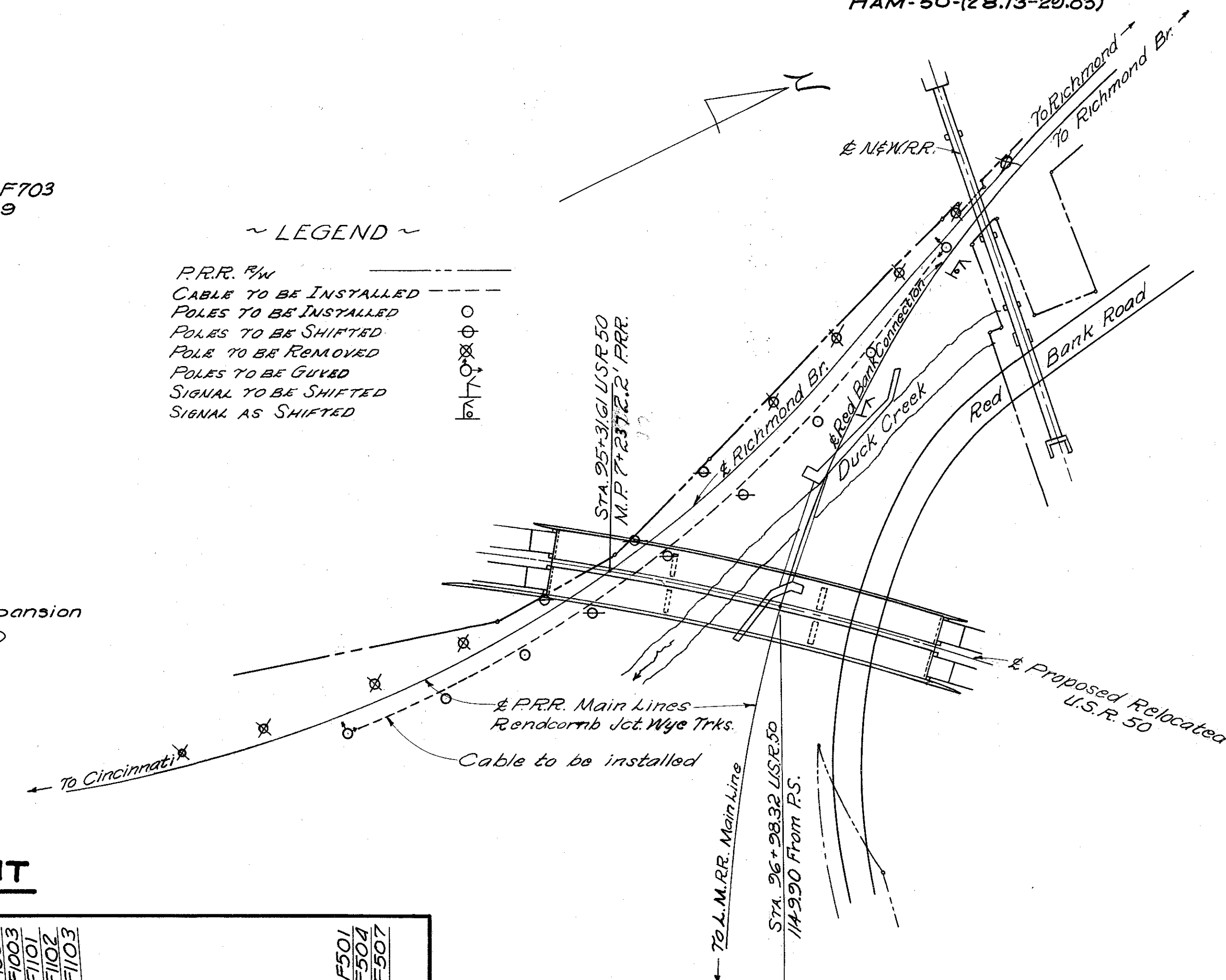
SECTION L-L



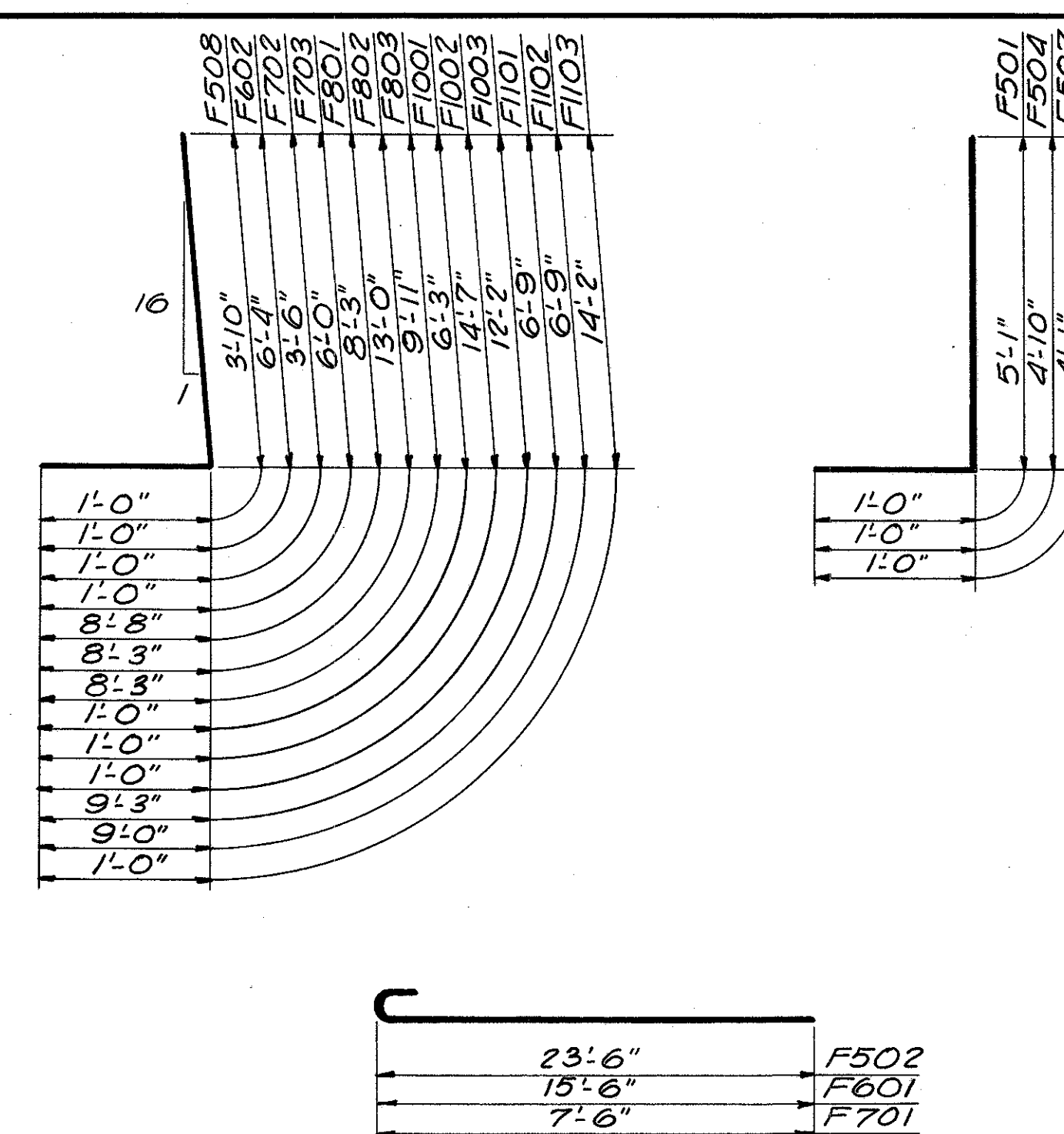
EXPANSION JOINT

~ LEGEND ~

P.R.R. P/W _____
CABLE TO BE INSTALLED
POLES TO BE INSTALLED
POLES TO BE SHIFTED
POLE TO BE REMOVED
POLES TO BE GUYED
SIGNAL TO BE SHIFTED
SIGNAL AS SHIFTED



R E I N F O R C I N G S T E E L L I S T									
MARK	LENGTH	SHAPE	NUMBER	WEIGHT	MARK	LENGTH	SHAPE	NUMBER	WEIGHT
F501	6'-0"	Bt.	26	163	W514	10'-0"	Str.	2	21
F502	24'-1"	Bt.	37	929	W515	19'-0"	Str.	2	40
F503	19'-4"	Str.	42	847	W516	Varies, 3'-10" to 10'-10", incr. 4 5/8"	Str.	1 Series of 19	145
F504	5'-9"	Bt.	34	204					
F505	25'-7"	Str.	30	800	W601	Varies, 7'-5" to 13'-9", incr. 4 3/4"	Str.	1 Series of 17	270
F506	26'-10"	Str.	16	448					
F507	5'-0"	Bt.	36	188	W701	13'-1"	Str.	9	241
F508	4'-9"	Bt.	19	94	W702	Varies, 8'-3" to 14'-7", incr. 4 3/4"	Str.	1 Series of 17	397
F509	3'-10"	Str.	32	128	W703	Varies, 8'-0" to 14'-4", incr. 4 3/4"	Str.	1 Series of 17	388
F510	6'-0"	Str.	23	144	W704	Varies, 10'-11" to 17'-3", incr. 4 3/4"	Str.	1 Series of 17	489
F601	16'-2"	Bt.	46	1117	W1001	16'-3"	Str.	17	1189
F602	7'-2"	Bt.	32	344					
F701	8'-4"	Bt.	48	818	W1101	23'-9"	Str.	9	1136
F702	4'-4"	Bt.	17	151	W1102	17'-6"	Str.	8	744
F703	6'-10"	Bt.	16	223	W1103	22'-2"	Str.	17	2002
					W1104	15'-9"	Str.	16	1339
F801	16'-8"	Bt.	32	1424					
F802	21'-0"	Bt.	17	953					
F803	17'-11"	Bt.	16	765					
F804	9'-8"	Str.	75	1936					
F1001	6'-11"	Bt.	17	506					
F1002	15'-3"	Bt.	16	1050					
F1003	12'-10"	Bt.	32	1767					
F1101	16'-6"	Bt.	17	1490					
F1102	15'-5"	Bt.	33	2703					
F1103	14'-10"	Bt.	16	1261					
F1104	17'-2"	Str.	98	8938					
W501	34'-3"	Str.	9	322					
W502	Varies, 27'-10" to 34'-2", incr. 4 3/4"	Str.	1 Series of 17	550					
W503	12'-2"	Str.	34	431					
W504	24'-8"	Str.	78	2007					
W505	25'-4"	Str.	8	211					
W506	16'-0"	Str.	8	134					
W507	8'-6"	Str.	8	71					
W508	Varies, 21'-8" to 28'-1", incr. 4 3/4"	Str.	1 Series of 17	441					
W509	Varies, 10'-8" to 17'-0", incr. 4 3/4"	Str.	1 Series of 17	245					
W510	Varies, 15'-4" to 21'-8", incr. 4 3/4"	Str.	1 Series of 17	328					
W511	Varies, 3'-7" to 10'-7", incr. 4 5/8"	Str.	1 Series of 19	140					
W512	27'-0"	Str.	6	169					
W513	27'-11"	Str.	2	58					



B E N D I N G D I A G R A M S

FORCE ACCOUNT WORK
by
The Pennsylvania Railroad Company

Engineering and Inspection
Communication and Signal Work

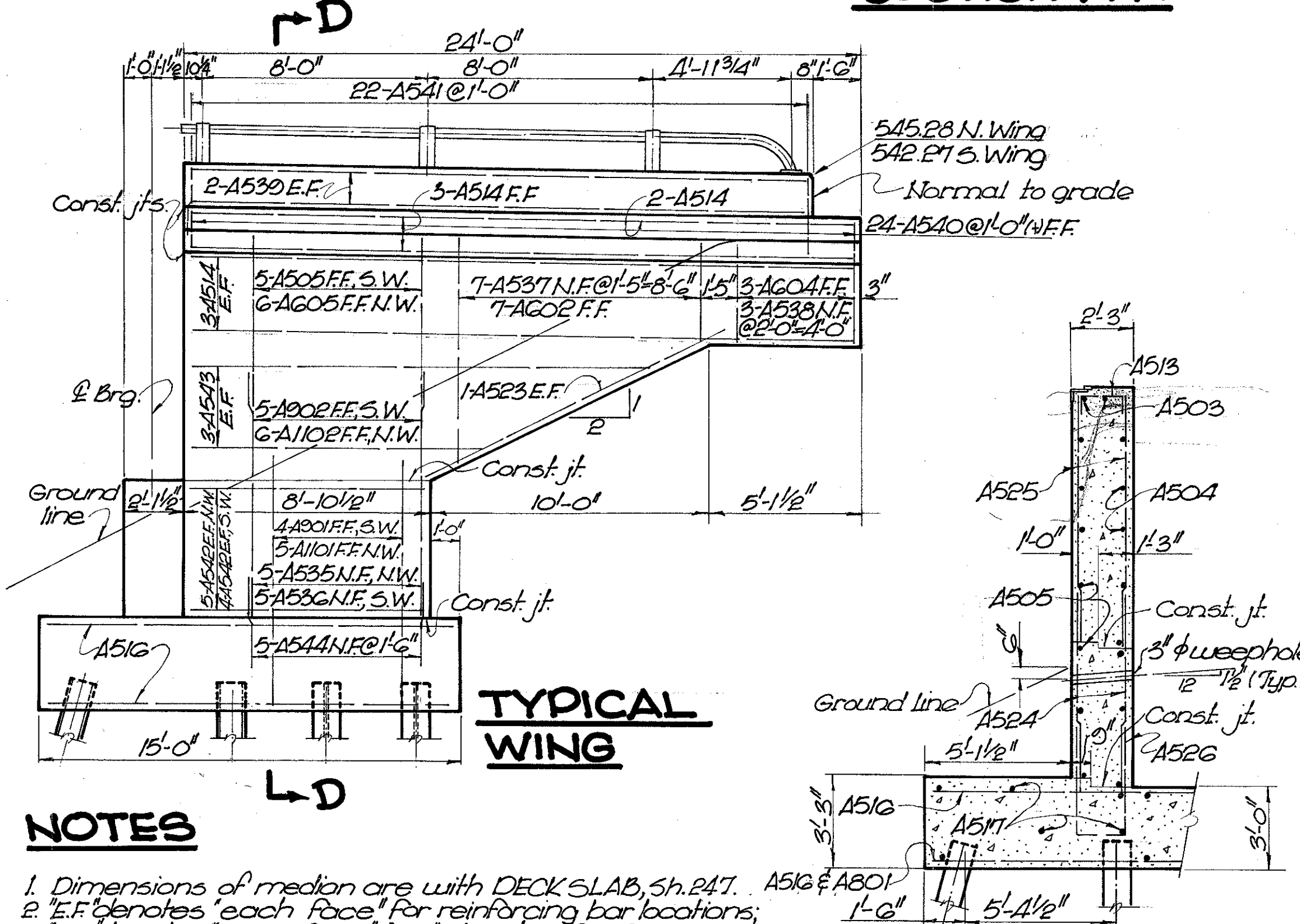
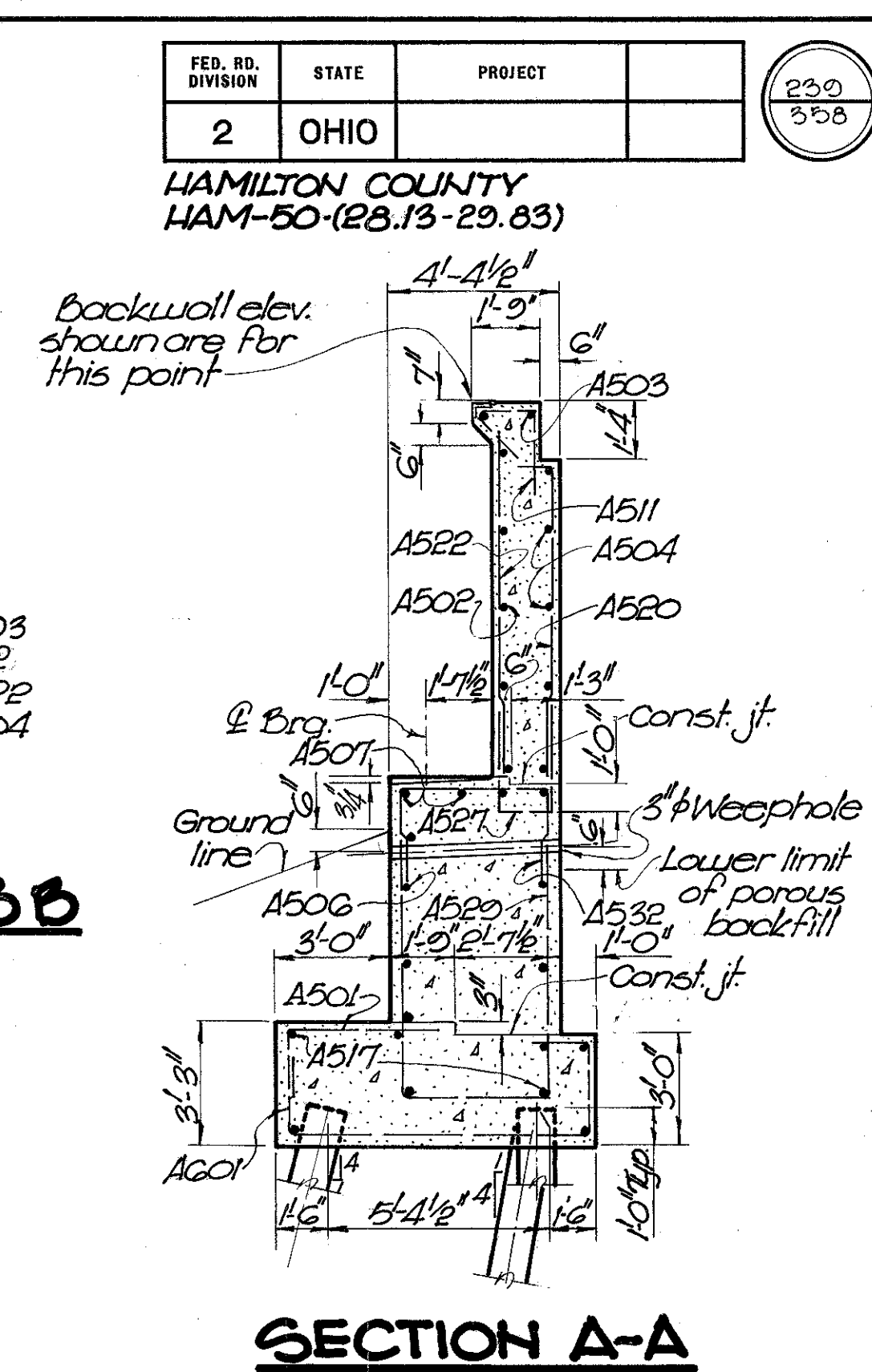
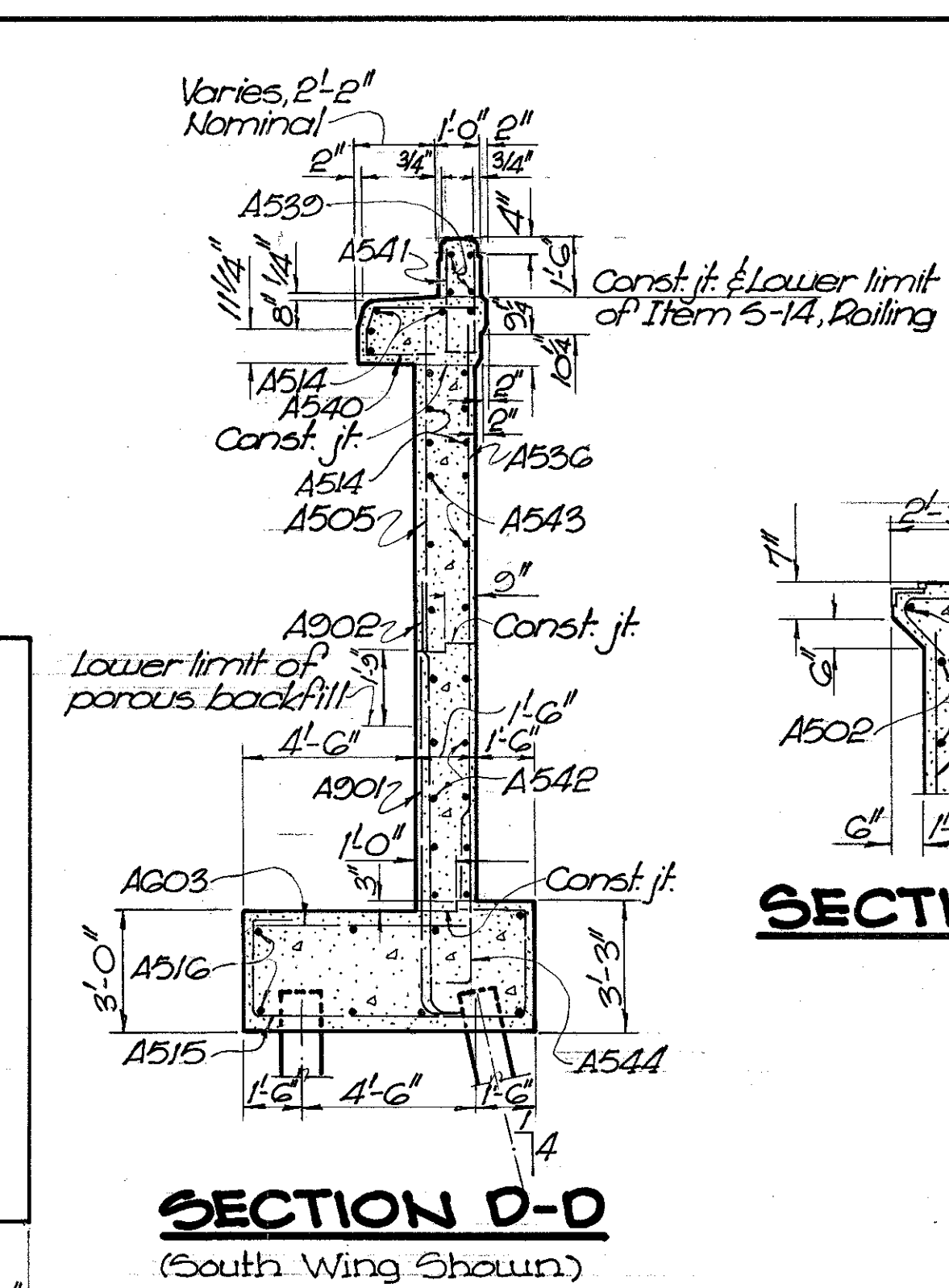
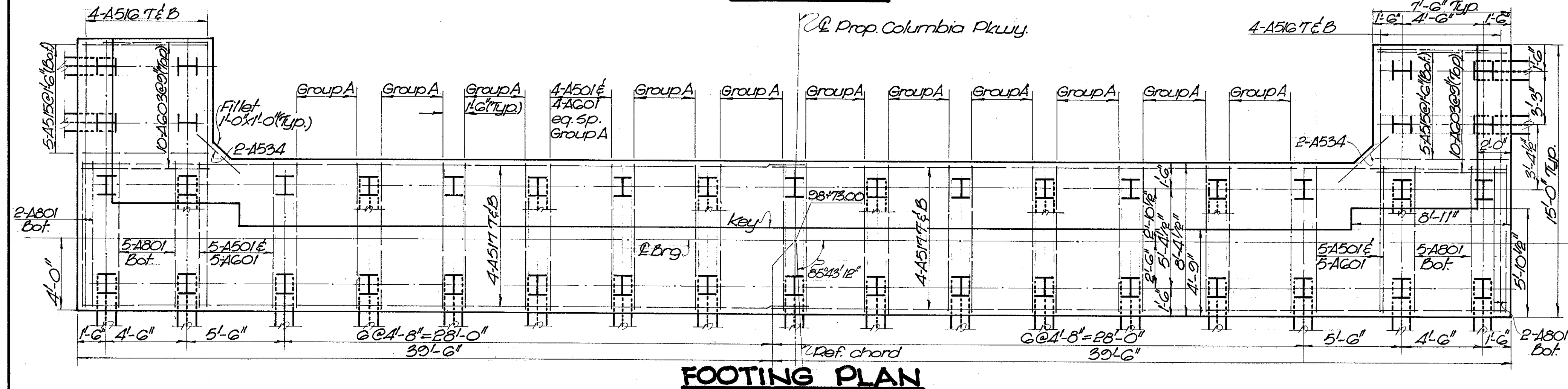
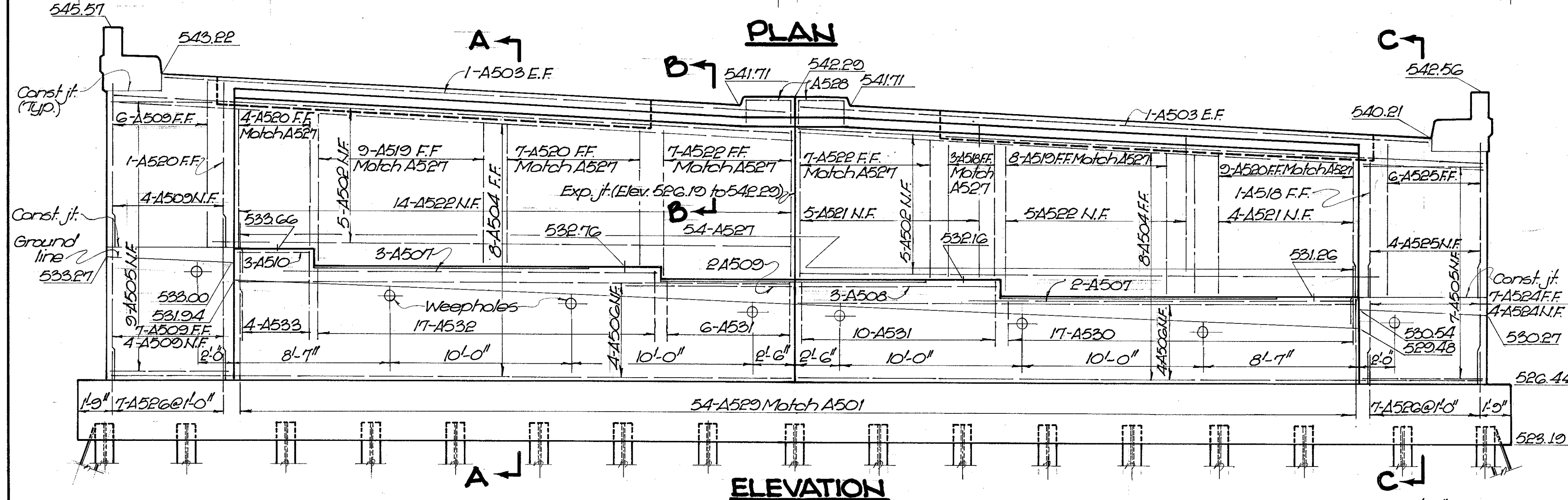
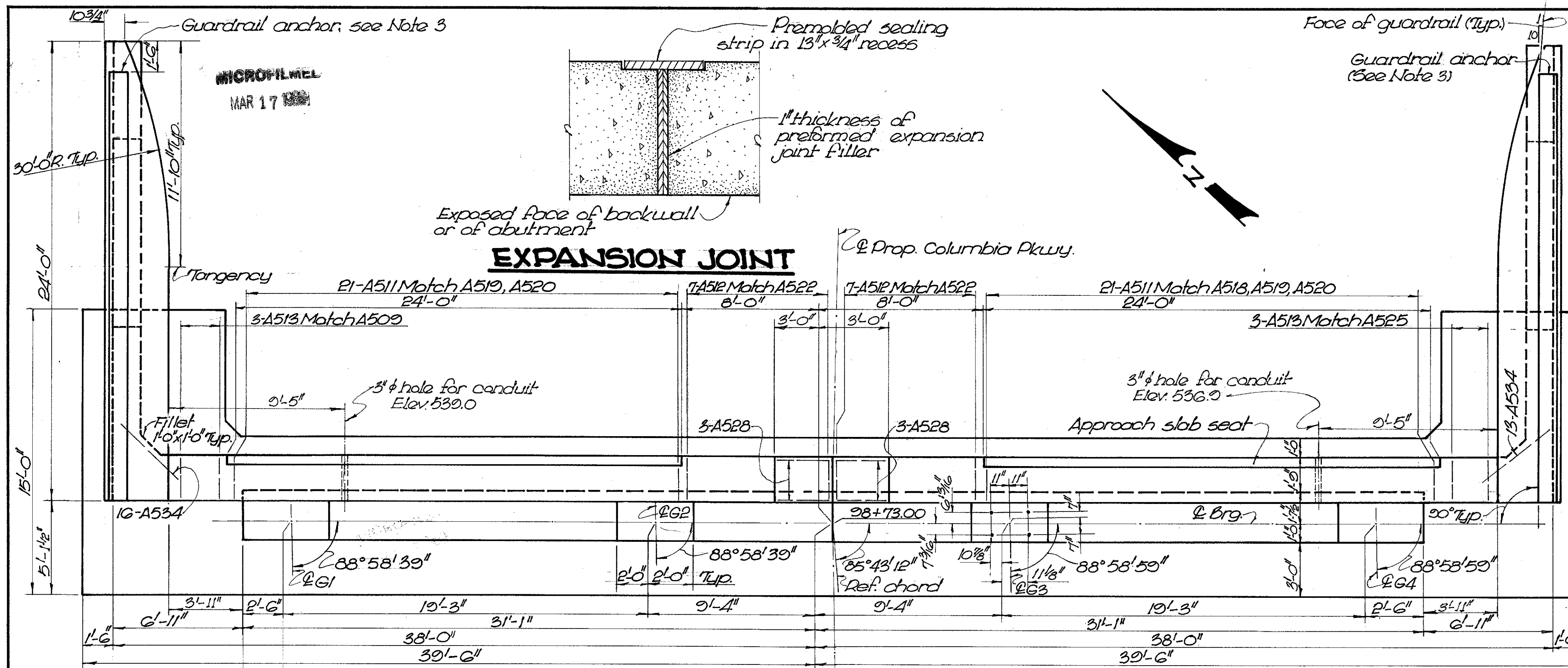
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VOGT, IVERS, SEAMAN & ASSOCIATES
ENGINEERS ARCHITECTS
CINCINNATI CHICAGO

ABUTMENT I

BRIDGE NO. HAM-50-2967
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA. 94+42.33
STA. 98+75.88

DES. A.Y.	DR. A.Y.	TR. H.W.S.	CH. J.C.G.	REVIEWED DATE J.A.D. Aug '59	REVISED
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- ## NOTES



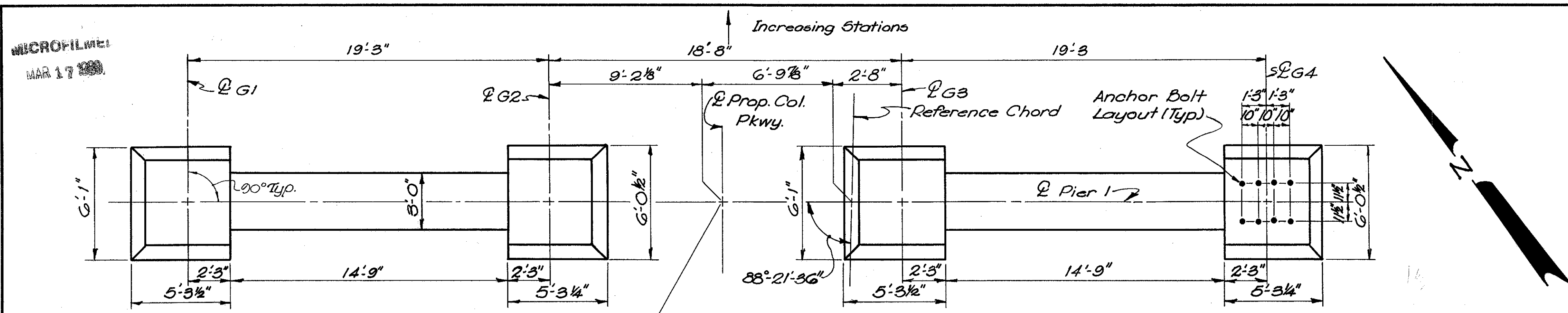
VOGT, IVERS, SEAMAN & ASSOCIATES
ENGINEERS ARCHITECTS
CINCINNATI CHICAGO

ABUTMENT 2

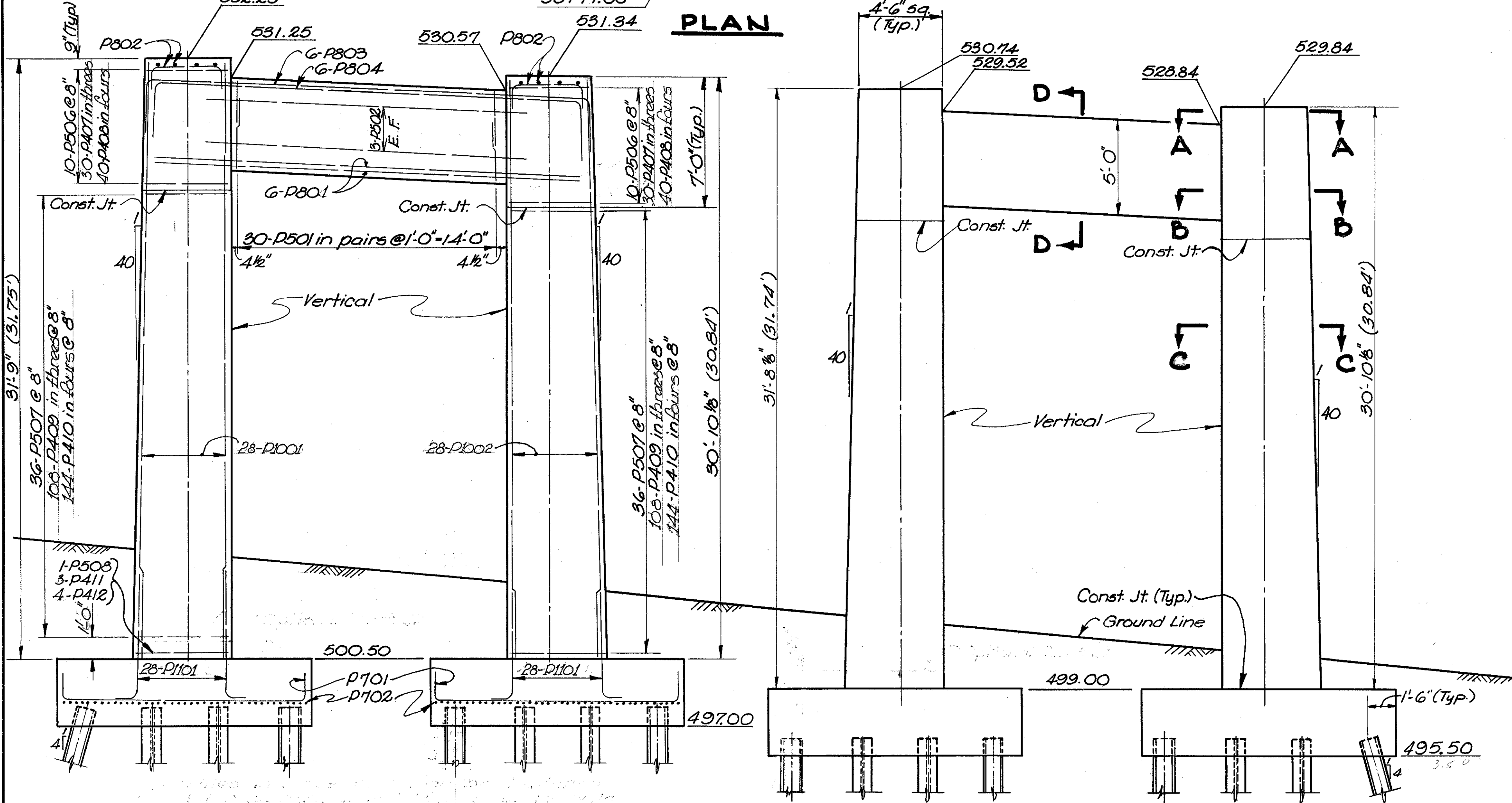
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PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA. 04+42.33 TO
STA. 08+75.88

DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
A.Y.	AY.	J.R.R.	R.J.M.	J.A.D. Aug. 59	

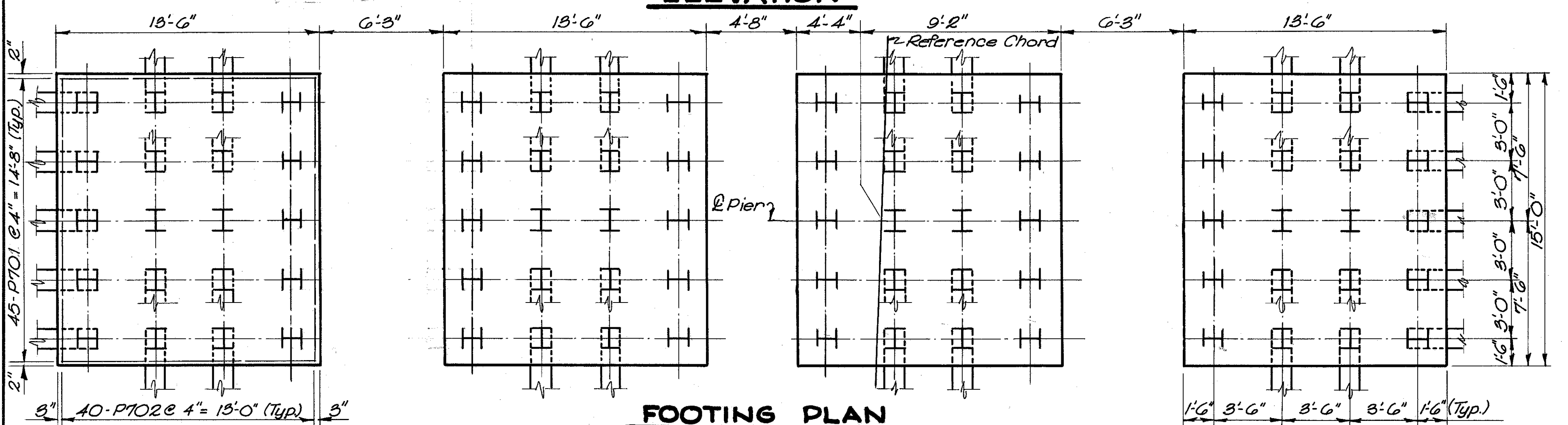
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MAR 17 1988



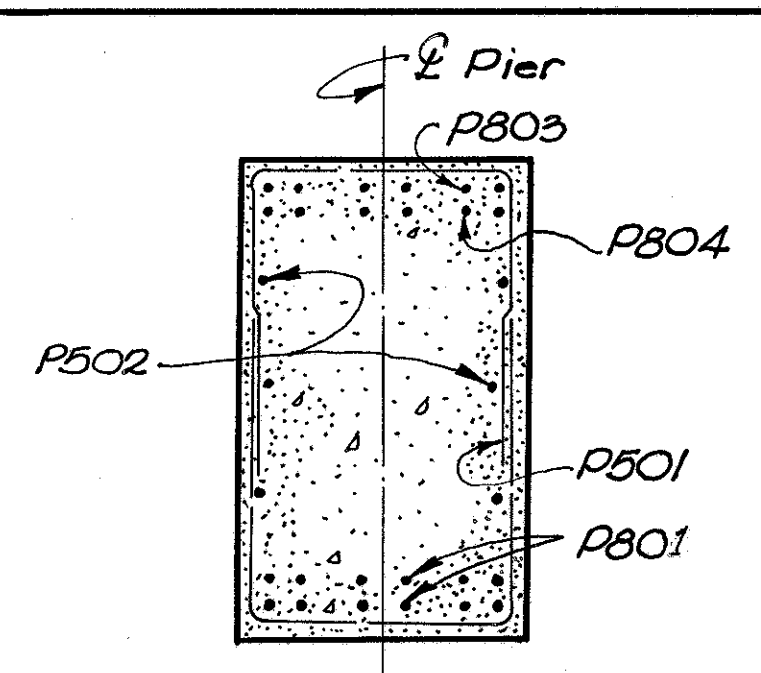
PLAN



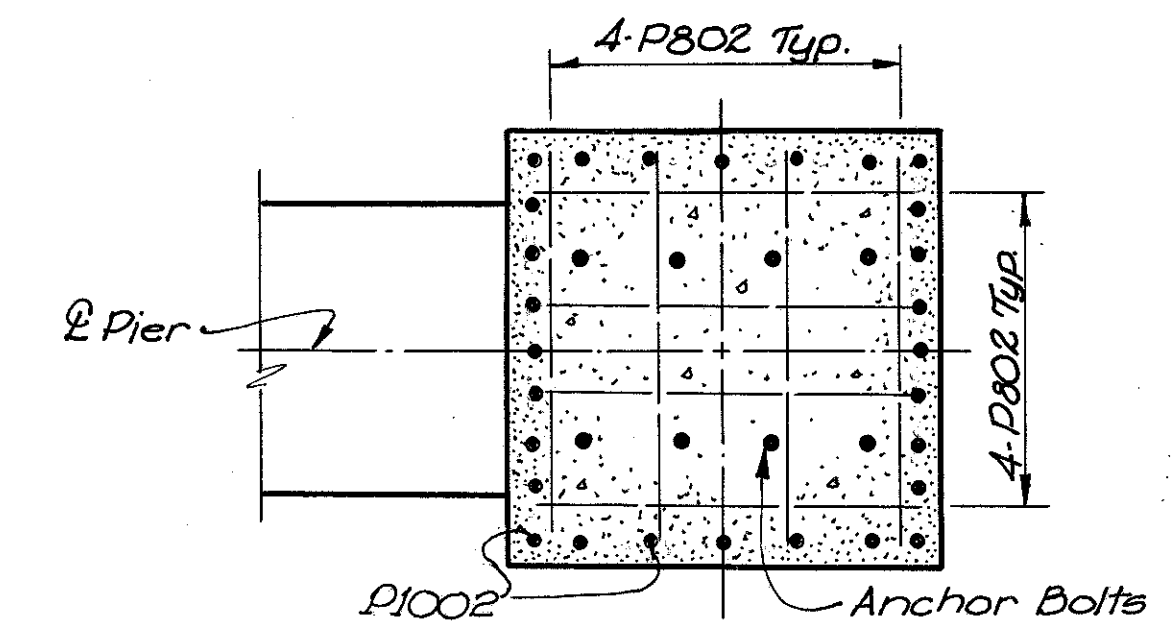
ELEVATION



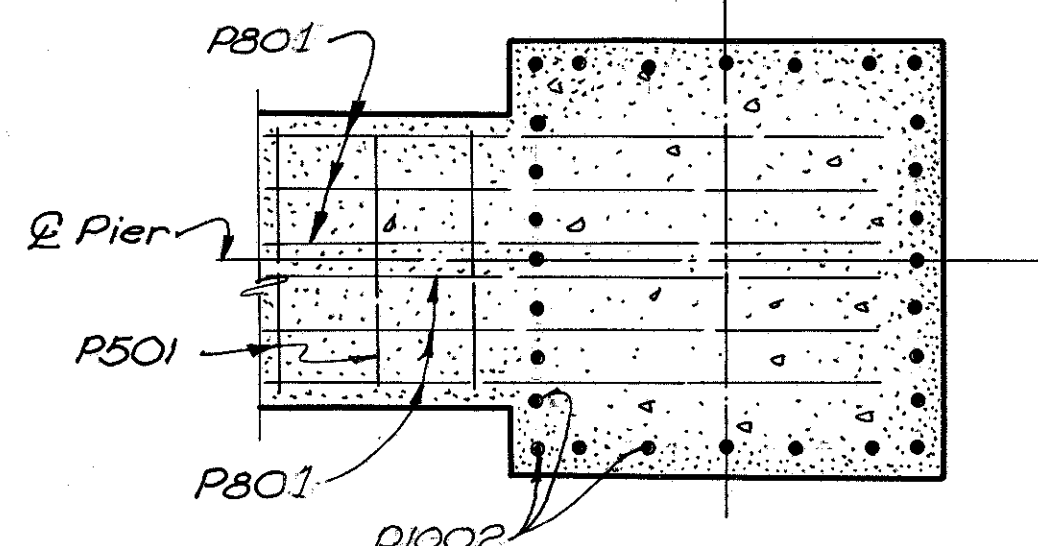
FOOTING PLAN



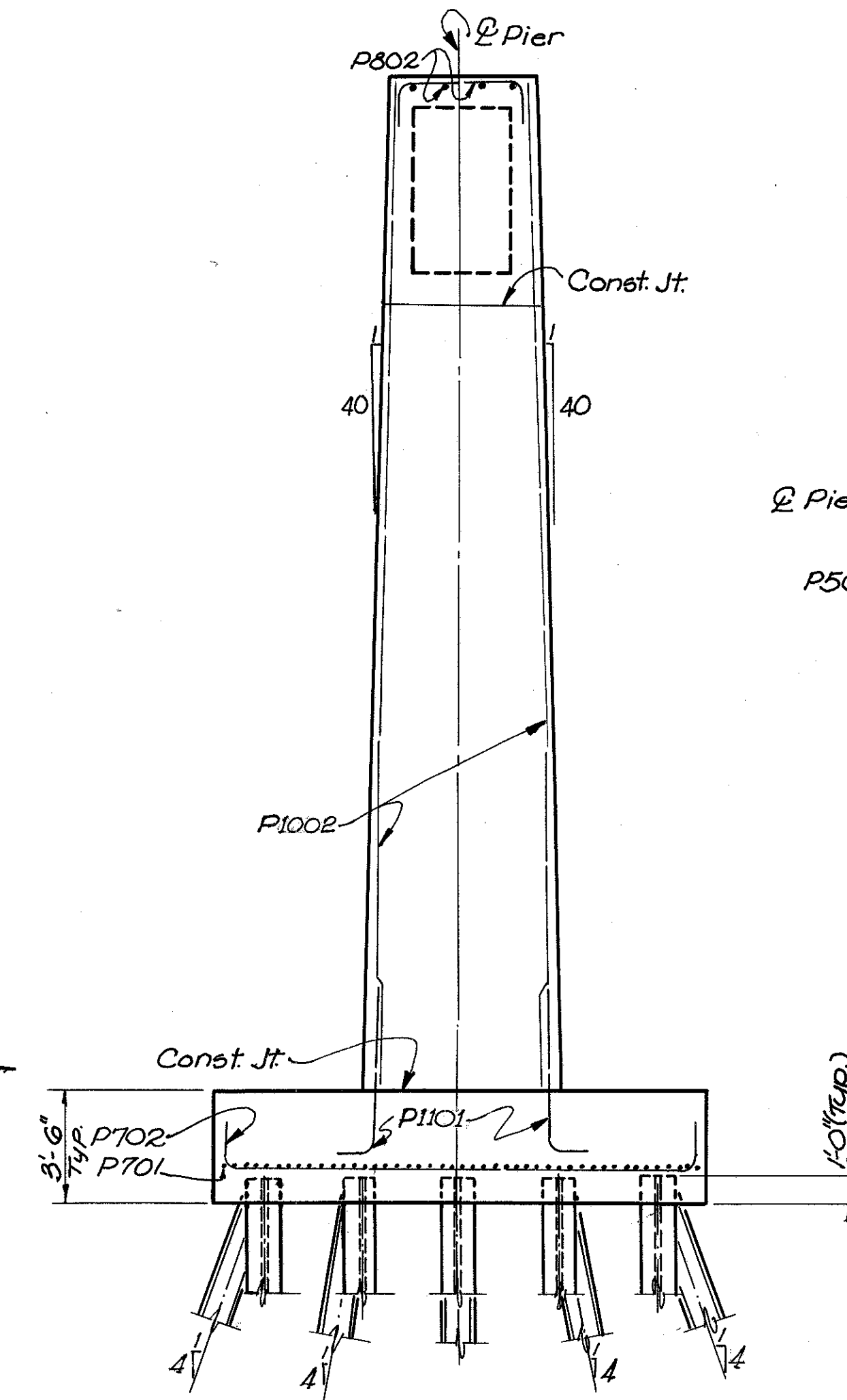
SECTION D-D



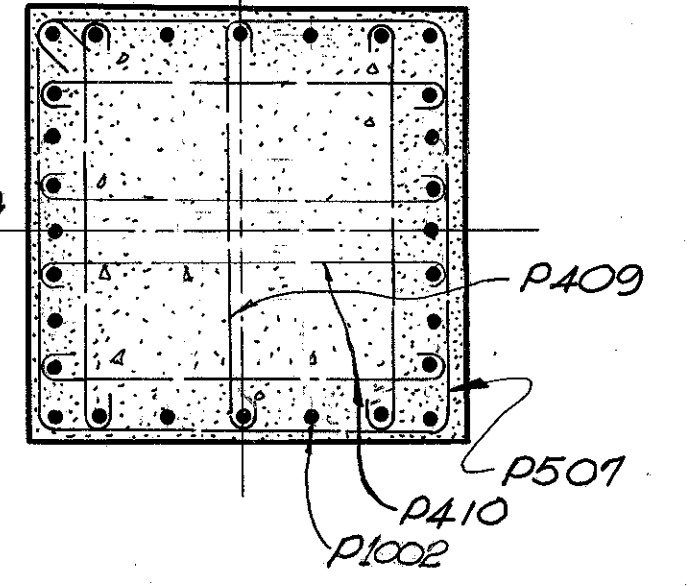
SECTION A-A



SECTION B-B



END VIEW

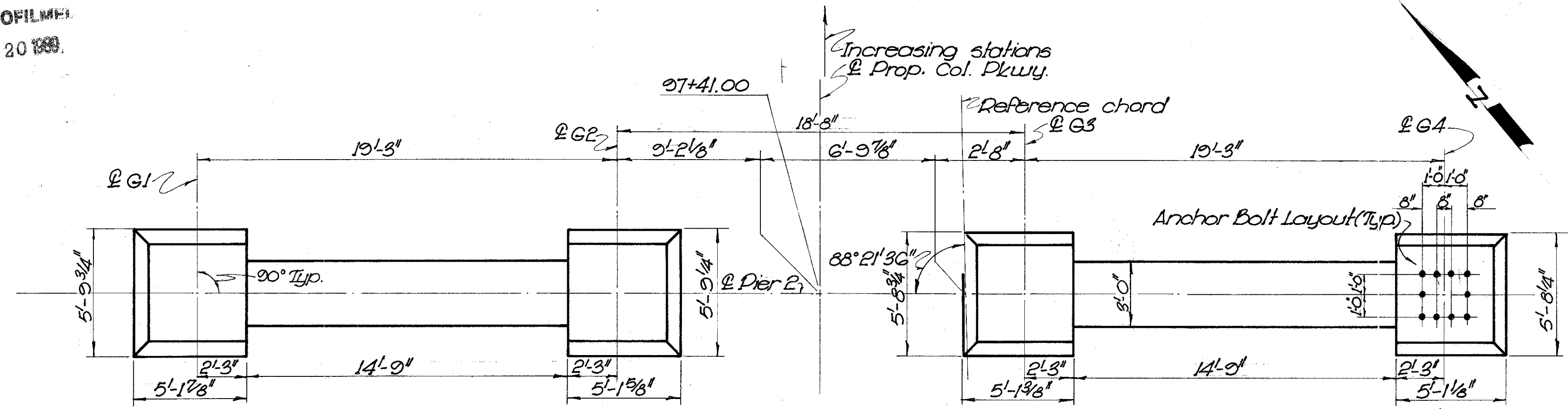


SECTION C-C

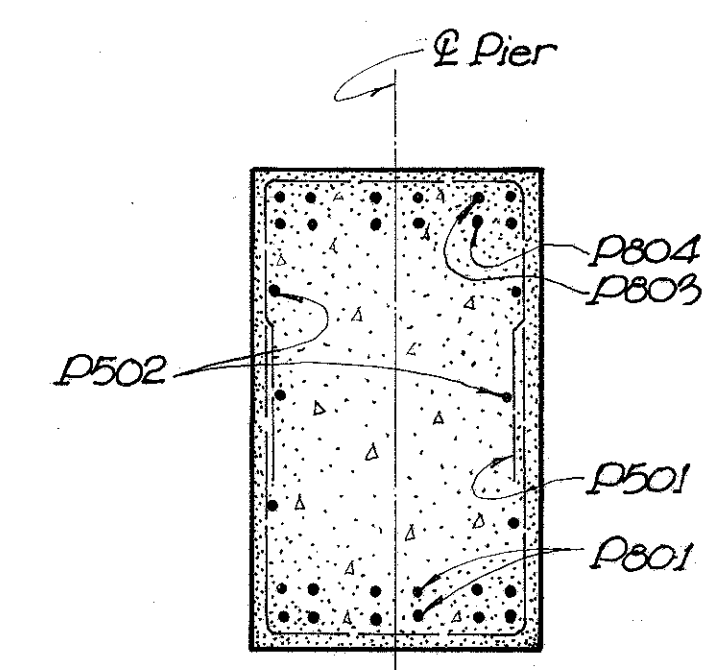
NOTES

1. Anchor bolt is 1 1/2" ϕ and 3' 2 1/2" long. Lower 2'-6" is swaged and embedded. Upper 3" is threaded and provided with hex nut and 3" std. plate washer.
2. Reinforcing steel shall be placed so as not to interfere with the drilling of holes for anchor bolts.
3. Piling layout is on Sh. 234.
4. Bearing shoes are detailed on Sh. 242.
5. Reinforcing for East bent is identical with reinforcing shown for West bent.

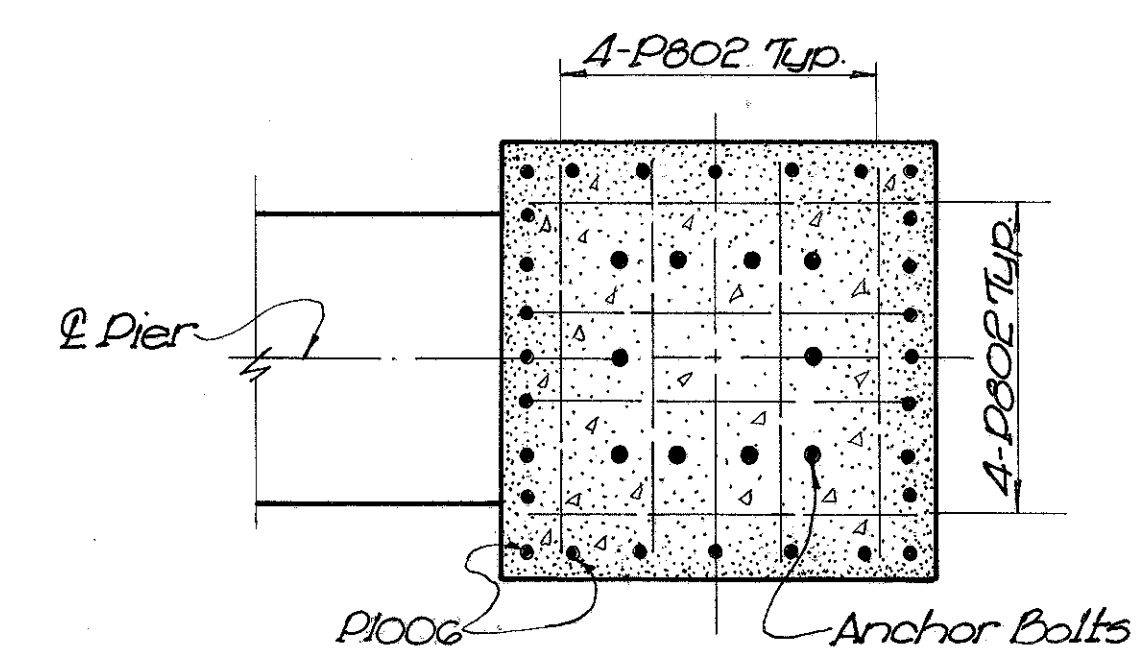
VOGT, IVERS, SEAMAN & ASSOCIATES ENGINEERS ARCHITECTS CINCINNATI CHICAGO				
PIER 1				
BRIDGE NO. HAM-50-2967 PROPOSED COLUMBIA PKWY. OVER DUCK CREEK VALLEY HAMILTON COUNTY STA. 94+42.33 TO STA. 98+75.88				
DES. RJM	DR. RJM	TR. GLM	CH. RJS	REVIEWED DATE J.A.D. Aug. 80
				REVISED



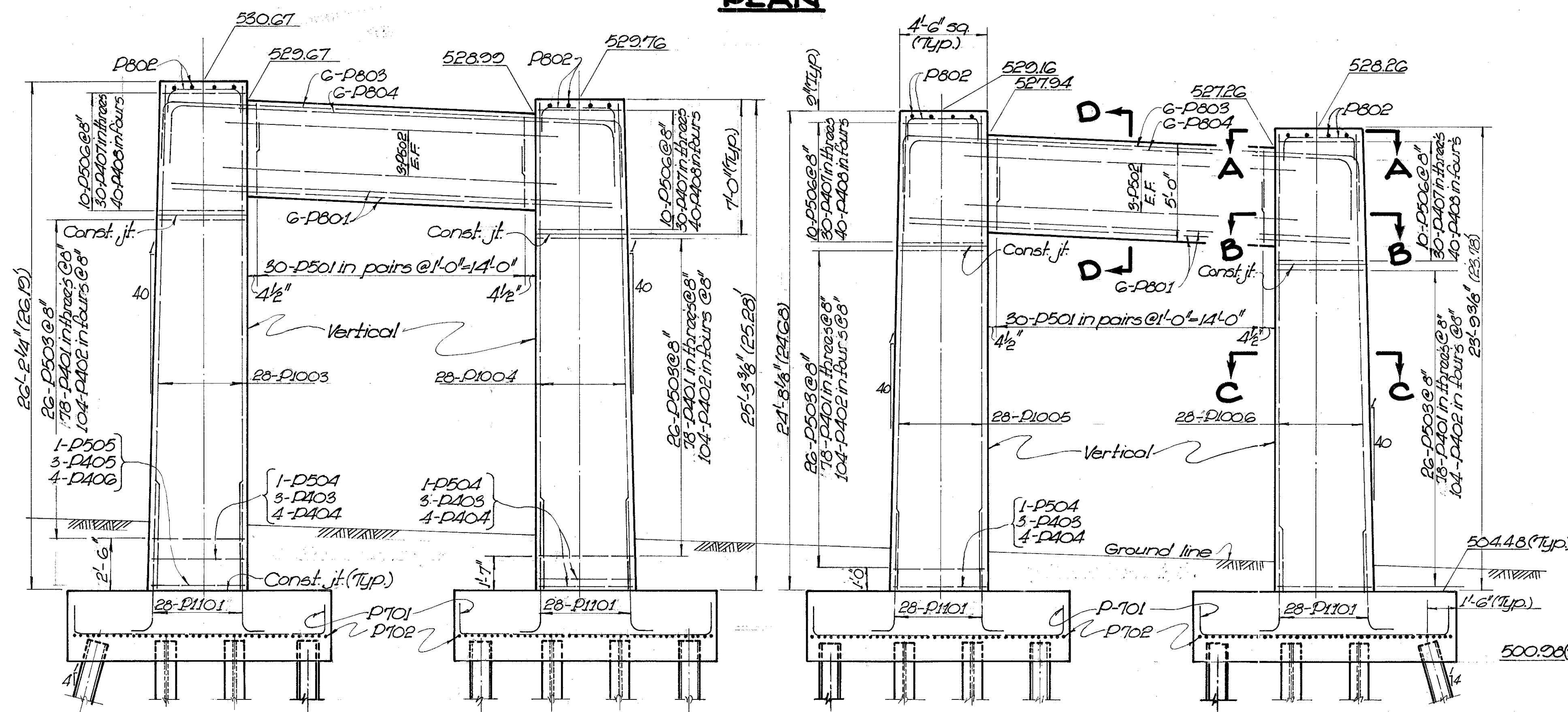
PLAN



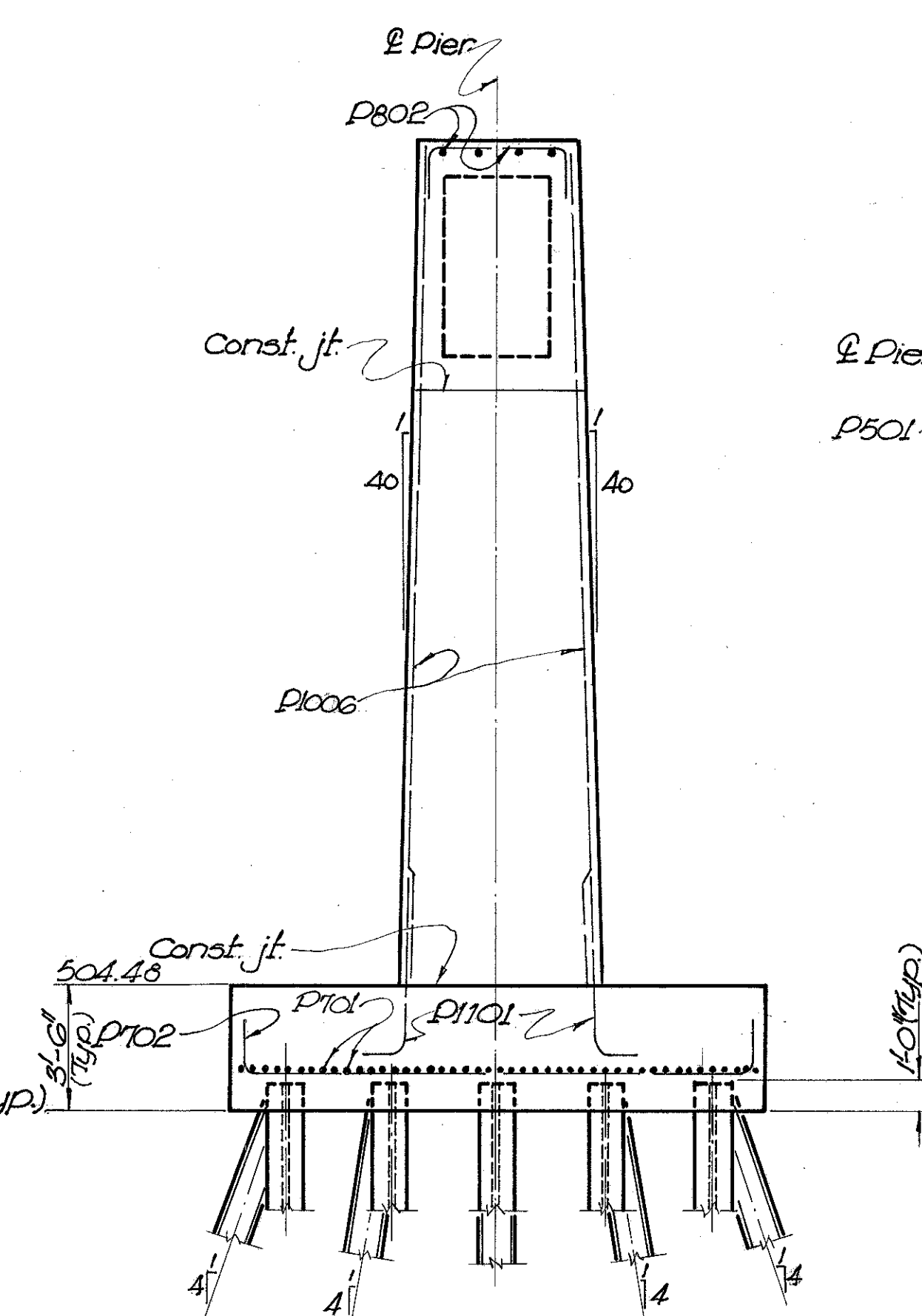
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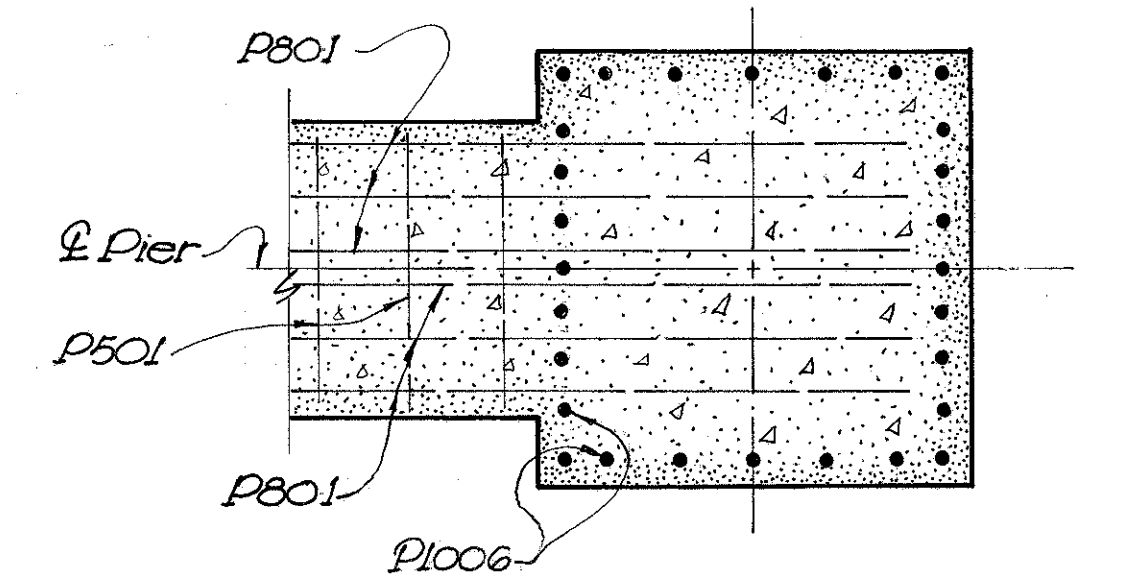
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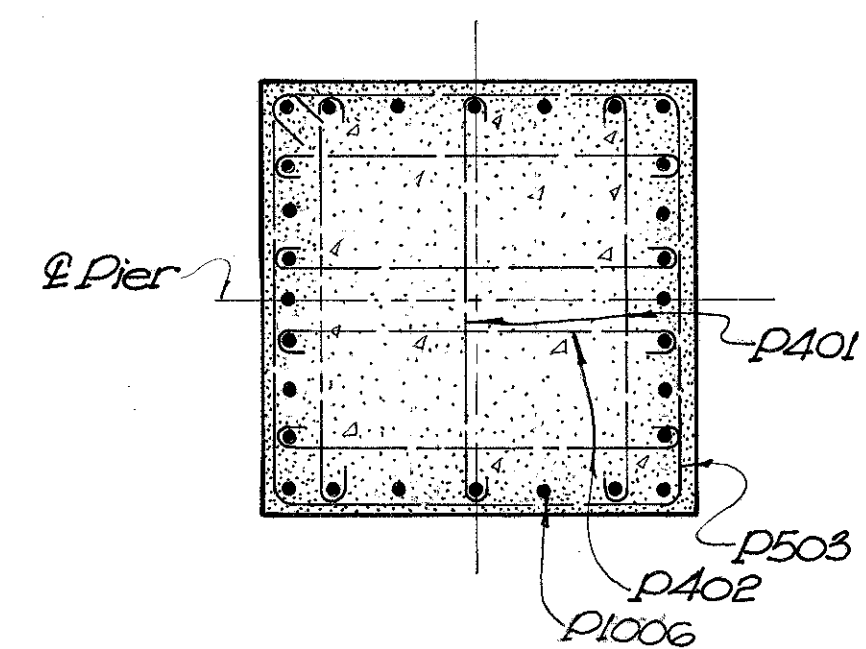
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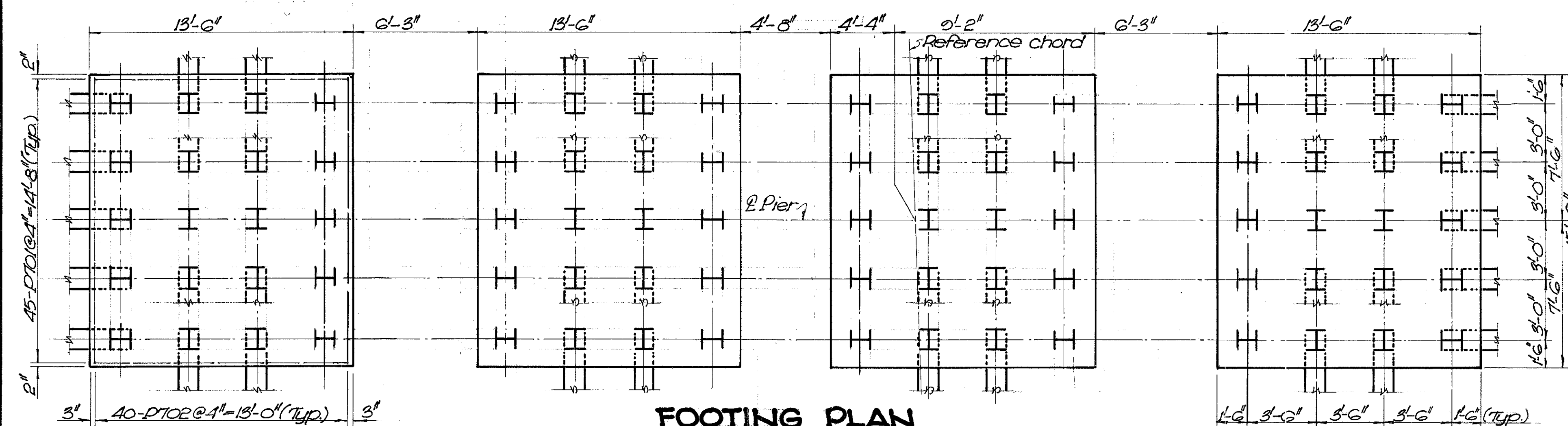
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SECTION B-B



SECTION C-C

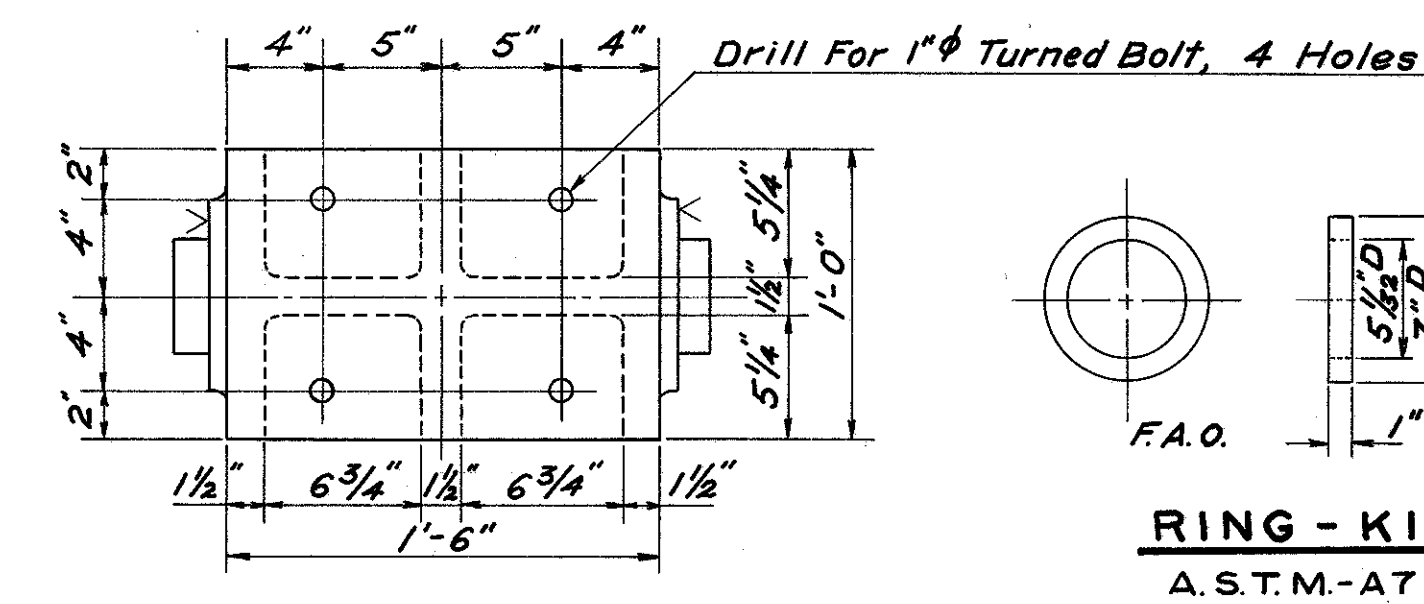


FOOTING PLAN

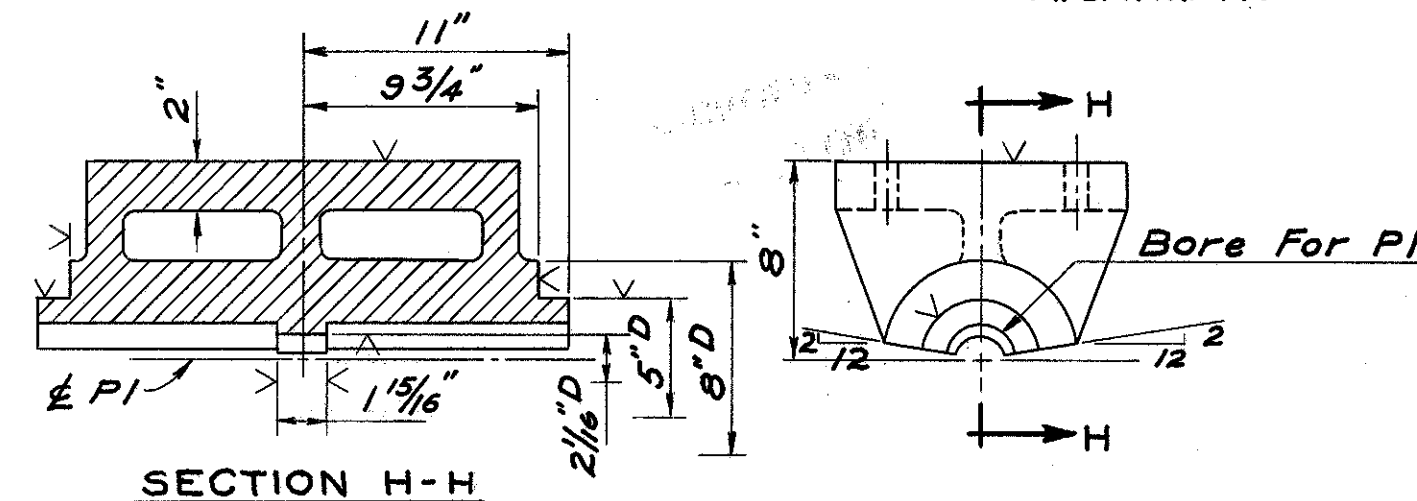
NOTES

1. Anchor bolt is 1 1/2" ϕ and 3'-0" long. Lower 2'-6" is swedged and embedded. Upper 3" is threaded, and provided with hex nut and 3" std. plate washer.
2. Reinforcing steel shall be placed so as not to interfere with the drilling of holes for anchor bolts.
3. Piling layout is on Sh. 234.
4. Bearing shoes are detailed on Sh. 242.
5. An electrical ground shall be provided for G1 & G4 as described on Sheet 259.

VOGT, IVERS, SEAMAN & ASSOCIATES ENGINEERS ARCHITECTS CINCINNATI CHICAGO					
PIER 2 BRIDGE NO. HAM-50-2967 PROPOSED COLUMBIA PKWY. OVER DUCK CREEK VALLEY HAMILTON COUNTY STA. 24+42.33 TO STA. 28+75.88					
DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
RJM	RJM	JRR	RJS	JAD Aug 89	

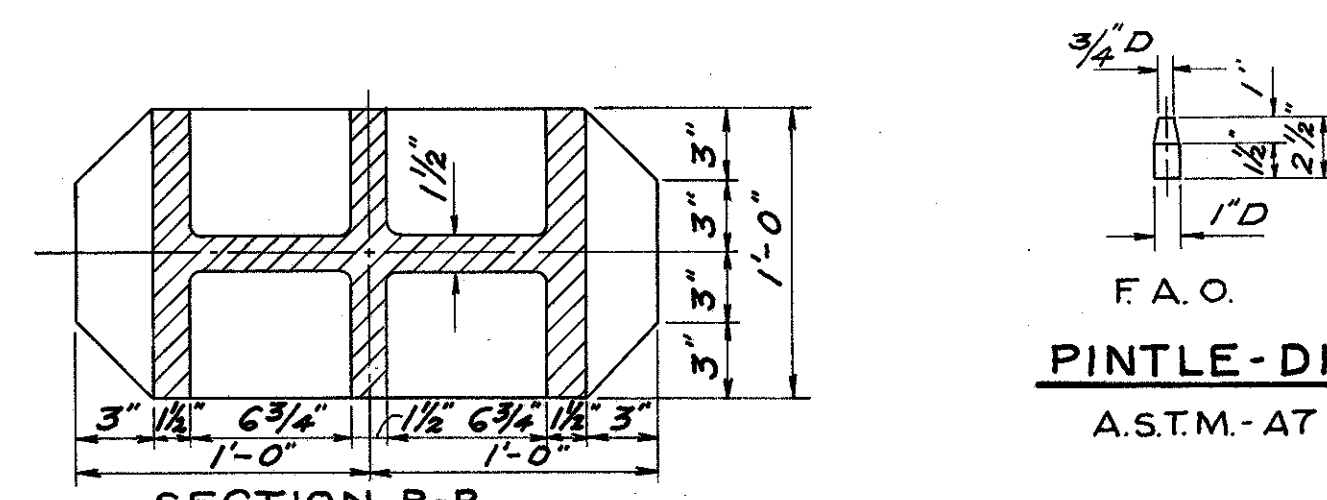


RING - KI
A.S.T.M.-A7

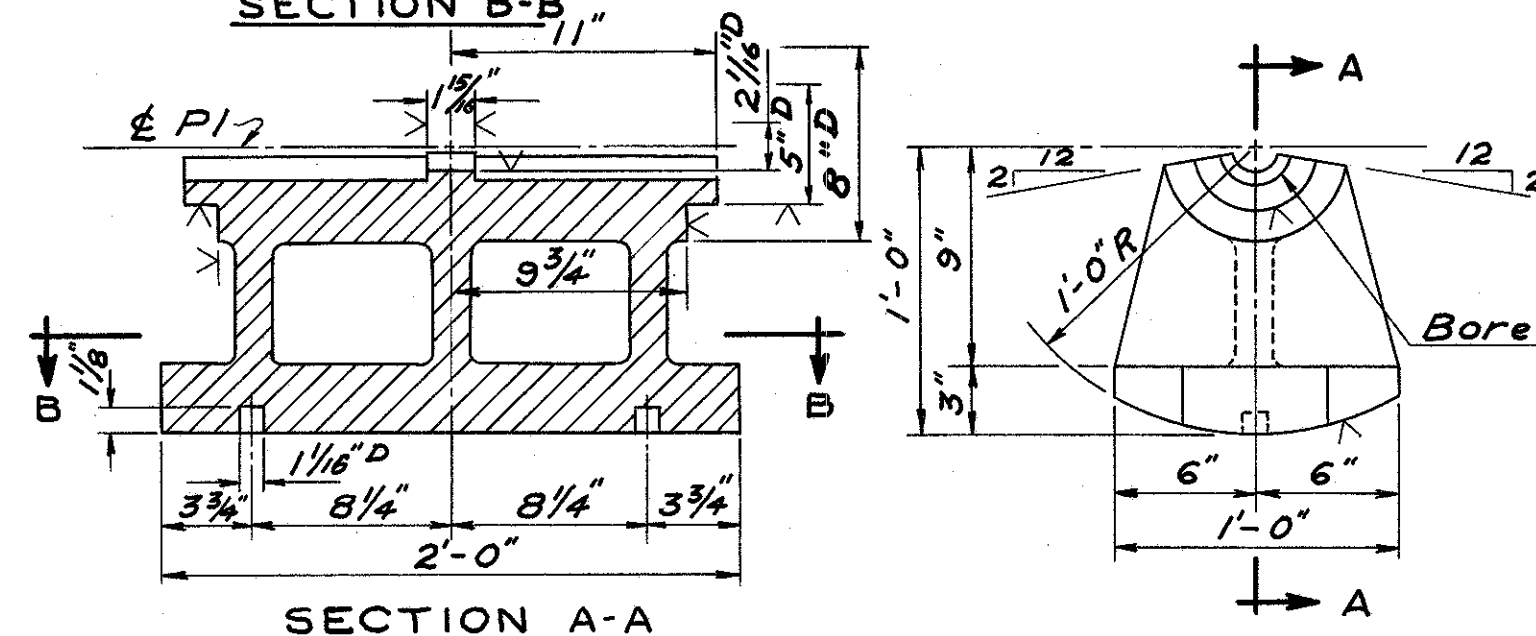


SECTION H-H

TOP SHOE - T1
A.S.T.M. - A27, GRADE 65-35

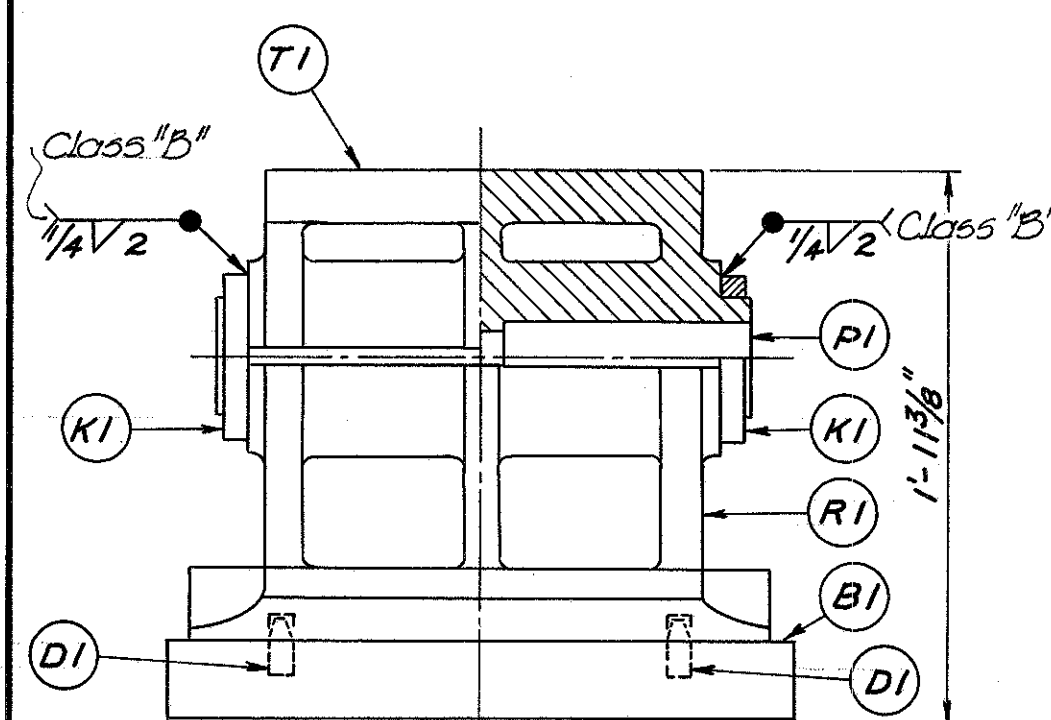


PINTLE-DI
A.S.T.M.-A7

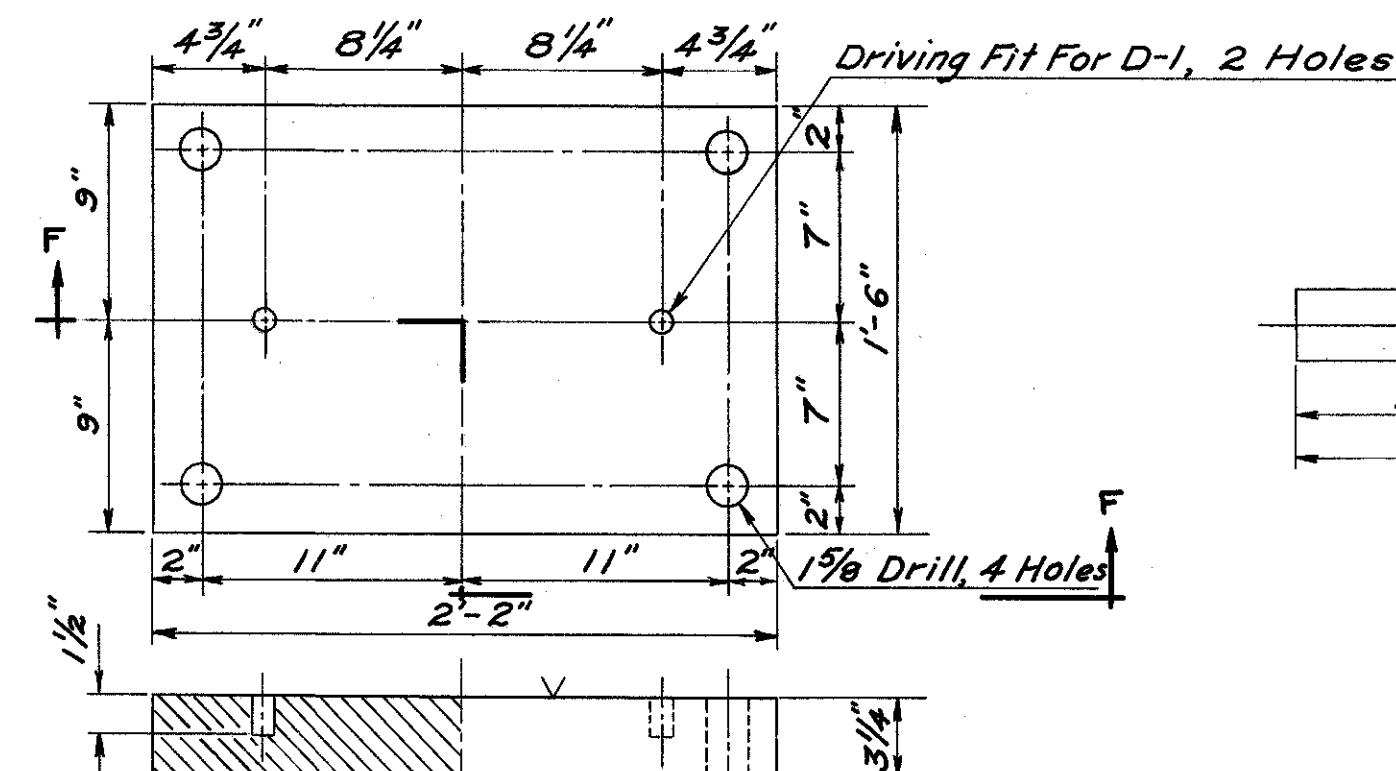


SECTION A-A

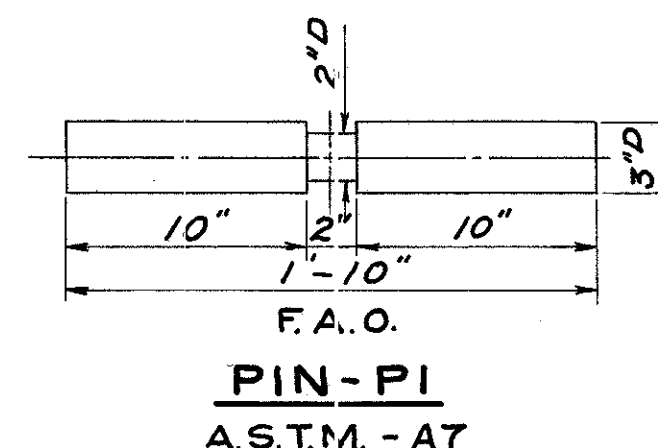
ROCKER - RI
A.S.T.M. - A27, GRADE 65-35



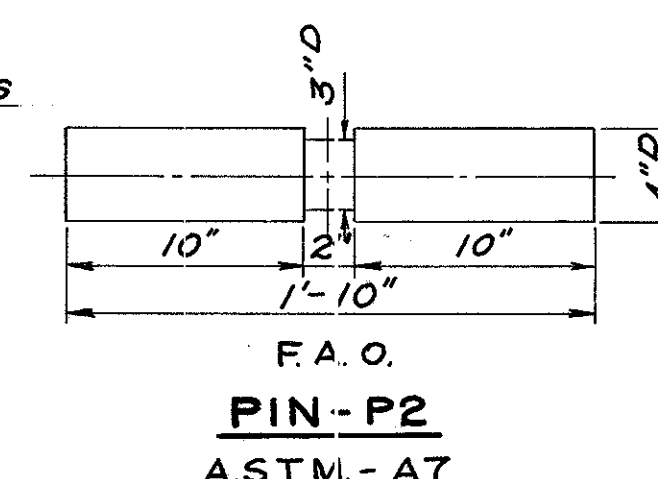
SHOE ASSEMBLY, ABUTMENTS
8 REQ'D



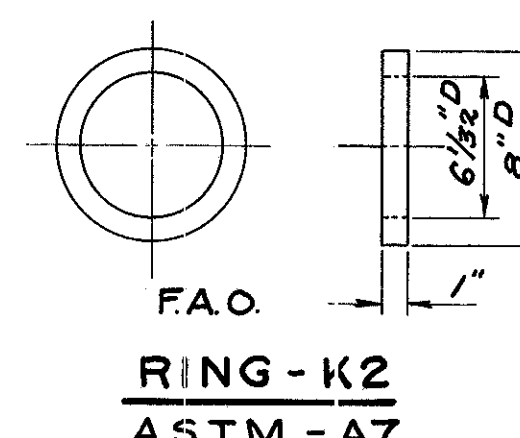
VIEW F-F
BASE PLATE B-1
A.S.T.M.-A7



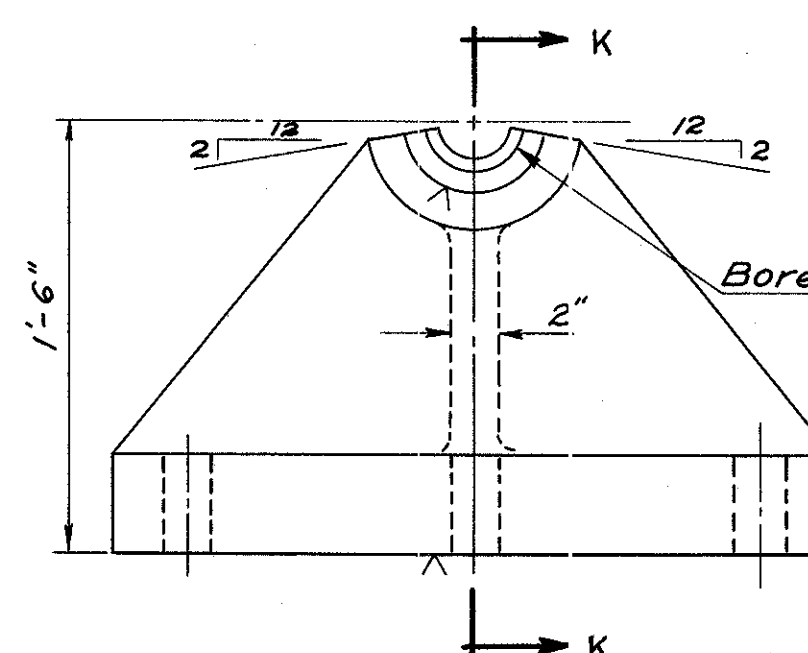
PIN-PI
A.S.T.M. - A7



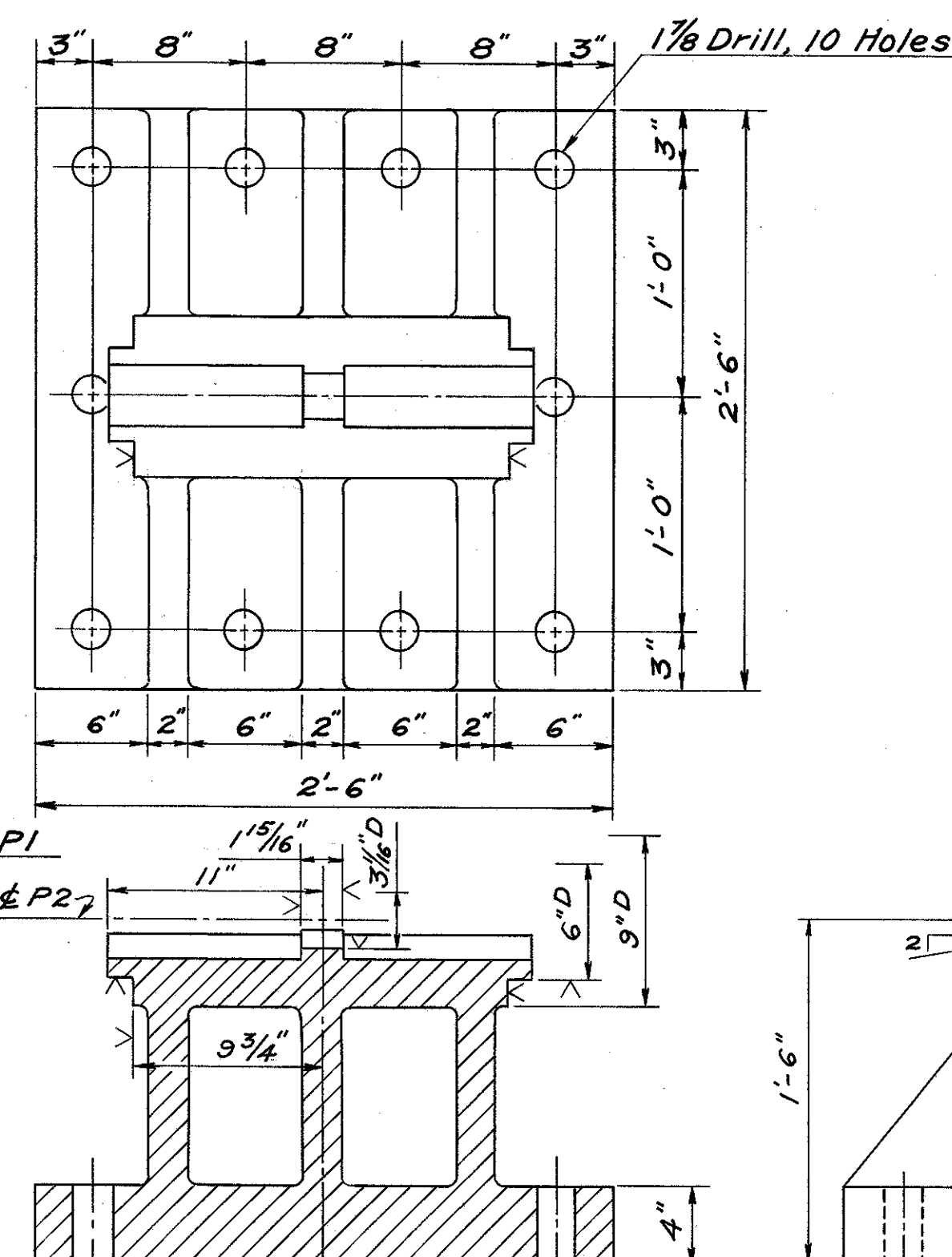
PIN - P2
ASTM - A7



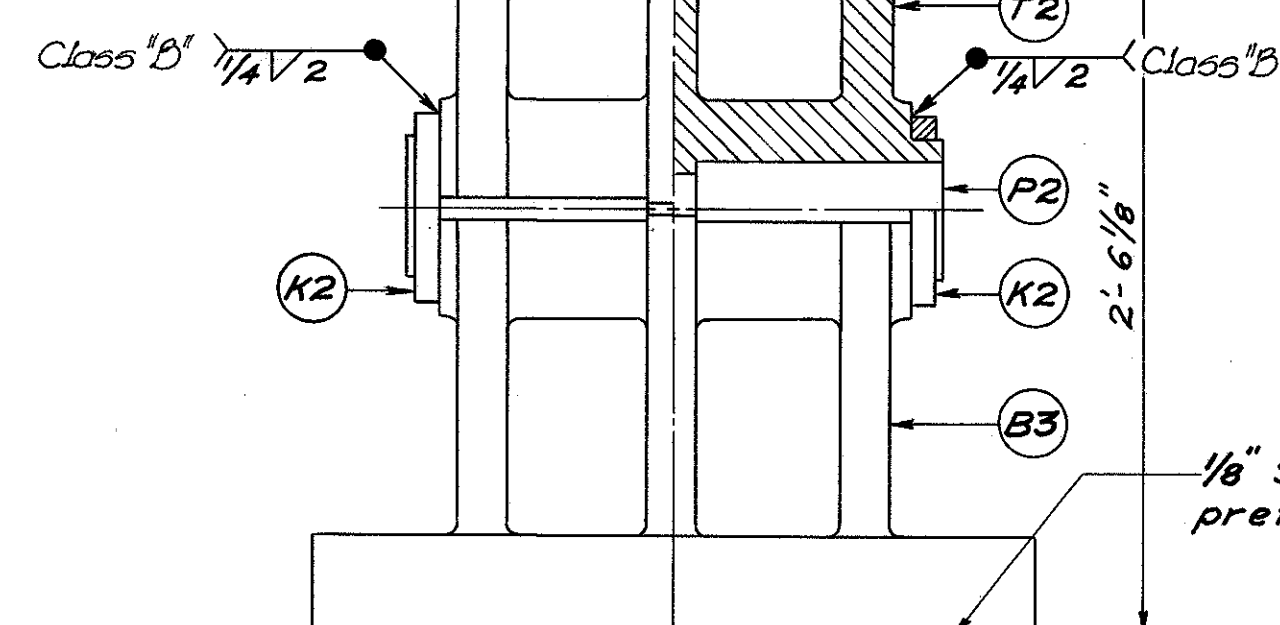
RING - K2
A.S.T.M. - A7



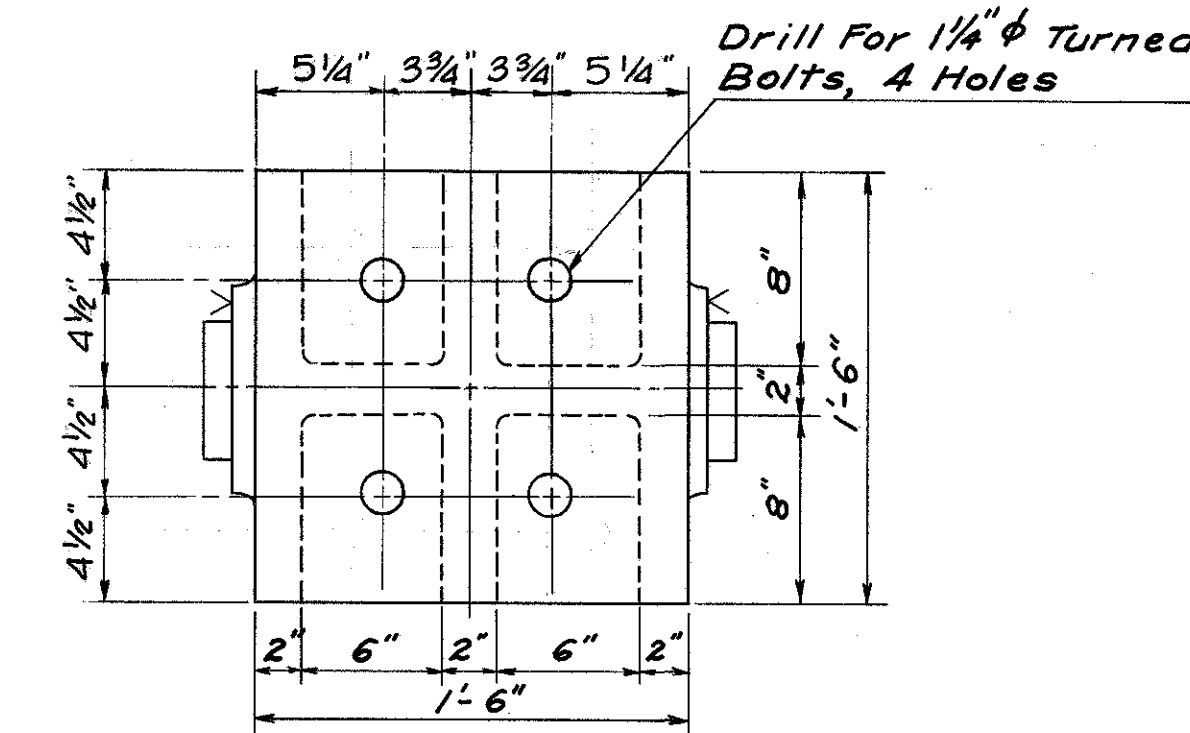
*1/8" Sheet lead or
preformed bearing pad*



SECTION K-K
BASE SHOE - B3
A.S.T.M. - A27, GRADE 65-35



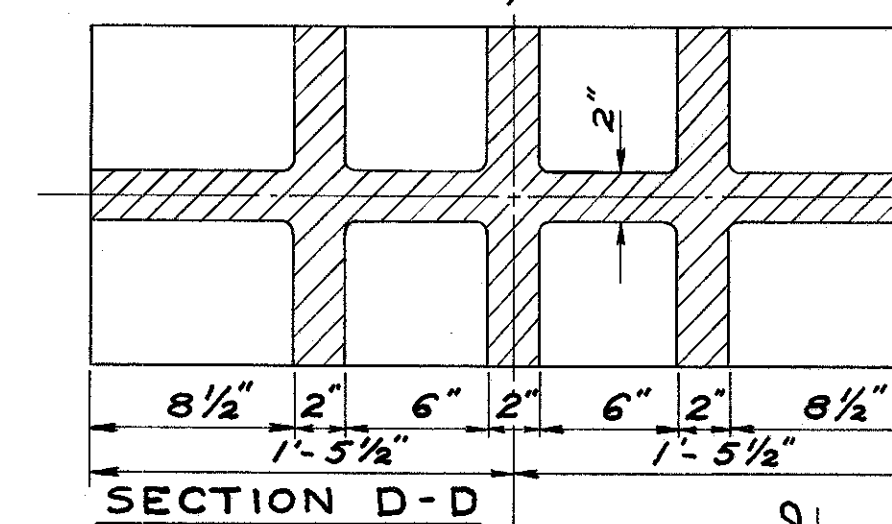
SHOE ASSEMBLY, PIER 2
4 REQ'D



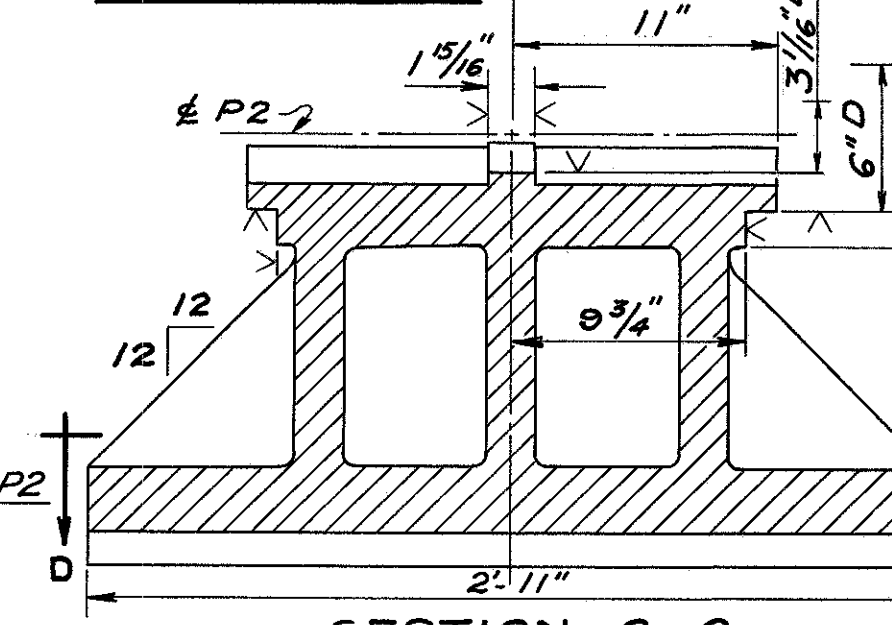
SECTION J-J $\frac{3}{8}$ " $\frac{1}{2}$ "

TOP SHOE T-2

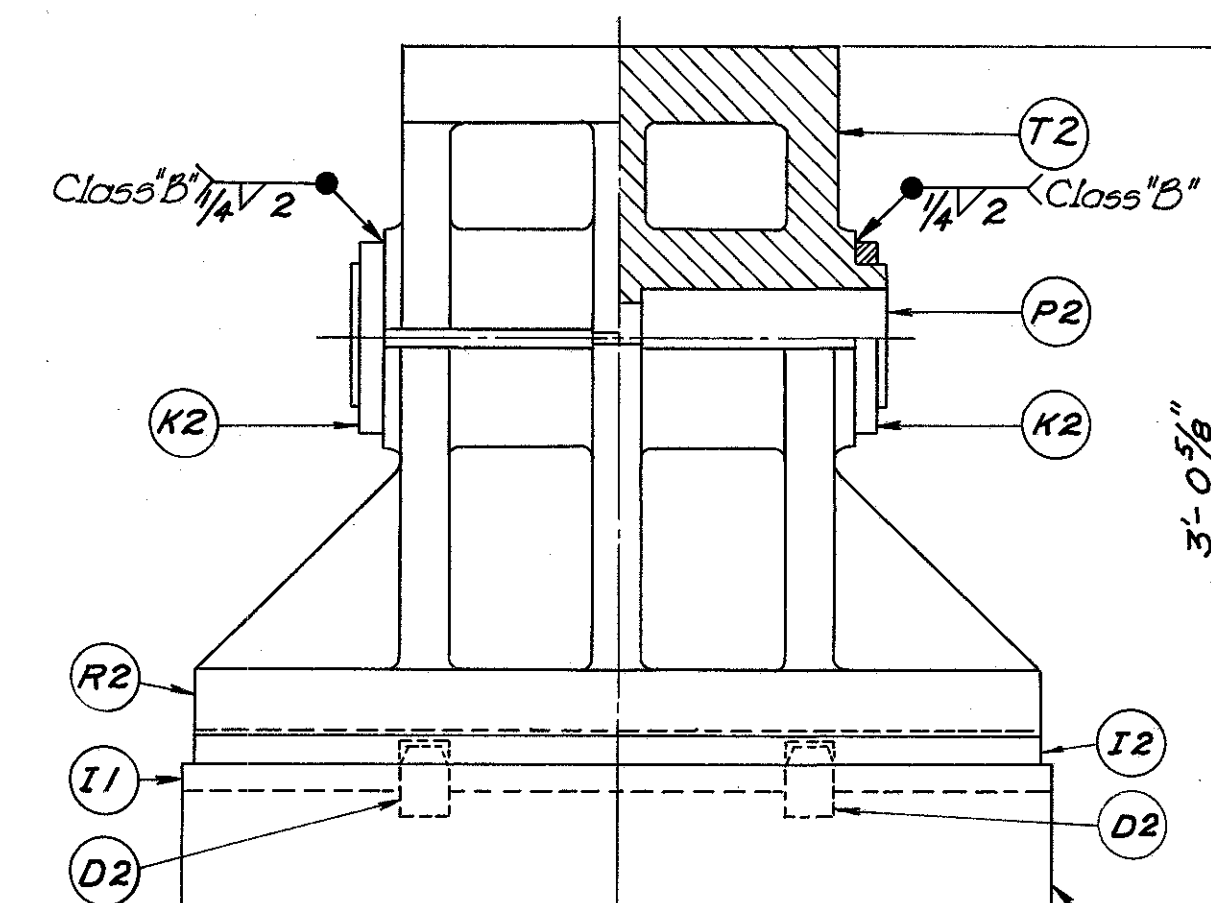
A.S.T.M.-A27, GRADE 65 - 35



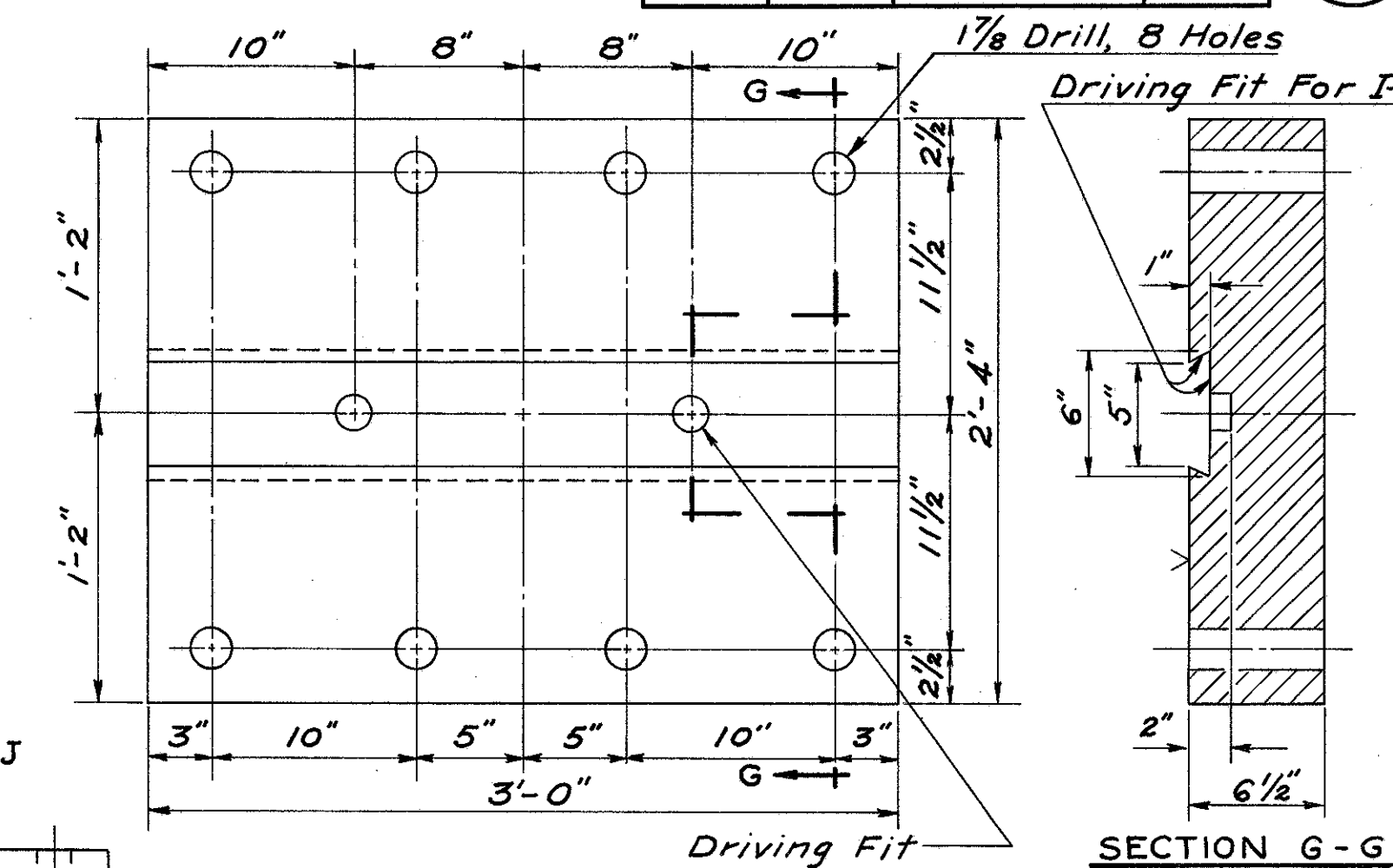
SECTION D-D



ROCKER - R2
A.S.T.M. - A27, GRADE 65-35



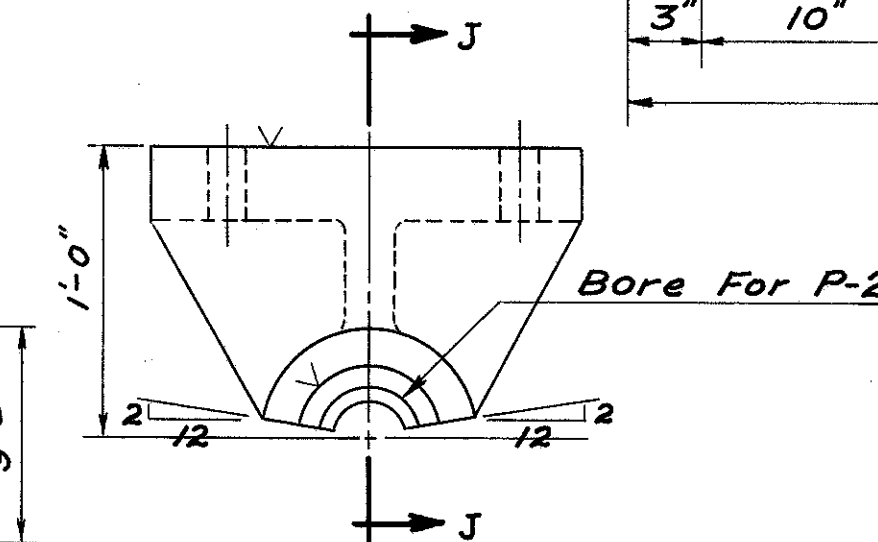
SHOE ASSEMBLY, PIER
4 REQ'D



Driving Fit
For D-2, 2 Holes

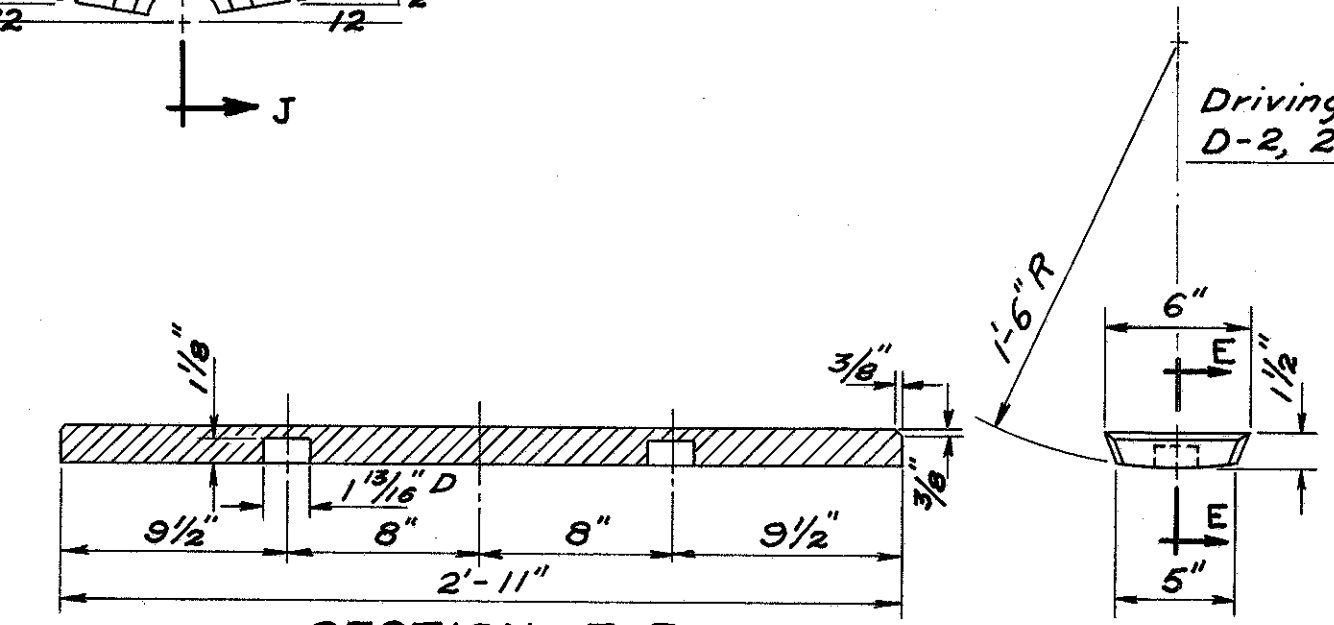
BASE PLATE B-2

A.S.T.M.-A7



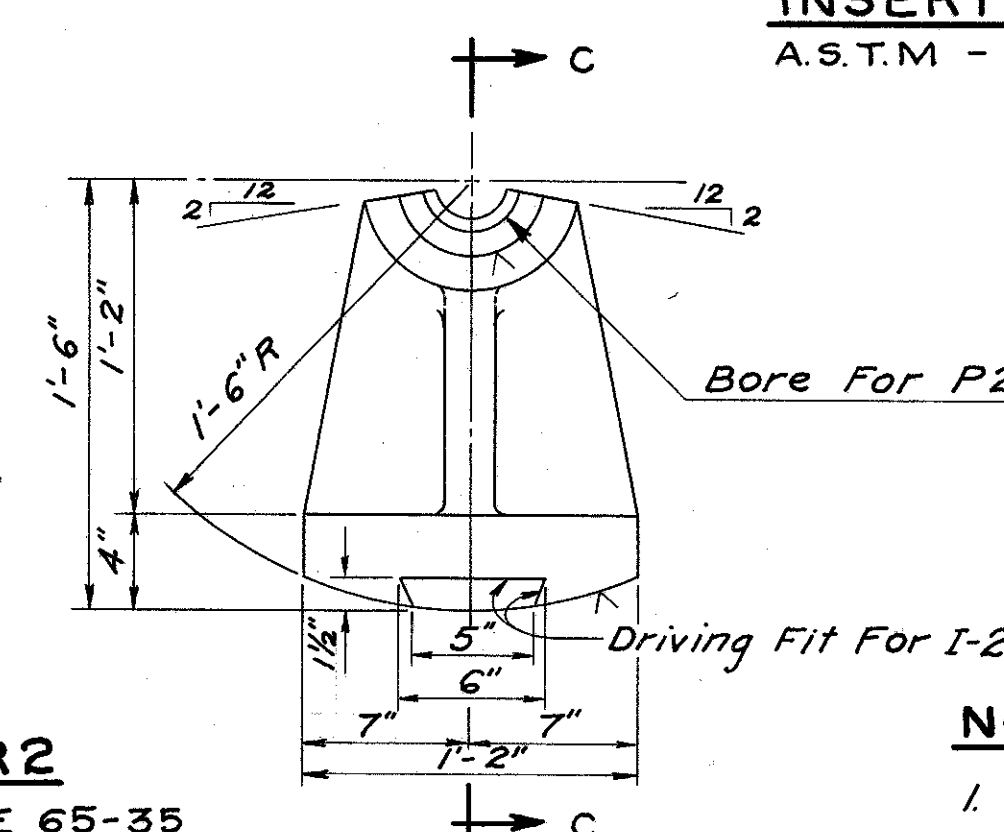
SECTION E-E

INSERT I-2
A.S.T.M - A242



F.A.O.
PINTLE-D2
A.S.T.M. - A7

INSERT I-1
ASTM - A242



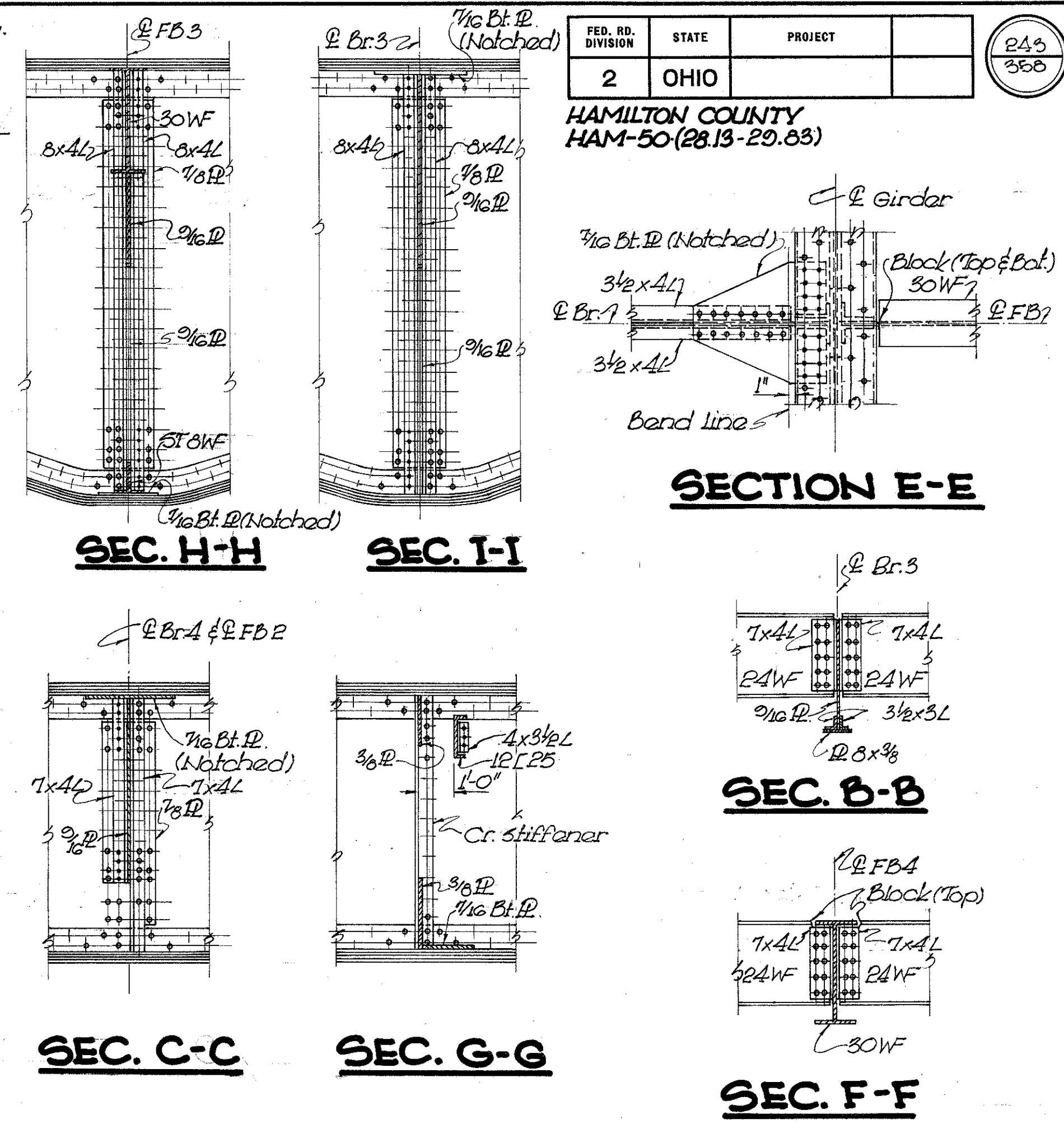
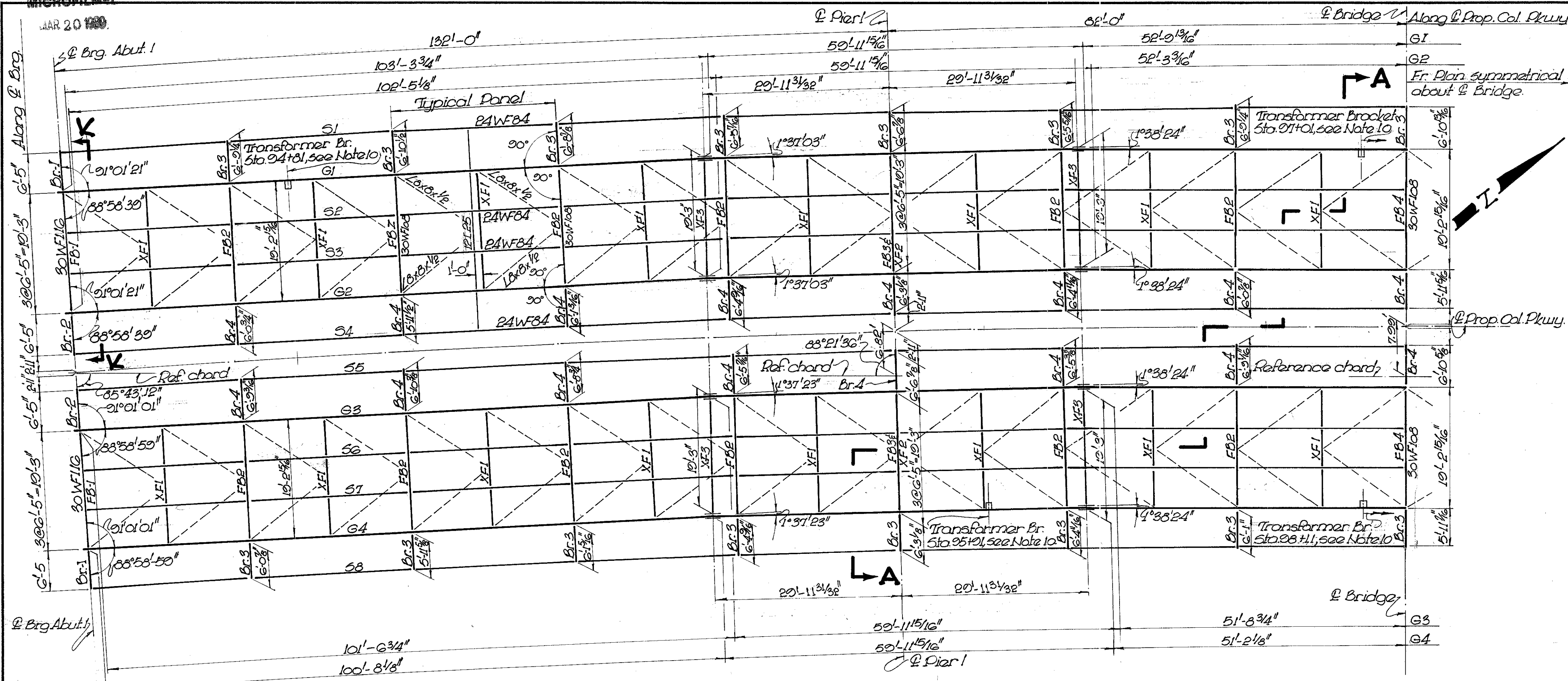
- ## NOTES
1. Anchor bolts are described on sheets 235 and 239 thru 241.
 2. All fillets and rounds on castings are $\frac{3}{16}$ " R.
 3. The contractor has the option of shop welding wherever field welds are shown.

VOGT, IVERS, SEAMAN & ASSOCIATES
ENGINEERS ARCHITECTS
CINCINNATI CHICAGO

BEARING SHOES

BRIDGE NO. HAM-50-2967
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA. 94+42.33 TO
STA. 98+75.88

DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
R.J.M.	R.J.M.	L.K.T.	E.P.A.	J.A.D. Aug. 59	



FRAMING PLAN

SECTION A-A

NOTES

1. Special detail for and dam. at median is on Sheet 259.
2. Gutters and gutter supports are detailed on CSB-P-56, Sheet 3 of 6.
3. 2" dia. standard pipe drains shall be placed at end of bulb angle gutters at Abut. 2. Drains are detailed on CSB-P-56, Sheet 2 of 6.
4. An intersection of E 31 or E 32 and E bracket occurs at the safety curb gutter line. An intersection of E 34 or E 35 and E bracket occurs one inch (1") from the median gutter line toward the centerline of Prop. Columbia Pkwy.
5. Rivets are 3/8" in diameter.
6. Rivets shown as field rivets may be driven in the shop.
7. High Strength Bolts conforming to the "Specifications for Assembly of Structural Joints using High Strength Steel Bolts" may be substituted for rivets.
8. Section K-K is shown on Sheet 246.
9. Dimensions shown on "Framing Plan" are horizontal.
10. Transformer Bracket is detailed on Sheet 259.
11. In addition to the requirements of Sec. 5-102 of the Construction and Material Specifications, the Contractor shall submit a proposed erection procedure for approval prior to the submission of shop drawings.
12. For additional notes see Sheet 255.
13. Cross frame XF3 is detailed on Sheet 246.
14. Welding of structural steel shall be class "A".

VOGT, IVERS, SEAMAN & ASSOCIATES
ENGINEERS ARCHITECTS
CHICAGO

FRAMING PLAN & DETAILS

BRIDGE NO HAM-50-P267
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA 24+42.33 TO
STA 28+12.88

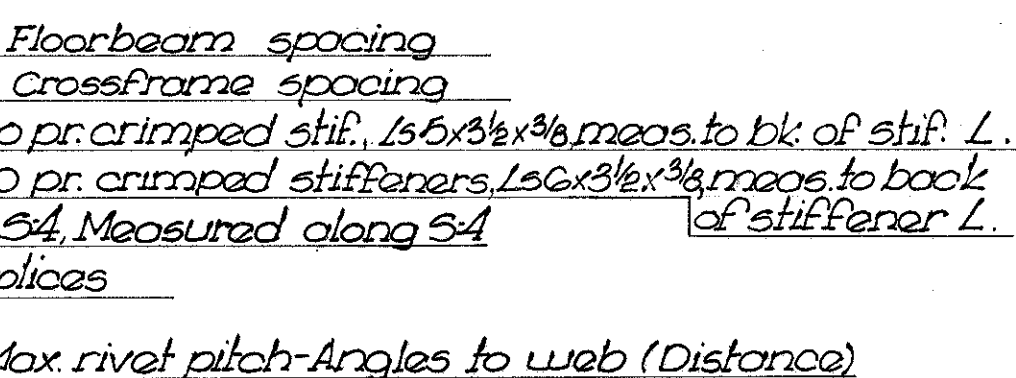
DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
R.H.H.	R.H.H.	J.R.R.	R.J.M.	J.A.O. Aug 60	

Floorbeam spacing
Crossframe spacing
30 pr. crimped stiffeners. $\geq 5 \times 5\frac{1}{2} \times \frac{3}{8}$ mags. to back of stiff. /
10 pr. crimped stiffeners. $\geq 6 \times 3\frac{1}{2} \times \frac{3}{8}$ mags. to back of stiff. /
5-1. Measured along 5-1. to back of stiff. /
Splices
Max. ravel pitch - Angles to web (Distance)

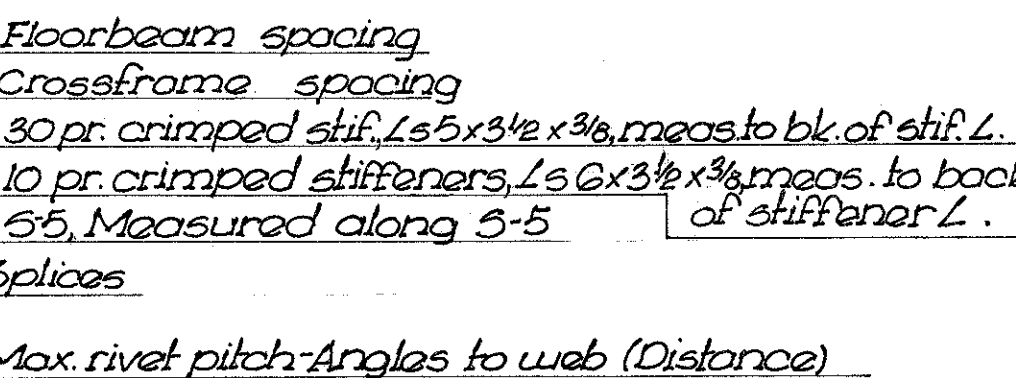
1. All girder dimensions are measured along top of top flange angles.
2. Reference lines are defined on Sh. 246.
3. Web and flange splices are detailed on Sh. 246.
4. Stiffeners and filler plates of floor-beams and brackets are billed on SECTION A-A, Sh. 243 and SECTION K-K, Sh. 246.



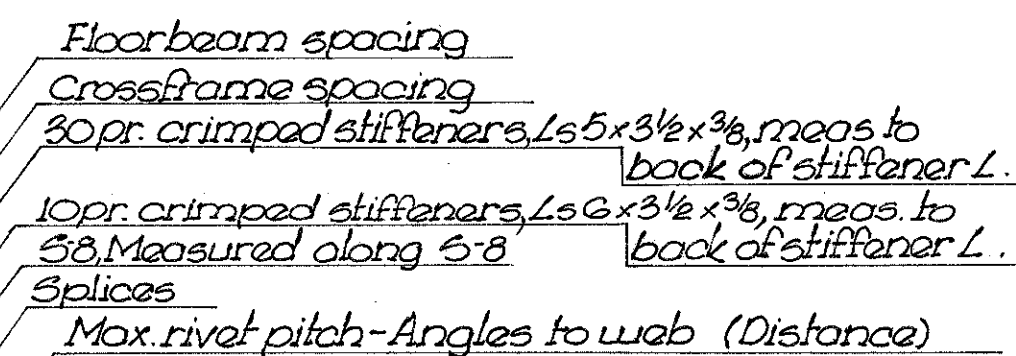
Line B & Girder Band line



f. line B & Girder bend 11



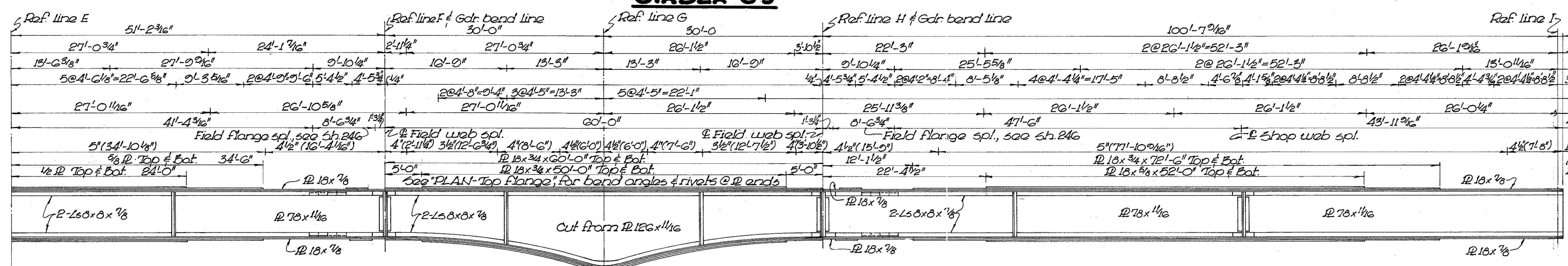
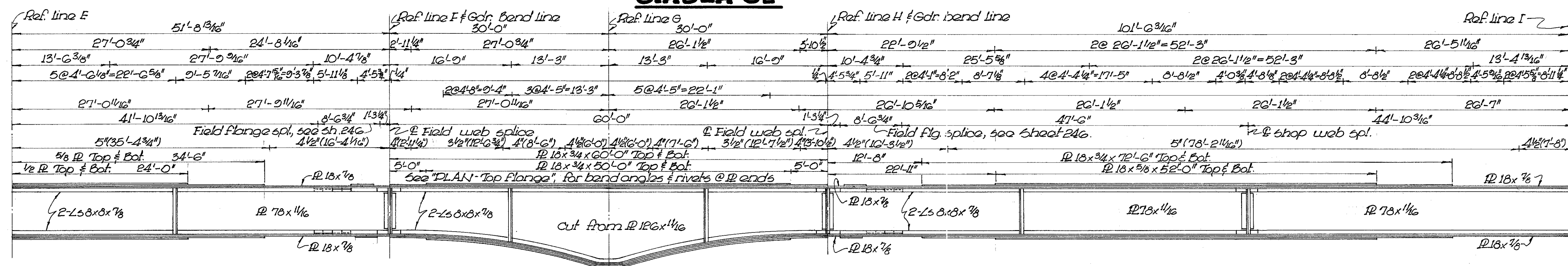
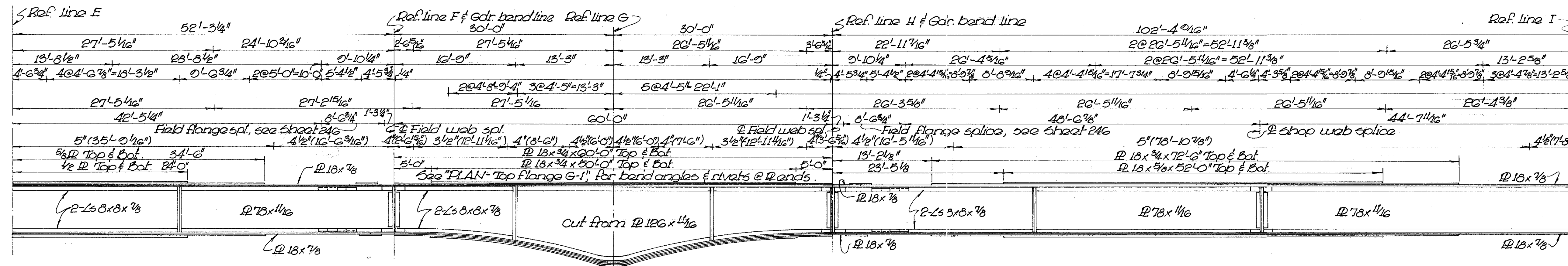
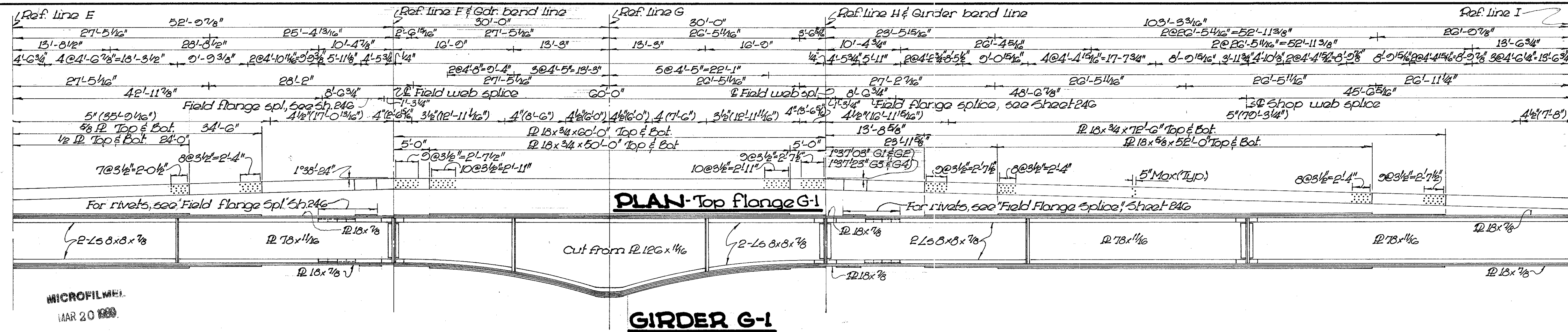
af. line B & Gdr. band line



CHICAGO

BRIDGE NO. HAM-50-2067
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA. 24+42.33 TO
STA. 28+75.88

DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
R.H.H.	R.H.H.	J.R.R.	W.O.L.	J.A.D. Aug 50	



FED. RD. DIVISION	STATE	PROJECT	
2	OHIO		

245
358

HAMILTON COUNTY
HAM-50-(28.13-29.83)

Floorbeam spacing
Crossframe spacing
 30 pr. crimped stiffeners, $1\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{8}$, meas. to back of stiff. 1.
 10 pr. crimped stiffeners, $1\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{8}$, meas. to back of stiff. 2.
S-1, Measured along S-1
Splices
 Max. rivet pitch - Angles to web (Distance)

NOTES

1. All girder dimensions are measured along top of top flange angles.
2. Reference lines are obtained on sheet 246.
3. All floor beams are detailed on Sh. 246
4. Stiffeners and filler plates at floorbeams and brackets are billed on SECTION A-A, Sh. 243 and SECTION K-K, Sh. 246.
5. Haunch geometry is on sheet 244.

Floorbeam spacing
Crossframe spacing
 30 pr. crimped stiff. $\leq 55 \times 3 \frac{1}{2} \times \%$, meas. to back of stiff. $\angle$
 10 pr. crimped stiffeners $\leq 6 \times 3 \frac{1}{2} \times \%$, meas. to back of stiff. $\angle$
 54 - Measured along 54
Splices
 Max. rivet pitch - Angles to web (Distance)

Floorbeam spacing
Crossframe spacing
 30 pr crimped stiff $25.6 \times 3 \frac{1}{2} \times \frac{3}{8}$, meas. to back of stiff $\angle$
 10 pr crimped stiffeners $25.6 \times 3 \frac{1}{2} \times \frac{3}{8}$, meas. to back of stiff $\angle$
 55-Measured along 55
Splices
Max rivet pitch - Angles to web (Distance)

Floorbeam spacing
Crossframe spacing
30 pr. crimped stiff. Ls $5 \times 3\frac{1}{2} \times \frac{3}{8}$, meas. to back of stiff. L.
10 pr. crimped stiffeners Ls $6 \times 3\frac{1}{2} \times \frac{3}{8}$, meas. to back of
58-Measured along 30 stiff. L.
Splices

VOGT, IVERS, SEAMAN & ASSOCIATES
ENGINEERS ARCHITECTS
CINCINNATI CHICAGO

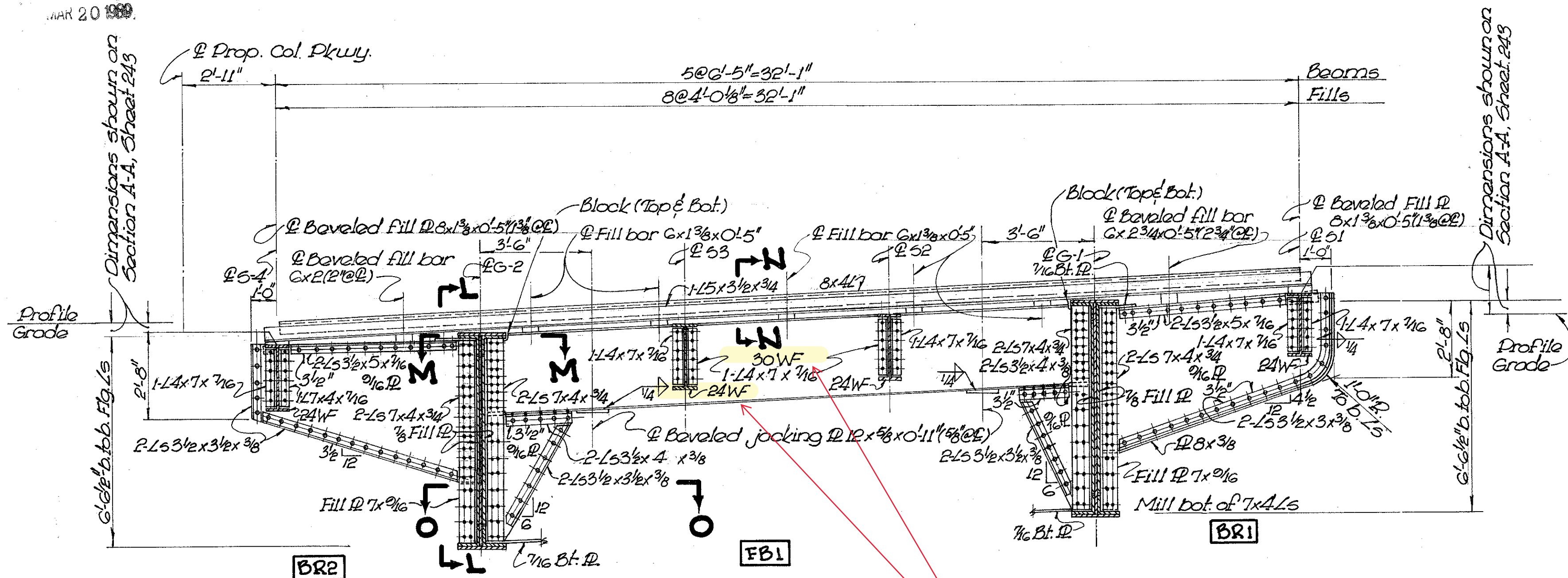
GIRDER DETAILS

BRIDGE NO. HAM-50-2067
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA 24+42.33 TO
STA. 28+75.88

DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
R.H.H.	R.H.H.	J.R.R.	W.D.L.	J.A.D. Aug '50	

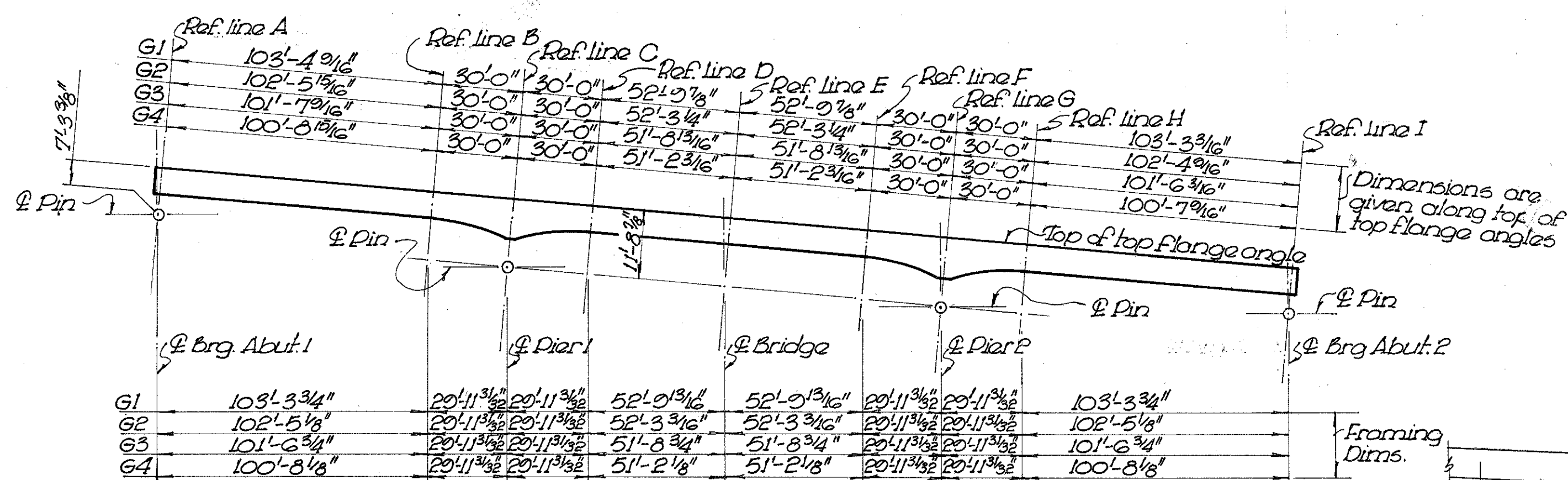
MAR 20 1989

FED. RD. DIVISION	STATE	PROJECT
2	OHIO	

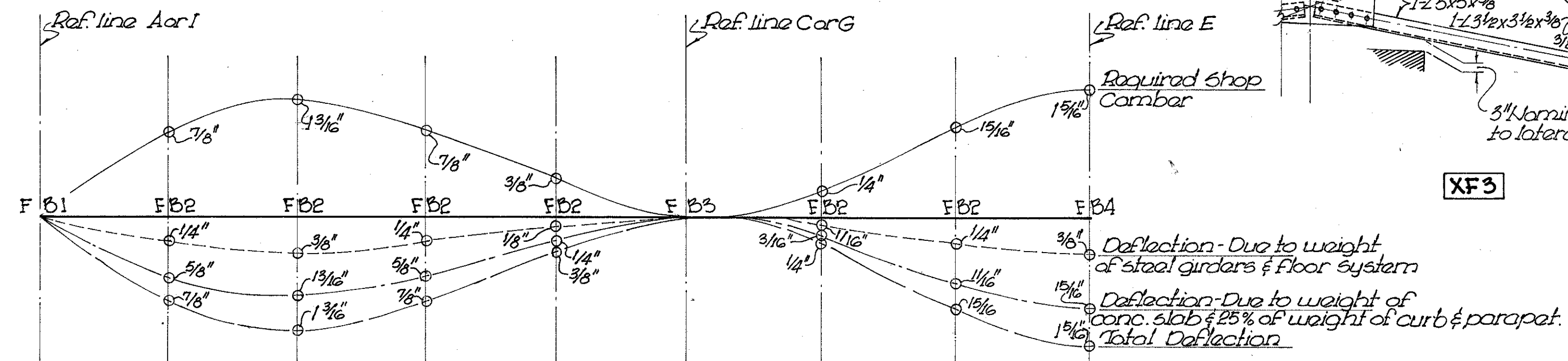
240
558HAMILTON COUNTY
HAM-50-(28.13-29.83)

SECTION K-K

Floor beams appear to be 30" webs, and stringers are 24" webs.

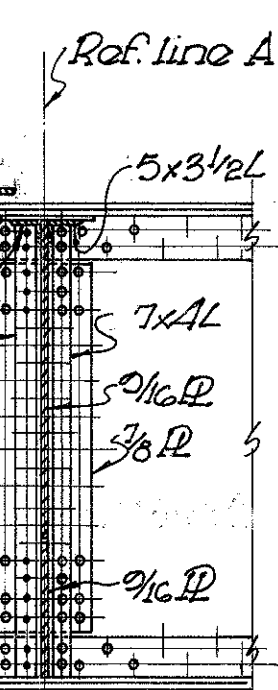


LOCATION OF REFERENCE LINES

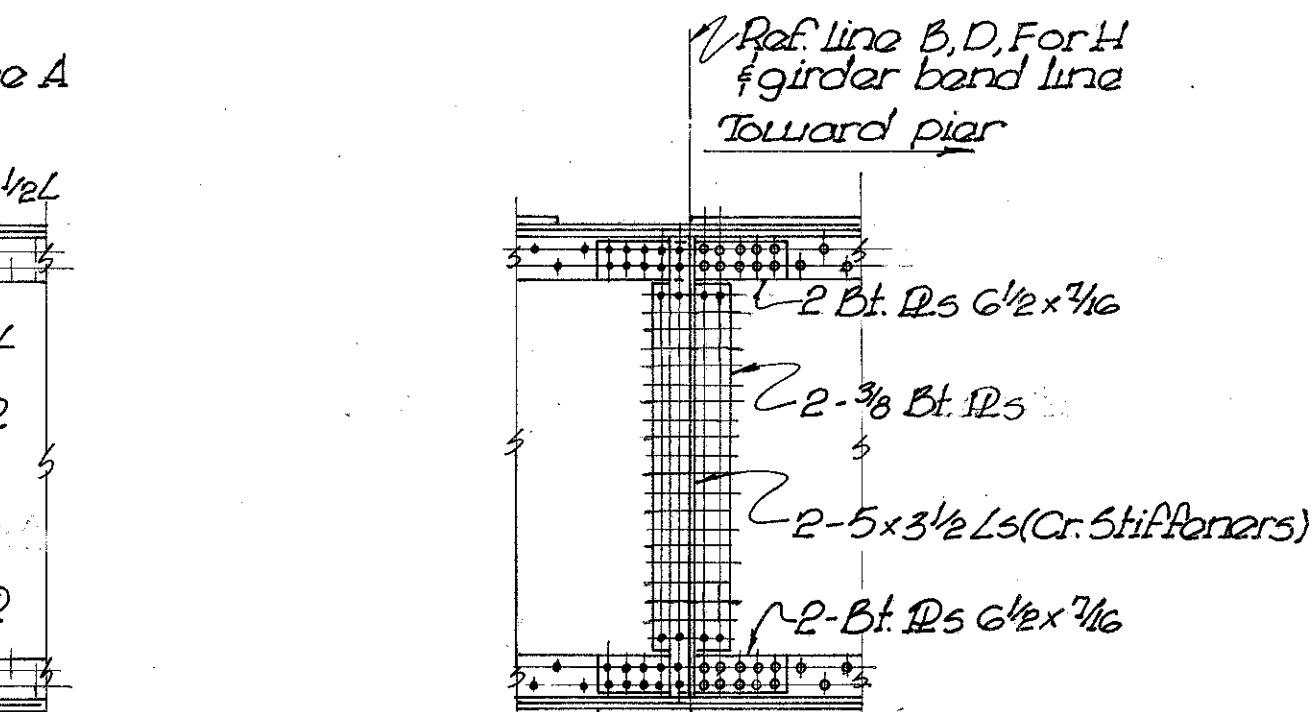


GIRDER DEFLECTION & CAMBER-G1 THRU G4

SHOP DRAWINGS for the girders shall include an overall layout with dimensions showing the relative unloaded vertical position of each girder or girder segment with respect to the others in the same girder line and with respect to a full length base or work line taking into account camber and the profile of the highway.

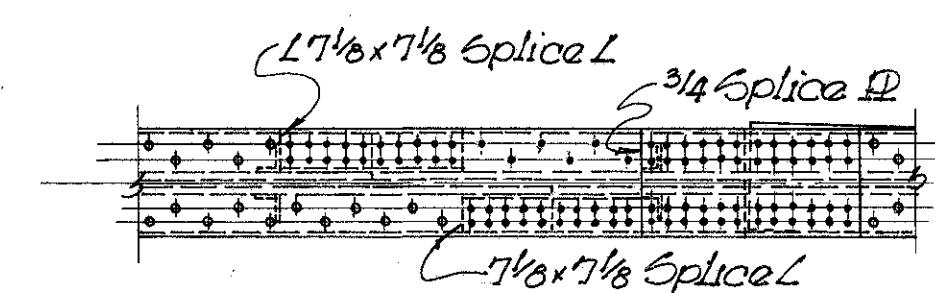


SECTION L-L

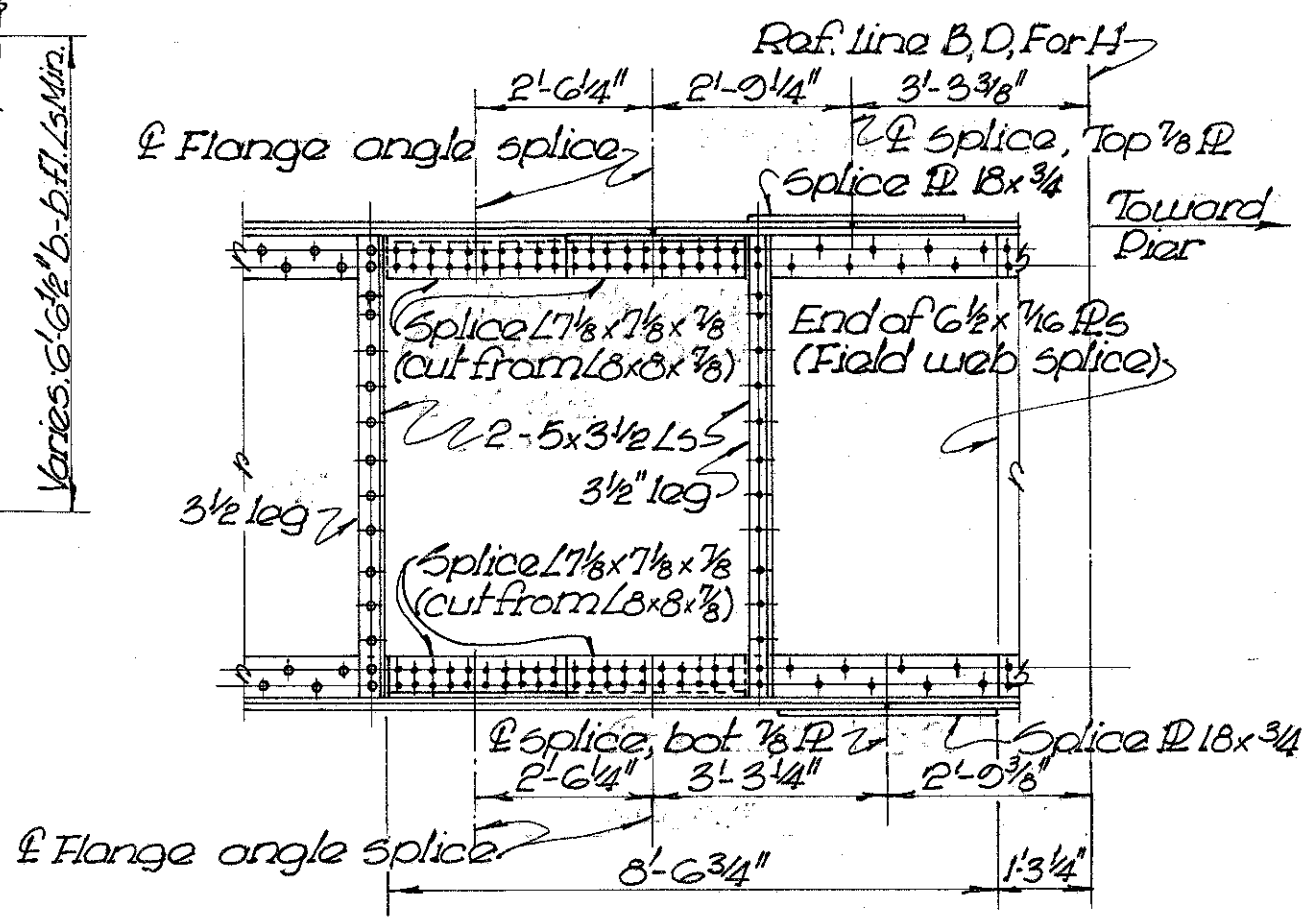


WEB SPLICE

(Field splice shown)

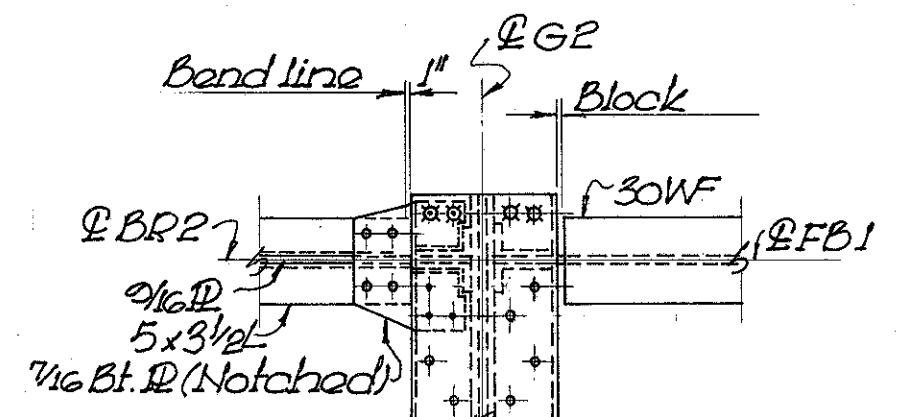


PLAN-TOP FLANGE

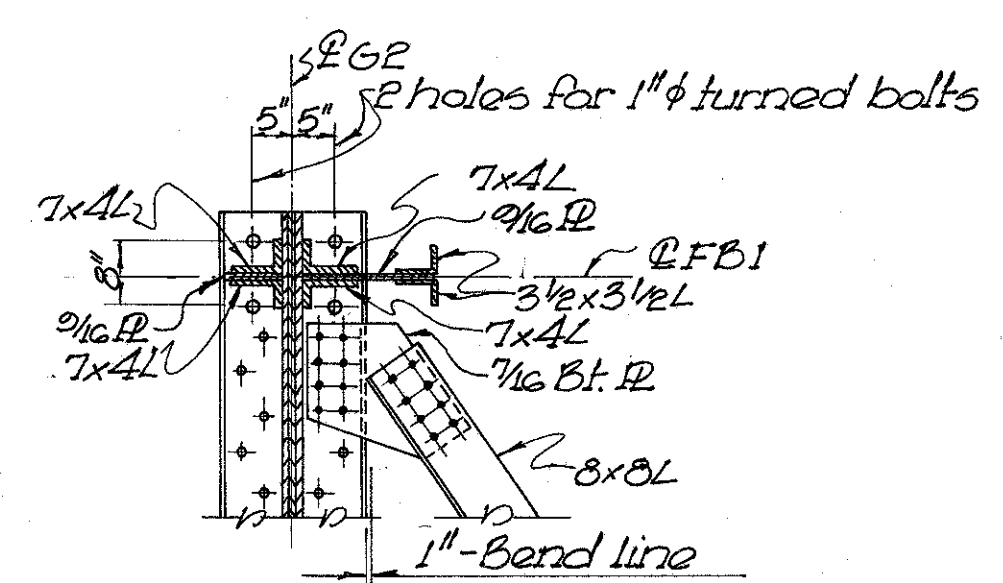


FIELD FLANGE SPLICE

SHOP ASSEMBLY. Reaming of holes for rivets or high strength bolts in shop or field splices of girder segments shall be done with at least three adjacent segments assembled in their correct unloaded positions as shown on the shop drawing layout required in the note, SHOP DRAWINGS



SECTION M-M



SECTION O-O

ROLLED BEAM DEFLECTION

	CENTER OF FLOOR BEAM	CENTER OF STRINGER
Due to weight of steel	—	—
Due to remaining dead load	1/16"	1/8"

No shop cambering of rolled beams is required.

NOTES

- SECTION K-K is taken on Sheet 243.
- End Dam, modified as shown in SECTIONS K-K and N-N, this sheet and on Sheet 250, is detailed on CSB-P-56, sheets E & F of 2.

VOGT, IVERS, SEAMAN & ASSOCIATES
ENGINEERS
GIN GINNATIARCHITECTS
CHICAGOSTRUCTURAL
STEEL DETAILS

BRIDGE NO HAM-50-2067
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA. 24+42.33 TO
STA. 28+72.88

DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
R.H.H.	R.H.H.	J.R.R.	R.J.M.	J.A.D. Aug 80	



1. Reinforcing steel in slab may be spread to clear scuppers.
2. Guardrail post is detailed on Sheet 250.
3. The placing of concrete shall progress from Abut. 2 toward Abut. 1. Transverse construction joints shall be normal to the E and placed at a crossframe, and near the center of any girder span.
4. Two rows of inserts for conduit hangers (as specified on lighting plans) shall be provided @ 4'-0" c-c. on underside of slab, full length of bridge.
5. Parapet joints are detailed on Std. Dwg. AR-1-57.
6. Bracket for light standard is detailed on Sheet 250.

DECK SLAB

BRIDGE NO. HAM-50-2967
PROPOSED COLUMBIA PKWY.
OVER DUCK CREEK VALLEY
HAMILTON COUNTY STA. 04+42.33 TO
STA. 08+75.88

DES.	DR.	TR.	CH.	REVIEWED DATE	REVISED
R.H.H.	R.H.H.	J.R.R.	R.J.M.	J.A.D. Aug '59	

A B U T M E N T S

MARK	LENGTH	SHAPE	NUMBER	WEIGHT	MARK	LENGTH	SHAPE	NUMBER	WEIGHT
A501	5'-10"	Bt.	58	353	A5055	Varies, 11'-0" to 19'-6", incr. 2'-10"	Str.	2Series of 4	127
A502	32'-0"	Str.	10	334	A5056	9'-8"	Str.	1	111
A503	34'-8"	Str.	4	145	A5057	26'-3"	Str.	1	111
A504	37'-8"	Str.	16	629	A5058	4'-7"	Bt.	24	115
A505	6'-7"	Str.	21	144	A5059	Varies, 1'-8" to 4'-1", incr. 2'-5"	Bt.	2Series of 12	72
A506	30'-9"	Str.	8	257	A5060	6'-0"	Bt.	15	282
A507	21'-4"	Str.	5	111	A5061	Varies, 3'-4" to 9'-4", incr. 9"	Str.	1Series of 9	59
A508	10'-10"	Str.	3	34	A5062	18'-9"	Str.	9	176
A509	9'-1"	Str.	23	218	A5063	Varies, 6'-0" to 14'-6", incr. 4'-3"	Str.	2Series of 3	64
A510	4'-2"	Str.	3	13	A5064	17'-3"	Str.	1	4
A511	5'-4"	Bt.	42	234	A5065	4'-0"	Str.	25	104
A512	5'-6"	Bt.	14	80	A5066	3'-9"	Bt.	25	98
A513	4'-3"	Bt.	6	27	A5067	9'-6"	Bt.	5	50
A514	23'-8"	Str.	22	543	A5068	17'-6"	Str.	2	37
A515	14'-9"	Bt.	10	154	A601	13'-1"	Bt.	58	1140
A516	14'-8"	Str.	16	245	A602	Varies, 3'-6" to 8'-0", incr. 9"	Str.	2Series of 7	121
A517	39'-9"	Str.	16	663	A603	5'-11"	Str.	20	178
A518	7'-7"	Bt.	4	32	A604	3'-6"	Str.	3	32
A519	8'-4"	Bt.	17	148	A605	7'-9"	Str.	6	70
A520	7'-10"	Bt.	21	172	A606	6'-2"	Bt.	15	139
A521	8'-9"	Str.	9	82	A607	Varies, 8'-0" to 8'-8", incr. 3/4"	Bt.	13Series of 12	150
A522	9'-0"	Str.	33	310	A608	8'-10"	Bt.	3	40
A523	12'-6"	Str.	4	52	A609	7'-1"	Bt.	13	138
A524	6'-6"	Str.	11	75	A610	8'-3"	Bt.	2	25
A525	8'-6"	Str.	10	89	A611	Varies, 9'-3" to 9'-8", incr. 1/2"	Str.	13Series of 11	156
A526	9'-4"	Str.	14	136	A612	7'-11"	Bt.	1	48
A527	7'-2"	Bt.	54	404	A613	8'-1"	Bt.	4	49
A528	4'-9"	Bt.	6	30	A614	13'-8"	Bt.	20	411
A529	17'-7"	Bt.	54	962	A615	8'-4"	Bt.	21	263
A530	5'-9"	Bt.	17	102	A616	6'-1"	Str.	12	110
A531	7'-9"	Bt.	16	129	A617	7'-0"	Str.	22	231
A532	8'-9"	Bt.	17	155	A618	8'-0"	Str.	10	120
A533	10'-9"	Bt.	4	45	A619	Varies, 4'-3" to 9'-6", incr. 9"	Str.	1Series of 8	83
A534	4'-0"	Str.	33	138	A620	3'-10"	Str.	4	23
A535	16'-8"	Str.	5	87	A621	8'-8"	Bt.	9	117
A536	13'-8"	Str.	5	71	A622	Varies, 3'-4" to 9'-4", incr. 6"	Str.	1Series of 13	124
A537	Varies, 3'-6" to 8'-0", incr. 9"	Str.	2Series of 7	84	A623	6'-0"	Str.	32	288
A538	3'-6"	Str.	6	22	A701	15'-0"	Bt.	5	153
A539	22'-2"	Str.	8		A702	10'-6"	Str.	12	258
A540	Varies, 1'-8" to 4'-1", incr. 2'-5"	Bt.	2Series of 12	72	A703	9'-9"	Str.	10	199
A541	6'-0"	Bt.	44	275	A704	22'-1"	Bt.	10	451
A542	8'-6"	Bt.	18	160	A705	13'-7"	Bt.	9	250
A543	Varies, 10'-0" to 16'-0", incr. 3'-0"	Str.	4Series of 3	163	A706	13'-4"	Bt.	2	55
A544	4'-10"	Bt.	10	50	A707	12'-2"	Bt.	2	50
A545	4'-7"	Bt.	24	115	A708	19'-4"	Bt.	18	711
A5001	28'-10"	Str.	4	120	A709	7'-0"	Str.	22	315
A5002	6'-2"	Bt.	16	103	A801	8'-0"	Str.	14	299
A5003	8'-9"	Str.	4	37	A802	8'-9"	Bt.	14	327
A5004	27'-0"	Str.	18	507	A901	8'-3"	Bt.	4	112
A5005	5'-0"	Bt.	8	42	A902	12'-3"	Bt.	5	208
A5006	20'-6"	Str.	8	171	A903	13'-3"	Str.	10	451
A5007	4'-2"	Bt.	8	35	A904	10'-9"	Str.	9	329
A5008	12'-8"	Str.	8	106	A905	17'-3"	Bt.	19	1114
A5009	5'-4"	Bt.	42	234	A1001	18'-11"	Bt.	18	1465
A5010	5'-10"	Bt.	11	67	A1002	9'-0"	Str.	29	1123
A5011	15'-5"	Bt.	19	306	A1003	Varies, 20'-8" to 21'-8", incr. 6"	Bt.	1Series of 3	273
A5012	5'-11"	Bt.	36	222	A1004	12'-2"	Bt.	20	1047
A5013	7'-9"	Bt.	16	129	A1005	Varies, 18'-5" to 19'-5", incr. 6"	Bt.	1Series of 3	244
A5014	7'-6"	Bt.	19	149	A1101	9'-2"	Bt.	5	244
A5015	Varies, 8'-3" to 8'-11", incr. 5/8"	Bt.	1Series of 14	125	A1102	14'-8"	Bt.	6	468
A5016	8'-1"	Bt.	6	51	A1103	23'-5"	Bt.	22	2737
A5017	15'-2"	Bt.	7	111	A1104	23'-7"	Str.	7	877
A5018	9'-4"	Str.	9	88	A1105	17'-1"	Str.	5	454
A5019	4'-2"	Bt.	5	22	A1106	10'-6"	Str.	10	558
A5020	Varies, 9'-0" to 9'-7", incr. 1"	Str.	1Series of 8	78	A1107	21'-4"	Bt.	22	2494
A5021	Varies, 8'-9" to 9'-3", incr. 1"	Str.	1Series of 7	66	A1108	18'-9"	Str.	12	1195
A5022	9'-2"	Bt.	4	38	A1109	14'-3"	Str.	10	757
A5023	8'-8"	Str.	4	36	A1110	24'-3"	Str.	2	258
A5024	10'-0"	Bt.	18	188	A1111	7'-11"	Bt.	2	84
A5025	Varies, 8'-2" to 9'-11", incr. 1 5/8"	Str.	1Series of 14	132	A1112	22'-1"	Bt.	21	2464
A5026	33'-9"	Str.	3	106	A1113	19'-6"	Bt.	1	104
A5027	Varies, 8'-6" to 9'-2", incr. 1"	Str.	1Series of 9	83	A1114	Varies, 15'-4" to 16'-1", incr. 9"	Bt.	1Series of 2	167
A5028	9'-0"	Str.	11	103	A1115	Varies, 7'-7" to 8'-7", incr. 6"	Bt.	1Series of 3	129
A5029	15'-7"	Str.	22	358	A1116	10'-1"	Bt.	9	482
A5030	22'-8"	Str.	22	47	A1117	11'-8"	Bt.	6	372
A5031	10'-0"	Str.	3	31	A1118	7'-3"	Bt.	5	193
A5032	13'-8"	Str.	55	784					
A5033	6'-6"	Str.	4	27					
A5034	5'-4"	Str.	3	17					
A5035	8'-6"	Str.	3	27					
A5036	9'-3"	Str.	2	19					
A5037	17'-7"	Str.	27	495					
A5038	4'-0"	Str.	3	13					
A5039	24'-6"	Str.	9	230					
A5040	19'-6"	Str.	4	81					
A5041	5'-8"	Bt.	14	83					
A5042	25'-10"	Bt.	19	512					
A5043	24'-5"	Bt.	17	433					
A5044	5'-10"	Bt.	3	18					
A5045	3'-10"	Bt.	3	12					
A5046	4'-11"	Str.	23	118					
A5047	21'-0"	Str.	19	416					
A5048	6'-8"	Str.	12	83					
A5049	5'-3"	Str.	2	11					
A5050	16'-4"	Str.	31	528					
A5051	16'-0"	Str.	2	33					
A5052	Varies, 4'-3" to 9'-6", incr. 12 1/2"	Str.	1Series of 8	57					
A5053	3'-10"	Str.	4	16					
A5054	27'-9"	Str.	9	260					

P I E R S

MARK	LENGTH	SHAPE	NUMBER	WEIGHT
P401	Varies by threes, 5'-4 1/2" to 6'-1 1/2", incr. 3/4"	Bt.	4Series of 18	1202
P402	Varies by fours, 5'-2 1/4" to 5'-7 1/4", incr. 3/16"	Bt.	4Series of 104	1502
P403	6'-3"	Bt.	12	50
P404	5'-8"	Bt.	6	61
P405	6'-4"	Bt.	3	13
P406	5'-10"	Bt.	4	15
P407	Varies by threes, 5'-0" to 5'-3 3/4", incr. 3/8"	Bt.	8Series of 30	624
P408	Varies by fours, 5'-0" to 5'-1 1/4", incr. 3/16"	Bt.	8Series of 40	1084
P409	Varies by threes, 5'-4 1/4" to 6'-5 3/4", incr. 3/8"	Bt.	4Series of 108	1709
P410	Varies by fours, 5'-2 1/4" to 5'-9 1/4", incr. 3/16"	Bt.	4Series of 144	2109
P411	6'-7"	Bt.	6	26
P412	5'-9"	Bt.	3	31

P I E R S (CONTINUED)

MARK	LENGTH	SHAPE	NUMBER	WEIGHT
P501	8'-9"	Bt.	120	1095
P502	17'-0"	Str.	24	426
P503	Varies, 18'-3" to 20'-7 1/8", incr. 1 1/8"	Bt.	4Series of 26	2107
P504	20'-11"	Bt.	4	87
P505	21'-5"	Bt.	1	22
P506	Varies, 17'-1" to 17'-1 1/8", incr. 1 1/8"	Bt.	8Series of 10	1461
P507	Varies, 18'-3" to 21'-6 3/4", incr. 1 1/8"	Bt.	4Series of 36	2987
P508	21'-9"	Bt.	2	45
P701	15'-10"	Bt.	360	11651
P702	17'-4"	Bt.	320	11337
P801	22'-3"	Str.	48	2852
P802	6'-7"	Bt.	64	1125
P803	28'-10"	Bt.	24	1848
P804	28'-4"	Bt.	24	1816
P1001	61'-7"	Str.	56	7610
P1002	60'-8"	Str.	56	7390
P1003	22'-0"	Str.	28	3133
P1004	25'-1"	Str.	28	3022
P1005	24'-0"	Str.	28	2952
P1006	23'-7"	Str.	28	2841
P1101	6'-5"	Bt.	224	7637

D E C K S L A B

MARK	LENGTH	SHAPE	NUMBER	WEIGHT
S601	38'-6"	Str.	652	37703
S602	37'-0"	Str.	644	35790
S603	35'-2"	Str.	468	24720
S604	34'-8"	Str.	442	23015
S605	13'-10"	Str.	513	10659
S606	25'-4"	Str.	342	13013
S701	38'-6"	Bt.	652	51308
S702	37'-0"	Bt.	644	48704
S703	35'-6"	Str.	364	26413
S704	34'-11"	Str.	351	25051
S798	10'-3"	Bt.	8	168
S799	9'-11"	Bt.	8	162
S501	5'-2"	Bt.	650	3503
S502	3'-9"	Bt.	650	2542
S503	5'-0"	Bt.	327	1705
S504	3'-9"	Bt.	327	1279
S505	3'-6"	Bt.	323	1179
S506	2'-3"	Bt.	323	758
S507	4'-8"	Bt.	677	3295
S508	4'-11"	Str.	4	
S509	17'-8"	Str.	92	
S510	14'-1"	Str.	4	
S511	4'-9"	Str.	4	
S512	17'-3"	Str.	92	
S513	13'-7"	Str.	4	

R E P L A C E M E N T B A R S

MARK	NO.	LENGTH	SHAPE
RE4	1	5'-3"	Str.
RE5	3	5'-7"	Str.
RE6	8	5'-11"	Str.
RE7	9	6'-3"	Str.
RE8	1	6'-6"	Str.
RE9	1	6'-10"	Str.
RE10	2	7'-9"	Str.
RE11	2	7'-7"	Str.

If reinforcing bars are fabricated from stock which has previously been tested and approved by the Ohio Highway Testing Laboratory, test samples as provided in Sec. 5-402 need not be furnished and replacement bars will not be required.

