

COMMONWEALTH OF KENTUCKY DEPARTMENT OF HIGHWAYS

PLANS OF PROPOSED PROJECT

HENDERSON COUNTY
MP 051-0041-019.243(B7)

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SHEETS NOT INCLUDED IN TOTAL SHEETS	
TOTAL BRIDGE SHEETS	

RECORD PLANS	NO.	SETS	DATE
CONS. PRODUCTION PLANS			

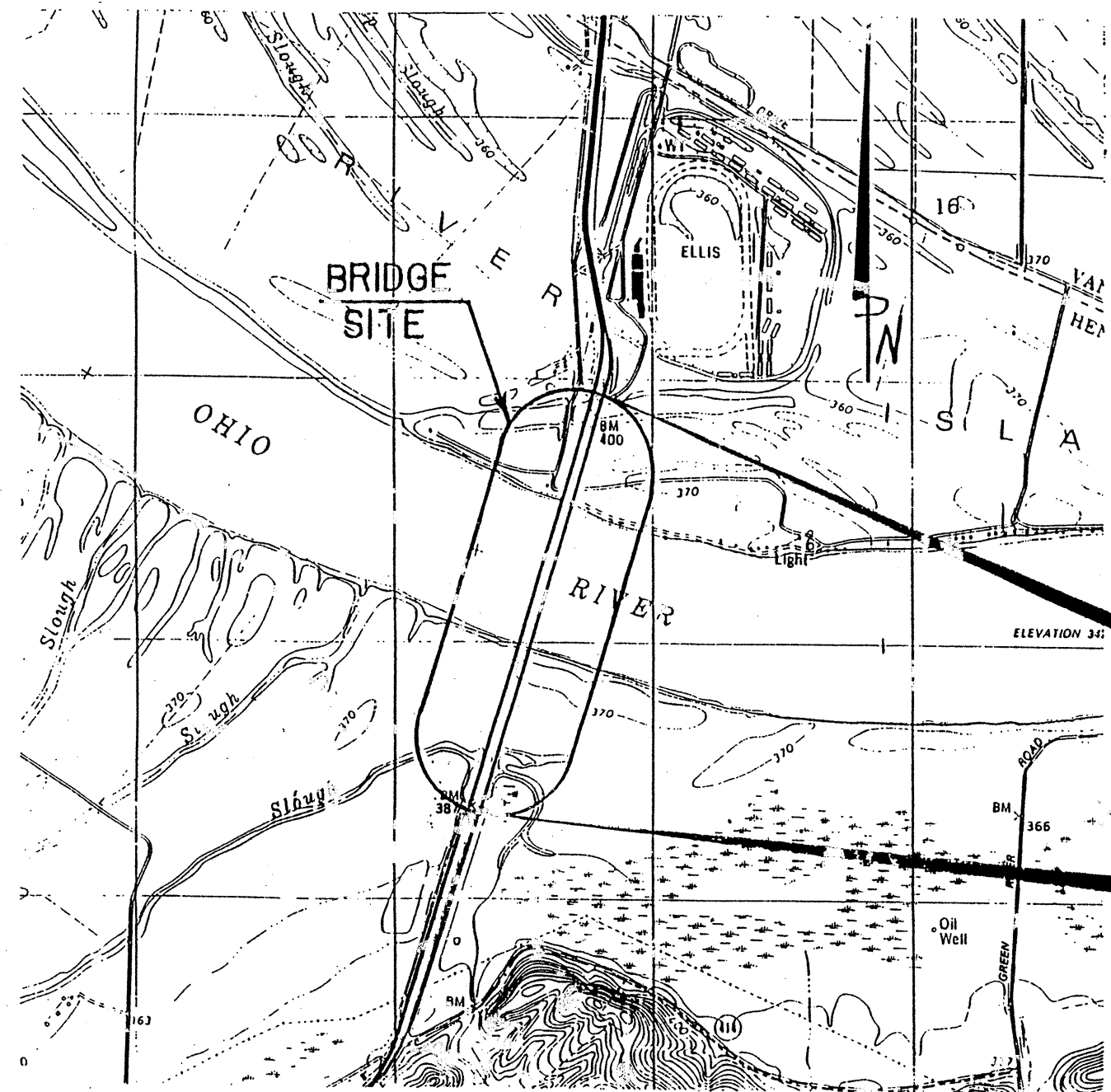
STANDARD DRAWINGS	
NUMBER	DESCRIPTION
TSC-210-04	LANE CLOSURE, CASE III
TSC-260-07	MISC. TRAFFIC CONTROL DEVICES
TSC-261-04	MISC. TRAFFIC CONTROL DEVICES
TSC-270-01	FLASHING ARROW
BJJ-003-07	PREFORMED JOINT SEAL

REFERENCES

DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1991 EDITION
FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

SPECIAL NOTES

SPECIAL NOTE FOR CLASS M CONCRETE
SPECIAL NOTE FOR WELDING STEEL BRIDGES
SPECIAL NOTE FOR PATCHING CONCRETE BRIDGE DECKS



REPAIRS TO BRIDGE ON US 41 (SOUTHBOUND)
OVER THE OHIO RIVER

DESIGN CRITERIA

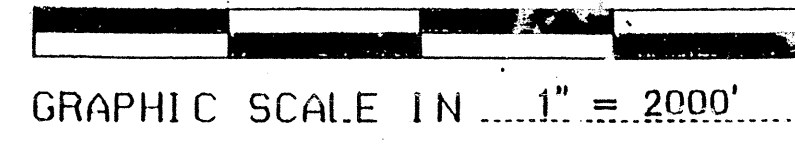
CLASS OF HIGHWAY _____
TYPE OF TERRAIN _____
DESIGN SPEED _____
REQUIRED NPSD _____
REQUIRED PSD _____
LEVEL OF SERVICE _____
ADT PRESENT () _____
ADT FUTURE () _____
DHV _____
D % _____
T % _____

GEOGRAPHIC COORDINATES

LATITUDE _____ DEGREES _____ MINUTES NORTH
LONGITUDE _____ DEGREES _____ MINUTES WEST

DESIGNED

% RESTRICTED SD _____
LEVEL OF SERVICE _____
MAX. DISTANCE W/O PASSING _____



LAYOUT MAP

GROSS LENGTH	NET LENGTH	ADDED (DEDUCTED) FOR EQUALITIES	RAILROAD CROSSINGS	BRIDGES
_____ LIN. FT. _____ MILES	_____ LIN. FT. _____ MILES	_____ LIN. FT. _____ MILES	_____ LIN. FT. _____ MILES	_____ LIN. FT. _____ MILES

REPAIRS TO BRIDGE ON US41 (SOUTHBOUND)
OVER OHIO RIVER

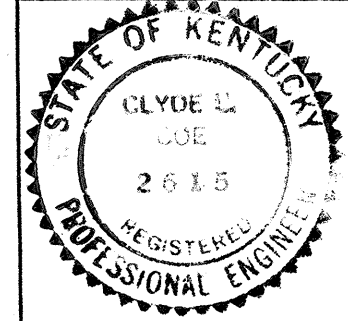
DRAWING NO. 22827
SHEET 1 OF 20

**KENTUCKY
DEPARTMENT OF HIGHWAYS**
HENDERSON COUNTY

HENDERSON-EVANSVILLE, IND. ROAD US41 (SB)
PROJECT: HENDERSON BRIDGE REPAIRS
NUMBER: MP 051-0041-019.243 (B7)
LETTING DATE: 3-20-92

PREPARED & SUBMITTED BY:
HAZELET + ERDAL, INC.
CONSULTING ENGINEERS
LOUISVILLE, KY

FILE NO. 1161-03
BY: *Clyde L. Cox*
DATE: 12-23-91



DESIGNED BY: _____ BY: _____ ASST. DISTRICT ENGINEER FOR PRE-CONSTRUCTION
CHECKED BY: _____ BY: _____ DIRECTOR OF TRAFFIC
PLAN CHECKED: _____ BY: _____ CHIEF DRAFTSMAN
PLAN APPROVED: 2/3 19 92 BY: *Art Emman* DIRECTOR OF BRIDGES
PLAN APPROVED: 2/3 19 92 BY: *Don Kelly* STATE HIGHWAY ENGINEER

APPROVED: _____
F.H.W.A. DIVISION ADMINISTRATOR

ESTIMATE OF QUANTITIES

MP 051-0041-019.243(B7)

DETAIL SHEET	BID ITEM	UNIT	AMOUNT
18	Expansion Joint Repairs at Pier A	L.S.	1
18	Expansion Joint Repairs at Pier E	L.S.	1
18	Expansion Joint Repairs at LSO	L.S.	1
18	Expansion Joint Repairs at LSO'	L.S.	1
15	Girder Splice Repair	Each	2
16	Repair Floorbeam at LSO'	L.S.	1
15	Cracked Diaphragm Connection Repair	Each	8
15	Crossframe Bottom Strut Replacement	Each	12
15	Crossframe Stiffener Plate Repair	Each	12
17	Stringer End Repairs at Pier S-1	L.S.	1
17	Repair Bearing at Abutment S-20	L.S.	1
-	Bolt Replacement Access	L.S.	1
8-14	Bolt Replacement (In Trusses)	Each	1888
10	Replace Missing and Loose Bolts	Each	26
16	Stringer Bearing Bolt Replacement	Each	35
12	Holes for Truss Drainage (3" Hole)	Each	61
16	Web Drilling - Floorbeams (2" Hole)	Each	28
15	Web Drilling - Cross Frames (1 1/2" Hole)	Each	18
11	Pigeon Screens	Each	504
19	Concrete Patching	L.S.	1
17	3/4" Compression Joint Seal	Lin. Ft.	330
17	1/2" Compression Joint Seal	Lin. Ft.	240
19	Pin-Hanger Back-up Support at Pier S-7	L.S.	1
19	Pin-Hanger Back-up Support at Pier S-15	L.S.	1
20	Pier Cap Sealing	L.S.	1
17	Repair Drain Pipes	Each	80
-	Clean Clogged Deck Drains	Each	174
-	Clean Expansion Joint Drain Troughs	L.S.	1
-	Maintain and Control Traffic	L.S.	1
-	Concrete Class "P"	C.Y.	22
-	Demobilization	L.S.	1

TRAFFIC CONTROL NOTES

Lane closures shall be made in accordance with the Kentucky Department of Highways Standard Drawing No. TSC 210-04 (Current Edition). Lane Closure Case III.

The lane closure shall be continuous throughout the work zone. Changing lanes within the work zone will not be allowed.

All signs, barricades, channelization devices and incidentals used for traffic control shall be new or used in good condition; and shall be in accordance with the applicable standard drawings and the "Manual on Uniform Traffic Control Devices".

All traffic control devices must be removed from the project site or covered to the project engineer's satisfaction when not in use.

Lane closures will NOT be permitted between the hours of 4:00 PM and 6:00 PM local time, Monday through Friday. Lane closures should be used only when absolutely necessary and kept to the shortest duration possible in order to minimize the disruption to the traveling public. One 10'-0" lane must be open to traffic at all times.

Lane closures will NOT be permitted on holidays, and the day before holidays.

Lane closures will NOT be permitted during the racing seasons at the Ellis Park Race Track located at the north end of the bridge.

GENERAL NOTES

SPECIFICATIONS: The Kentucky Department of Highways Standard Specifications for Road and Bridge Construction, current edition, shall apply to this project.

DESIGN LOAD: See original construction contract plans (dated September 1961) for design loads.

MATERIAL DESIGN SPECIFICATIONS: For new Structural Steel $F_s = 20000$ PSI for ASTM A36, $F_s = 27000$ PSI for ASTM A572 Gr. 50. $F'_c = 3500$ PSI for Class A Concrete.

MATERIALS: ASTM Specifications, current edition, as designated below shall govern the materials furnished.

Material	A.S.T.M.
Structural Steel	A36
Structural Steel	A572 Gr. 50
High Strength Bolts, Nuts and Washers	A325

CONCRETE: Class "M" Concrete in accordance with the Special Notes or Pyrament 505 Repair Material (proprietary) shall be used to replace the concrete in the superstructure roadway that is removed to repair the expansion dams and stringers. Pyrament 505 Repair Material is a packaged mortar produced by Pyrament Division of Lone Star Industries, Inc., Houston, Texas. An approved equal may be used.

CLEANING AND PAINTING: All new structural steel, including bolts, nuts and washers, called for on the plans shall be cleaned and painted in accordance with Section 607 of the specifications. This steel shall receive two coats of paint. The paint shall conform to Section 821 of the Specifications and shall consist of one coat of inorganic zinc rich primer and one gray vinyl finish coat meeting Federal Standard No. 595-36314. All surfaces of new structural steel which are to be placed in contact with existing structural steel shall receive one coat of primer prior to installation. The cost of cleaning and painting is to be included in the price bid for the appropriate items.

TOUCH-UP PAINTING: All areas of new or existing structural steel on which the paint has been damaged by the Contractor with weld burns or by other means during construction or after final painting shall be spot painted with inorganic zinc rich primer and given one finish coat of gray vinyl paint meeting Federal Standard No. 595-36314. The cost of this touch up painting is to be included in the price bid for appropriate items.

CLEANING AND PAINTING EXISTING STEEL: All repaired areas of structural steel, and all existing structural steel that is corroded adjacent to repaired areas (within 12" outside the repair limits) and in other areas designated in the plans shall be cleaned and painted in accordance with Section 727 of the Standard Specifications. All areas of existing steel that are to be in contact with new steel including areas under bolt heads, shall be cleaned of all dirt, rust and other foreign matter before installing the new steel. The paint shall conform to Section 821 of the Standard Specifications and shall consist of one coat of inorganic zinc rich primer and one gray vinyl finish coat meeting Federal Standard No. 595-36314. Contrary to the Standard Specifications, payment for cleaning and painting existing steel shall be included in the price bid for structural steel repair items.

PAYMENT FOR STRUCTURAL STEEL REPAIRS: Except where specifically noted otherwise the unit price bid for all structural steel repair or replacement bid items listed in the Estimate of Quantities shall be full compensation for access, temporary supports, removing existing rivets, drilling, reaming holes, cutting, welding, removing deteriorated metal and all new materials, labor, equipment, tools, and incidentals necessary to complete each item of work.

WELDING SPECIFICATIONS: All welding and welding materials shall conform to Joint Specifications ANSI/AASHTO/AWS D1.5-88 Bridge Welding Code. Welding procedures shall be submitted to the Engineer and approved prior to the start of fabrication and repairs. The cost of welding, welding materials, straightening, altering and burning new or existing steel is to be included in the unit price bid for the appropriate items.

NEW STRUCTURAL STEEL: All new structural steel shall be ASTM A36 except where noted otherwise.

HIGH STRENGTH BOLT CONNECTIONS: Unless otherwise provided on the plans, all new bolts in the main truss joints shall be 1" diameter high strength bolts and all new bolts in the bracing, and stringers are 7/8" diameter high strength bolts. All new bolts in the north and south approach structures shall be 7/8" diameter high strength bolts. Open holes shall be 15/16" diameter for 7/8" bolts and 1 1/16" diameter for 1" bolts. All reaming of existing rivet holes shall be considered incidental to the appropriate item of work.

Note: Existing paint system is inorganic zinc and vinyl.

DIMENSIONS: Dimensions shown on these plans are taken from original construction contract plans and do not necessarily reflect revisions made during construction. The Contractor shall verify dimensions, including thicknesses of parts, with field measurements prior to ordering materials or fabricating steelwork.

MILL TEST REPORTS: Notarized test reports shall be furnished in triplicate to the Department showing that all the materials used for these repairs conform to the requirements of the Specifications.

PROHIBITED FIELD WELDING: Except as shown on the plans, no welding of any nature shall be performed on the members of the bridge.

DAMAGE TO THE STRUCTURE: The Contractor is responsible for any and all damage to the structure during construction, even to the replacement of the entire spans and removal of the fallen spans at his own expense, should they fall due to his actions.

REMOVED STEEL: All existing steel that is to be removed and not reused in the structure shall become the property of the contractor and shall be removed from the bridge site. The cost of this removal shall be incidental to the specific bid item in which this work occurs.

ON-SITE INSPECTION: Each Contractor submitting a bid for this work shall make a thorough inspection of the bridge and the work site prior to submitting his bid and shall thoroughly familiarize himself with existing conditions so that work can be expeditiously performed after a contract is awarded. A suitable method of performing the work described herein should be investigated. Submission of a bid will be considered evidence of this inspection having been made. Any claims resulting from site conditions will not be honored by the Department of Highways.

REMOVAL OF EXISTING RIVETS AND BOLTS: The Contractor will be permitted to remove rivets and bolts in any manner which does not damage adjacent structural steel. This may include mechanical removal or other method approved by the Engineer. If mechanical removal is not practical in the opinion of the Engineer, air carbon arc cutting may be used to cut the heads or nuts off providing there is absolutely no damage to the adjacent steel. This is the last resort method of removal to be used only after all mechanical removal methods fail.

RIVER NAVIGATION: Continuous maintenance and safety of river navigation throughout the term of the project shall be a prime consideration. All work involving the installation or removal of structural elements beneath the bridge deck shall cease when there is approaching river traffic. This work shall not resume until the river traffic is clear of the bridge area.

The contractor must advise the Coast Guard of his proposed schedule of work at least 10 days prior to the commencement of any field operations. The notification shall be addressed to:

Commander
2nd Coast Guard District
1430 Olive Street
St. Louis, Missouri 63103
PHONE: (314) 425-4607

REPAIRS TO BRIDGE ON
US41 (SB) OVER OHIO RIVER

SHEET 2

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF

HENDERSON
HENDERSON-EVANVILLE, IND.

ROAD

STATION	P.E. PROJECT NO.	DR/WING NO.
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.	22827

UPDATE DATE: _____ DATE: _____
 LETTING DATE: _____ DATE: _____
 DESIGNED BY: _____ DATE: 10-91
 CHECKED BY: _____ DATE: _____
 DRAWN BY: _____ DATE: _____
 12/23/1991 084 D:\DWGFILES\1616\GENNOTES

UPDATE DATE
LETTING DATE

GENERAL NOTES

CONCRETE REMOVAL: The Contractor shall remove concrete with a method that will not damage existing reinforcement or structural steel that is to remain in the structure. All removal shall be to neat saw cut lines and feather edges will not be permitted.

BONDING NEW CONCRETE TO OLD CONCRETE: New concrete shall be bonded to old concrete, unless stated otherwise on the plans, using two component epoxy resin system conforming to Section 833 of the Specifications. The cost of this work, including all labor, tools and materials, is to be considered incidental to the specific bid item in which this work occurs.

EXPANSION JOINT REPAIRS: This work consists of stringer and diaphragm repairs at the expansion joints at Piers A and E and at Panel Points LS0 and LS0' of the truss spans. Also at Piers A and E the main span side of the expansion joints shall be lowered to match the approach side by the removal of the rust pack, replacement of the bearing plates at the stringer supports and the installation of new shim plates, all as indicated in the plans. The items of work included under these bid items are listed on Sheet 18. The Lump Sum price bid for the repair of each expansion joint shall be full compensation for access, concrete slab removal and replacement, all temporary supports, removing existing bolts, drilling, reaming, cutting, welding, removing deteriorated metal and all new materials, labor, equipment, tools and incidentals necessary to complete these items of work.

GIRDER SPLICE REPAIR: This item of work consists of removing the existing bottom flange splice plates on Girder E, Span 8S and on Girder E, Span 18S, removing the rust pack and replacing the splice plates with new plates of the same size as the existing plates shown in the plans. The unit price each bid will be full compensation for temporary supports, removing the existing splice plates and all new materials, labor, equipment, tools and incidentals necessary to complete the work.

CROSSFRAME STIFFENER PLATES REPAIR: This item of work consists of removing deteriorated metal from stiffener plates on the top member of the cross frame at Pier S-15 and replacing a portion of the stiffener with new metal as shown in the plans. The contract price each for this item of work shall be full compensation for cutting and removing deteriorated metal, welding and all new materials, labor, equipment, tools and incidentals necessary to complete this item of work.

STRINGER END REPAIRS AT PIER S-1: This item of work consists of repairing the ends of 2 stringers (B and C) at Pier S-1 in accordance with the repair details shown in the plans. There are two ends of each stringer to be repaired. The lump sum price bid for this work shall be full compensation for removing and replacing the concrete deck as shown, splicing on new stringer sections at 4 stringer ends, providing temporary supports for the stringers and for all materials, labor, equipment, tools and incidentals to complete the work.

REPAIR BEARING AT ABUTMENT S-20: This work consists of repairing the rocker bearing under Stringer D, at Abutment S-20 in accordance with the details and repair procedure shown in the plans. The lump sum price for "Repair Bearing at Abutment S-20" shall be full compensation for temporary supports, removing and replacing existing tap bolts, replacing deteriorated pintels in the top shoe, adjusting the masonry plate, furnishing and installing the shim plate and materials, labor, equipment, tools and incidentals necessary to complete this item of work.

BOLT REPLACEMENT ACCESS: This item of work includes the labor and equipment necessary to access all of the lower chord joints in the trusses to replace the necessary bolts under the item "Bolt Replacements". The contract lump sum price for this item of work will be full compensation for all labor, equipment, tools and incidentals necessary to access all lower chord joints that require bolt replacement in the trusses.

TEMPORARY SUPPORTS: The cost of temporary supports shall be incidental to the unit price bid for each repair. The contractor shall submit support schemes to the engineer for approval.

BOLT REPLACEMENTS (IN TRUSSES): This item of work consists of removing and replacing the deteriorated 1" diameter truss bolts as indicated in the plans. No more than 5 bolts in a vertical plate connection or 2 bolts in a horizontal web or perforated plate connection shall be removed at one time. New 1" diameter High Strength Bolts (ASTM 325) of the proper length to provide adequate "stick through" shall be installed as soon as practical after removal of the deteriorated bolts. Bolts shall be furnished and installed in accordance with Article 607.08 of the Kentucky Standard Specifications. The new bolts shall be cleaned and painted in accordance with the general note "Cleaning and Painting". The contract unit price each for this item of work shall be full compensation for all bolts, washers and other materials, labor, equipment, tools and incidentals necessary to complete this work. Contrary to the Standard Specifications, there will be no adjustment in the unit price bid for this item of work regardless of the amount of overrun or underrun.

REPLACE MISSING LOOSE BOLTS: This item of work consists of the removal and replacement of bolts that are missing or loose at locations in the south approach and truss spans as noted in the plans. Loose bolts shall be removed and replaced with new High Strength Bolts (A325) of the same diameter as the existing bolts. The length shall be in accordance with Sec. 607.08 of the Standard Specifications. The contract unit price each for this item of work shall be full compensation for access and furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work.

STRINGER BEARING BOLT REPLACEMENTS: This item of work consists of removing deteriorated stringer bearing bolts at locations designated in the plans and replacing with new High Strength Bolts (A325) of the same size as the existing bolts. The Contract unit price each for this item of work shall be full compensation for access and furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work.

HOLES FOR TRUSS DRAINAGE (3" DIAMETER HOLE): This item of work consists of drilling a 3" diameter hole for drainage in the web of the bottom chord of the truss at designated joints in the cantilever arms, fixed span and anchor span as indicated in the plans. This item of work will be paid for at the contract unit price each and shall be full compensation for access, labor, tools and incidentals necessary to complete the work.

WEB DRILLING-FLOORBEAMS (2" HOLE) AND CROSS FRAMES (1 1/16" HOLE): This item of work consists of removing paint, performing dye penetrant testing to determine crack locations and ends, drilling a hole at the end of web cracks in the floorbeams of the truss and cross frames in the approaches and applying paint in accordance with the General Note "Touch-up Painting". The contract unit price each for this item of work shall be full compensation for access, material and labor for testing, drilling, cleaning and painting, and incidentals necessary to complete the work.

PIGEON SCREENS: This item of work consists of installing screens at each panel point of the lower chord of the main truss spans. Four screens are required at each interior panel point and 2 each at LS10 and LA12. The screens shall be fabricated and installed as shown in the plans. The contract unit price each shall be full compensation for all materials, labor, equipment, access, tools and incidentals to fabricate and install the screens complete in place.

CONCRETE PATCHING: This work consists of preparing, forming and placing an acrylic mortar patch in accordance with the plans, notes and specifications at Abutment S-20. The acrylic patch mortar shall be Burke Acrylic Patch as manufactured by the Burke Co., San Mateo, California (1-800-423-1140) or an approved equal. The lump sum bid for this item shall include all materials and labor for saw cutting, removing loose and sound concrete, cleaning reinforcing bars, applying bonding coats and placing forms and concrete as necessary to complete the work.

COMPRESSION JOINT SEALS - 1/2" & 3/4": This work consists of the removal of the existing seal material in the 1/2" & 3/4" expansion joints in both approaches and truss spans and installing preformed compression joint seals as indicated in the plans. The seals must be placed in one continuous unbroken length. The contract unit price per linear foot for each size shall be full compensation for removing the existing seals and for all materials including lubricant adhesive, labor, equipment, tools and incidentals necessary to complete the work.

PIN-HANGER BACK-UP SUPPORT AT PIERS S-7 AND S-15: These items of work consist of the construction of a reinforced concrete attachment to the cap of each pier in accordance with details shown in the plans. Care must be taken in finishing the top of the concrete so that the clearance between the elastomeric pad and the steel girder is no greater than 1/4". The lump sum price bid for each of these items shall be full compensation for drilling in dowels and drilling holes for rebar ties, painting the exposed rebars and nuts in accordance with the requirements for cleaning and painting structural steel, all materials including Class A concrete and steel reinforcement, labor, equipment, tools and incidentals necessary to complete the work.

PIER CAP SEALING: This work consists of applying an epoxy seal coat to exposed surfaces of the tops of all substructure units (See Sheet 20) in accordance with Section 731 of the Standard Specifications. Contrary to Section 731.09 of the Standard Specifications, payment for this item of work shall be at the contract lump sum price which payment will be full compensation for all materials, labor, equipment, tools, access, and incidentals necessary to clean and seal all the designated areas.

REPAIR DRAIN PIPES: This item of work consists of removing the deteriorated ends of the existing steel drain pipes and installing a coupling and short length of p.v.c. pipe at locations shown in the plans. The color of p.v.c. pipe shall be as close to structural steel paint color as possible. The contract unit price each for "Repair Drain Pipes" shall be full compensation for furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work.

CLEAN CLOGGED DECK DRAINS: This item of work consists of removing the roadway grate of each clogged deck drain, removing all debris from the drain casting and replacing the roadway grate on the drain casting. The Contract unit price bid, "Each" for "Clean Clogged Deck Drains" shall be full compensation for furnishing all materials, labor, equipment, tools and incidentals necessary to complete this work.

CLEAN EXPANSION JOINT DRAIN TROUGHS: This item of work shall consist of removing all debris, sand or other materials from the drain troughs and pipe in the main span at Piers A and E, LS0 and LS0' and in the approaches at Piers S-3, S-7, S-11 and N-5. The contract lump sum price for this item of work shall be full compensation for furnishing all materials, labor, equipment, tools and incidentals necessary to complete the work.

DYE PENETRANT TESTING: Dye penetrant testing using water-washable visible liquid dye shall be in accordance with standard methods set forth in ASTM E165. At the Contractors option, magnetic particle testing in compliance with provisions of ANSI/AASHTO/AWS D1.5-88 may be used in lieu of dye penetrant testing. Personal performing either method of testing shall be qualified for NDT LEVEL I in accordance with the current edition of the American Society for Nondestructive Testing Recommended Practice No. SNT-TC-1A.

DESIGNED BY: DRH
CHECKED BY: PMP & CSB
DATE: 10-91
REVISED: _____
DATE: _____
REVISED: _____
DATE: _____

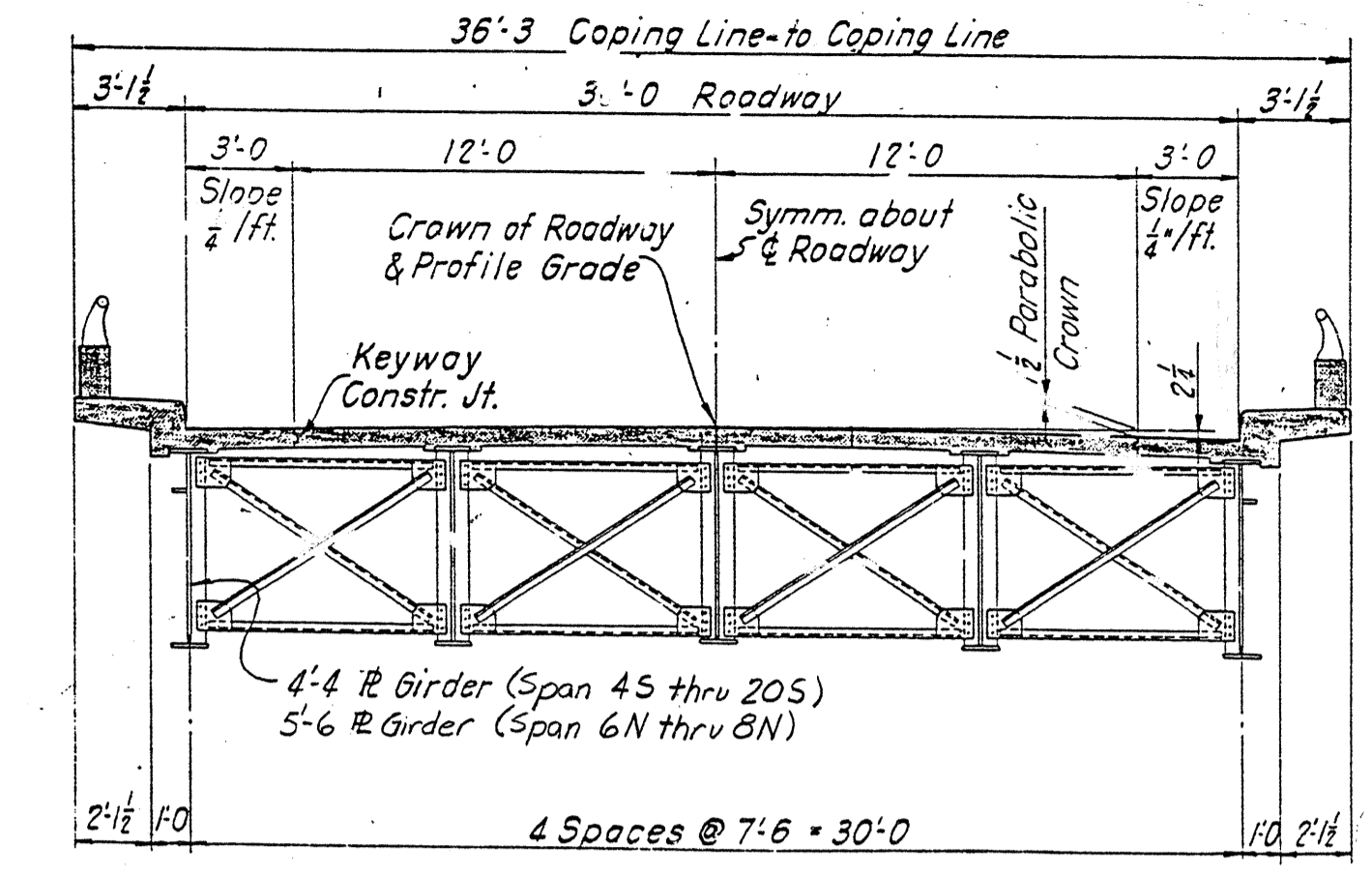
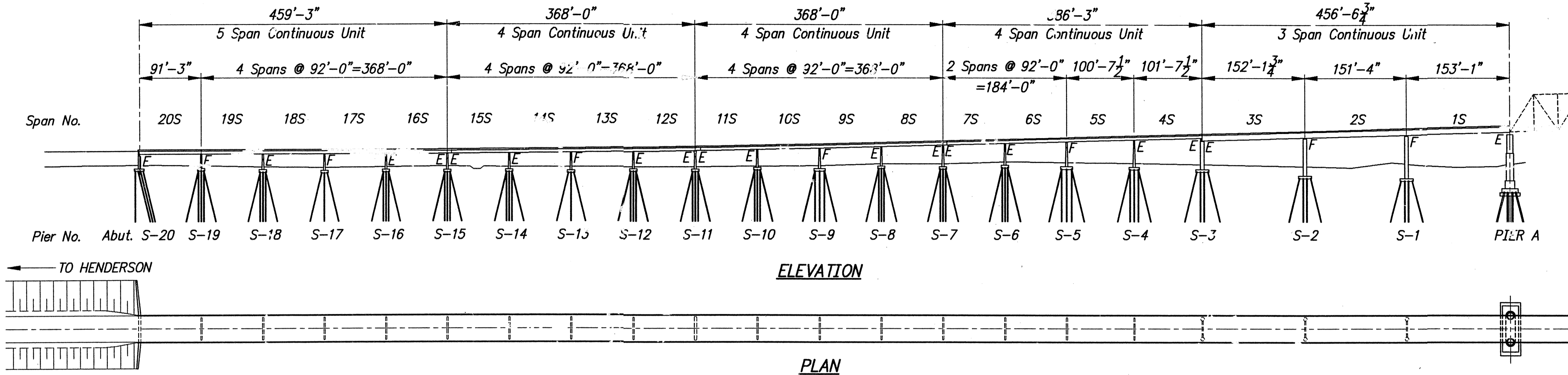
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REPAIRS TO BRIDGE ON
US41 (SB) OVER OHIO RIVER SHEET 3

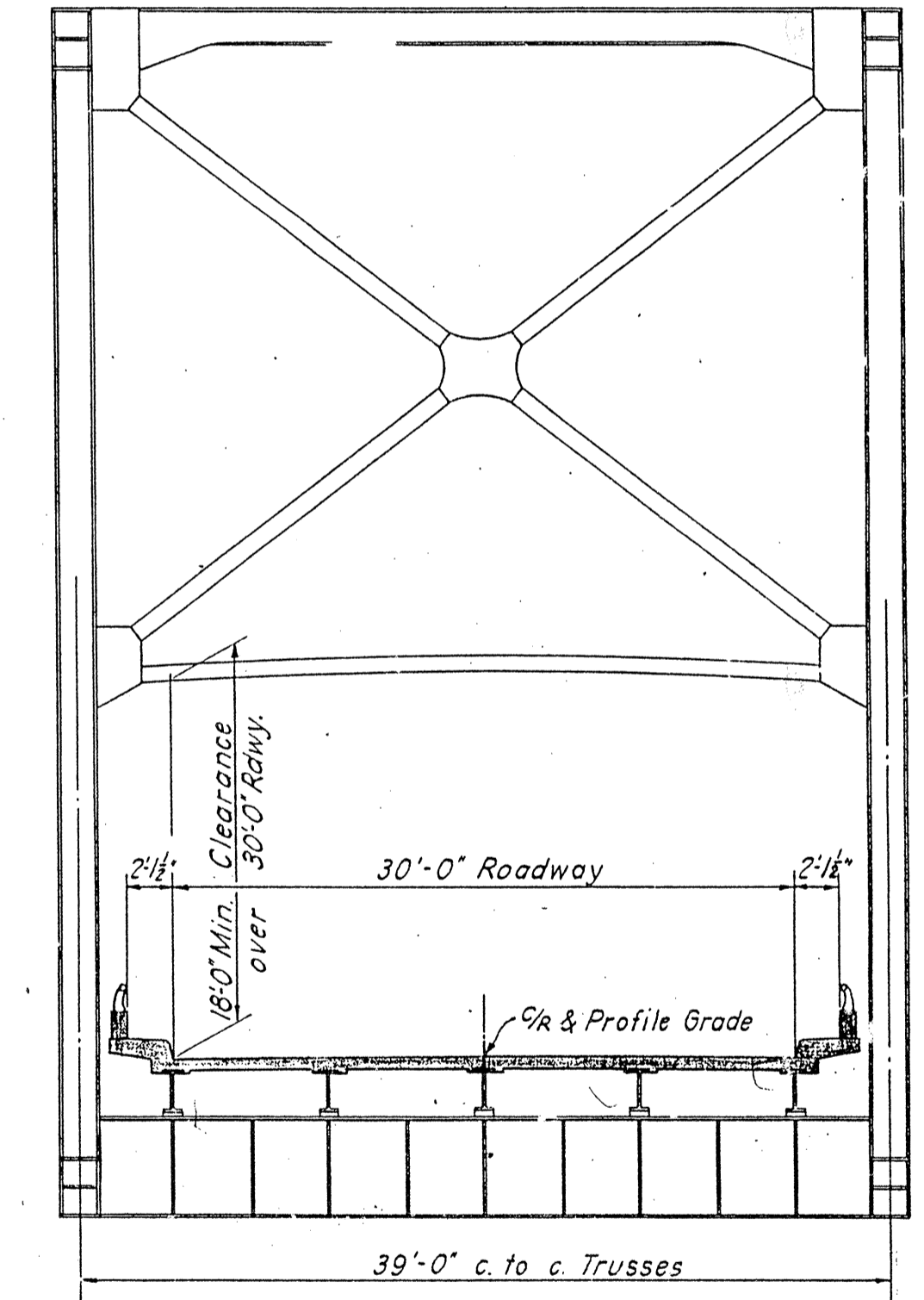
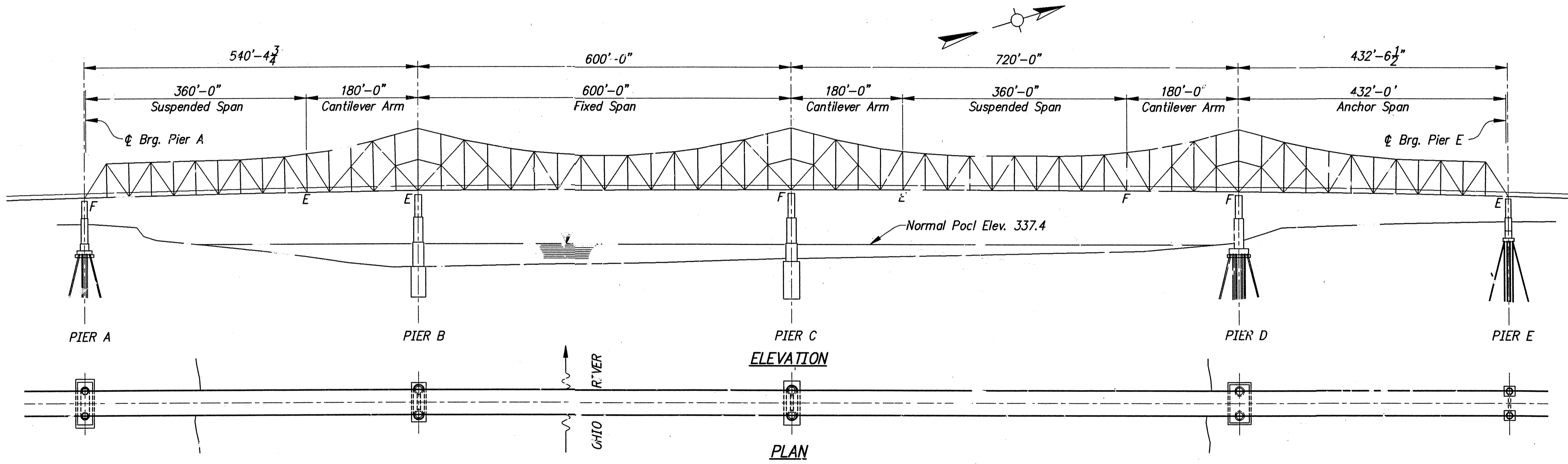
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANVILLE, IND.
ROAD
STATION _____ P.E. PROJECT NO. _____
CONSTRUCTION PROJECT NO. _____ MAINTENANCE PROJECT NO. _____ DRAWING NO. 22827

GENERAL NOTES

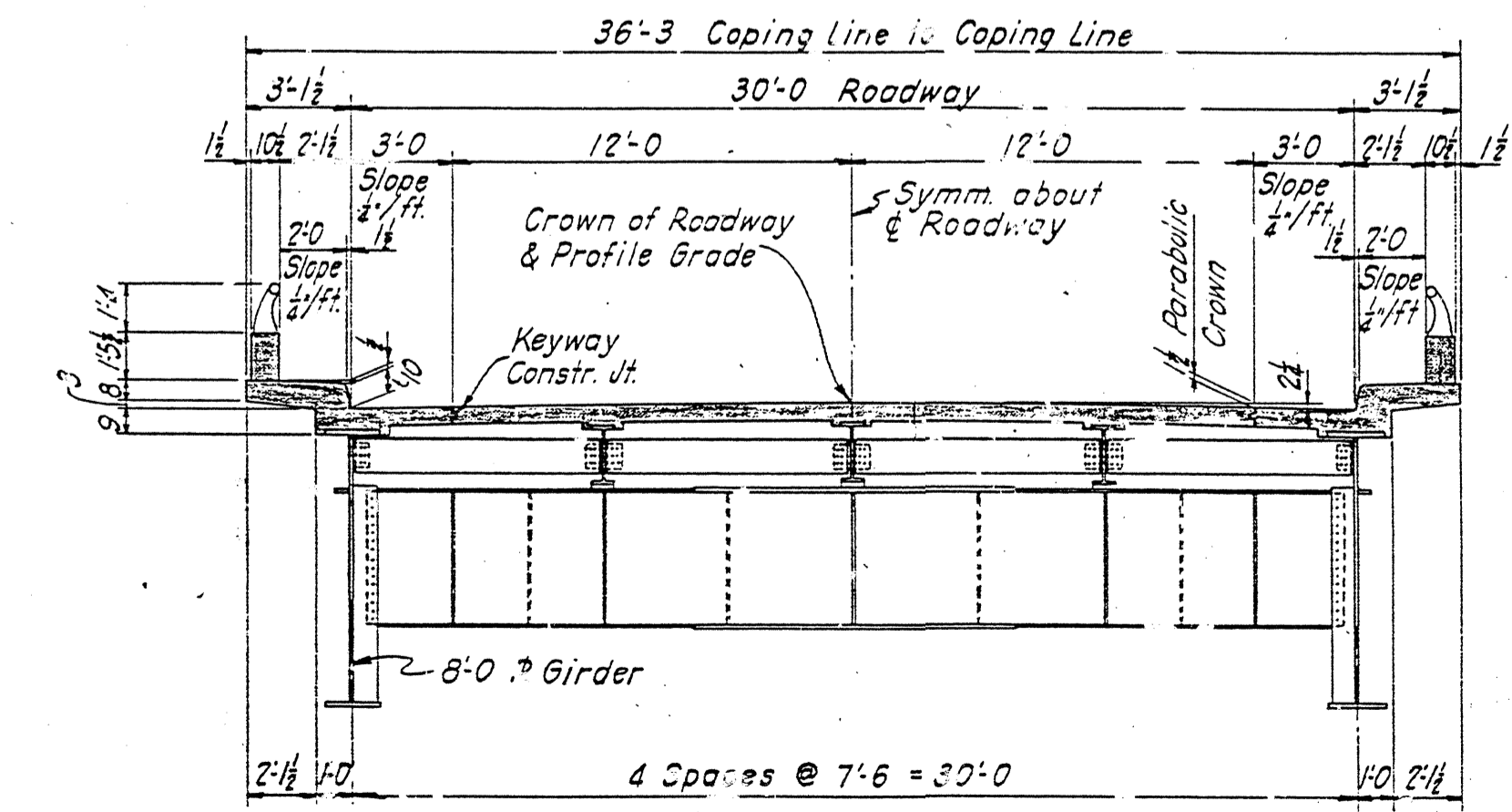
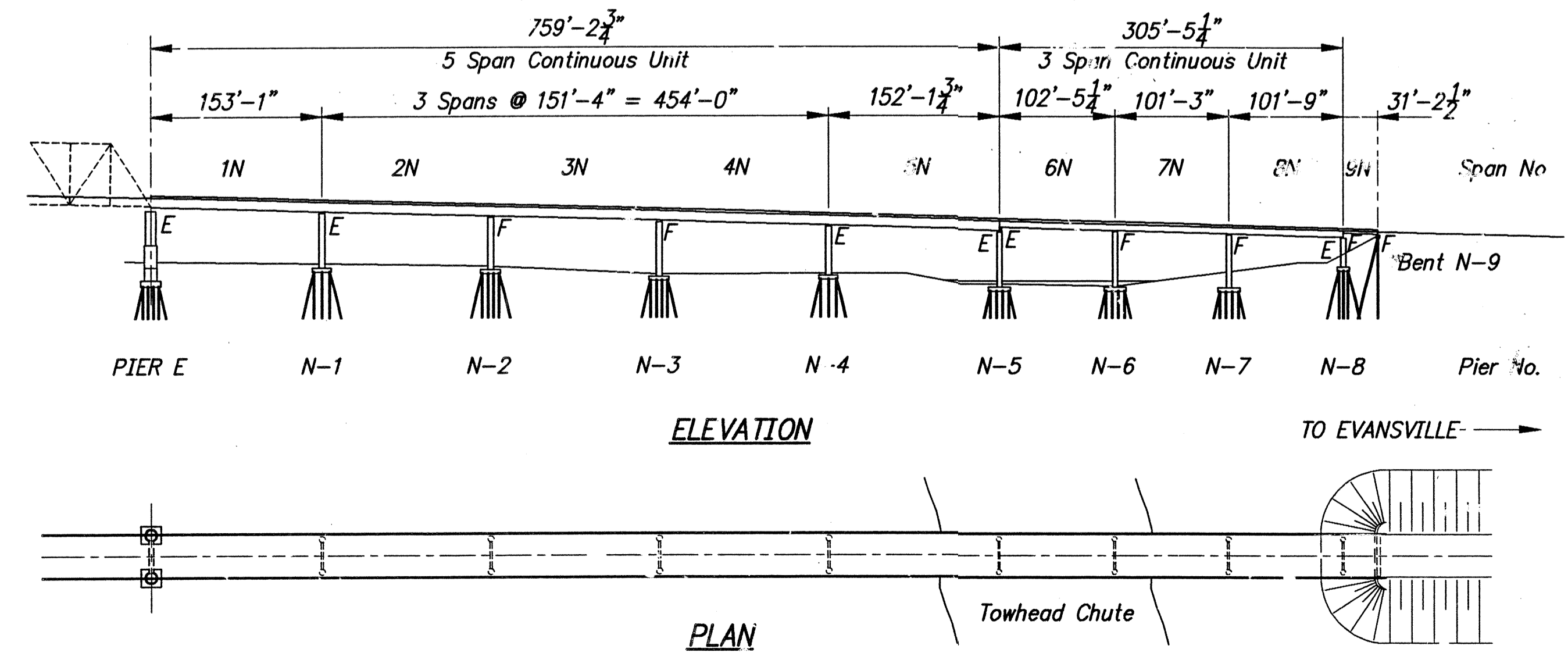
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TYPICAL SECTION
SPANS 4S THRU 20S
and SPANS 6N THRU 8N



TYPICAL SECTION THRU TRUSS



TYPICAL SECTION
SPANS 1S THRU 3S
and SPANS 1N THRU 5N

LAYOUT

DESIGNED BY: DRH
CHECKED BY: PNP
DATE: 10-91

REVISED: _____ DATE: _____
REVISED: _____ DATE: _____

REPAIRS TO BRIDGE ON
US 41 (SB) OVER OHIO RIVER

SHEET 4

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANSVILLE TND.

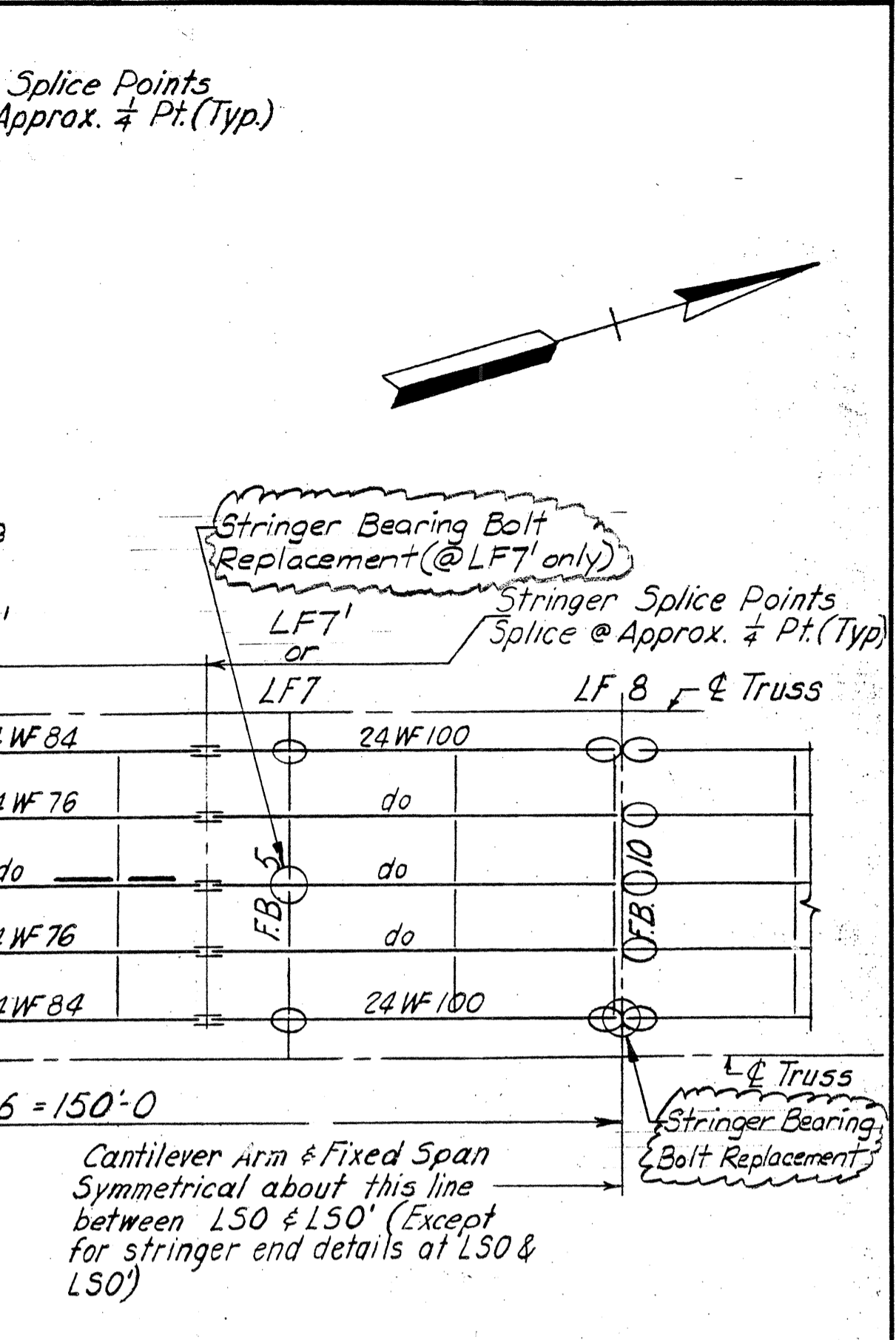
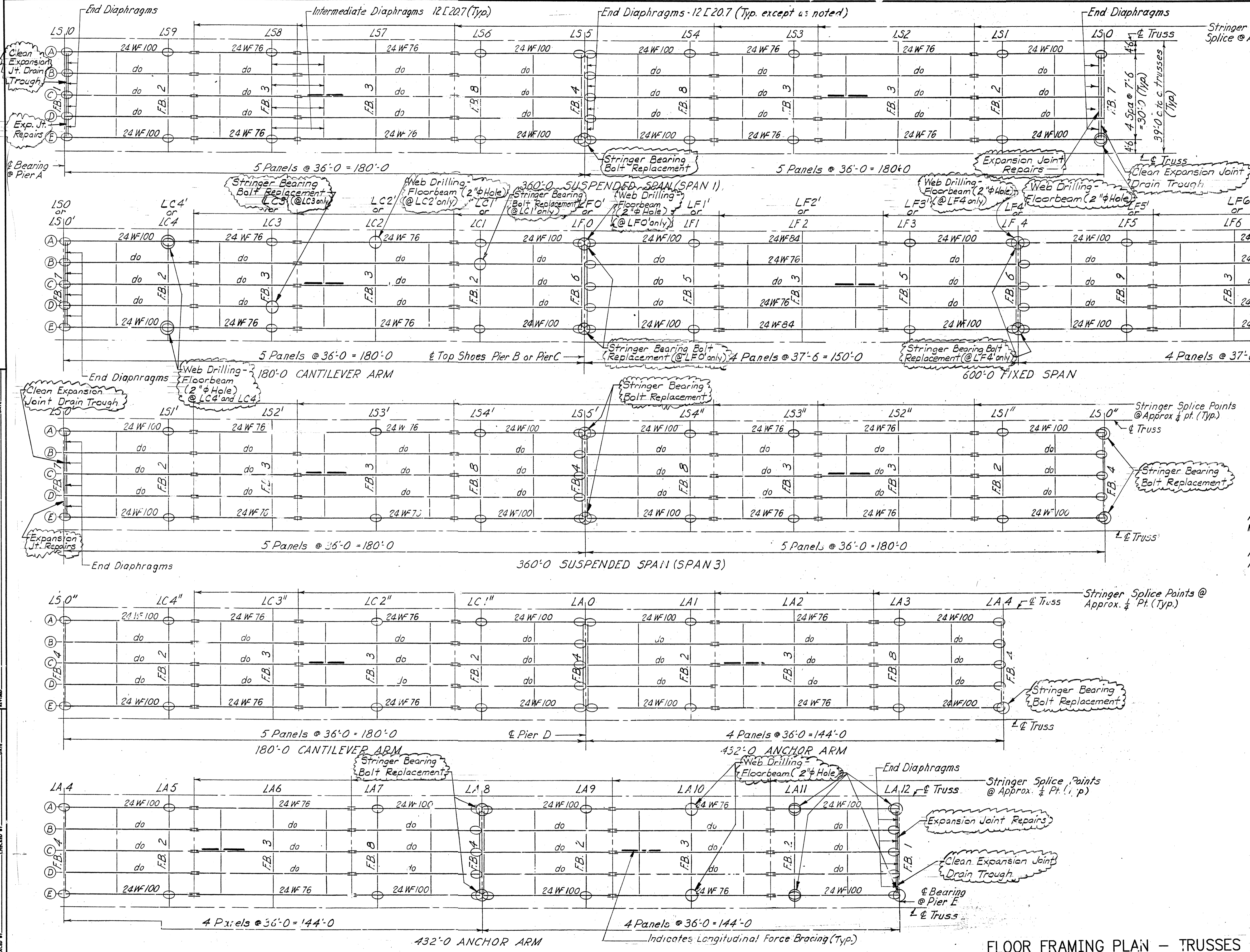
ROAD
P.E. PROJECT NO.

STATION
CONSTRUCTION PROJECT NO.

MAINTENANCE PROJECT NO.

DRAWING NO.
22827

UPDATE DATE _____
 LETTING DATE _____



TEMPORARY SUPPORT LOADS FOR REPAIRING STRINGERS AND BEARING PLATES AT PIERS A AND E

	D.L.	L.L.	Total
At Pier A and E: Main Span - Str. A & E	17 Kips	24 Kips	41 Kips
Str. B, C & D	14 Kips	39 Kips	53 Kips
At Pier E: Approach Span - Str. B, C & D	8 Kips	31 Kips	39 Kips

NOTE:
 ○ indicates expansion bearing

DESIGNED BY: AR & DRH
 CHECKED BY: PNP
 DATE: 10-91

REPAIRS TO BRIDGE ON US 41(SB) OVER OHIO RIVER SHEET 5

COMMONWEALTH OF KENTUCKY
 DEPARTMENT OF HIGHWAYS
 FRANKFORT
 COUNTY OF
HENDERSON
 HENDERSON-EVANSVILLE, IND.

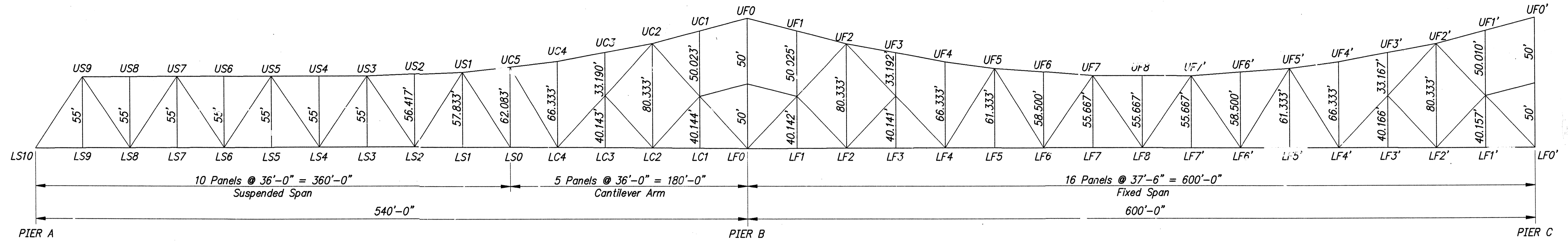
ROAD
 P. E. PROJECT NO. _____

STATION
 CONSTRUCTION PROJECT NO. _____ MAINTENANCE PROJECT NO. _____

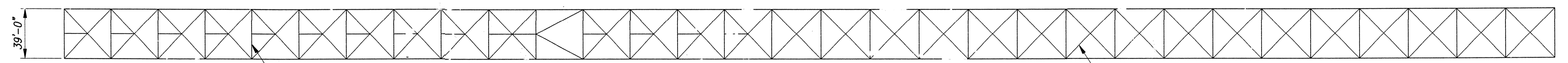
DRAWING NO.
22827

FLOOR FRAMING PLAN - TRUSSES

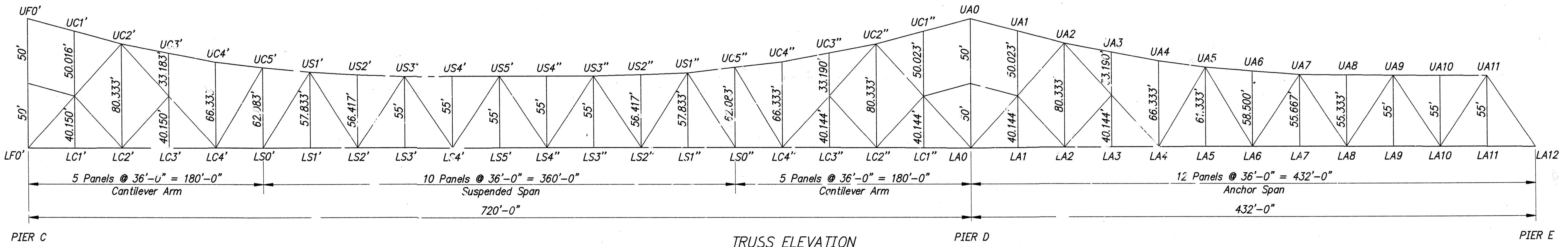
UPDATE DATE
LETTING DATE



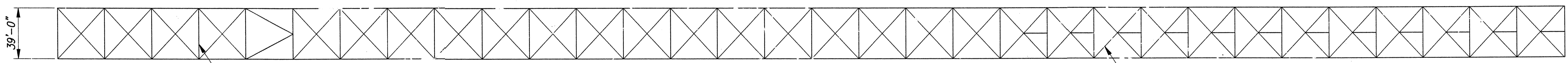
TRUSS ELEVATION



PLAN BOTTOM LATERALS



TRUSS ELEVATION



PLAN BOTTOM LATERALS

NOTE: Stringers are not shown.
For stringer spacings,
see sheet 5.

REPAIRS TO BRIDGE ON
US41 (SB) OVER OHIO RIVER SHEET 6

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
 FRANKFORT
 COUNTY OF
HENDERSON
 HENDERSON-EVANSVILLE, IND.

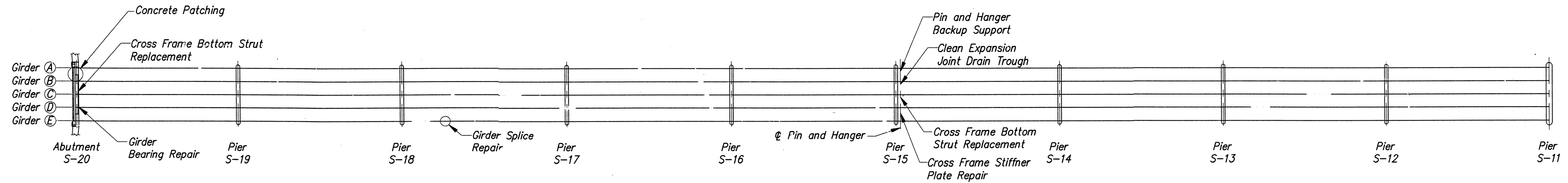
ROAD
 P.E. PROJECT NO.

STATION
 CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO.
 22827

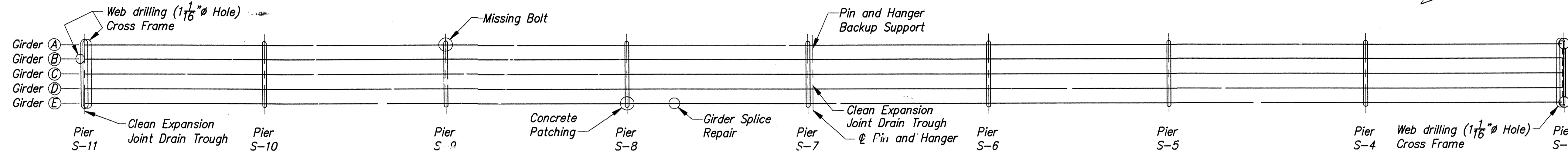
TRUSS FRAMING PLAN

DESIGNED BY: DRH
 CHECKED BY: PNP
 DATE: 10-91

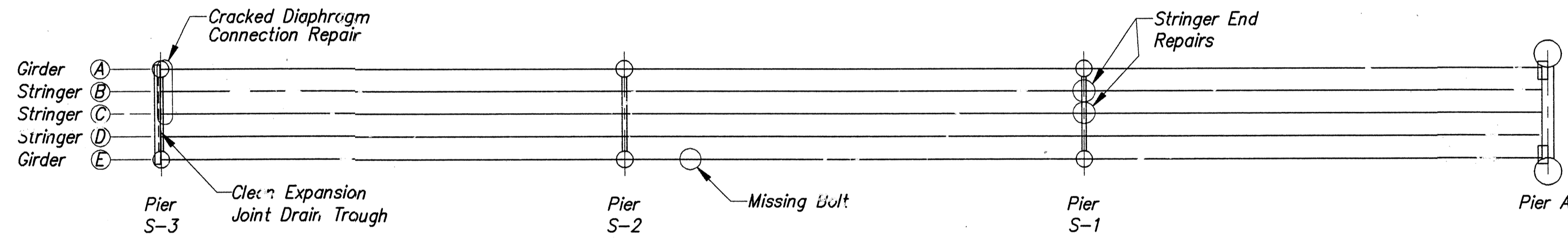
UPDATE DATE
LETTING DATE



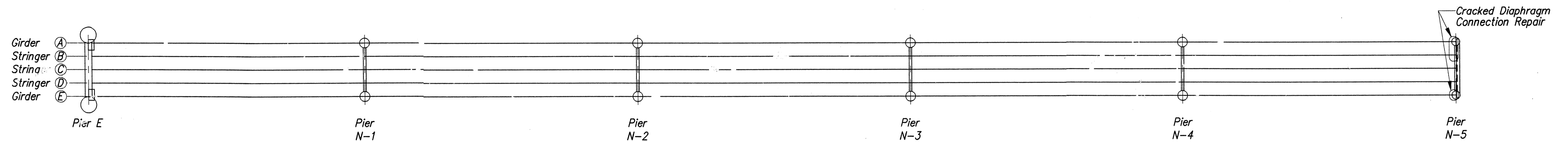
PART PLAN - SOUTH APPROACH - UNITS 5 & 4



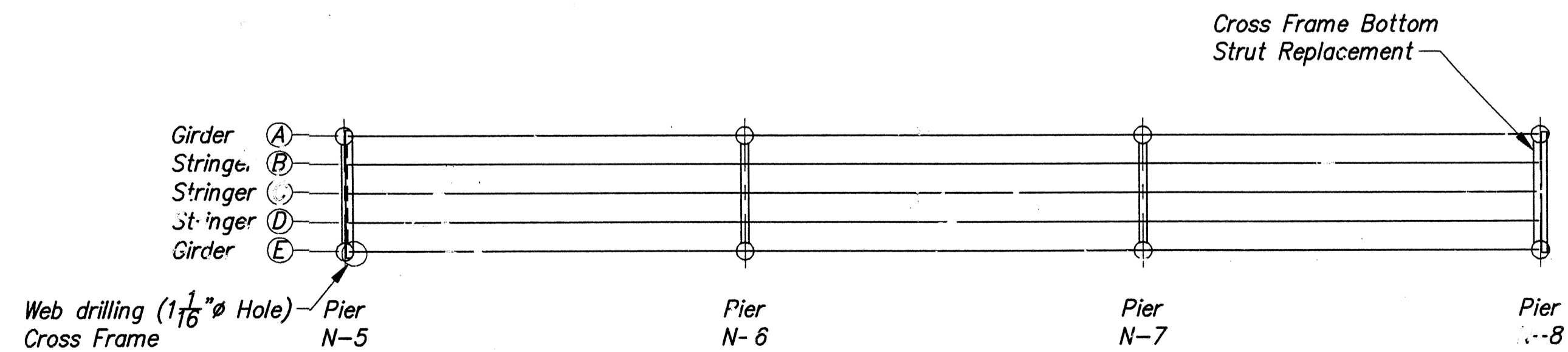
PART PLAN - SOUTH APPROACH - UNITS 3 & 2



PART PLAN - SOUTH APPROACH - UNIT 1



PART PLAN - NORTH APPROACH - UNIT 1



PART PLAN - NORTH APPROACH - UNIT 2

FRAMING PLAN - APPROACHES

DESIGNED BY: DRH	CHECKED BY: DRH	DATE: 10-91
REVISIONS:	DATE:	BY:

REPAIRS TO BRIDGE ON
US 41 (SB) OVER OHIO RIVER

SHEET 7

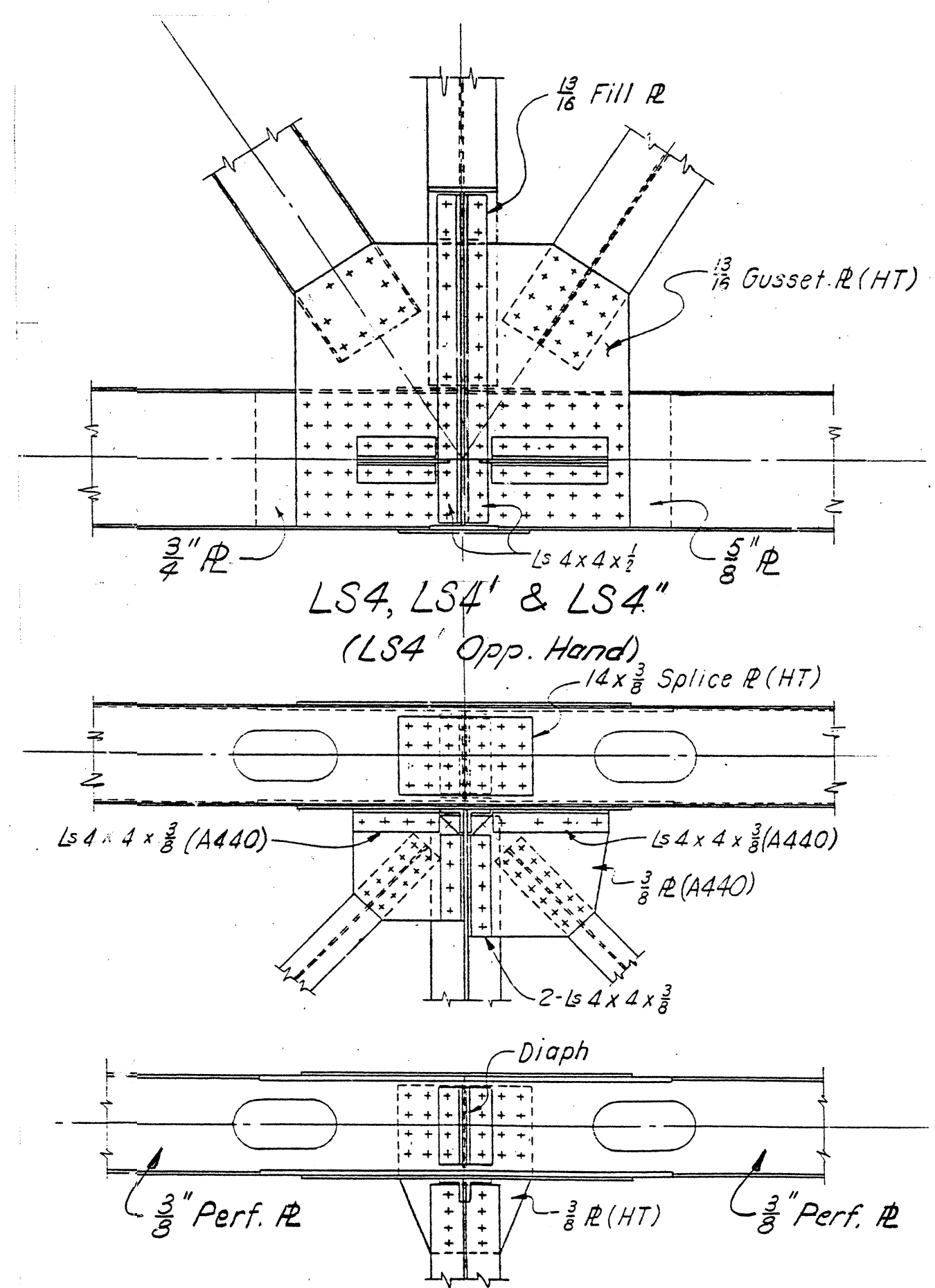
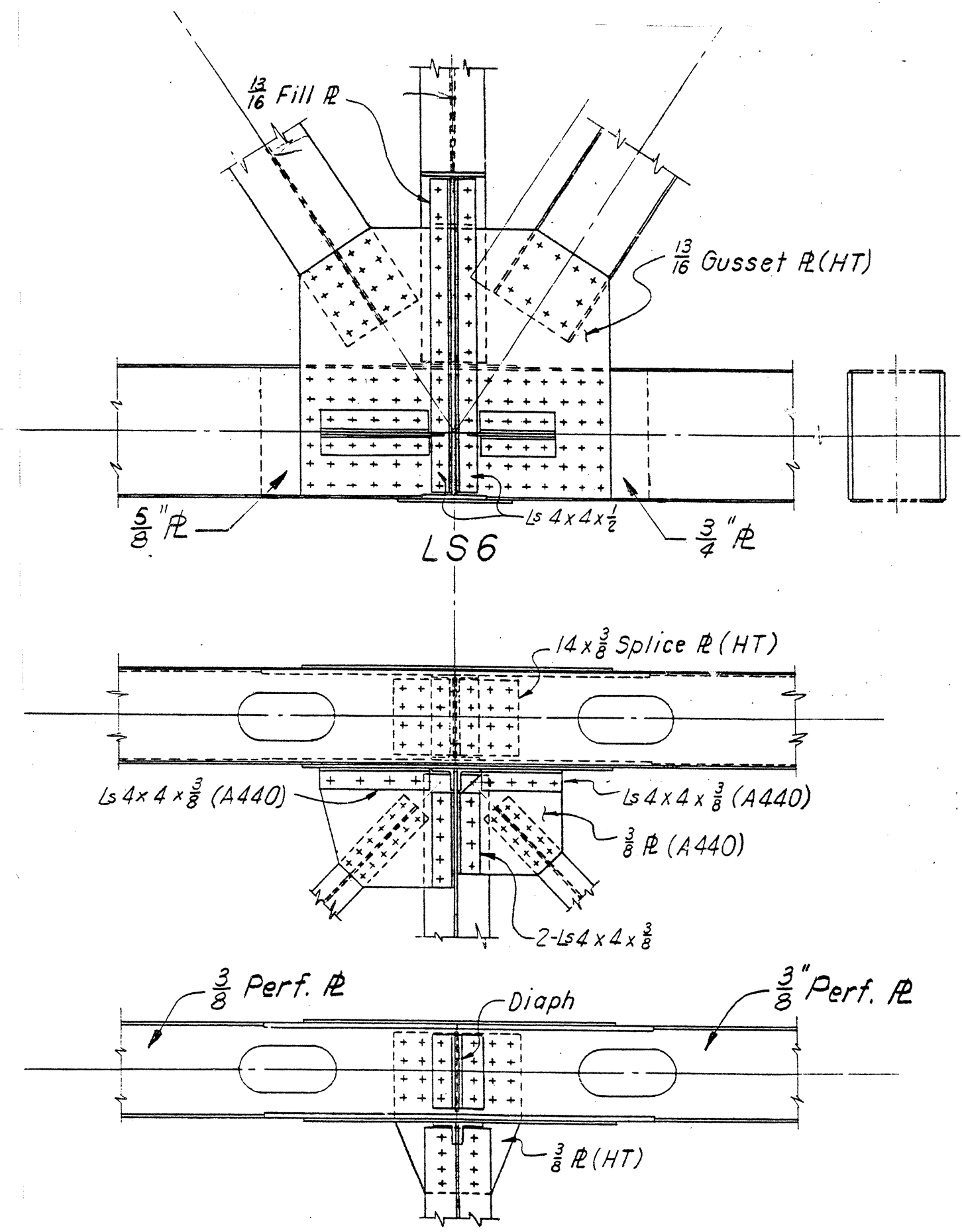
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANSVILLE, IND.

ROAD P.E. PROJECT NO.
CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO.

DRAWING NO. 22827

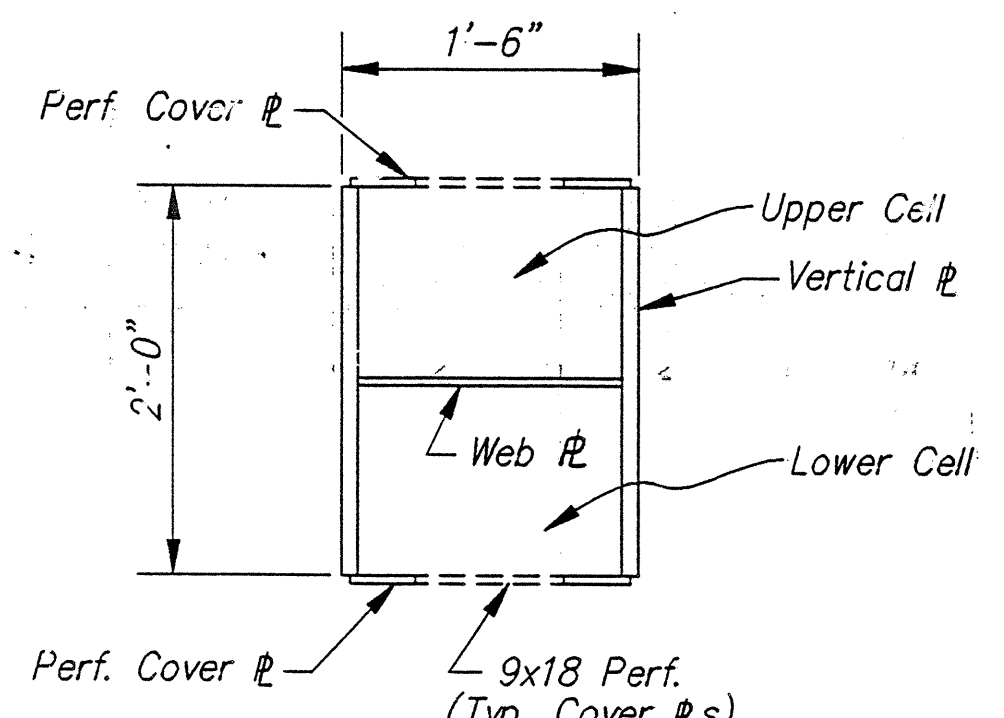
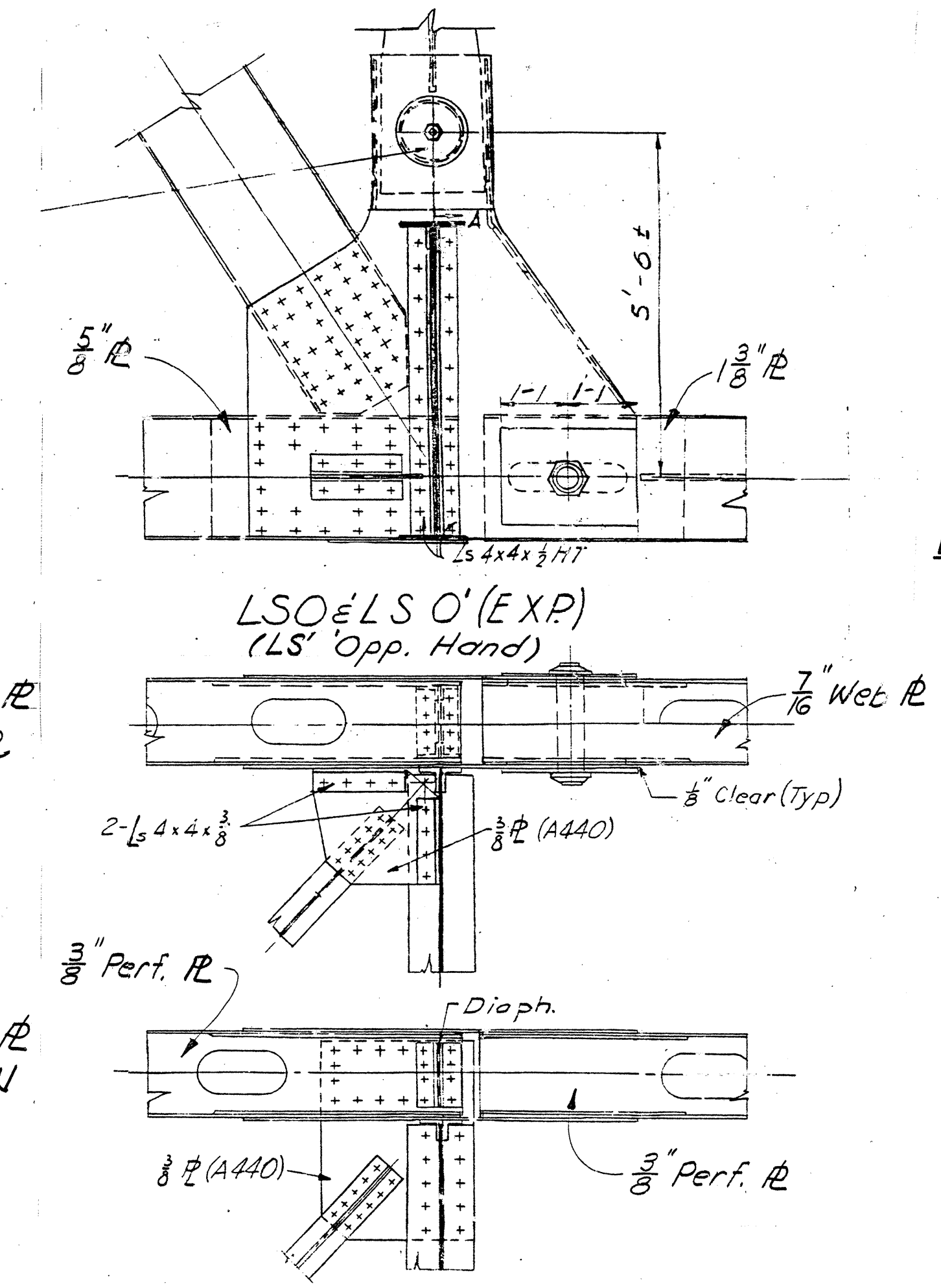
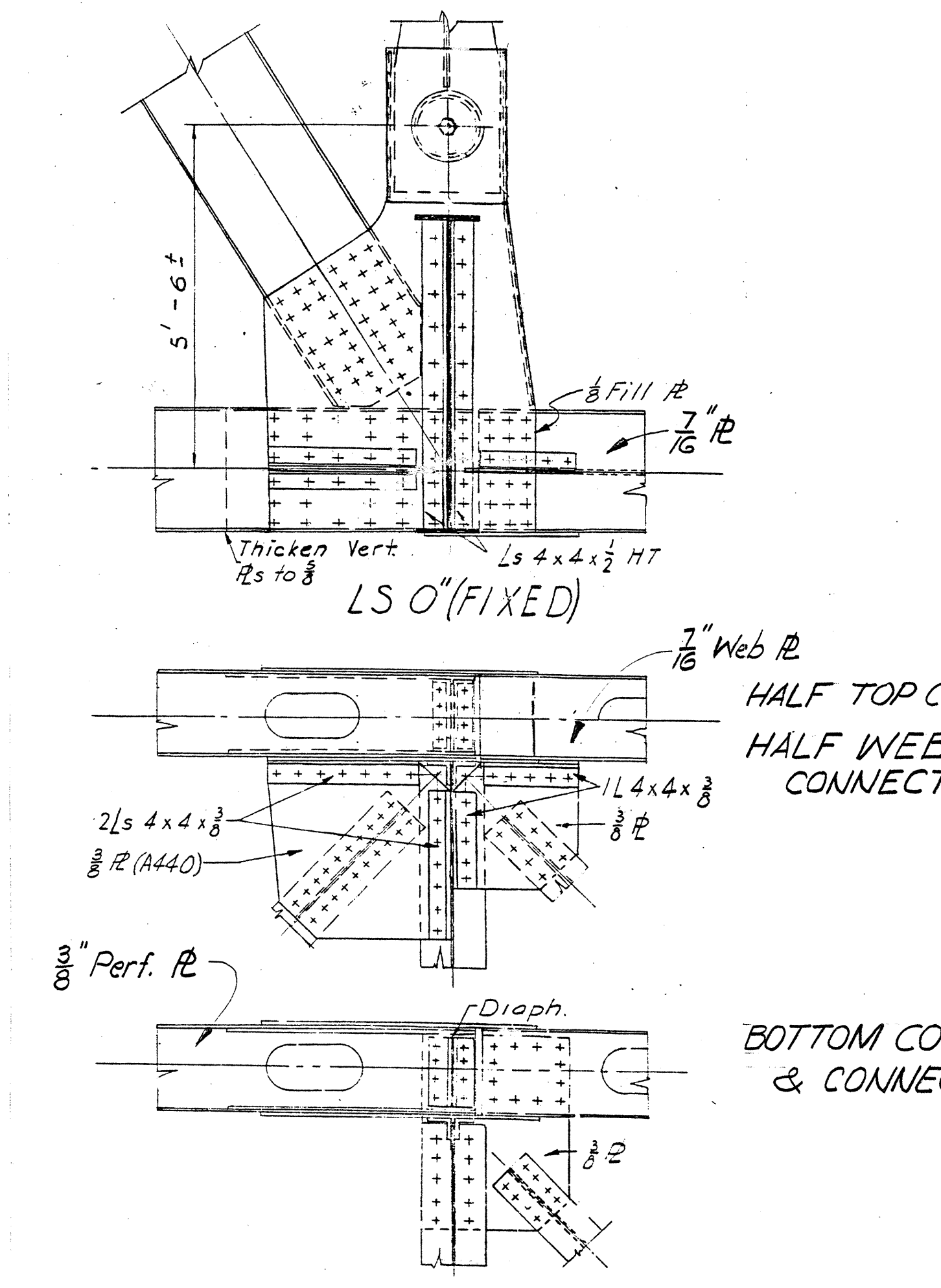
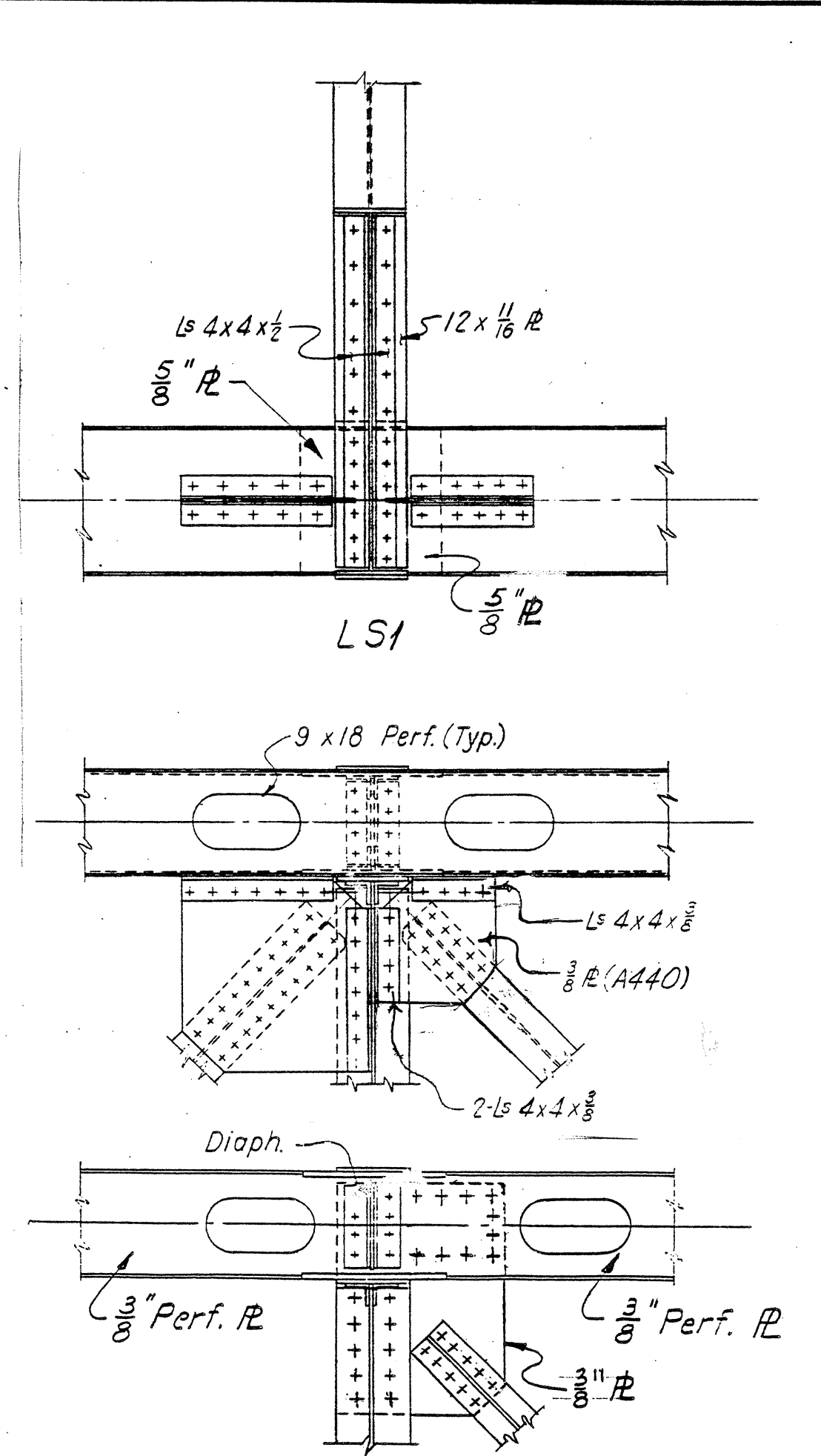
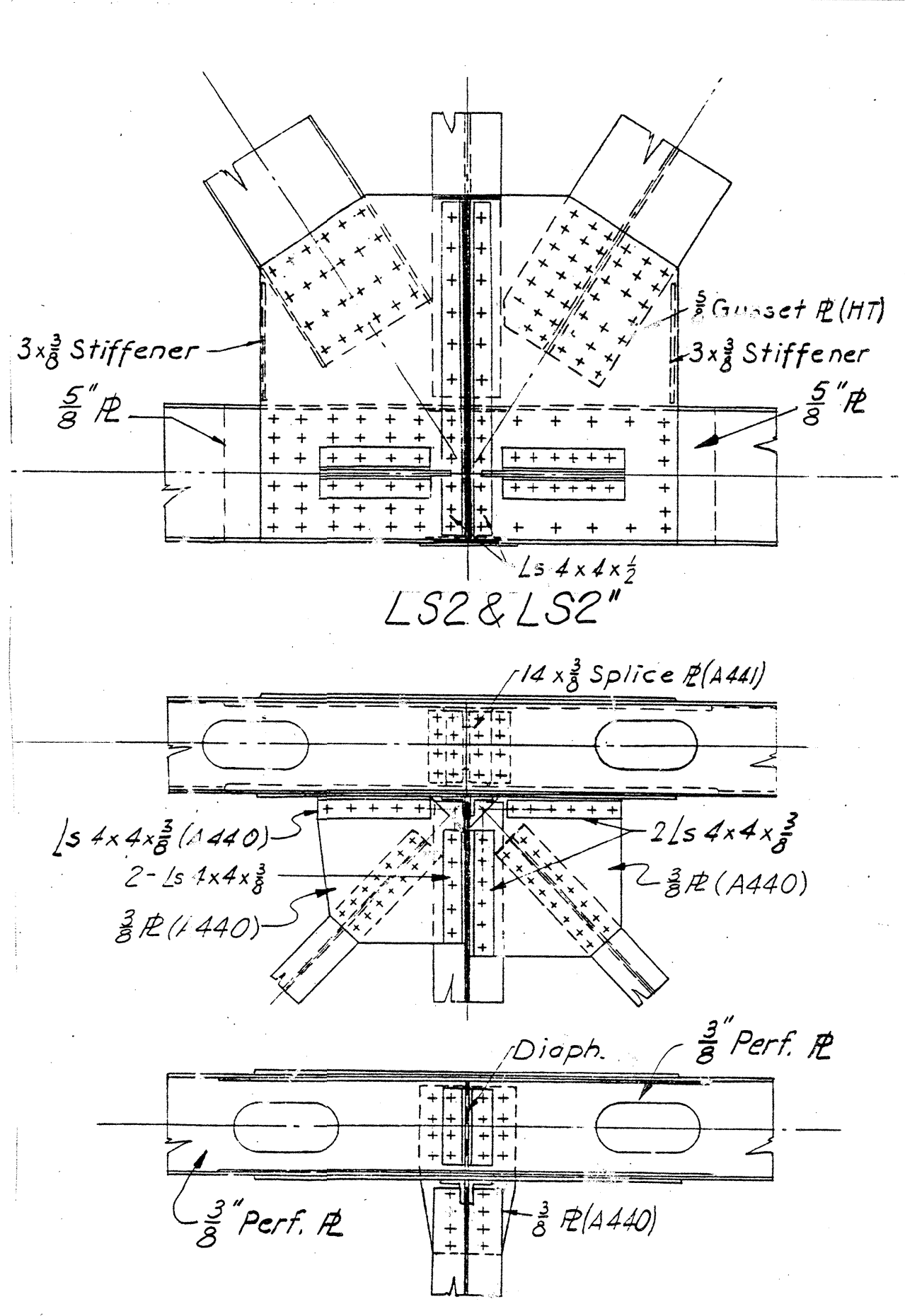
UPDATE DATE
LETTING DATE

DESIGNED BY: PNP
CHECKED BY: PNP
DATE: 10-91
TRACED BY: PNP
DATE: 10-91

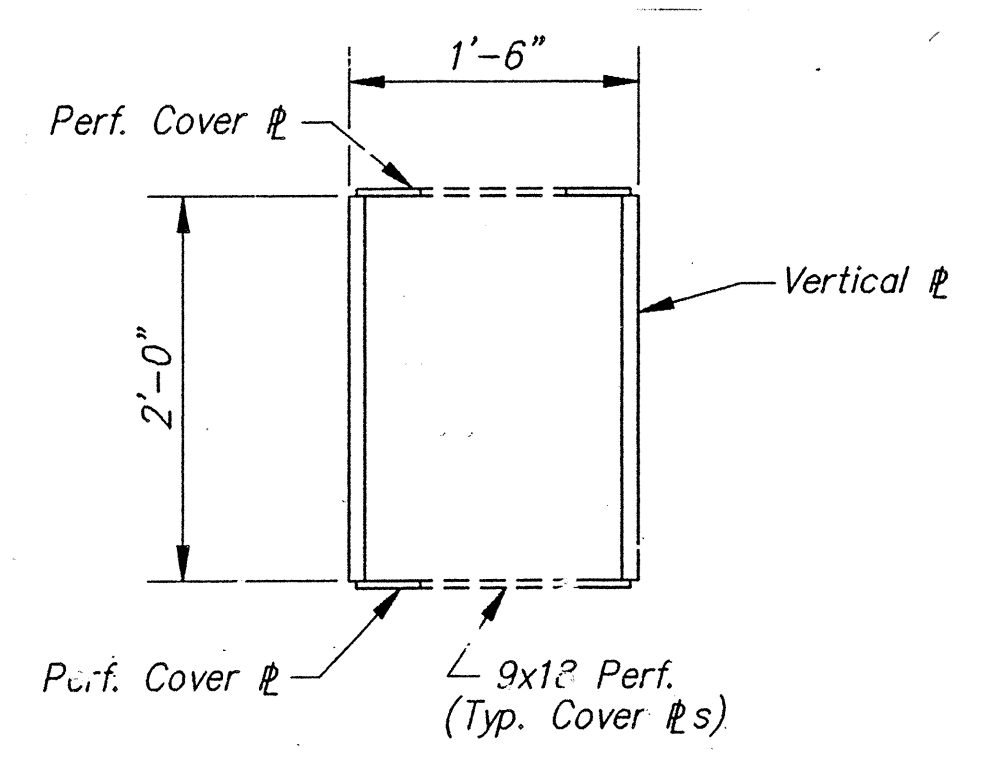


TOP COVER PLATE & CONNECTION

BOTTOM COVER PLATE & CONNECTION



BOTTOM CHORDS - CANTILEVER ARMS, FIXED & ANCHOR SPANS



BOTTOM CHORDS - SUSPENDED SPANS

PANEL POINT LOCATION	APPROXIMATE NUMBER OF BOLT REPLACEMENTS						TOTAL
	BOTTOM COVER PLATE		VERTICAL SIDE PLATES				
	NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	NORTH SIDE OF PANEL POINT EAST FACE WEST FACE	SOUTH SIDE OF PANEL POINT EAST FACE WEST FACE			
LS0E		10			2	2	14
LS1E	14		1	1			16
LS2E	8		3	3			14
LS4E		4					4
LS4W	4						4
LS6E	12	12					25
LS0'E	6					1	6
LS4'E	4						4
LS4'W		12					12
LS2'E		4					4
LS2'W	8						8
LS0"E	1						1
LS0'W		4					4
LS0"W		4					4

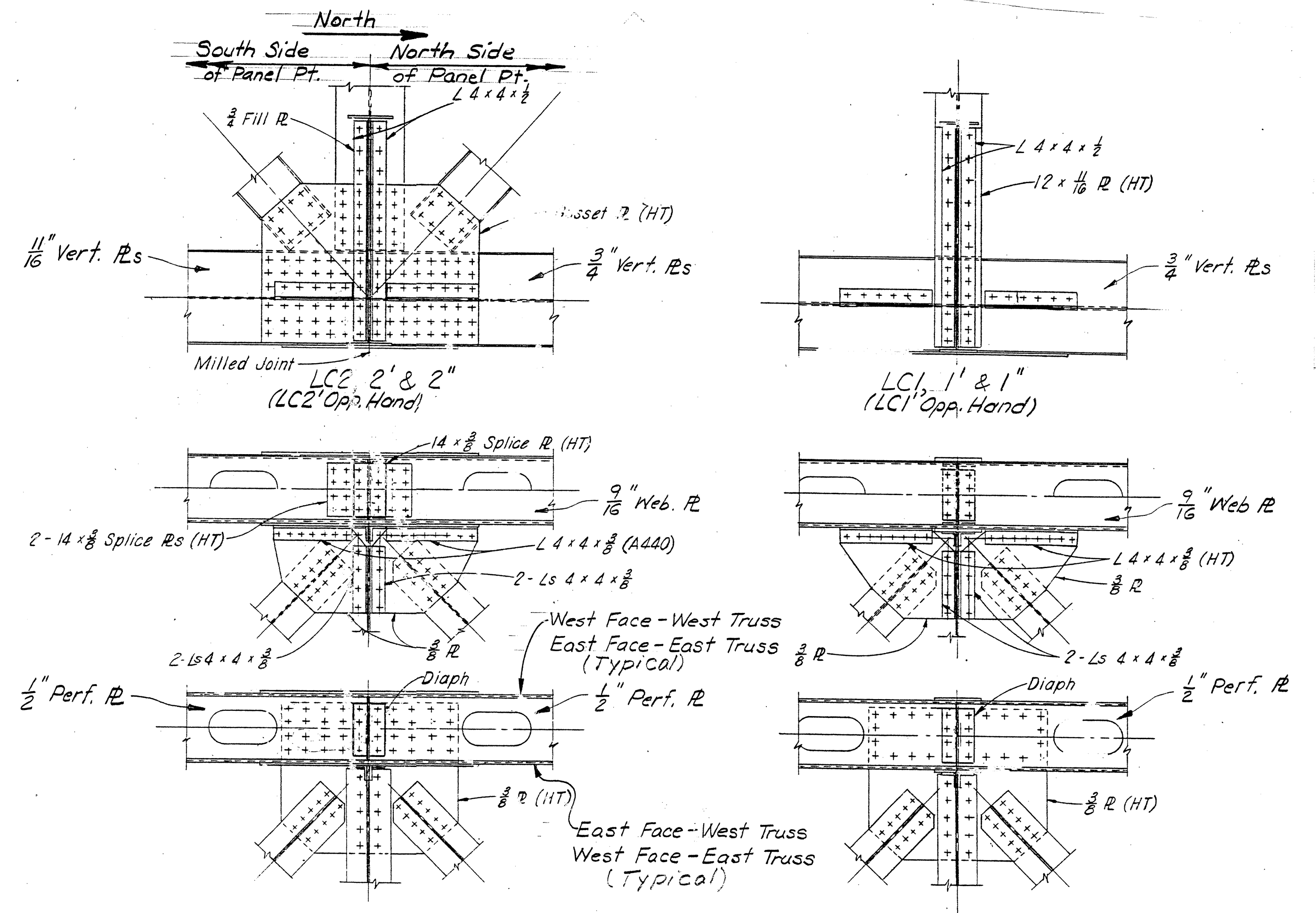
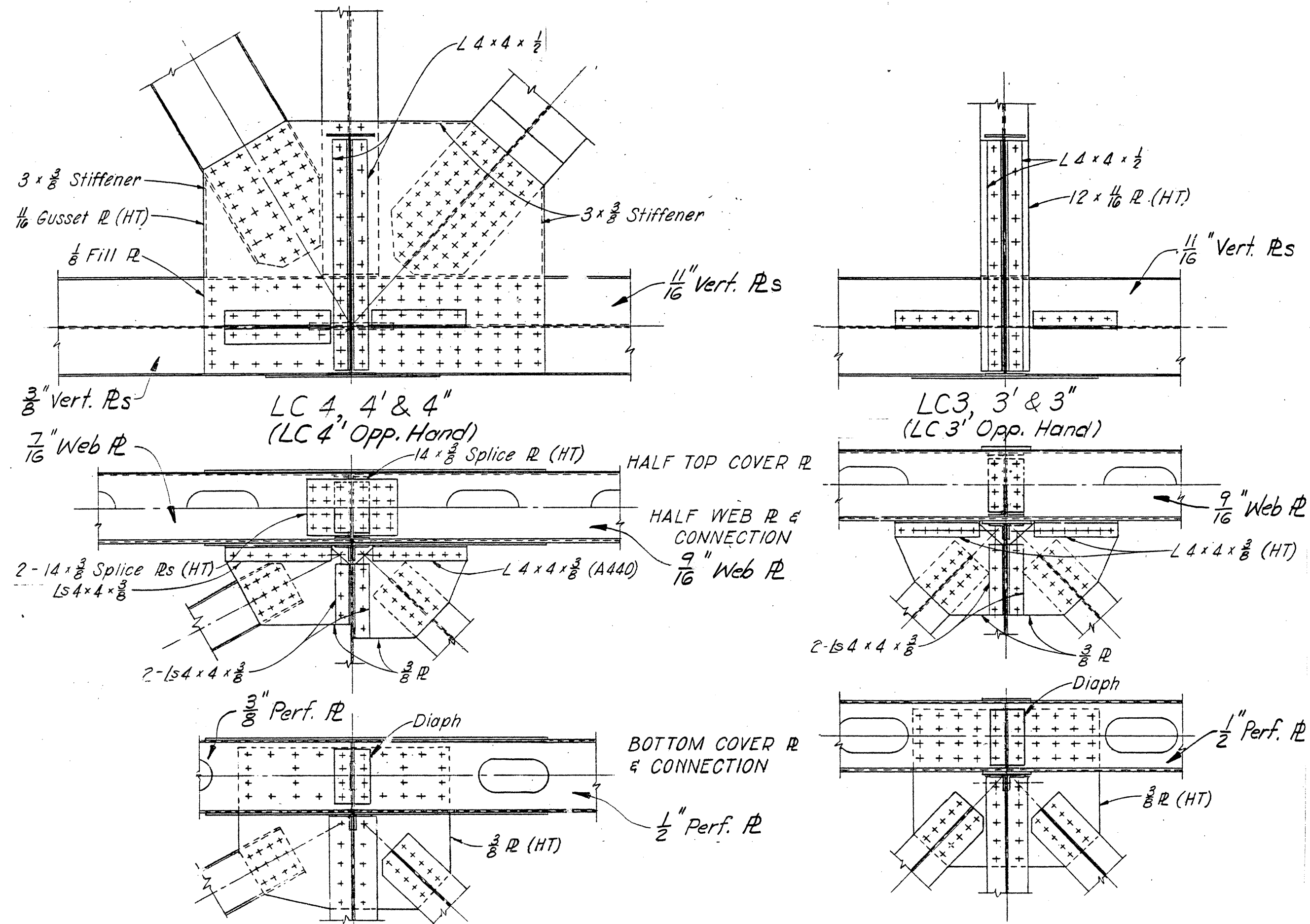
Note: See Location Sketch on next sheet.

TRUSS JOINT REPAIRS

REPAIRS TO BRIDGE ON US 4(SB) OVER OHIO RIVER SHEET 8

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANVILLE, IND.
ROAD
STATION P. E. PROJECT NO.
CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO. 22827

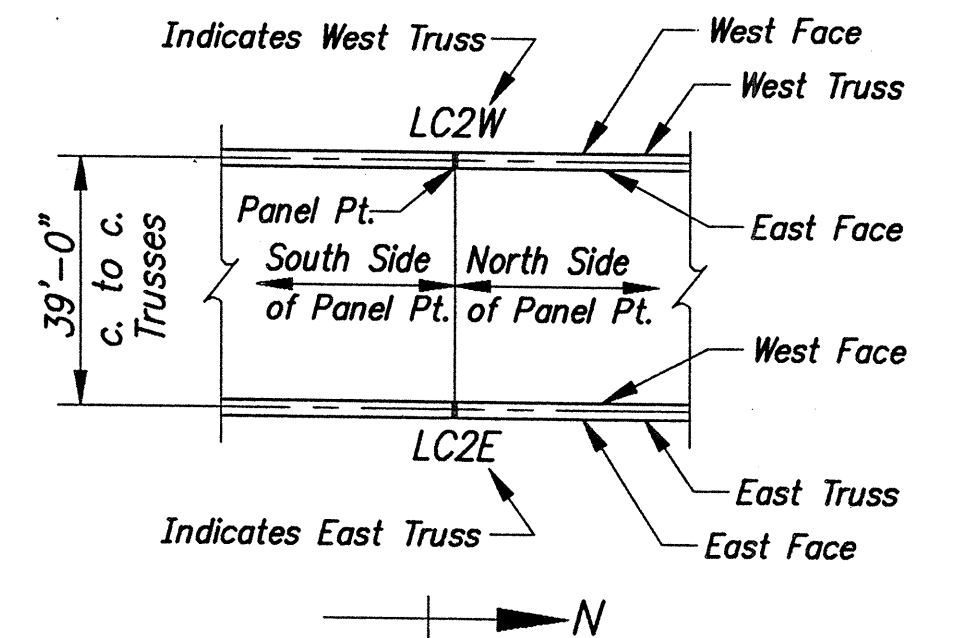
UPDATE DATE
LETTING DATE



APPROXIMATE NUMBER OF BOLT REPLACEMENTS

PANEL POINT LOCATION	BOTTOM COVER PLATE		VERTICAL SIDE PLATES (LOWER CELL)				VERTICAL SIDE PLATES (UPPER CELL)				HORIZONTAL WEB PLATE		TOTAL
	NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	
			EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE			
LC4E	14	14	2	3	4	4*							41
LC4W				1									1
LC3E	12	16	1	1	1	3*							34
LC3W							2	1			4	4	11
LC2E	20	20	2	2	4	5*							53
LC2W	20	16		1									37
LC1E	14	14	1	1	1	1					4	4	40
LC1W	7						2	1	1	1	4	4	20
LC4'E	14	16	7		6								43
LC4'W	14	16											30
LC3'E	7	8	3		3							1	22
LC3'W		2									4	4	10
LC2'E	10	8	12	4	3							3	40
LC2'W	20	12					1	2		2	12	12	61
LC1'E	8	4			2						4	4	22
LC1'W								1	1	1	4	4	11
LC4"E	12	14	6		3	3							41
LC4"W	1	14											15
LC3"E	8	6	6										20
LC3'W		8											8
LC2"E	16	12	6		8								42
LC2'W	12	20											32
LC1"E	6	6	3		2								17
LC1'W		6											6

*Deteriorated bolts are located in more than one row.



TYPICAL LOCATION SKETCH
(Shown @ LC2 - also see LC2 above)

REPAIRS TO BRIDGE ON US 41(SB) OVER OHIO RIVER SHEET 9

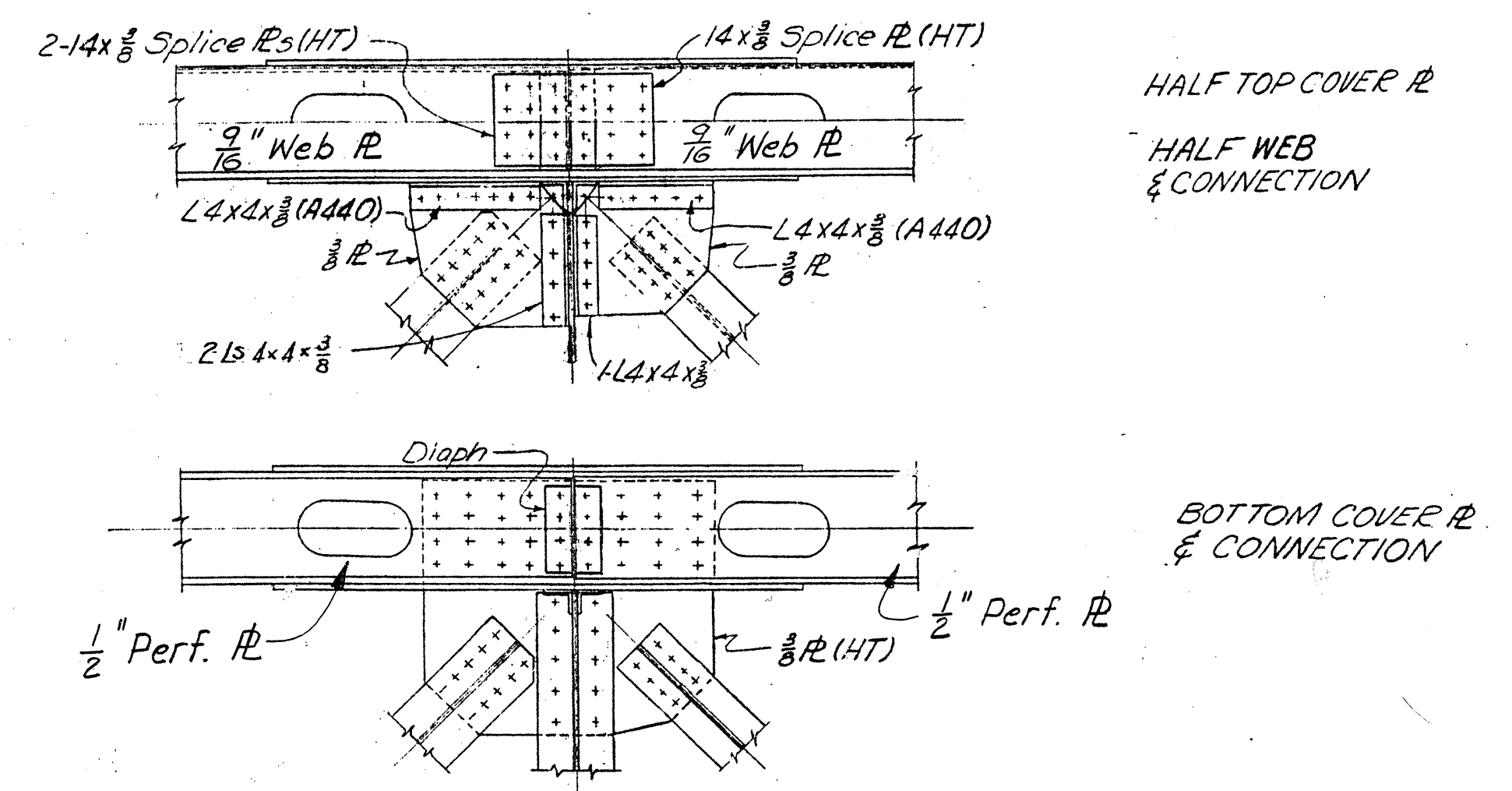
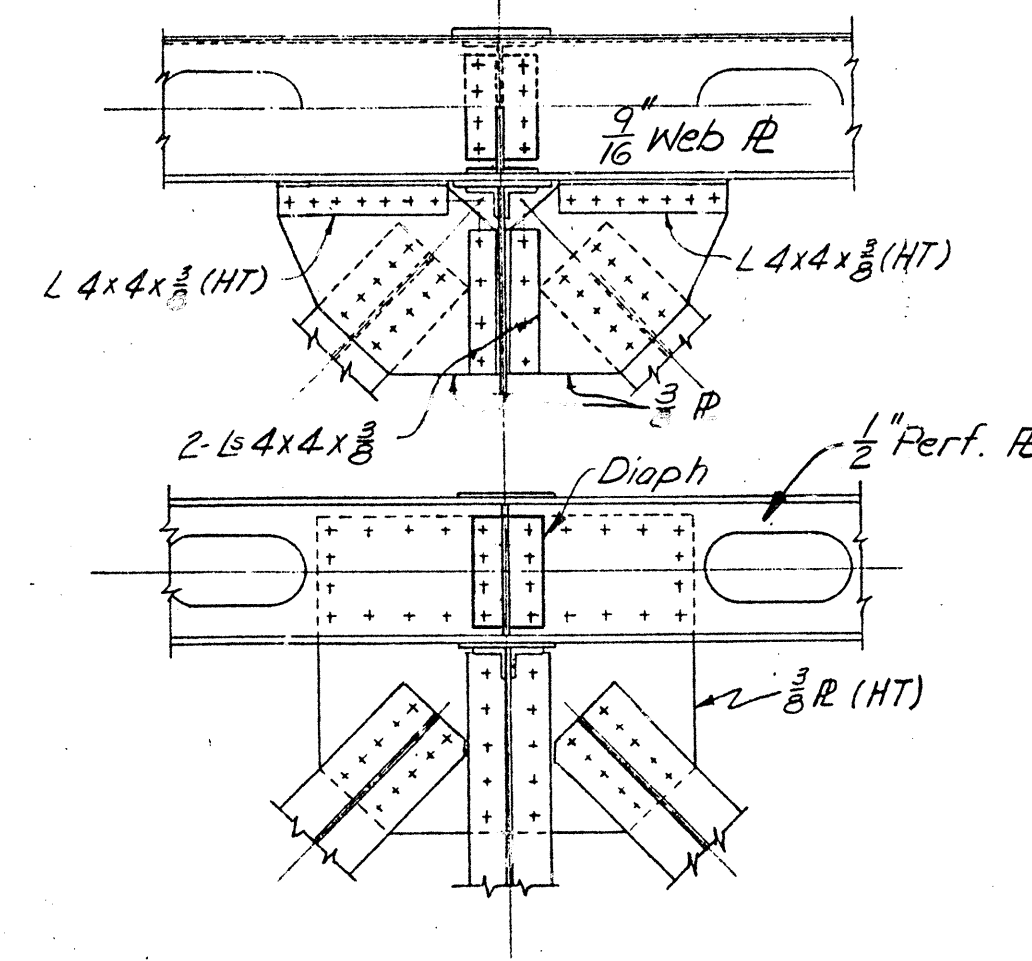
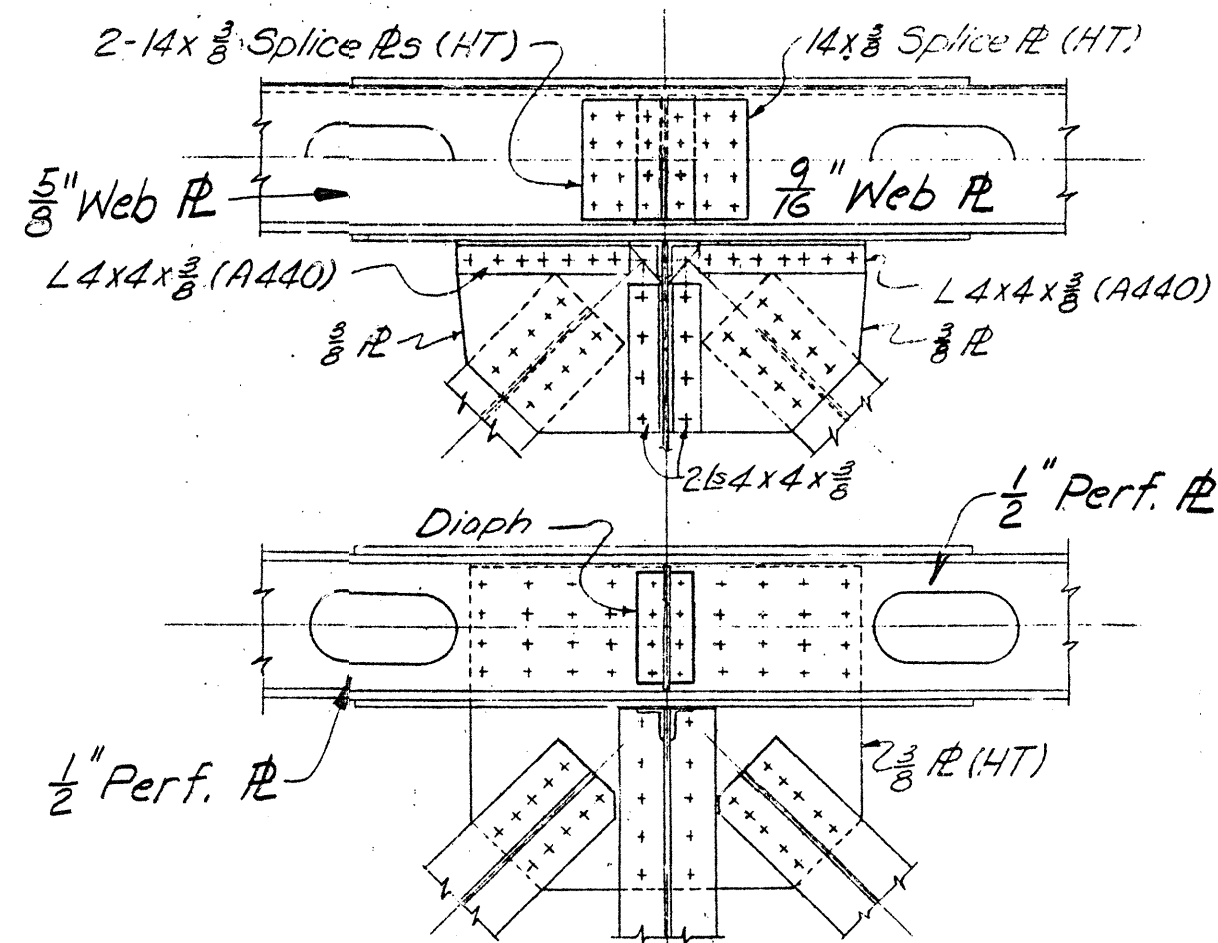
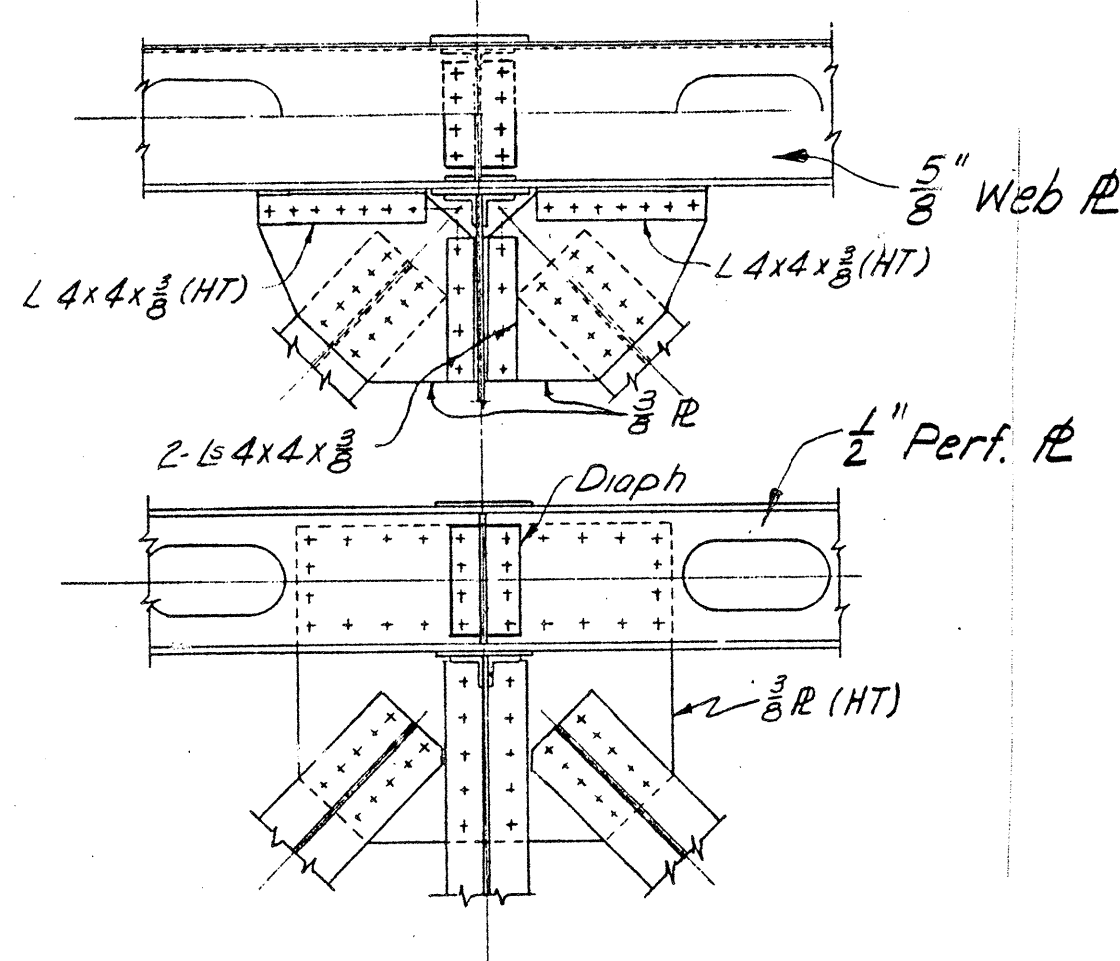
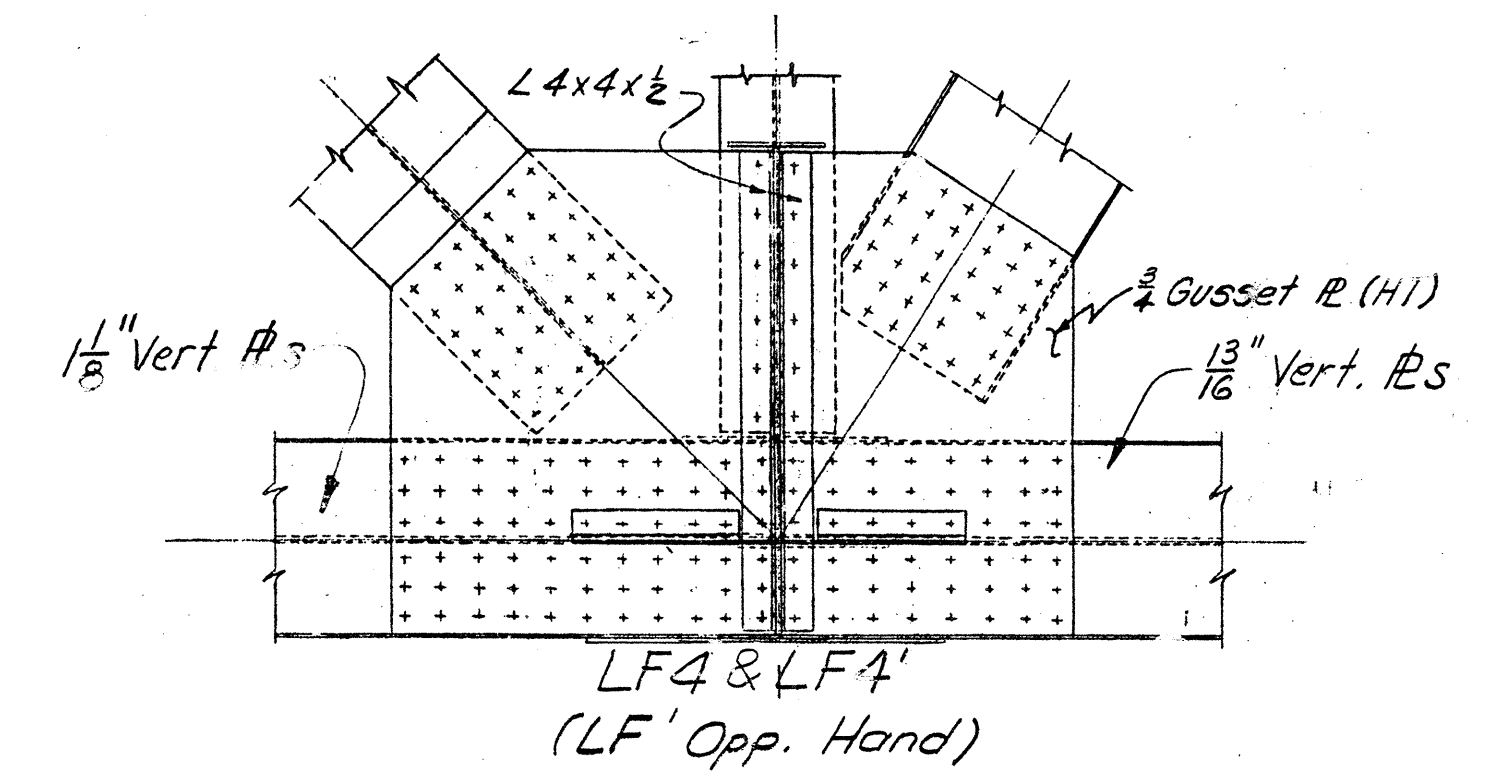
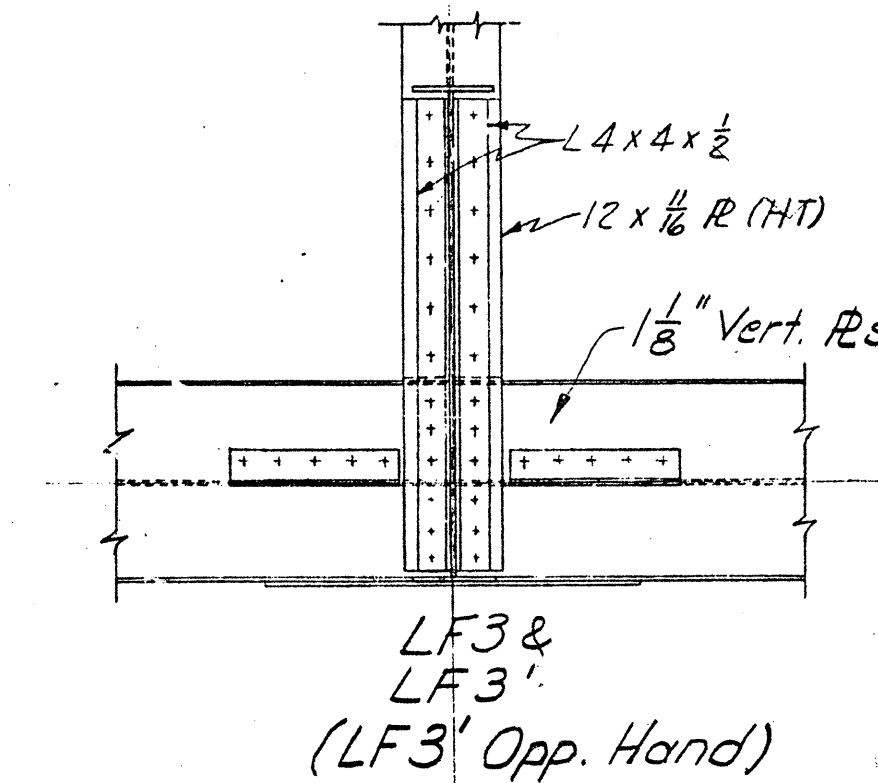
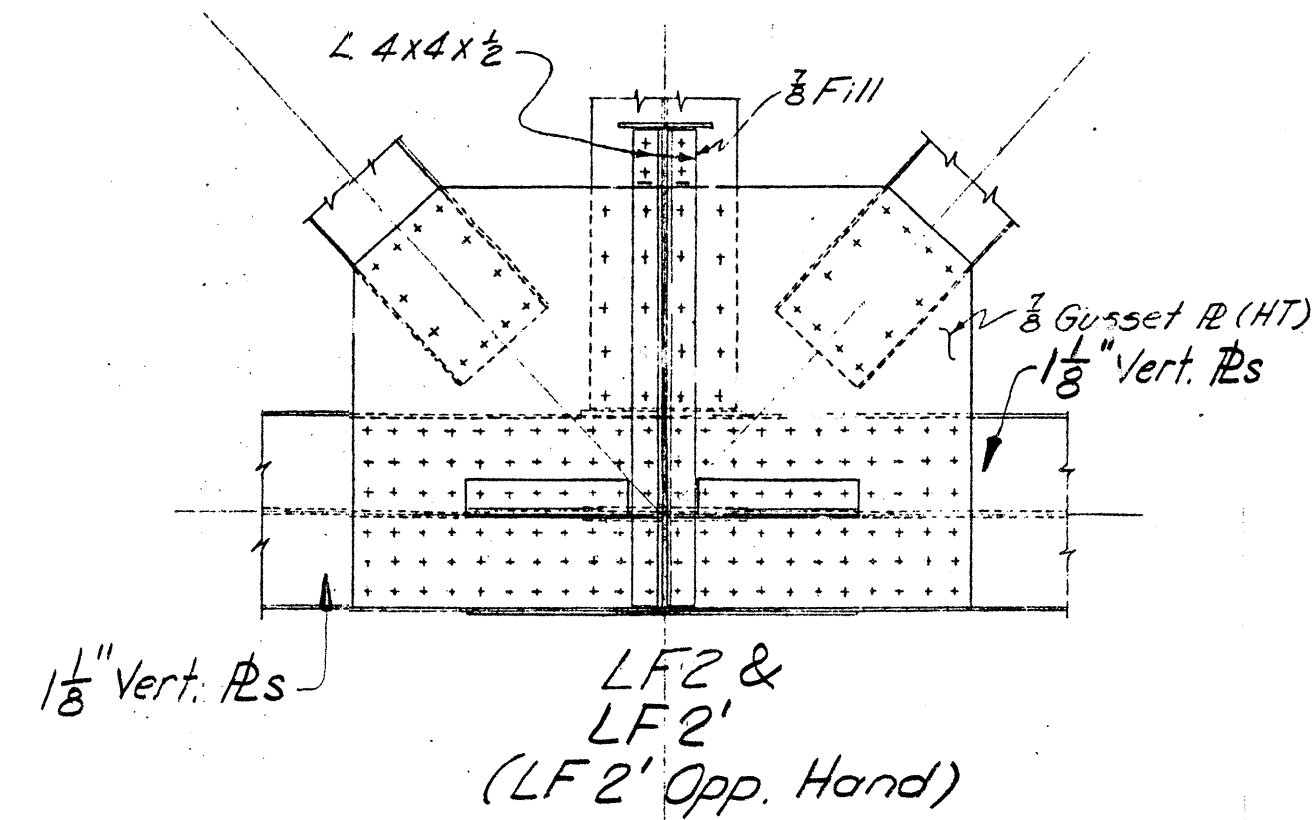
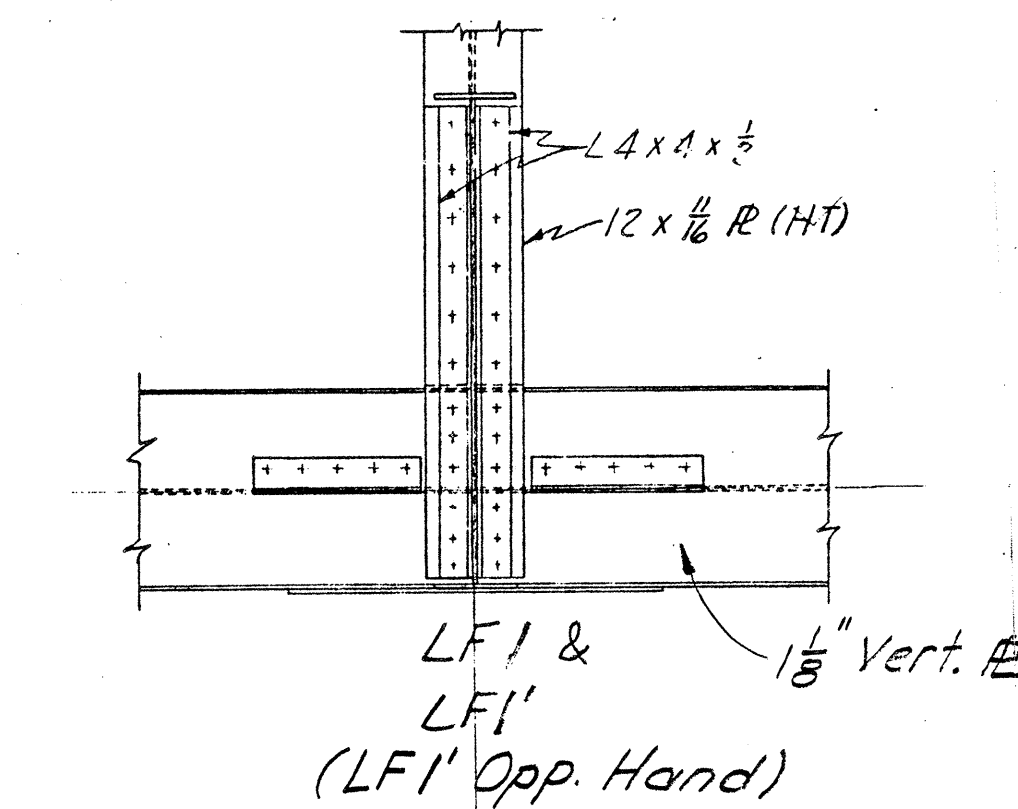
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANVILLE, IND.

ROAD
P. E. PROJECT NO.

STATION
CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO. 22827

TRUSS JOINT REPAIRS

UPDATE DATE
LETTING DATE



LOOSE OR MISSING BOLT REPLACEMENTS

LOCATION	NO. OF LOOSE OR MISSING BOLTS	DESCRIPTION
Pier S-9	1	Girder "A" diaphragm connection.
5th Floorbeam South of Pier S-1	1	SE end of floorbeam at connection into Girder "E"
US8 East	4	Top north lateral connection.
US7 East	1	Top south lateral connection, bottom gusset plate, east connection angle.
UF5 East	1	East face of truss connection.
MF3 East	1	Lower vertical, upper connection, 2nd bolt up from bottom of gusset plate.
LS3" East	2	North side of panel point, connection of web plate and east vertical plate.
US1" West	1 ^Δ	South lateral connection, bottom gusset plate, north bolt.
LS0"	1	South side of floorbeam, west face of stringer #3, diaphragm connection.
UA0 East	1	Northeast side of truss, the north bolt at the connection of the upper chord to the stay plate.
UA5 East	4	Top gusset plate connection.
UA7-UAB	5	Upper truss lateral connection at mid panel.
LA8	3	Truss connection, east face.

^Δ Missing Nut only.

APPROXIMATE NUMBER OF BOLT REPLACEMENTS

PANEL POINT LOCATION	BOTTOM COVER PLATE		VERTICAL SIDE PLATES (LOWER CELL)				VERTICAL SIDE PLATES (UPPER CELL)				HORIZONTAL WEB PLATE		TOTAL
	NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	
			EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE			
LF1E	6	6	1	1	1	1						4	20
LF1W											1	4	5
LF2E	20	16	4	3	3	3							49
LF2W	20	9	2	3									34
LF3W								1	1			4	10
LF4E	16	16										2	34
LF4W	16	15											31
LF1'E	4	4										4	12
LF1'W	4	4									4	4	16
LF2'E	20	12	4	4	6*	1							47
LF2'W	20	8		1									29
LF3'E	4	4								1		4	17
LF3'W	4	4									1	4	13
LF4'E	20	12	6	5	2	2						8	47
LF4'W	20	8	2	2					1		1	5	47

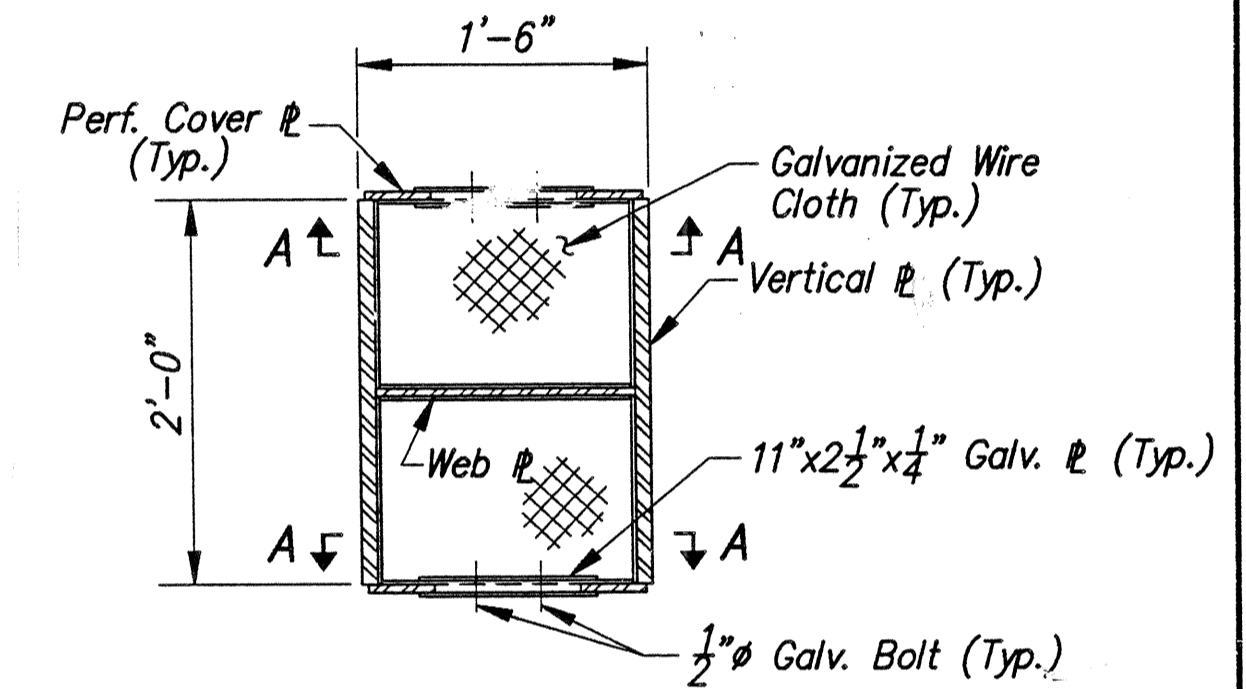
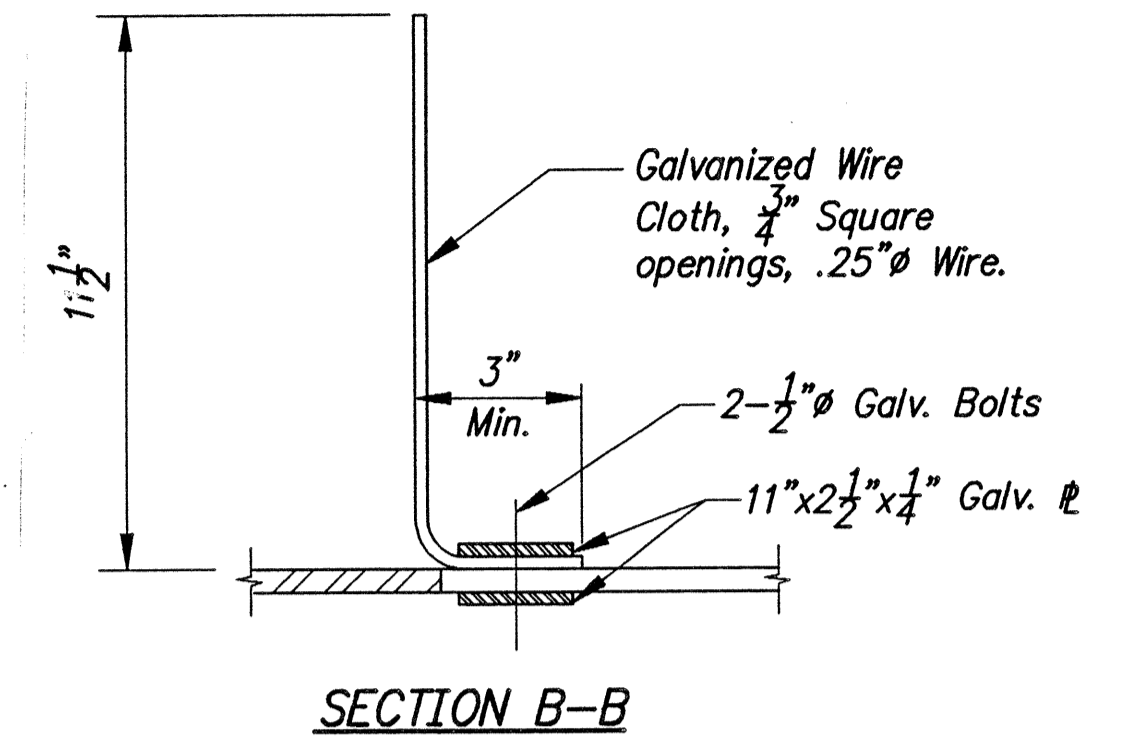
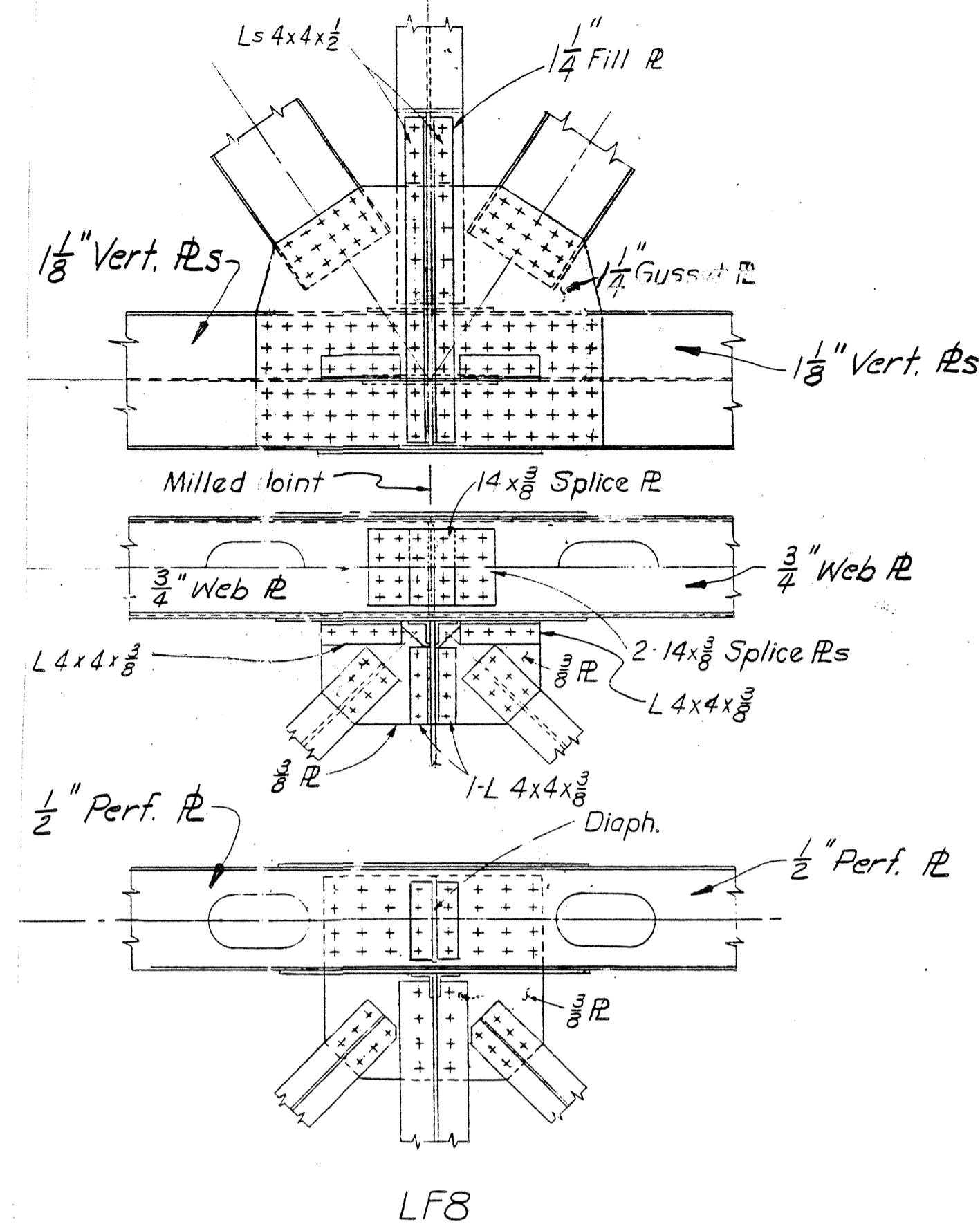
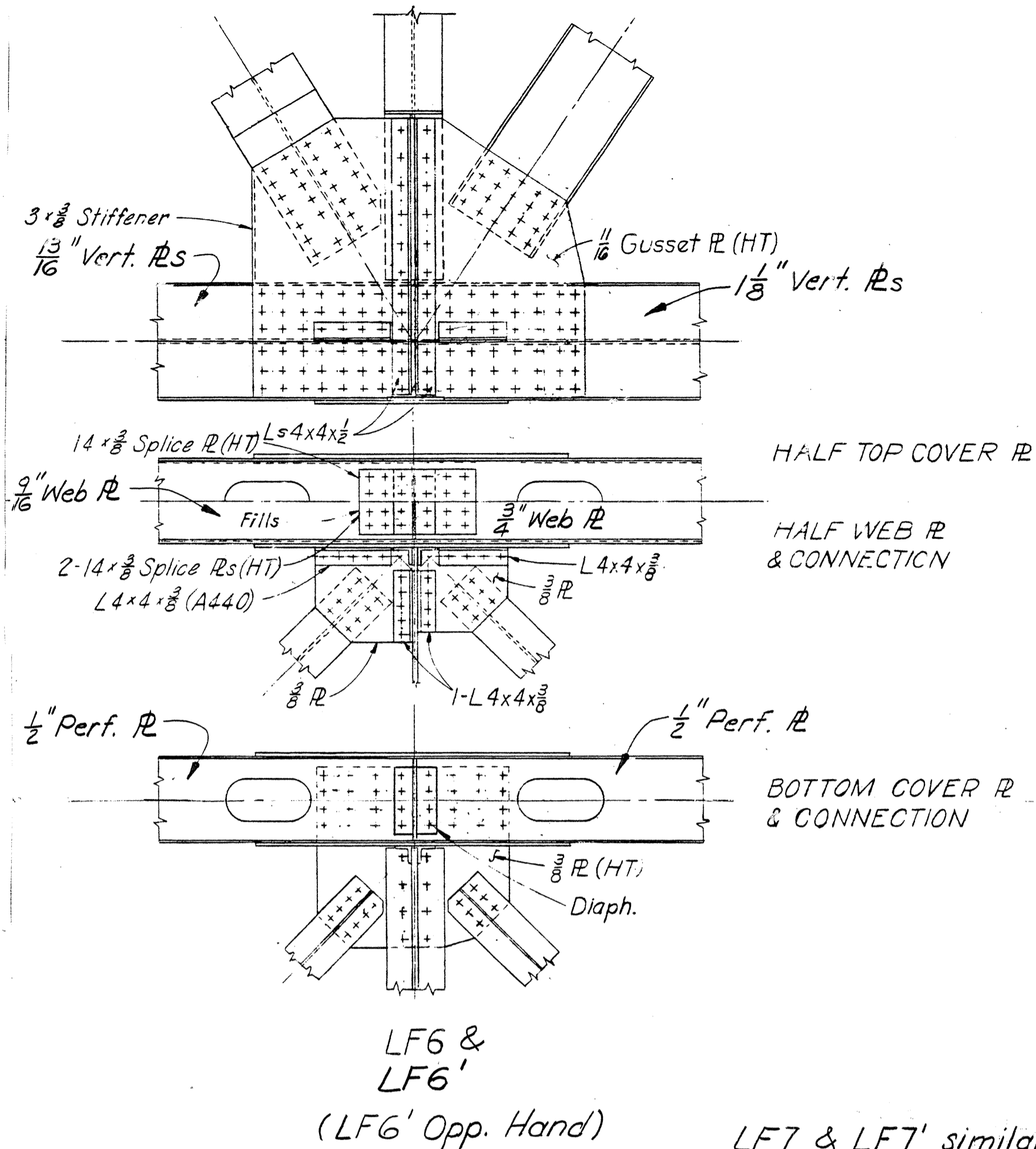
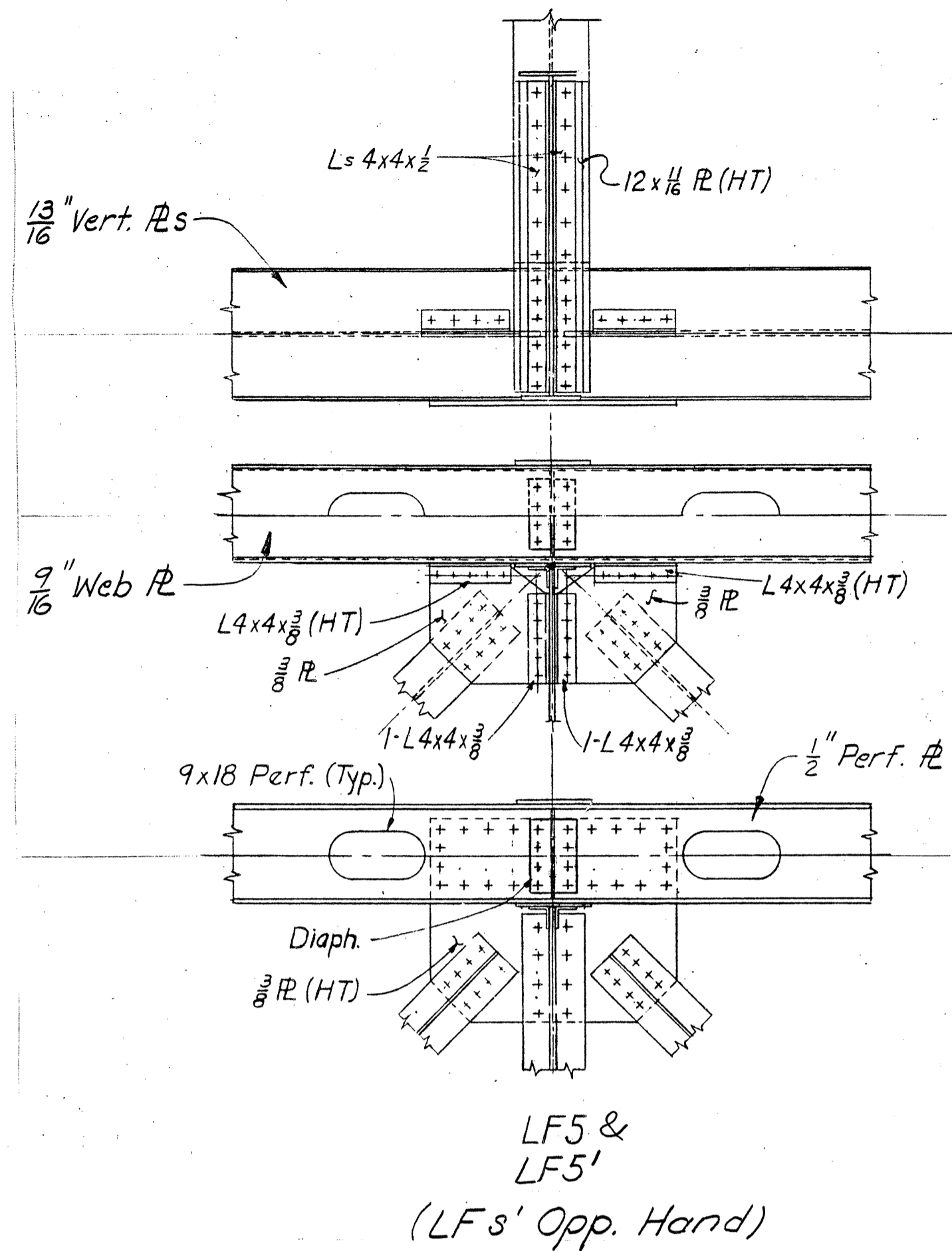
*Deteriorated bolts are located in more than one row.

REPAIRS TO BRIDGE ON US 41(SB) OVER OHIO RIVER SHEET 10

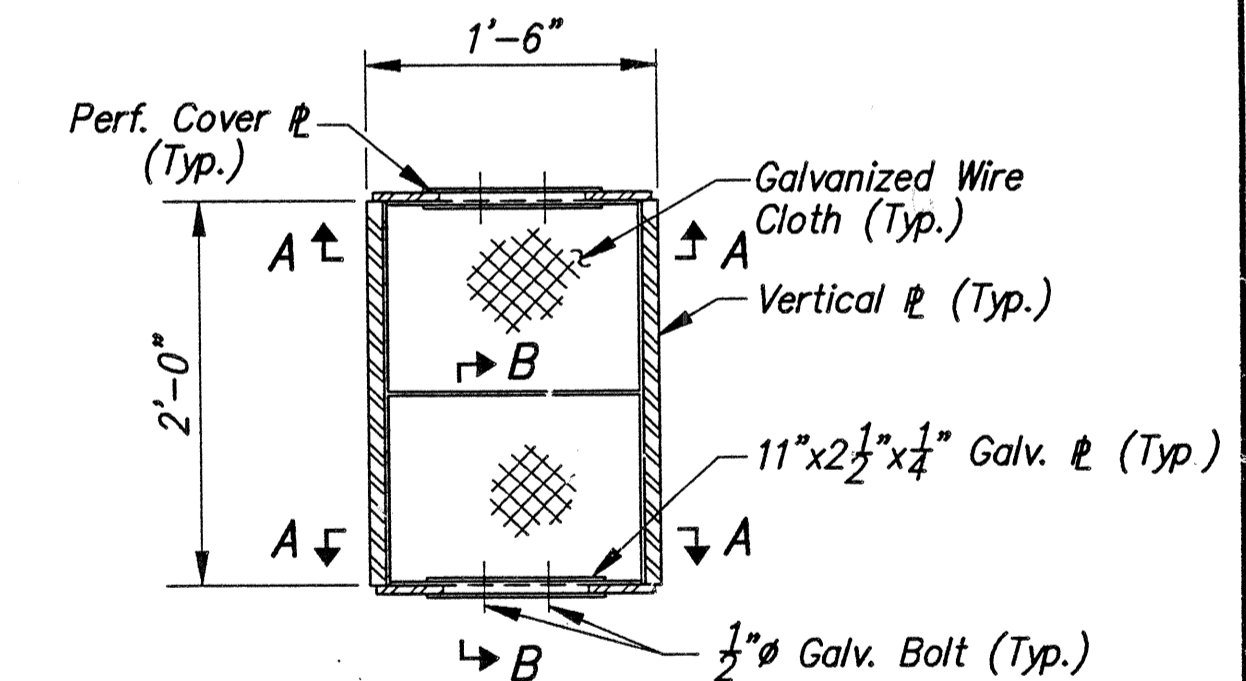
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
 FRANKFORT
 COUNTY OF
HENDERSON
 HENDERSON-EVANSVILLE, IND.
 ROAD
 STATION P. E. PROJECT NO.
 CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO.
 22827

TRUSS JOINT REPAIRS

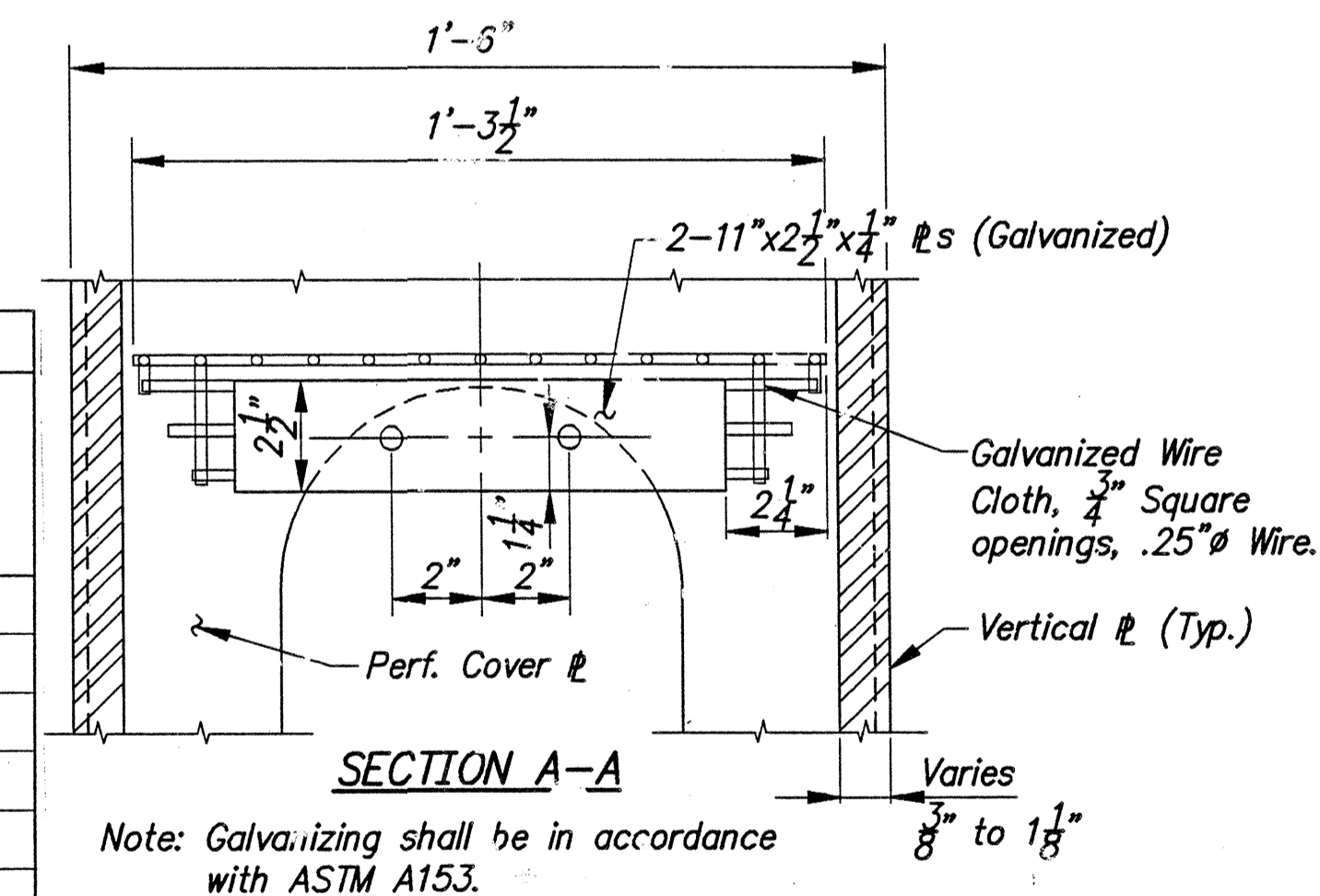
UPDATE DATE
LETTING DATE



BOTTOM CHORDS - CANTILEVER ARMS, FIXED & ANCHOR SPANS



BOTTOM CHORDS - SUSPENDED SPANS



PIGEON SCREEN DETAILS

Note: The Contractor may submit alternate screen details for approval.

LF7 & LF7' similar to LF6
See Sht. 13

APPROXIMATE NUMBER OF BOLT REPLACEMENTS

PANEL POINT LOCATION	BOTTOM COVER PLATE		VERTICAL SIDE PLATES (LOWER CELL)				VERTICAL SIDE PLATES (UPPER CELL)				HORIZONTAL WEB PLATE		TOTAL	
	NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT		
			EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE				
LF5E	8		1	1							4		14	
LF5W								1	1	1	1	4	4	12
LF6E	16	16	6	6							6	3	53	
LF6W	12												12	
LF7E											4	4	8	
LF7W								4	2	1	4	4	15	
LF8E	16	8						2		3	4	8	29	
LF8W	16	8						2	2	6	4	8	50	
LF5'E	4	4									4	4	16	
LF5'W	4	4							1		4		13	
LF6'E	16	16								3	3		38	
LF6'W	16	8		1									25	
LF7'E											1		1	
LF7'W								4	1	2	1	4	16	

TRUSS JOINT REPAIRS

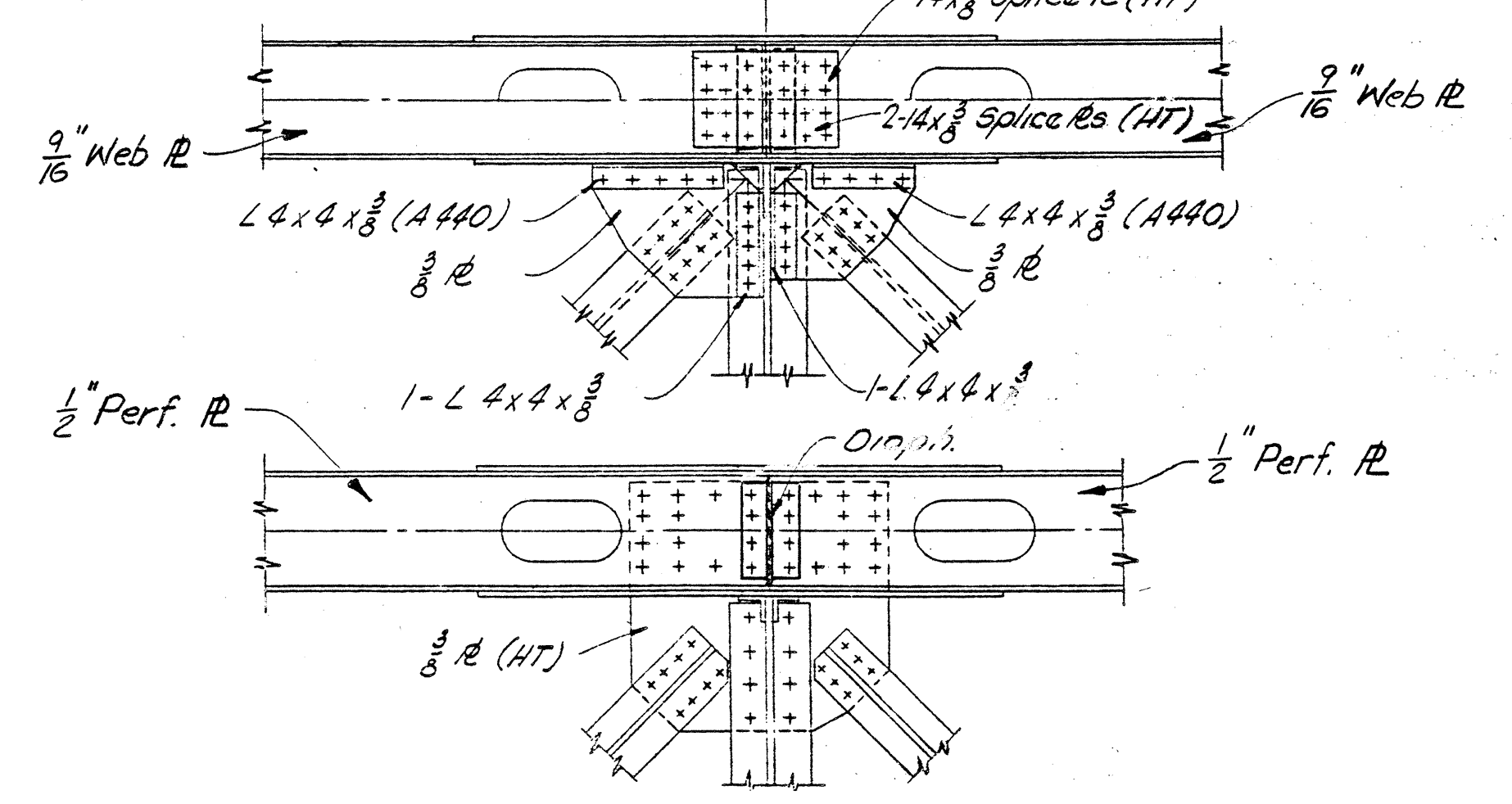
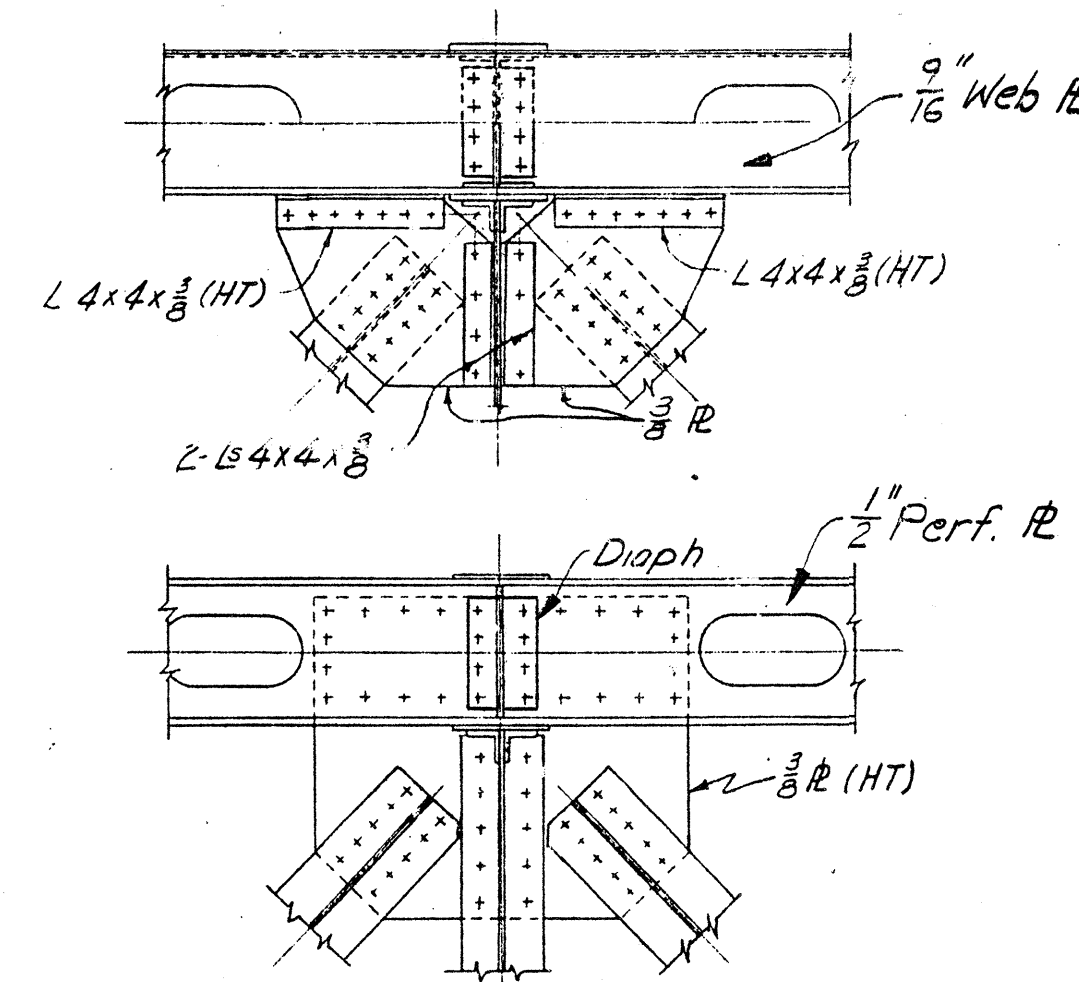
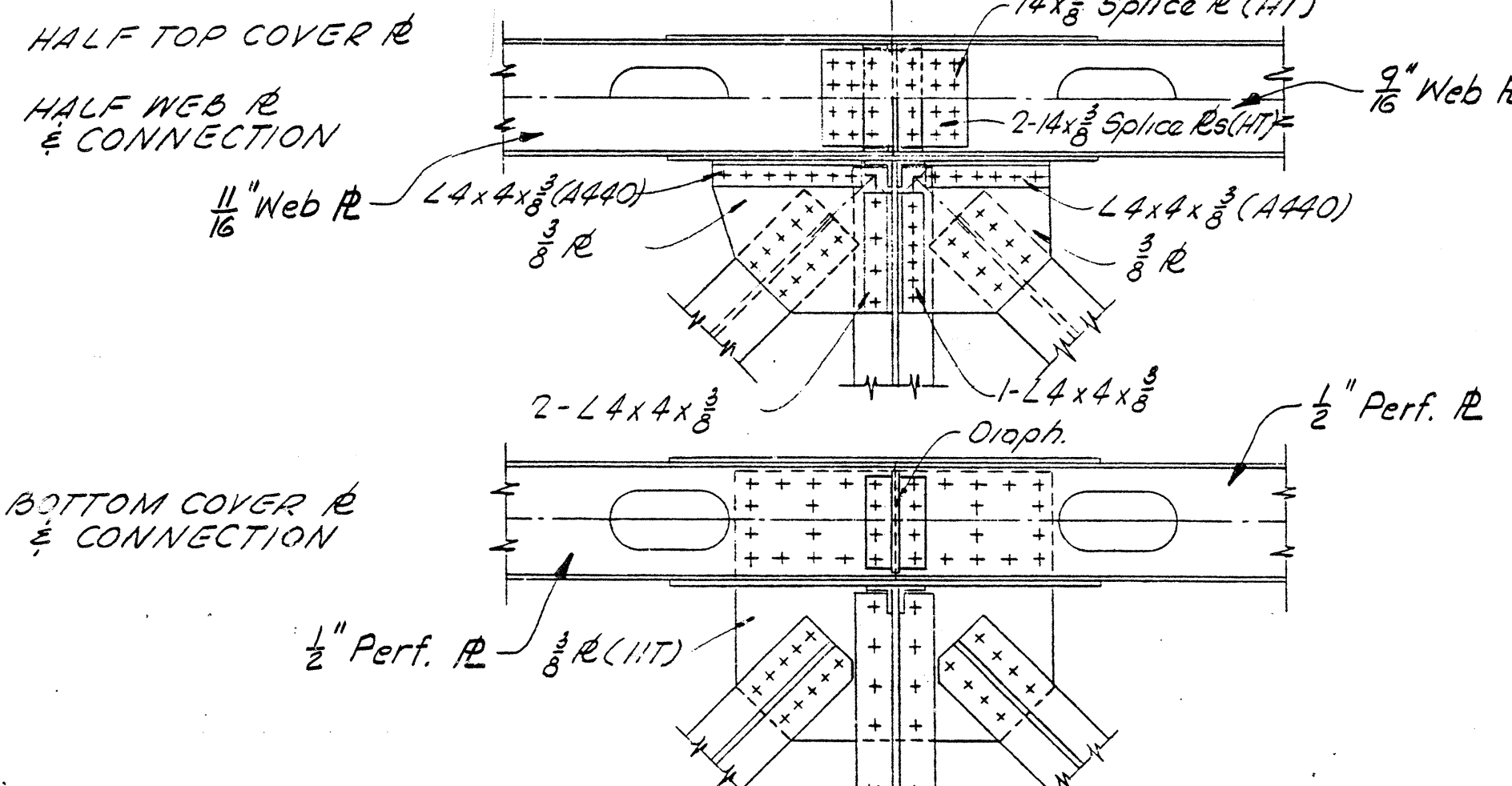
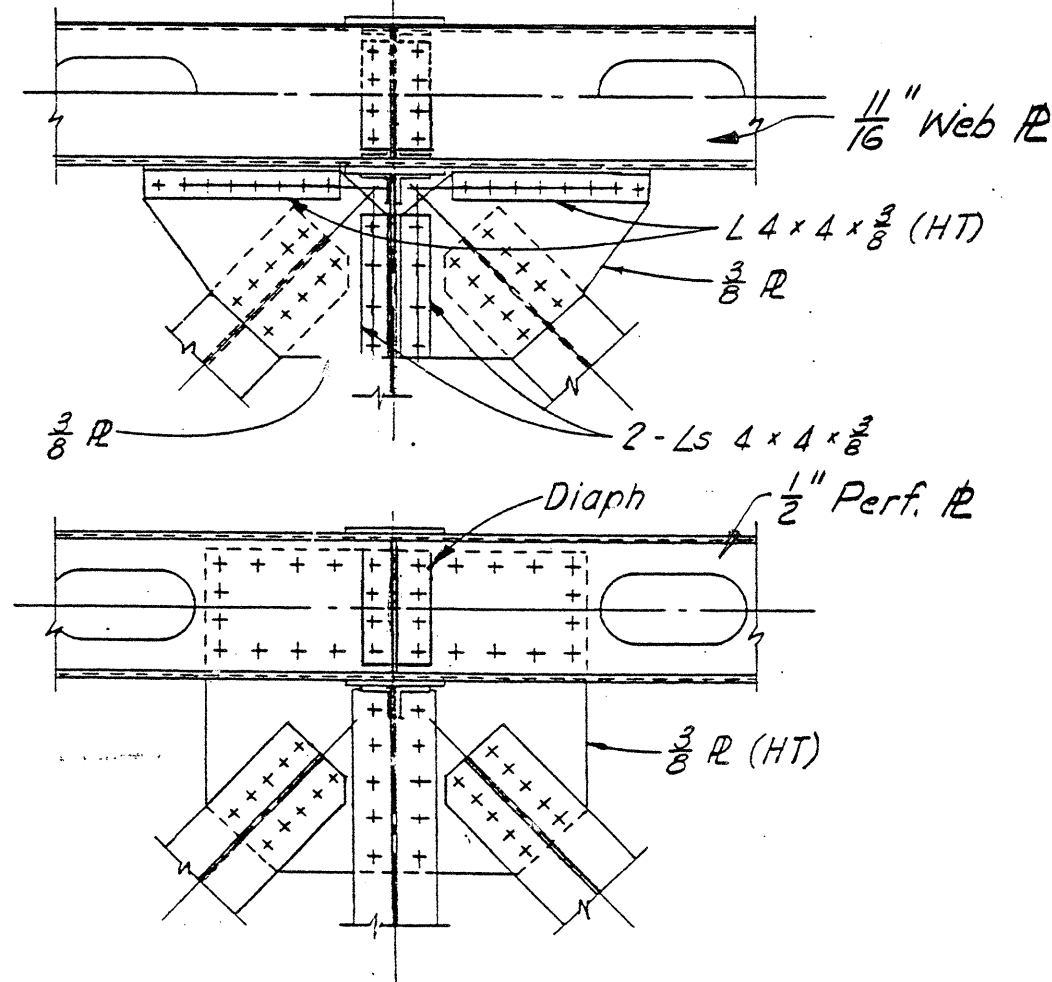
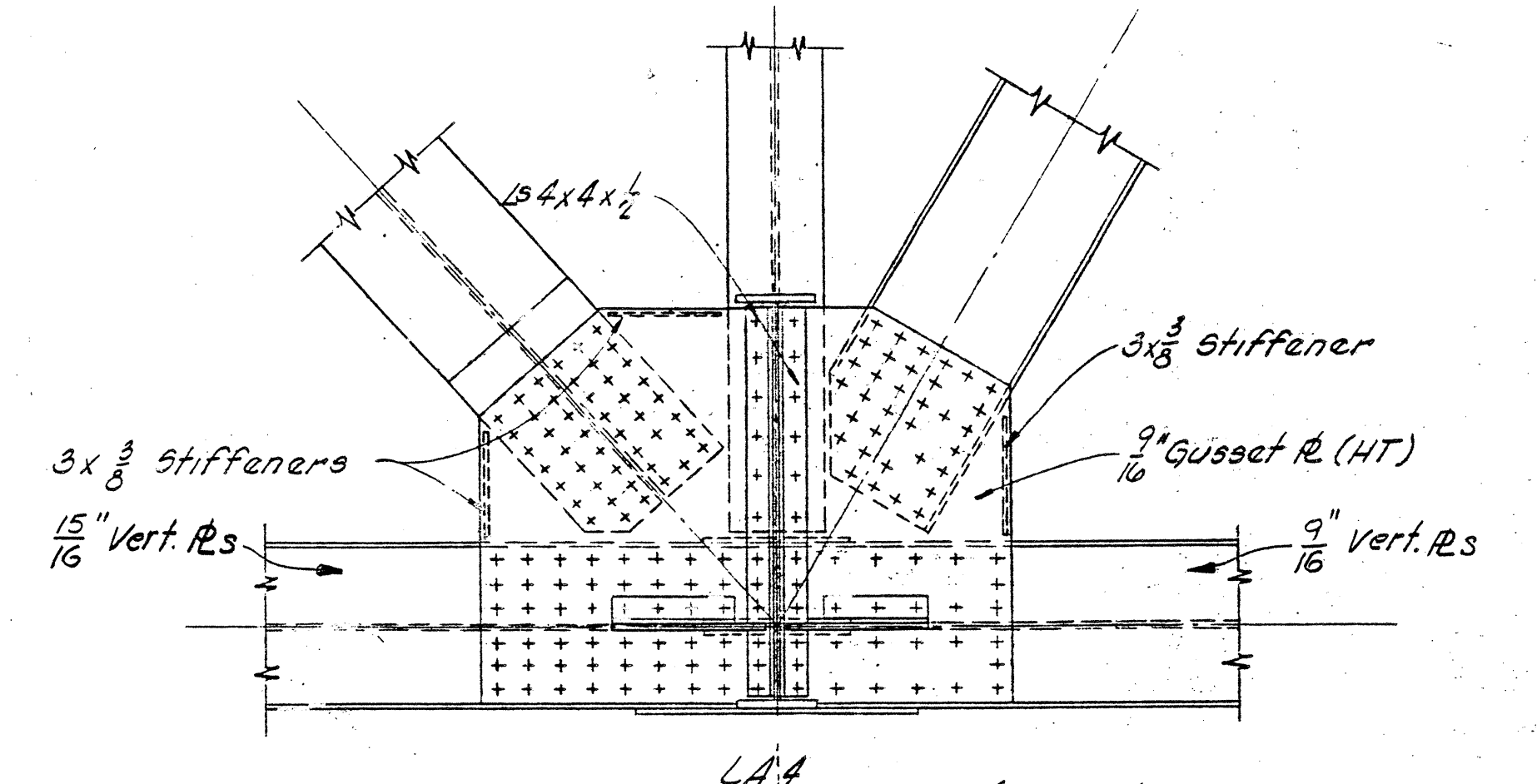
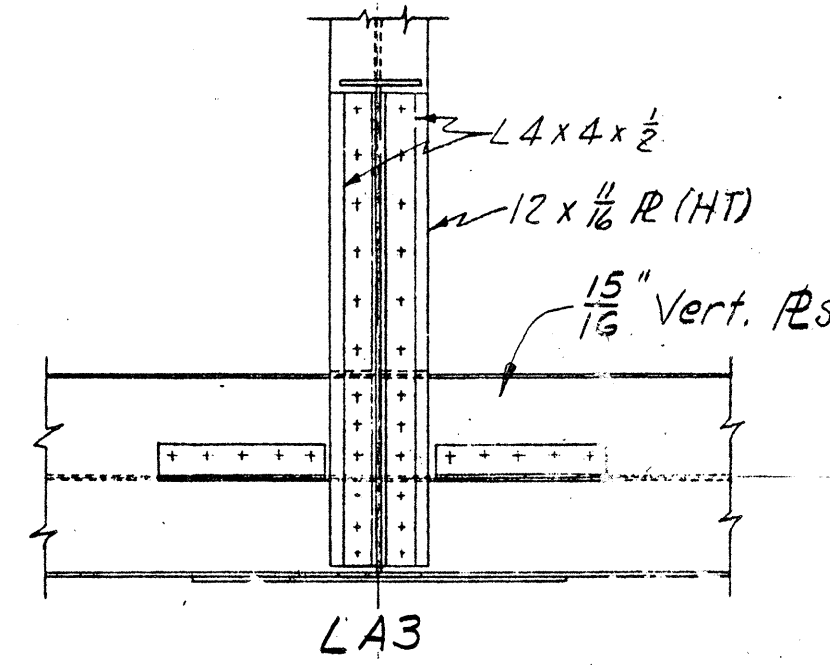
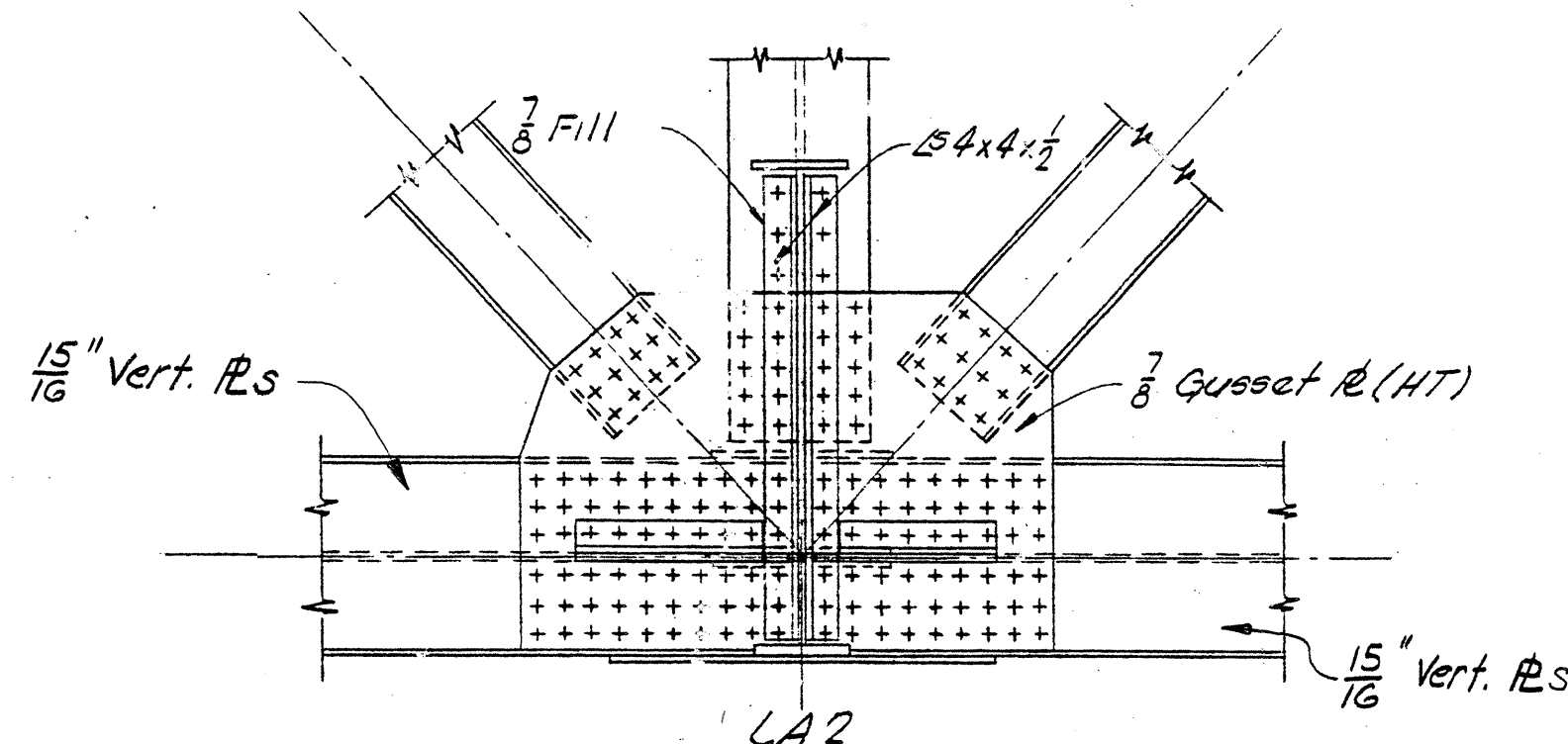
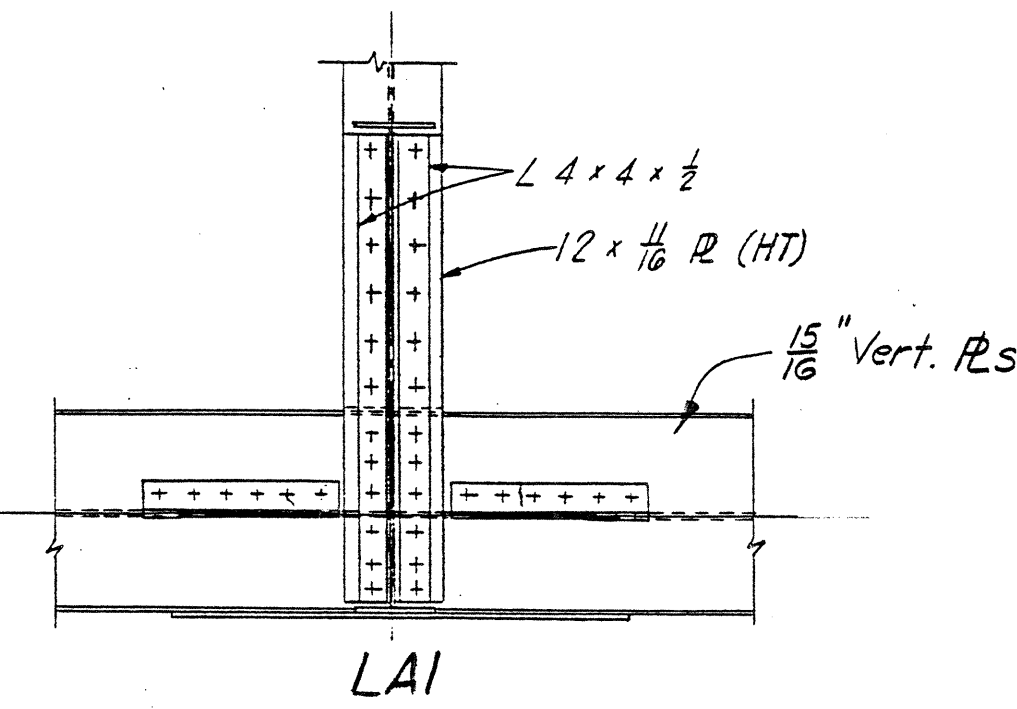
REPAIRS TO BRIDGE ON US 41(SB) OVER OHIO RIVER

SHEET 11

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANSVILLE, INCL.

ROAD
P. E. PROJECT NO.
STATION
CONSTRUCTION PROJECT NO.
MAINTENANCE PROJECT NO.
DRAWING NO.
22827

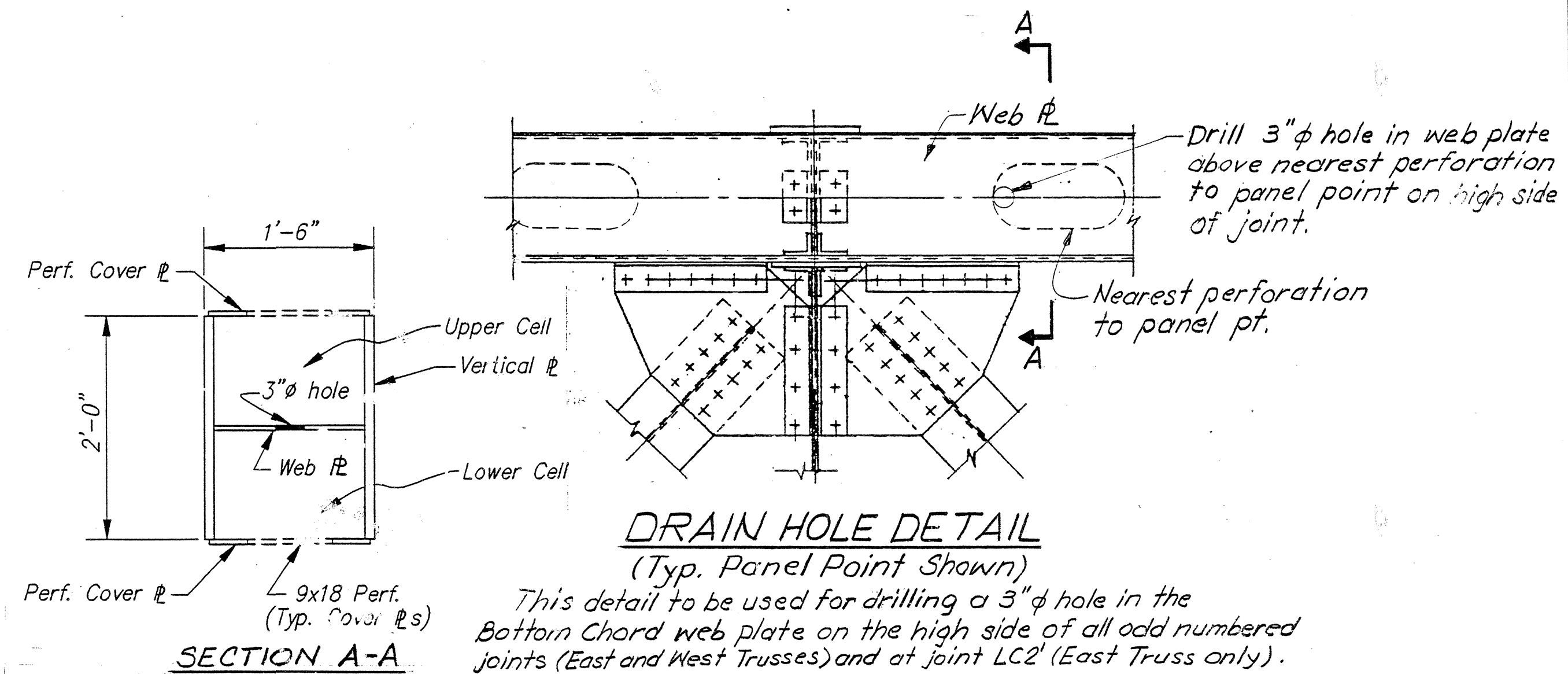
UPDATE DATE
LETTING DATE



HALF TOP COVER PLATE
HALF WEB PLATE & CONNECTION
BOTTOM COVER PLATE & CONNECTION

APPROXIMATE NUMBER OF BOLT REPLACEMENTS

PANEL POINT LOCATION	BOTTOM COVER PLATE		VERTICAL SIDE PLATES (LOWER CELL)				VERTICAL SIDE PLATES (UPPER CELL)				HORIZONTAL WEB PLATE		TOTAL
	NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	
			EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE			
LA1E	8	8											16
LA1W		4											4
LA2E	12	16	4										32
LA2W	12	16											28
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LA3W	10	10											20
LA4E				1									1
LA4W	14	14											28



TRUSS JOINT REPAIRS

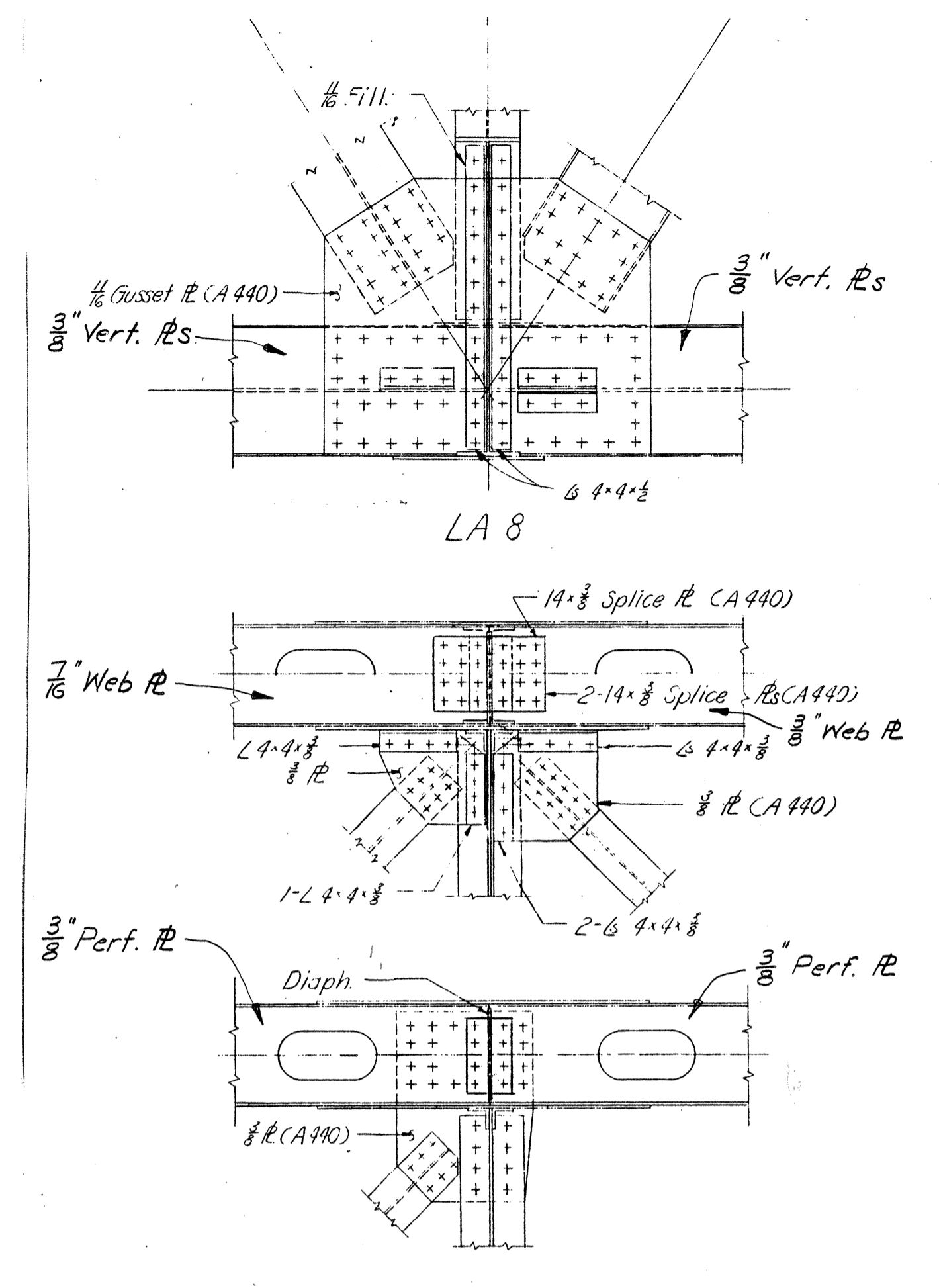
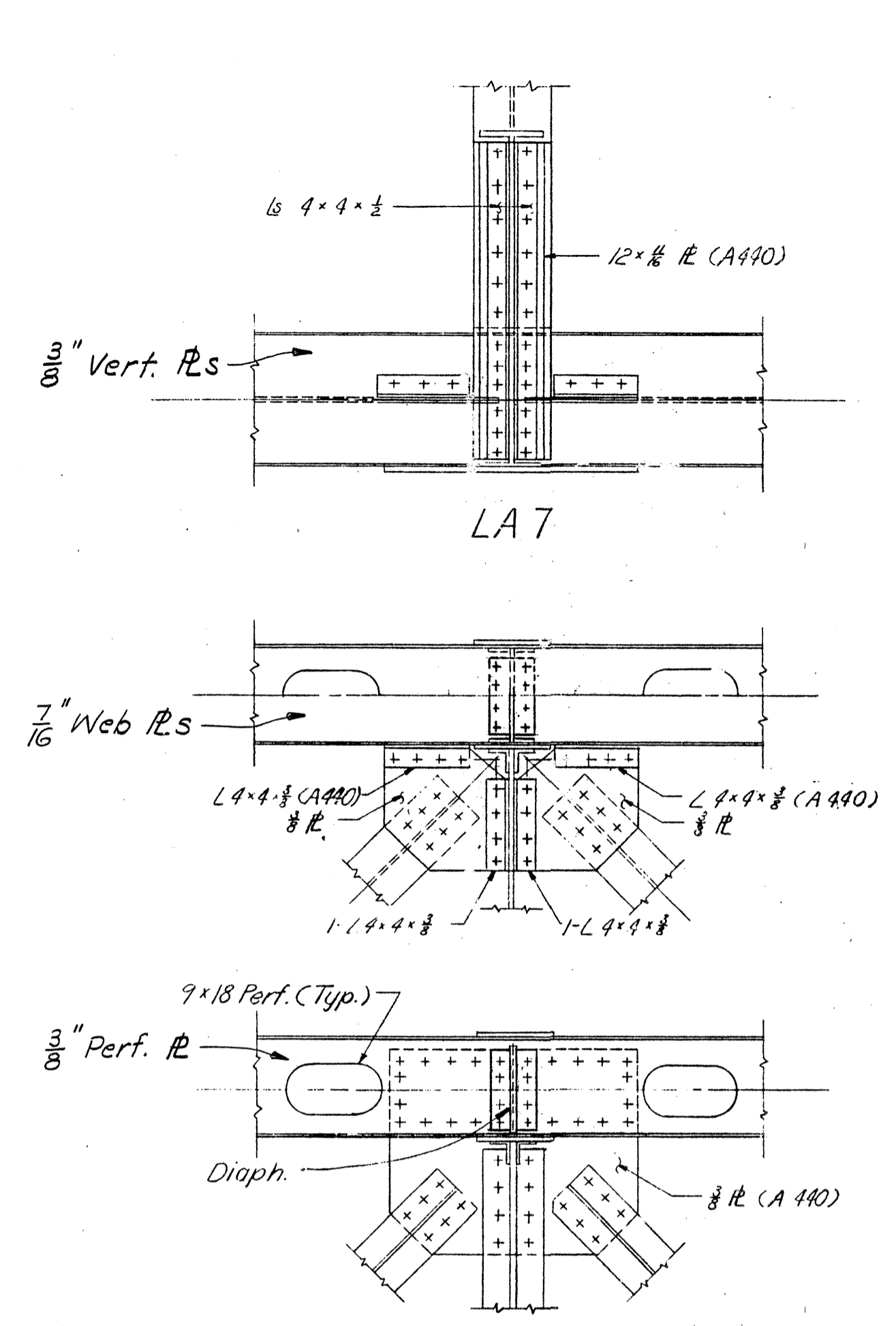
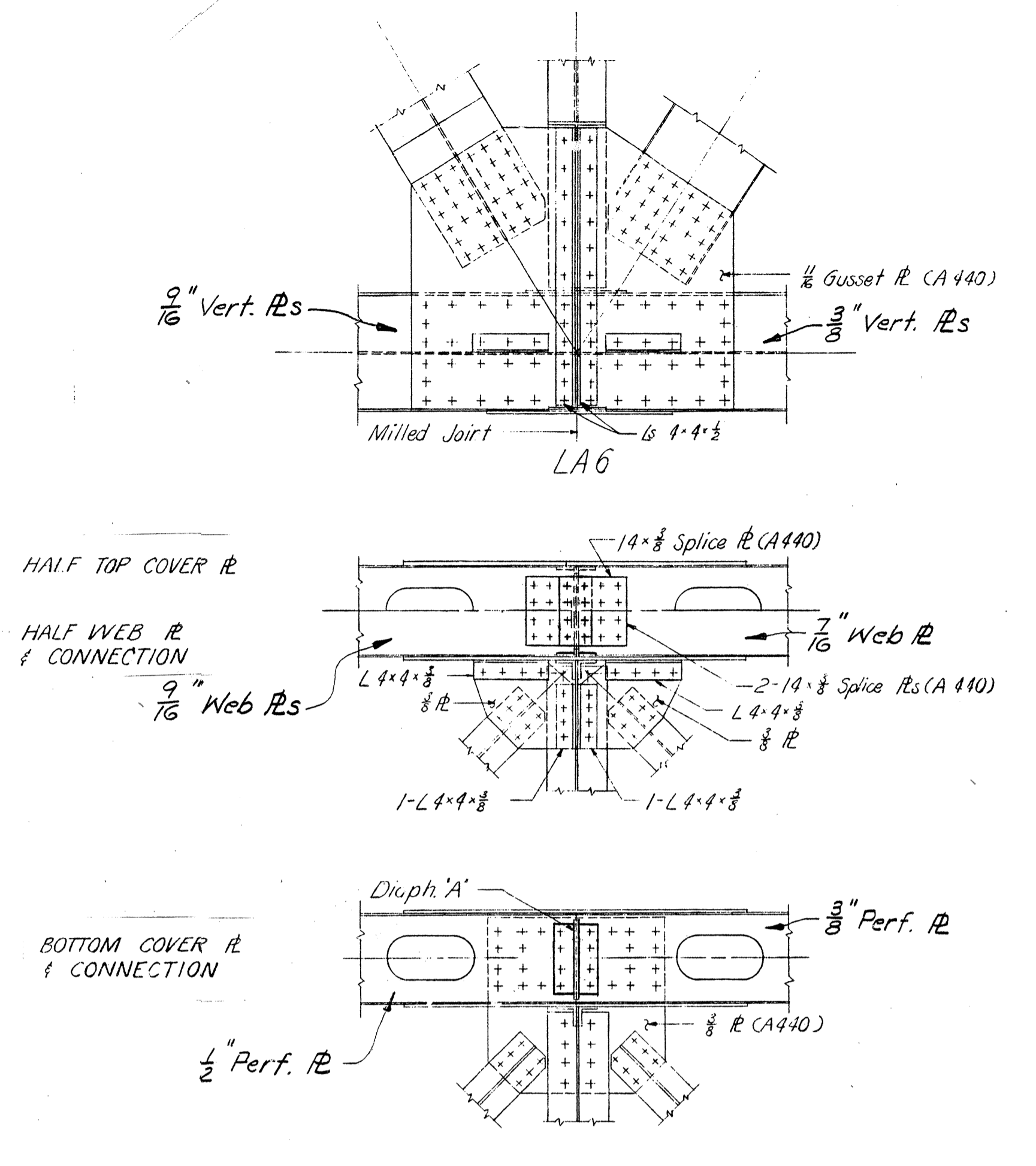
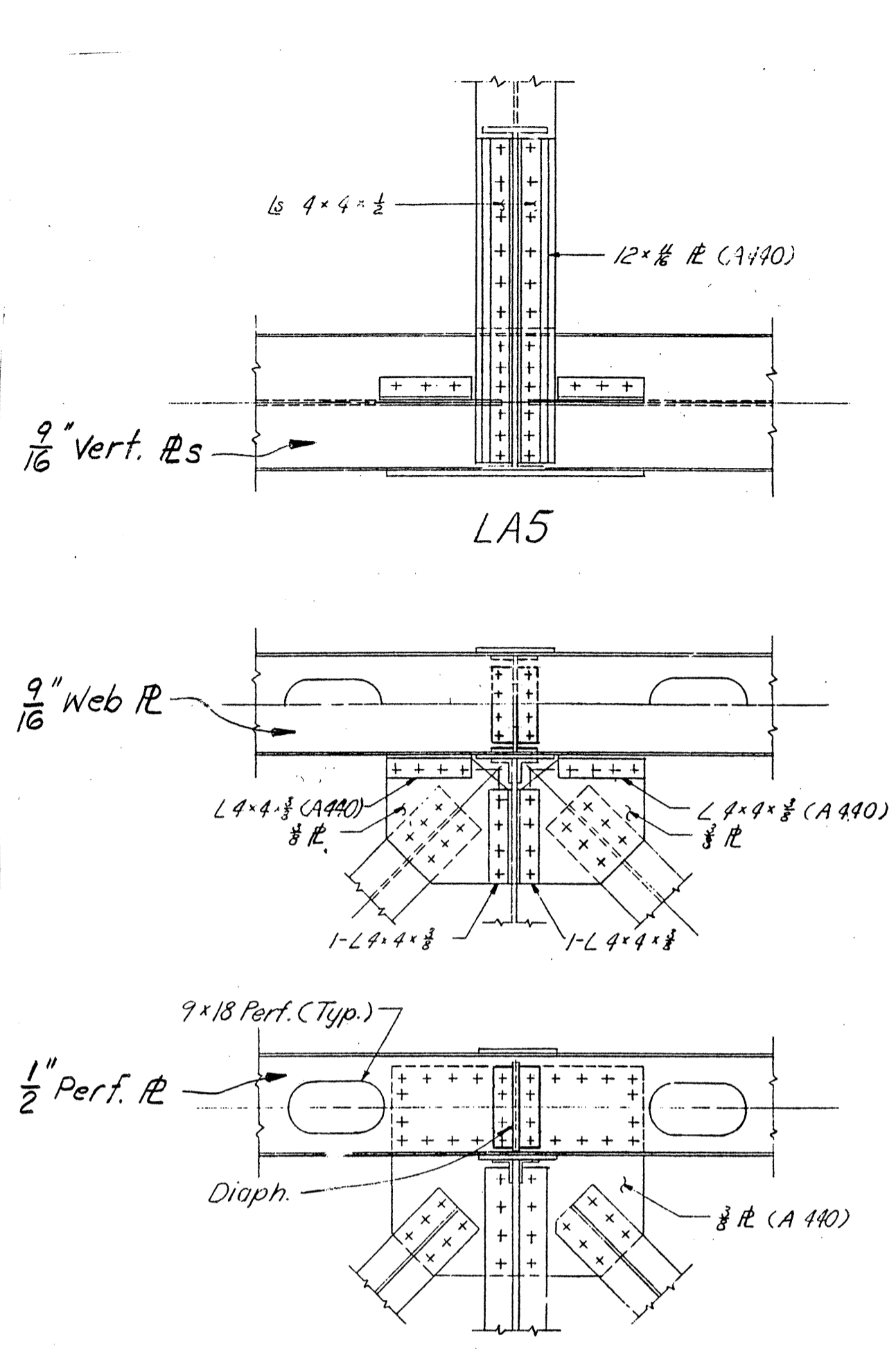
REPAIRS TO BRIDGE ON US 41(SB) OVER OHIO RIVER SHEET 12

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON EVANSVILLE, IND.
ROAD
P. E. PROJECT NO.

STATION CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO. 22827

DESIGNED BY: [Signature] DATE: 10-91
CHECKED BY: PMP DATE: [Blank]
DRAWN BY: [Signature] DATE: [Blank]
CHECKED BY: [Signature] DATE: [Blank]

UPDATE DATE
LETTING DATE



DESIGNED BY: AB CHECKED BY: PMP DATE: 10-91
 REVISION: _____ DATE: _____
 REVISION: _____ DATE: _____
 REVISION: _____ DATE: _____

APPROXIMATE NUMBER OF BOLT REPLACEMENTS

PANEL POINT LOCATION	BOTTOM COVER PLATE		VERTICAL SIDE PLATES (LOWER CELL)				VERTICAL SIDE PLATES (UPPER CELL)				HORIZONTAL WEB PLATE		TOTAL
	NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	
			EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE			
LA5E		6											6
LA5W	8												8
LA6E	14	14	6	3	3	3							43
LA6W	14	14											28
LA7E	8	10	3										21
LA7W		14											14
LA8E	4	14	1		8	4							31
LA8W	8	14											22

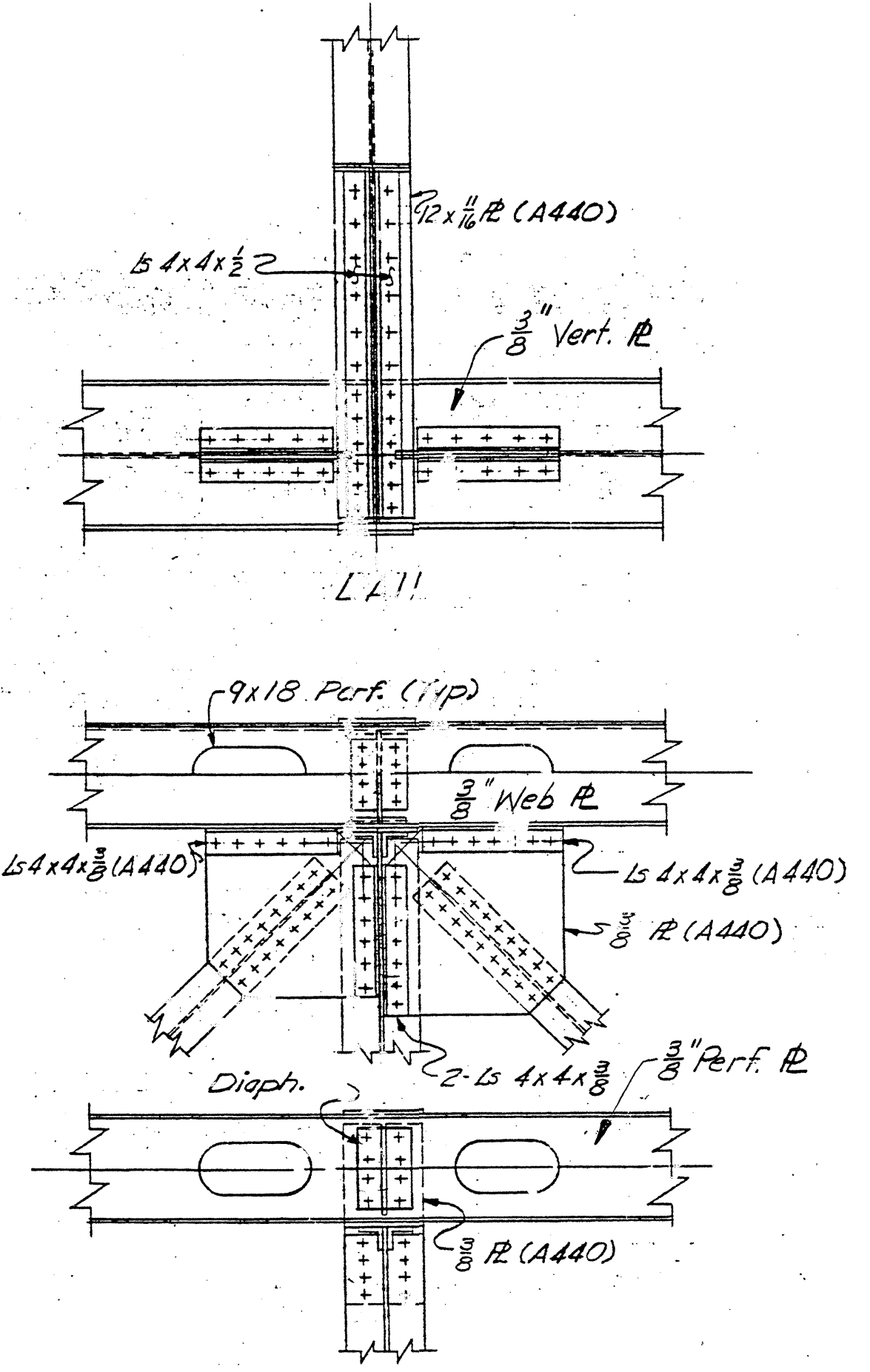
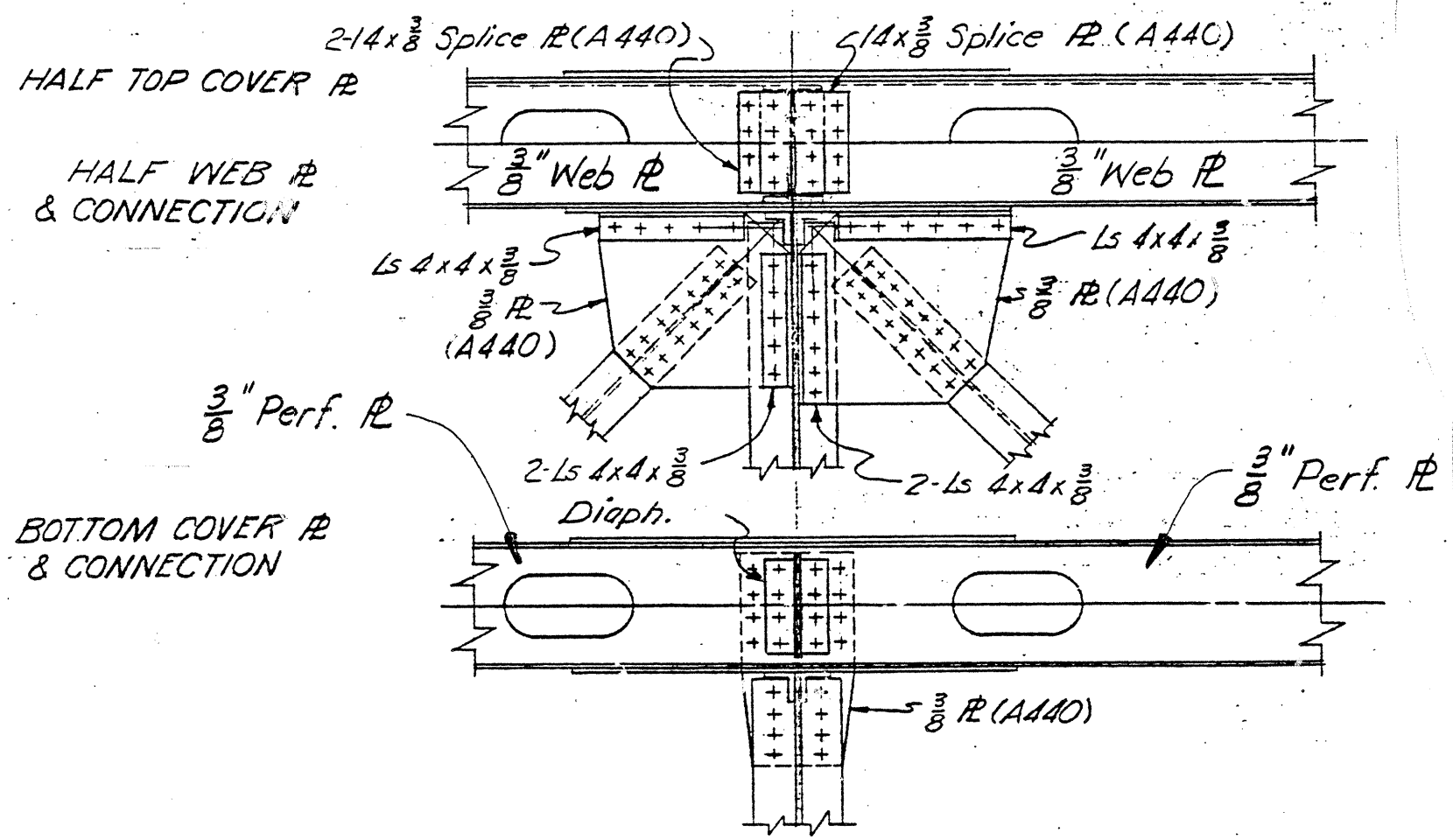
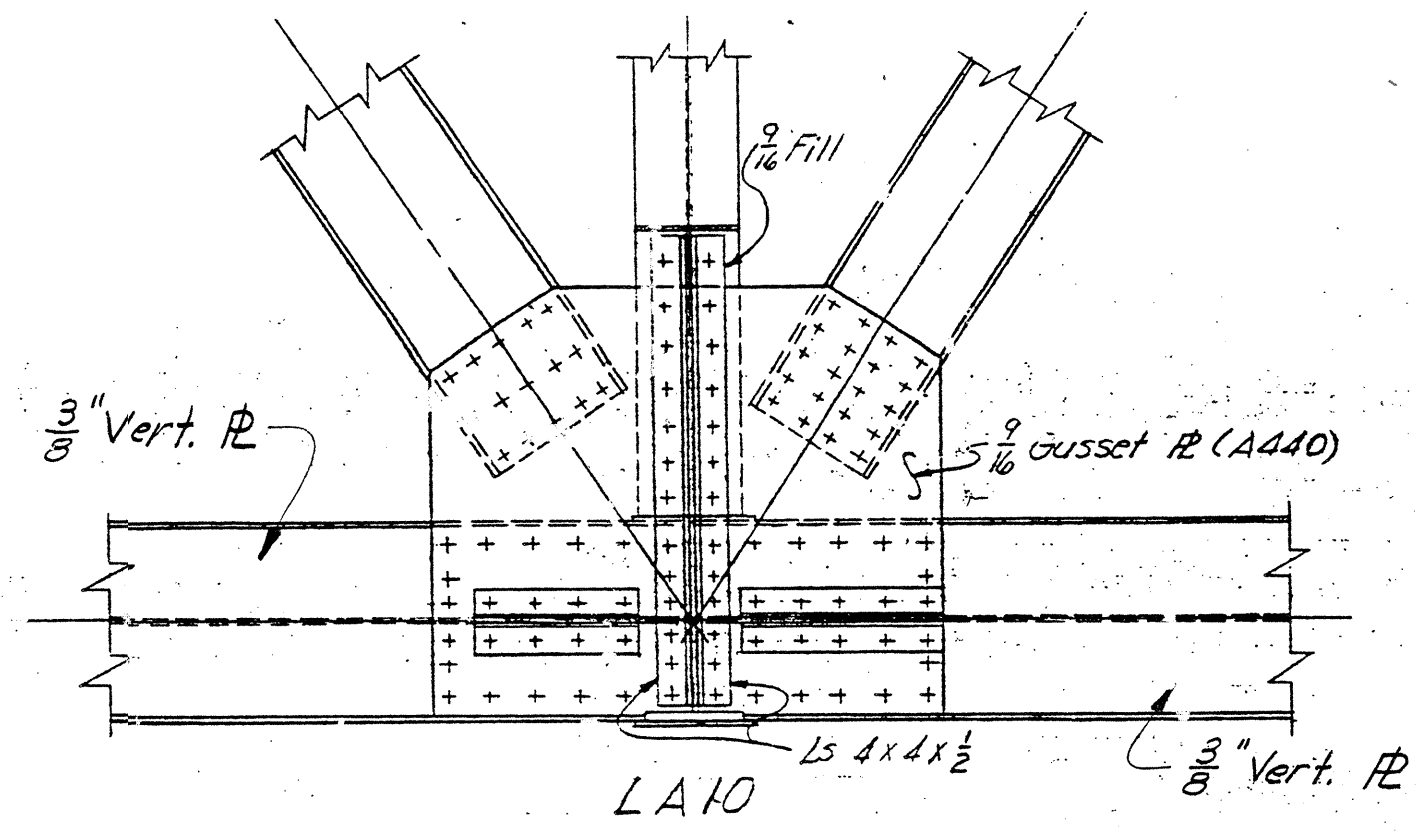
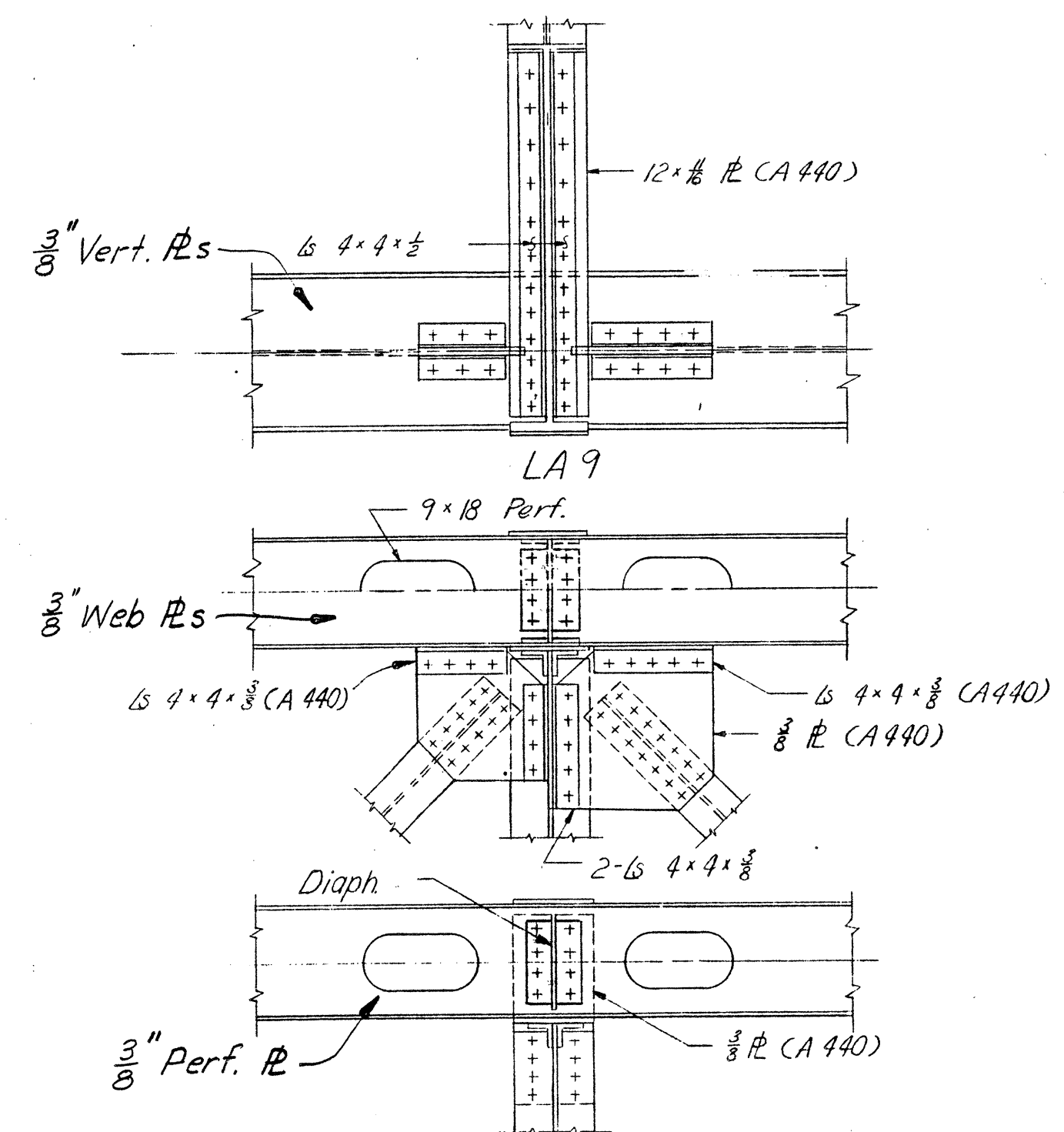
TRUSS JOINT REPAIRS

REPAIRS TO BRIDGE ON US 41(SB) OVER OHIO RIVER SHEET 13

COMMONWEALTH OF KENTUCKY
 DEPARTMENT OF HIGHWAYS
 FRANKFORT
 COUNTY OF
HENDERSON
 HENDERSON-EVANSVILLE, IND.
 ROAD
 P. E. PROJECT NO.

STATION _____ CONSTRUCTION PROJECT NO. _____ MAINTENANCE PROJECT NO. _____ DRAWING NO. **22827**

UPDATE DATE
LETTING DATE



PANEL POINT LOCATION	APPROXIMATE NUMBER OF BOLT REPLACEMENTS												TOTAL	
	BOTTOM COVER PLATE		VERTICAL SIDE PLATES (LOWER CELL)				VERTICAL SIDE PLATES (UPPER CELL)				HORIZONTAL WEB PLATE			
	NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT	NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT		SOUTH SIDE OF PANEL POINT		NORTH SIDE OF PANEL POINT	SOUTH SIDE OF PANEL POINT		
		EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE	EAST FACE	WEST FACE			
LA9E	3													3
LA9W	4	4												8
LA10E	8	8			7	11						2		36
LA10W	6	8												14
LA11E	2	4												6
LA11W	4	4												8

DESIGNED BY: [Signature]
CHECKED BY: [Signature]
DATE: [Date]
REVISIONS: [Table]

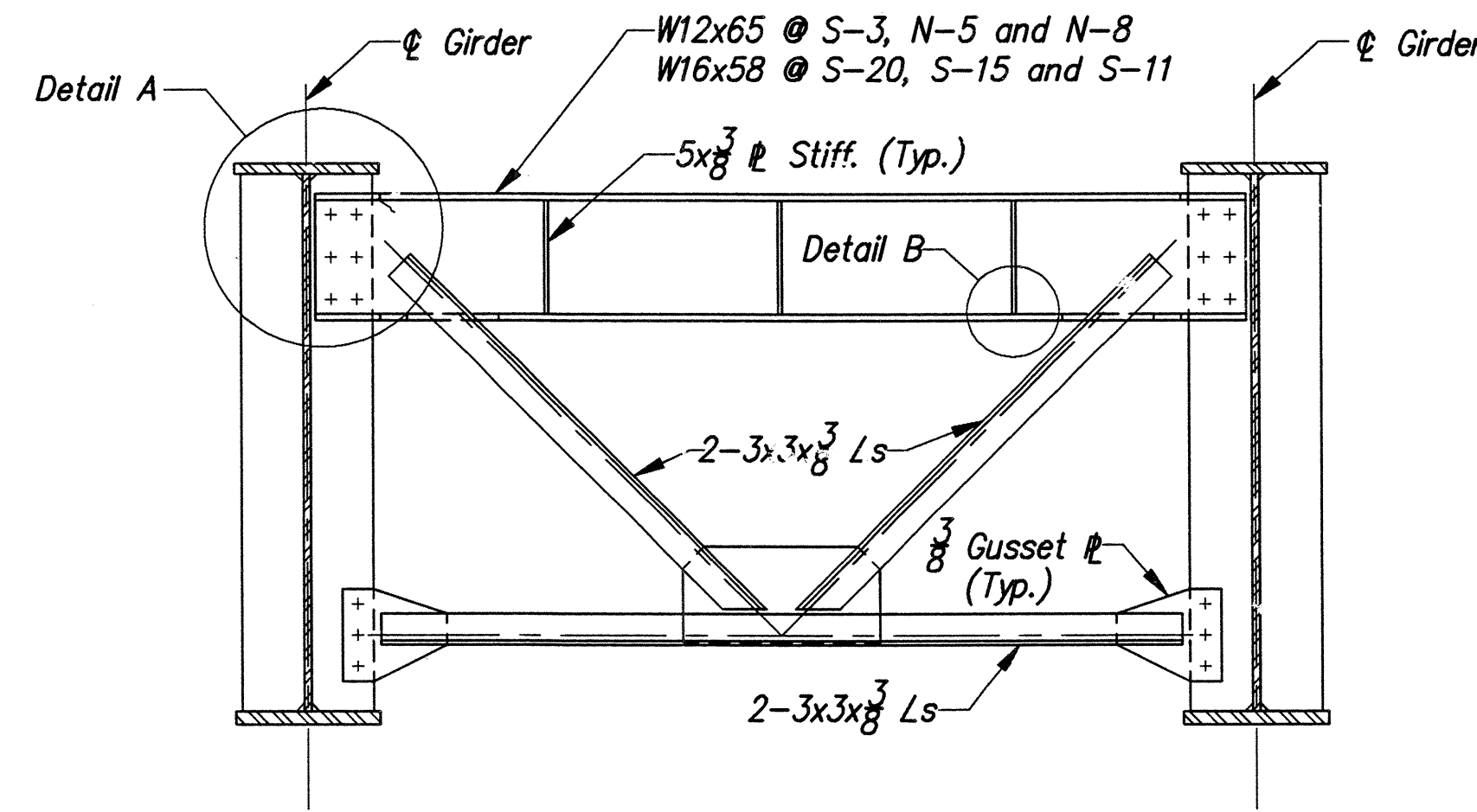
REPAIRS TO BRIDGE ON US 41(SB) OVER OHIO RIVER SHEET 14

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON - EVANSVILLE, IND.
ROAD
STATION P. E. PROJECT NO.

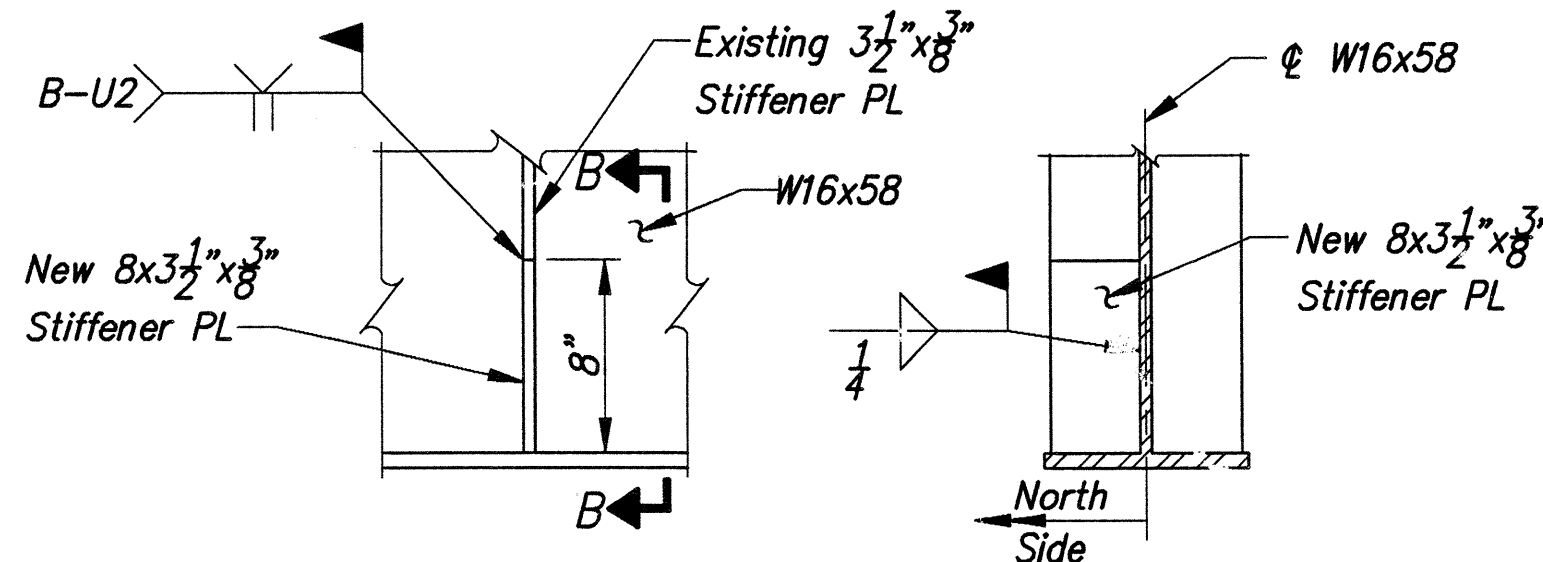
CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO. 22827

TRUSS JOINT REPAIRS

UPDATE DATE
LETTING DATE



TYPICAL CROSS FRAME

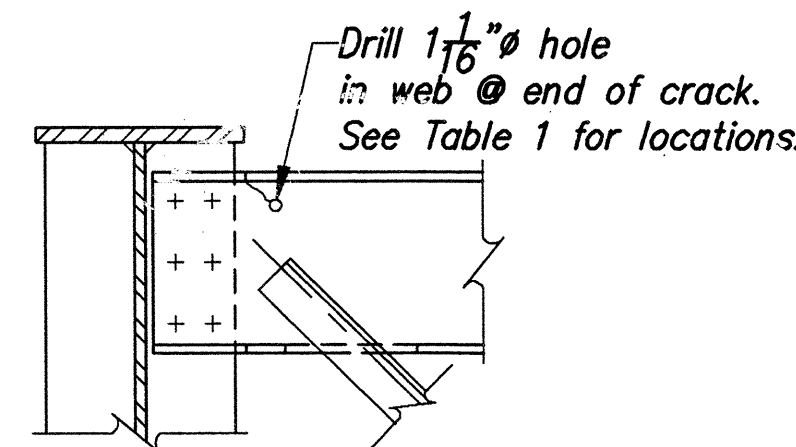


DETAIL B

SECTION B-B

CROSS FRAME STIFFENER PLATE REPAIR DETAIL

This detail to be used for repair of vertical stiffener plates on the north side of the W16x58 crossframe member at the north crossframe, Pier S-15. At the bottom of the existing stiffener plate an 8" section shall be neatly removed and a new 8" x 3 1/2" x 3/8" plate added. Each crossframe between Girder A and E shall have all vertical stiffener plates on the north side repaired.



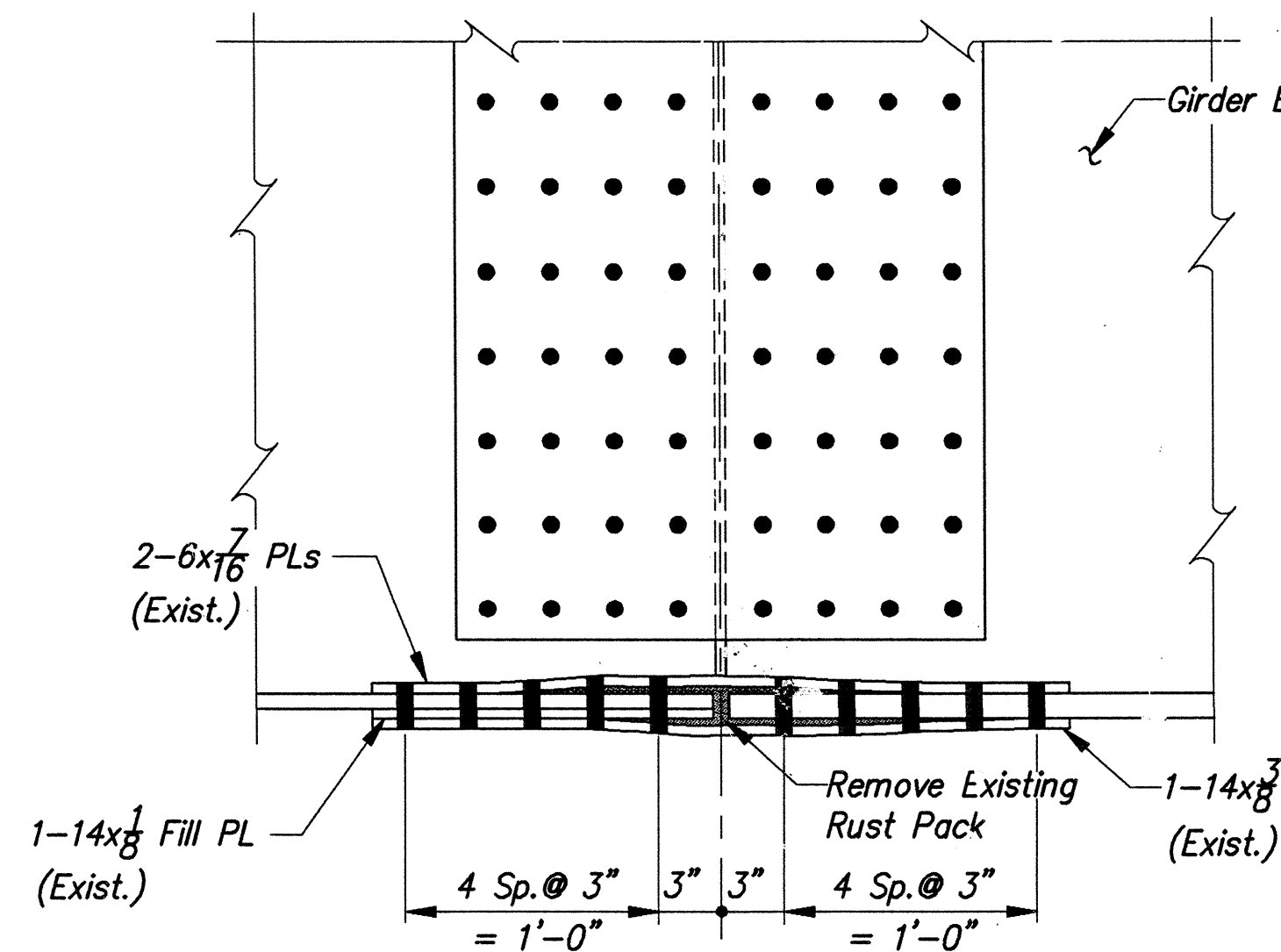
DETAIL A

CROSS FRAME DIAPHRAGM REPAIR DETAIL

This detail to be used for repair of cracks in web of top strut W Section at each location listed in Table 1.

TABLE 1
WEB DRILLING (1 1/8" HOLE) LOCATIONS

LOCATION	GIRDER	EAST OR WEST FACE
Pier S-11, Span 11S	A	East
	B	East & West
	C	East & West
	D	East & West
	E	West
Pier S-11, Span 12S	B	West
	A	East
Pier S-3, Span 4S	B	East & West
	C	East & West
	D	East & West
	E	West
Pier N-5, Span 6N	E	West



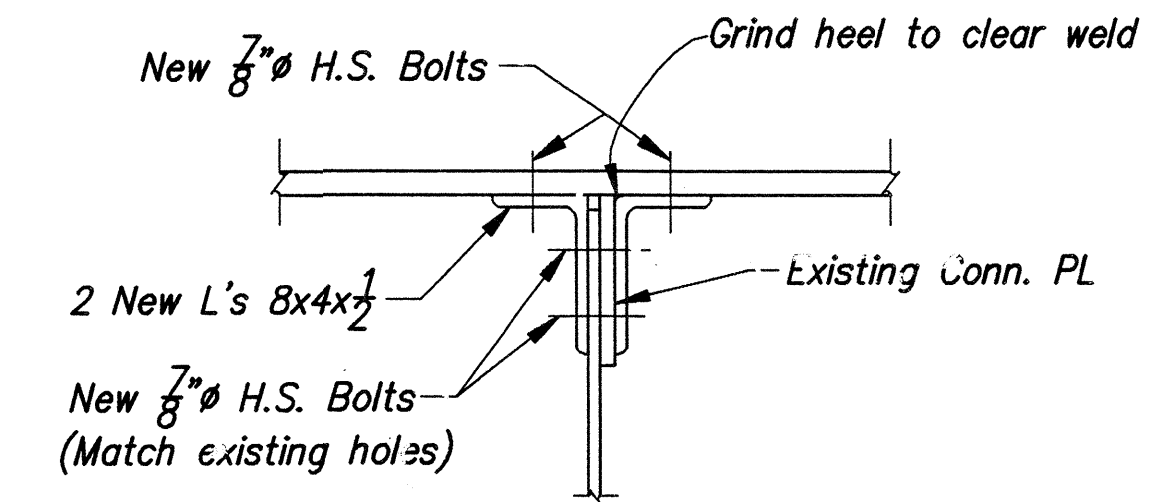
FIELD SPLICE REPAIR DETAIL

This detail is to be used to repair the Girder E splice, 24' north of Pier S-18 and the Girder E splice, 24' north of Pier S-8. All of the bottom flange splice plates shall be removed and the existing steel cleaned. New ASTM A36 splice plates of the same size as the existing plates shall be bolted to the bottom flange and all bare steel painted.

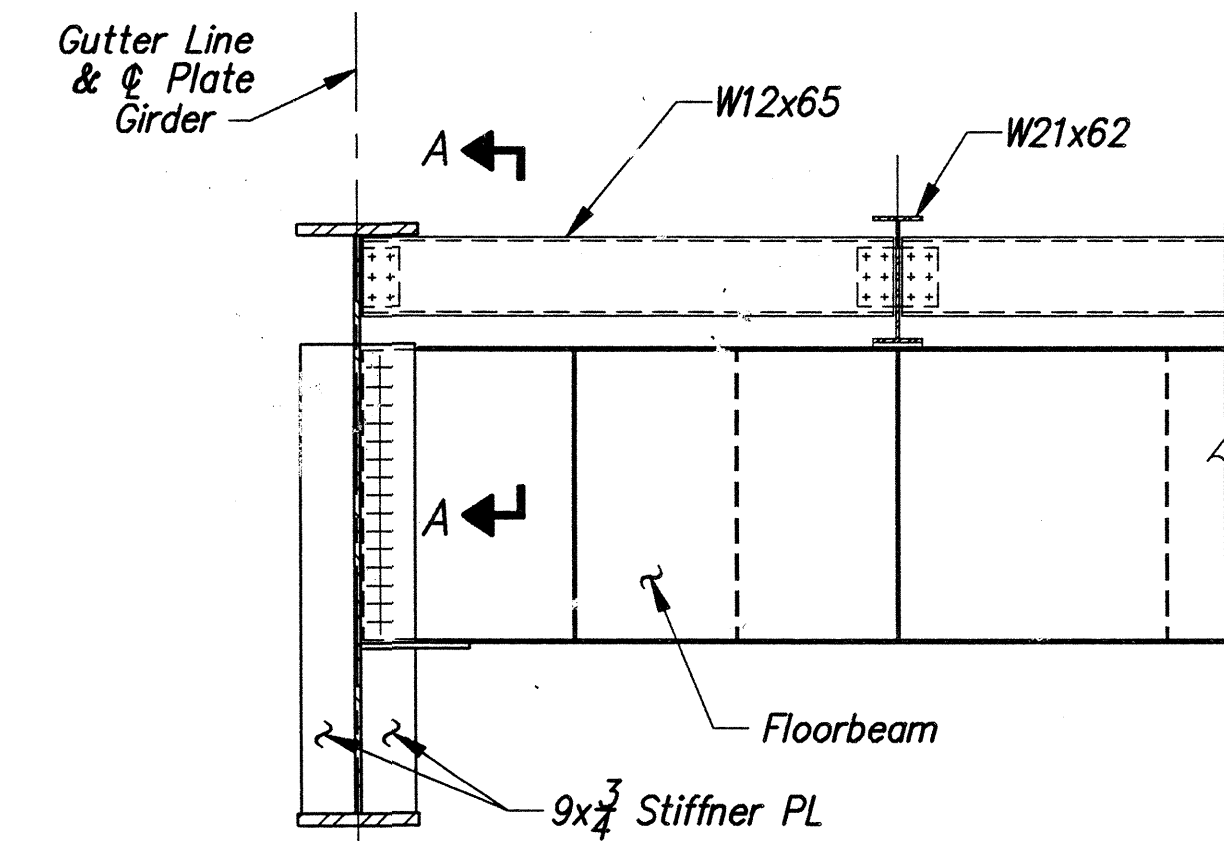
Note: A temporary support on the north side of each splice is required. Support must be placed under closest vertical stiffener.

Temporary Support Load: D.L. 10 Kips *
L.L. 75 Kips
Total 85 Kips

* Maximum Jacking Load



SECTION D-D
(Typ. W12x65 Diaph. Conn.)



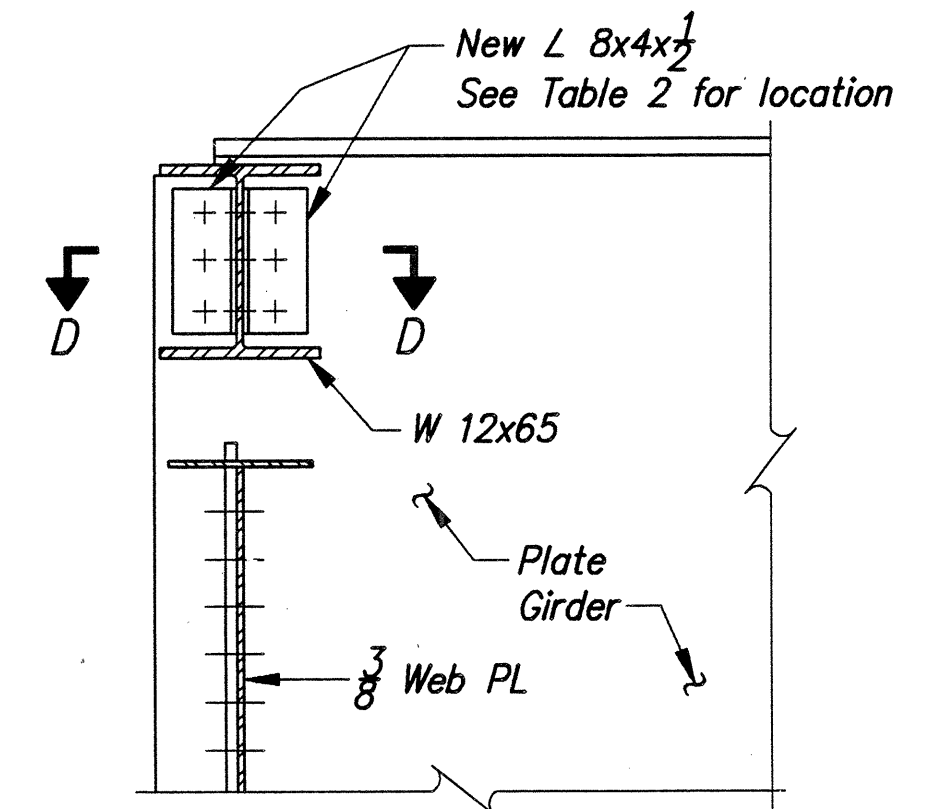
FLOORBEAM ELEVATION AT PIER

Pier N-5, Span 5N and Pier S-3, Span 3S

CRACKED DIAPHRAGM CONNECTION REPAIR DETAIL

TABLE 2
NEW CONNECTION ANGLE LOCATIONS

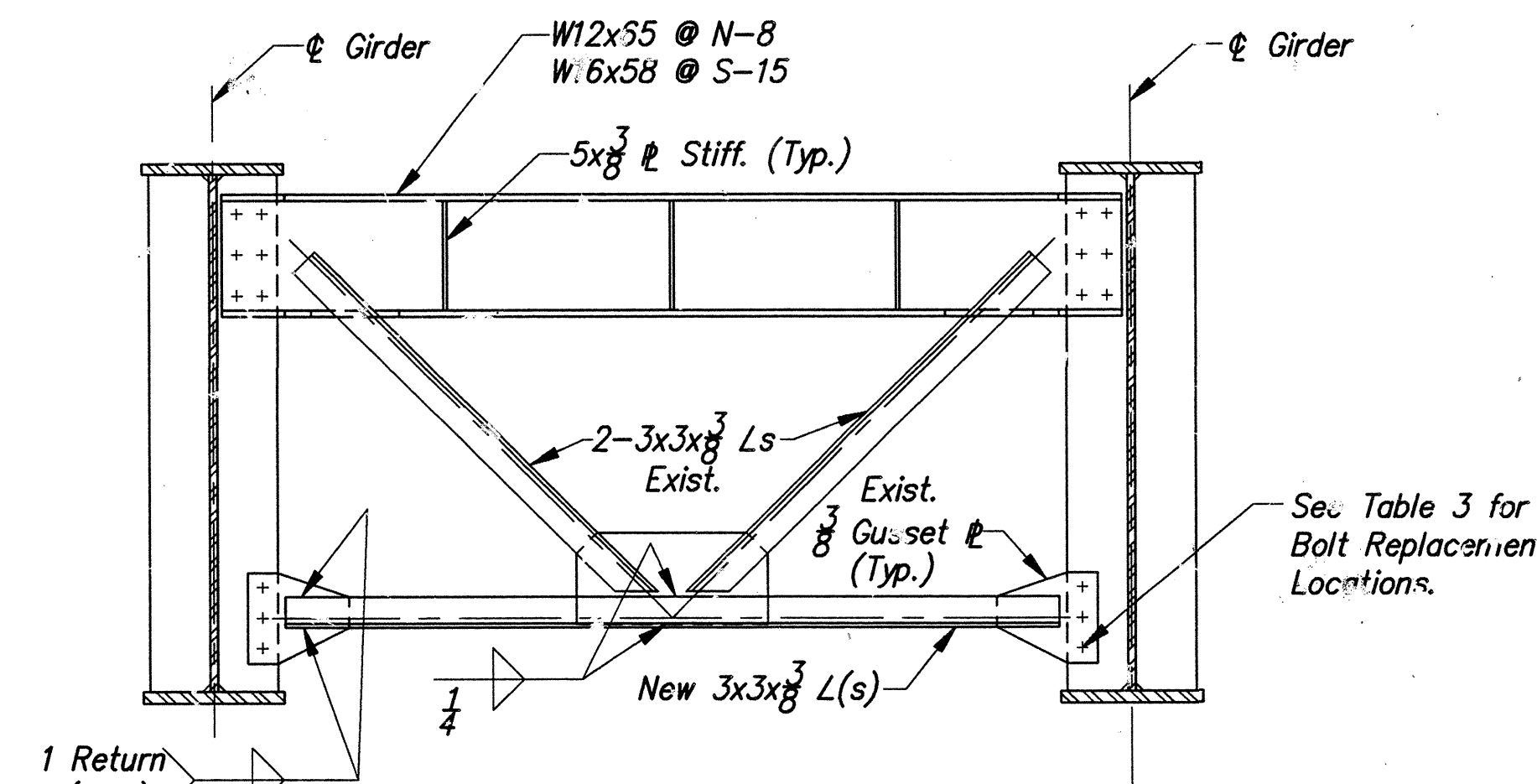
LOCATION	GIRDER OR STRINGER	EAST OR WEST FACE
Pier S-3, Span 3S	GIR. A	East
	STR. B	West
	STR. C	East
	GIR. E	West
Pier N-5, Span 5N	GIR. A	East
	STR. B	East & West
	GIR. E	West



SECTION A-A

TABLE 3
7/8" BOLT REPLACEMENT LOCATIONS

LOCATION	GIRDER	EAST OR WEST SIDE	NUMBER OF BOLTS
South Abutment	B	East	Bottom Bolt
South Abutment	C	East & West	Bottom Bolt
South Abutment	D	East & West	Bottom Bolt
South Abutment	E	West	Bottom 2 Bolts



CROSS FRAME BOTTOM STRUT REPLACEMENT DETAIL

This detail to be used for replacement of bottom strut angles at the following locations:

1. North Crossframe @ Pier S-15, all bays, both angles.
2. Crossframe @ Pier N-8, all bays, north angle only.
3. Crossframe @ South Abutment, all bays, south angle only.

This detail should also be used for replacement of 7/8" bolts at all locations in Table 3. (Incidental to Cross Frame Bottom Strut Replacement)

MISCELLANEOUS
SUPERSTRUCTURE REPAIRS

REPAIRS TO BRIDGE ON US 41 (SB) OVER OHIO RIVER SHEET 15

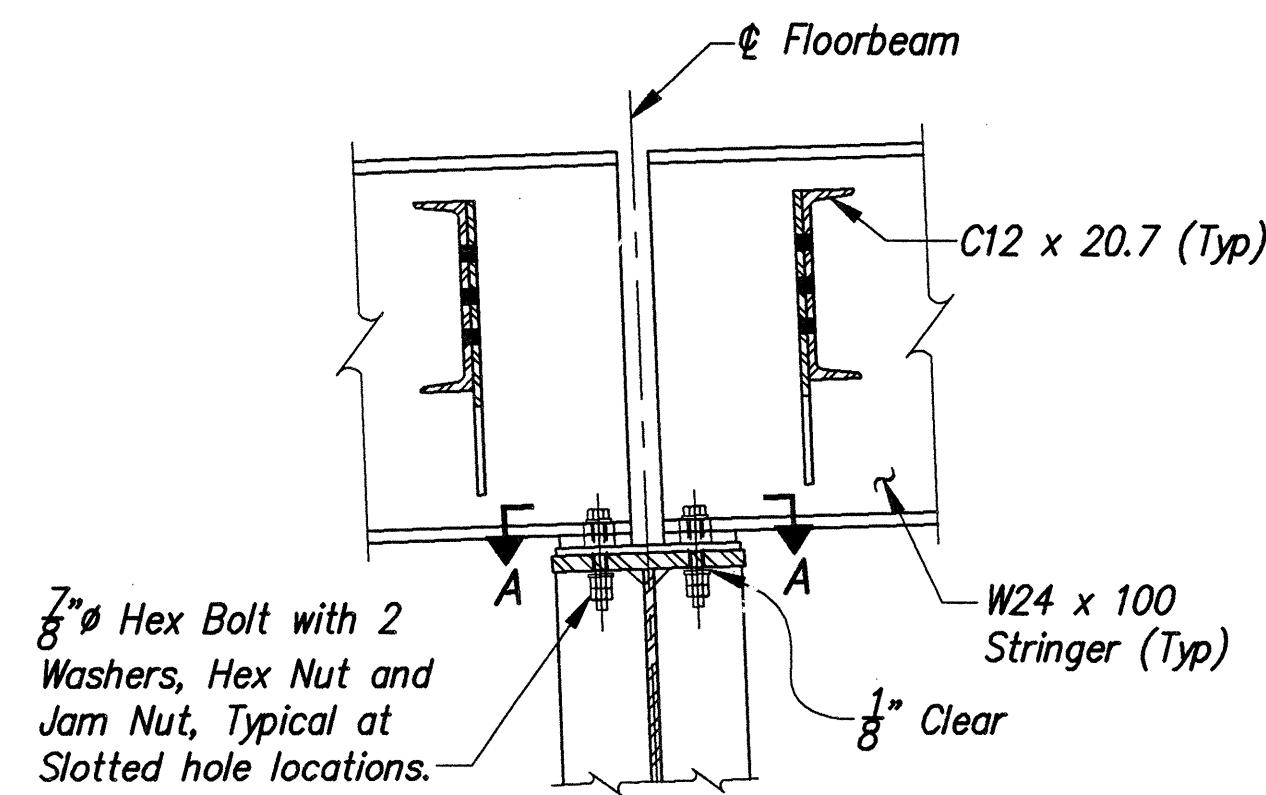
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANVILLE, IND.

ROAD P.F. PROJECT NO.
CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO. 22827

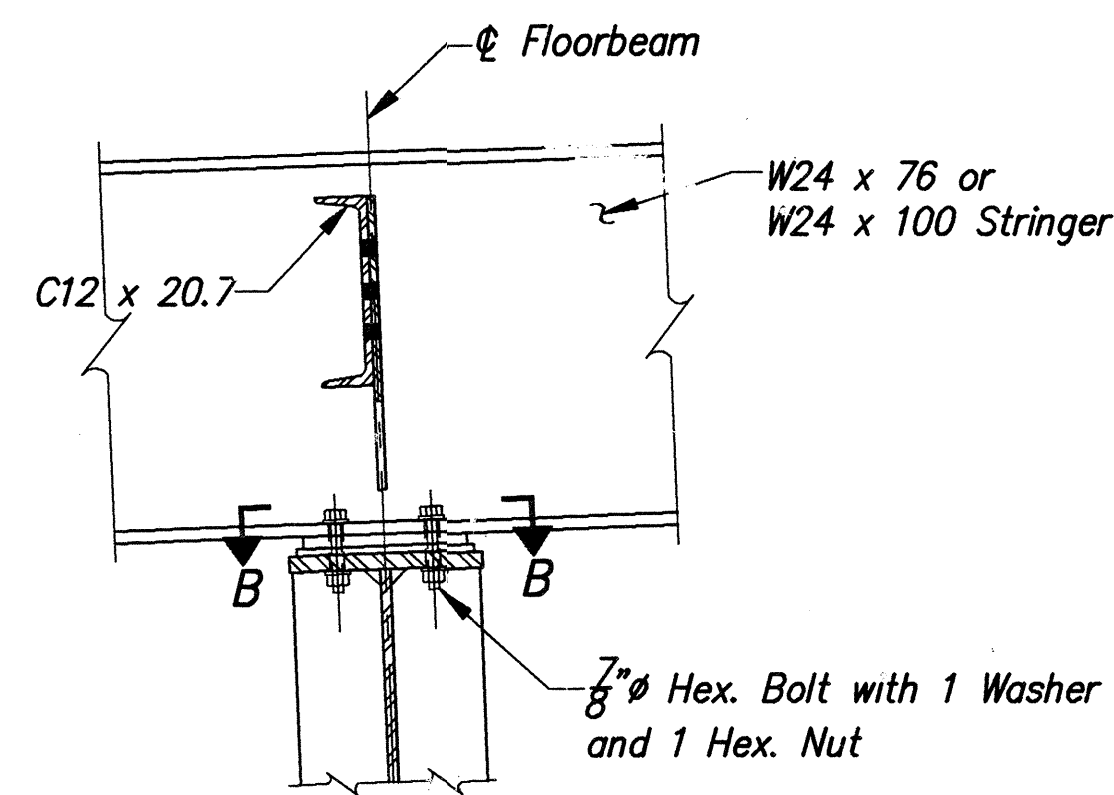
DESIGNED BY: DRH
CHECKED BY: PNP
DATE: 10-91

REVISIONS
DATE
BY
REVISIONS
DATE
BY

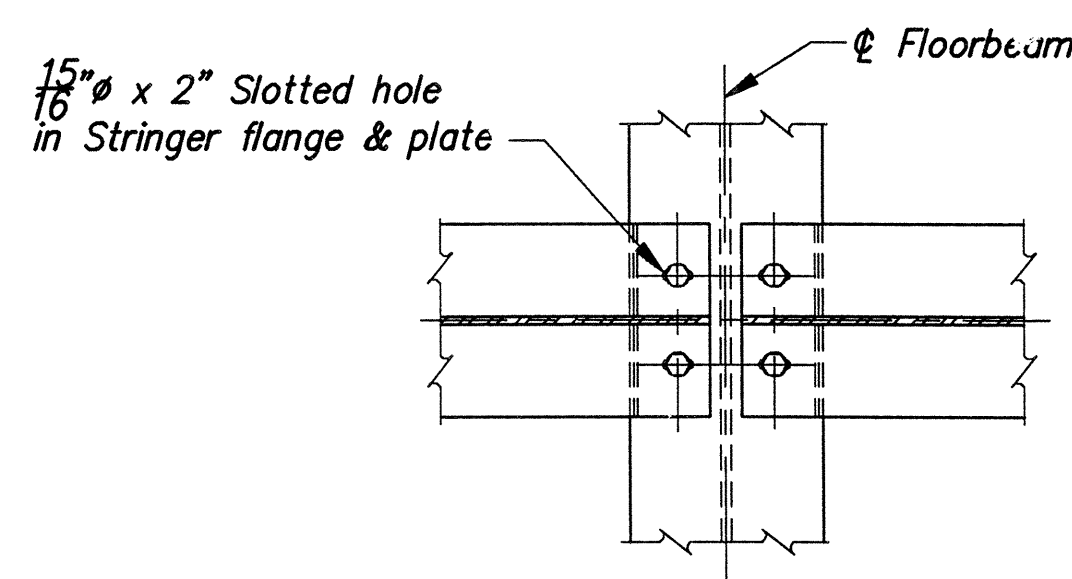
UPDATE DATE
LETTING DATE



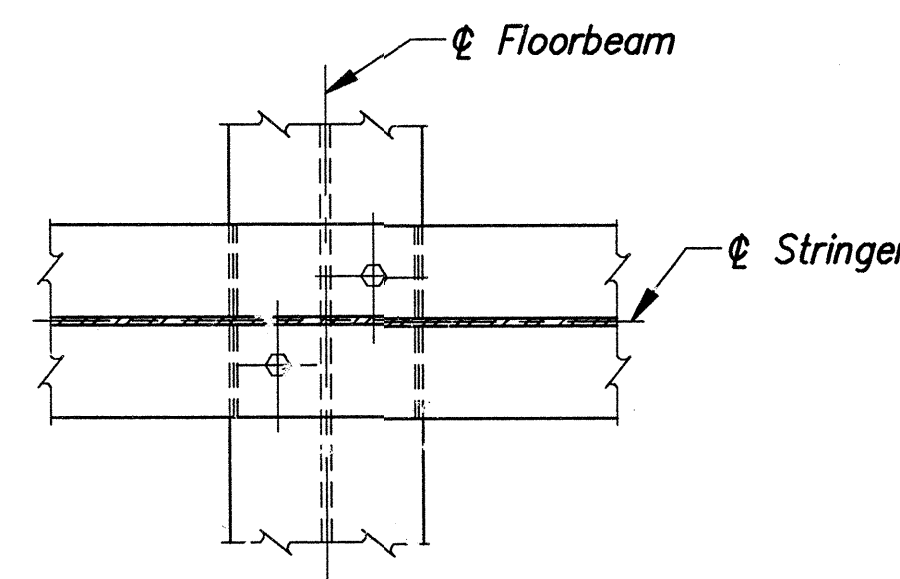
STRINGER BEARING DETAIL 1
(Typical @ LS5, LF8, LF4', LF0', LS5', LS0'', LA4, and LA8)



STRINGER BEARING DETAIL 2
(Typical @ LC3, LF7', and LC1')

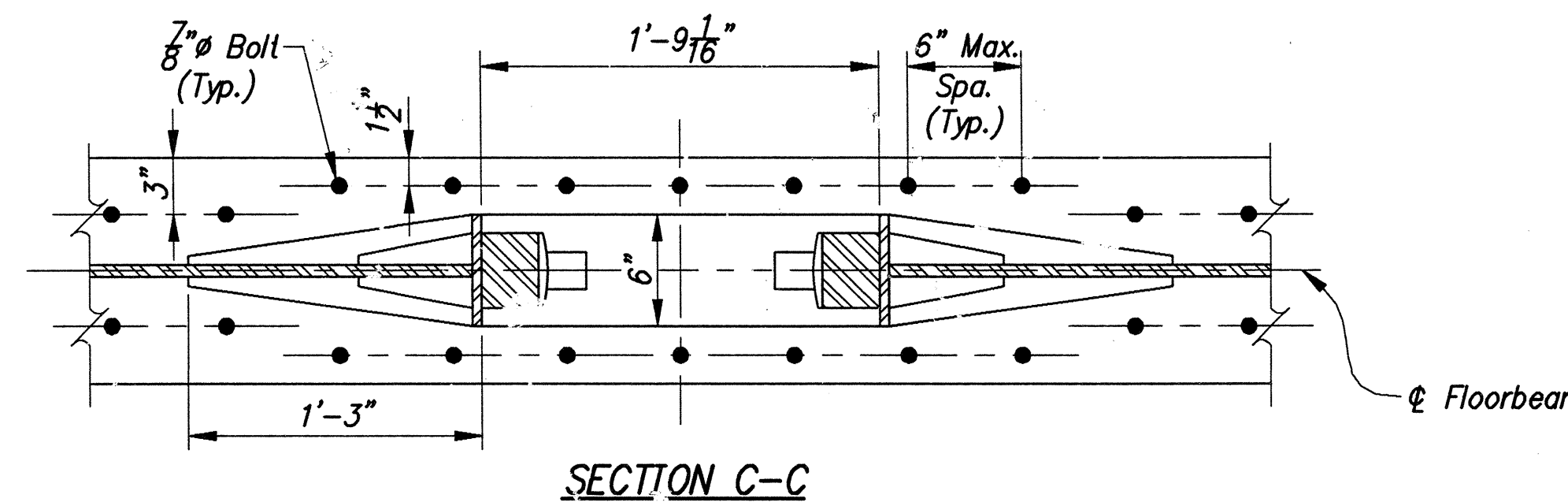


SECTION A-A

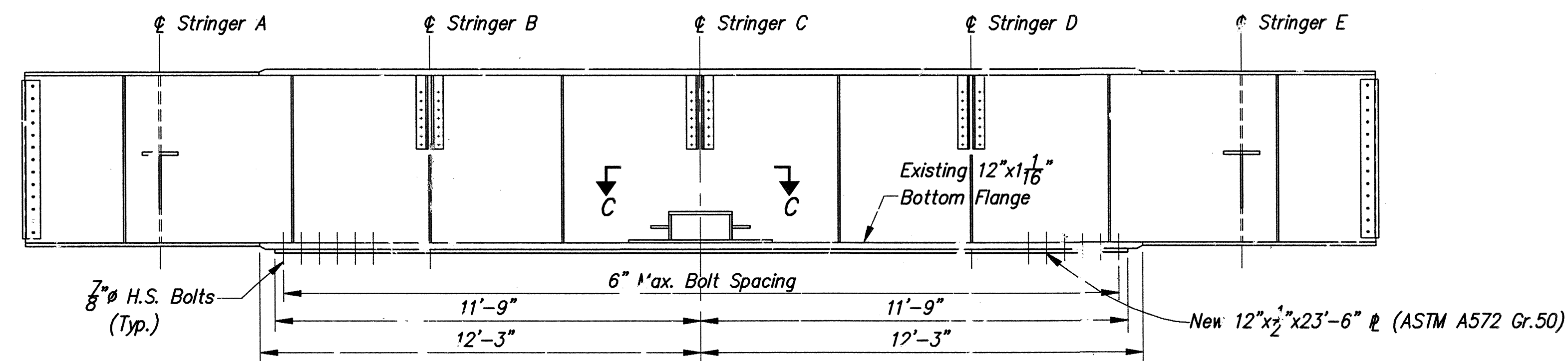


SECTION B-B

FLOORBEAM LOCATION	STRINGER	QUADRANT
LS5	E	S.W.
LC3	D	N.E.
LF8	E	S.W.
LF7'	C	N.W.
LF4'	A	N.W.
	E	S.E.
LF0'	A AND E	N.E., S.E., S.W. & N.W.
LC1'	B	N.W.
LS5'	A AND E	N.E., S.E., S.W. & N.W.
LS0''	A	N.E., S.E., S.W. & N.W.
	E	N.E. & S.E.
LA4	E	N.E.
LA8	A	N.E., N.W. & S.E.
	E	N.E. & N.W.



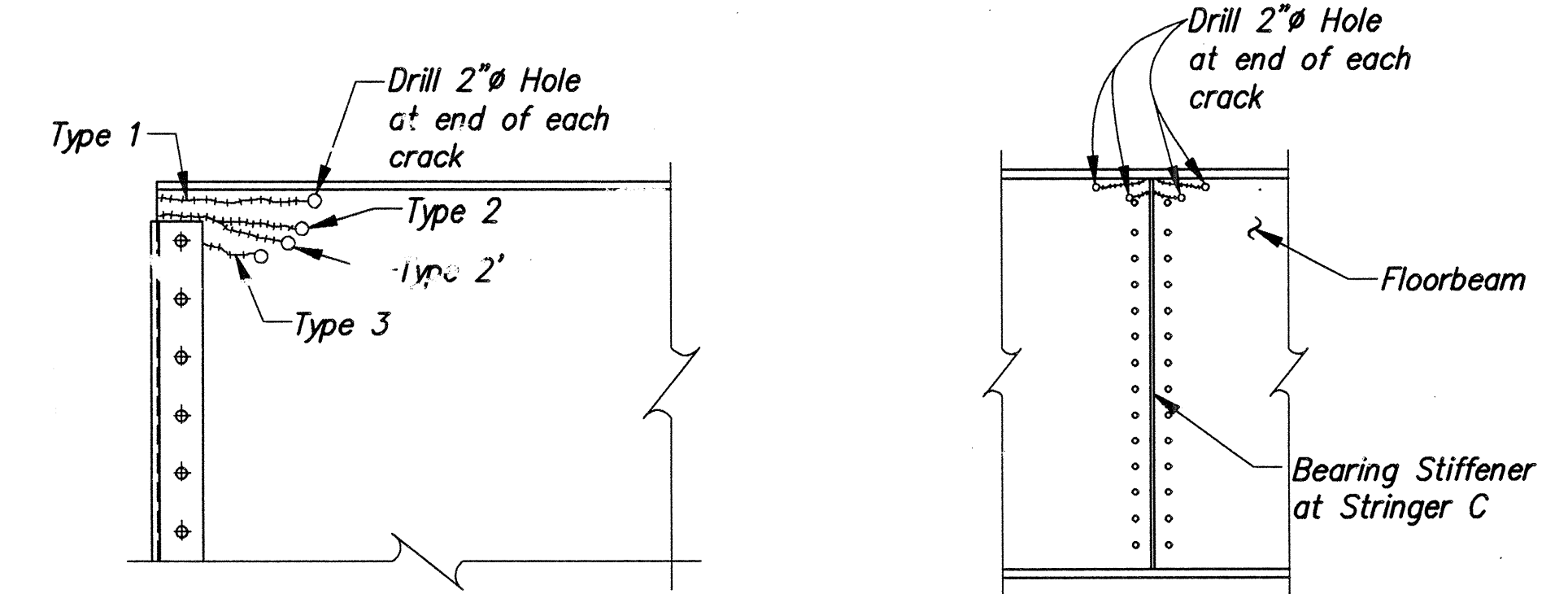
SECTION C-C



FLOORBEAM REPAIR DETAIL
This detail to be used for repair of the floorbeam bottom flange at LS0'.

**TABLE 3
FLOORBEAM WEB CRACK LOCATIONS AND TYPES**

FLOORBEAM	EAST OR WEST END	CRACK TYPE
LS0	EAST	2
		3
LC4	EAST	1
	WEST	3
LF4	WEST	1
		3
LF0'	WEST	1
LC2'	WEST	1
LC4'	EAST	1
	WEST	3
LA10	EAST	2
	WEST	1
LA11	EAST	1
		2
		1
LA12	EAST	2
		2'
		2
LA12	WEST	2
		2'



TYPICAL FLOORBEAM END
All typical floorbeam web cracks are shown above. See Table 3 for location and type(s) of cracks at each location.

FLOORBEAM WEB CRACK DETAIL AT LS0
(View is looking South at North side of Floorbeam)

CRACK DESCRIPTIONS AND LOCATIONS

- Type 1 - A crack in the web along the toe of the fillet weld connecting the top flange and web.
- Type 2 - A crack in the web that runs along the top edge of the connection angle, and continues toward the center of the floorbeam.
- Type 2' - An additional crack in the web that branches off from a Type 2 crack.
- Type 3 - A crack in the web that protrudes from the top bolt hole in the connection angle.

FLOORBEAM WEB CRACK DETAILS

DESIGNED BY: DRH
CHECKED BY: PMP
DATE: 10-91
REVISIONS: 10-91

REVISIONS: 10-91
DATE: 10-91
REVISIONS: 10-91
DATE: 10-91

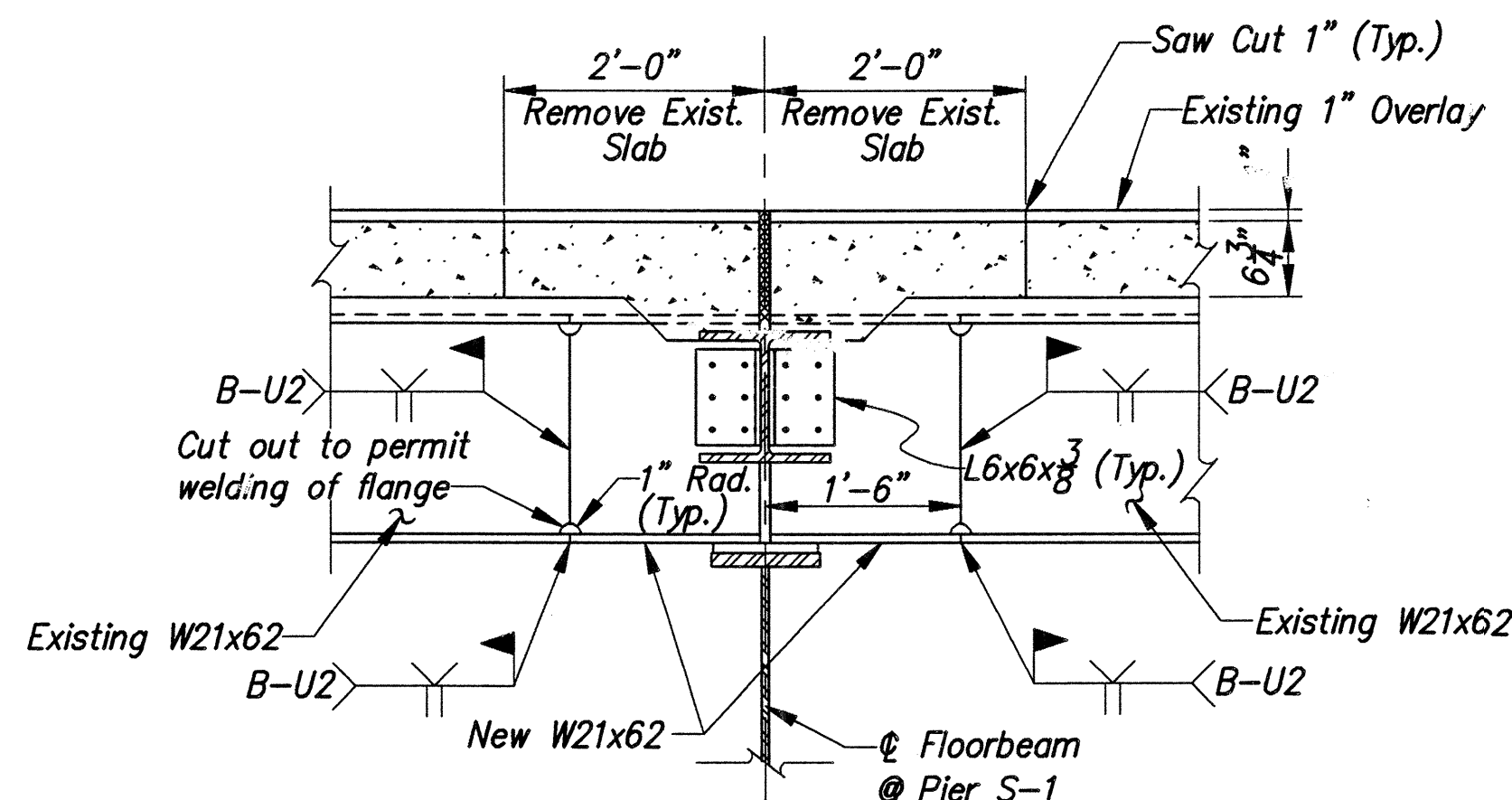
REPAIRS TO BRIDGE ON US41 (SB) OVER OHIO RIVER SHEET 16

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANSVILLE, IND.

MISCELLANEOUS
SUPERSTRUCTURE REPAIRS

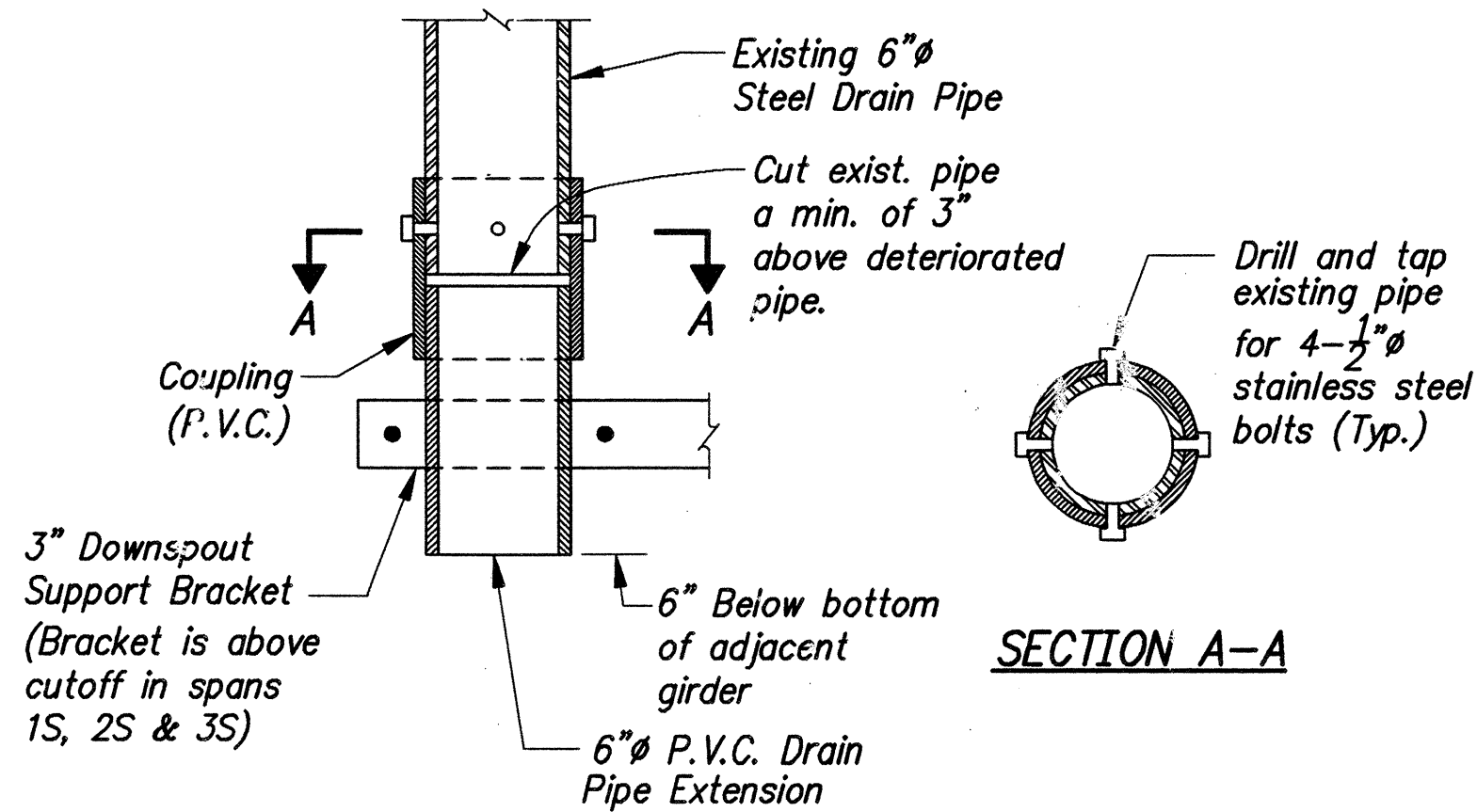
STATION: _____ ROAD P.E. PROJECT NO.: _____
CONSTRUCTION PROJECT NO.: _____ MAINTENANCE PROJECT NO.: _____ DRAWING NO.: 22827

UPDATE DATE _____
LETTING DATE _____



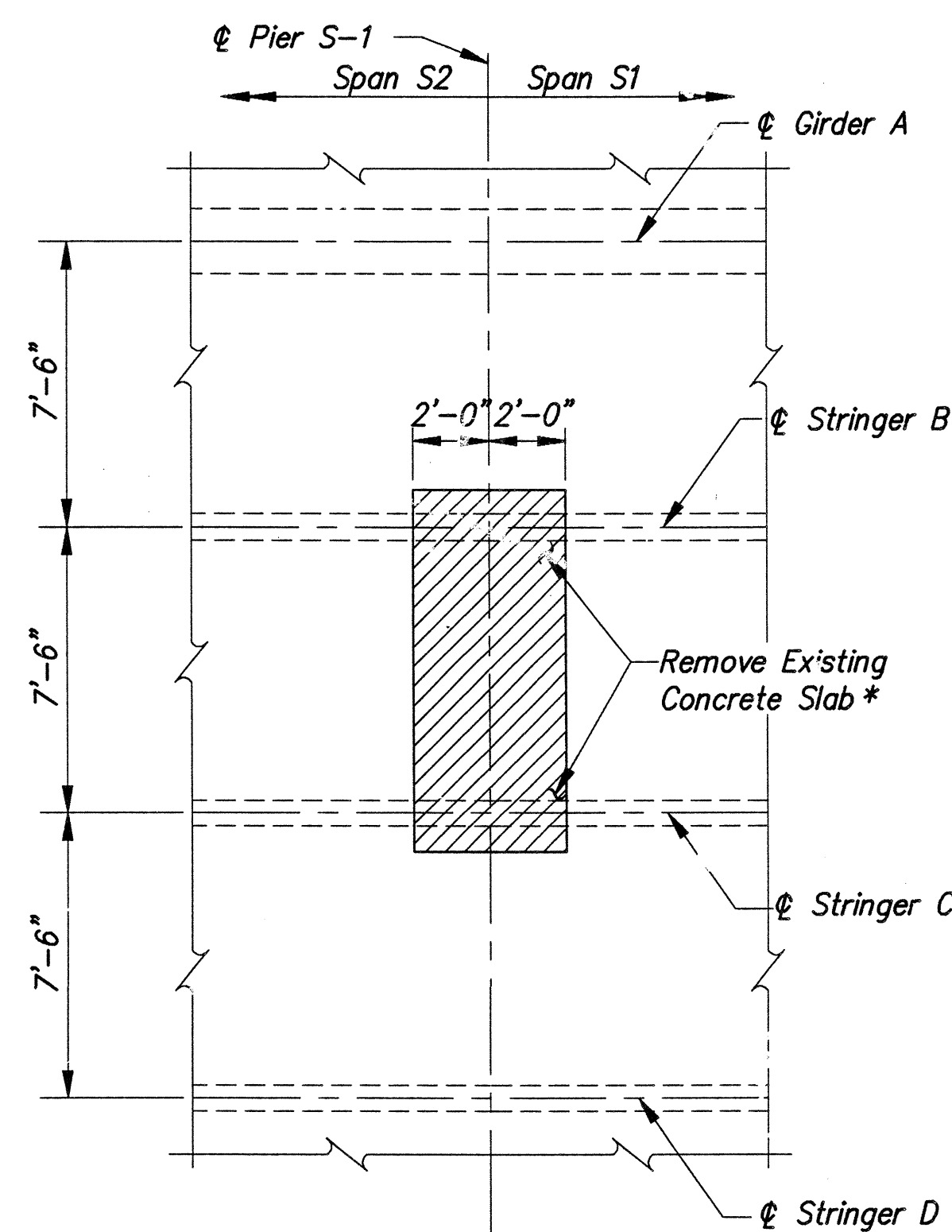
STRINGER B ELEVATION AT PIER S-1

Note: Temporary Supports required.
Support Load: D.L. 8 Kips
L.L. 31 Kips
Total 39 Kips



DRAIN PIPE REPAIR DETAIL

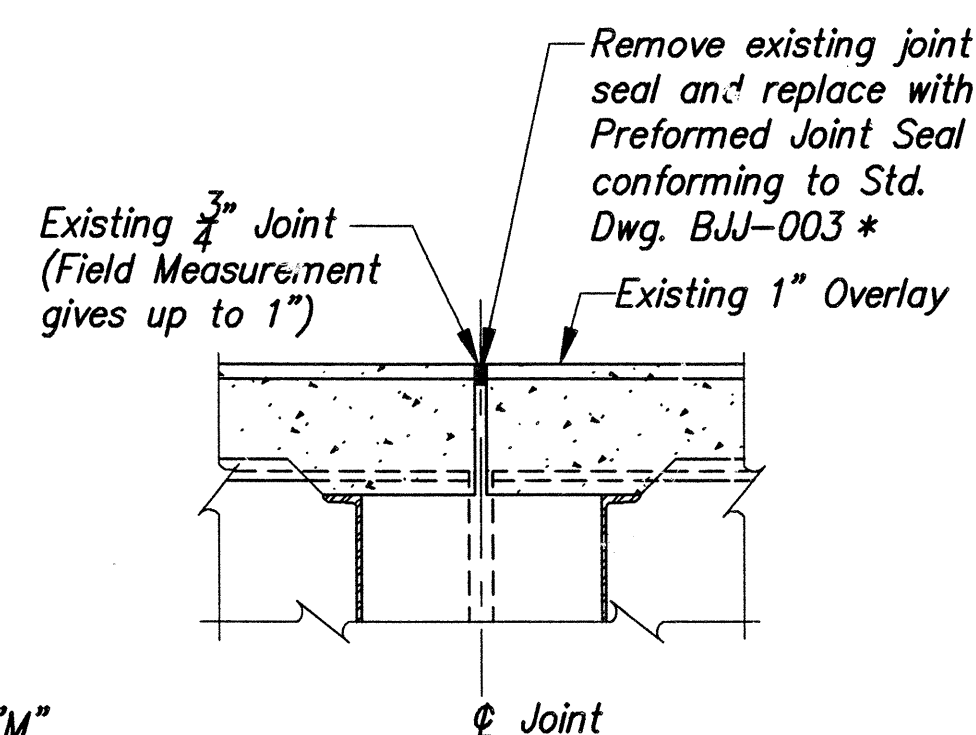
(80 locations in south approach only)



PLAN-SLAB AT PIER S-1

STRINGER END REPAIR DETAIL

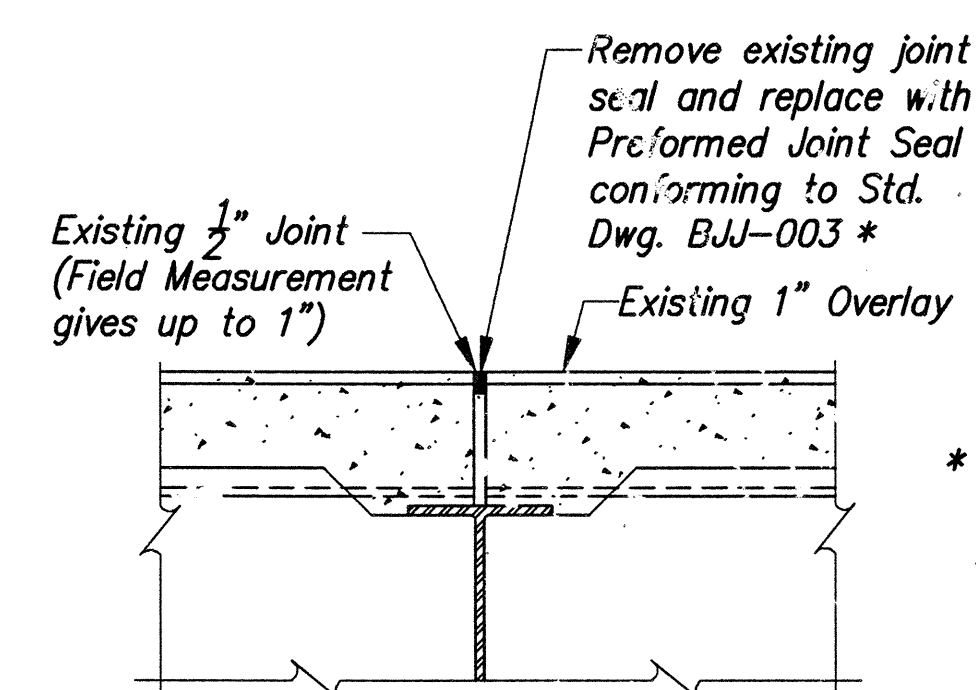
This detail to be used for repair of Stringers B and C ends at Pier S-1.



DECK JOINT SEALING

(at LS5, LF0, LF4, LF8, LF4', LF0', LS5', LS0', LA0, LA4 & LA8)

* Replace with Class "M" Concrete full depth (overlay not required)



DECK JOINT SEALING

(at N1-N4, N6, N7, S1 & S2)

* Seal shall extend into the curb to the face of the railing parapet. Payment shall be from gutter line to gutter line.

DRAIN PIPE REPAIR NOTES

Pipe and fittings shall be manufactured from a PVC compound which meets the requirements of Class 12454-B poly(vinyl chloride), as outlined in ASTM D-1784.

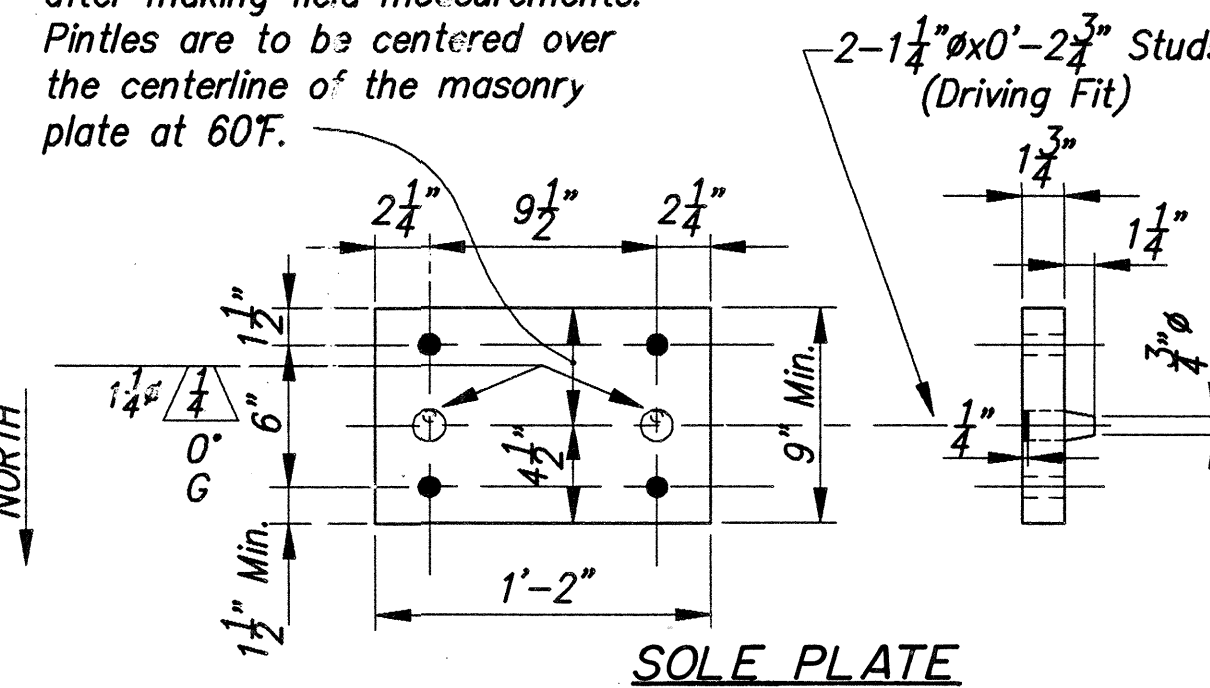
Pipe shall be Schedule 40 and conform to the requirement of ASTM D-1785.

Fittings shall be Schedule 40 and conform to the requirements of ASTM D-2466.

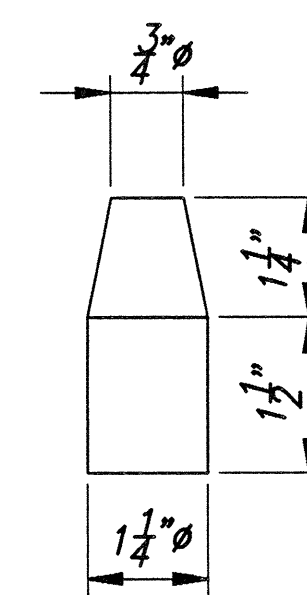
Stainless steel bolts shall conform to ASTM A320.

The joint between the coupling and the PVC pipe shall be made by solvent welding in accordance with the manufacturer's recommendations.

This dimension is to be set after making field measurements. Pintles are to be centered over the centerline of the masonry plate at 60F.



SOLE PLATE



PINTLE STUD DETAIL

BEARING REPAIR PROCEDURE

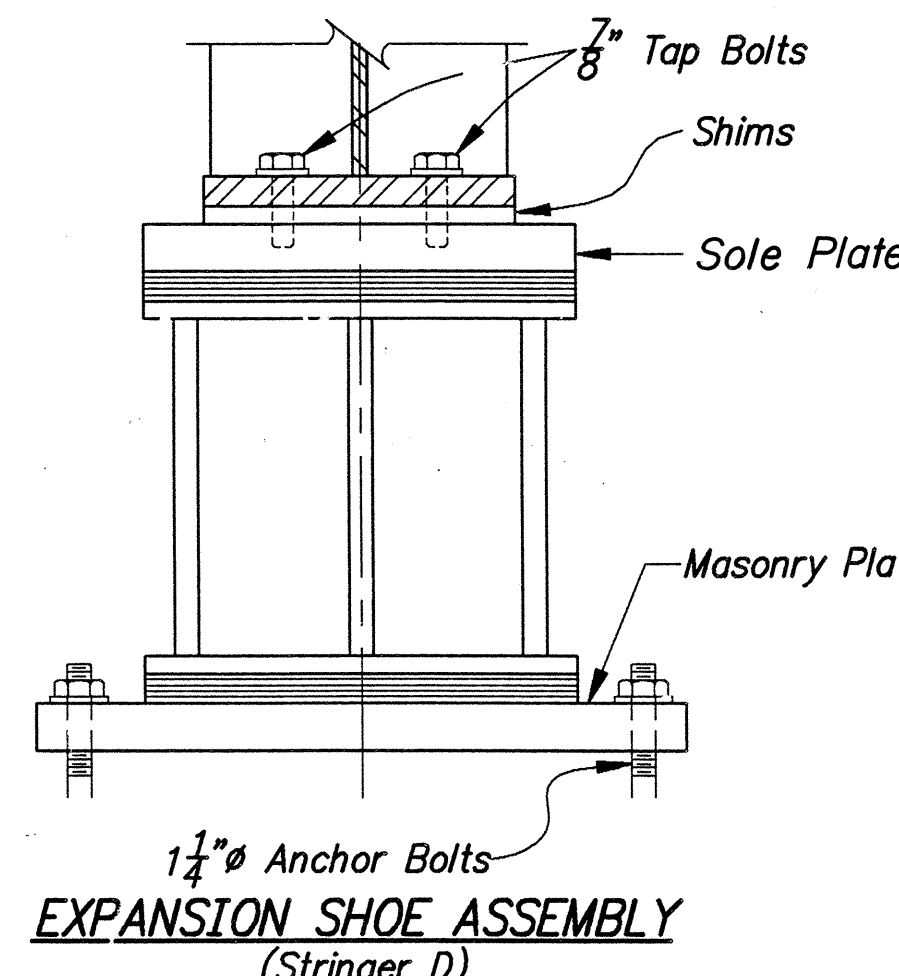
Jack stringer slightly off the rocker bearing.

Remove the 4-7/8 inch tap bolts fastening top shoe to the girder flange.

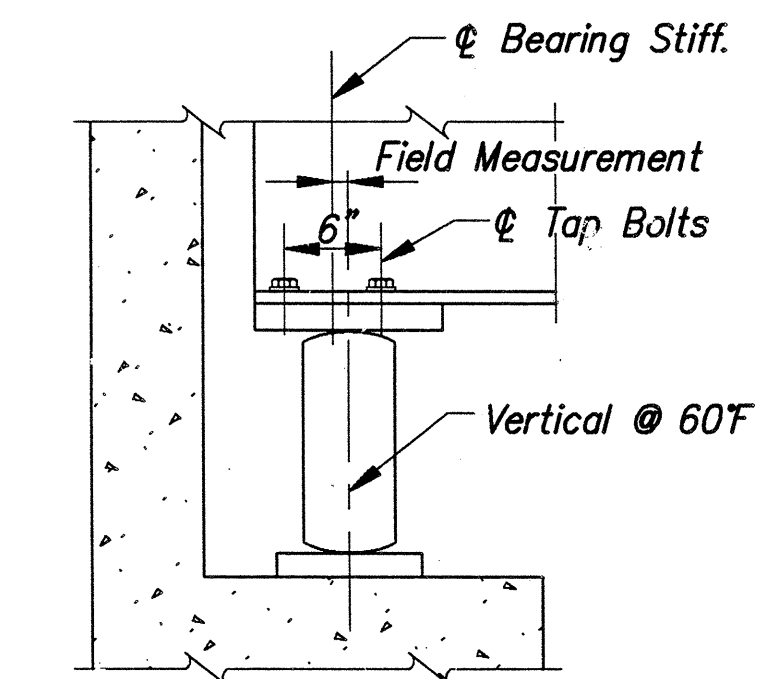
Remove sole plate and replace with new plate and pintles. The width of the top shoe shall be such that when bolted to the girder thru the existing holes, the pintles will be centered over the centerline of the masonry plate at 60F.

Add shims between the sole plate and girder flange so that sole plate is in contact with rocker with girder raised approximately 1/16 inch.

Install new tap bolts and washers in top shoe.



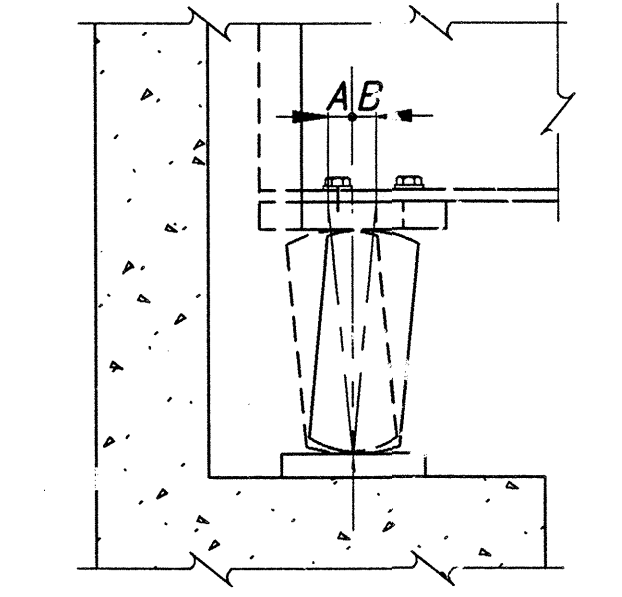
EXPANSION SHOE ASSEMBLY (Stringer D)



SHOE AT ABUTMENT S20

Temperature	Dimension B				Dimension A			
	0'	20'	40'	60'	60'	80'	100'	120'
Top of Shoe to	5"	7"	7"	-	-	7"	7"	1.5"
Masonry at Abut. S20	1 1/16"	8"	16"	-	-	16"	8"	1 1/16"

BEARING REPAIR AT ABUTMENT S-20



SHOE SETTING DIAGRAM

MISCELLANEOUS SUPERSTRUCTURE REPAIRS

REPAIRS TO BRIDGE ON US 41 (SB) OVER OHIO RIVER SHEET 17

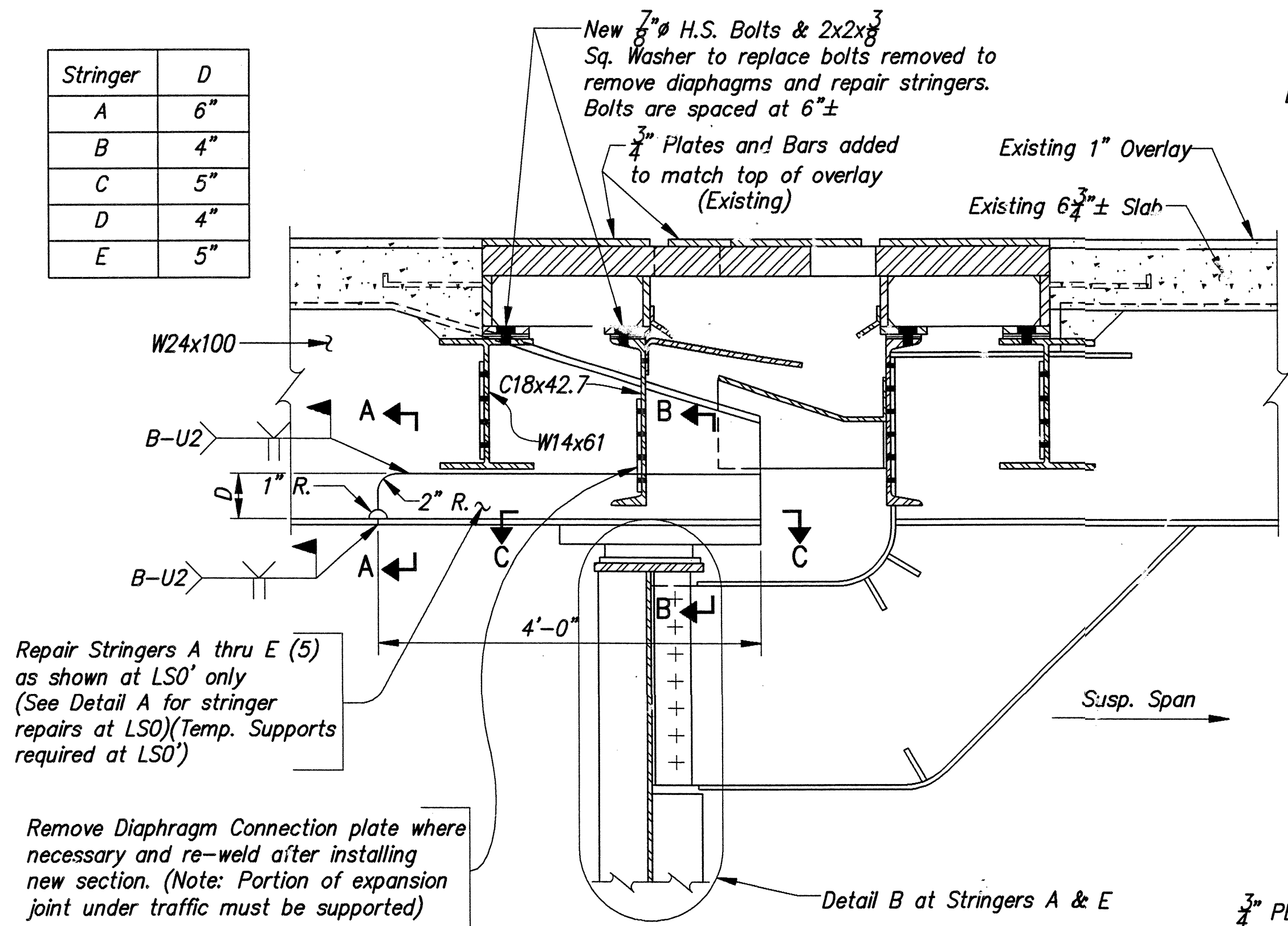
COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT COUNTY OF
HENDERSON
HENDERSON-EVANSVILLE, IND.

STATION	ROAD P.E. PROJECT NO.
CONSTRUCTION PROJECT NO.	MAINTENANCE PROJECT NO.
DRAWING NO. 22827	

DESIGNED BY _____ DATE 10-91
CHECKED BY _____ DATE _____
P.N.P. & C.S.B.
DRAWN BY _____ DATE _____
CHECKED BY _____ DATE _____

UPDATE DATE: _____
 LETTING DATE: _____

Stringer	D
A	6"
B	4"
C	5"
D	4"
E	5"

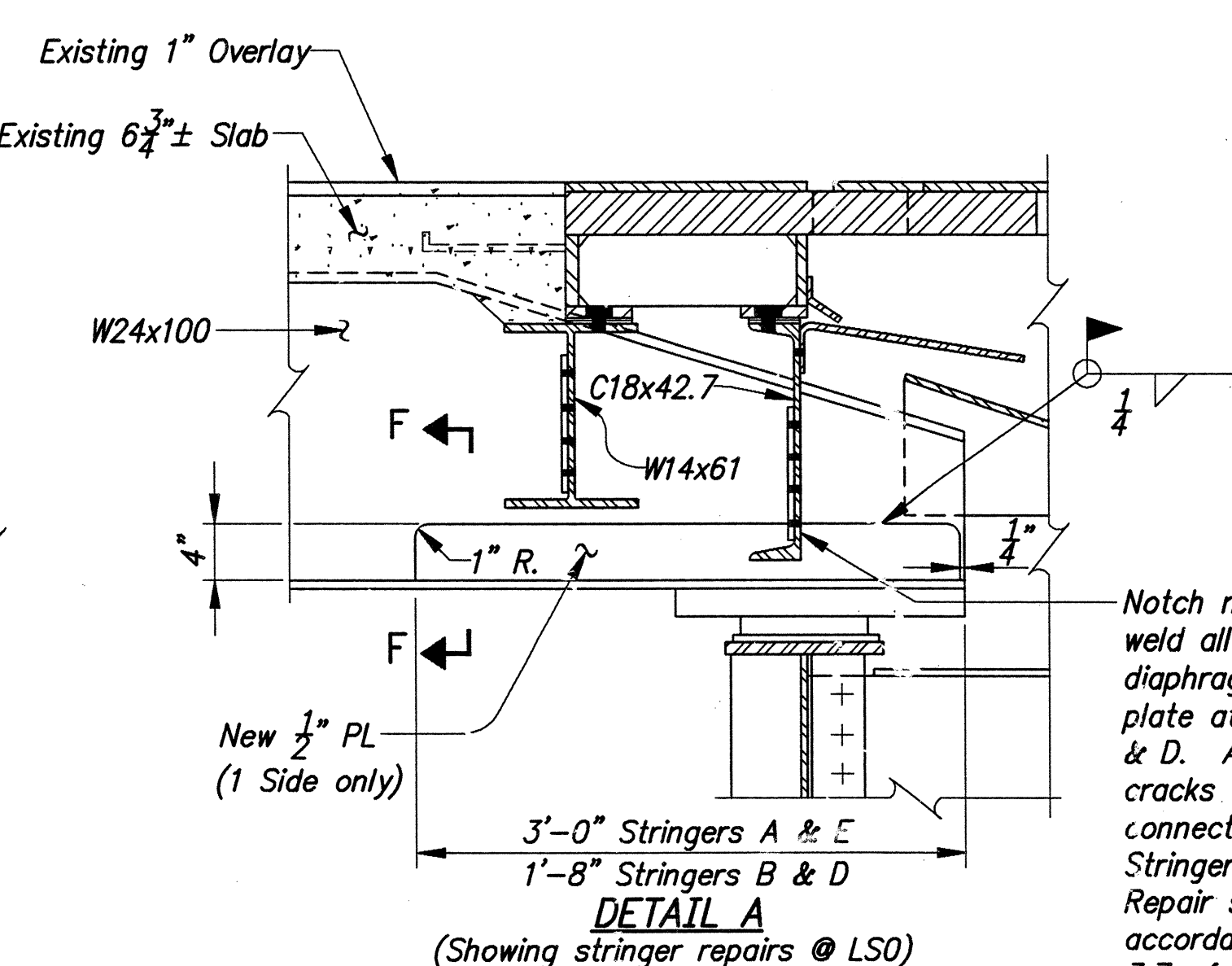


Repair Stringers A thru E (5) as shown at LSO' only (See Detail A for stringer repairs at LSO) (Temp. Supports required at LSO')

Remove Diaphragm Connection plate where necessary and re-weld after installing new section. (Note: Portion of expansion joint under traffic must be supported)

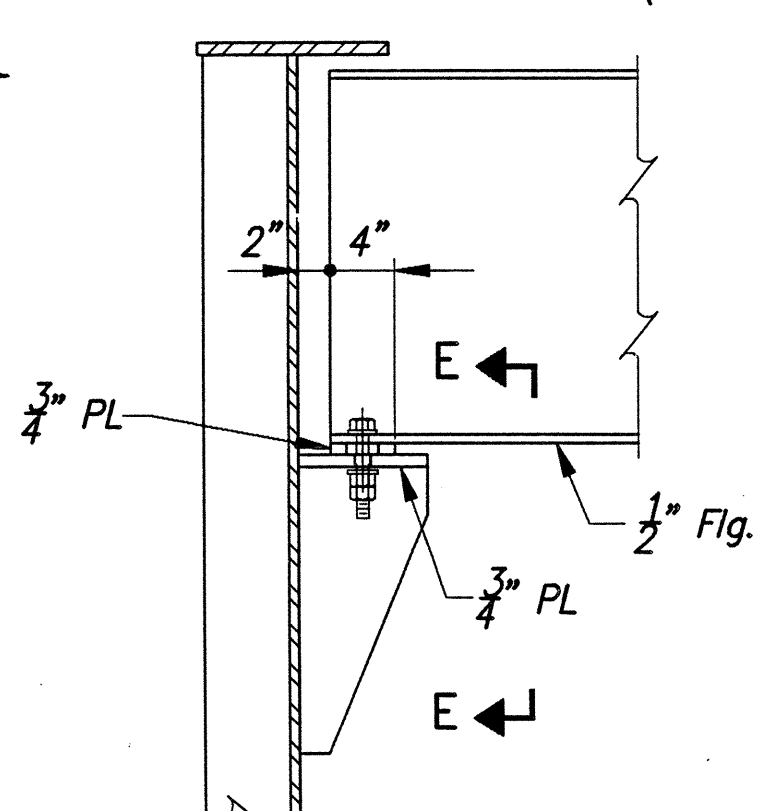
EXPANSION JOINT AT LSO AND LSO'

Temp. Support Loads: Str. A & E D.L. 17 Kips Str. B, C & D D.L. 14 Kips
 L.L. 24 Kips L.L. 39 Kips
 Total 41 Kips Total 53 Kips



DETAIL A
(Showing stringer repairs @ LSO)

Notch new plate and weld all around at diaphragm connection plate at Stringers B & D. Also repair weld cracks at bottom of connection plate at Stringers A & E. Repair shall be in accordance with Section 3.7 of AWS D1.5-88.

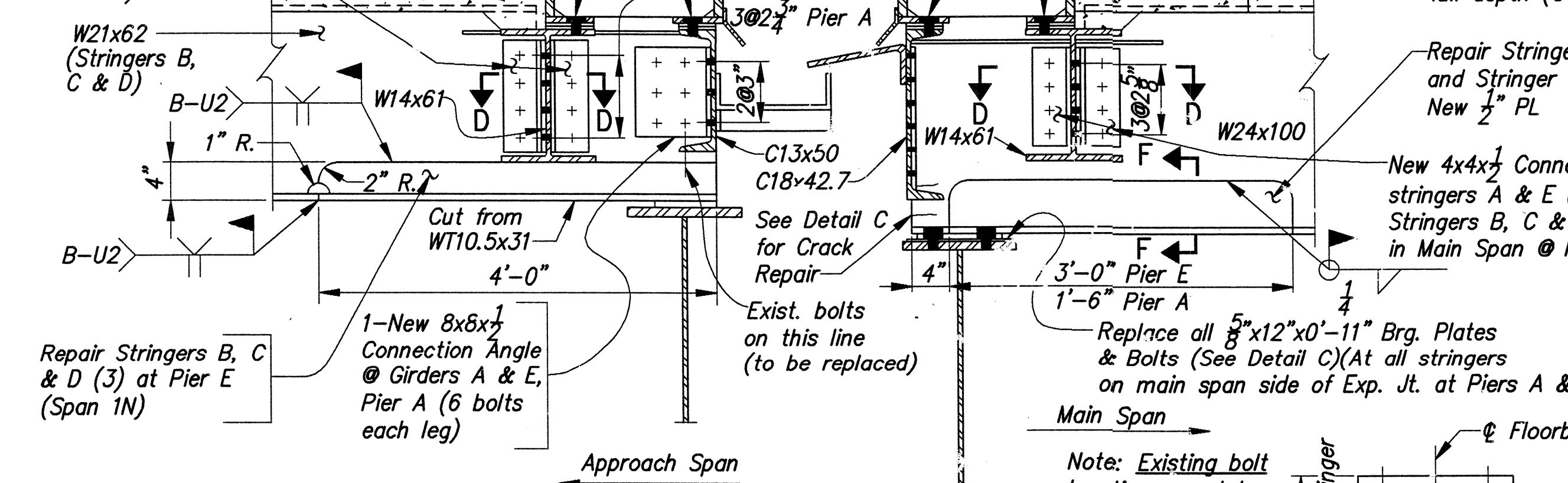


DETAIL B

New 7/8" H.S. Bolts & 2x2x3/8 Sq. Washer to replace bolts removed to remove diaphragms and repair stringers. Bolts are spaced at 6"±

Replace all 7/8" H.S. Bolts & 2x2x3/8 Sq. Washers and Shim Plates on main span side of expansion joint @ Piers A and E. Bolts are spaced at 6"±

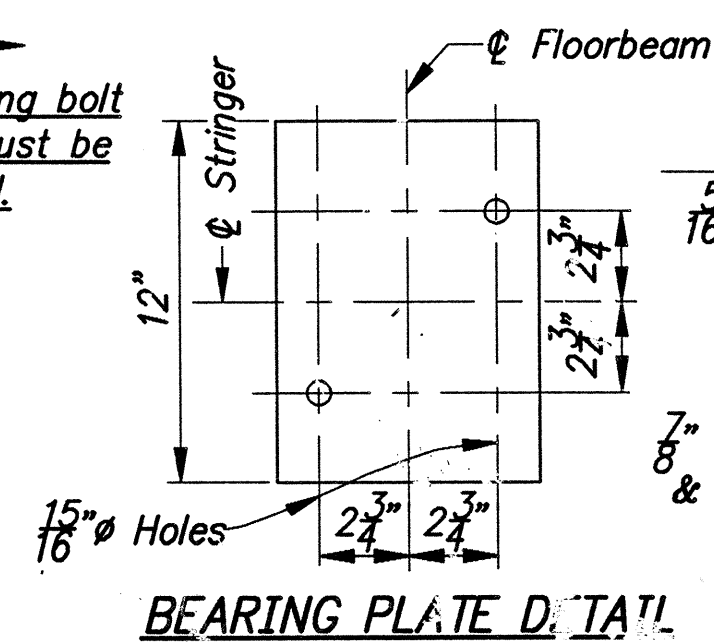
New Connection Angles @ Girders A & E, Pier A & E (See Section D-D and Table)



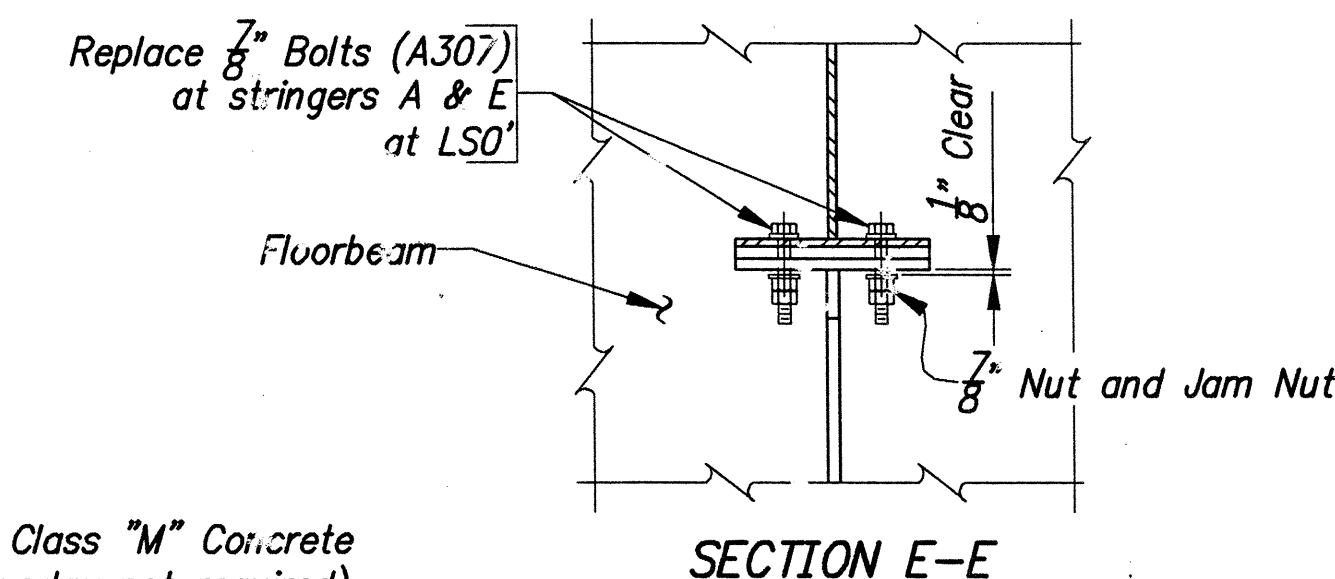
EXPANSION JOINT AT PIERS A AND E (LS10 & LA12)

Note: The top of the expansion joint on the main span side is now approximately 1/4" to 3/4" higher than the joint on the approach span side. The replacement of the bearing plates, shims and bolts on the main span side is intended to correct this difference. The thickness of the shim plates must be selected so that the main span side of the joint matches the elevation of the approach side.

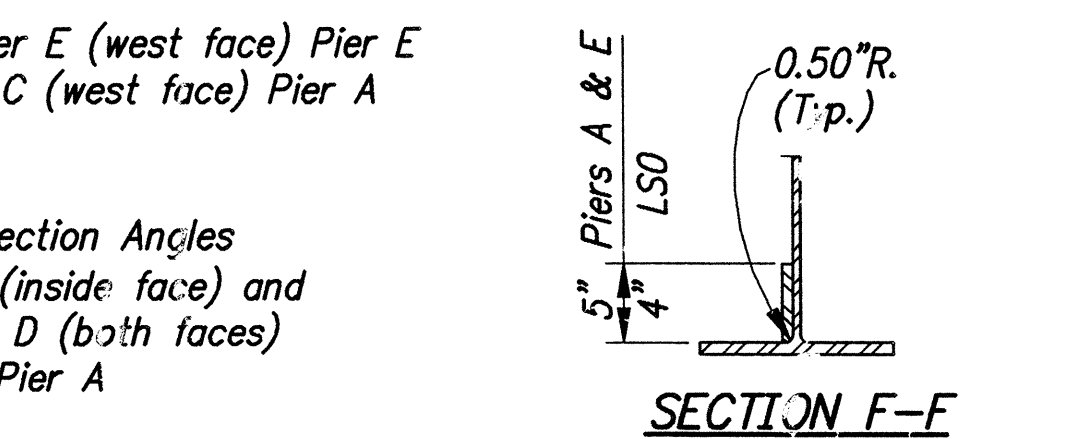
NOTE: Temporary supports required to make stringer repairs and bearing plate replacements. See support loads on Sheet 5.



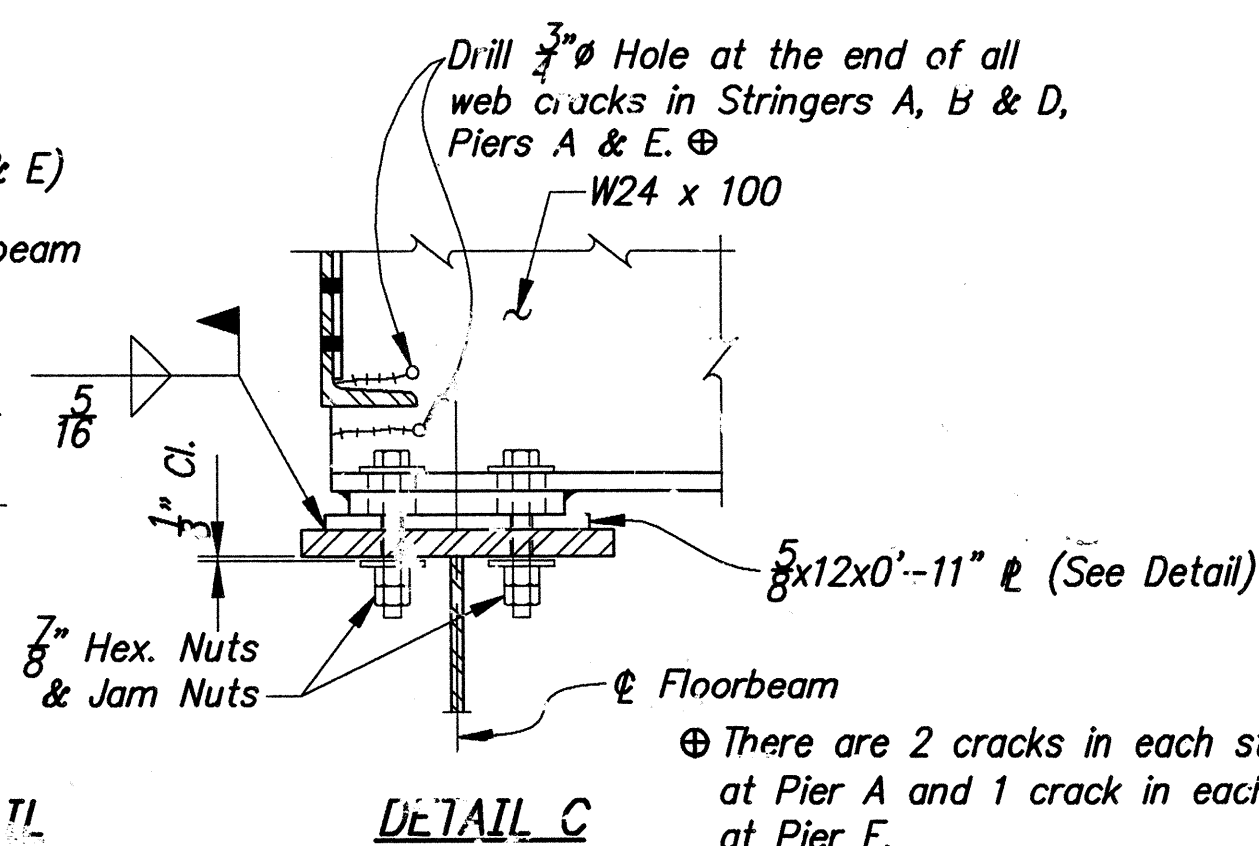
BEARING PLATE DETAIL



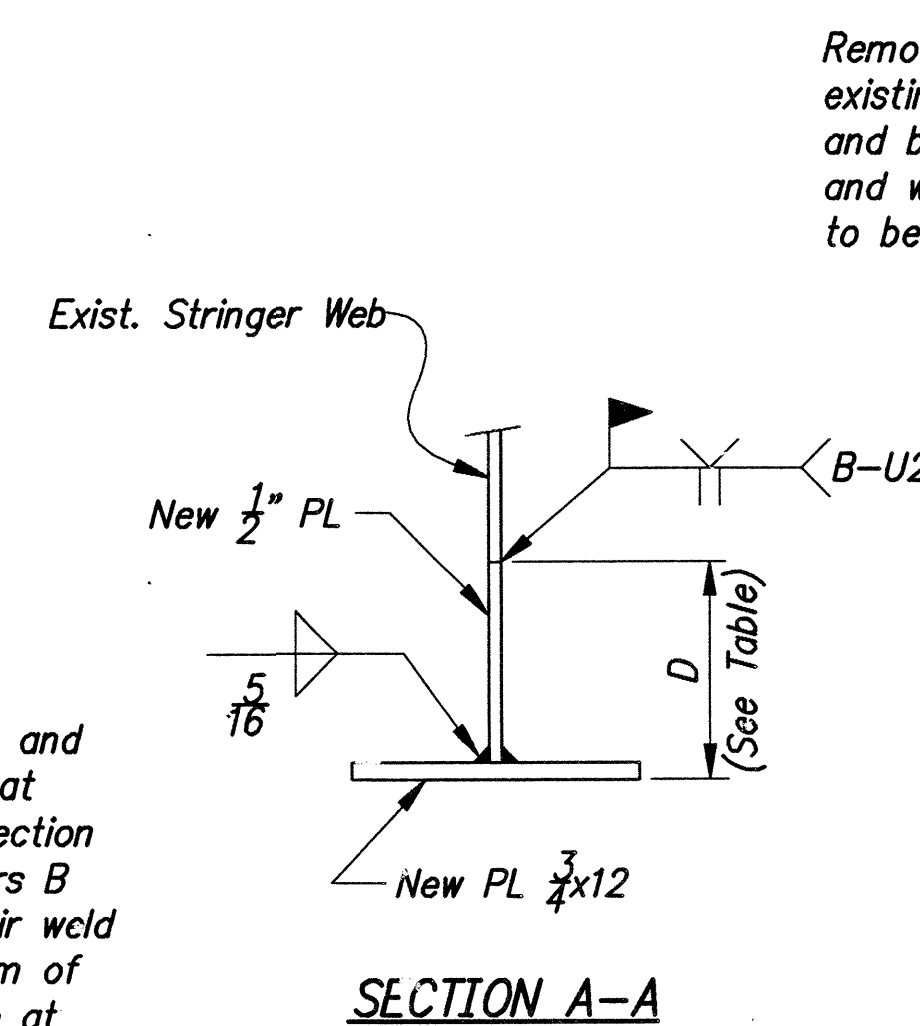
SECTION E-E



SECTION F-F

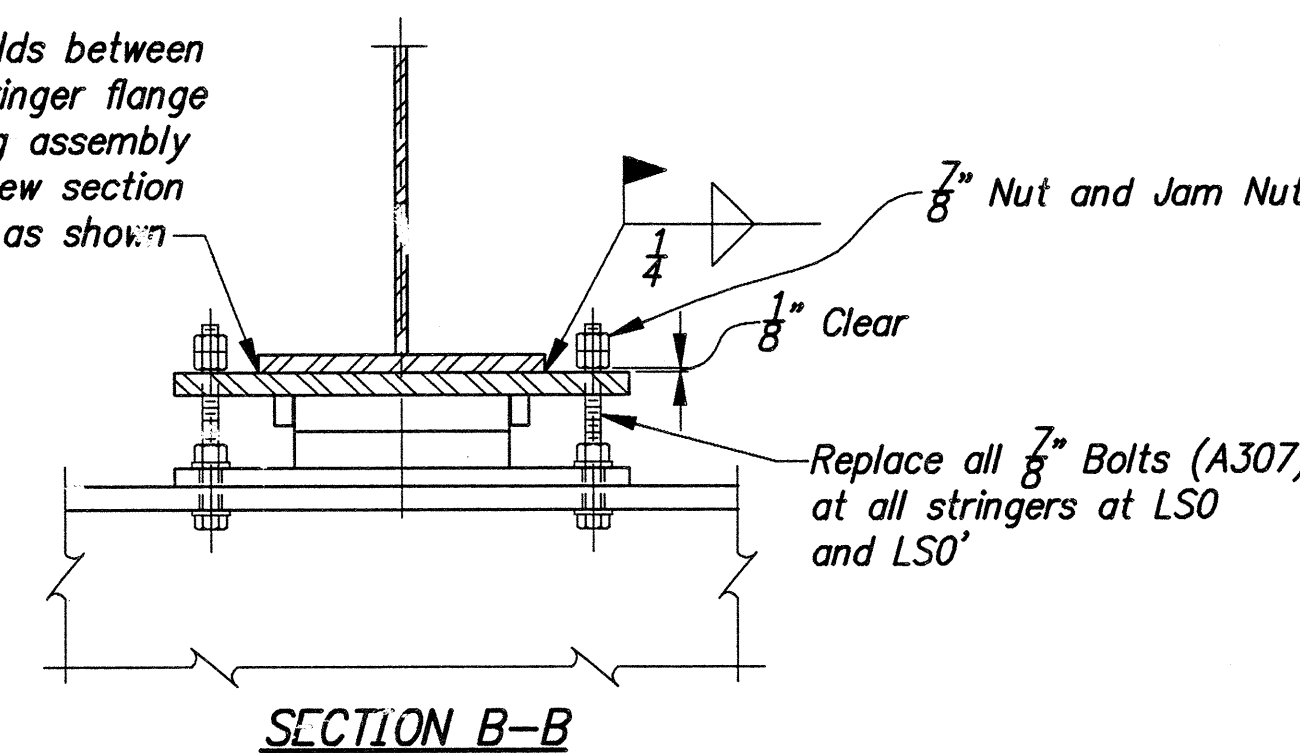


DETAIL C



SECTION A-A

Remove welds between existing stringer flange and bearing assembly and weld new section to bearing as shown



SECTION B-B

EXPANSION JOINT REPAIR NOTES

Traffic must be maintained in a 10'-0" minimum lane at all times. This will require supporting any portion of the expansion joint that is carrying traffic while the support diaphragms are disconnected for repairing Stringer C. It is the responsibility of the Contractor to provide this support as well as the temporary support for stringers while making the stringer repairs. The Contractor shall submit details of the proposed support plan to the Engineer prior to beginning this work. The Contractor is reminded that traffic must be maintained in two 10'-0" minimum lanes for 2 hours each weekday (See Traffic Control Notes). The lump sum price for each expansion joint repair shall be full compensation for the following items of work:

Temporary supports for repairing stringers.

Repairing stringer ends as shown.

Repair weld cracks at stringer A & E at LSO.

Repair stringer cracks at ends of stringers A, B & D on main span side of Piers A & E.

Removal and replacement of concrete deck adjacent to the expansion dam on main span side, Piers A & E.

Replacing bearing plates under stringers in main span at Piers A and E as shown.

Resetting the expansion joint on main span side at Piers A & E to the correct grade and tooth openings with new shims, bolts and washers.

Repairing diaphragm connections at Piers A and E.

Removing and replacing 7/8" H.S. Bolts, diaphragms and diaphragm connection plates removed to repair stringers.

Replacing bolts in expansion bearings as noted.

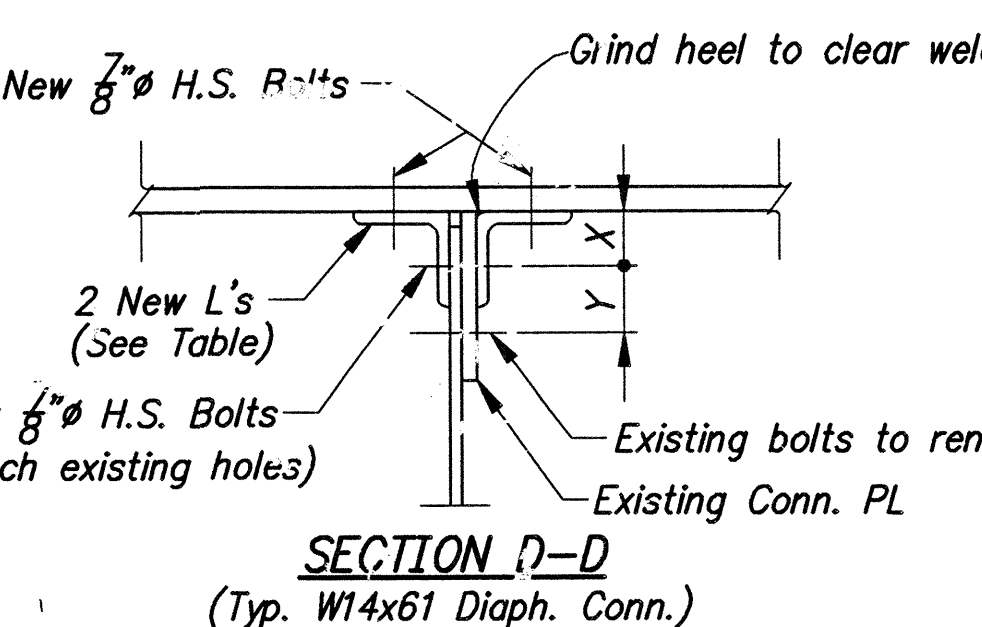
Cleaning and painting all corroded existing steel adjacent to repair areas (within 12" outside the repair limits).

Cleaning and painting all new structural steel.

Shop drawings of existing structural steel will be made available to the successful bidder upon written request.

TOOTHED PLATE DETAIL
(Showing "Y" Dimensions)

TABLE FOR SETTING "Y" DIMENSIONS					
Temp.	20'	40'	60'	80'	100'
Location					
A	4 1/2"	4"	3 1/2"	3"	2 1/2"
E	7 1/8"	6"	4 7/8"	3 3/4"	2 9/16"



SECTION D-D
(Typ. W14x61 Diaph. Conn.)

TABLE FOR DIAPHRAGM CONNECTION ANGLE DIMENSIONS			
LOCATION	ANGLE SIZE	X	Y
PIER A			
M. in Span	4x4x1/2	2 1/2"	3"
S. App. Span	5x5x1/2	3 5/8"	3"
PIER E			
N. App. Span	4x3 1/2x1/2**	2 1/8"	2 1/2"

** 3 1/2" leg on Diaphragm

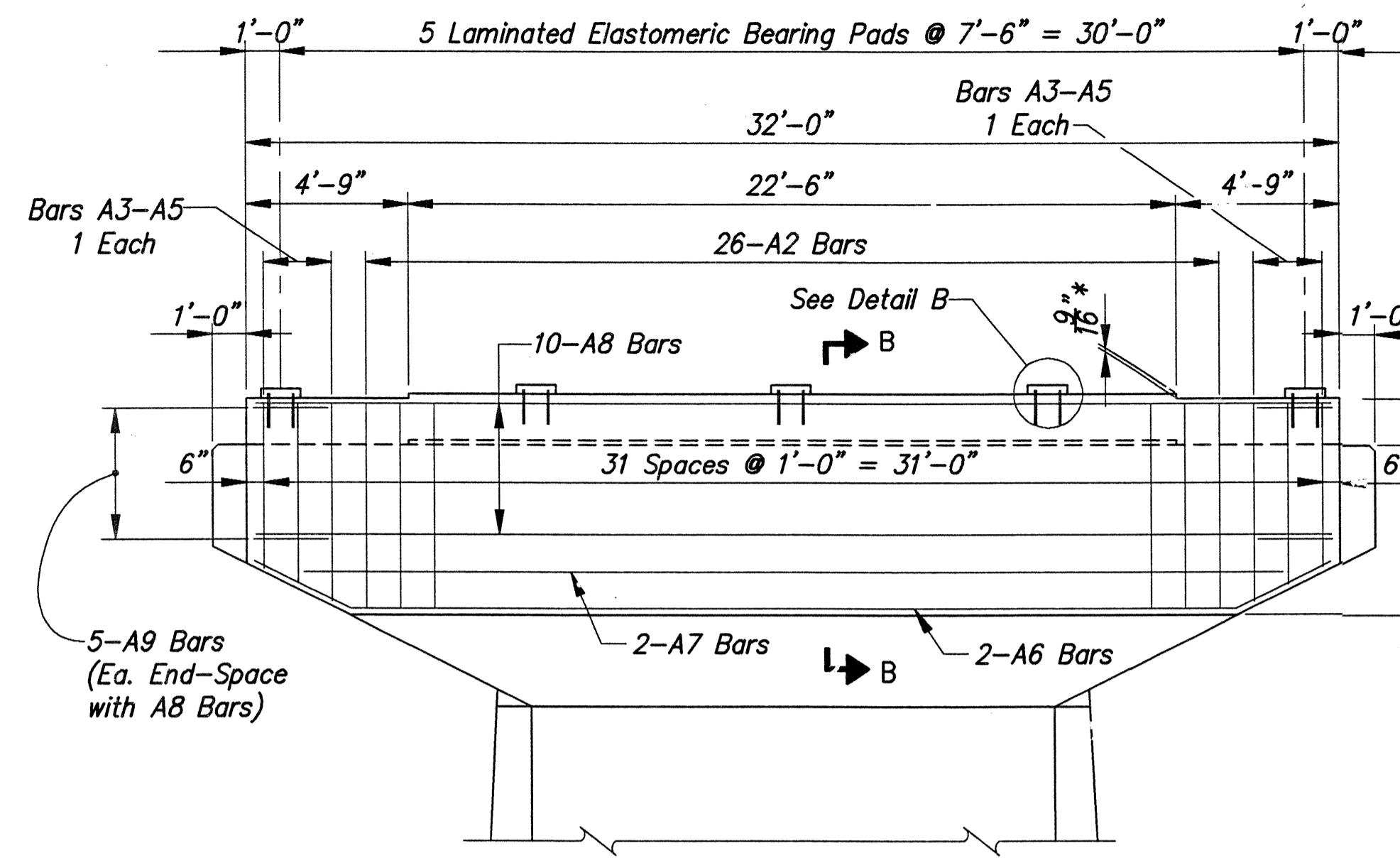
EXPANSION JOINT REPAIRS

REPAIRS TO BRIDGE ON US 41 (SB) OVER OHIO RIVER SHEET 18

COMMONWEALTH OF KENTUCKY
 DEPARTMENT OF HIGHWAYS
 FRANKFORT COUNTY OF
 HENDERSON
 HENDERSON-EVANVILLE, IND.

ROAD P.E. PROJECT NO.
 STATION CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO. 22827

UPDATE DATE
LETTING DATE

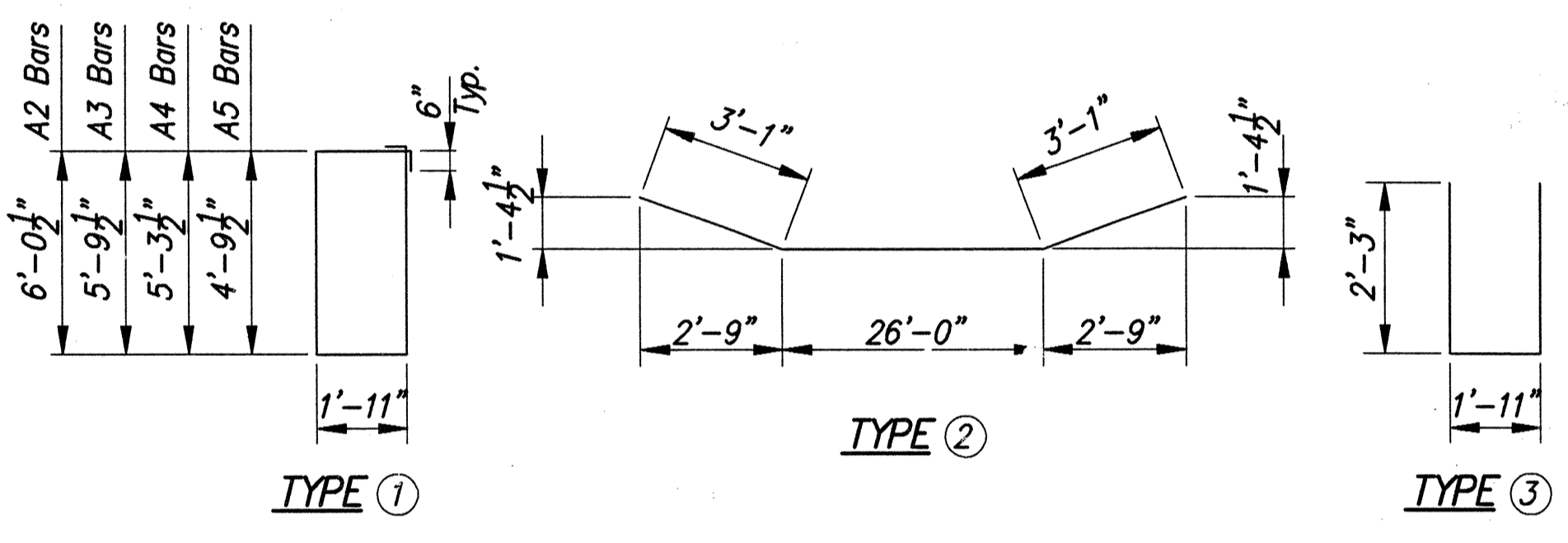


ELEVATION - PIERS S7 & S15

* These dimensions have been determined from the design plans. They must be adjusted so that the top of concrete is $3\frac{1}{2}'' (+0'', -\frac{3}{16}'')$ below low steel.

ESTIMATE OF QUANTITIES				
Item	Unit	Pier 7	Pier 15	
Concrete Class "A"	C.Y.	16.7	16.6	
Reinforcement	Lbs.	1570	1570	

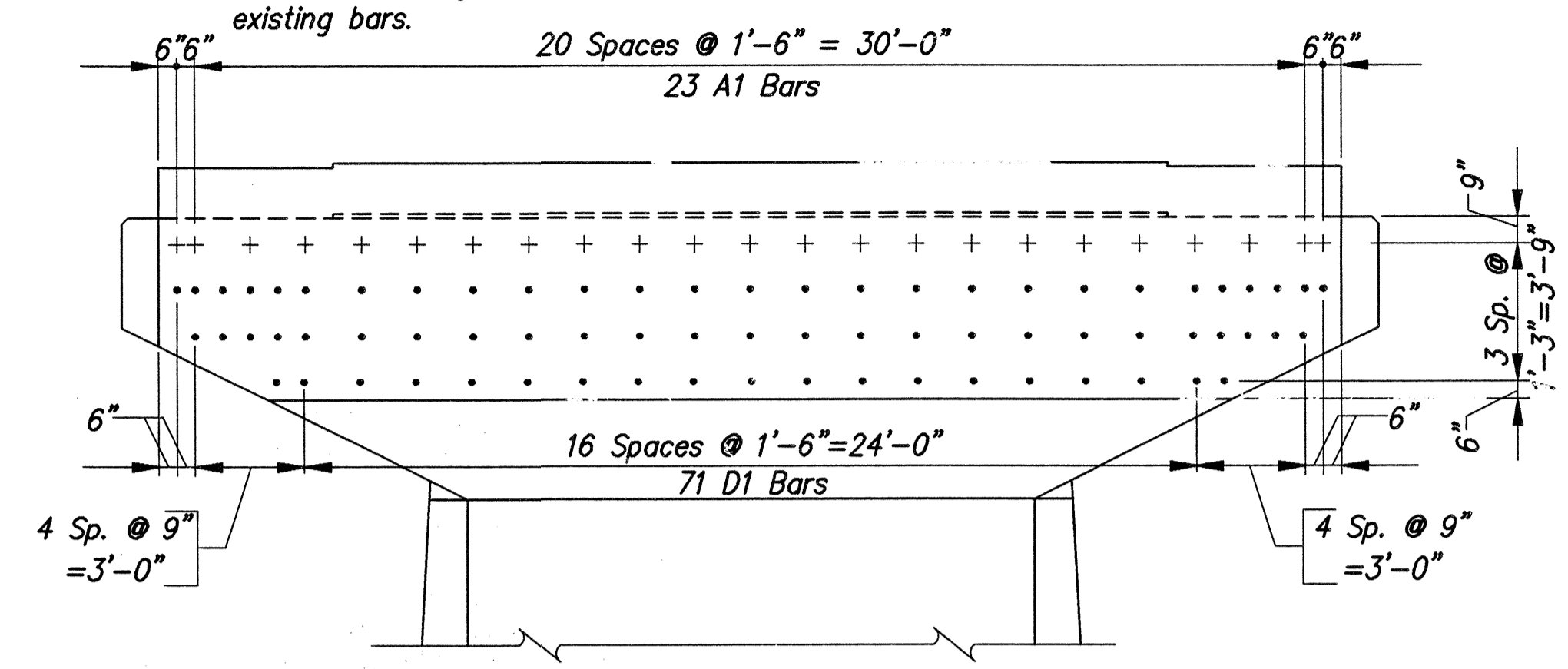
Note: Above quantities are not pay items - See General Notes.



PIN AND HANGER BACK UP SUPPORT DETAILS

⊕ Paint end of bar, washer and nut in accordance with the requirements for painting structural steel.

Note: Before drilling into pier the existing reinforcing bars must be located and marked on the pier. Holes for A1 & D1 bars shall be adjusted to clear existing bars.



ELEVATION - PIERS S7 & S15

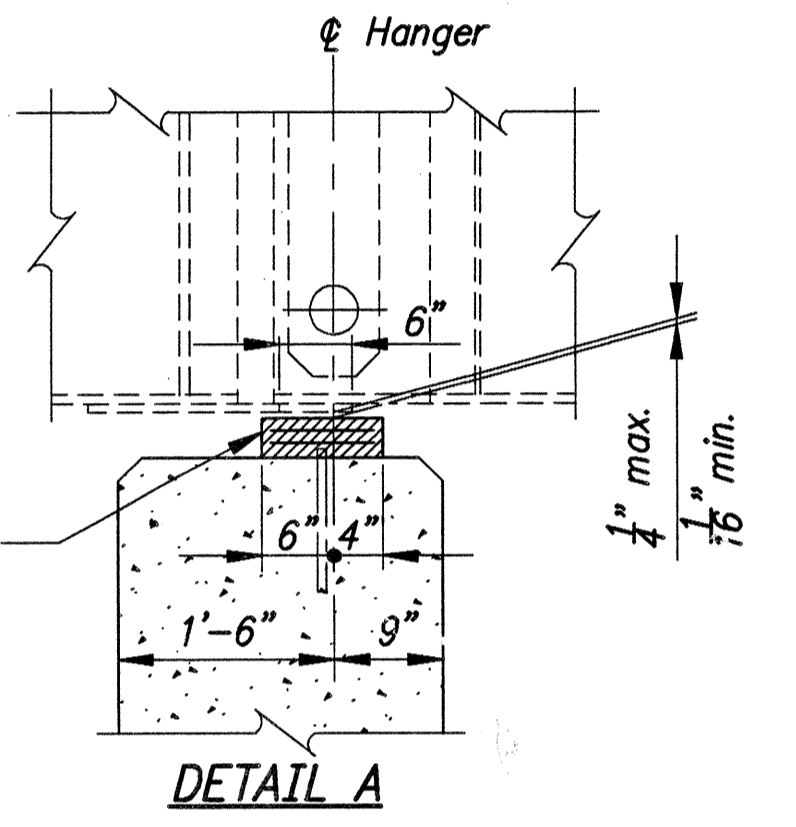
+ = $\frac{3}{8}''$ Threaded Bar
• = #6 Rebar Dowels

D1 Bars shall be grouted into the existing pier in accordance with Sec. 736 of the Standard Specifications.

BILL OF REINFORCEMENT						
MARK	TYPE	SIZE	NO.	LENGTH		LOCATION
				FT.	IN.	
A1	Str.	**	46	4	7	Pier S7 & S15
A2	(1)	5	52	16	8	Pier S7 & S15
A3	(1)	5	4	16	2	Pier S7 & S15
A4	(1)	5	4	15	2	Pier S7 & S15
A5	(1)	5	4	14	2	Pier S7 & S15
A6	(2)	5	4	32	2	Pier S7 & S15
A7	Str.	5	4	29	6	Pier S7 & S15
A8	Str.	5	20	32	8	Pier S7 & S15
A9	(3)	5	20	6	4	Pier S7 & S15
D1	Str.	6	142	.3	0	Pier S7 & S15

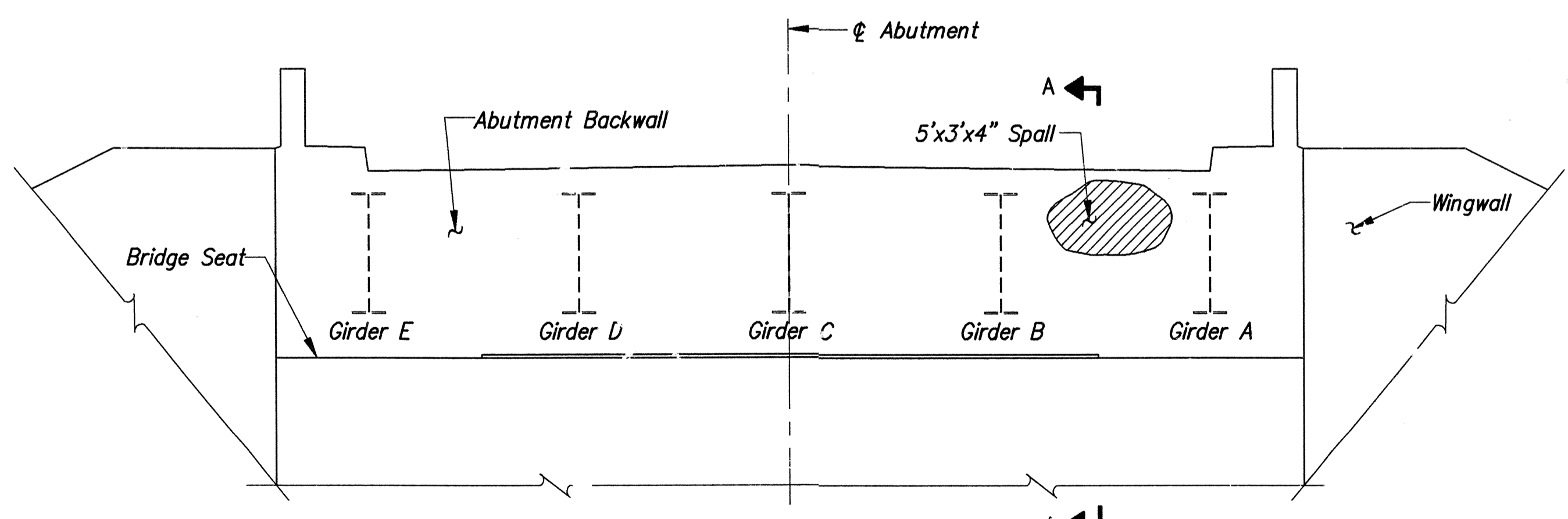
* For 2 Piers
** $\frac{3}{8}''$ Swedged Bar (ASTM A36)

*** The contractor shall finish the top surface of the girder support before ordering the Elastomeric Bearing Pad. The thickness of the bearing pad shall be enough to allow a maximum $\frac{1}{4}''$ gap between the bearing pad and the low steel. This thickness should be approximately $3\frac{1}{4}''$. One bearing pad required under each stringer.



DETAIL A

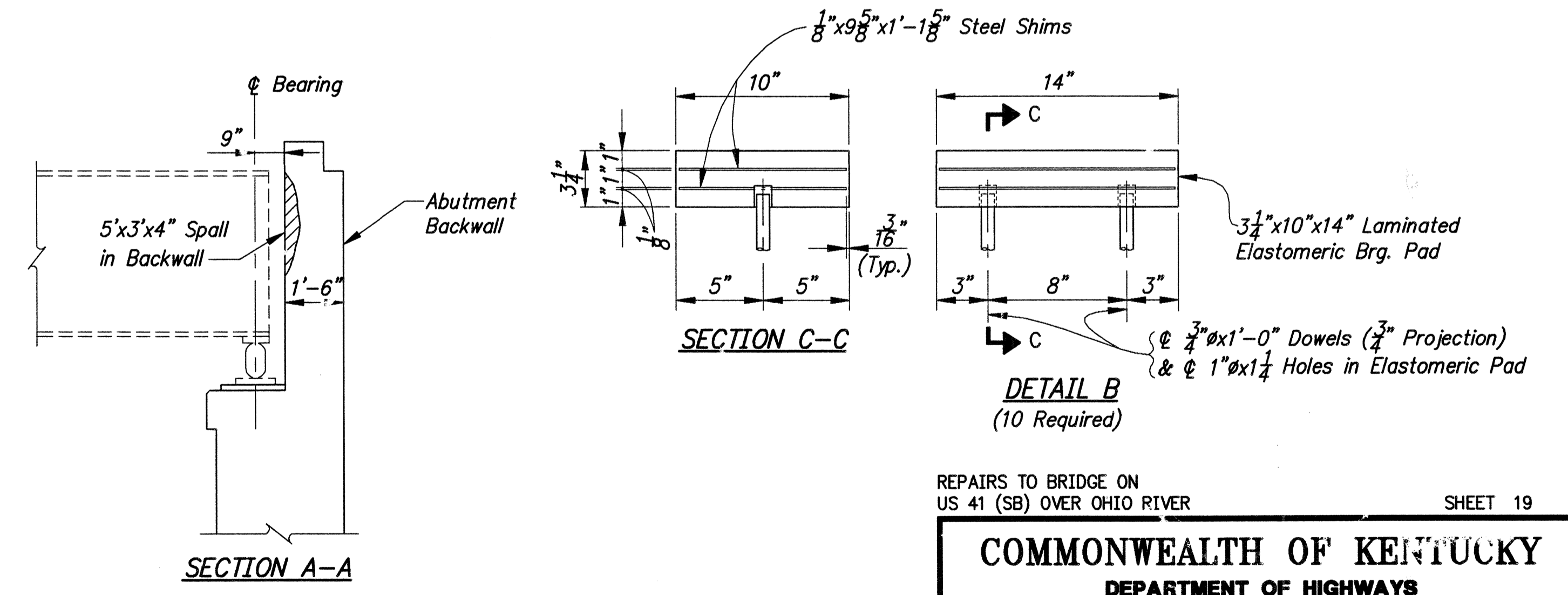
Note: The elastomeric bearing pad shall be in accordance with Section 822 of the Standard Specifications and shall have a durometer hardness of 50.



ELEVATION - ABUTMENT S-20

This detail is to be used for repair of the 5'x3'x4" spall in the backwall of Abutment S-20. All loose concrete shall be removed and the spalled area patched with Acrylic Patch Mortar (See General Notes).

CONCRETE PATCHING AT ABUTMENT S-20



SECTION A-A

NOTE FOR CONCRETE PATCHING

Prepare the spall area for patching by making 1" deep saw cuts to outline rectangular patch area. Remove loose pieces and chip away sound concrete to 1" minimum patching depths. Exposed reinforcing bars shall be blast cleaned to remove rust and foreign materials. Blow the areas free of dust and grime. Place patch concrete using an epoxy bonding system (see General Notes).

DETAIL B (10 Required)

REPAIRS TO BRIDGE ON US 41 (SB) OVER OHIO RIVER

SHEET 19

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON-EVANVILLE, IND.

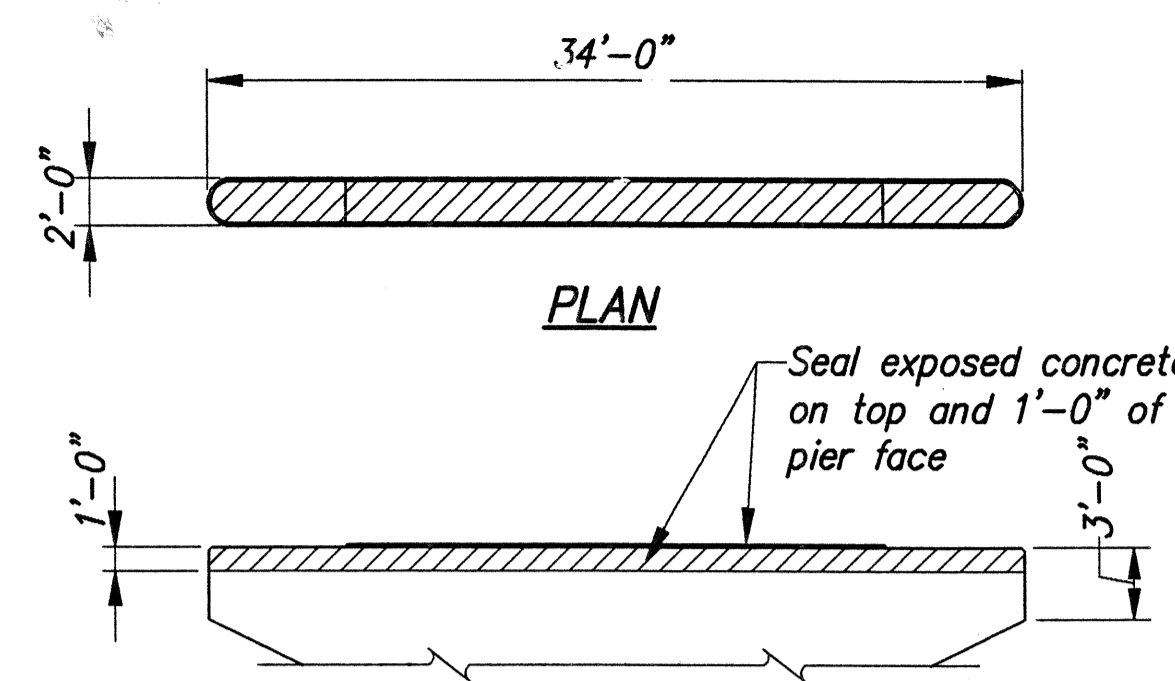
ROAD PROJECT NO.
STATION CONSTRUCTION PROJECT NO. MAINTENANCE PROJECT NO. DRAWING NO.
22827

SUBSTRUCTURE REPAIRS

DESIGNED BY: DRH
CHECKED BY: PNP & CSB
DATE: 10-91

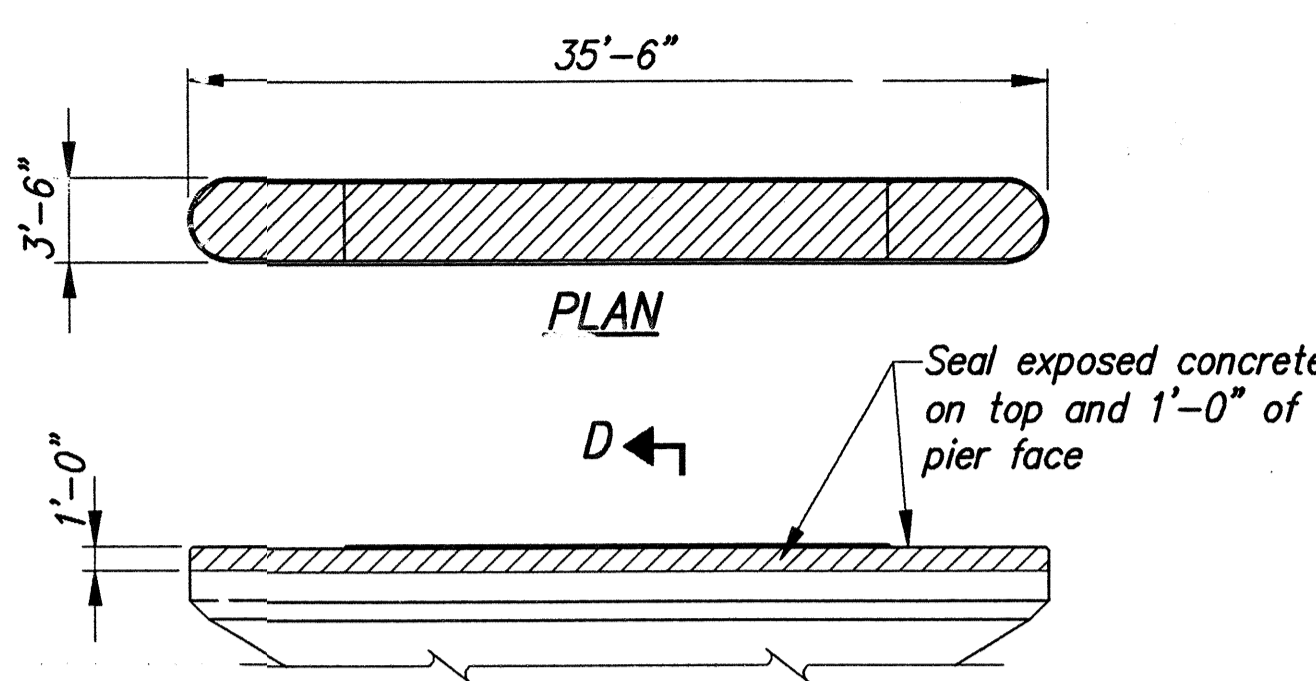
UPDATE DATE
LETTING DATE

DESIGNED BY: DRH
CHECKED BY: PNP
DATE: 10-91
REVISIONS: _____
DATE: _____
DATE: _____

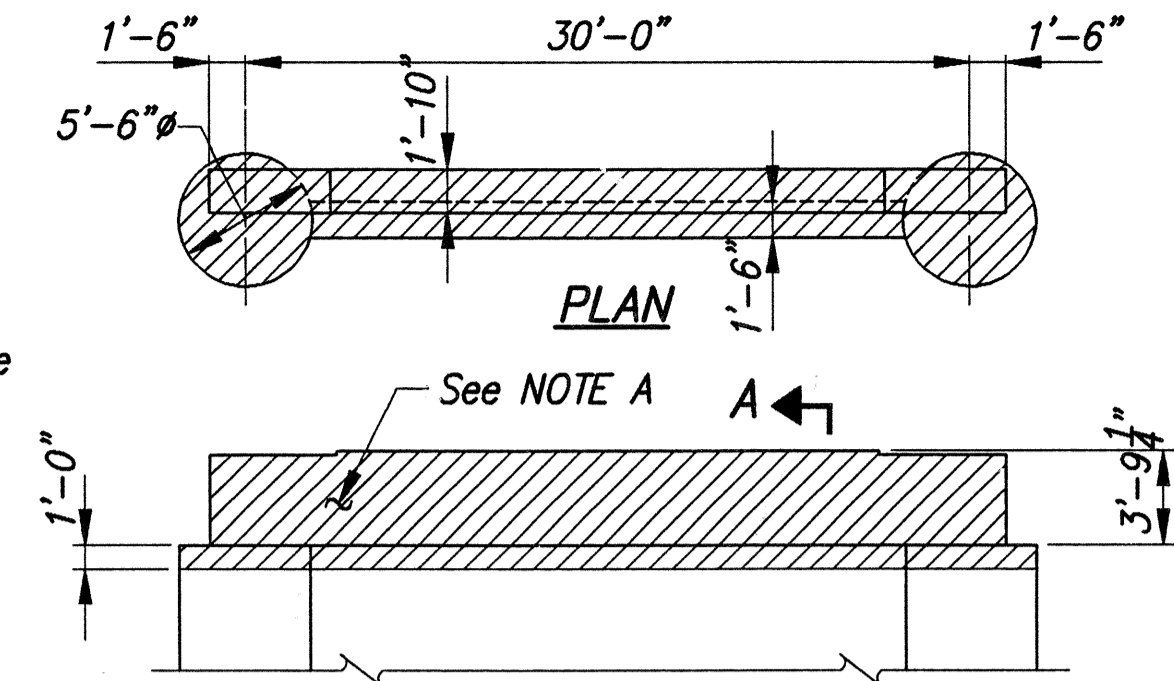


PLAN
ELEVATION
PIER CAP SEALING
PIERS S4-S10 & S12-S19

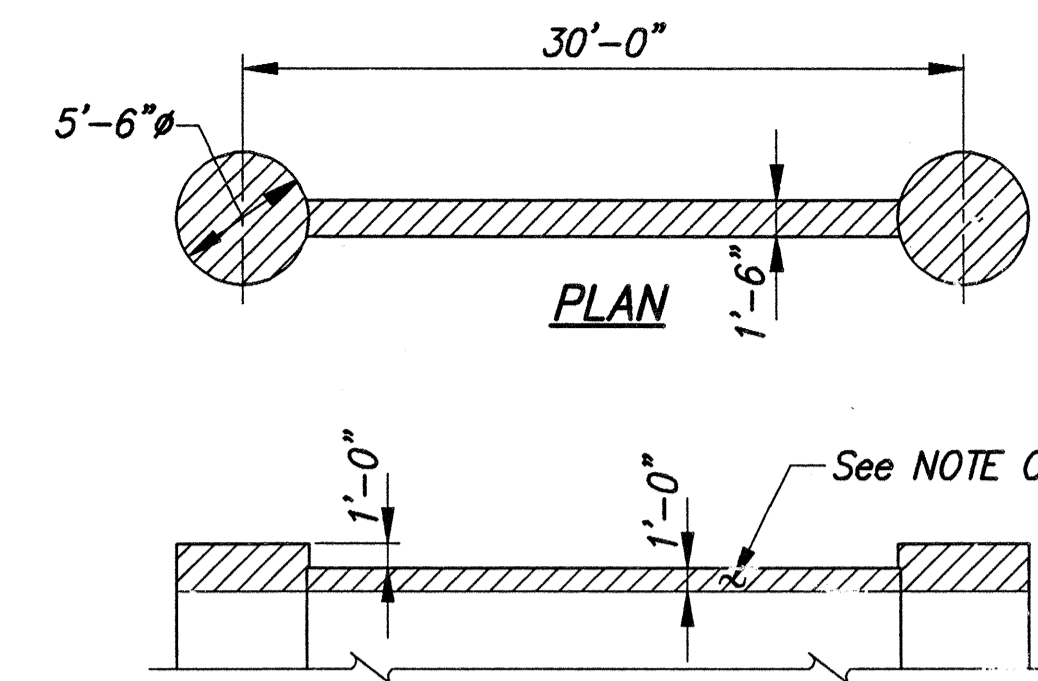
Note: Pin-hanger back-up support at Piers S7 and S15 shall be similarly sealed.



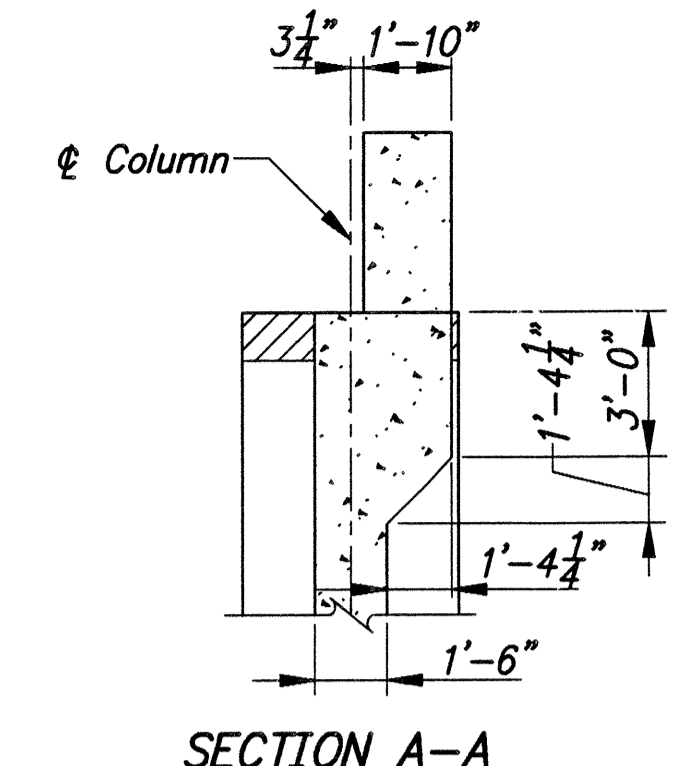
PLAN
ELEVATION
PIER CAP SEALING - PIER S11



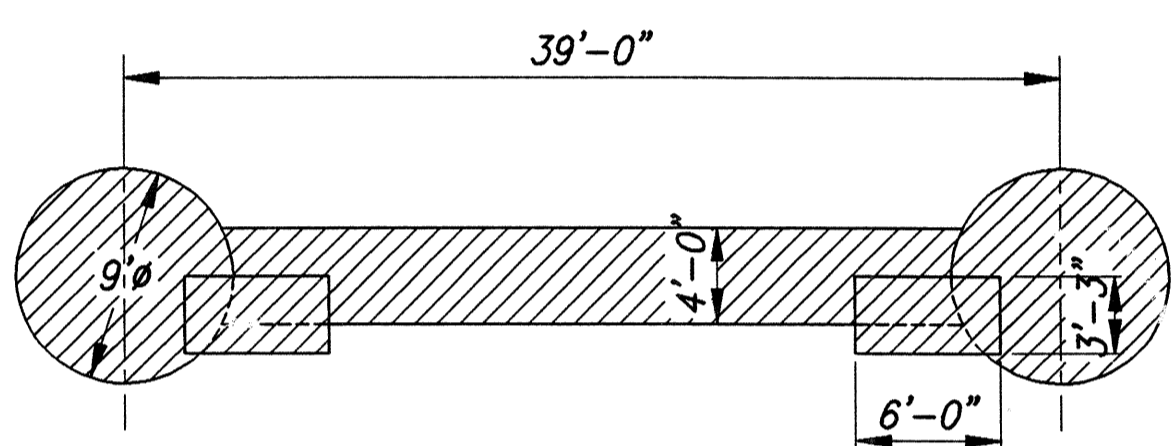
PLAN
ELEVATION
PIER CAP SEALING - PIER S3



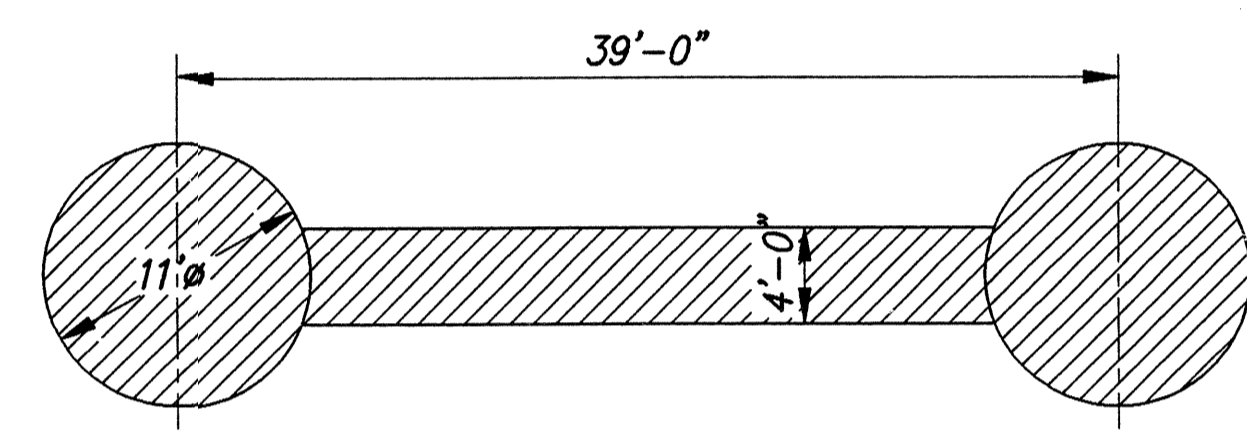
PLAN
ELEVATION
PIER CAP SEALING - PIERS S1 & S2



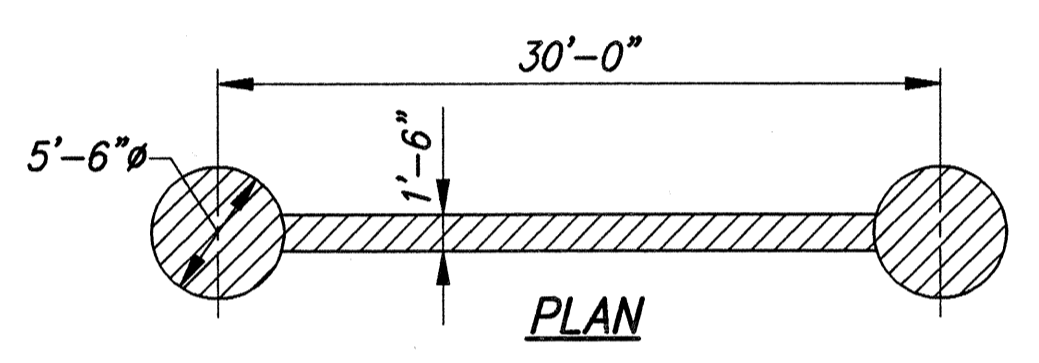
SECTION A-A



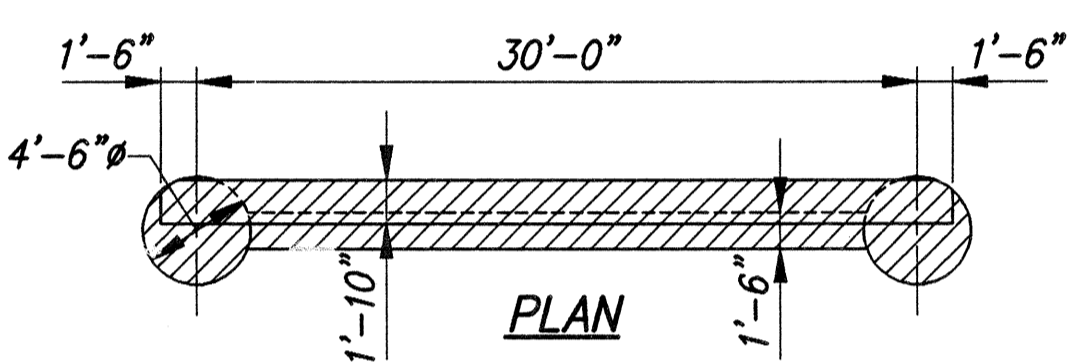
PLAN
ELEVATION
PIER CAP SEALING - PIERS A & E



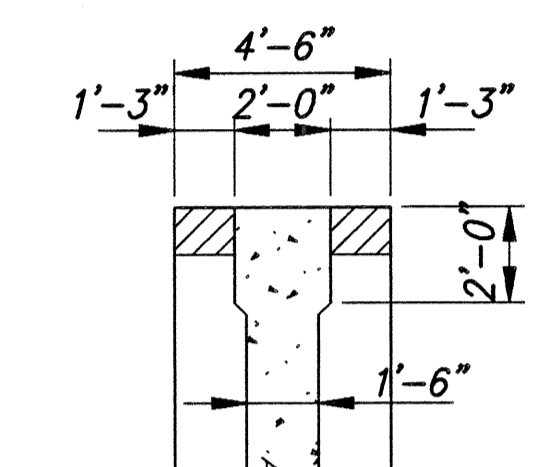
PLAN
ELEVATION
PIER CAP SEALING - PIERS B, C & D



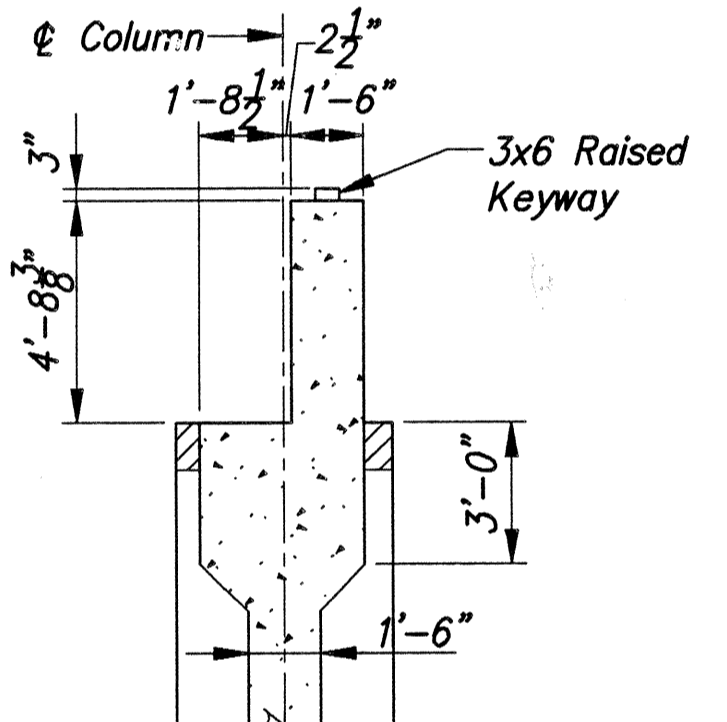
PLAN
ELEVATION
PIER CAP SEALING - PIERS N1 THRU N4



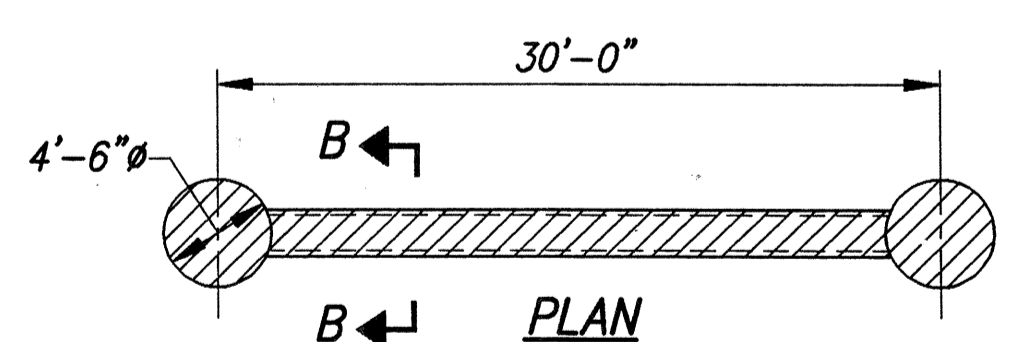
PLAN
ELEVATION
PIER CAP SEALING - PIER N5



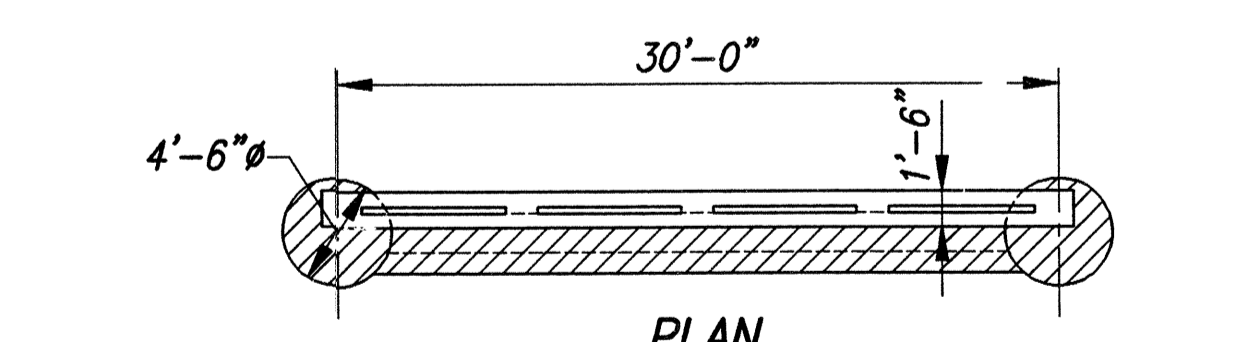
SECTION B-B



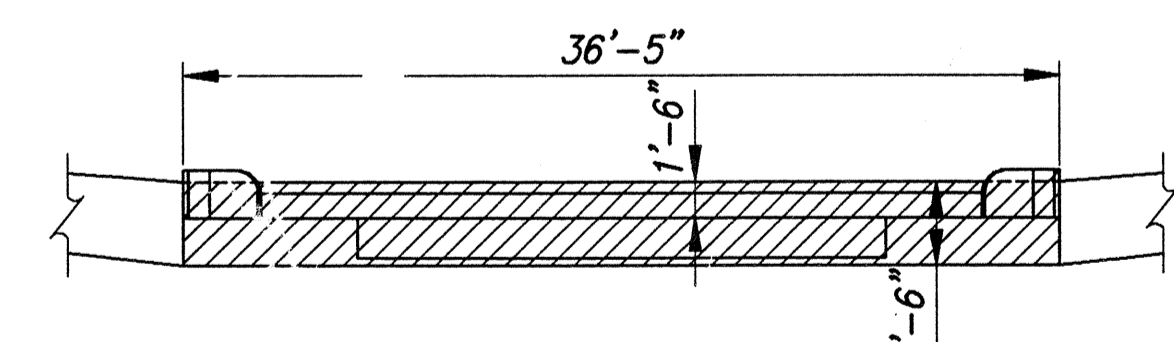
SECTION C-C



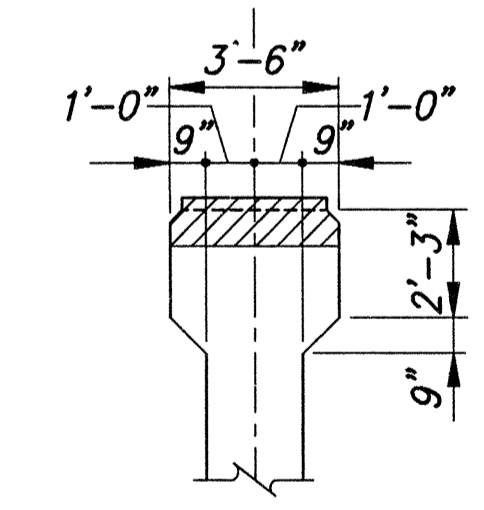
PLAN
ELEVATION
PIER CAP SEALING - PIERS N6 & N7



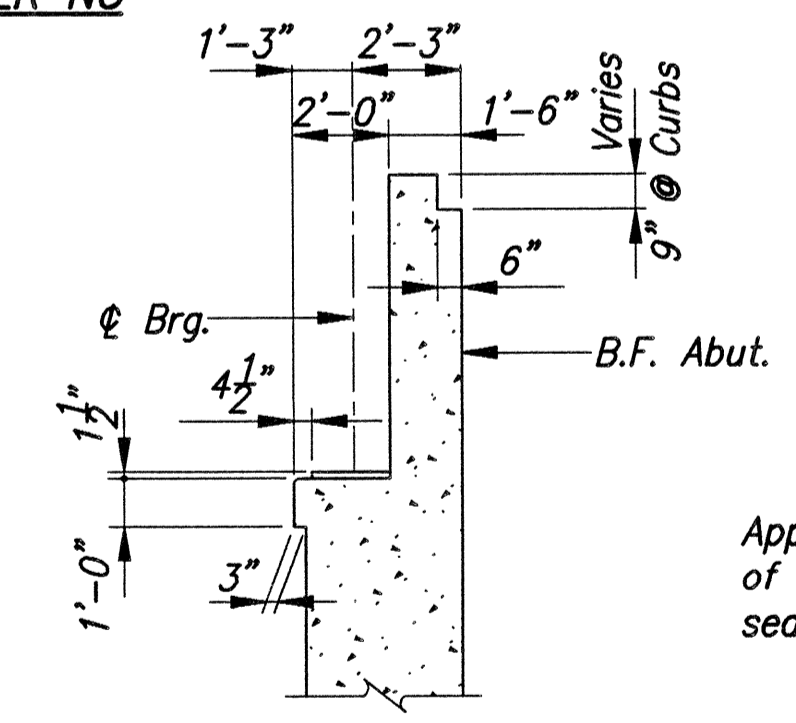
PLAN
ELEVATION
PIER CAP SEALING - PIER N8



PLAN
ELEVATION
ABUT. CAP SEALING - ABUT. S20



SECTION D-D



SECTION E-E

Approximate total area of surfaces to be sealed = 825 Sq. Yds.

NOTE A: Seal all exposed surfaces from top of substructure unit to 1'-0" below top of column.

NOTE B: Seal all exposed surfaces from top of substructure unit to 1'-0" below top of strut.

NOTE C: Seal all exposed surfaces from top of substructure unit to 1'-0" below top of webwall.

REPAIRS TO BRIDGE ON US41 (SB) OVER OHIO RIVER

SHEET 20

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
HENDERSON
HENDERSON - EVANSVILLE, IND.

SUBSTRUCTURE REPAIRS

ROAD P.E. PROJECT NO. _____
STATION _____
CONSTRUCTION PROJECT NO. _____
MAINTENANCE PROJECT NO. _____
DRAWING NO. 22827