

SUMMARY OF QUANTITIES																	
Item Location	Excavation		Concrete		Reinforcing Steel		Prestressed Concrete Beams		Piles (Steel) (HP12x53)	Test Piles (Special) (Steel) (HP12x53)	Pre-Drilled Pile Holes	Bridge Backwall Prot. System	Abutment Strip Drain	Bearing (Steel Reinforced Elastomeric) Each	Expansion Device (Finger Plate)	Slope Protection (Shot Rock)	Substructure Waterproofing Membrane
	Class I Cu. Yds.	Class II Cu. Yds.	(Grade 4.0)(AE)(SA)	(Grade 4.0)(AE)	(Epoxy Coated)	(Grade 60)	Lbs.	(K4) Lin. Ft.	(K4+2) Lin. Ft.	* Lin. Ft.	Lin. Ft.	Sq. Yds.	Sq. Yds.	Lin. Ft.	Lin. Ft.	Cu. Yds.	Sq. Yds.
Abutment No. 1	102		**	20.4					304			57	52			48	
Pier No. 1	41			68.8		4760			288								
Pier No. 2	36			68.8		4760			280		168						
Pier No. 3	33			68.8		4760			280		164						
Pier No. 4	58	240		85.9		13670							12	46		34	
Pier No. 5	18	63		93.7		5700			370		203						
Pier No. 6	16	65		93.7		5700			350		181						
Pier No. 7	26	68		93.7		5700			333	45							
Abutment No. 2	101		**	20.4					280			59	53			49	
Substr. Total	431	436		614.2		45,050			2485	45	716	116	105	12		97	34
Superstr. Total			1184.1		281,700		1896	2280		+ 2485	+ 45	716	116	105	12	46	97
Total	431	436	1184.1	614.2	281,700	45,050	1896	2280									34

\*\*Quantities are included in the Superstr. Total Quantity.

\*NOTE: Use only HP12x53 steel pile on this project.

**EMBANKMENT:** Complete the embankment at the abutments as shown on the Bridge Excavation sheet prior to driving the abutment piling.

**BRIDGE EXCAVATION:** Elevation 2147.89 shall designate the Excavation Boundary Plane of Class I and Class II Excavation; Class I above the plane, Class II below the plane. See the Bridge Excavation sheet for the limits of pay excavation.

**BACKFILL COMPACTION:** Backfill compaction shall be required at abutments.

**PILING:** Drive all piling to bearing in the Dakota Formation. Driving shall stop when in the opinion of the Engineer additional driving may damage the piling. Drive all piling to the Pile Driving Formula Load of:

Abutment No. 1	78.8 Tons
Piers No. 1, No. 2 & No. 3	136.1 Tons
Piers No. 5, No. 6 & No. 7	133.7 Tons
Abutment No. 2	87.5 Tons

As a minimum drive each pile to the load and penetration, but in no case shall the pile be driven to more than 110% of Pile Driving Formula Driving Load. At any location where problems are experienced, pile damage is suspected, or the Pile Driving Formula Load occurs significantly above the design pile tip elevation, the Engineer may request that the Pile Driving Analyzer (PDA) equipment be used.

**TEST PILE SPECIAL:** Drive the test pile special at the locations directed by the Engineer/Geologist or as on the Plans. Use (Pile Driver Analyzer) (PDA) equipment and methods compliant with KDOT Specifications. The test piling shall remain in place as permanent piling. Drive the test pile special piling to the resistance value of the Strength I divided by Phi.

**PRE-DRILLING:** All steel piles in Piers #2, #3, #5, and #6 shall be pre-drilled to elevations shown on the Geology sheet. Piles shall be set and driven to the computed bearing value shown. After driving the holes shall be backfilled with lean concrete.

**ABUTMENT STRIP DRAIN:** See the General Notes on the "Abutment Strip Drain" sheet.

**BRIDGE BACKWALL PROTECTION SYSTEM:** See the General Notes on the "Abutment Strip Drain" sheet.

#### + Summary of Piling

Abutment No. 1	8 @ 38 ft.	Pier No. 5	10 @ 37 ft.
Pier No. 1	8 @ 36 ft.	Pier No. 6	10 @ 35 ft.
Pier No. 2	8 @ 35 ft.	Pier No. 7	9 @ 37 ft.
Pier No. 3	8 @ 35 ft.	1 @ 45 ft. (Test Pile Special)	
		Abutment No. 2	
		8 @ 35 ft.	

#### GENERAL NOTES

**CONCRETE:** Superstructure concrete is bid as Concrete (Grade 4.0)(AE)(SA). Substructure concrete is bid as Concrete (Grade 4.0)(AE). If desired, the Contractor may use Concrete (Grade 4.0) in the footings and in the abutments below the construction joint. Bevel all exposed edges of all concrete with a  $\frac{3}{4}$ " triangular molding, except where noted on the plans. Construction joints are optional, but if used, place only at locations shown, or at locations approved by the Engineer.

**REINFORCING STEEL:** All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel, except the spiral bars, shall conform to the requirements of ASTM A615, Grade 60. Spiral bars may meet the requirements of either ASTM A615 (Gr. 40 or 60) or A82, and are included in the bid item "Reinforcing Steel (Gr. 60)".

**CAMBER:** Construct the finished deck to plan grade by varying the depth of the fillet over the beam to provide for prestress camber, concrete dead load deflection and, if necessary, vertical curvature. After the prestressed beams are erected measure the camber in the field by taking a profile of each beam. Correct any variation between the actual camber and concrete dead load deflection shown in the plans by varying the depth of the concrete fillets over the beam so that the finished floor is constructed to the theoretical grade. The minimum depth of the slab over the beam shall be 9 inches.

The theoretical amount of concrete required for the fillets is 27 Cu. Yds. This amount of concrete is included in the Summary of Quantities. Any additional concrete required to construct the fillets will be subsidiary.

**PRESTRESSED BEAM CONCRETE:** Use air entrained concrete with select coarse aggregate as specified in the KDOT Specifications. The release strength and 28 day strength requirements shall be as noted on the plans. Submit mix designs to the Bureau of Materials and Research for approval.

**ERCTION ELEVATION CHECKS:** After the abutment and pier concrete has cured and before setting any prestressed beams, present verification to the Engineer that the elevations at the bearings match plan elevation ( $\pm \frac{1}{4}$ ").

**CONTRACTOR CONSTRUCTION STAKING:** Contractor Construction Staking for clear span bridges requires two independent surveys. See KDOT Specifications.

**REMOVAL OF EXISTING STRUCTURES:** Removal of existing structure is included in the bid item, "Removal of Existing Structures", Lump Sum. All materials removed from the existing structure shall become the property of the Contractor. Remove this material from the site.

**EXISTING STRUCTURE:** Plans of the existing structure are on file and available for inspection by qualified bidders at the State Bridge Office, KDOT, Eisenhower State Office Building, 700 SW Harrison, Topeka, KS.

**CONCRETE PLACING SEQUENCE:** The sequence of placing concrete in the slab and curbs shall be as shown, or the Contractor may submit an alternate placing sequence for review. Submit the alternate placing sequence to the Engineer at the Preconstruction Conference. Include the proposed rate of concrete placement in Cu. Yds./h, the plant capacity, placement direction, construction joint location, a description of the equipment used in placing the concrete, proposed admixtures, and the quantity of concrete in each placing segment. Any additional cost for the Contractor's alternate plan of placing concrete, including admixtures, shall be at the Contractor's expense and shall be considered subsidiary to the bid item, "Concrete (Grade 4.0)(AE)(SA)". Approval of the Contractor's alternate sequence is required prior to placement of concrete in the deck.

Place and hand vibrate all concrete for the pier diaphragms at Piers #1, #2, #3, #5, #6 & #7 and the abutments above the construction joints to the bottom of the deck just prior to the normal paving train operations. Do this work in a manner to avoid a cold joint in either the abutments or in the diaphragms.

STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	22	113

#### LRFR RATING FACTORS - Unit #1

Rating Level	Inventory	Operating
HL-93 Loading	1.35	1.75

2008 Manual for Bridge Evaluation

#### LRFR RATING FACTORS - Unit #2

Rating Level	Inventory	Operating
HL-93 Loading	1.34	1.74

2008 Manual for Bridge Evaluation

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32	Pier #5, #6, & #7 Details
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34	K4 & K4+2 Beam Details (Spans 1,2,3,6,7 & 8)
35	K4 & K4+2 Beam Details (Spans 4 & 5)
36	Framing Plan & Temporary Diaphragms Details - Unit #1
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#### TRAFFIC DATA - (013)

AADT (2010)	2,400
AADT (2030)	3,200
DHV	10%
D	55.0%
T	25.5%

3			
2			
1			

NO. DATE REVISIONS BY APP'D

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KANSAS	50-24 KA-0715-01	2010	23	113

#### GENERAL NOTES CONTINUED

**CONSTRUCTION LOADS:** Only foot traffic is permitted on the new deck or any concrete overlay during the seven day curing period. Work to place reinforcing steel or forms for the bridge rail or barrier is allowed 3 days after the concrete is placed provided the curing is maintained on any exposed deck by keeping it wet during the 7-day curing period. Light truck traffic (gross vehicle weight less than 5 Tons) is allowed on the deck 15 days after the pour is completed. Legal loads are permitted 21 days after the concrete is placed. Legal loads are permitted on any concrete overlay 7 days after the concrete overlay is placed. With Engineer approval, heavy stationary loads may be allowed on the bridge deck 21 days after the deck pour is completed. With Engineer approval, vehicle loads greater than legal loads may be allowed on the bridge deck 28 days after the deck pour is completed. See KDOT Specifications.

**PREFORMED ANCHOR BOLT HOLES:** Preform 4 inch diameter holes using only corrugated polyethylene tubing (Type C) at the locations shown. When temperatures are expected to go below freezing, seal the preformed holes or fill them with a propylene glycol-based antifreeze to prevent expansion damage. The holes will be free of water, antifreeze or foreign materials at the time of grouting the anchor bolts. The polyethylene tubing may remain in-place. Trim the tubing flush with the top of concrete. This work shall be subsidiary to Concrete Grade 4.0 (AE).

**ANCHOR BOLTS:** Place the reinforcing bars below the bearing devices to clear the anchor bolts.

**BEARING (STEEL REINFORCED ELASTOMERIC):** The Elastomeric Bearing Device shall be factory bonded to the steel sole plate by a vulcanized process. The steel sole plate and swedge anchor bolt are subsidiary to the bid item, "Bearing (Steel Reinforced Elastomeric)" and shall be furnished by the bearing device fabricator.

Bearings at Pier #4 were designed using the provisions of Method A of the AASHTO Specifications.

**BEARING (Steel Reinforced Elastomeric)(Method A):** Bearing devices at Pier No. 4 shall be fabricated with an elastomer satisfying:

- Shear Modulus of 150 psi @ 73F, tested and reported per AASHTO M-251, Section 8.8.4.
- Low Temperature Grade 3 requirements.
- Type A certification for elastomeric bearing device acceptance is required.

**EXPANSION DEVICE (FINGER PLATE):** All material and labor shall be paid for by the bid item "Expansion Device (Finger Plate)". All steel plates, angles and bars shall be ASTM A36 or A709 Gr. 36 steel, except finger plates shall be AASHTO M270 Gr. 36 (T3). No weathering steel will be allowed. See "Expansion Device Details" sheets for further notes and details.

**PAINT SYSTEM ON EXISTING STRUCTURE:** The structural steel has a paint history of:

- 1) Original paint system: Basic Lead Chromate Date: 1942
- 2) Repaint system: Inorganic Zinc Vinyl Date: 1985
- 3) TCLP value is 2.71 mg/L Report Date: 2/28/2008

By analysis, the existing paint system is considered to be non-lead based for the purpose of demolition.

**SLOPE PROTECTION (Shot Rock):** Place Slope Protection (Shot Rock) to the limits and thicknesses shown on the plans or as directed by the Engineer.

Place a 10 foot wide mat of geotextile under the rock/rubble embankment on the berm and berm slopes and centered on the drip lines of the slab.

**TEMPORARY DIAPHRAGMS:** See the note on the "Framing Plan and Temporary Diaphragm Details" sheets.

**CAUSEWAY:** If the Contractor chooses to build a causeway for bridge construction purposes, the Contractor shall obtain any required U.S. Army Corps of Engineers, Section 404 permit, Kansas State Board of Agriculture-Division of Water Resources Permit, Kansas Department of Health and Environment Section 401 Permit, Kansas Department of Wildlife and Parks Endangered Species Permit, or any other permit required by law for causeway construction. Obtain the permit in a timely manner so as not to delay the completion of the project.

**GAGING STATION:** Provide the United States Geological Survey (U.S.G.S.) with the labor and equipment necessary to access, remove, attach, support or anchor any new or existing stream gaging hardware to the bridge. Contact the U.S.G.S. office located in Lawrence, Kansas to coordinate this work. The labor and equipment required to perform this work will be considered subsidiary to the bid item "Removal of Existing Structures".

**CONSTRUCTION JOINTS:** The construction joints shown are optional with the Contractor. If used, place the construction joints only at locations shown or at locations approved by the Engineer.

**DEMOLITION PLANS:** This is a Category A Demolition. Submit detailed Demolition Plans to the Field Engineer per KDOT Specifications. No Demolition work will begin without approved Demolition Plans. A Licensed Professional Engineer is not required.

**SUBSTRUCTURE WATERPROOFING MEMBRANE:** At Pier No. 4 apply a Substructure Waterproofing Membrane in accordance with KDOT Specifications to the top of the pier beam, the entire vertical face at the pier beam ends and to the dimension shown on the Pier No. 4 detail sheet. Do not apply to the top of the concrete steps. Repair any damage done to the membrane while the bridge is under construction. All work shall be as directed and approved by the Engineer. Use the Epoxy System.

**ERCTION PLANS:** This is a Category A Structure. Submit detailed Erection Plans to the Field Engineer per KDOT Specifications. A Licensed Professional Engineer is not required.

#### DESIGN DATA

##### DESIGN SPECIFICATIONS:

AASHTO Specifications, 2007 Edition and latest Interim Specifications. Load and Resistance Factor Design.

##### DESIGN LOADING: HL-93

Design Dead Load includes an allowance of 15 psf for a future wearing surface.

##### UNIT STRESSES:

Concrete (Grade 4.0)	f'c = 4,000 psi
Concrete (Grade 4.0)(AE)	f'c = 4,000 psi
Concrete (Grade 4.0)(AE)(SA)	f'c = 4,000 psi
Prestressed Beam Concrete (K4)	f'c = 5,000 psi
Prestressed Beam Concrete (K4+2)	f'c = 6,000 psi
Reinforcing Steel (Grade 60)	f'y = 60 ksi
Prestressed Strand	1/2" Ø Grade 270 uncoated 7-wire, low relaxation strand.

##### LRFD DESIGN PILE LOAD:

Design Loading (Tons/Pile)	Strength I	Service I	Phi
Abutment No. 1	78.8	57.0	0.6
Piers No. 1, No. 2 & No. 3	136.1	98.0	0.6
Piers No. 5, No. 6 & No. 7	133.7	96.7	0.6
Abutment No. 2	87.5	63.7	0.6

##### LRFD DESIGN FOOTING PRESSURES:

Design Loading (tsf)	Strength I	Phi
Pier No. 4	9.6	0.45

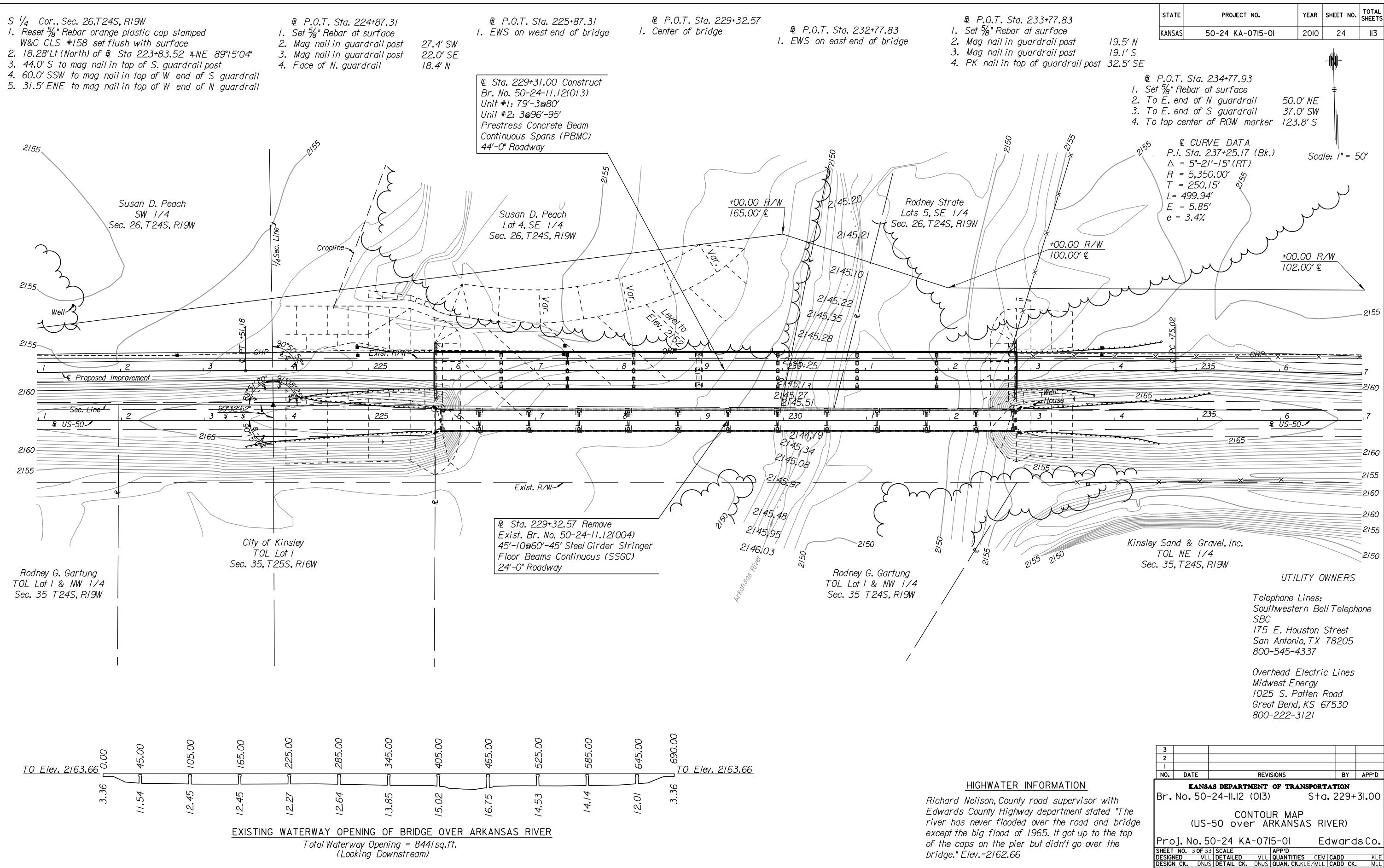
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Plotted By: mlarache  
File#: 071501-013-27.dgn (071501-013-27)  
Plot Date: 07-FEB-2011 13:46

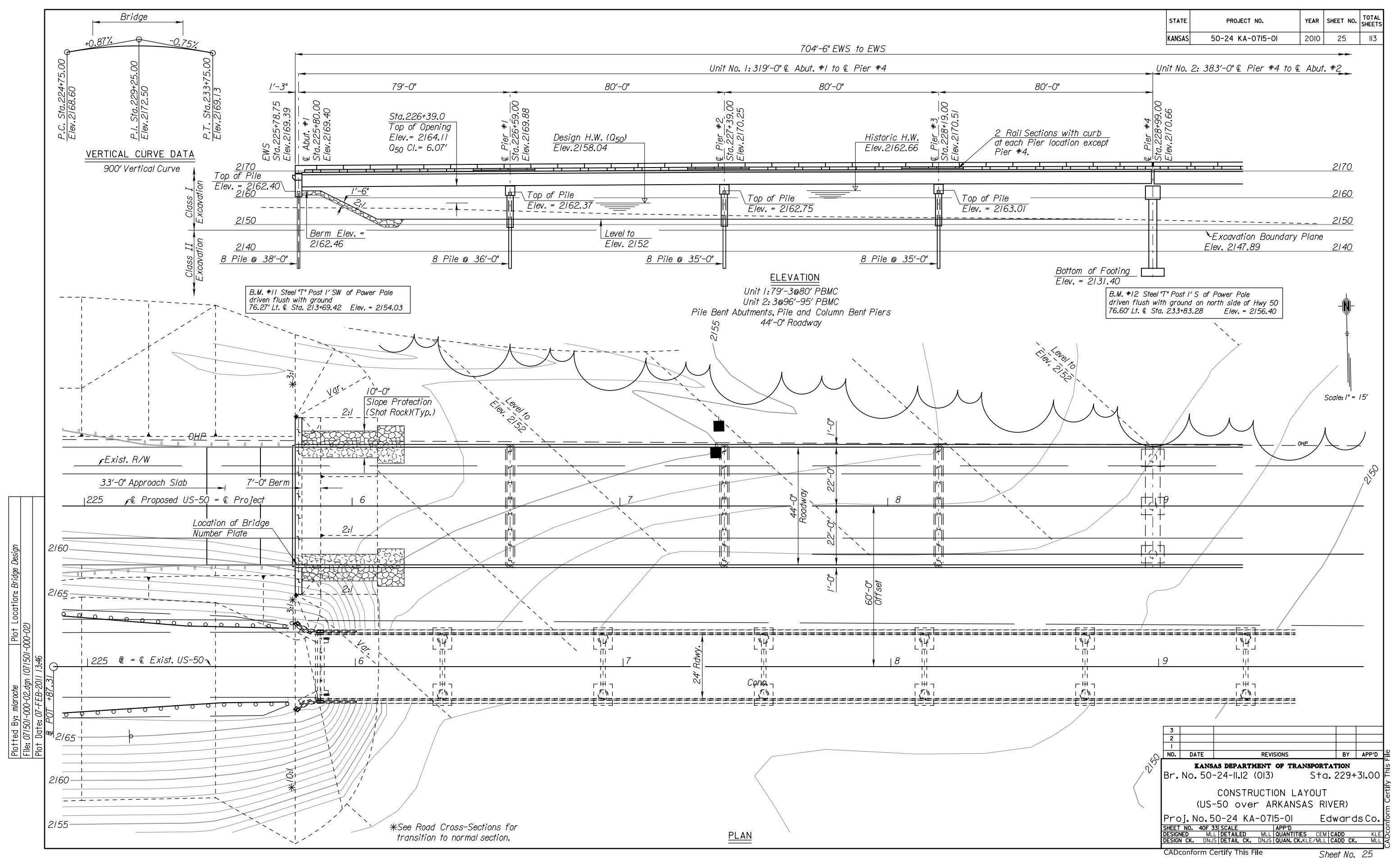
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NO.	DATE	REVISIONS	BY	APP'D
<b>KANSAS DEPARTMENT OF TRANSPORTATION</b>				
Br. No. 50-24-II.12 (013) Sta. 229+31.00				
GENERAL NOTES AND QUANTITIES (US-50 over ARKANSAS RIVER)				
Proj. No. 50-24 KA-0715-01 Edwards Co.				
SHEET NO. 2 OF 33 SCALE APP'D				
DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD				
DESIGN CK. MEH DETAIL CK. MEH QUAN. CCKLE/MLL CADD CK.				

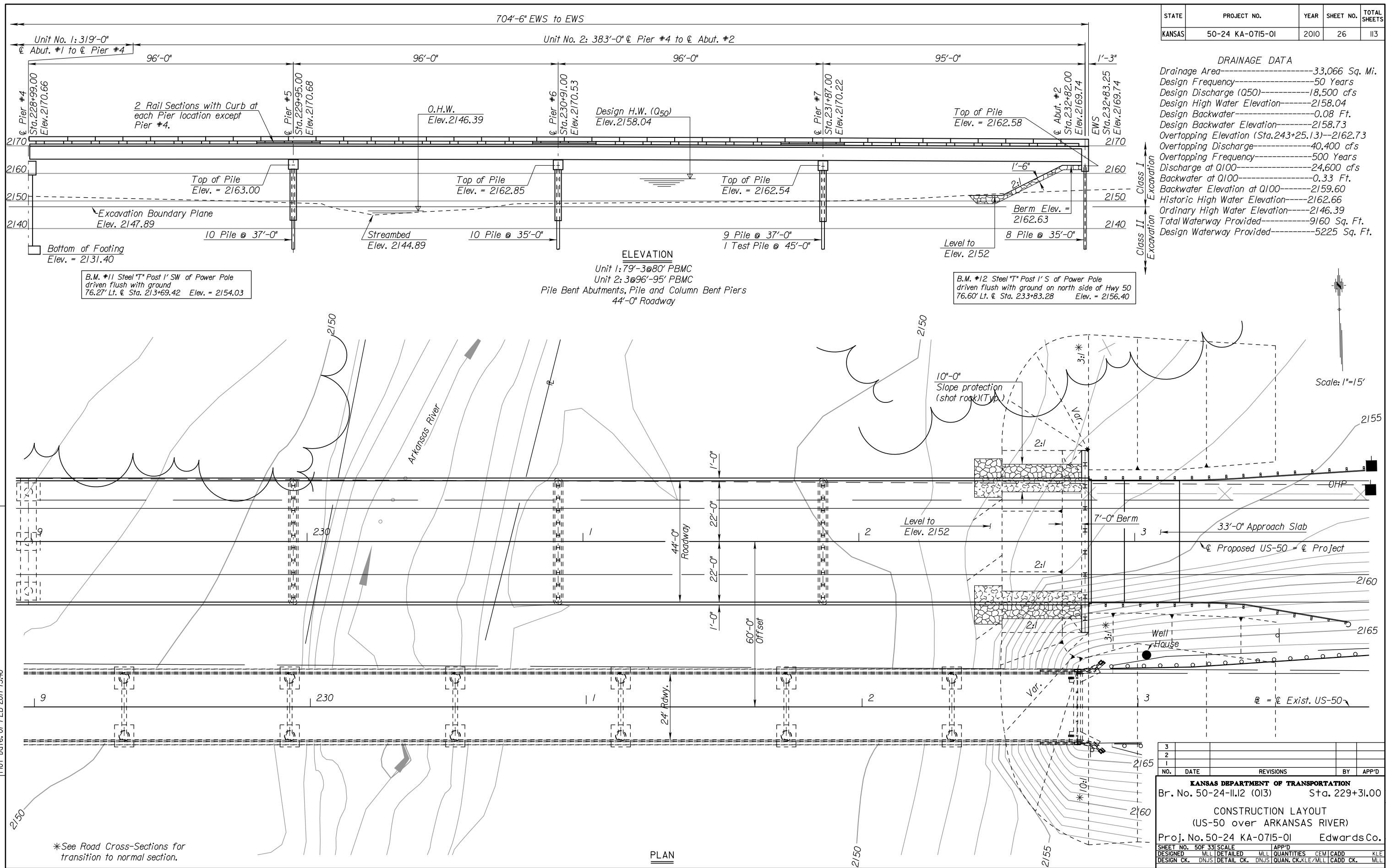
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Sheet No. 23

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Plot Date: 07-FEB-2011 13:46







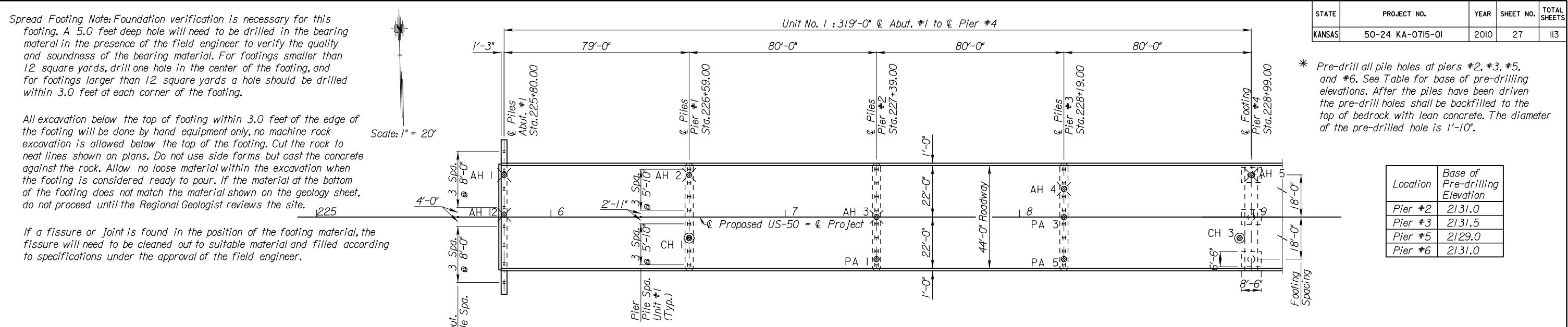
\*See Road Cross-Sections for transition to normal section.

## PLAN

CONSTRUCTION LAYOUT  
(US-50 over ARKANSAS RIVER)

No. 50-24 KA-0715-01      Edwards Co.

50F 33J SCALE	APP'D	QUANTITIES CEM CADD KLE
MILE DETAILED MLL		QANU, CK, KLE (MLL) CADD CK, MLL
DNUJS DETAILED CK, DNJS		

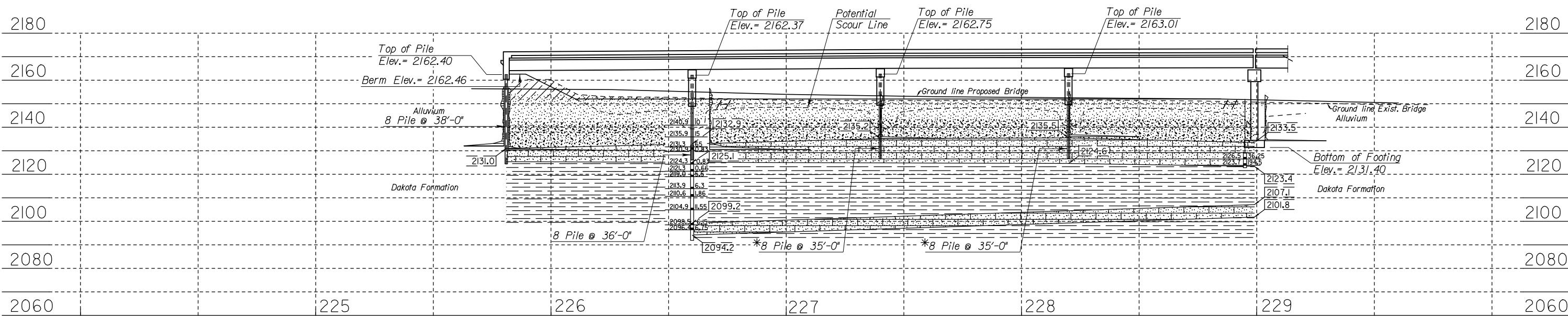


STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	27	13

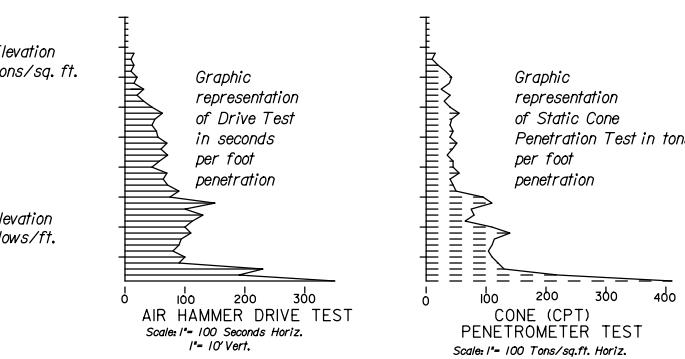
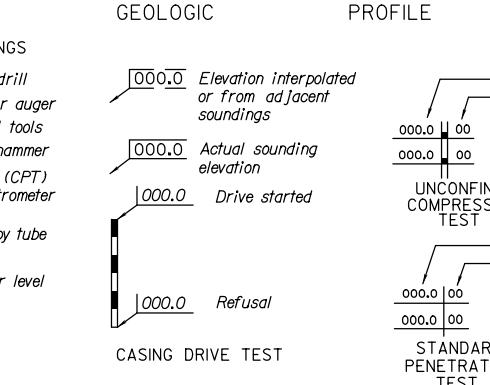
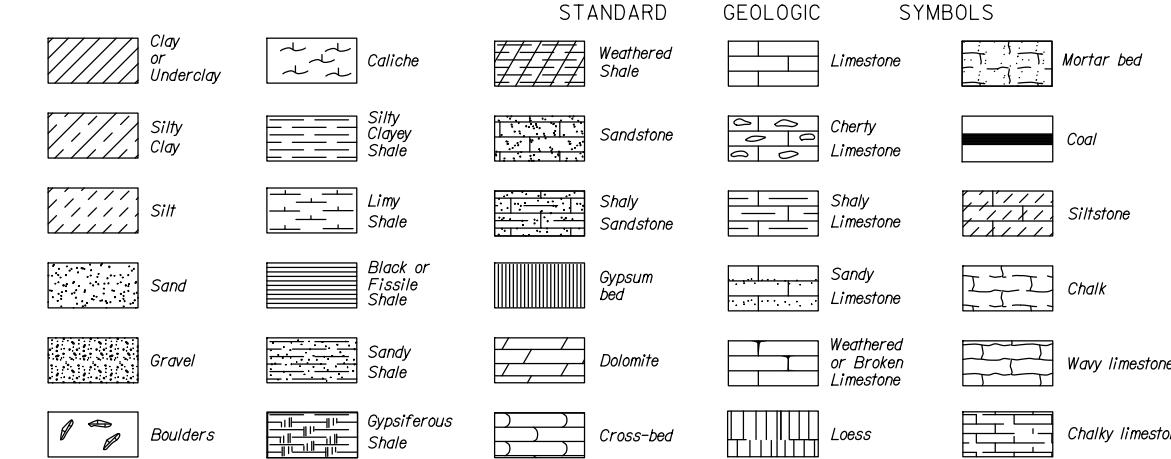
\* Pre-drill all pile holes at piers #2, #3, #5, and #6. See Table for base of pre-drilling elevations. After the piles have been driven the pre-drill holes shall be backfilled to the top of bedrock with lean concrete. The diameter of the pre-drilled hole is 1'-10".

Location	Base of Pre-drilling Elevation
Pier #2	2131.0
Pier #3	2131.5
Pier #5	2129.0
Pier #6	2131.0

**Pile Note:** Once Sufficient bearing and penetration into the Dakota Formation is achieved, driving should cease to avoid damage to the pile. Final pile tip elevations should be determined in the field based on observed blow counts and bearing formula calculations.



Plotted By: mlarache Plot Location: Bridge Design  
File: 07/15/01-31.dwg (07/15/01-31)  
Plot Date: 07-FEB-2011 13:46



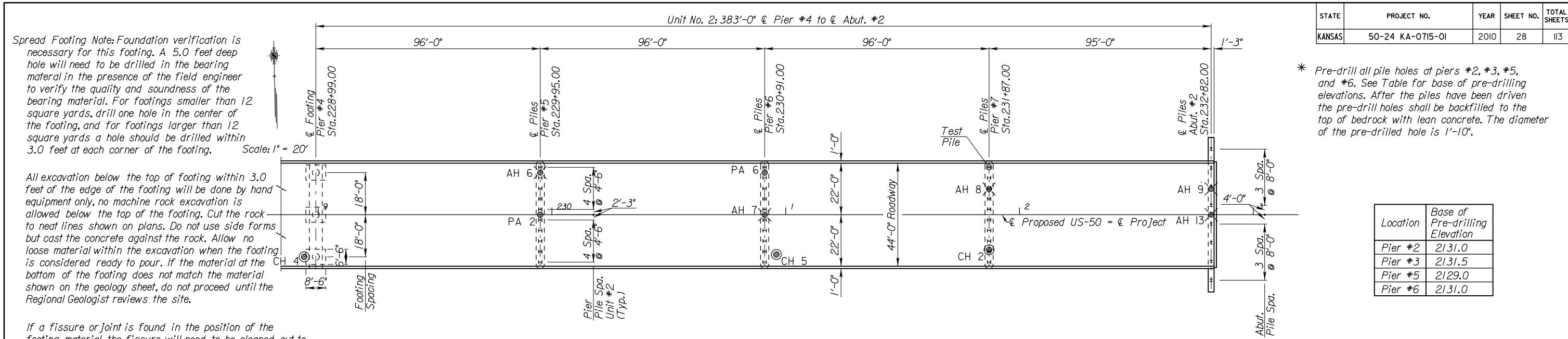
NOTE: Soundings shown on these plans are taken from notes obtained in the field and represent the best information available. Logs of these soundings are in the files of the Kansas Department of Transportation and are available at their offices at Topeka, Kansas for inspection by interested and qualified bidders.

SCALE: 1" = 20' Horiz. 1" = 20' Vert.

NO.	DATE	REVISIONS	BY APP'D
3			
2			
1			
KANSAS DEPARTMENT OF TRANSPORTATION Br. No. 50-24-II.12 (013)		Sta. 229+31.00	
ENGINEERING GEOLOGY (US-50 over Arkansas River)			
Proj. No. 50-24 KA-0715-01 Edwards Co.			
SHEET NO. 6 OF 33		SCALE APP'D	QUANTITIES CADD
DESIGNED DETAILED		QUAN. CK. CADD CK.	
DESIGN CK. DETAIL CK. QUAN. CK. CADD CK.			

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Sheet No. 27

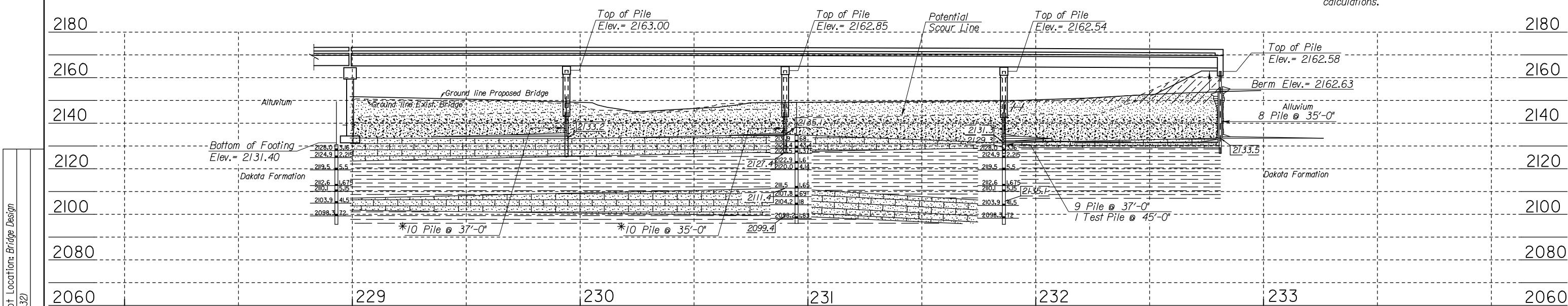


STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	28	13

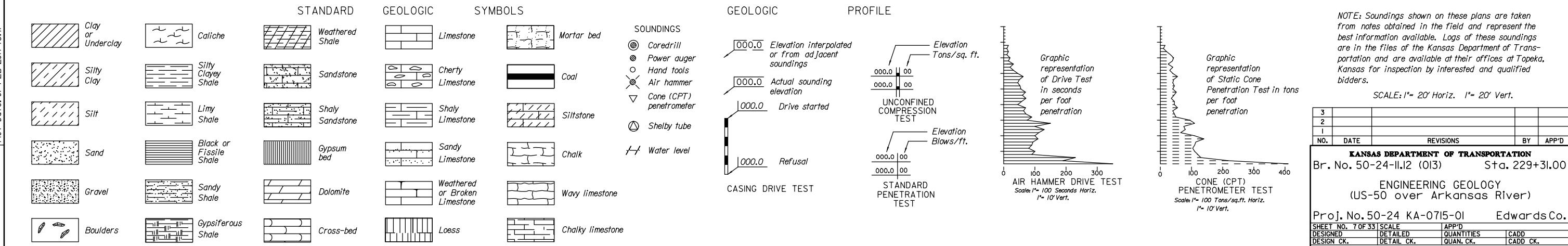
\* Pre-drill all pile holes at piers #2, #3, #5, and #6. See Table for base of pre-drilling elevations. After the piles have been driven the pre-drill holes shall be backfilled to the top of bedrock with lean concrete. The diameter of the pre-drilled hole is 1'-10".

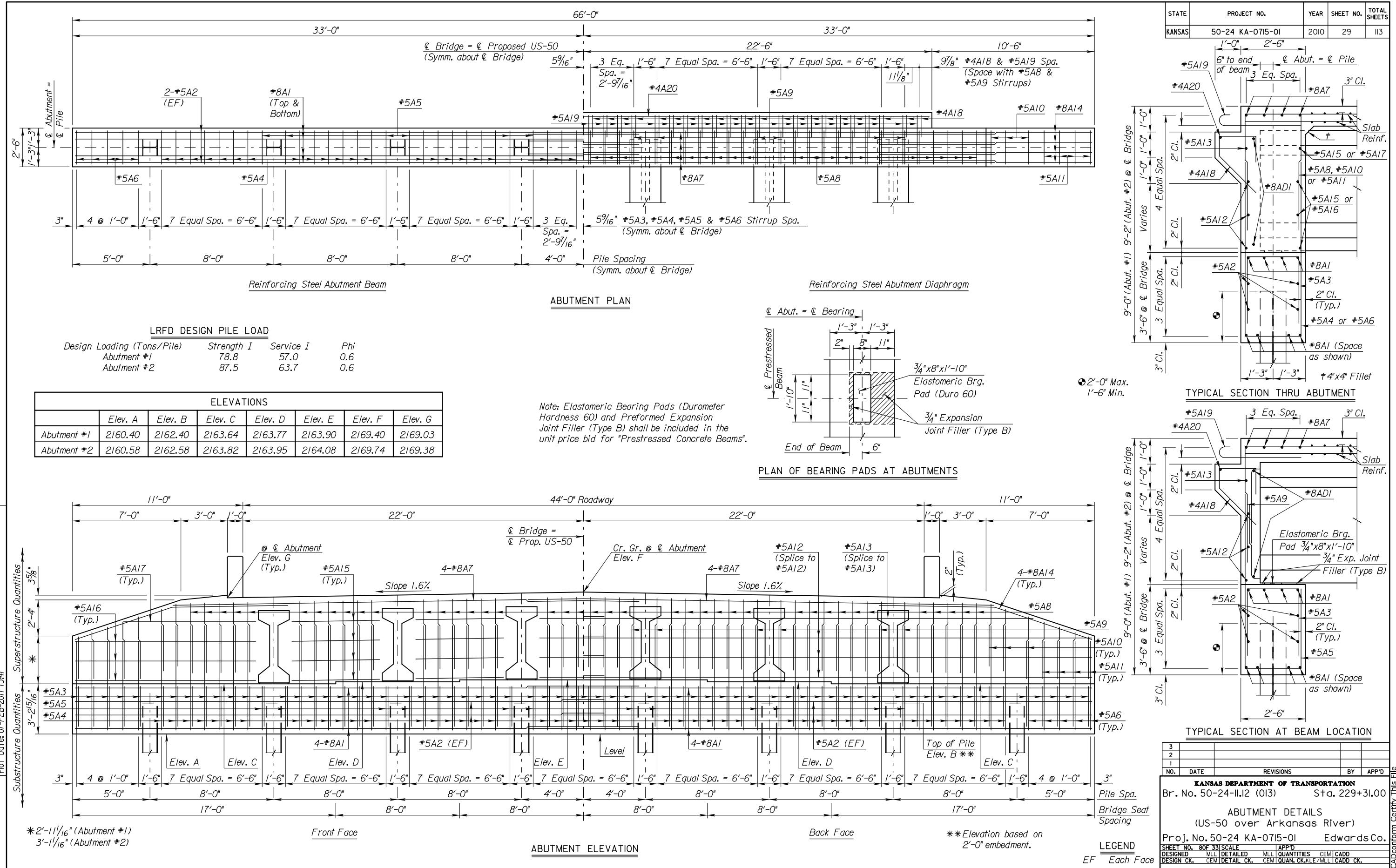
Location	Base of Pre-drilling Elevation
Pier #2	2131.0
Pier #3	2131.5
Pier #5	2129.0
Pier #6	2131.0

**Pile Note:** Once Sufficient bearing and penetration into the Dakota Formation is achieved, driving should cease to avoid damage to the pile. Final pile tip elevations should be determined in the field based on observed blow counts and bearing formula calculations.

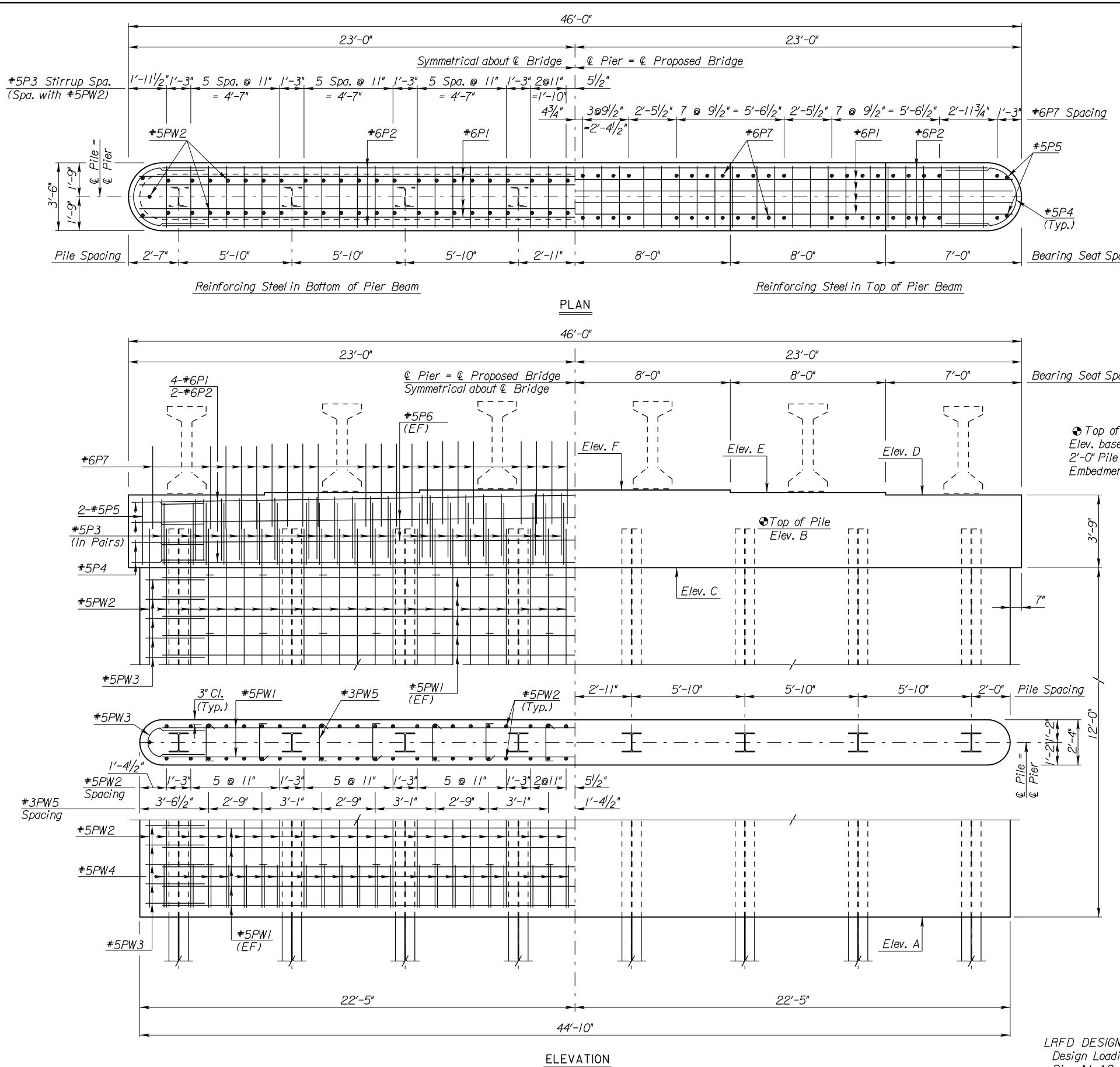


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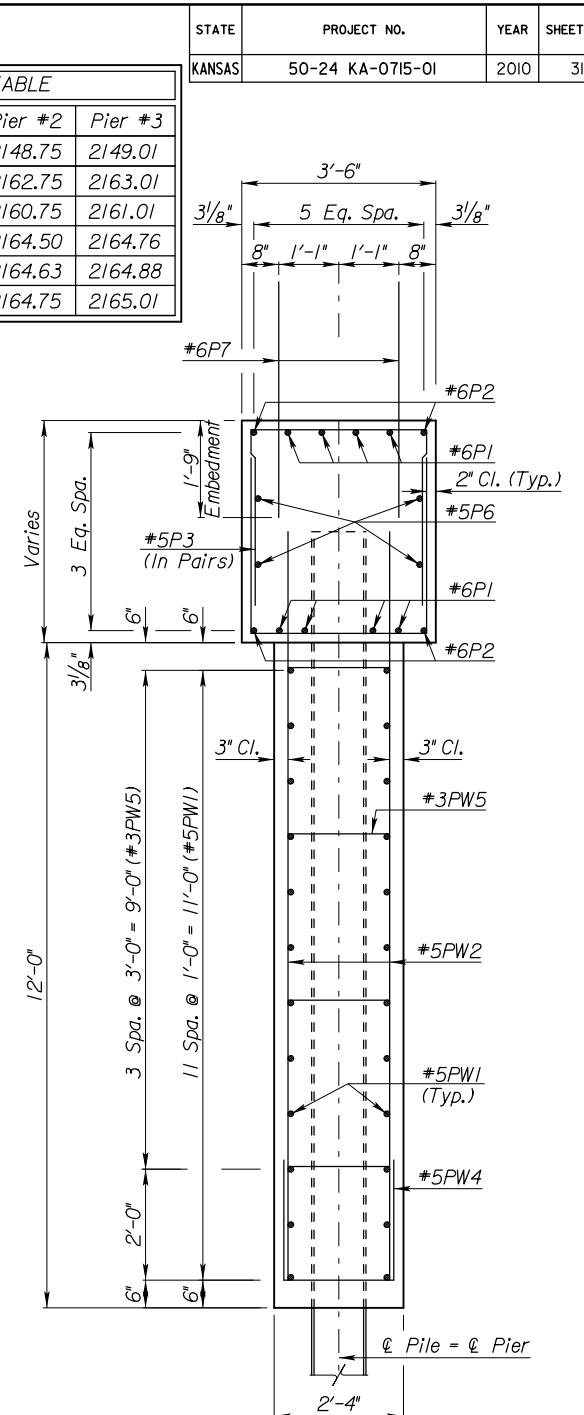




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File: 071501-013-04.dgn (071501-013-04)  
Plot Date: 07-FEB-2011 13:47



ELEVATION TABLE			
	Pier #1	Pier #2	Pier #3
Elevation A	2148.37	2148.75	2149.01
Elevation B	2162.37	2162.75	2163.01
Elevation C	2160.37	2160.75	2161.01
Elevation D	2164.12	2164.50	2164.76
Elevation E	2164.25	2164.63	2164.88
Elevation F	2164.38	2164.75	2165.01



### TYPICAL SECTION THRU PIER

LEGEND

3			
2			
1			
NO.	DATE	REVISIONS	BY APP'D
		<b>KANSAS DEPARTMENT OF TRANSPORTATION</b>	
Br. No. 50-24-II.I2 (013)		Sta. 229+31.00	
PIER #1, #2 and #3 DETAILS (US-50 over ARKANSAS RIVER)			

LRFD DESIGN PILE LOAD:

Design Loading (T)  
Pier #1, #2 & #3

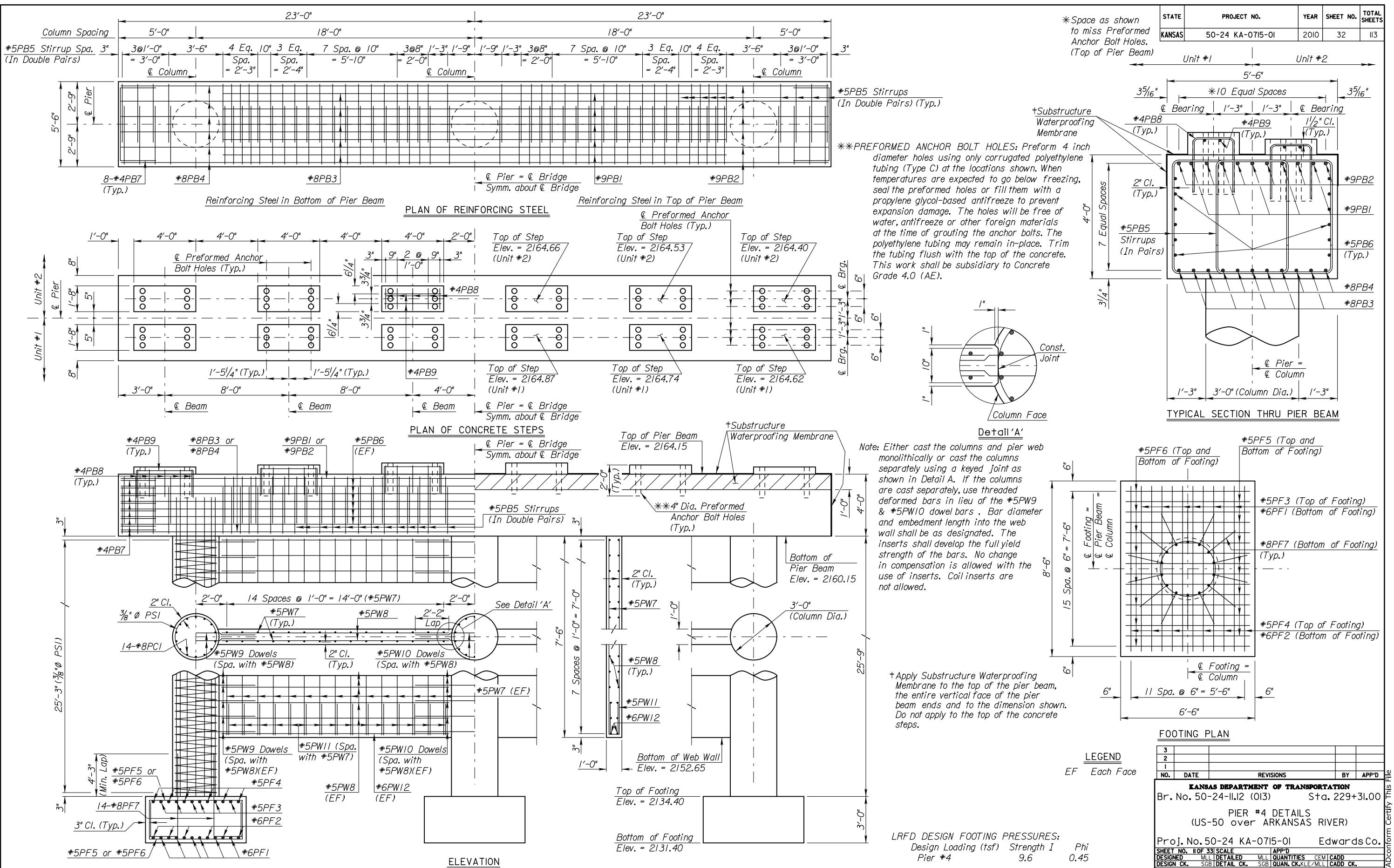
*Strength I*    *Service I*    *Phi*

(US-50 over ARKANSAS RIVER)

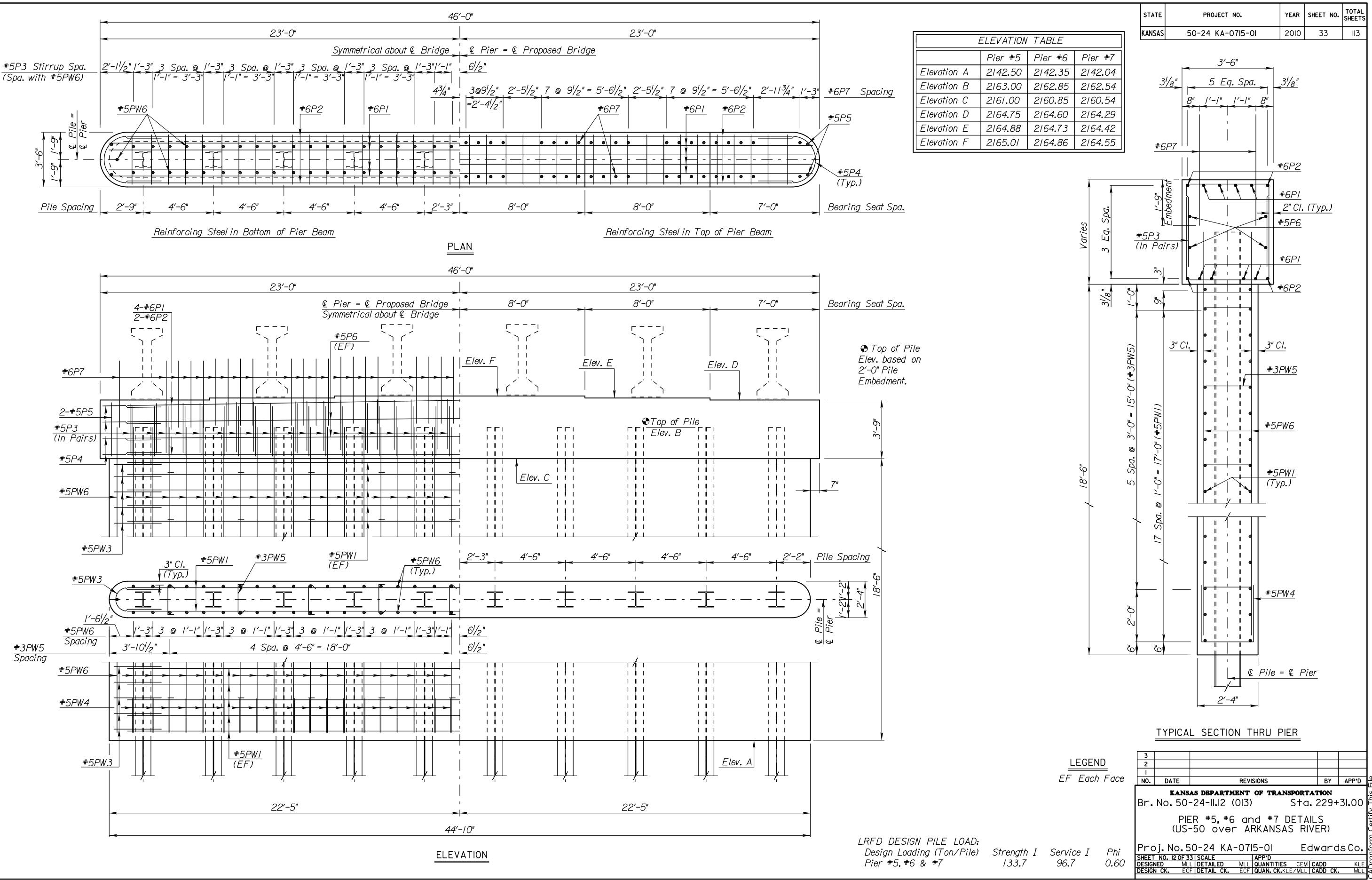
PIER #1, #2 and #3 DETAILS  
IS-50 over ARKANSAS RIVER)

Proj. No. 50-24 KA-0715-01      Edwards Co.

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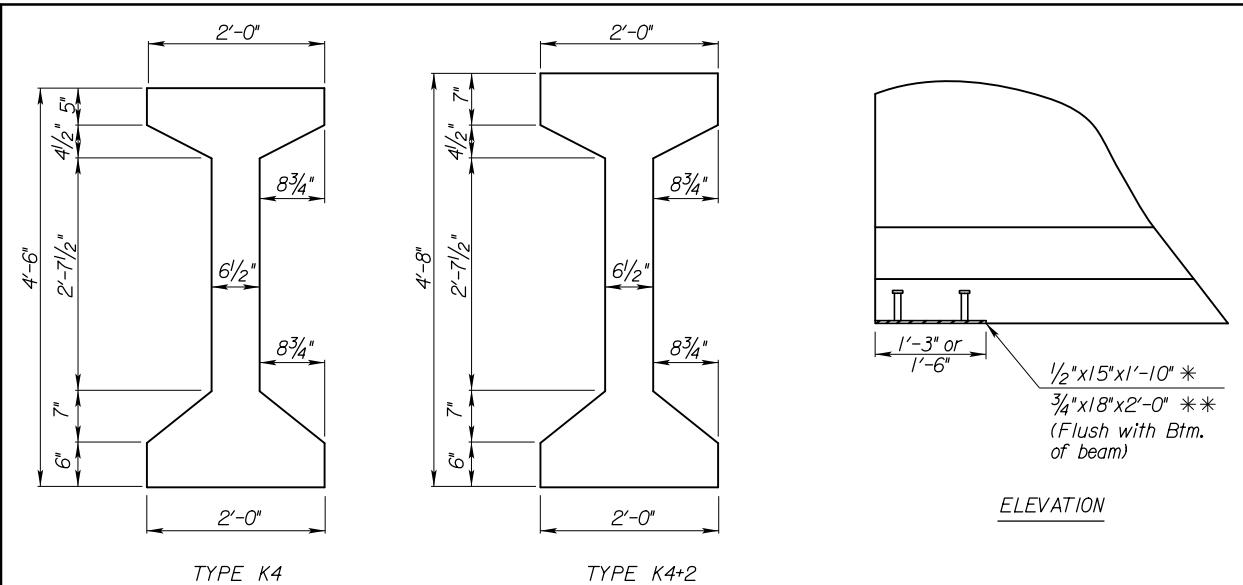


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Plotted By: *mraoche* Plot Location: *Bridge Design*  
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Plot Date: 07-FEB-2011 13:47

STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	34	113



TYPE K4

Area	644 In. <sup>2</sup>
I <sub>G</sub>	236,105 In. <sup>4</sup>
Y <sub>Bot</sub>	25.89 In.
Vol./Surf. Area	3.65 In.
Wt./Ft.	671 Lbs.

TYPE K4+2

Area	692 In. <sup>2</sup>
I <sub>G</sub>	273,964 In. <sup>4</sup>
Y <sub>Bot</sub>	27.91 In.
Vol./Surf. Area	3.87 In.
Wt./Ft.	720 Lbs.

ELEVATION

END VIEW  
(K4 & K4+2 Beam)  
(Beam Ends at Abutments,  
Piers #1, #2, #3, #5, #6, & #7)

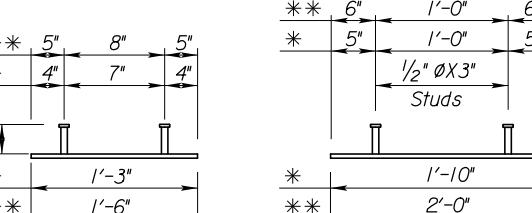
END VIEW  
(K4 & K4+2 Beam)  
(Beam Ends at Pier #4)

Note: Stud welding will be in accordance with the latest edition of AWS D1.1.

Use plate conforming to the requirements of ASTM A709 Grade 36. The stud anchors will be made of material as specified for Shear Connector Studs in the KDOT Specifications.

The exposed surface of the bearing plates shall be galvanized except for the bearing plates located at the beam ends at Pier #4.

All work and material to install the bearing plates shall be subsidiary to the bid item "Prestressed Concrete Beam".

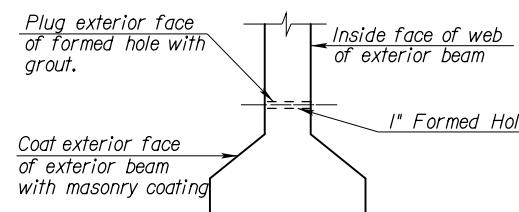


ELEV. OF BRG. PLATE

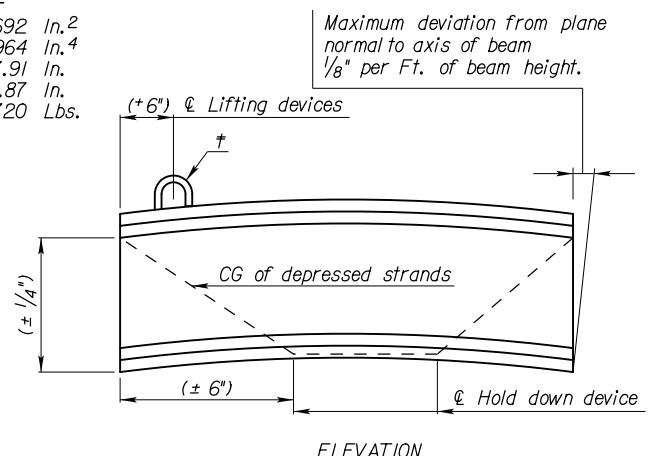
BEARING PLATE DETAILS

\* (Beam Ends at Abutments,  
Piers #1, #2, #3, #5, #6, & #7)

\*\* (Beam Ends at Pier #4)

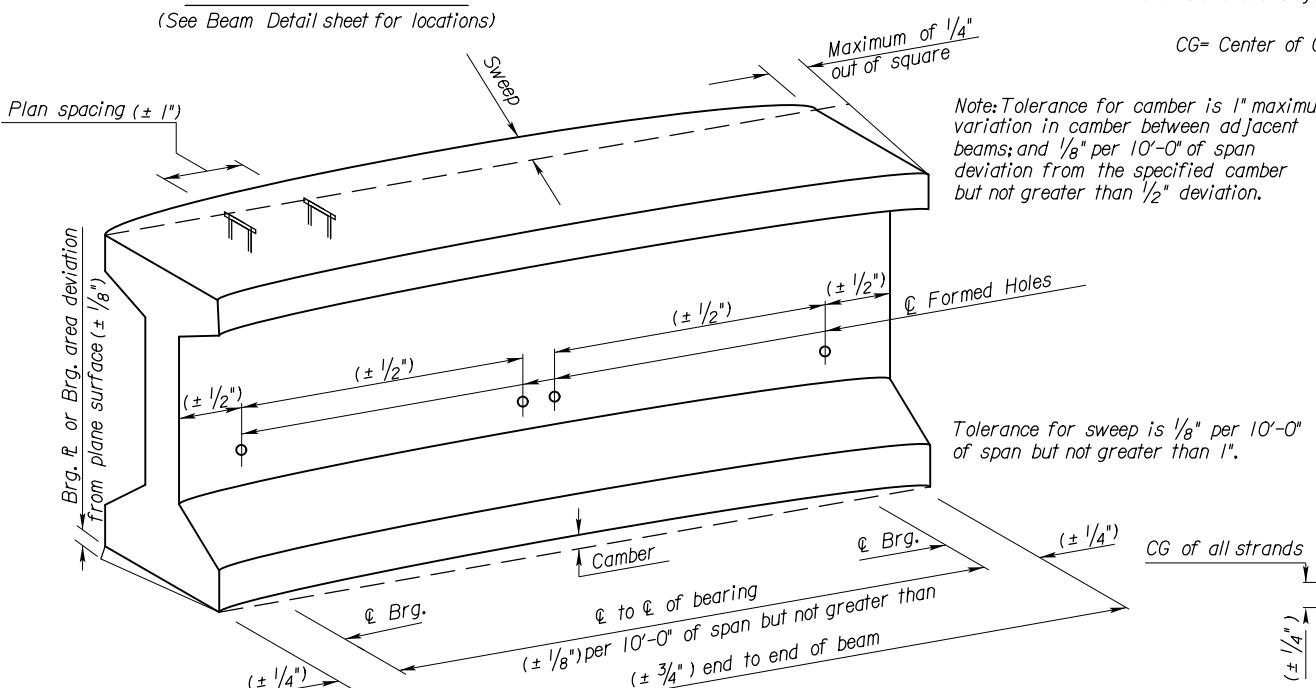


DETAIL OF FORMED HOLE(S)  
(See Beam Detail sheet for locations)



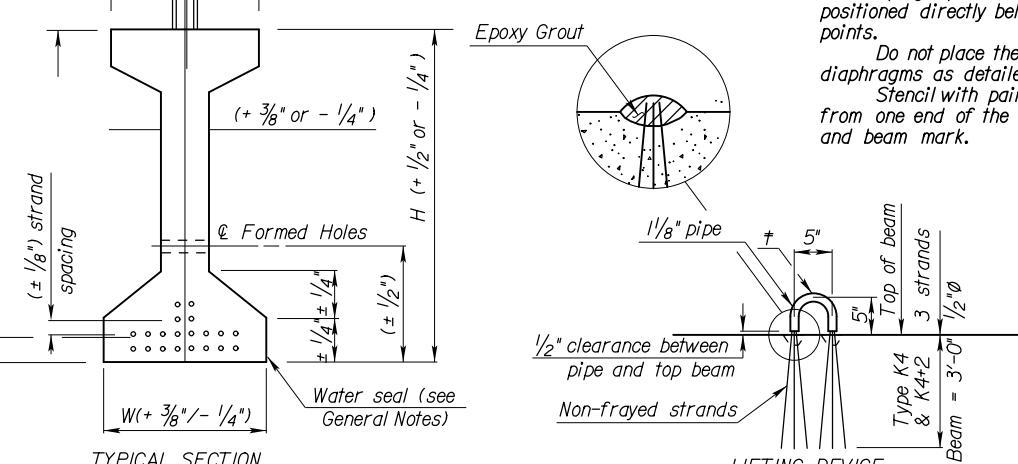
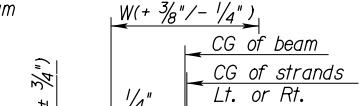
Note: Dimensions shown in parentheses are tolerances only.

CG= Center of Gravity



PRESTRESSED BEAM FABRICATION TOLERANCES

\* Remove lifting device within 1/2" from top of beam. Coat area with approved epoxy bonding agent. Completely cover remaining exposed strands and fill depressions adjacent to strands with approved epoxy grout.



3	7/22/08	Revision for Formed Holes only	JPJ	KFH
2	2/28/07	Separated Beam Sections	JPJ	KFH
1-31-06	General Note Changes & Grouting	JPJ	KFH	
NO. DATE	REVISIONS	BY	APP'D	

KANSAS DEPARTMENT OF TRANSPORTATION

STANDARD PRESTRESSED CONCRETE BEAM DETAILS

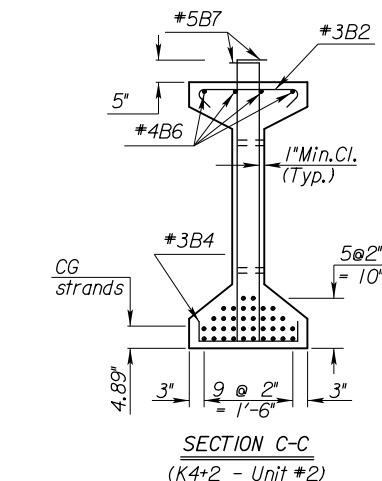
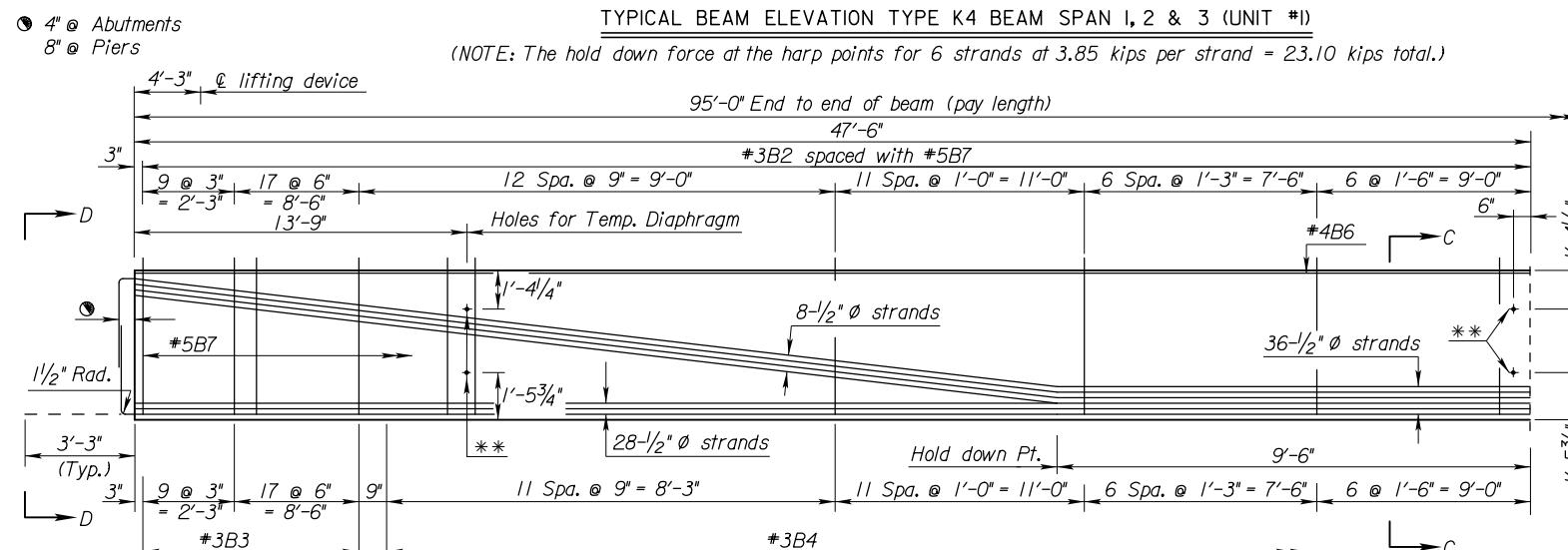
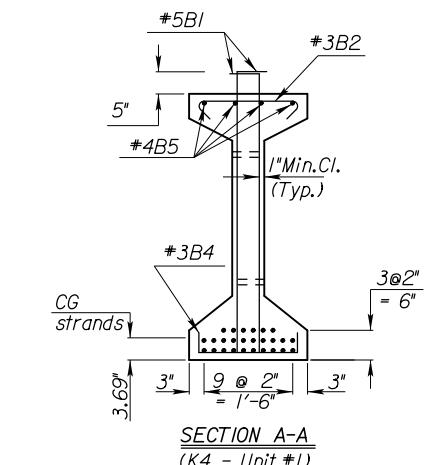
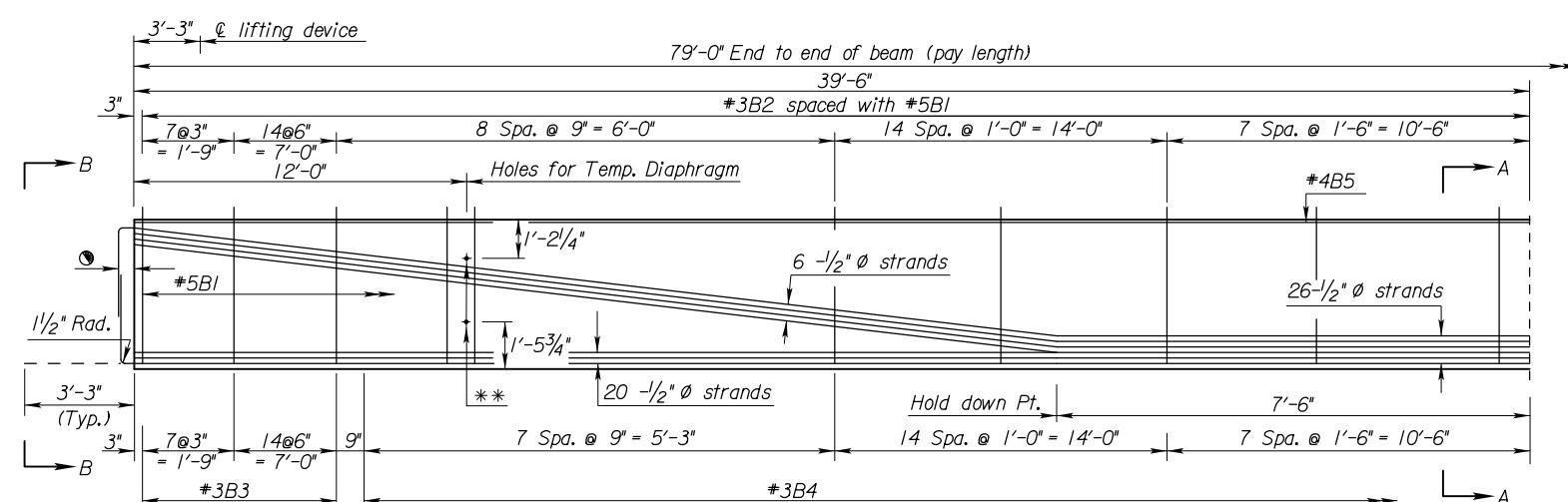
BR300C	2-23-06 APP'D	KENNETH F. HURST
FIWA APPROVAL	DETAILED RGF QUANTITIES	CAAD
DESIGNED BY: L. MARCHE	DETAIL CK. L. R. QUAN. CK.	TRACE CK.

CADconform Certify This File

Sheet No. 34

CADconform Certify This File

STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	35	113



NOTE: During transportation and construction only, support beams on bearing points a maximum of 7'-6" (79'-0" K4 beams) and 9'-6" (95'-0" K4+2 beams) from the beam end. The Fabricator shall show the proposed support locations on the shop drawings.

NOTE: Epoxy coat all bars.

#### BILL OF REINFORCING STEEL

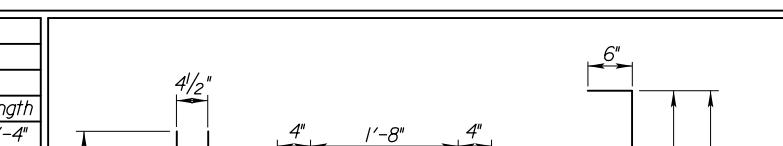
Beam (1 Listed-18 Req'd.) (K4 - Unit #1)

##### Straight bars

Mark	No.	Size	Length
B5	8	#4	40'-3"

##### Bent bars

Mark	No.	Size	Length
B2	101	#3	2'-4"
B3	44	#3	6'-0"
B4	57	#3	2'-4"



Beam (1 Listed-18 Req'd.) (K4+2 - Unit #2)

##### Straight bars

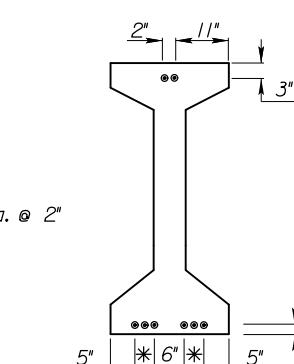
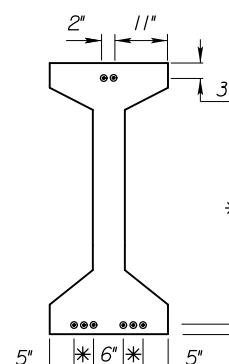
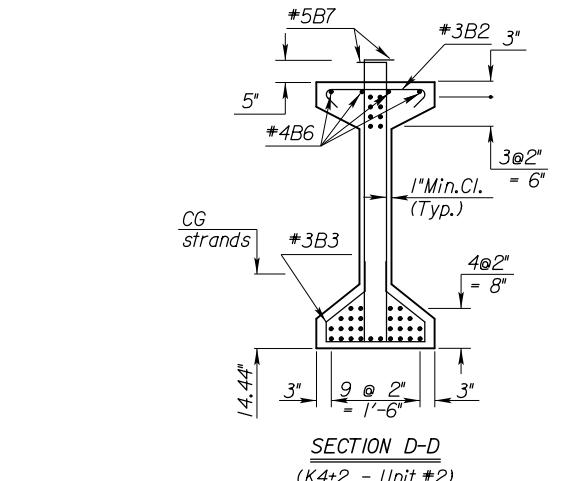
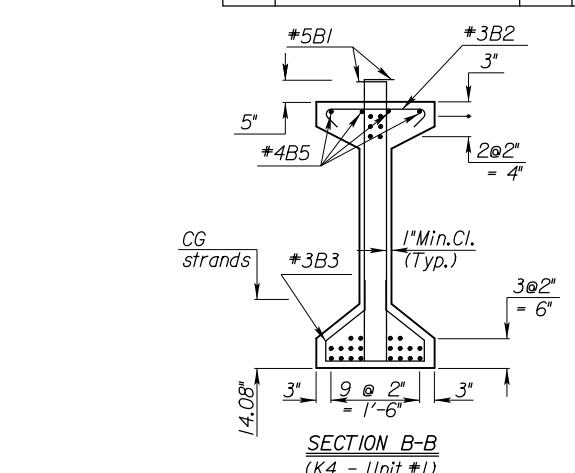
Mark	No.	Size	Length
B6	8	#4	48'-3"

##### Bent bars

Mark	No.	Size	Length
B2	123	#3	2'-4"
B3	54	#3	6'-0"
B4	69	#3	2'-4"
B7	246	#5	6'-6"

#### BILL OF MATERIAL

Item	Unit	Quantity
Prestressed concrete beams (K4) Unit #1	Lin.Ft.	1422
Prestressed concrete beams (K4+2) Unit #2	Lin.Ft.	1710
The following quantities are given for information only and shall not be paid for directly but shall be made subsidiary to the bid item "Prestressed Concrete Beams"		
Beam concrete (f'c= 5000 PSI) (per K4 - Unit #1)	Cu.Yds.	13.1
Beam concrete (f'c= 6000 PSI) (per K4+2 - Unit #2)	Cu.Yds.	16.9
Approx. Wt. per 79'-0" beam (K4 - Unit #1)	Tons	26.5
Approx. Wt. per 95'-0" beam (K4+2 - Unit #2)	Tons	34.2
1/2" Ø Prestressing strand (270 KSI low relaxation fy= 243 KSI)	Lin.Ft.	100,500
Epoxy reinforcing steel (fy=60,000 PSI)	Lbs.	72,060
Elastomeric Brdg. pads (3/4" x 8" x 1'-10")	Each	72
1" Ø Formed Hole	Each	180
Lifting devices	Each	72
Bearing plates (1/2" x 15" x 1'-10")	Each	72



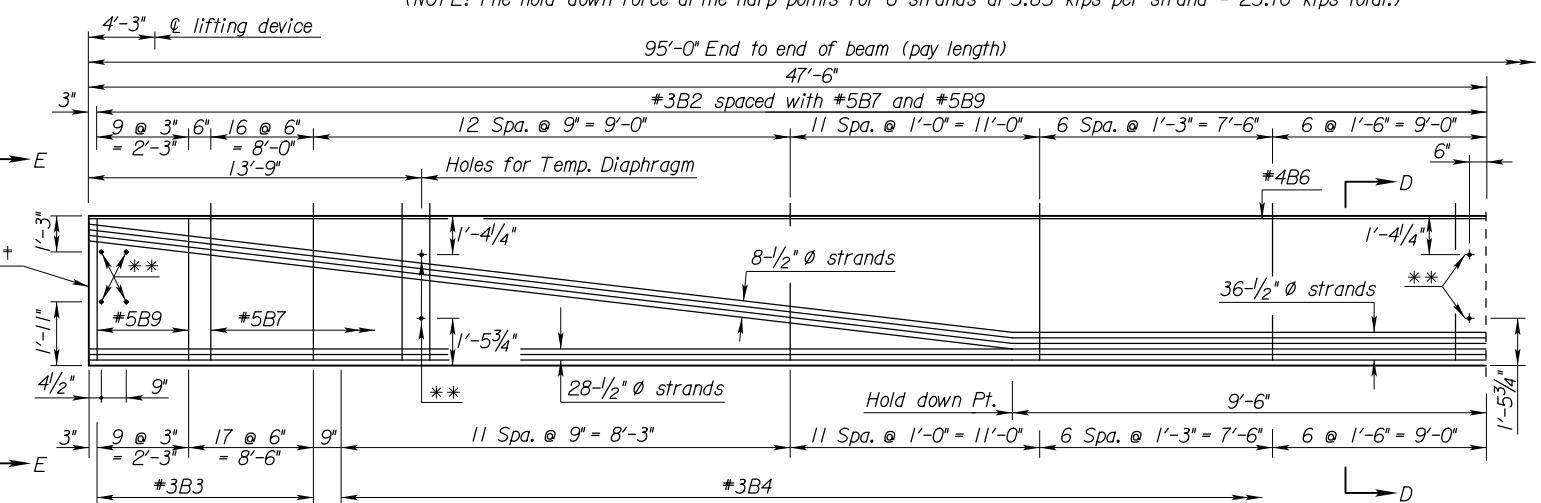
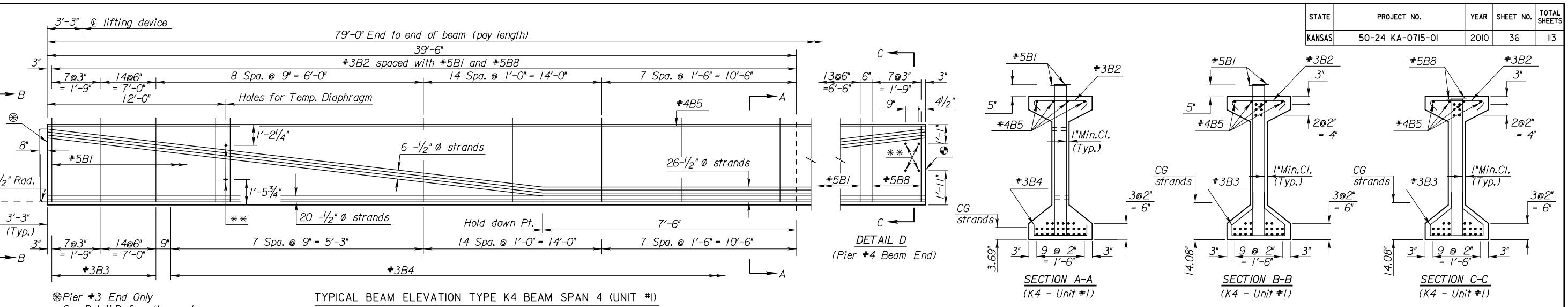
STRAND EXTENSION DETAIL  
(79'-0" span beams) (Unit #1)

STRAND EXTENSION DETAIL  
(95'-0" span beams) (Unit #2)

NO.	DATE	REVISIONS	BY APP'D
3	2		
1			

KANSAS DEPARTMENT OF TRANSPORTATION  
Br. No. 50-24-II, I2 (O13) Sta. 229+31.00  
K4 and K4+2 BEAM DETAILS  
(Spans 1, 2, 3, 6, 7 and 8)  
(US-50 over Arkansas River)  
Proj. No. 50-24 KA-0715-01 Edwards Co.

SHEET NO. 14OF 33 SCALE APP'D  
DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD  
DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK. CLE/MLL CADD CK.  
CADconform Certify This File



After the strands are cut flush with the end of the beam, the Fabricator shall coat the end of the beams with a membrane that meets the requirements of the KDOT specifications for Substructure Waterproofing Membrane. The thickness shall be sufficient to seal the exposed end of the strands. This work shall be subsidiary to the bid item "Prestressed Concrete Beams".

NOTE: During transportation and construction only, support beams on bearing points a maximum of 7'-6" (79'-0" K4 beams) and 9'-6" (95'-0" K4+2 beams) from the beam end. The Fabricator shall show the proposed support locations on the shop drawings.

NOTE: Epoxy coat all bars.

#### BILL OF REINFORCING STEEL

Beam (1 Listed-6 Req'd.) (K4 - Unit #1)

##### Straight bars

Mark No. Size Length

B5 8 #4 40'-3"

##### Bent bars

Mark No. Size Length

B2 101 #3 2'-4"

B3 44 #3 6'-0"

B4 57 #3 2'-4"

B1 186 #5 6'-4"

B8 16 #5 5'-9"

Beam (1 Listed-6 Req'd.) (K4+2 - Unit #2)

##### Straight bars

Mark No. Size Length

B6 8 #4 48'-3"

##### Bent bars

Mark No. Size Length

B2 123 #3 2'-4"

B3 54 #3 6'-0"

B4 69 #3 2'-4"

B7 226 #5 6'-6"

B9 20 #5 5'-11"

#### BILL OF MATERIAL

Item	Unit	Quantity
Prestressed concrete beams (K4) Unit #1	Lin.Ft.	474
Prestressed concrete beams (K4+2) Unit #2	Lin.Ft.	570

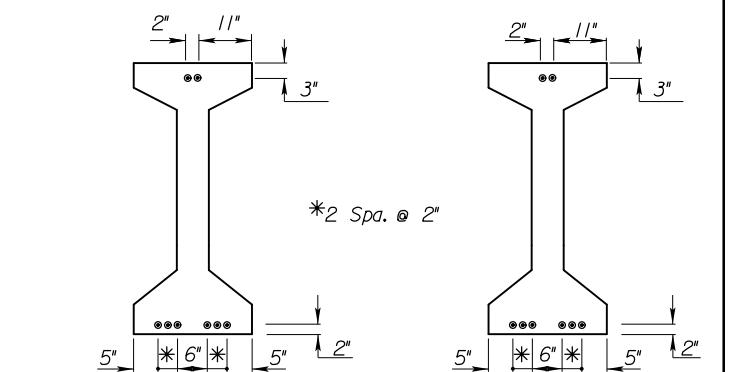
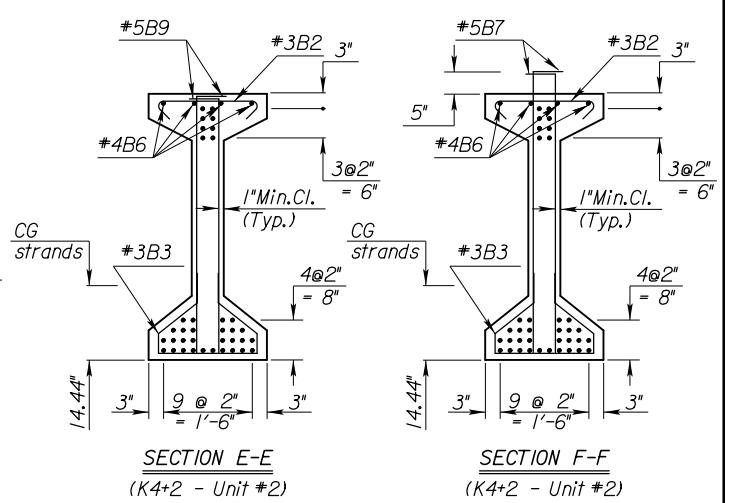
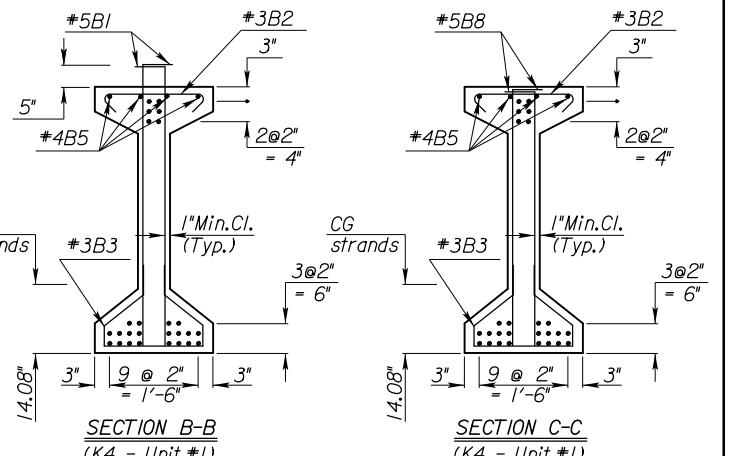
The following quantities are given for information only and shall not be paid for directly but shall be made subsidiary to the bid item "Prestressed Concrete Beams".

Beam concrete ( $f'c = 5000 \text{ PSI}$ ) (per K4 - Unit #1)	Cu.Yds.	13.1
Beam concrete ( $f'c = 6000 \text{ PSI}$ ) (per K4+2 - Unit #2)	Cu.Yds.	16.9
Approx. Wt. per 79'-0" beam (K4 - Unit #1)	Tons	26.5
Approx. Wt. per 95'-0" beam (K4+2 - Unit #2)	Tons	34.2
1/2" Ø Prestressing strand (270 KSI low relaxation $f_y = 243 \text{ KSI}$ )	Lin.Ft.	33,188

Epoxy reinforcing steel ( $f_y=60,000 \text{ PSI}$ )	Lbs.	23,890
Elastomeric Brdg. pads ( $3/4" \times 8" \times 1'-10"$ ) X	Each	12
1" Ø Formed Hole X X	Each	108
Lifting devices	Each	24
Bearing plates ( $1/2" \times 15" \times 1'-10"$ ) X	Each	12
Bearing plates ( $3/4" \times 18" \times 2'-0"$ ) X X X	Each	12

\* Beam Ends at Pier #3 and Pier #5 only. \*\*\* Beam Ends at Pier #4 only.  
X X Includes the optional holes near pier #4.

STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	36	113



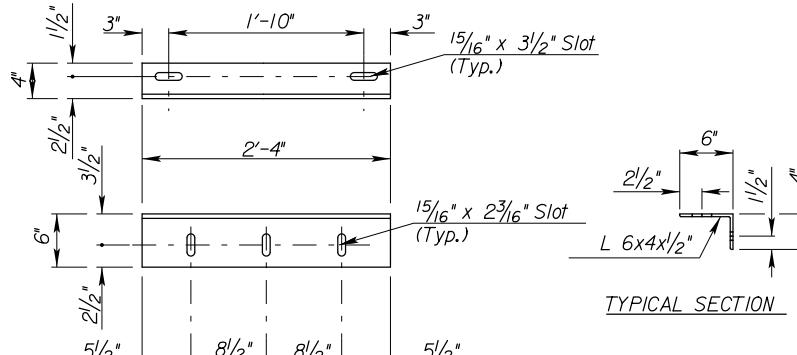
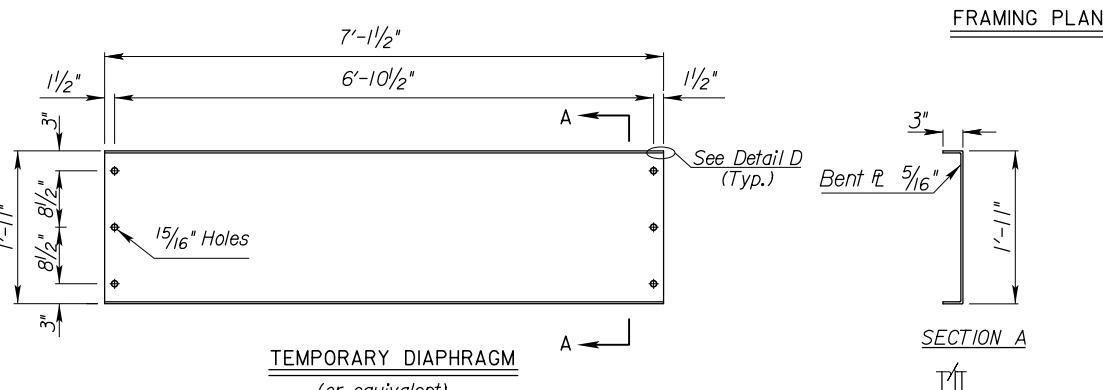
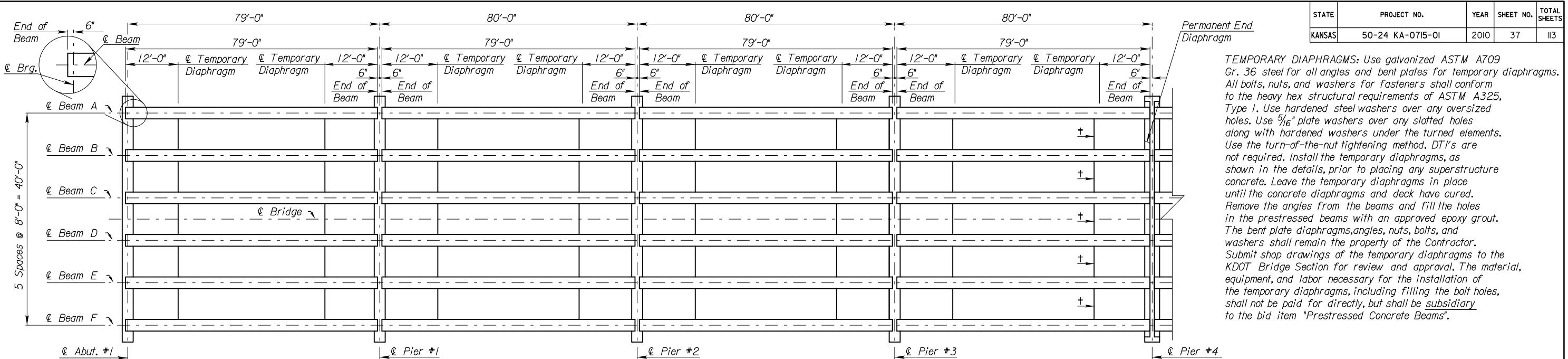
3	2	1	REVISIONS	BY APP'D
NO.	DATE			

**KANSAS DEPARTMENT OF TRANSPORTATION**  
Br. No. 50-24-II,12 (013) Sta. 229+31.00  
K4 and K4+2 BEAM DETAILS  
(Spans 4 and 5)  
(US-50 over Arkansas River)

Proj. No. 50-24 KA-0715-01 Edwards Co.

SHEET NO. 15OF 33 SCALE APP'D  
DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD  
DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK. CLE/MLL CADD CK.

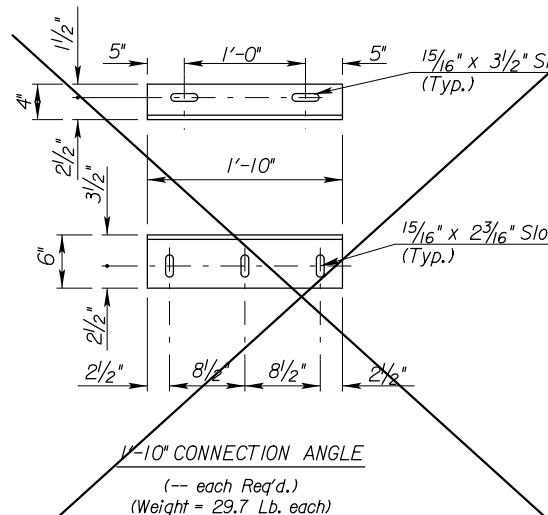
CADconform Certify This File



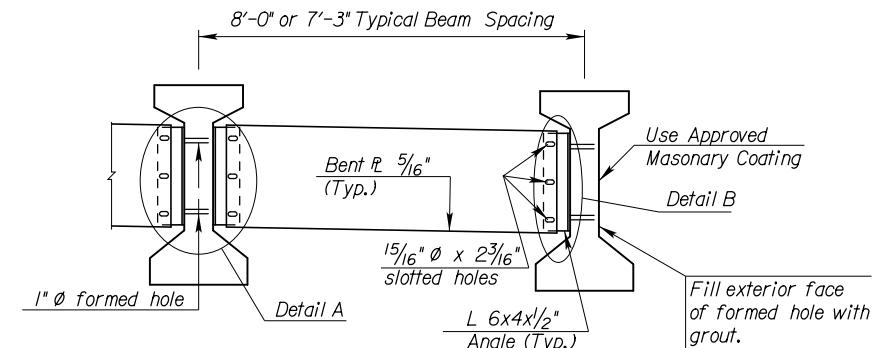
2'-4" CONNECTION ANGLE  
(80 each Req'd.)  
(Weight = 37.8 Lb. each)

\*Includes the angles required for the optional temporary diaphragms near Pier #4.

CONNECTION ANGLE DETAILS  
(or equivalent)

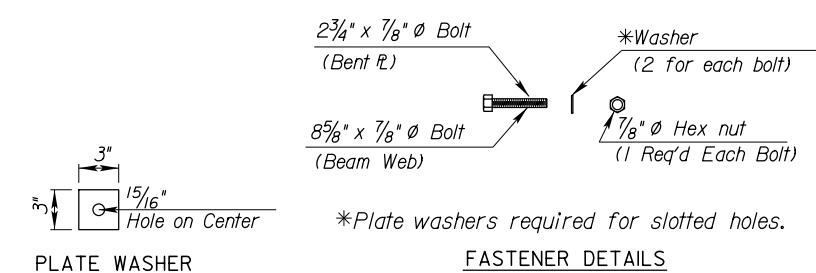


\*These temporary diaphragms are not required if the permanent end diaphragm concrete has cured a minimum of 7 days before placing the deck. If the contractor elects not to wait the 7 day minimum cure time before placing the deck then these temporary diaphragms shall be required.



Typ. Exterior Beams      Typical Bay      Typ. Exterior Beams

ELEVATION OF TEMPORARY DIAPHRAGMS



NO.	DATE	REVISIONS	BY APP'D
3			
2			
1			

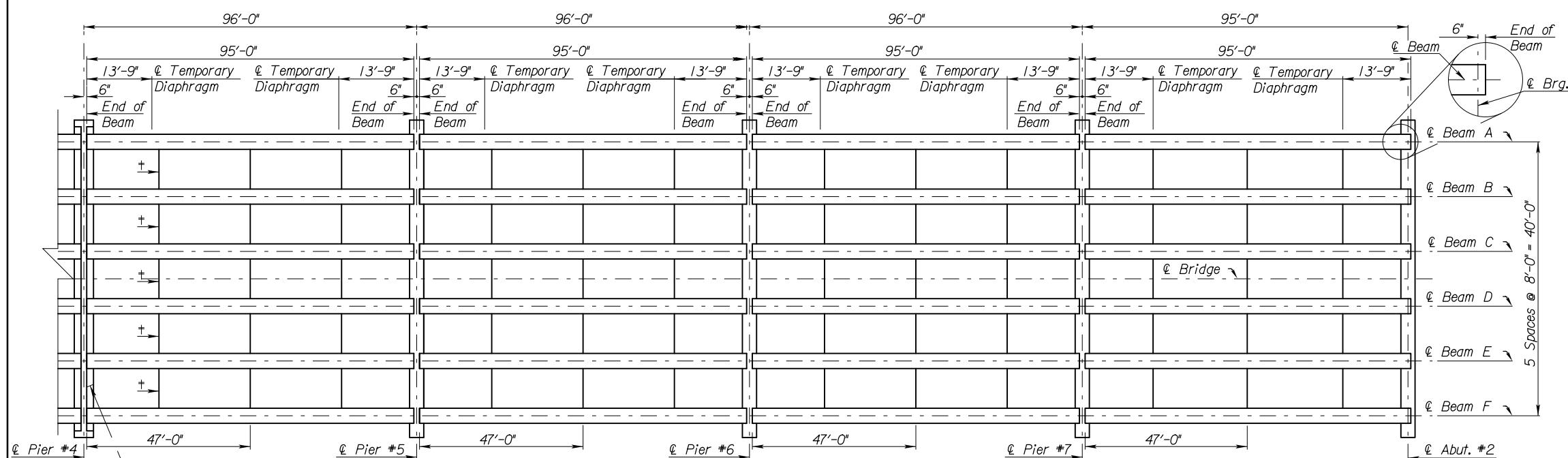
KANSAS DEPARTMENT OF TRANSPORTATION  
Br. No. 50-24-II-12 (013) Sta. 229+31.00  
FRAMING PLAN &  
TEMPORARY DIAPHRAGM DETAILS - UNIT #1  
(US-50 over Arkansas River)

Proj. No. 50-24 KA-0715-01 Edwards Co.  
SHEET NO. 16 OF 33 SCALE APP'D  
DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD  
DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK/CLE/MILL CADD CK.

CADconform Certify This File

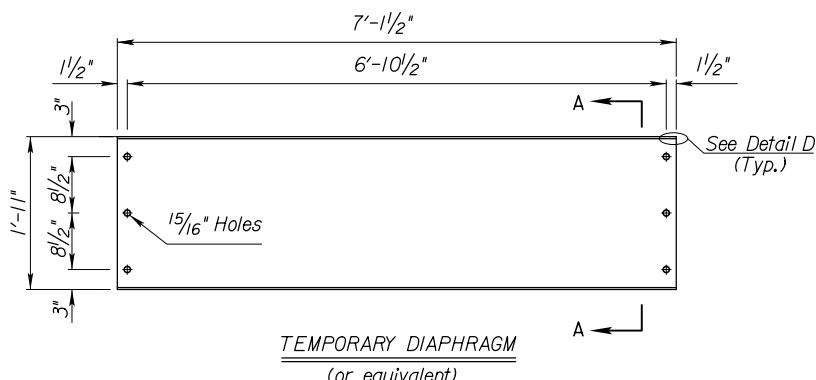
STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	38	113

**TEMPORARY DIAPHRAGMS:** Use galvanized ASTM A709 Gr. 36 steel for all angles and bent plates for temporary diaphragms. All bolts, nuts, and washers for fasteners shall conform to the heavy hex structural requirements of ASTM A325, Type I. Use hardened steel washers over any oversized holes. Use  $\frac{5}{16}$ " plate washers over any slotted holes along with hardened washers under the turned elements. Use the turn-of-the-nut tightening method. DTI's are not required. Install the temporary diaphragms, as shown in the details, prior to placing any superstructure concrete. Leave the temporary diaphragms in place until the concrete diaphragms and deck have cured. Remove the angles from the beams and fill the holes in the prestressed beams with an approved epoxy grout. The bent plate diaphragms, angles, nuts, bolts, and washers shall remain the property of the Contractor. Submit shop drawings of the temporary diaphragms to the KDOT Bridge Section for review and approval. The material, equipment, and labor necessary for the installation of the temporary diaphragms, including filling the bolt holes, shall not be paid for directly, but shall be subsidiary to the bid item "Prestressed Concrete Beams".

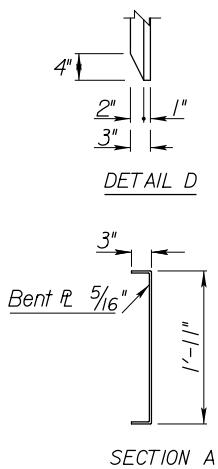


Permanent End Diaphragm

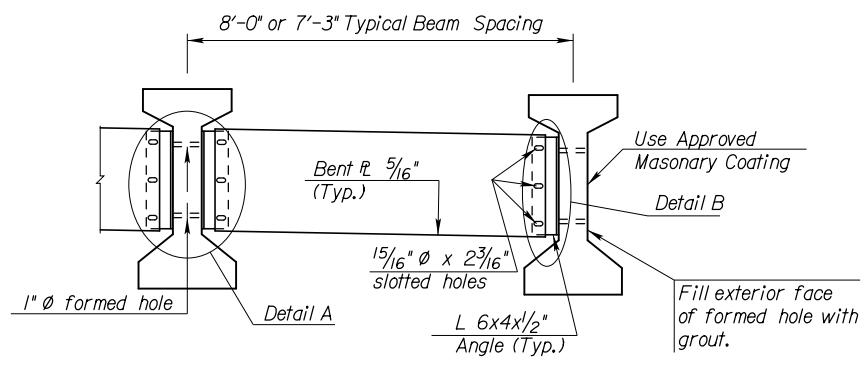
\*These temporary diaphragms are not required if the permanent end diaphragm concrete has cured a minimum of 7 days before placing the deck. If the contractor elects not to wait the 7 day minimum cure time before placing the deck then these temporary diaphragms shall be required.



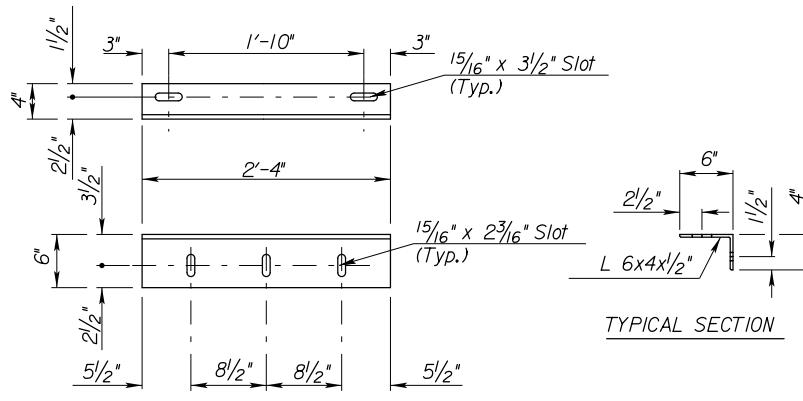
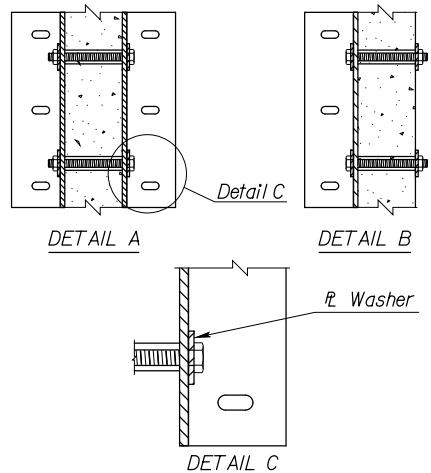
FRAMING PLAN



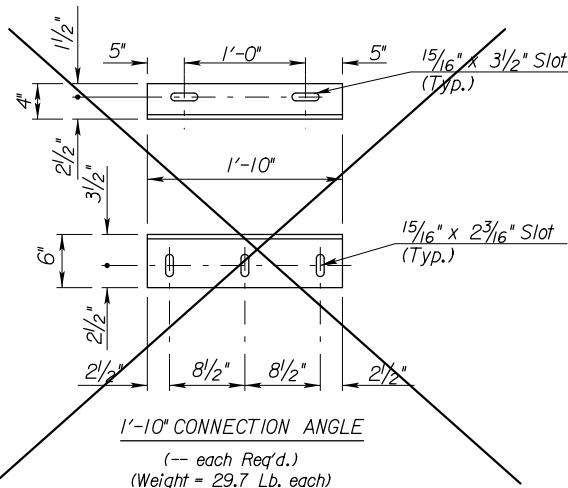
SECTION A



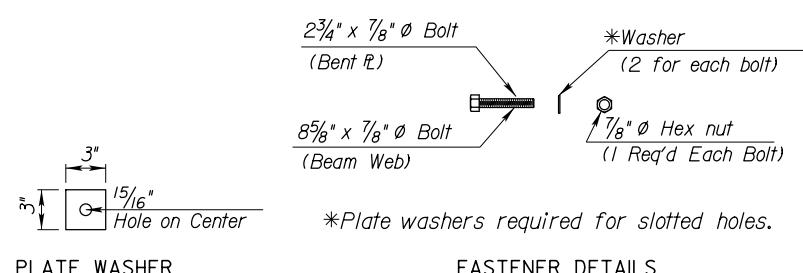
ELEVATION OF TEMPORARY DIAPHRAGMS



2'-4" CONNECTION ANGLE  
(120 each Req'd.)\*  
(Weight = 37.8 Lb. each)



1'-10" CONNECTION ANGLE  
(-- each Req'd.)  
(Weight = 29.7 Lb. each)



\*Plate washers required for slotted holes.

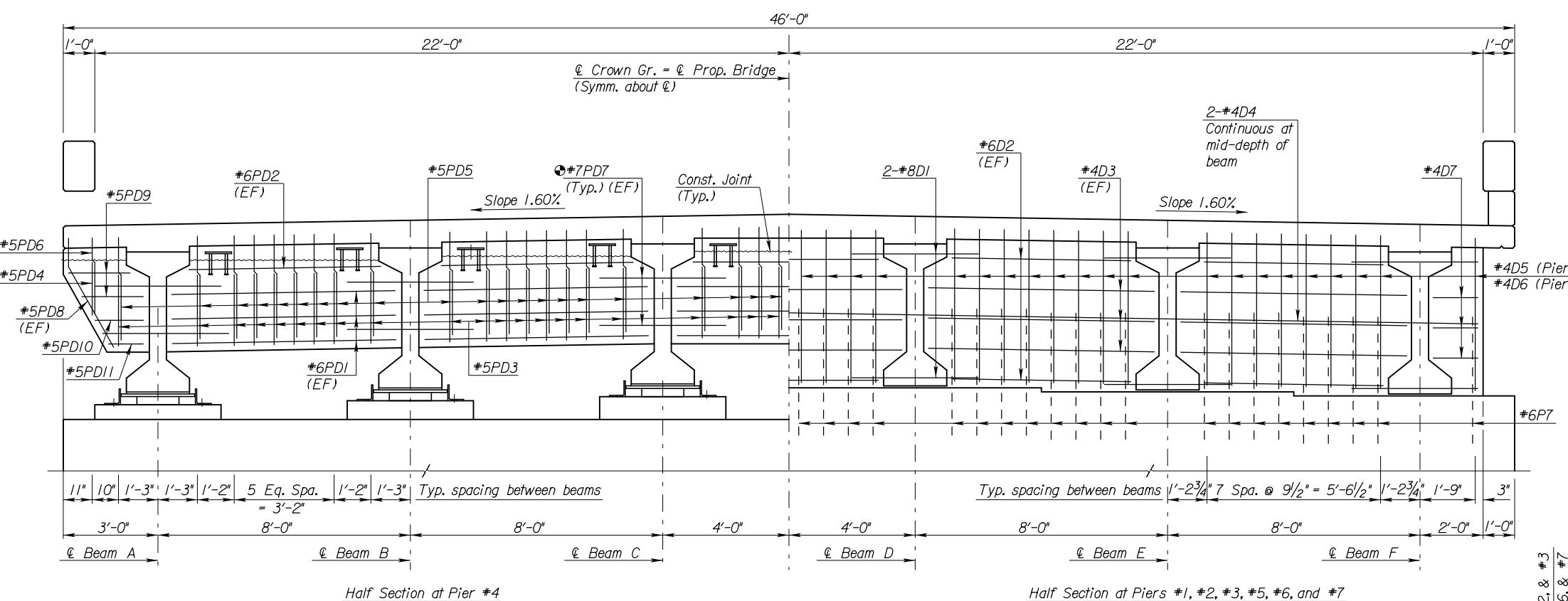
FASTENER DETAILS

NO.	DATE	REVISIONS	BY APP'D
3			
2			

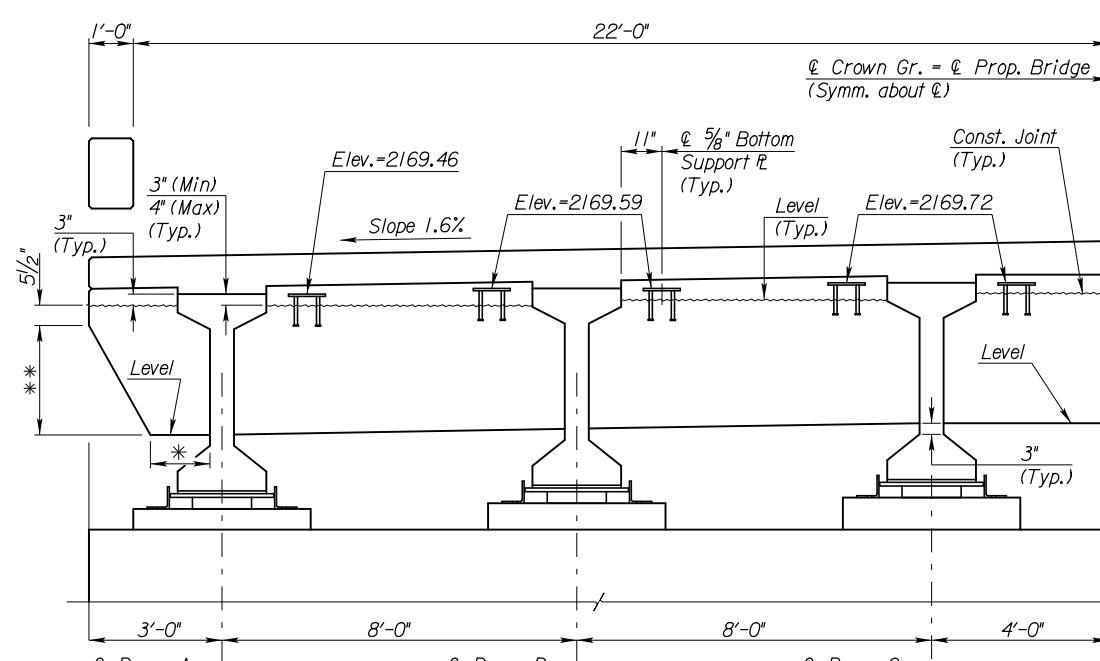
**KANSAS DEPARTMENT OF TRANSPORTATION**  
Br. No. 50-24-II-12 (013) Sta. 229+31.00  
FRAMING PLAN &  
TEMPORARY DIAPHRAGM DETAILS - UNIT #2  
(US-50 over Arkansas River)

Proj. No. 50-24 KA-0715-01 Edwards Co.  
SHEET NO. 17 OF 33 SCALE APP'D  
DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD  
DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK/CLE/MILL CADD CK.

STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	39	113



PIER SECTION



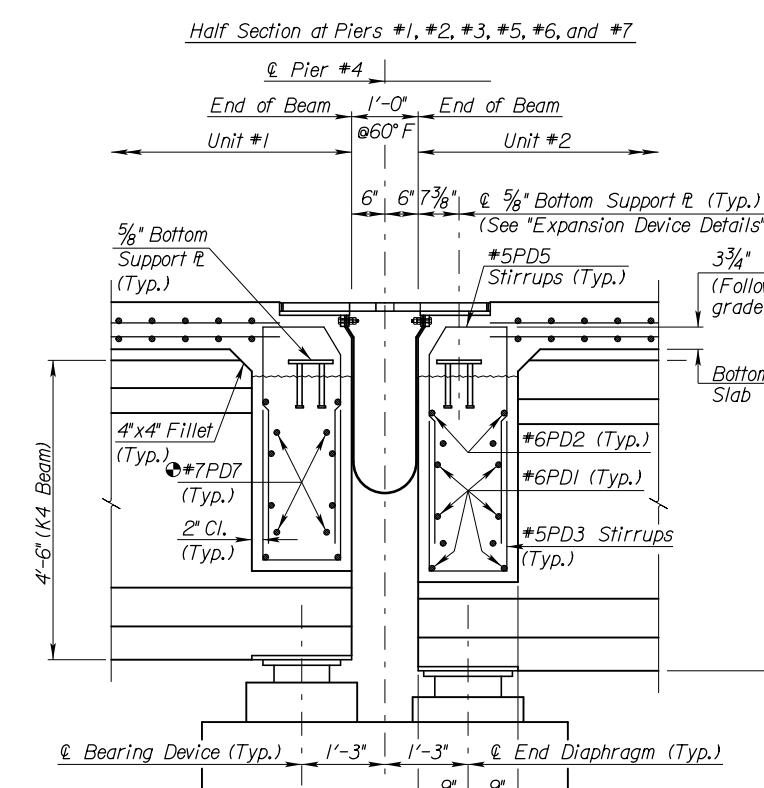
HALF ELEVATION AT PIER #4

\*1'-4 1/8" (Unit #1)  
1'-3" (Unit #2)

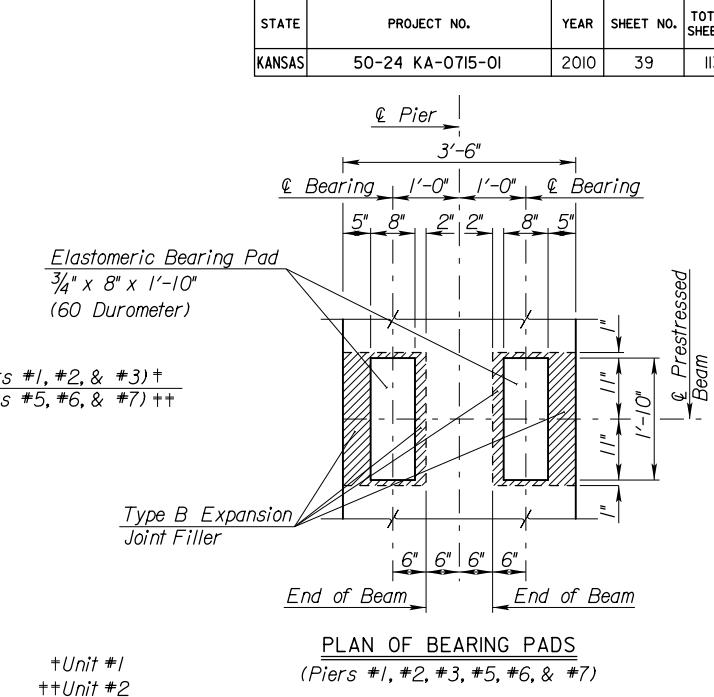
\*\*2'-5 5/8" (Unit #1)  
2'-7 5/8" (Unit #2)

#7PD7 bars go  
through 1" Ø  
formed holes in  
beam.

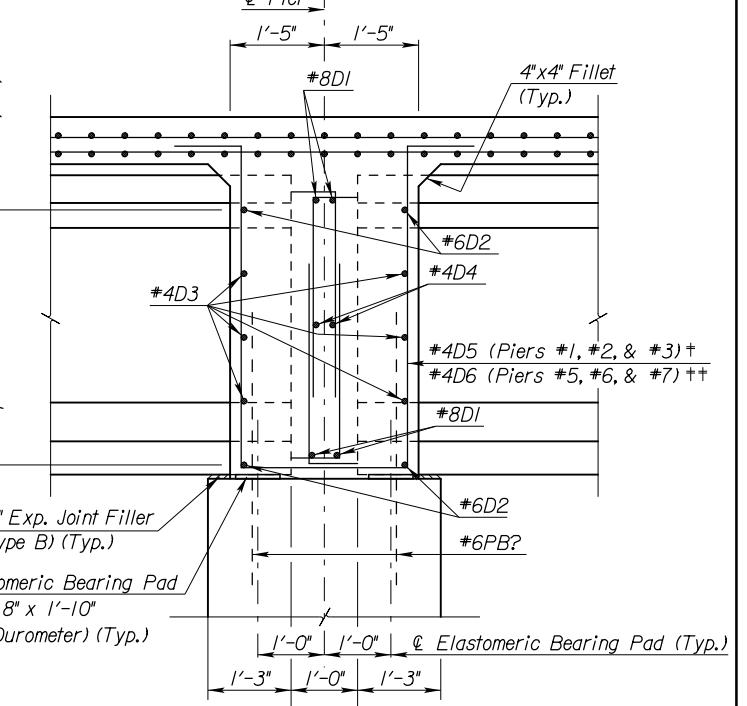
TYPICAL SECTION THRU PIER DIAPHRAGM  
(Pier #4)



Note: Elastomeric Bearing Pads (Durometer 60) and Preformed Expansion Joint Filler (Type B) at Piers #1, #2, #3, #5, #6 & #7 only shall be included in the unit price bid for "Prestressed Concrete Beams".



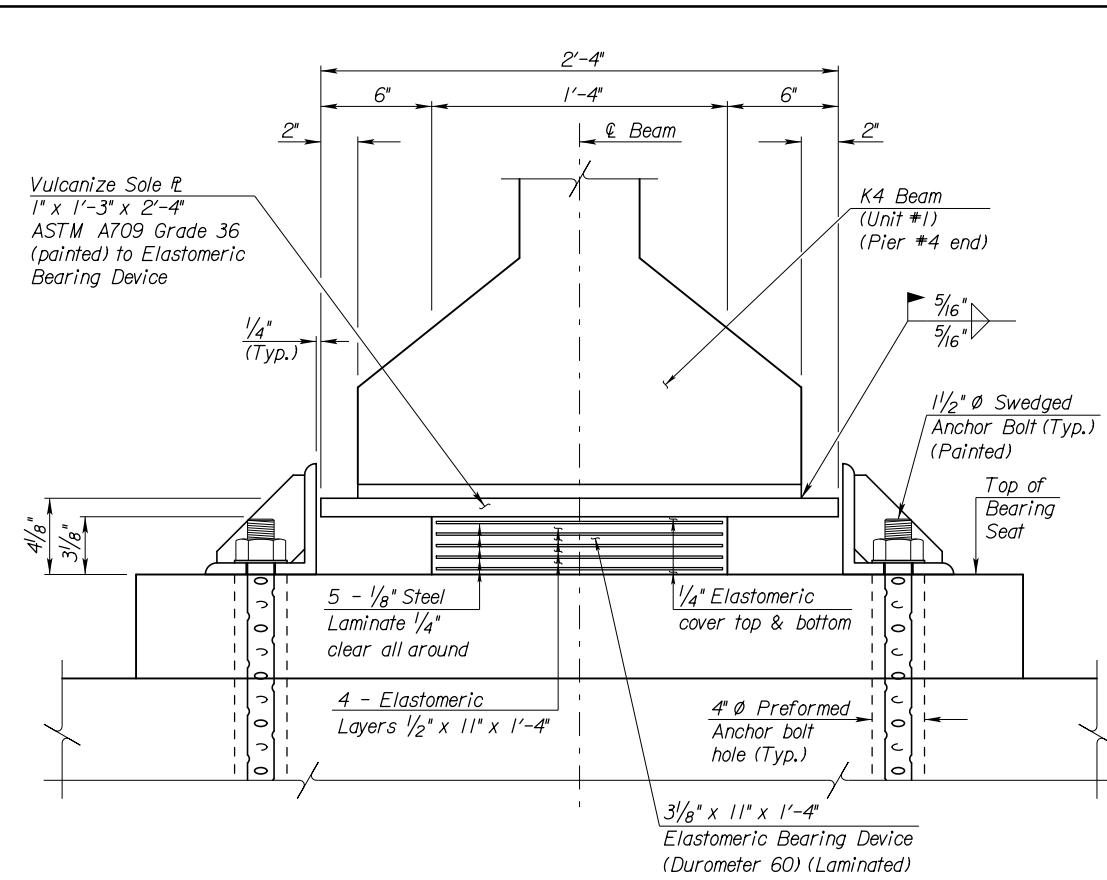
+Unit #1  
++Unit #2



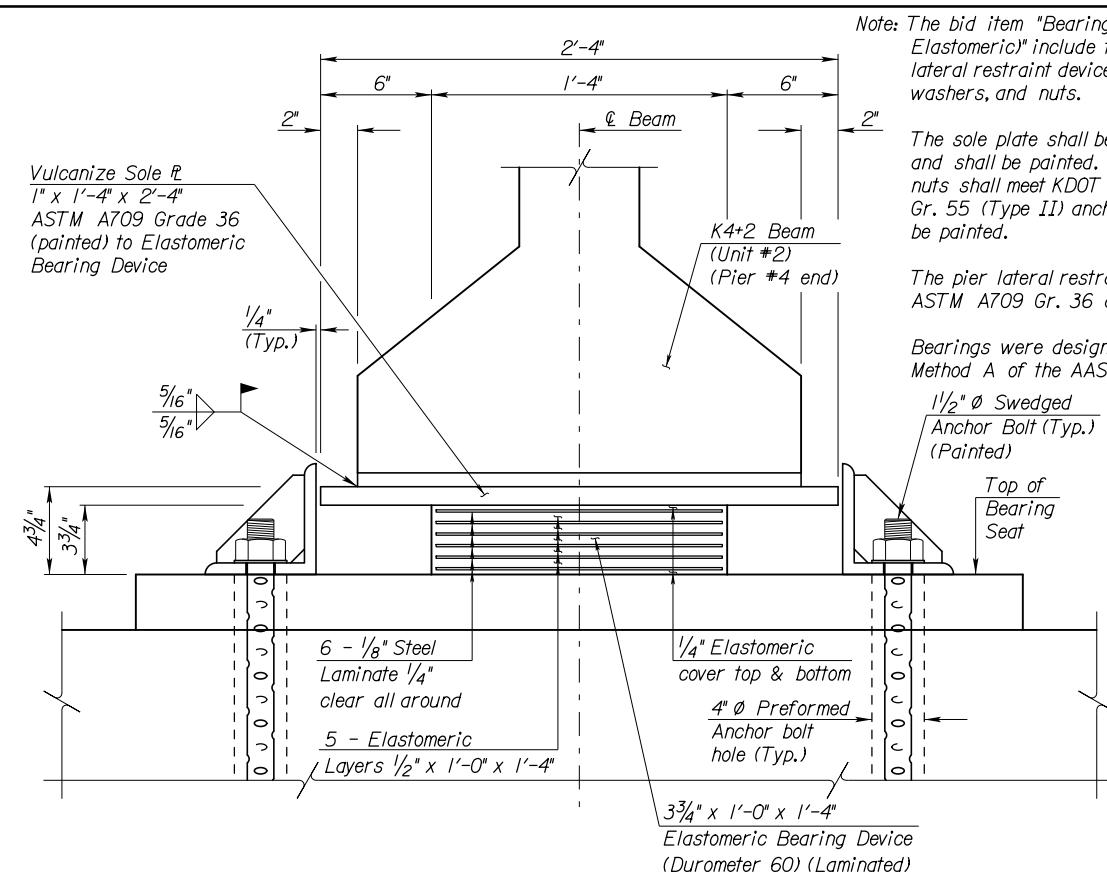
TYPICAL SECTION THRU PIER DIAPHRAGM  
(Piers #1, #2, #3, #5, #6, & #7)

NO.	DATE	REVISIONS	BY APP'D
3			
2			
1			
Br. No. 50-24-II.12 (013)	Sta. 229+31.00		
KANSAS DEPARTMENT OF TRANSPORTATION			
Proj. No. 50-24 KA-0715-01 Edwards Co.			
SHEET NO. 180F 33 SCALE APP'D	DESIGNED BY MLL DETAILED BY MLL QUANTITIES CEM CADD	DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK. CLE/MILL CADD CK.	

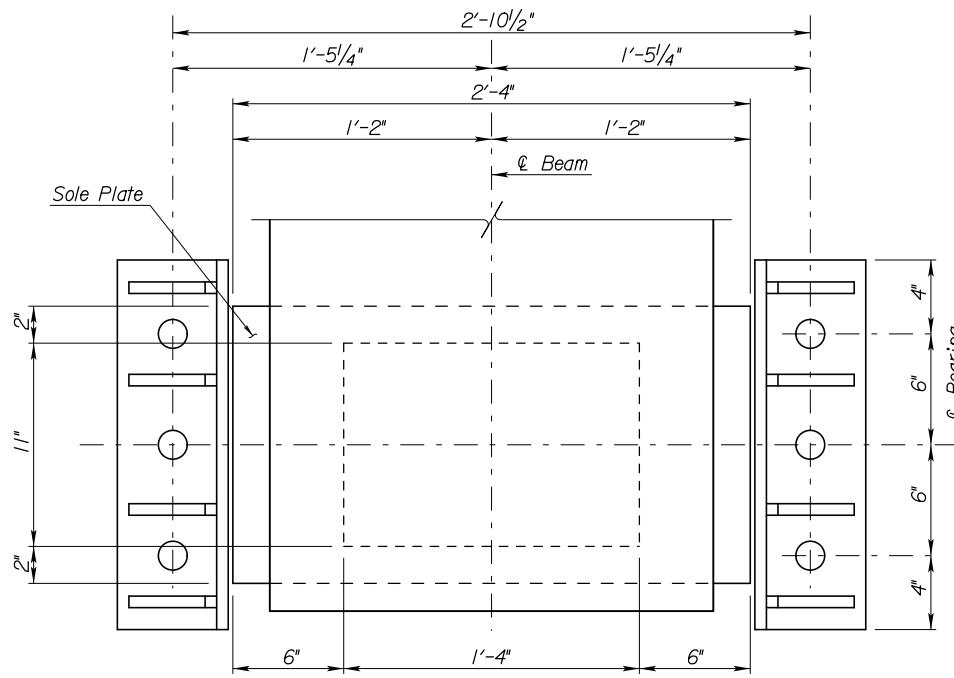
Plotted By: mfarache Plot Location: Bridge Design  
File: 071501-013-2.dgn 071501-013-23  
Plot Date: 07-FEB-2011 13:47



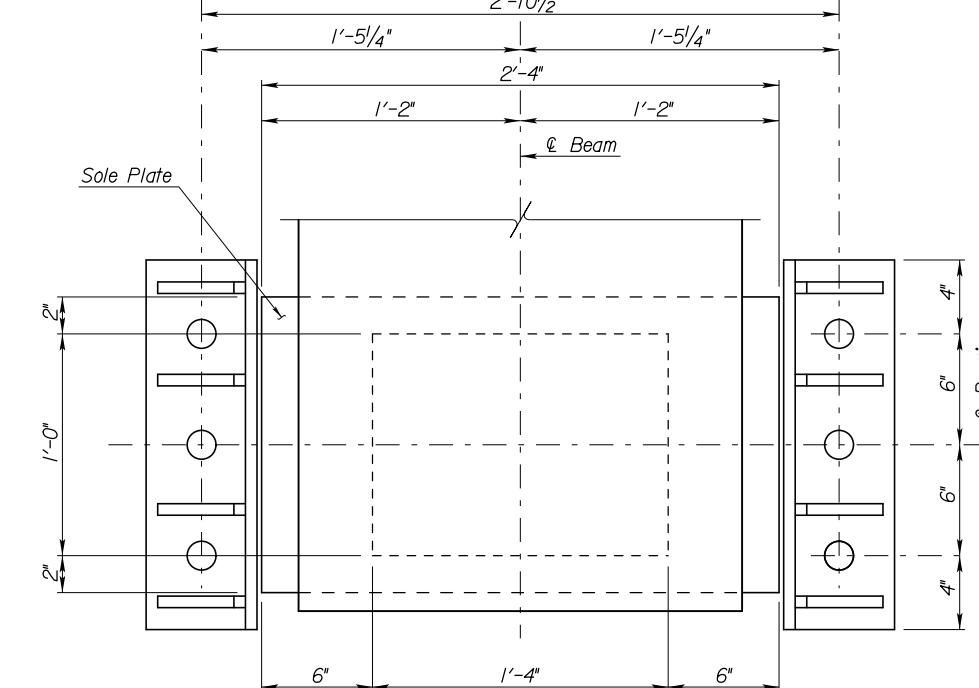
SECTION THRU BEARING DEVICE - UNIT #1  
(6 Required)



SECTION THRU BEARING DEVICE - UNIT #2  
(6 Required)



PLAN OF BEARING DEVICE - UNIT #1



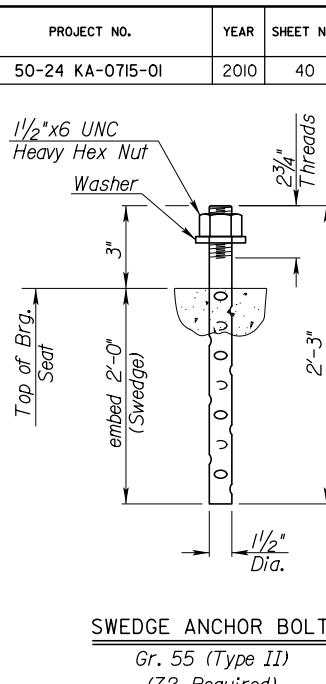
PLAN OF BEARING DEVICE - UNIT #2

Note: The bid item "Bearing (Steel Reinforced Elastomeric)" include the sole plates, pier lateral restraint devices, anchor bolts, washers, and nuts.

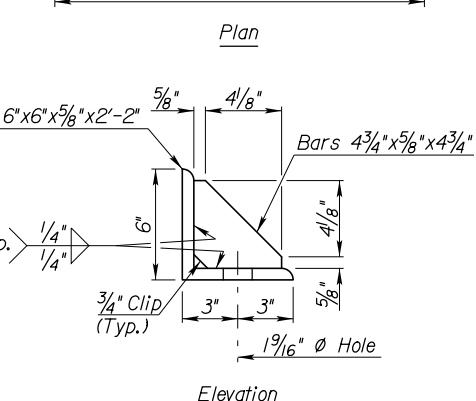
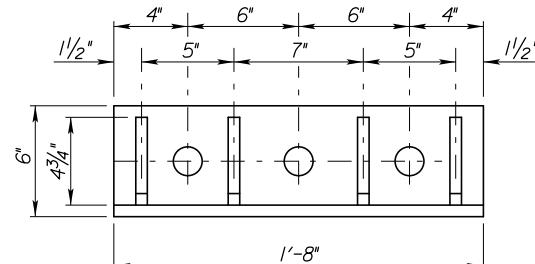
The sole plate shall be ASTM A709 Gr. 36 and shall be painted. The anchor bolts and nuts shall meet KDOT Specifications for Gr. 55 (Type II) anchor bolts and shall be painted.

The pier lateral restraint devices shall be ASTM A709 Gr. 36 and shall be painted.

Bearings were designed using the provisions of Method A of the AASHTO LRFD Specifications.



SWEDGE ANCHOR BOLT  
Gr. 55 (Type II)  
(72 Required)



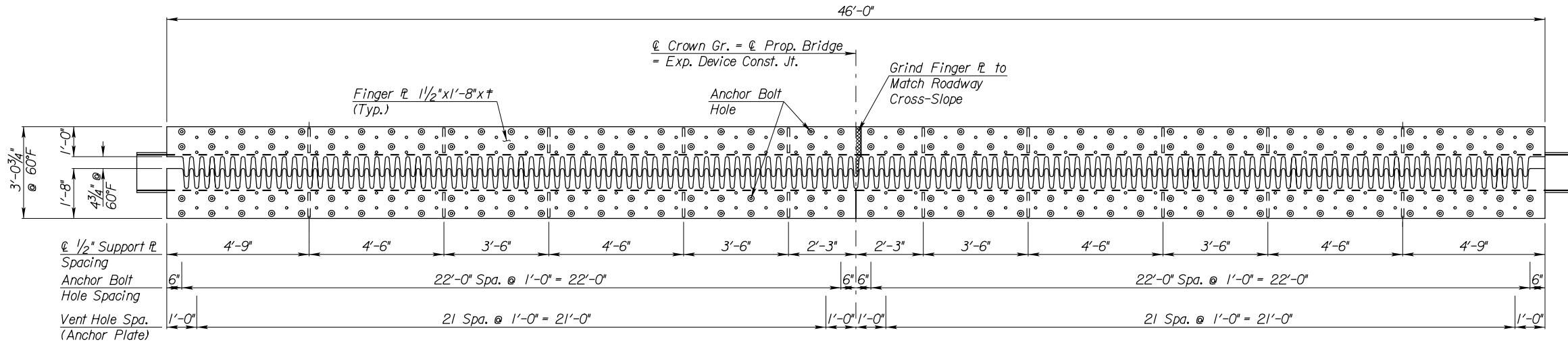
PIER LATERAL RESTRAINT DEVICE  
(24 Required)(Painted)

NO.	DATE	REVISIONS	BY APP'D
3			
2			
1			

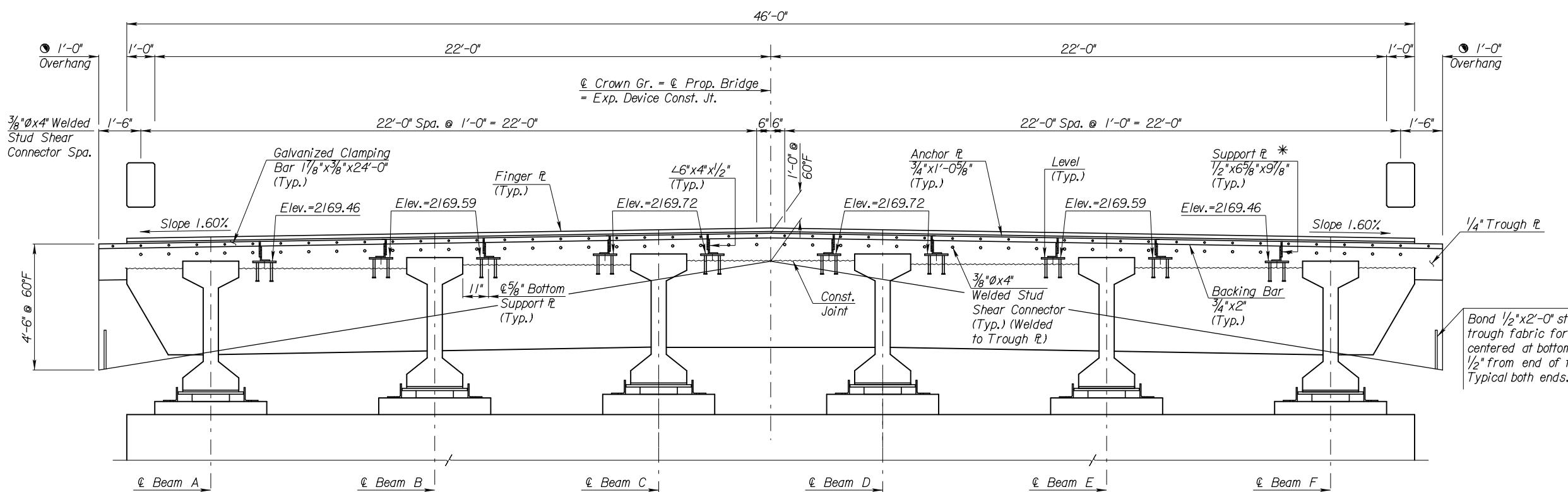
KANSAS DEPARTMENT OF TRANSPORTATION  
Br. No. 50-24-II.12 (013) Sta. 229+31.00  
BEARING DEVICE DETAILS (PIER #4)  
(US-50 over ARKANSAS RIVER)  
Proj. No. 50-24 KA-0715-01 Edwards Co.  
SHEET NO. 19 OF 33 SCALE APP'D  
DESIGNED BY MLL DETAILED BY MLL QUANTITIES CEM CADD  
DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK. CLE MLL CADD CK.  
CADconform Certify This File

STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	41	113

\* NOTE: The Finger P. Shall be Fabricated into eight pieces with field splices at the Crown Grade and the Lane Lines.



EXPANSION DEVICE PLAN



EXPANSION DEVICE ELEVATION

Extend fabric, 3/4" Backing Bar, 3/8" clamping Bar and Trough Plate 1'-0" past Finger plate.

\*NOTE: All Support Plates are vertical.

3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION				
Br. No. 50-24-II.12 (013) Sta. 229+31.00				
PIER #4 EXPANSION DEVICE DETAILS (US-50 over Arkansas River)				
Proj. No. 50-24 KA-0715-01 Edwards Co.				
SHEET NO. 200F 33 SCALE APP'D				
DESIGNED	MLL DETAILED	MLL QUANTITIES	CEM CADD	KLE
DESIGN CK.	DNJS DETAIL CK.	DNJS QUAN. CK	KLE/MILL CADD CK.	MILL

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Sheet No. 41

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	42	113

#### GENERAL NOTES

All material and labor shall be paid for, by the bid item "Expansion Device (Finger Plate)". All steel plates, angles and bars shall be ASTM A709 (Grade 36) steel, except finger plates shall be AASHTO M270 (Gr. 50 T2). No weathering steel will be allowed. Shop paint or galvanize all structural steel except the support angles and finger plate, which shall be painted. Shop paint with an approved Inorganic Zinc Primer to a nominal dry film thickness of 3 mils. Galvanize in accordance with ASTM A123. Completely remove any coating prior to welding. Also remove any coating damaged during the welding process. Touch-up any painted areas damaged by welding with an approved Organic Zinc Primer. Touch-up any damaged galvanized areas with an approved zinc rich paint. All bolts, heavy hex nuts and washers shall be ASTM A325, except where noted otherwise. Threaded rod shall meet requirements for Gr. 55 (Type II) anchor bolts. Tighten the high strength bolts (used to align the device) using the turn-of-the-nut method (Direct Tension Indicator (DTI) washers are not required). Use plate washers over the slotted holes in the support angles and the vertical support plates. Use a hardened washer under the turned element of the fastener. Galvanize all bolts, threaded rods, heavy hex nuts and washers, except for stainless steel bolts, nuts and washers. Shipping requirements for galvanized bolts, threaded rods and nuts shall meet AASHTO requirements. When possible, the galvanized bolts and threaded rods must be shipped together in the same shipping container in a plastic bag to protect the lubricants. Show proper manufacturer's markings on bolts and threaded rods. Bolts and threaded rods with improper bolt markings will be rejected. Submit a sample of the threaded rods, bolts and nuts to KDOT for testing after galvanizing. No tack welding will be allowed on the bolts or nuts.

#### FINGER JOINT INSTALLATION SEQUENCE

- Concrete for the Pier #4 end diaphragms of both units shall be placed to the construction joint with the bottom support plates installed at the proper location and elevation. The concrete shall cure a minimum of 3 days prior to installing the anchor units.
- Using the erection channels, spaced no greater than 4'-0", bring the anchor plates to the proper grade and into the same plane, centered over the gap between the prestressed concrete beam ends. Set the top surface of the anchor unit parallel to the roadway slope. Check the scribe lines for proper alignment.
- Position the support angles against the vertical support plates on both anchor units and weld the support angles to the bottom support plates.
- Adjust the gap based on the average ambient air temperature during the previous 24 hours. See the table on the "Pier #4 Anchor Unit Details" sheet for the gap between anchor units. Tighten the top hex nuts in the erection channels and tighten the bolts connecting the support angles to the vertical support plates on both anchor units. Weld the support angles to the vertical support plates.
- Remove the erection channels.
- After the Pier #4 end diaphragms have cured for a minimum of 7 days, place the deck concrete. Place concrete transversely starting from each curb and working toward the crown. Thoroughly vibrate and compact the concrete around the anchor unit until concrete comes through the vent holes and no voids exist under the anchor unit. The Contractor has the option to use temporary diaphragms in all bays at the diaphragm location nearest to Pier #4 in lieu of the minimum 7 day cure of the end diaphragms before placing the deck. See "Temporary Diaphragm Details" sheets for Unit #1 and Unit #2.
- Following a minimum of 3 days after concrete placement, the Engineer will check for voids and loose bolts by sounding the anchor plates. Fill any voids by drilling through the anchor plate and pumping an approved epoxy grout at a minimum of 75 psi. This work will be subsidiary to the bid item "Expansion Device (Finger Plate)". Clean the top of the anchor plates. Remove all concrete paste in air holes.
- Install the fabric trough and the finger plates according to the standard specification and special provisions.
- After installation of the finger plates, the Engineer shall inspect the plates for alignment. Any fingers that the Engineer determines are misaligned, so that they may be struck by a snow plow, shall be ground as directed by the Engineer.
- Clean the trough of all foreign material after the completion of all superstructure work.

3	2	1		
NO.	DATE	REVISIONS	BY	APP'D

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 50-24-II-12 (013) Sta. 229+31.00

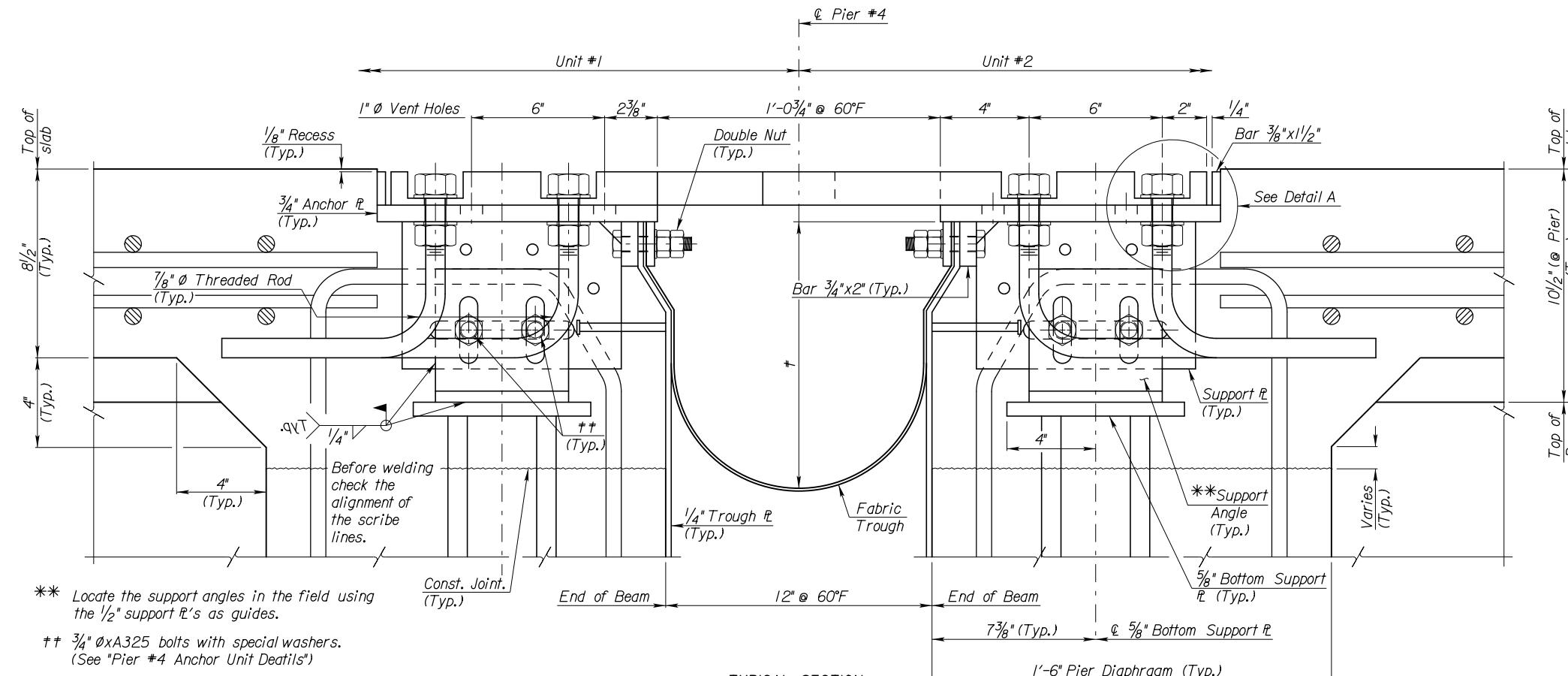
PIER #4 EXPANSION DEVICE DETAILS  
(US-50 over Arkansas River)

Proj. No. 50-24 KA-0715-01 Edwards Co.

SHEET NO. 21 OF 33 SCALE APP'D  
DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD KLE  
DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK.KLE/MILL CADD CK. MLL

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Sheet No. 42



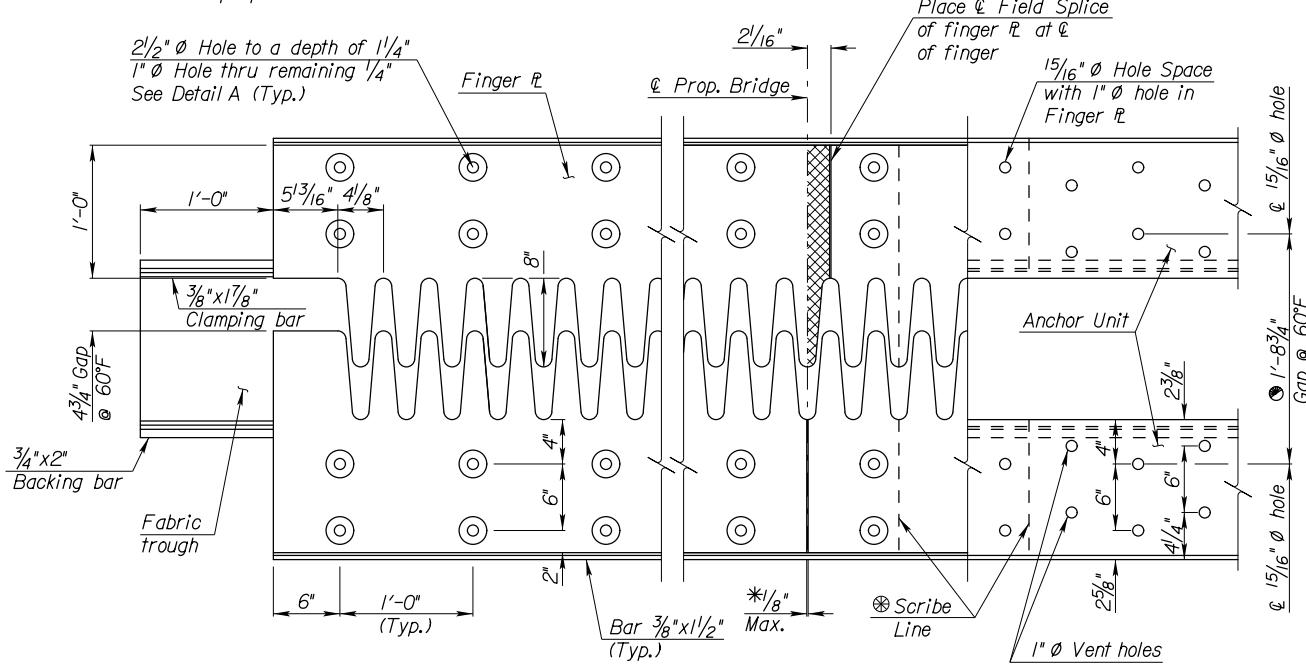
\*\* Locate the support angles in the field using the 1/2" support R's as guides.

†† 3/4" ØxA325 bolts with special washers.  
(See "Pier #4 Anchor Unit Details")

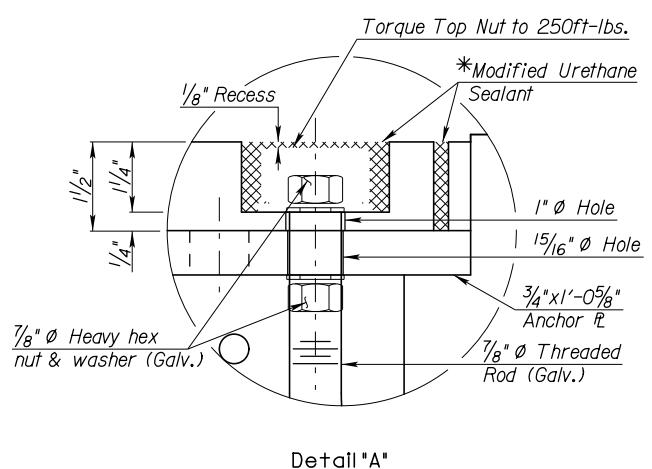
† Depth Varies. (See "Pier #4 Expansion Device")

Note: The fabric trough shall be furnished in two pieces.

The fabric trough shall be field spliced @ & Proposed Bridge with an approved bonding agent. There shall be a minimum lap splice of 6".



PLAN OF EXPANSION DEVICE



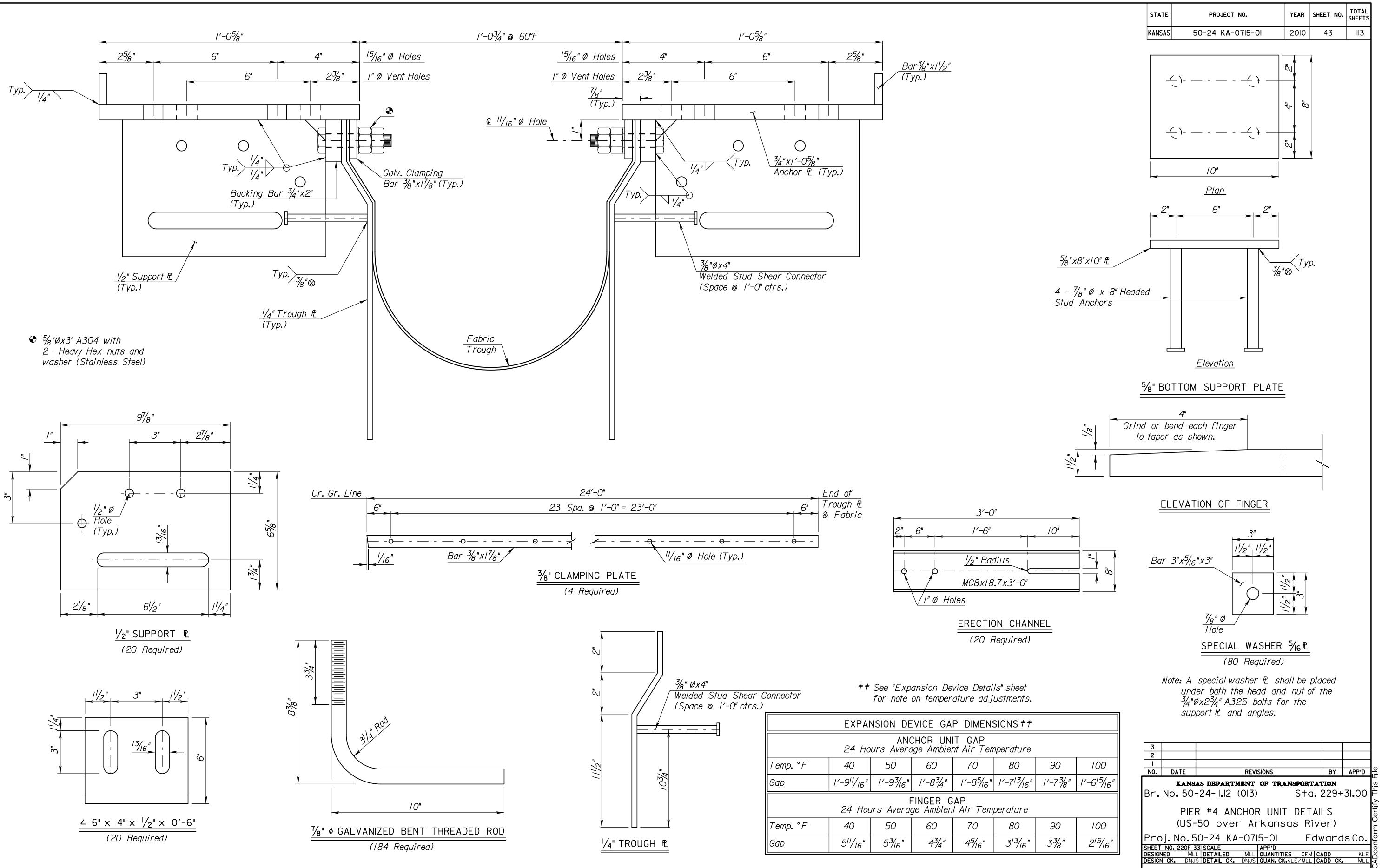
Detail "A"

\* Place modified urethane sealant in the top holes of the finger R and in the gap between the 3/8"x2" bar and the finger R. Welding of the finger R at the field splice is not allowed.

⊗ Scribe lines shall be placed on the Anchor R's and finger R's for proper alignment in the field. Use 2 scribe lines per R.

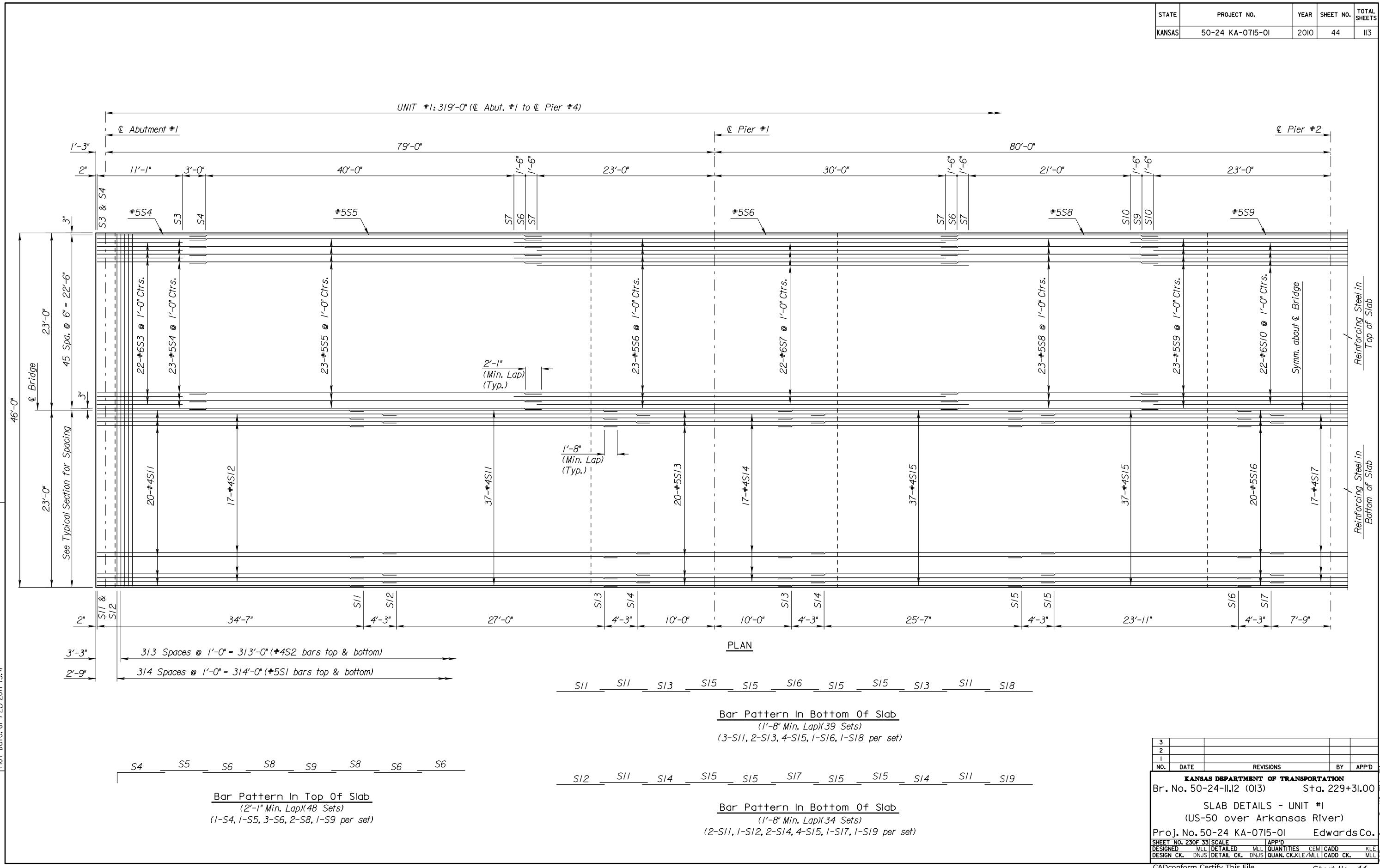
⊗ Position the anchor units in the deck with a gap width, as shown in the table, on the "Pier #4 Anchor Unit Details" sheet. See note #4 of the "Finger Joint Installation Sequence" for details.

Note: Field splice anchor units at the & Cr. Gr. only. Field splice finger plates at & Cr. Gr. and at the lane lines.

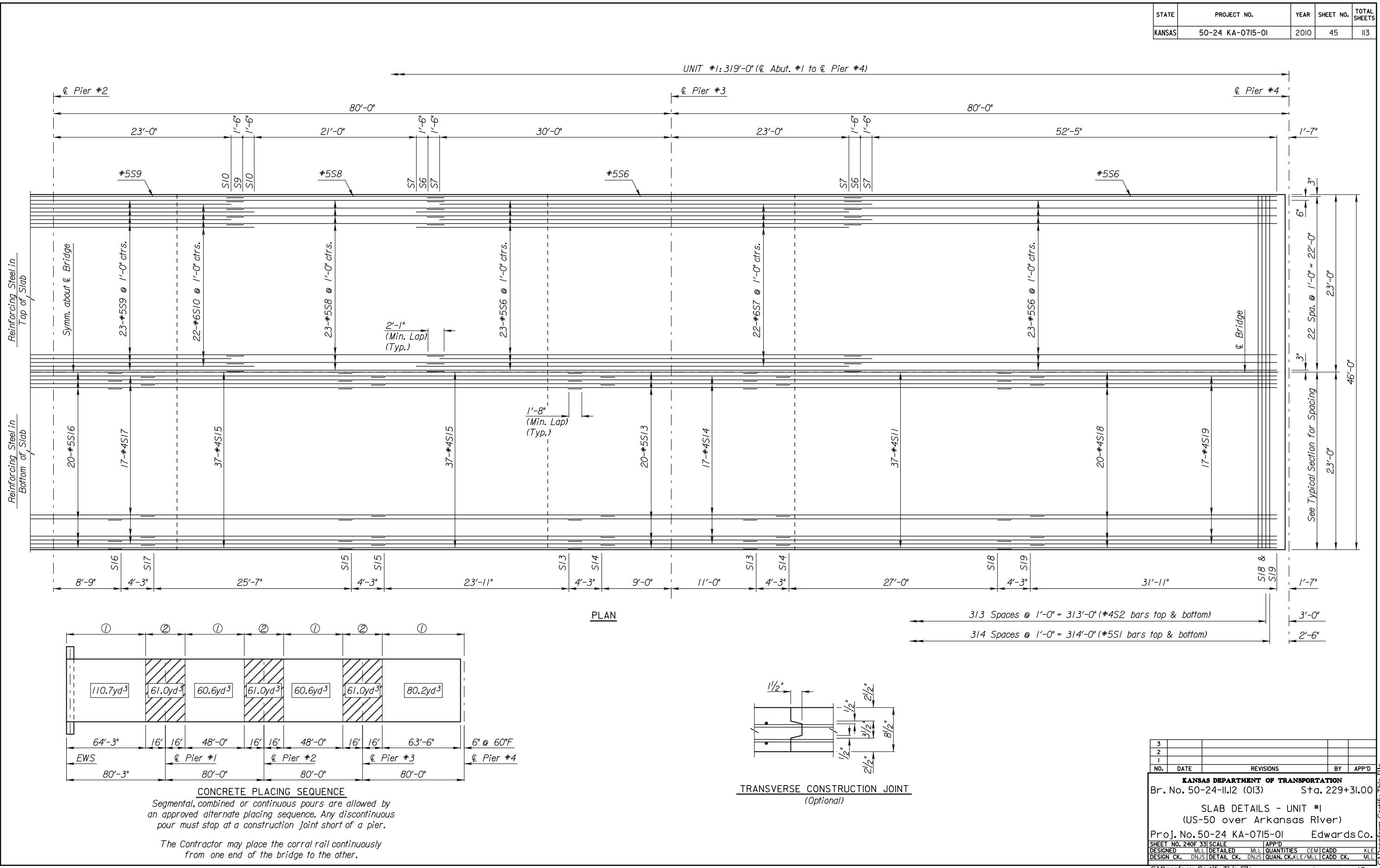


Plotted By: *mharote* Plot Location: Bridge Design  
File: 071501-013-05.dgn (071501-013-05)  
Plot Date: 07-FEB-2011 13:47

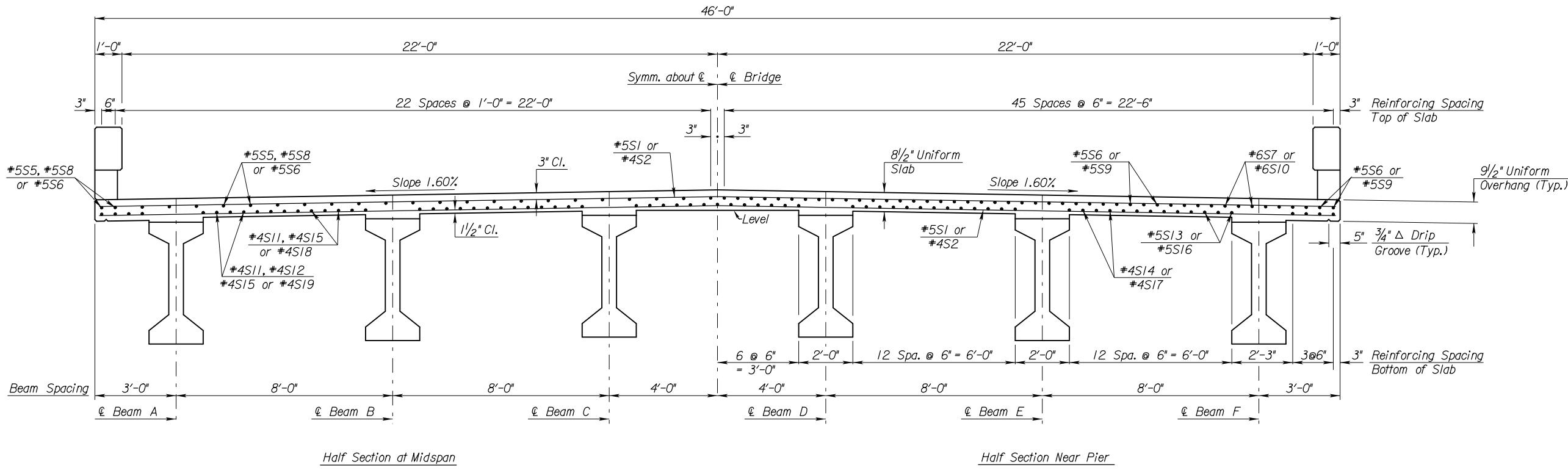
STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	44	113



STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	45	113



STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	46	113

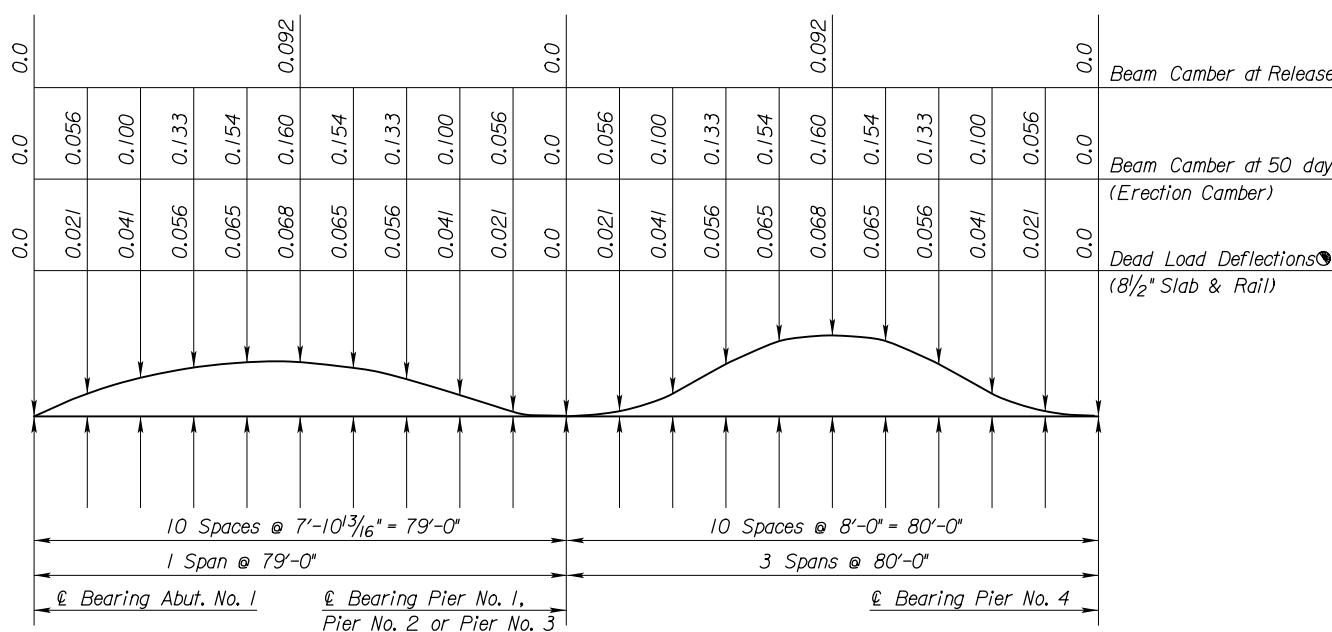


Half Section at Midspan

Half Section Near Pier

TYPICAL SECTION

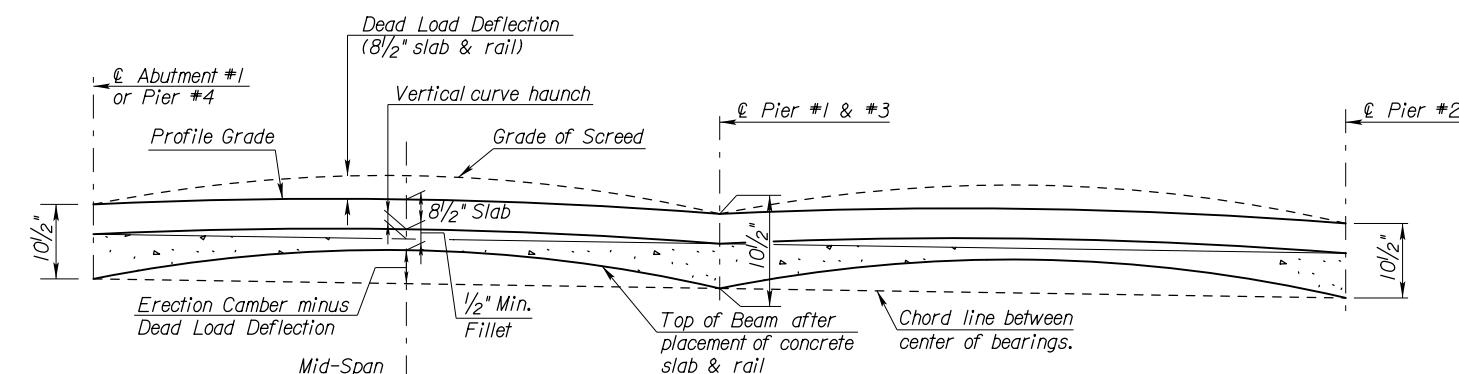
NOTE: Concrete dead load deflections shall be added to the plan grade to provide for deflections. This will be accomplished by increasing or decreasing the depth of the concrete fillets over the beams. The minimum depth of the slab over the beam shall be 8 1/2".



BEAM CAMBER AND DEAD LOAD DEFLECTIONS

Given in feet  
Beam Concrete  $E_i = 3,644 \times 10^6$  psi  
 $E_f = 4,074 \times 10^6$  psi

DL Deflections are downward

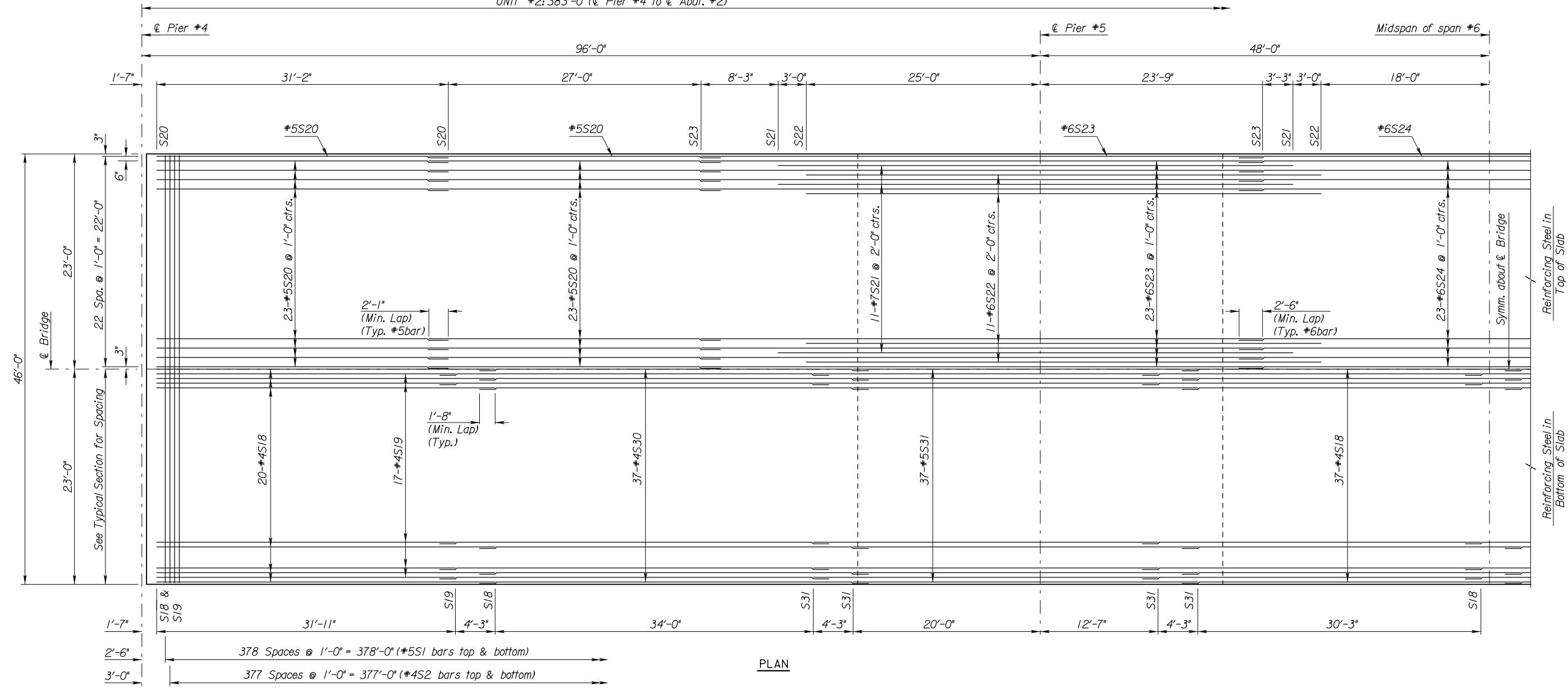


VARIABLE FILLET DIAGRAM  
(Along L of Girder)

3	2	1	REVISIONS	BY APP'D
<b>KANSAS DEPARTMENT OF TRANSPORTATION</b>				
Br. No. 50-24-II.12 (013) Sta. 229+31.00				
SLAB DETAILS - UNIT #1 (US-50 over Arkansas River)				
Proj. No. 50-24 KA-0715-01 Edwards Co.				
SHEET NO. 250F 33 SCALE APP'D	DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD KLE	DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK.KLE/MLL CADD CK. MLL		

STATE	PROJECT NO.	YEAR	sheet no.	Total Sheets
KANSAS	50-24 KA-0715-01	2010	47	113

UNIT #2: 383'-0" (Q Pier #4 to Q Abut. #2)



PL

S20    S20    S23    S24    S10    S24    S23    S27    S28

\*                \*                †                \*                †                †                \*

### Bar Pattern In Top Of Slab

(48 Sets)

\* 2'-1" M

† 2'-6" M

Bar Pattern In Bottom Of Slab  
(1'-8" Min. Lap)(39 Sets)  
(5-S18, 1-S30, 2-S31, 1-S32, 2-S33 per set)

S19    S30    S31    S18    S18    S32    S18    S18    S31    S33    S34

Bar Pattern In Bottom Of Slab  
(1'-8" Min. Lap)(34 Sets)

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NO.	DATE	REVISIONS	BY	APP'D

**KANSAS DEPARTMENT OF TRANSPORTATION**  
Br. No. 50-24-II.I2 (013) Sta. 229+31.00

## SLAB DETAILS - UNIT #2

(US-50 over Arkansas River)

Proj. No. 50-24 KA-0715-01 Edwards Co.  
SHEET NO. 260F 33 SCALE APP'D  
DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD KLE

**DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD MLL  
DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK.KLE/MLL CADD CK. MLL**

CADconform Certify This File Sheet No. 47

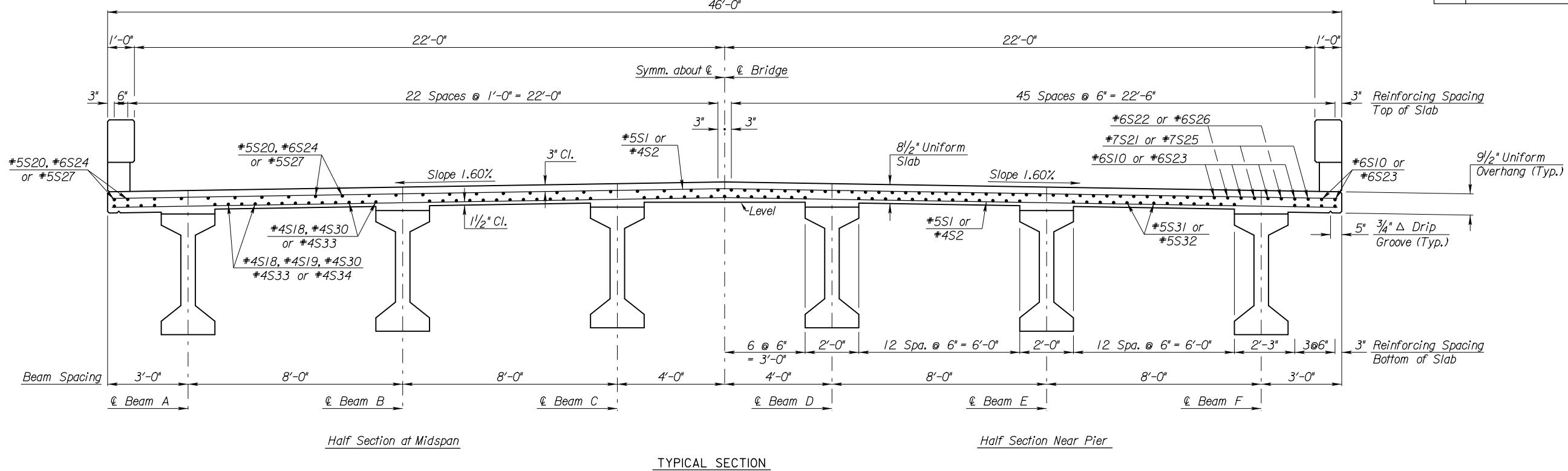
Sheet No. 11

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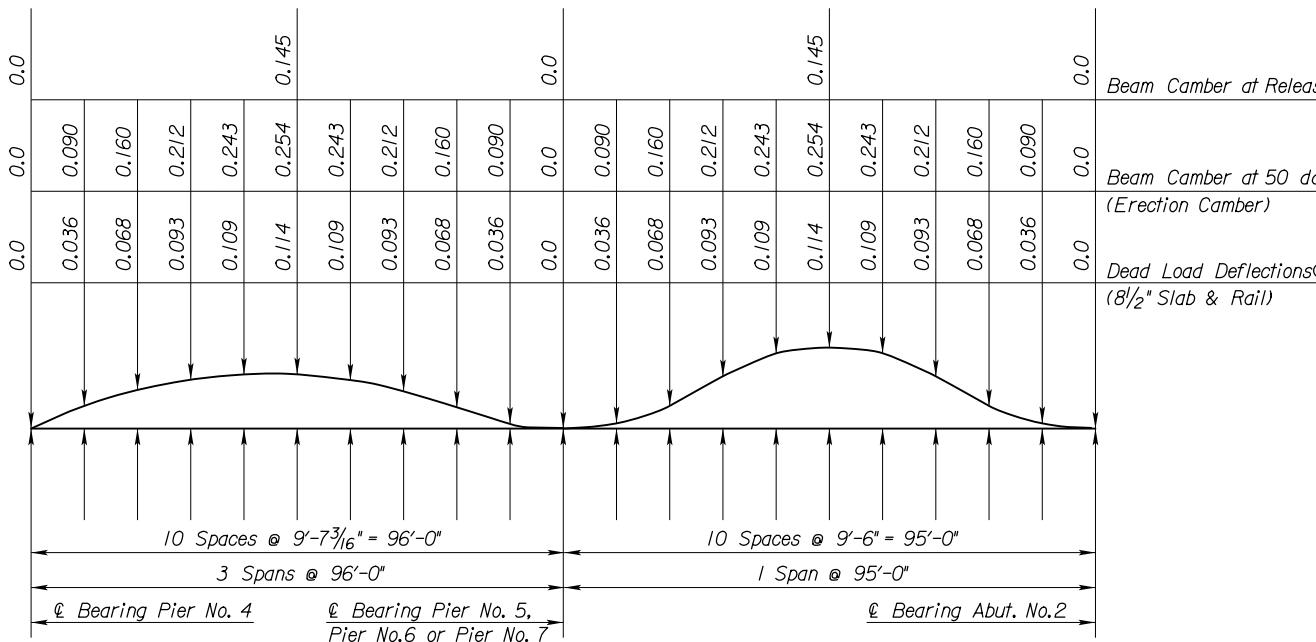




STATE	PROJECT NO.	YEAR	HEET NO.	TOTAL SHEETS
KANSAS	50-24 KA-0715-01	2010	50	113



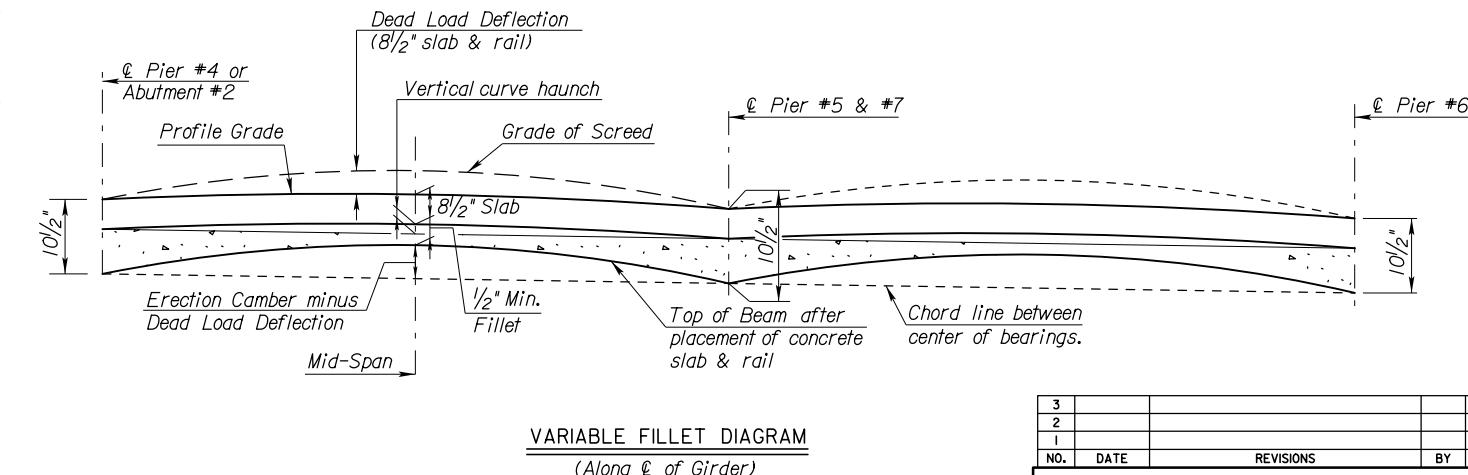
NOTE: Concrete dead load deflections shall be added to the plan grade to provide for deflections. This will be accomplished by increasing or decreasing the depth of the concrete fillets over the beams. The minimum depth of the slab over the beam shall be 8 1/2".



#### BEAM CAMBER AND DEAD LOAD DEFLECTIONS

Given in feet  
 Beam Concrete  $E_i = 3.644 \times 10^6$  psi  
 $E_f = 4.074 \times 10^6$  psi

DL Deflections are downward



3	2	1	REVISIONS	BY APP'D
NO.	DATE			

**KANSAS DEPARTMENT OF TRANSPORTATION**  
Br. No. 50-24-II.12 (013) Sta. 229+31.00  
**SLAB DETAILS - UNIT #2**  
(US-50 over Arkansas River)  
Proj. No. 50-24 KA-0715-01 Edwards Co.  
SHEET NO. 290F 33 SCALE APP'D  
DESIGNED MLL DETAILED MLL QUANTITIES CEM CADD KLE  
DESIGN CK. DNJS DETAIL CK. DNJS QUAN. CK.KLE/MLL CADD CK. MLL