

STATE	PROJECT NUMBER	Year	Sheet No.	Total Sheets
KANSAS	67 C-5209-01	2024	1	84
BSN 661				

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STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE OF PROPOSED

67 C-5209-01

STATE AID PROJECT

NEOSHO COUNTY

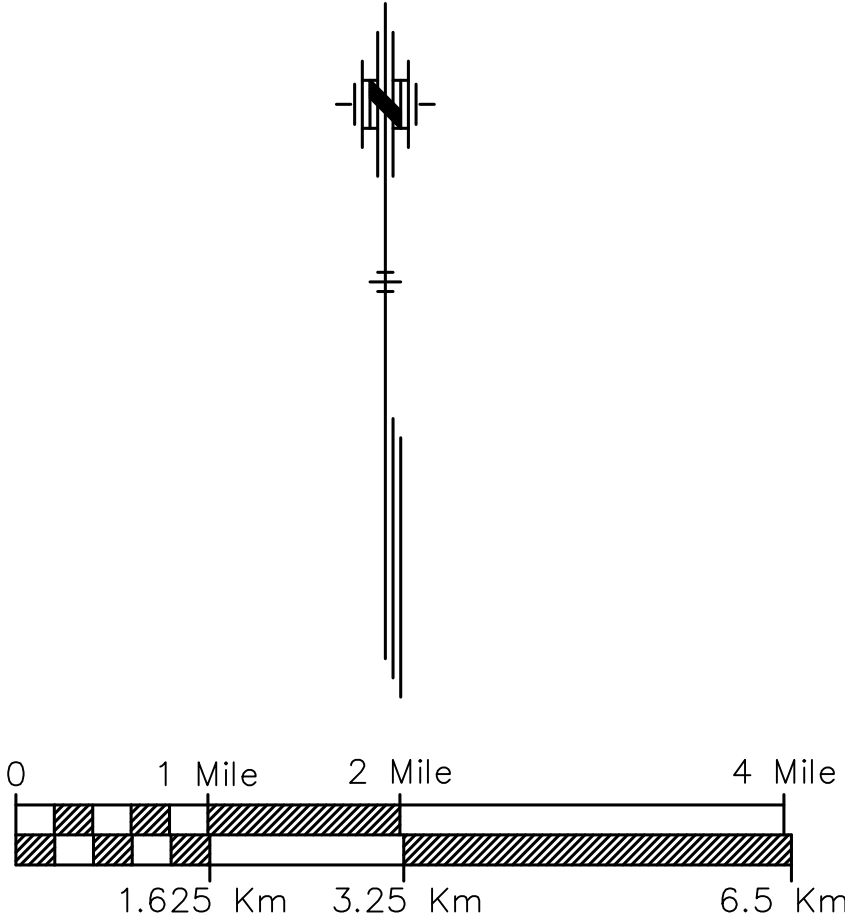
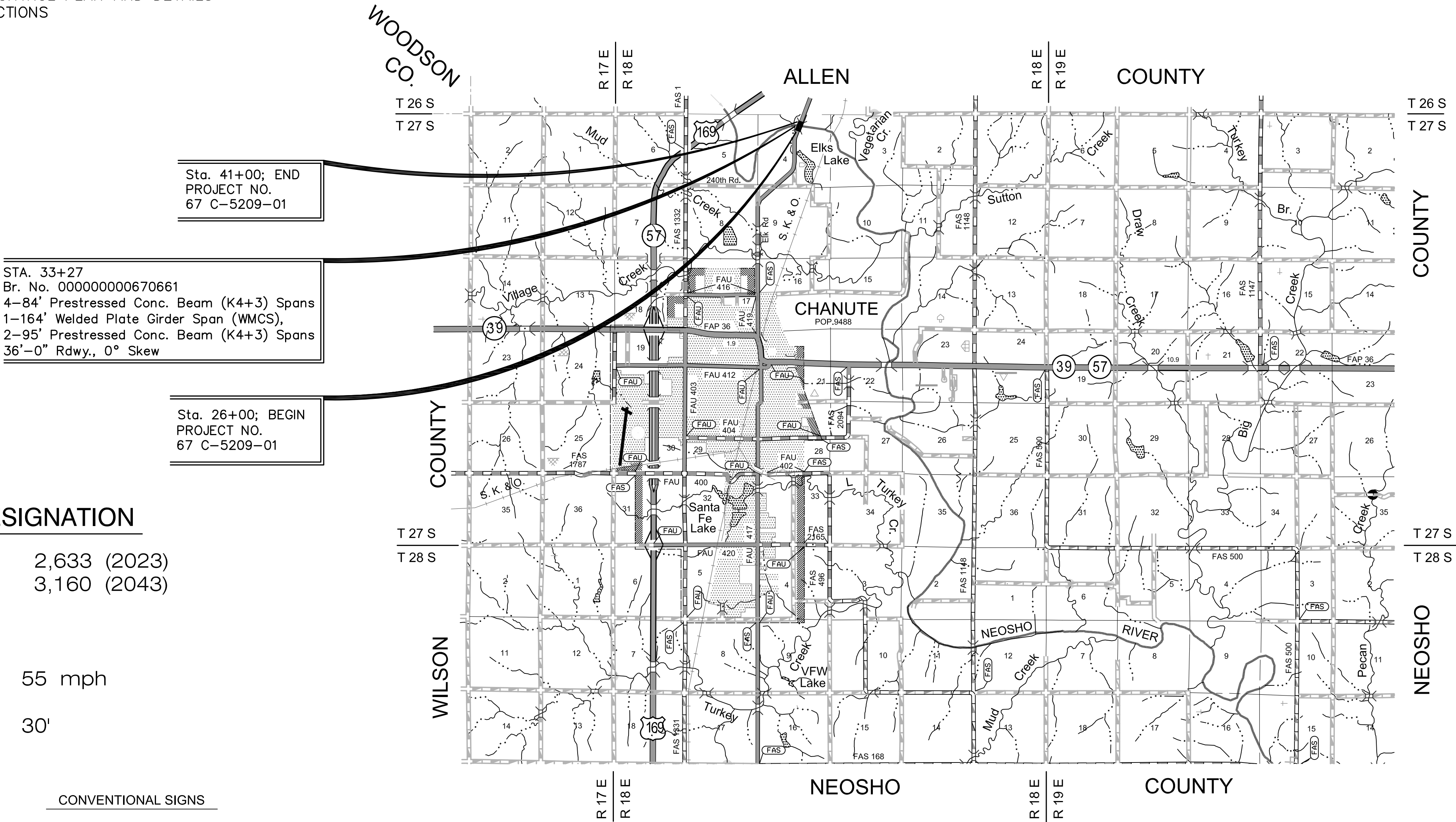
GRADING

BRIDGE

SURFACING (ASPHALT)

PAVEMENT MARKING

SEEDING



DESIGN DESIGNATION

AADT	2,633 (2023)
AADT	3,160 (2043)
DHV	
D	
T	
V	55 mph
C of A	
Clear Zone	30'

CONVENTIONAL SIGNS

COUNTY LINE	-----	CENTER LINE OF PROJECT	-----
CITY LIMITS	=====	TERRACE	-----
STATE or NATIONAL LINE	-----	CULVERTS	-----
TOWNSHIP, SECTION or GRANT LINE	-----	DROP INLET & STORM SEWER	-----
PROPERTY LINE	-----	ACCESS CONTROL	-----
HIGHWAY FENCE	=====	POWER POLE	-----
EXISTING FENCE	-----	TELEPHONE POLE	-----
GUARD FENCE	=====	MARSH	-----
CONSTRUCTION LIMITS	-----	HEDGE	-----
RIGHT OF WAY LINE	-----	TREES	-----
TRAVELED WAY	=====	PROFILE ELEVATION	-----
RAILROADS	=====	STREAM or CREEK	-----

GROSS LENGTH OF PROJECT	1,500.00	FT. = 0.284 MILE
EXCEPTIONS		FT. = MILE
NET LENGTH OF PROJECT	1,500.00	FT. = 0.284 MILE
NET LENGTH OF BRIDGES	693.00	FT. = 0.131 MILE
NET LENGTH OF ROAD	807.00	FT. = 0.153 MILE

Note: Road Shall Be Closed To Thru Traffic During Construction.

BIDDING PLANS

Cook, Flatt & Strobel

ENGINEERS, P.A.

DATE: MAR. 2024

PLANS PREPARED BY:

CFS ENGINEERS

BRIDGE GRADING

GENE E. PETERSEN 17259 KANSAS PROFESSIONAL ENGINEER

KENNETH BLAIR 10469 KANSAS PROFESSIONAL ENGINEER

RECOM. FOR APPROVAL-DATE	
Road Supervisor	2024

DATE		
BY		
REFERENCE NOTED		
REFERENCE CHECKED		

Ref. P.O.T. @ Sta. 15+31.04, 0.0' Rt.
Set 5/8" Rebar @ P.O.T.
1. In C N-S Asph. Rd. (Elk. Rd.)
2. To Entr. to West 82.0' S.
3. Spk. & Wshr. Side Fc. Cor. Post 96.0' SSW
4. Spk. & Wshr. E. Face 20" Elm. 51.0' SW

Ref. P.C. @ Sta. 19+19.98
Set 5/8" Rebar @ P.C.
N 355,839.386 E 20,395,855.893
1. In C N-S Asph. Rd.
2. Spk. & Wshr. E. Face 60" Tree 42.6' SW
3. Spk. & Wshr. W. Face 20" Tree 35.2' SE
4. Top C Tel. Ped. 95.8' NE

Ref. P.T. @ Sta. 26+12.34
Set 5/8" Rebar @ P.T.
N 356,516.970 E 20,395,978.469
1. In C N-S Asph. Rd.
2. To Spk. & Wshr. N. Face 20" Tree 33.30' E.
3. To Spk. & Wshr. S. Face 20" Tree 53.5' NE
4. R.R. Spk. in W. Face 50" Tree (B.M. #1)49.64' SE

Ref. P.O.T. @ Sta. 40+14.57
Set 5/8" Rebar @ P.O.T.
N 357,829.21 E 20,396,472.71
1. In C N-S Asph. Rd.
2. To C Entr. to E. 40.0' N.
3. Spk. & Wshr. N. Face 20" Tree 41.60' E.
4. "T" Post driven flush w/ Surf. (B.M. #14) 57.65' NNE

Ref. P.O.T. @ Sta. 47+09.57
Set 5/8" Rebar @ P.O.T.
N 358,479.60 E 20,396,717.67
1. In C N-S Asph. Rd.
2. R.R. Spk. in E. Face 40" Tree 42.59' E.
3. Spk. & Wshr. S. Face 20" Tree 58.80' NE
4. Spk. & Wshr. N. Face 10" Tree 38.5' SE

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S 1/4 Cor. Sec. 4-27-18
Fnd. 1/2" Rebar @ S 1/4 Cor.
N 352,705.85 E 20,395,828.30
1. To C E-W Grav. Rd. 3.0' S.
2. To C Grav. Rd. to N. 6.0' E.
3. To W. Edge Conc. R.C.B. 35.44' E.
4. Mag & Shiner S. Face Pow. Pole 37.58' ENE
5. Mag Nail S. Face Pow. Pole 56.74' NE
6. Spk. & Wshr. W. Face 20" Tree 24.35' S.

NW 1/4 Sec. 4, T 27 S, R 18 E

— FOR INFORMATION ONLY —
Large trees & stumps to be grubbed this project:
24-40", 6-50", 8-60", 2-70"
1-80", 2-100"
Total = 43

R. Gay Barker, Widow

Note: The Contractor shall construct Slope Protection (Riprap Stone)(1/4 Ton) on the Channel slopes as shown.
Abutment No. 1 = 1,750 C.Y.
Abutment No. 2 = 1,500 C.Y.
Total = 3,250 C.Y.

Sta. 33+30; Remove Br. No. 00000000670660 Demolition Category A

Garry E. Daniels & Debra K. Daniels, H&W

Sta. 40+50; Const. Mnd. Entr. Lt.

Construct 10' wide 6" AB-3 Shldr. Lt. Sta. 40+00 to 41+00 See Cross Sections

Sta. 26+00; BEGIN KDOT Project No. 67 C-5209-01

Note: Transition approach grading from Sta. 26+00 to 27+00 & Sta. 40+00 to 41+00.

Sta. 41+00; END KDOT Project No. 67 C-5209-01

LIST OF UTILITIES

Utility	Location	Owner-Address
Fiber Optic	Rt.	AT&T Fiber Derek Pierce 316-200-4445
Telephone	Rt.	AT&T Telephone Derek Pierce 316-200-4445

Alan D. Cox & Debra A. Cox, Living Trust

Note: The Contractor shall construct concrete bridge approach pavement Sta. 29+47.17 to Sta. 29+80.5 and Sta. 36+73.5 to Sta. 37+06.83 See Sh. 5-7
Total = 264.0 S.Y.

Also construct bridge approach slab footing See Sh. 5-7
Total = 21.3 C.Y.

Sta. 33+27; Const. Br. No. 00000000670661
4-84' Prestressed Conc. Beam (K4+3) Spans, 1-164' Welded Plate Girder Span (WMCS), 2-95' Prestressed Conc. Beam (K4+3) Spans, 36'-0" Rdwy., 0' Skew See Sh. 13-54

Note: The Contractor shall construct shoulder widening & Install 25'-0" Steel Plate Guardrail with End Terminals, (SRT or FLEAT) at Each Quadrant of the new bridge.
Total: 100'-0" Guardrail & 4 End Terminals

Lloyd W. Drybread and Nancy L. Drybread, H&W

Note: The Contractor shall contact USGS for removal of gauge station prior to demolition of existing bridge.

Note: The Contractor shall remove the existing structure (Br. No. 00000000670660)(2-91', 2-142', 2-91' Steel Truss Spans, w/ Conc. Abutments and piers. 24' Rdwy. w/ Conc deck and shall excavate the channel improvements in the vicinity of the new structure.

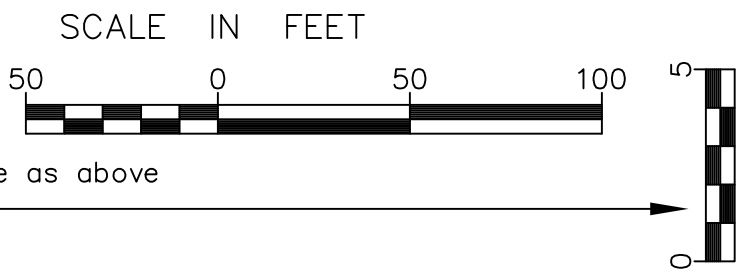
The existing structure shall become the property of the Contractor and shall be disposed of at a site selected by the Contractor and in a manner approved by the Engineer.

NE 1/4 Sec. 4, T 27 S, R 18 E



Horizontal Control:
United States / State Plane 1983
KRCS (Zone 20 Pittsburg)
NAD83 By GPS Network Observation

Vertical Control:
NAVD88 By GPS Network Observation CP #100 (3/8" Rebar)
Differential Leveling thru project control / Benchmarks



B.M. #10- Top C 4"x4" Conc. KDOT R/W Mkr., 50.4' Rt. Sta. 20+44.8 Elev. 915.43	B.M. #12- "a" Cut Top SW Cor. S. End Retwall, 15.4' Lt. Sta. 29+76.7 Elev. 928.33	B.M. #14- T-Post Flush with Surf., 30.0' Rt., Sta. 40+63.7 Elev. 927.17
B.M. #11- R.R. Spk. in 50" Tree, 41.4' Rt. Sta. 25+84.7 Elev. 919.12	B.M. #13- Brass Disk Top C NE Retwall Br., 14.1' Lt. Sta. 36+77.4 Elev. 928.31	B.M. #15- R.R. Spk. in Backside 50" Tree, 37.5' Rt. Sta. 47+29.8 Elev. 922.04

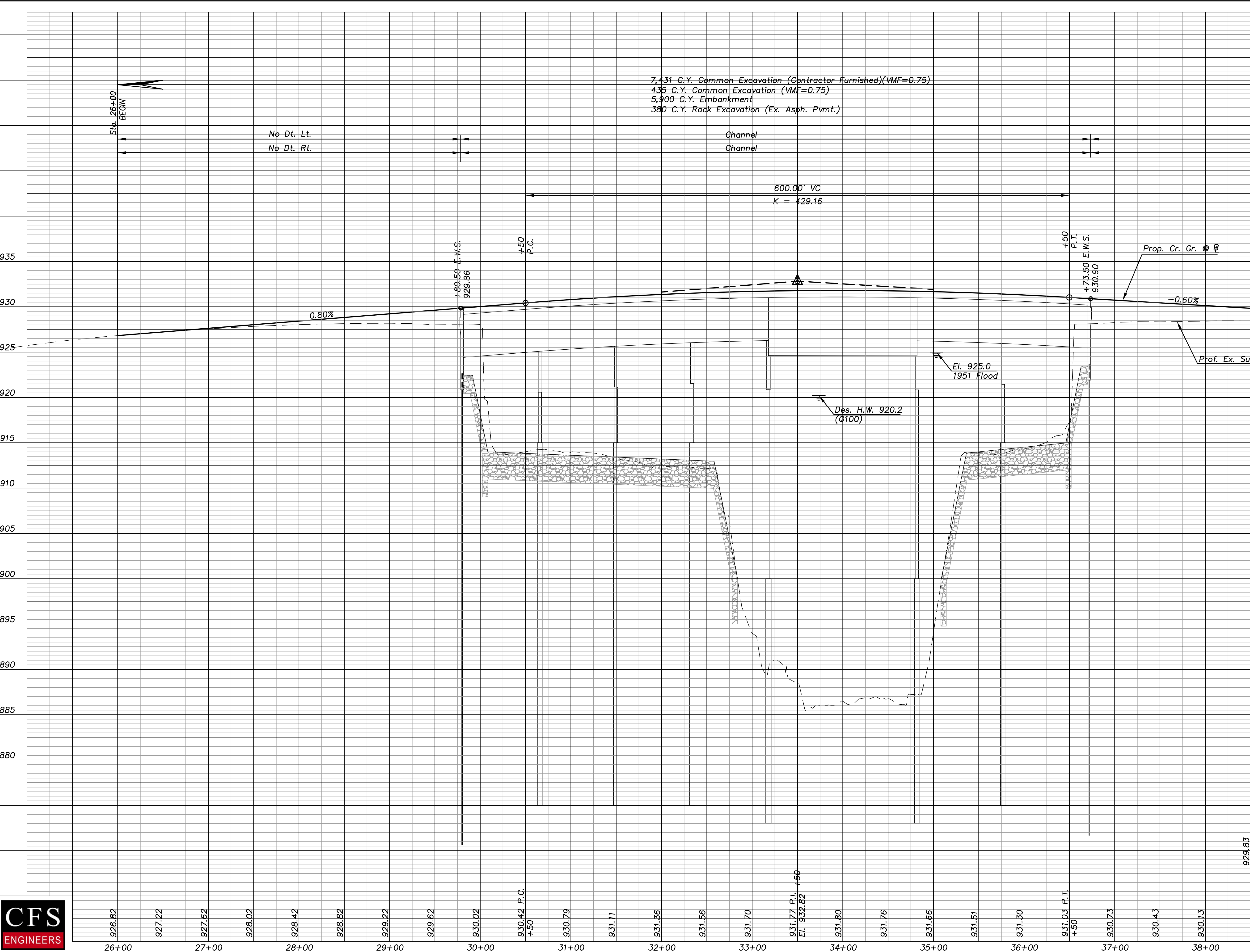
KANSAS DEPARTMENT OF TRANSPORTATION

PLAN
ELK ROAD
STA. 26+00 to STA. 41+00

PROFILE		BY	DATE
NO.	ND		
SURVEYED			
NOTE BOOK			
PLOTTER			
ALIGNMENT CHECKED			
RECORDS CHECKED			

PROFILE		BY	DATE
NO.	ND		
SURVEYED			
NOTE BOOK			
PLOTTER			
GRADES CHECKED			
STRUCTURE NOTATIONS CHECKED			

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Note: All disposal sites must be approved by the Kansas Department of Health & Environment. Materials either stockpiled or disposed of in a Flood Plain shall require a Kansas State Board of Agriculture permit. Any materials dumped in waters of the United States or U.S. Wetlands is subject to U.S. Corps of Engineers permitting regulations.

Any materials, buried or stockpiled outside of the project construction limits would require additional archeological investigations, unless buried in a previously approved borrow location.

Borrow areas provided by the Contractor shall be approved by the Engineer as to suitability of material and location. Special care shall be taken in this approval to minimize the increase of siltation & turbidity of Streams, Lakes, and Reservoirs, and to avoid interference with the movement of migratory fish. Areas which, in the opinion of the Engineer, may leave an unsightly appearance to the project will not be approved.

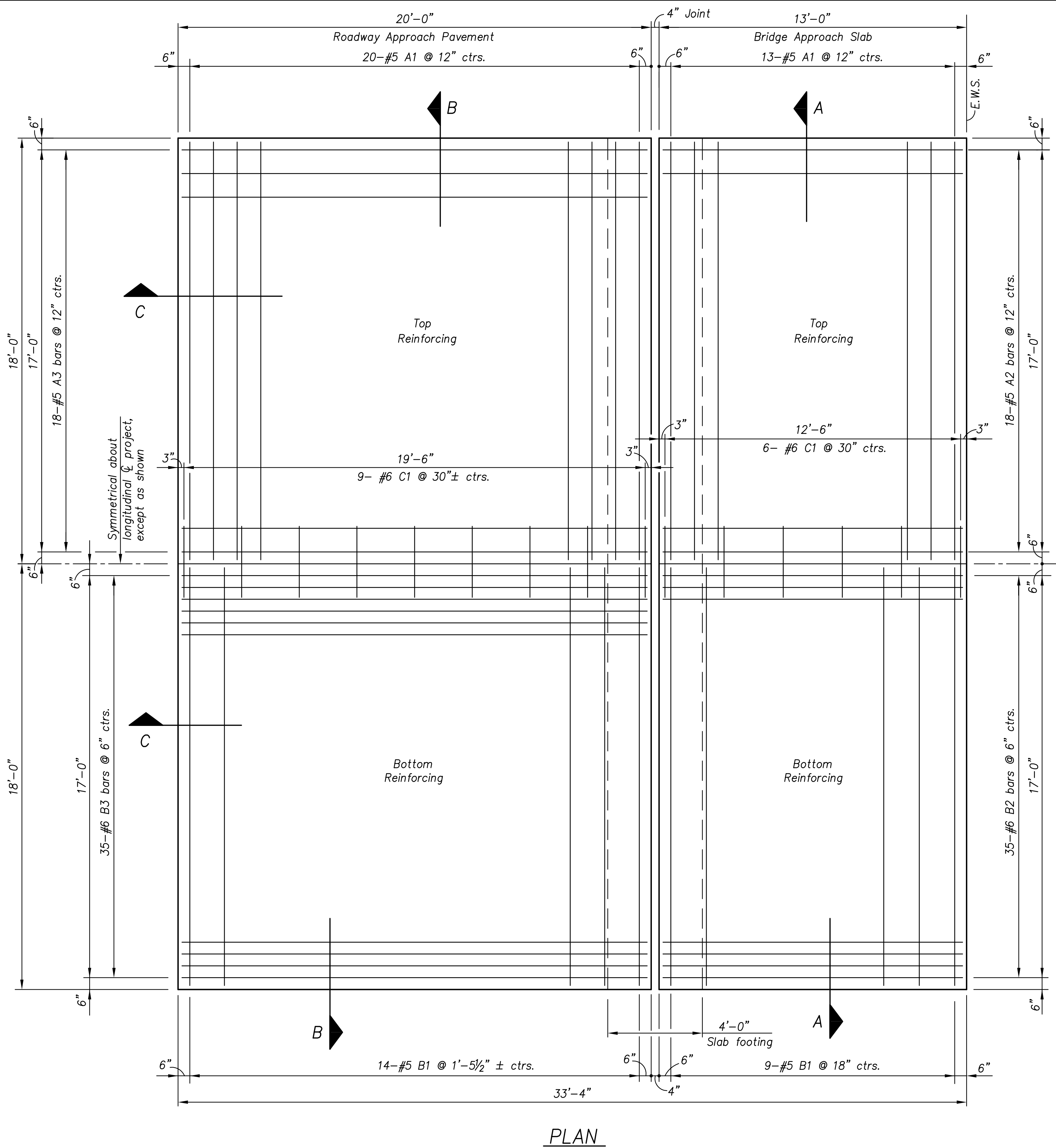
All borrow area locations shall be submitted by the contractor to the Kansas Historical Society KDHE & NPDES prior to any excavation.

It shall be the responsibility of the Contractor to restore, seed and complete other operations noted in the agreement with the Land Owner, approved by the Engineer, on all disturbed areas used to provide borrow areas for "Common Excavation (Contractor Furnished)".

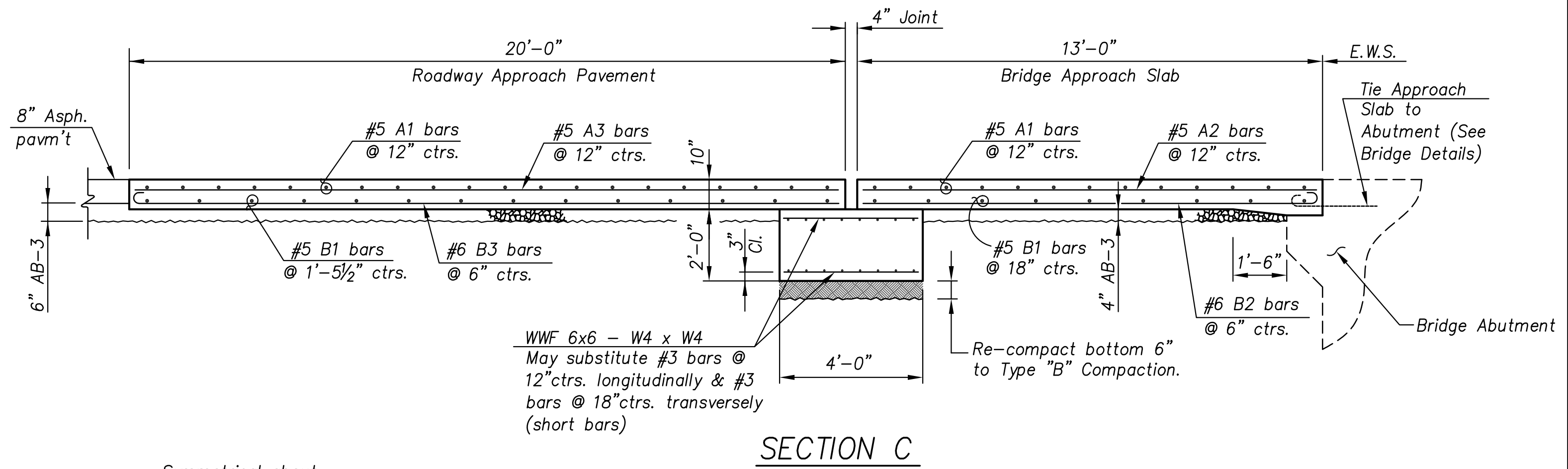
KANSAS DEPARTMENT OF TRANSPORTATION

PROFILE
ELK ROAD
STA. 26+00 to STA. 41+00

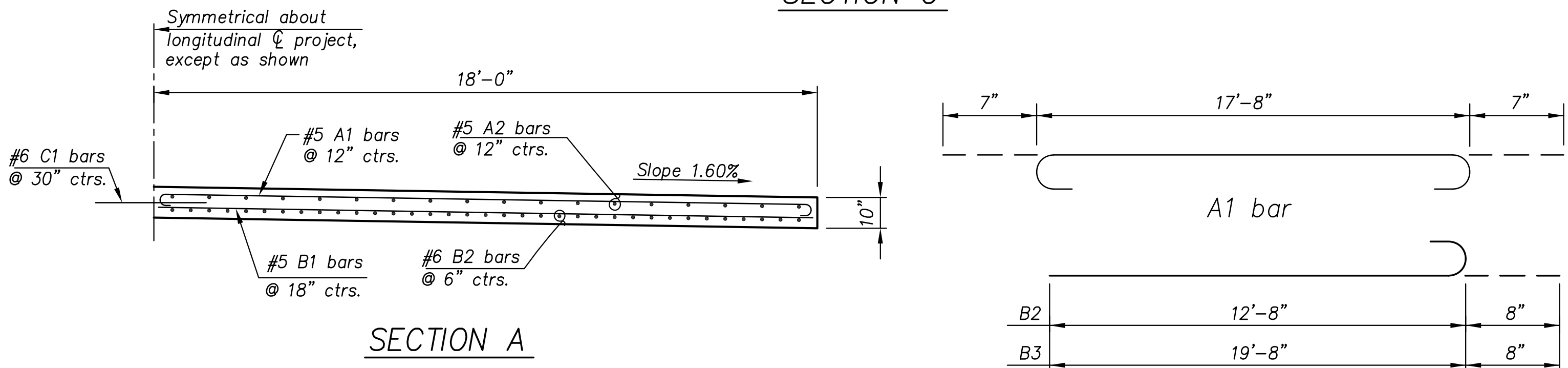
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
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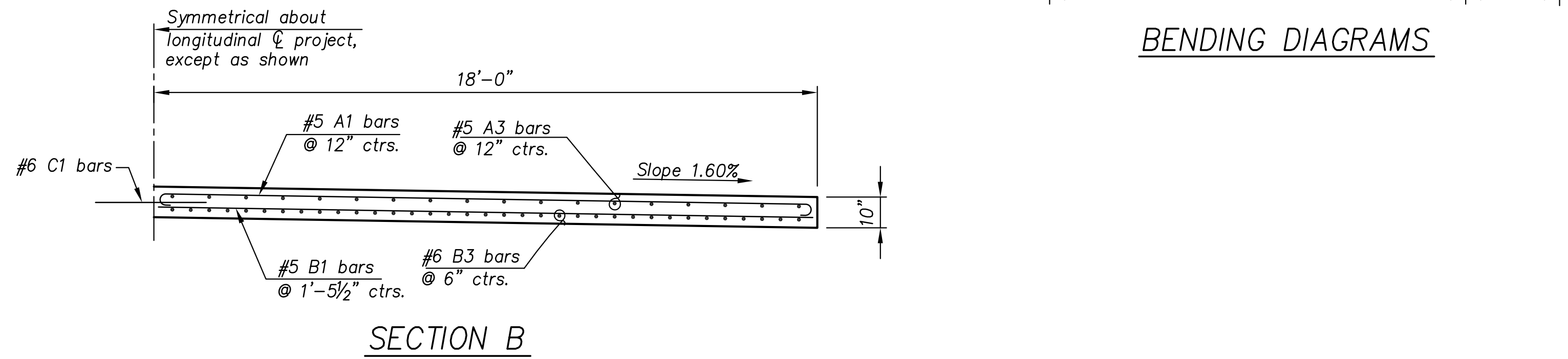
PLAN



SECTION C



SECTION A



SECTION B

BENDING DIAGRAMS

NOTES

SPECIAL CONCRETE BRIDGE APPROACH SHALL BE PAID FOR AS SQUARE YARDS OF CONCRETE PAVEMENT (10" UNIF)(AE) AND INCLUDES ALL WORK AND MATERIALS REQUIRED TO CONSTRUCT THE APPROACH SLAB AS SHOWN ON THIS SHEET.

THE BRIDGE APPROACH SLAB FOOTINGS SHALL BE PAID FOR AS "BRIDGE APPROACH SLAB FOOTINGS" IN CUBIC YARDS.

AT THE CONTRACTORS OPTION, #4 x 3'-0" TIE BARS AT 15" CENTERS MAY BE SUBSTITUTED FOR FOR THE #6 C1 BARS AT 2'-6" CENTERS.

ALL REINFORCING IN THE APPROACH PAVEMENT SHALL BE EPOXY COATED. REINFORCING IN THE APPROACH SLAB FOOTING MAY BE UNCOATED.

CLEARANCE FROM THE FACE OF CONCRETE FOR ALL REINFORCING STEEL SHALL BE 2".

STANDARD REINFORCING BAR HOOKS IN ACCORDANCE WITH THE LATEST ACI SPECIFICATIONS SHALL BE USED THROUGHOUT.

CONSTRUCT THE APPROACH SLAB WITHOUT CURBS.

(Both approaches)

BILL OF REINFORCING

Bar	A1	A2	A3	B1	B2	B3	C1
Size	#5	#5	#5	#5	#6	#6	#6
No.	132	72	72	92	140	140	30
Length	18'-10"	12'-8"	19'-8"	17'-8"	13'-4"	20'-4"	3'-0"
Reinforcing Steel (Epoxy Coated)(Gr. 60)	14,219 Lbs.*						
Roadway Approach Pavement	160.0 Sq. Yds.						
Bridge Approach Slab	104.0 Sq. Yds.						
Bridge Approach Slab Footing	21.33 Cu. Yds.						

* For information only. Quantity includes reinforcing in footing.

PROJECT NO. 67 C-5209-01
ROADWAY & BRIDGE APPROACH
PAVEMENT DETAILS
BRIDGE OVER NEOSHO RIVER

DESIGNED
SCALE
DATE
SHEET

STA. 33+27
NEOSHO COUNTY

CFS
ENGINEERS

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GENERAL NOTES

All work shall be done in conformity with the Standard Specifications applicable to the project.

The cost of all bars and joint material shown on this sheet is to be included in the bid price for Concrete Pavement.

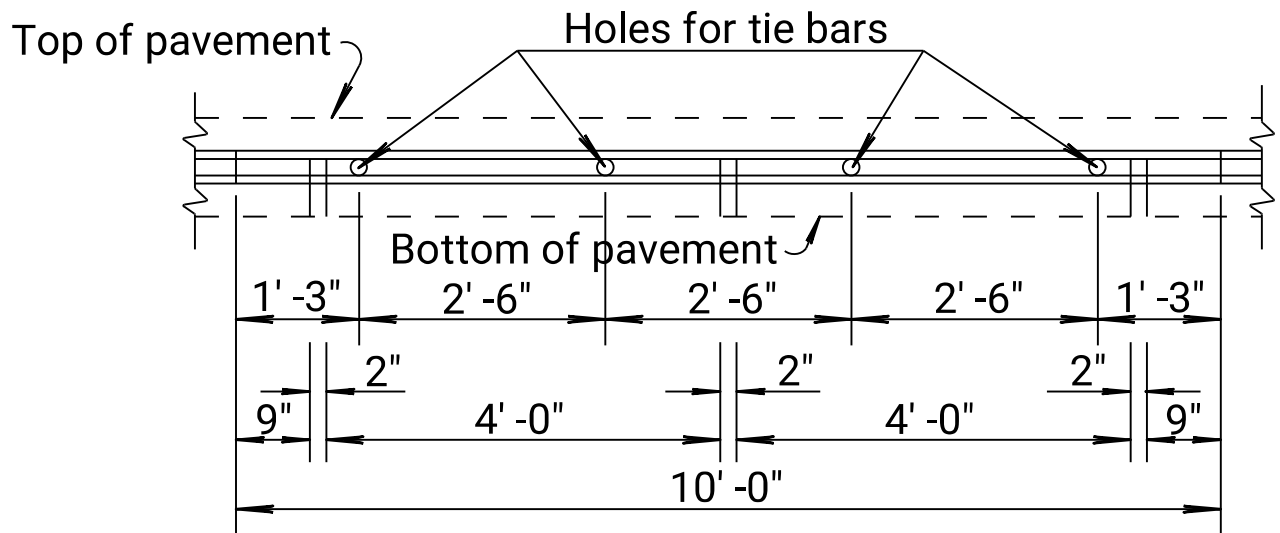
At each planned transverse joint location, a 4 to 6 inch wide strip of the pavement surface shall be protected from the texturing operation to provide a transverse textureless surface centered over the joint sawcut.

All sawed joints on this project shall be filled with sealant in accordance with Standard Specifications.

The 4 inch edge curb shall be constructed integral with the approach slab shoulder.

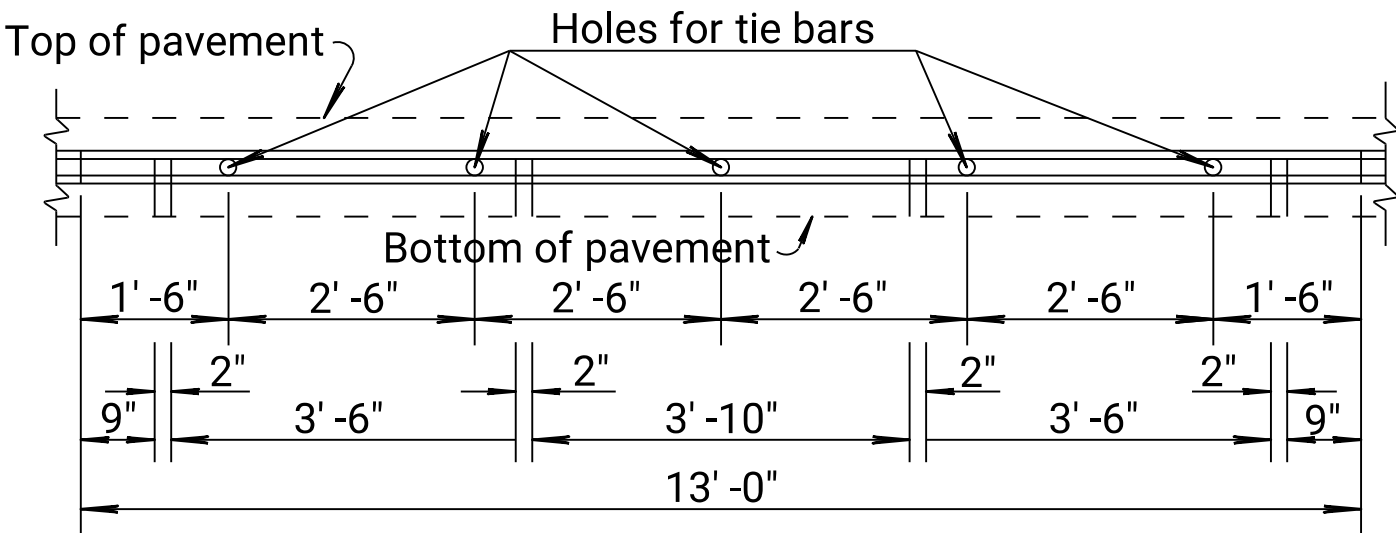
All materials and work required for this construction shall be subsidiary to the concrete approach slab.

Tie bars shall be evenly spaced along the length of the slab and no tie bars shall be within 12" of contraction joint.



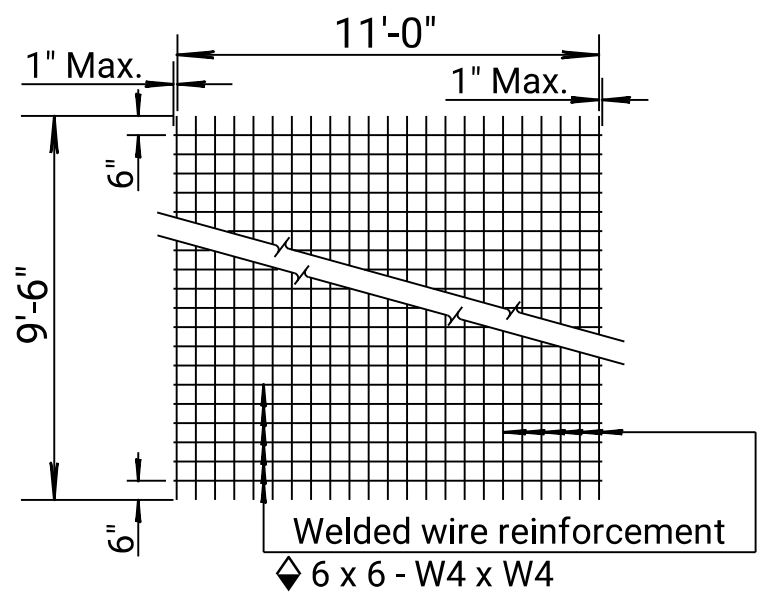
To be used only against forms. Shall not extend through contraction joints.

METAL STRIP FOR
LONGITUDINAL CONSTRUCTION JOINT (10'-0")



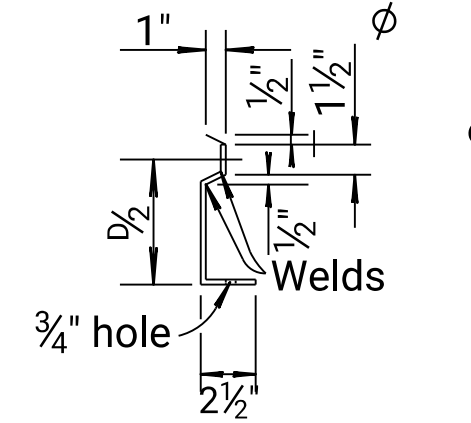
To be used only against forms. Shall not extend through contraction joints.

METAL STRIP FOR
LONGITUDINAL CONSTRUCTION JOINT (13'-0")



TYPICAL SHEET OF WELDED WIRE REINFORCEMENT
FOR SPECIAL BRIDGE APPROACH PAVEMENT

◆ Note: Epoxy coated #3 bars longitudinally @ 12" ctrs. & #3 bars transversely @ 18" ctrs. may be substituted for each layer of epoxy coated welded wire reinforcement.



SECTION OF RECESSED
FORM LEG

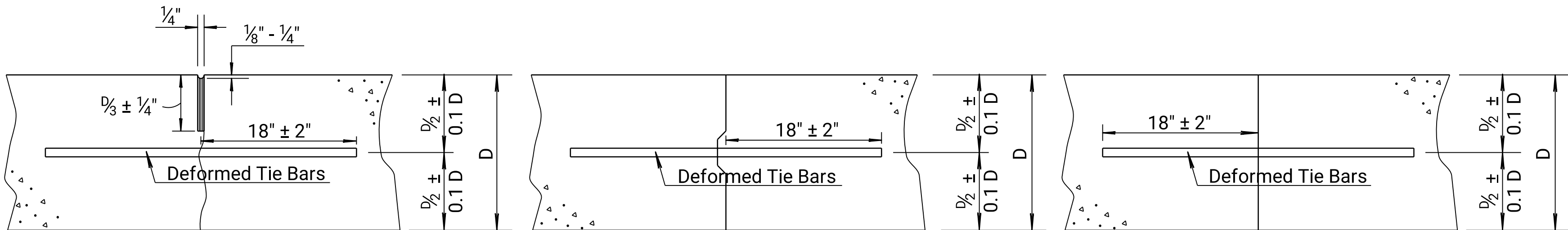
∅ Snap-in leg or other approved designs may be used in lieu of welded leg.



DETAIL OF LAP FOR WELDED WIRE REINFORCEMENT

The lap shall extend beyond the first transverse or bag wire of each sheet.

The sheet shall be wired securely at the edges and at intervals not to exceed 2'-6" for the full width of the sheet. Approximate weight of welded wire reinforcement = 58 lbs. per 100 sq. ft. Other methods for fastening the sheets of welded wire reinforcement at the laps may be used with the approval of the Engineer.



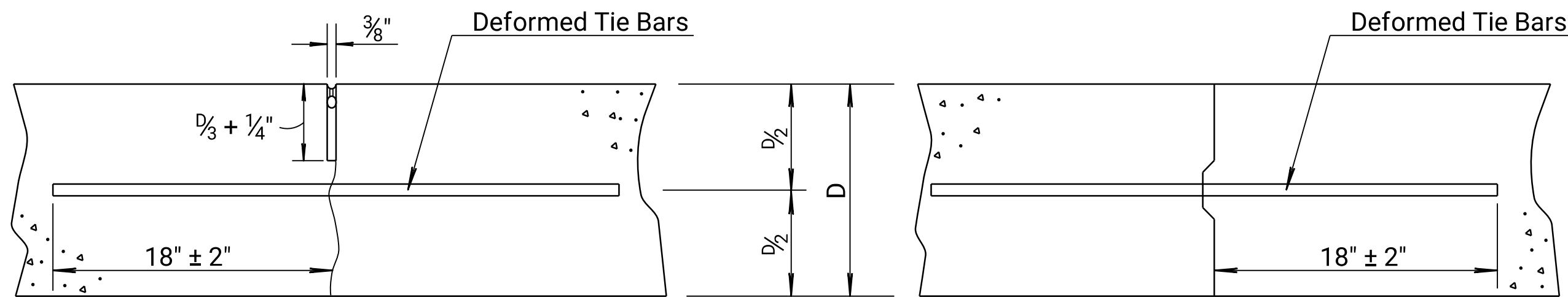
Tied Non-Keyed

Tied Keyed Construction

Tied Butt Construction

LONGITUDINAL JOINTS

Note: For longitudinal construction joints the contractor has the option of using either the keyed or butt type. Place deformed tie bars mid-depth of the shoulder.



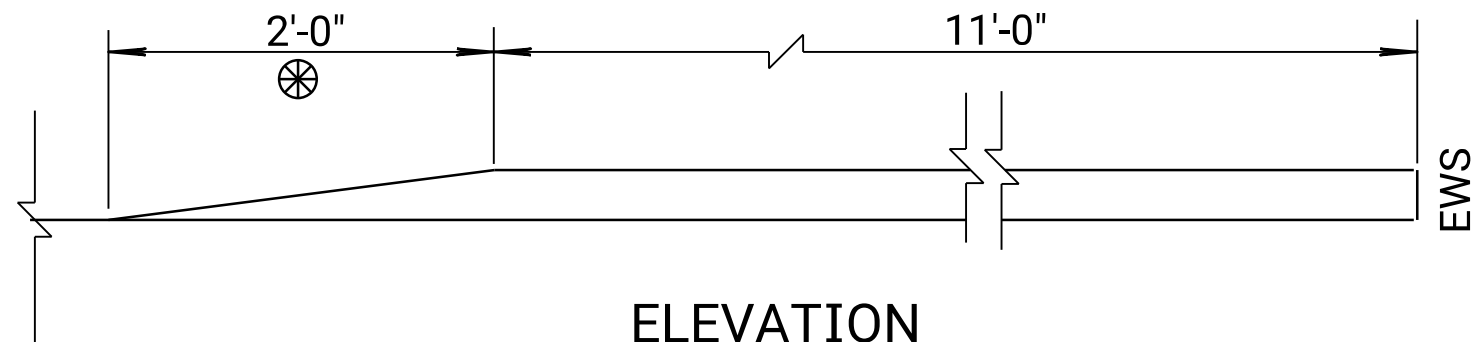
Monolithic Pour

Construction Joint

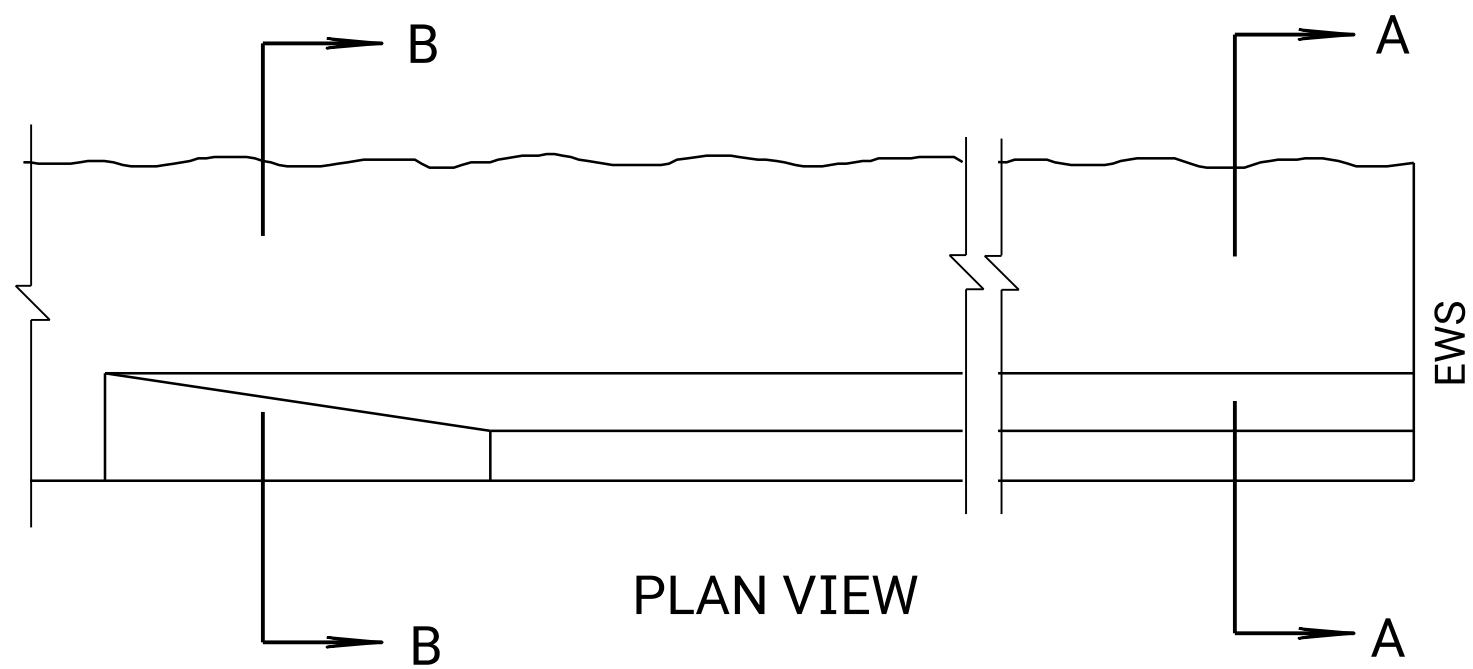
TRANSVERSE JOINTS

Note: A construction joint is required when the concrete placement has been interrupted for a substantial length of time or at the end of a day's placement.

⊗ No 4" Curb transition when adjacent to Flume Inlet.

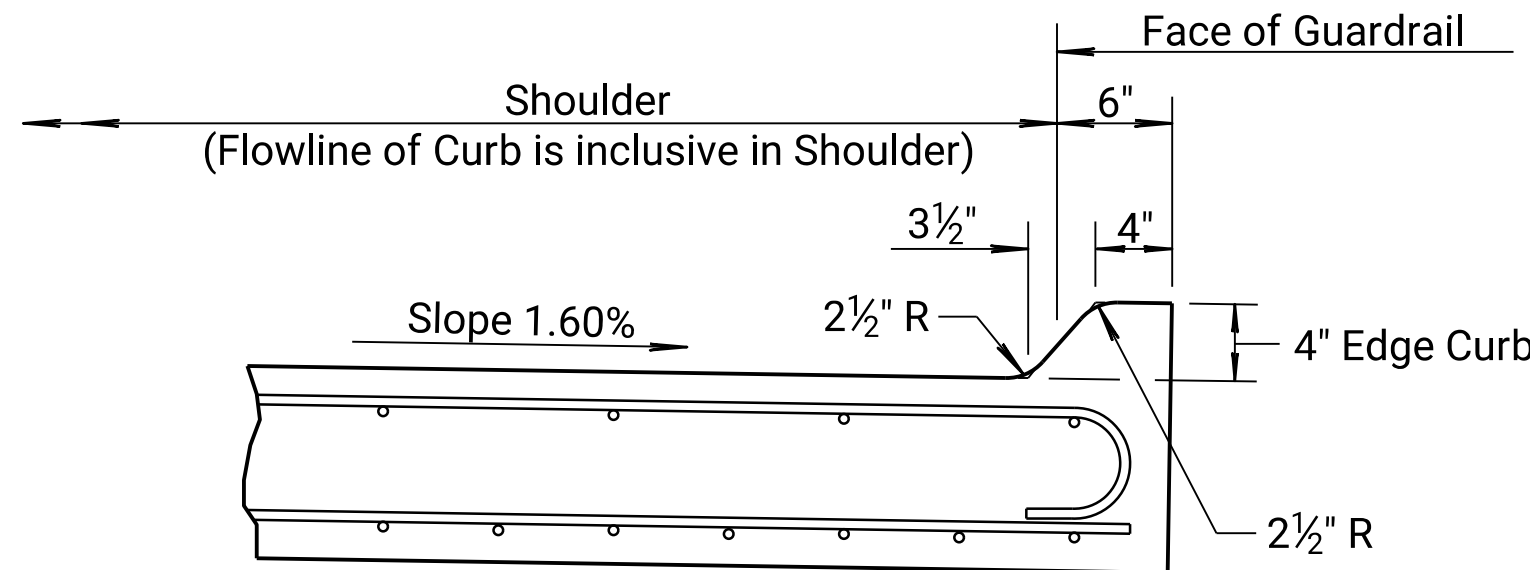


ELEVATION

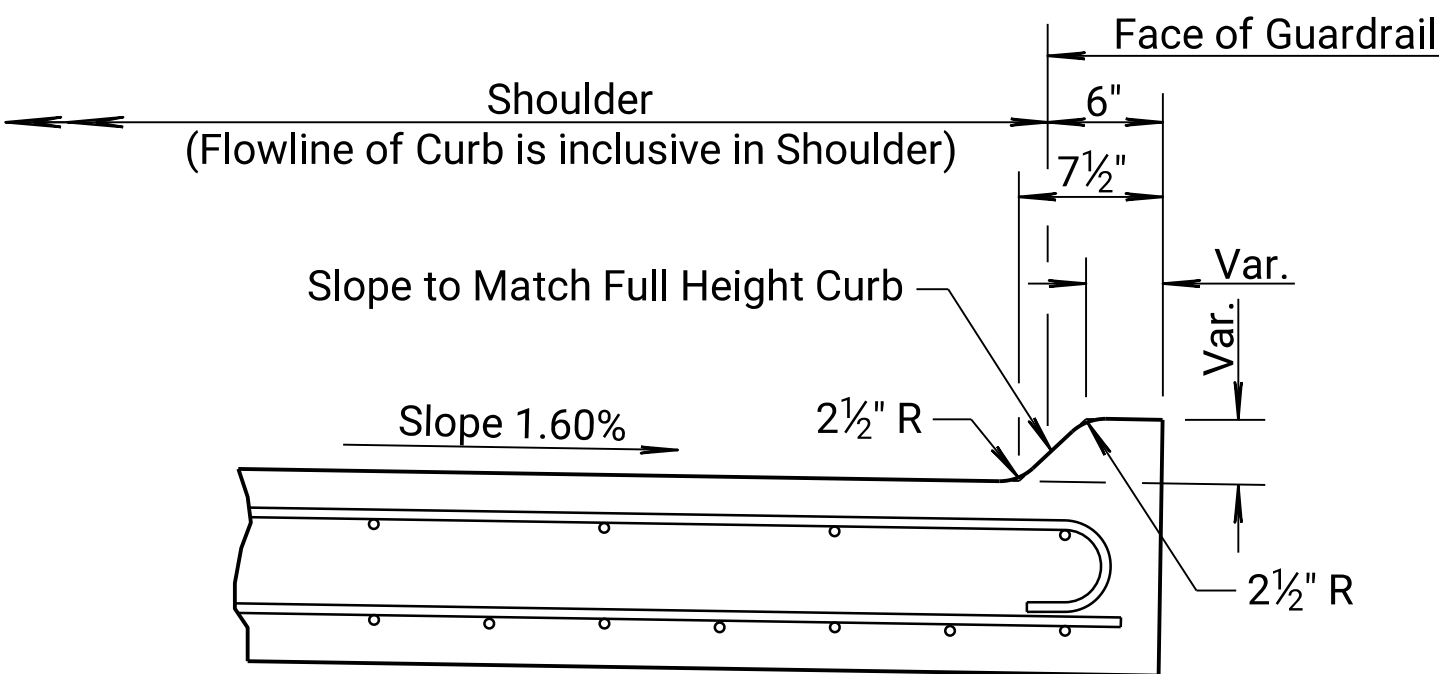


PLAN VIEW

4" EDGE CURB DETAIL



SECTION A-A



SECTION B-B

13	05-17-13	Revised Note, Longitudinal Joints	S.W.K.	J.O.B.
12	05-14-09	Pres. Relief Jt. to RD712/tie bar lab.	S.W.K.	J.O.B.
11	10-23-08	Revised Sec. A-A and Sec. B-B	S.W.K.	J.O.B.

NO.	DATE	REVISIONS	BY	APPD
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KANSAS DEPARTMENT OF TRANSPORTATION				
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MISCELLANEOUS DETAILS
FOR CONCRETE
BRIDGE APPROACH PAVEMENT

RD711		James O. Brewer	
DESIGNED	10-23-13	APPD.	James O. Brewer
DESIGN CK.	10-23-13	QUANTITIES	TRACED
DESIGN CK.	10-23-13	QUAN. CK.	TRACE CK.

Note to Designer: For Membrane Sealant Expansion Joint on Non-skewed Bridges the maximum length of expansion is: 380' for Steel Bridges, 410' for Concrete Bridges.

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GENERAL NOTES

EXPANSION/PRESSURE RELIEF JOINTS

See Concrete Bridge Approach Pavement standard drawings for location of expansion and pressure relief joints.

Form the joint opening prior to placement of the pavement approach. Remove the material used to form the joint after the pavement approach has been in place for a minimum of 6 days.

Clean and construct the joint only after the concrete in the approach slab has cured for a minimum of 7 days.

Thoroughly clean the joint by sandblasting and by high pressure air blast to remove all laitance and contaminants from the joint. When any joint is shaped by saw cutting in lieu of forming, blast the joint with water prior to sandblasting and air cleaning.

Accomplish sandblasting in two passes to clean each face of the joint (one pass for each face). Hold the nozzle 1 to 2 inches from the joint face at an angle to the joint face.

Remove any contaminants such as oil, curing compound, etc. by sandblasting to the satisfaction of the Engineer. Solvents, wire brushing, or grinding are not permitted.

Air blast the joint just prior to installing the Membrane Sealant. Equip the air compressor used to clean the joint with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. Spot check the joint to verify any residual dust or dirt has been removed. The Engineer is required to inspect the joint immediately prior to installing the joint material.

* See KDOT Standard Specifications for Membrane Sealant, Bonding Adhesive and Splice Adhesive. The width of the membrane sealant is 4 inches (nominal).

Do not allow traffic on the joint for a minimum of 3 hours unless otherwise directed by the Engineer.

Use splice materials and methods recommended by the Manufacturer.

All work and materials for the preparation, construction, and installation of the joint will be subsidiary to the concrete approach pavement.

BRIDGE APPROACH SLAB FOOTING

Pay for the Bridge Approach Slab Footing at the unit price bid per cubic yard for "Bridge Approach Slab Footing". This price will be full compensation for furnishing all materials and labor including Concrete Grade 4.0 (AE) Pavement, Reinforcing Steel (Gr. 60) (Epoxy Coated), excavation, Type "A" Compaction and materials used to prevent bonding of concrete. The Contractor may use Concrete Grade 4.0 (AE) or the mix used in the concrete pavement for the slab footing.

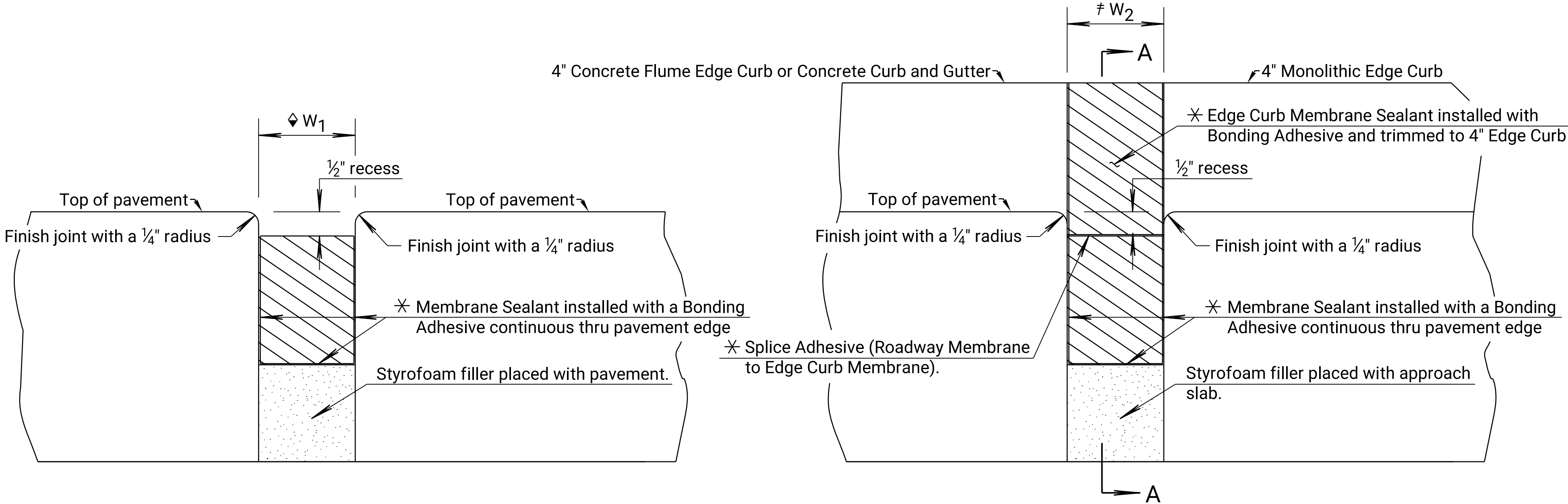
♦ PRESSURE RELIEF JOINT WIDTH DETAILS (W₁)

Temperature (F°)	40°	50°	60°	70°	80°	90°	100°
Formed Concrete Opening Size	4'-0"	3¾"	3½"	3¼"	3'-0"	2¾"	2½"

Temperature Average Ambient Temperature over previous 24 hours.

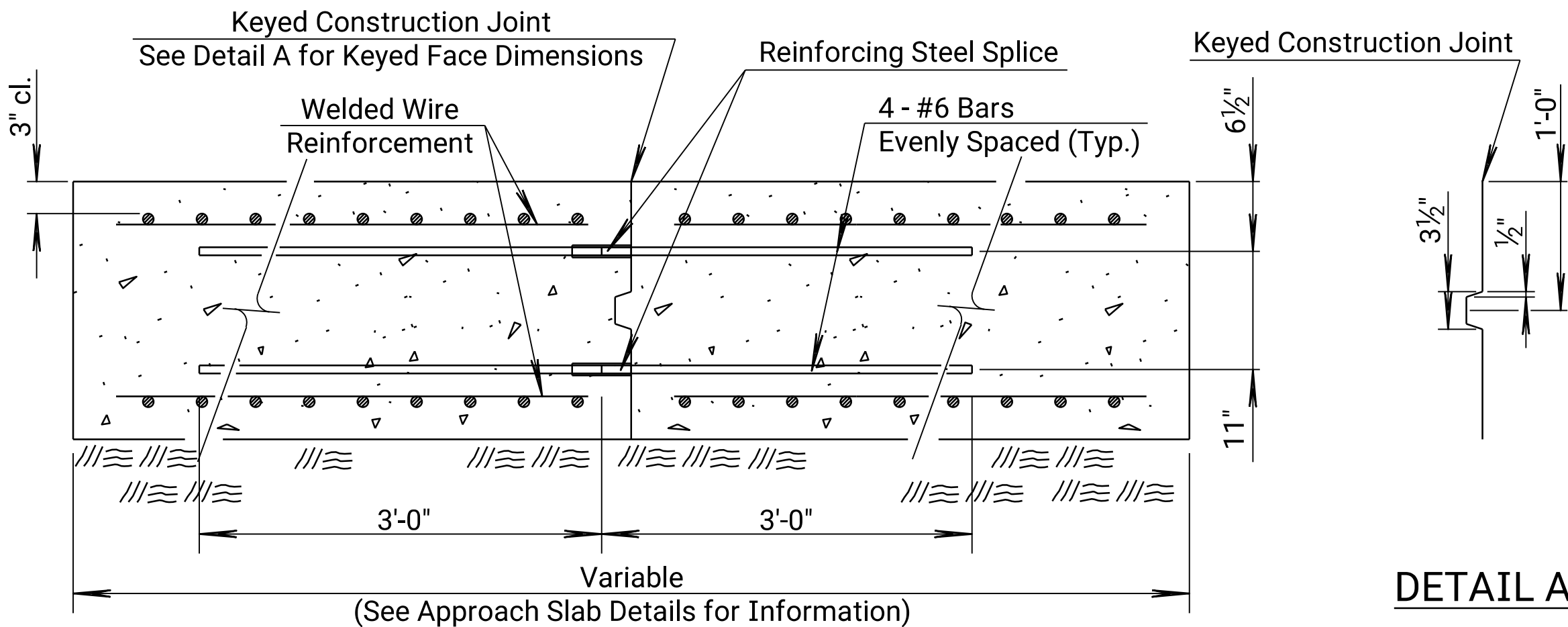
≠ EXPANSION JOINT WIDTH DETAILS (W₂)

See bridge construction layout sheet for details.

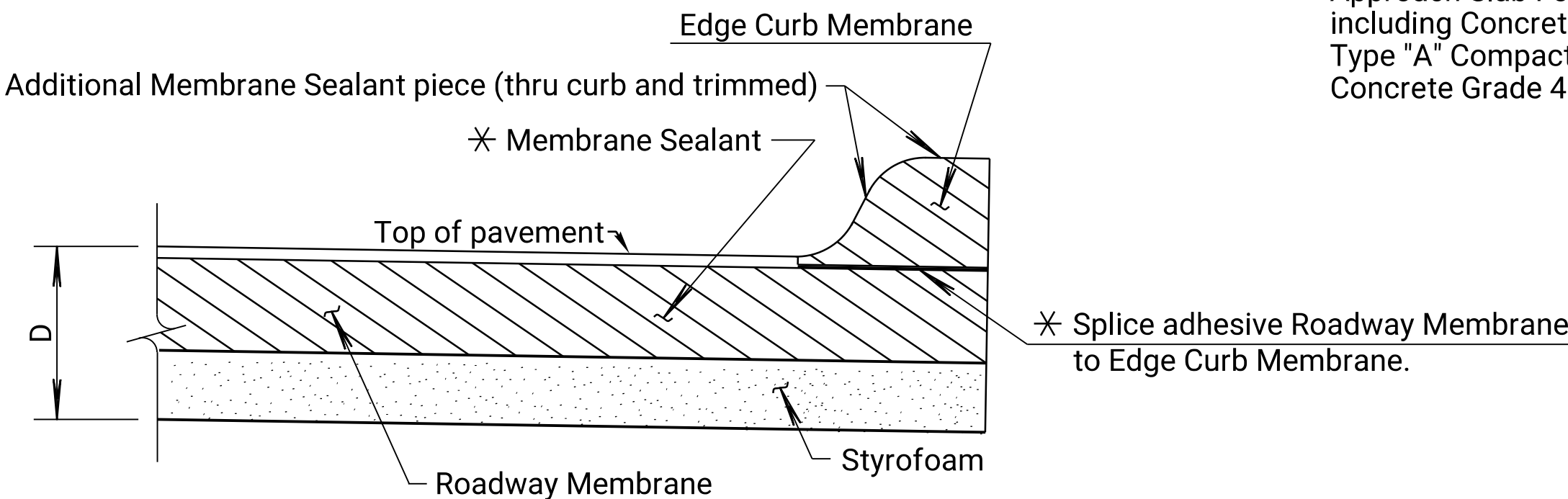


ELEVATION PRESSURE RELIEF JT.

ELEVATION EXPANSION JT.



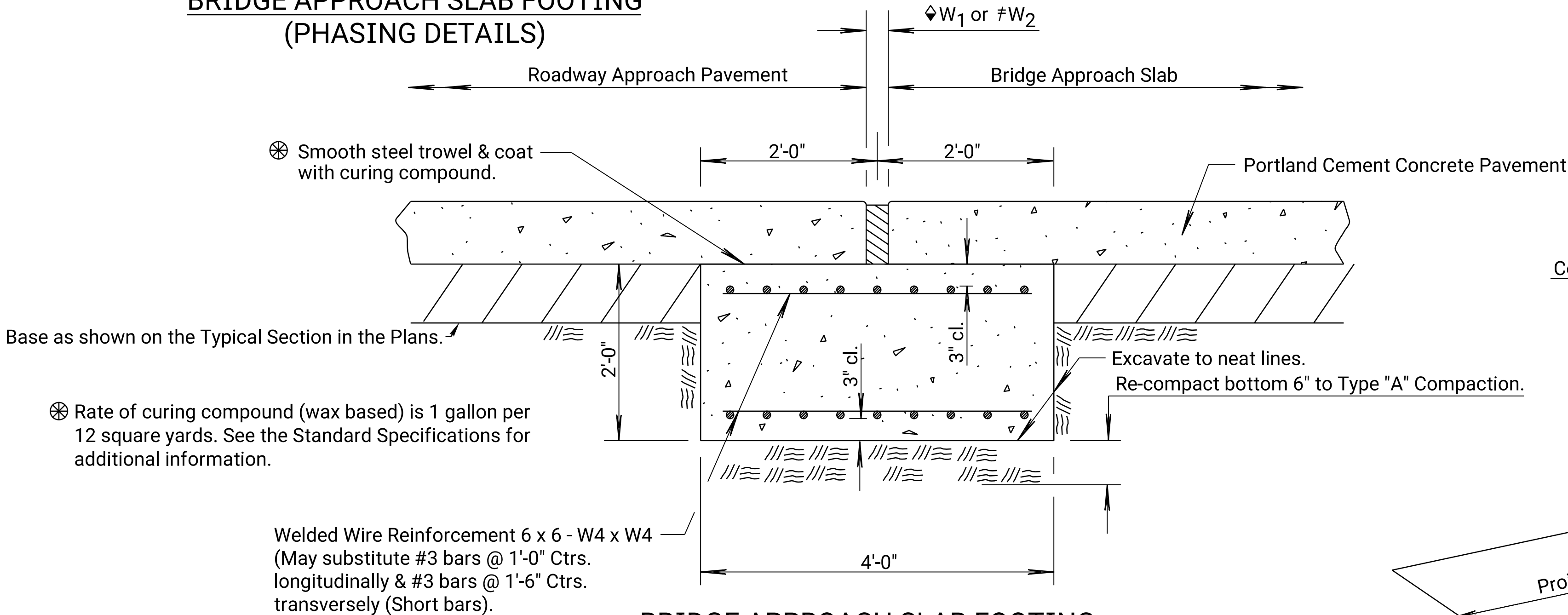
DETAIL A



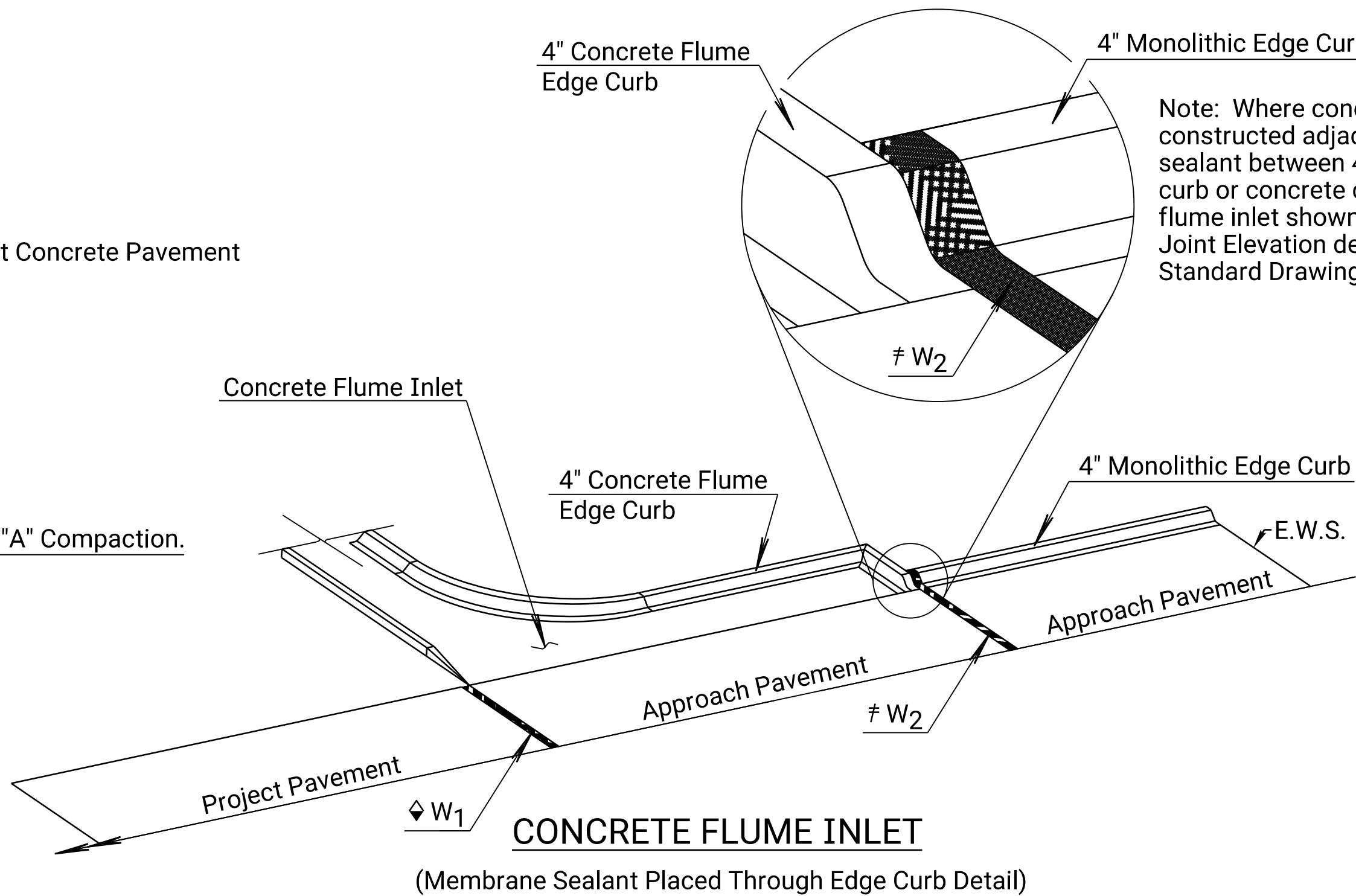
SECTION A-A

(See Std. Drawing RD711 for details of 4" Edge Curb.)

BRIDGE APPROACH SLAB FOOTING
(PHASING DETAILS)



BRIDGE APPROACH SLAB FOOTING



CONCRETE FLUME INLET

(Membrane Sealant Placed Through Edge Curb Detail)

Note: Where concrete flume inlets or concrete curb and gutter are constructed adjacent to bridge approach slab pavement place membrane sealant between 4" monolithic edge curb and 4" concrete flume inlet edge curb or concrete curb and gutter as shown on this sheet (concrete flume inlet shown). See approach slab Standard Drawings, Expansion Joint Elevation detail this sheet, Standard Drawing RD628, and Standard Drawing RD635 for additional details.

LEGEND

■ Membrane Sealant

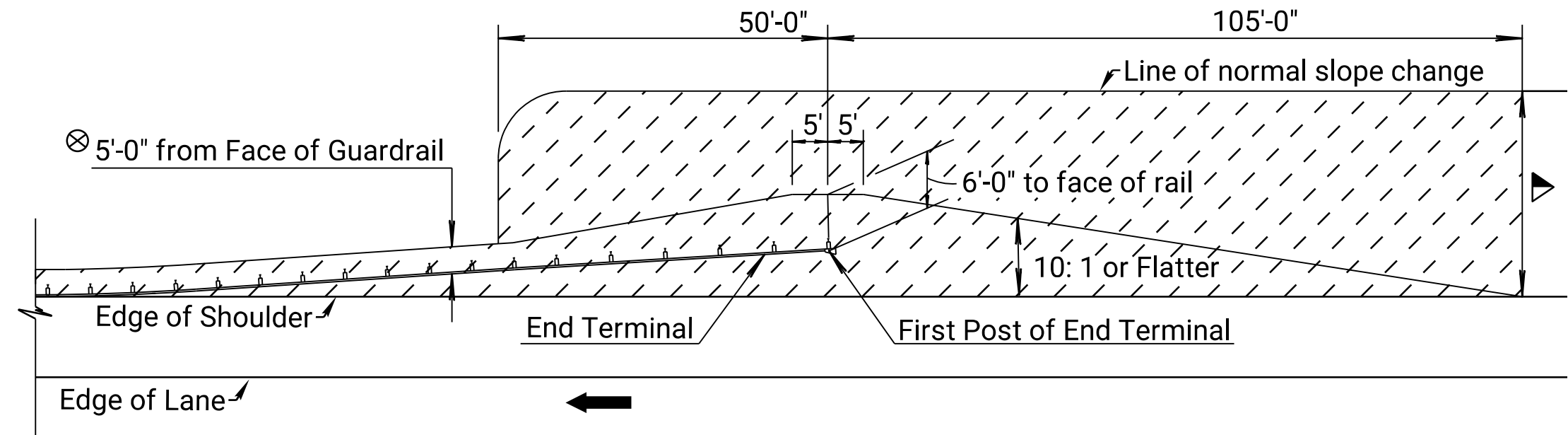
10	01-22-16	Add. Det., Keyed Joint & Flume Inlet	T.T.R.	S.W.K.
09	10-16-13	Revised General Note	S.W.K.	J.O.B.
08	04-04-13	Rev. Joint Width Det. Table	S.W.K.	J.O.B.
NO.	DATE	REVISIONS	BY	APPD

KANSAS DEPARTMENT OF TRANSPORTATION				
BRIDGE APPROACH SLAB DETAILS EXPANSION/PRESSURE RELIEF JOINT/ BRIDGE APPROACH SLAB FOOTING				
RD712				
FHWA APPROVAL		02-01-16	APPD.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

Note to Designer - Design guardrail installations using guidance shown on KDOT's 'Guardrail Typical Alignments' Standard Drawings. 'Flared' guardrail installations are preferred over 'Parallel' or 'Zero Flare' installations. Where 'Flared' or 'Parallel' installations are used, the flare rate of the guardrail end terminal typically matches the flare rate of the remaining guardrail installation. For 'Zero Flare' installations, 'Parallel' guardrail end terminals should be designed using typical flare rates of 50:1 or flatter for the length of the end terminal. However, while 50:1 or flatter flare rates are typical for 'Parallel' guardrail end terminals, these end terminals may be flared as steep as 26:1 or flatter in order to offset the end terminal head as far from the edge of the through traveled lane as practicable.

GUARDRAIL CLEAR AREA

Applies to all guardrail installations unless otherwise shown in the plans.



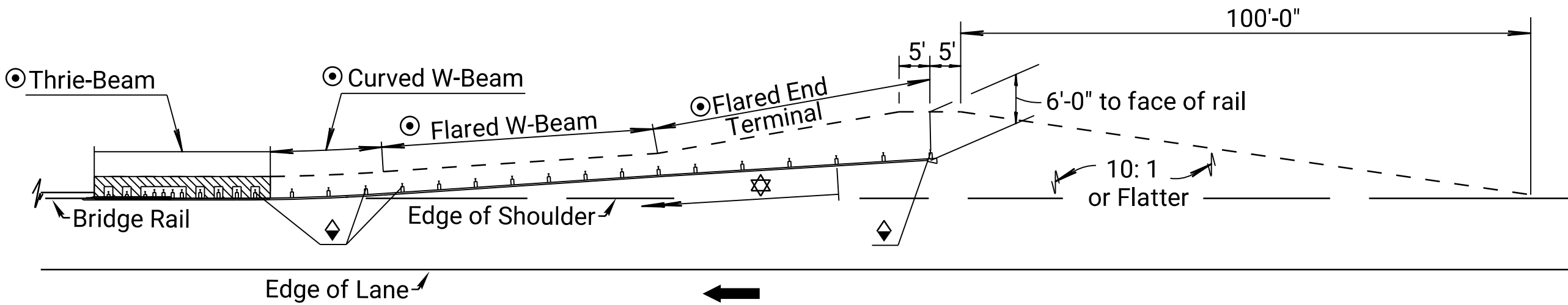
Keep Area Free of Stockpiled Material, Equipment, or Other Obstacles, Such as Temporary Signs, Regardless of Crash Worthiness. This Clear Area Extends 105 Feet in Advance of and 50 Feet behind the First Post of the Guardrail End Terminal and Then, in Order to Maintain Full Post Spacing, Continues 5 Feet behind the Face of the Guardrail through the W-Beam Portion of the Installation as Shown in the 'Guardrail Clear Area' Detail on this Sheet.

▲ Normal Project Side Slope.

⊗ Deflection Distance for Normal Post Spacing

FLARED GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



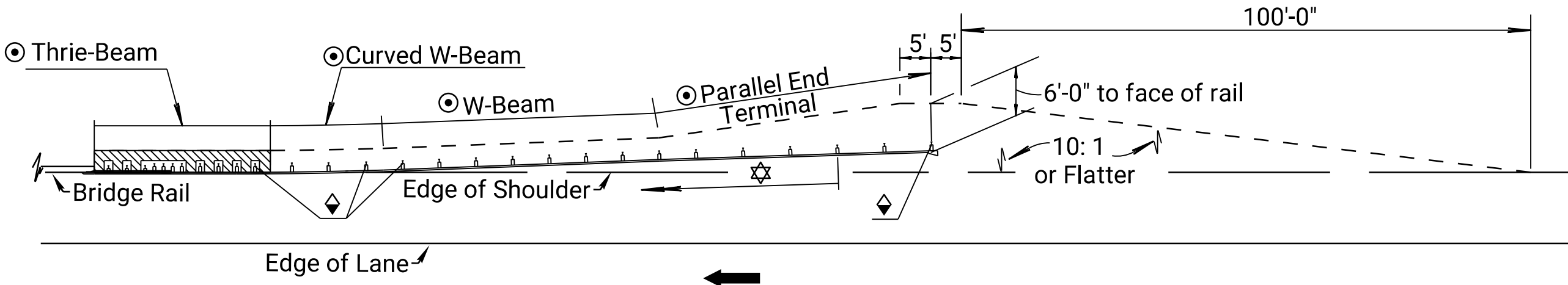
⊙ See Guardrail Layout Sheets for Details

◆ On Guardrail Layout Sheets, Show Station AND Offset from the Roadway Alignment to the Face of Post at these Locations.

☆ Length of Need (Begins at Post 3)

PARALLEL GUARDRAIL DETAIL

Applies to CGS AND MGS (MGS Shown)



GENERAL NOTES

Install the guardrail end terminals according to the Manufacturer's Installation Manual. The Contractor will furnish a copy of the Manufacturer's Installation Manual to the Engineer prior to the start of the installation.

Use approved steel (preferred) or wood posts provided by the Manufacturer. The guardrail end terminal post type may be independent of the post type used in the remainder of the installation. However, no mixing of post types is permitted in the remaining w-beam and thrie-beam installation.

Use approved polymer (preferred) or wood blockouts provided by the Manufacturer. The guardrail end terminal blackout size and type may be independent of the blackout size and type used in the remainder of the installation. For blackout size and types for the remaining w-beam and thrie-beam portion of the installation see the details shown on KDOT's 'Guardrail Post Details' and 'Guardrail Thrie-Beam Transition Details' Standard Drawings.

Apply retroreflective sheeting to the end terminal impact head before installation.

Tighten all cable anchor assemblies as per the Manufacturer's Installation Manual.

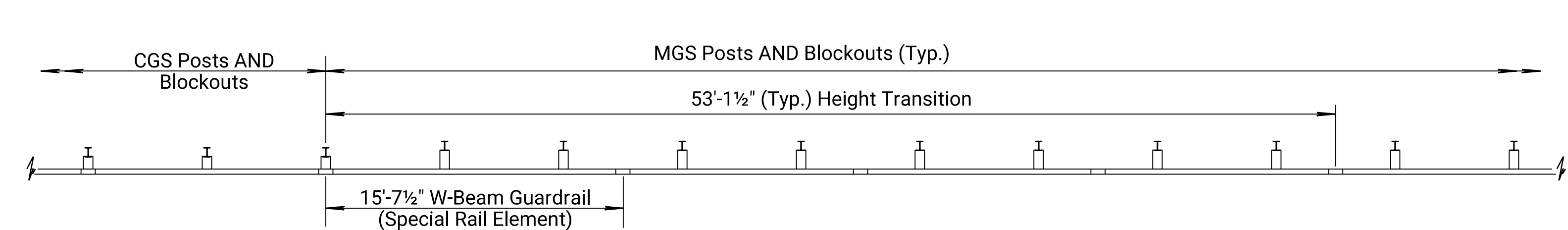
Lap w-beam and thrie-beam guardrail splices, in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final traffic configuration. Lap end terminal splices per the Manufacturer's Installation Manual in the direction of permanent traffic, even where temporary traffic may be carried in the opposite direction of the final configuration.

The minimum length of w-beam guardrail required between the thrie-beam transition and the guardrail end terminal is 12'-6" for all installations; unless otherwise stated in the Manufacturer's Installation Manual.

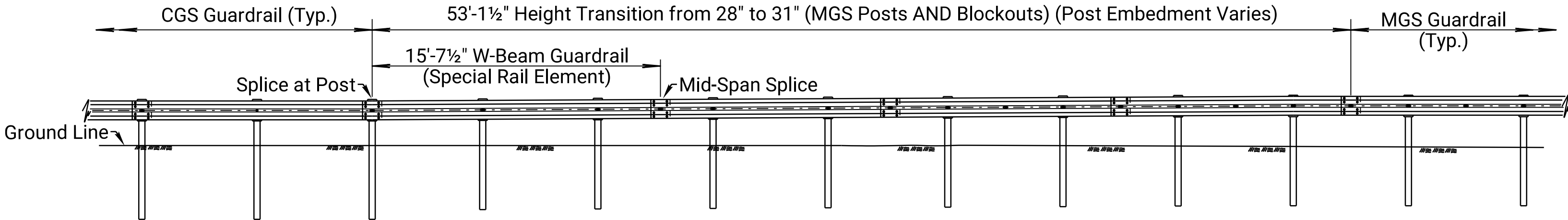
Where pavement with a thickness less than or equal to 8" is encountered during installation, use the details shown on KDOT's 'Guardrail Post Details' Standard Drawings to provide openings in the pavement for the guardrail posts. Where pavement with a thickness greater than 8" or geologic rock is encountered during installation, follow the Manufacturer's Installation Manual for guidance. Where the Manufacturer's Installation Manual does not address pavement with a thickness greater than 8" or geologic rock, contact the manufacturer for instructions or install the guardrail posts as directed by the Engineer.

All work and materials required for w-beam and thrie-bean guardrail installations are paid for under the appropriate bid items for either CGS or MGS guardrail depending on the type of installation.

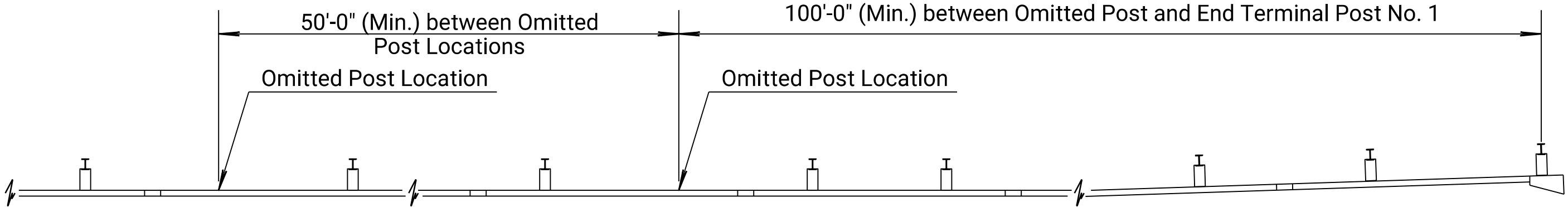
All work and materials required for guardrail end terminal installations are paid for under the bid item for the selected guardrail end terminal. See the table on this sheet for the appropriate end terminal bid item information.



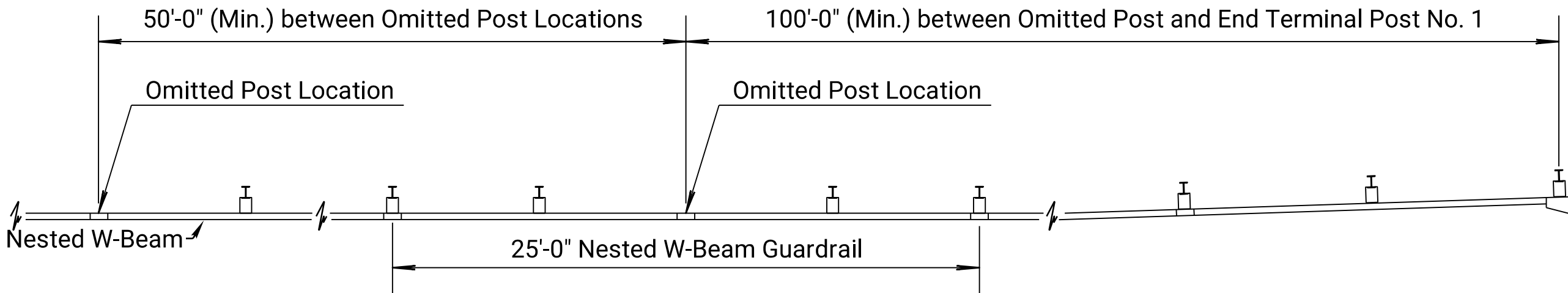
CGS TO MGS TRANSITION DETAILS (PLAN)



CGS TO MGS TRANSITION DETAILS (ELEVATION)



MGS OMITTED POST DETAIL



CGS OMITTED POST DETAIL

MIDWEST GUARDRAIL SYSTEM (MGS) END TERMINALS

END TERMINAL BID ITEM	FLARED OR PARALLEL	MOUNTING HEIGHT	CRASH TESTING CRITERIA	STEEL POST DESIGN AVAILABLE	WOOD POST DESIGN AVAILABLE	ENERGY ABSORBING	MANUFACTURER	DESIGN LENGTH	MANUFACTURER SYSTEM LENGTH
Guardrail End Terminal (MGS-FLEAT)	Flared	31"	NCHRP 350	Yes	Yes	Yes	Road Systems	40'-7½"	37'-6"
Guardrail End Terminal (MGS-SRT)	Flared	31"	NCHRP 350	Yes	Yes	No	Valtir	40'-7½"	37'-6"
Guardrail End Terminal (MGS-MSKT)	Parallel	31"	MASH	Yes	No	Yes	Road Systems	46'-10½"	46'-10½"
Guardrail End Terminal (MGS-SOFTSTOP)	Parallel	31"	MASH	Yes	No	Yes	Valtir	46'-10½"	50'-9½"

CONVENTIONAL GUARDRAIL SYSTEM (CGS) END TERMINALS

END TERMINAL BID ITEM	FLARED OR PARALLEL	MOUNTING HEIGHT	CRASH TESTING CRITERIA	STEEL POST DESIGN AVAILABLE	WOOD POST DESIGN AVAILABLE	ENERGY ABSORBING	MANUFACTURER	DESIGN LENGTH	MANUFACTURER SYSTEM LENGTH
Guardrail End Terminal (FLEAT)	Flared	28"	NCHRP 350	Yes	Yes	Yes	Road Systems	37'-6"	37'-6"
Guardrail End Terminal (SRT)	Flared	28"	NCHRP 350	Yes	Yes	No	Valtir	37'-6"	37'-6"
Guardrail End Terminal (SKT)	Parallel	28"	NCHRP 350	Yes	Yes	Yes	Road Systems	50'-0"	50'-0"

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	9	84

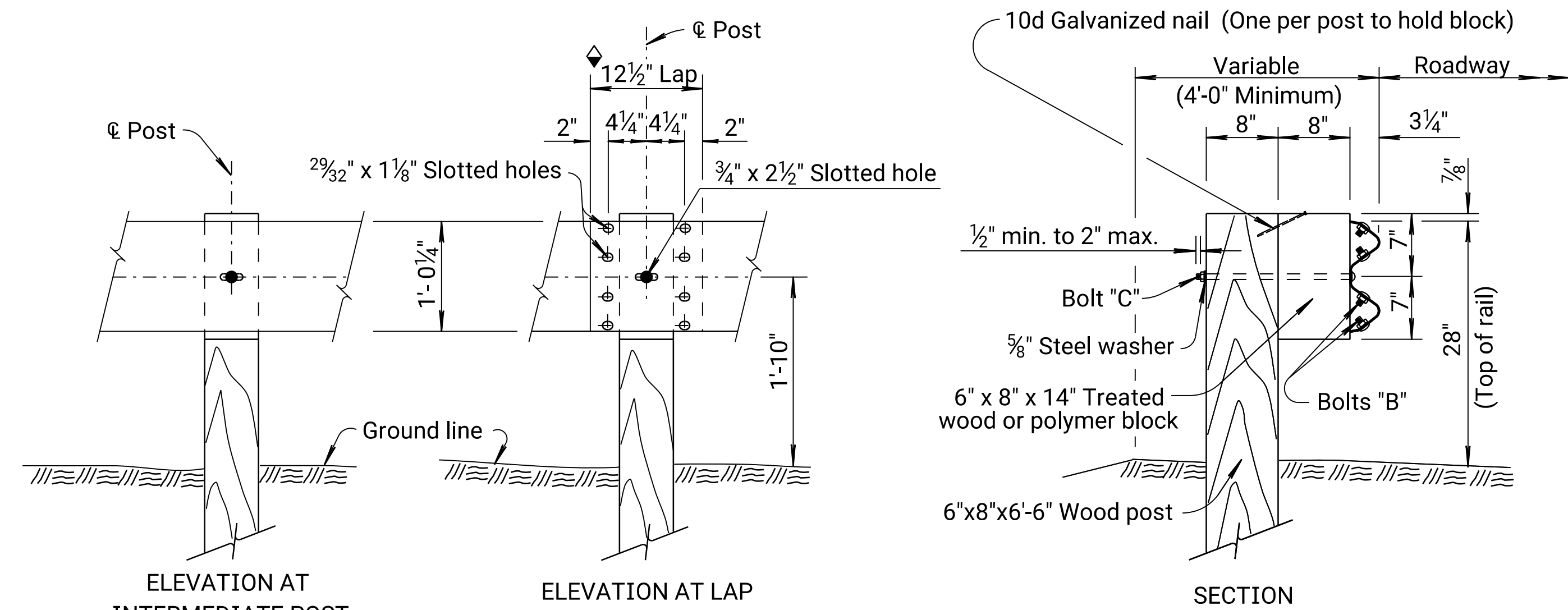
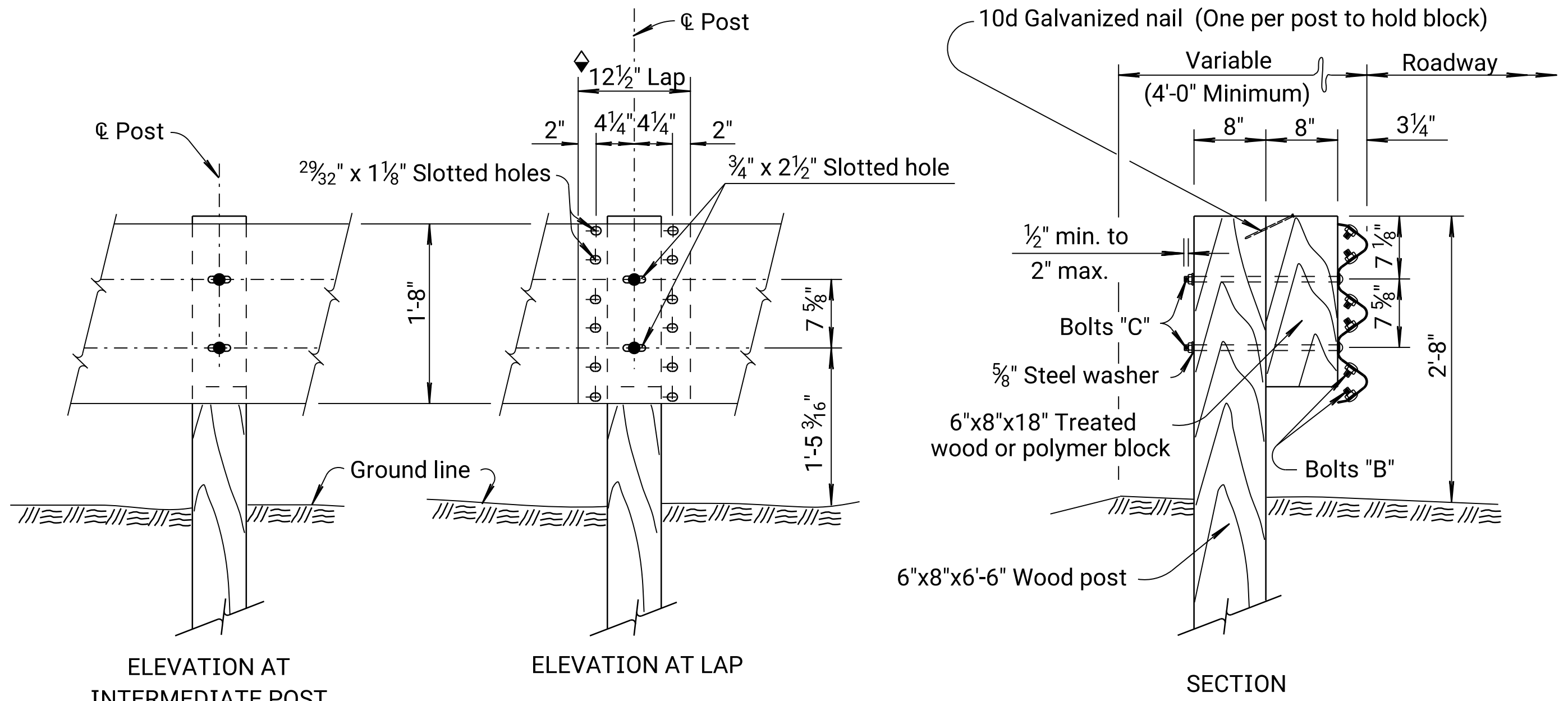
02	09-05-18	ADD. OMITTED POST AND TRANS. DETAILS	A.L.R.	T.T.R.
01	06-05-18	INITIAL RELEASE	A.L.R.	T.T.R.
NO.	DATE	REVISIONS	BY	APPD

GUARDRAIL AUXILIARY DETAILS

RD606

DESIGNED	09-25-18	APPD.	Scott W. King
DESIGN CK.	DETAIL CK.	QUANTITIES	TRACED
		QUAN.CK.	TRACE CK.

Notes to Designer: For posts installed in pavement thicker than 8" or posts installed in rock formations refer to AASHTO's Roadside Design Guide for details then revise this drawing and all supporting drawings appropriately.

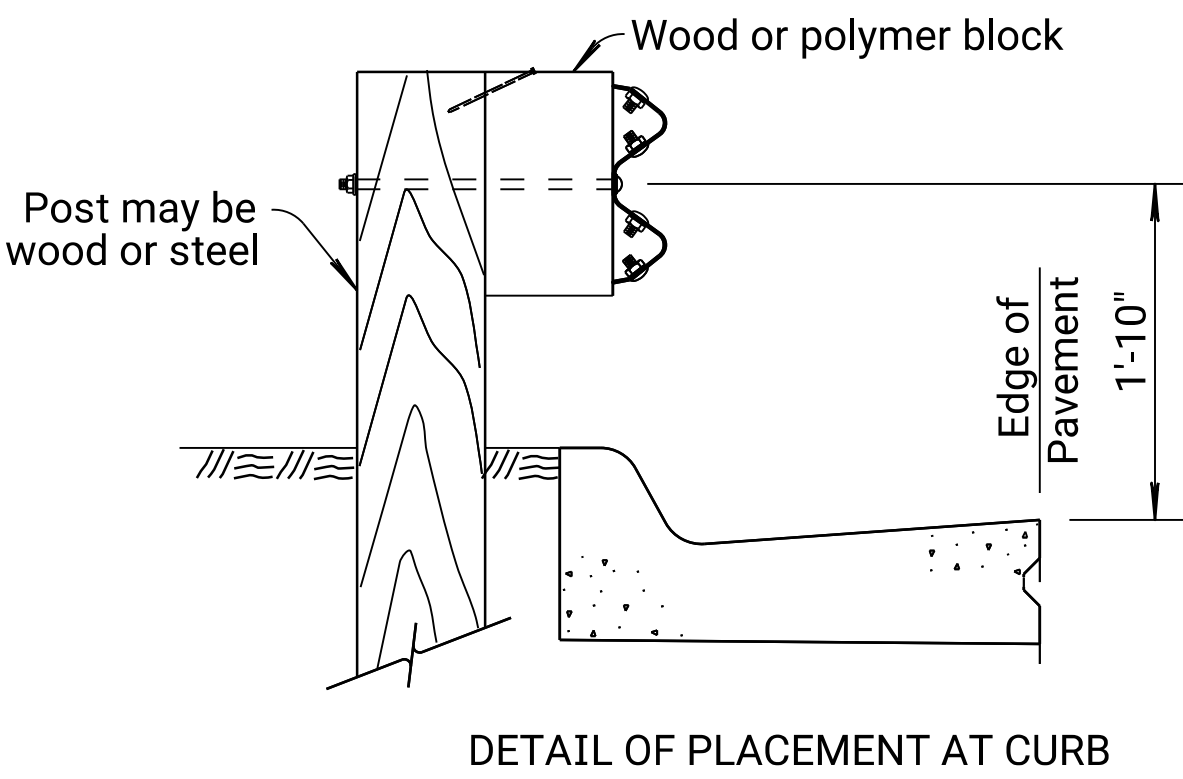


◆ Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.

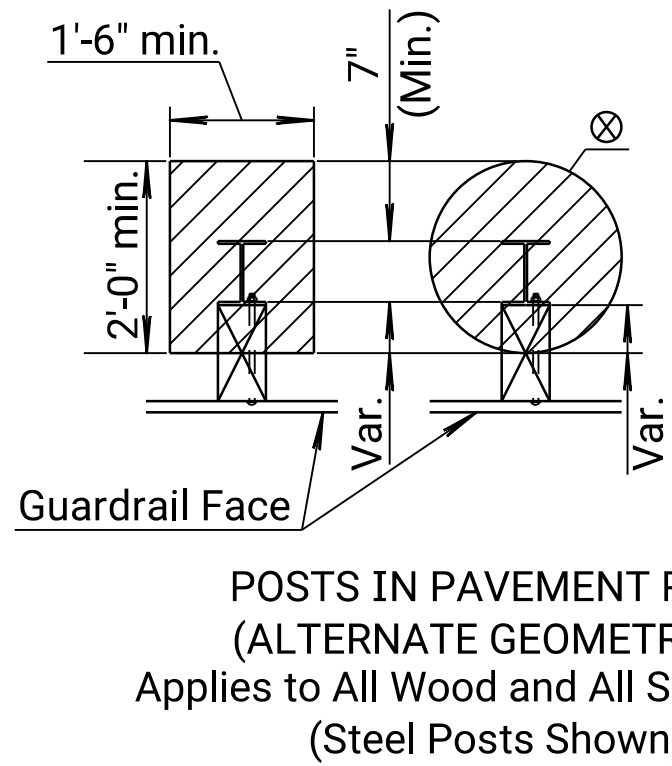
WOOD POSTS

GENERAL NOTES (Wood Posts)

Give all wood posts and wood blocks a preservative treatment, see standard specifications. Thoroughly saturate all cuts, injuries and bolt holes on wood posts and blocks with preservative. Use only one type of preservative treatment on a project. Use S4S rectangular posts and wood blocks, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the the guardrail end terminals. Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations. Contractor must notify Engineer at the earliest time when a non-removable manmade object (footing, pipe, etc.) is encountered and prevents installation of a full length post. Contractor must obtain Engineer approval prior to cutting post shorter than 6'-6". Approved polymer blockouts may be substituted for wood blockouts. Only one type of blockout is permitted on each guardrail installation. This excludes the guardrail end terminals unless certified by the manufacturer. All dimensions are nominal and are subject to manufacturing tolerances. Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made. Where guardrail posts are installed in pavement, form openings in the pavement for the guardrail posts.



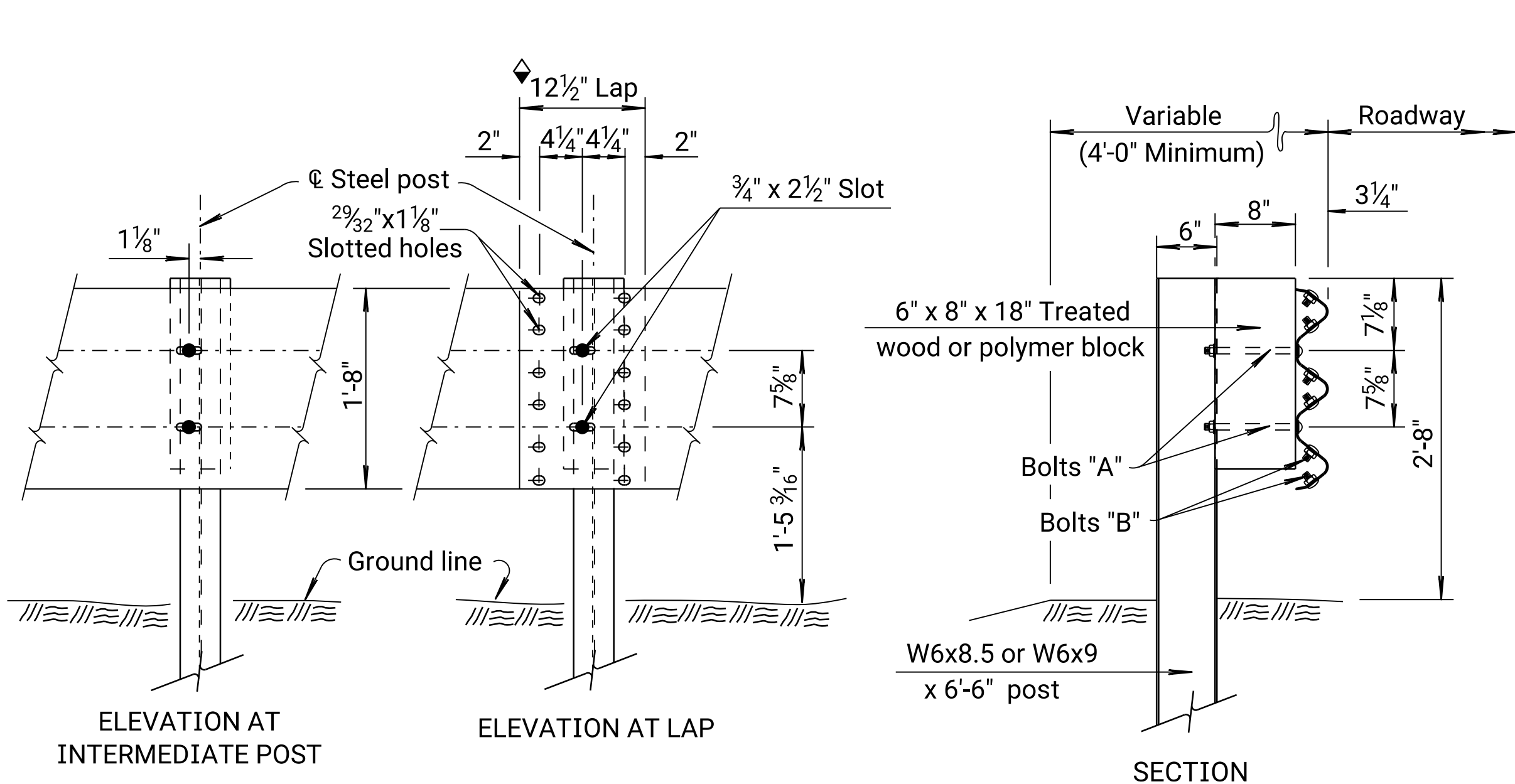
Note: When face of guardrail is aligned with the face of a curb, measure the height of rail from the pavement surface at the curb/pavement joint as shown. Use a laydown type curb where the face of the guardrail is not located at the face of the curb.



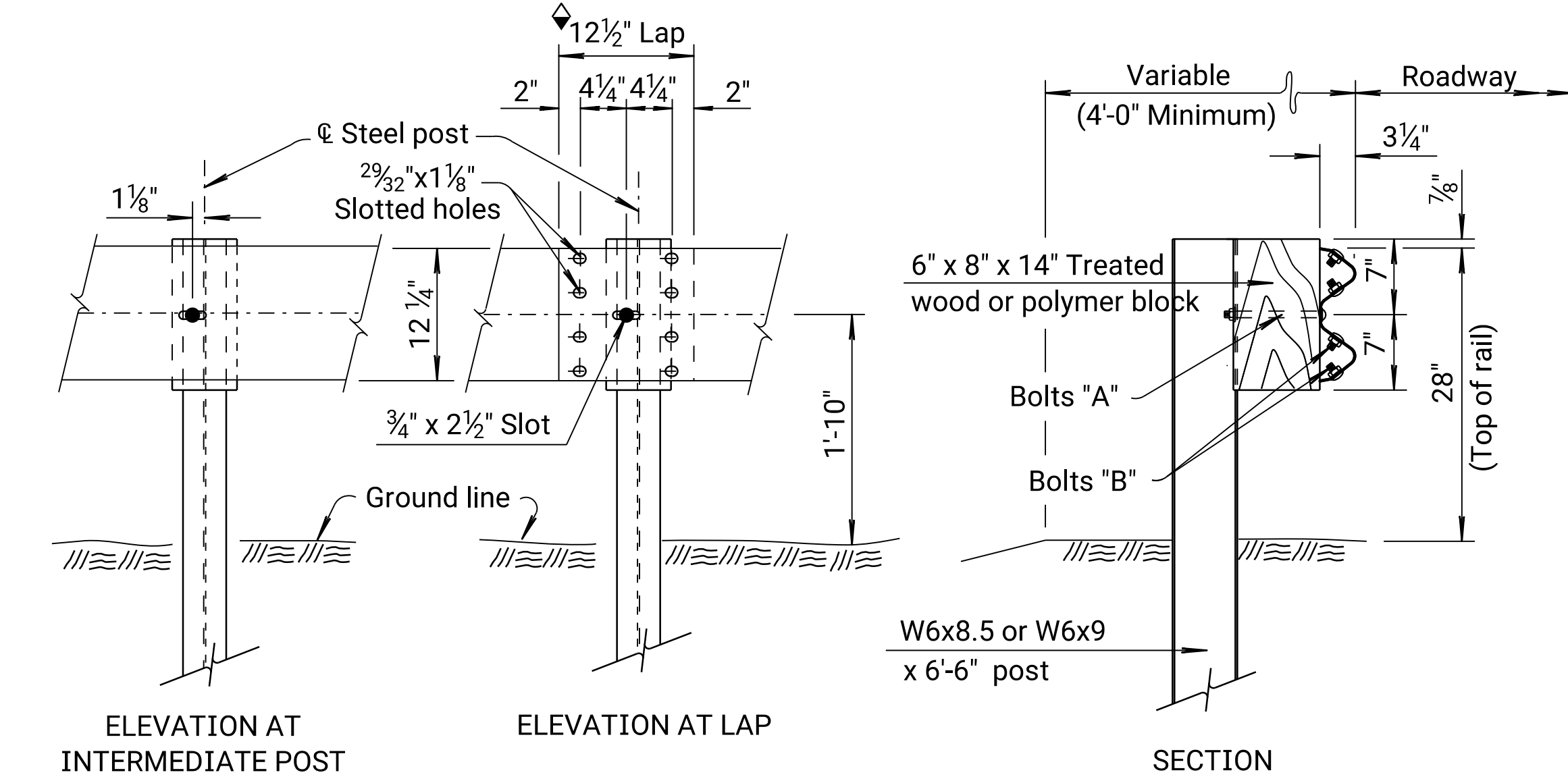
- ▨ Slurry Grout (Low Strength). See KDOT's Standard Specifications
- ⊗ Diameter may vary from 1'-6" (min.) to 2'-0".

Note: Low Strength Grout must have a 28-day compressive strength of 120 psi or less. All work and materials related to posts in pavement are subsidiary to other guardrail bid items. Rectangular geometry shown in Posts in Pavement detail. Circular geometry, as shown on this sheet, may be used at the Contractor's option.

BOLT SIZE SCHEDULE	
Bolt	L
A	8 1/2"
B	1 1/4"
C	18"



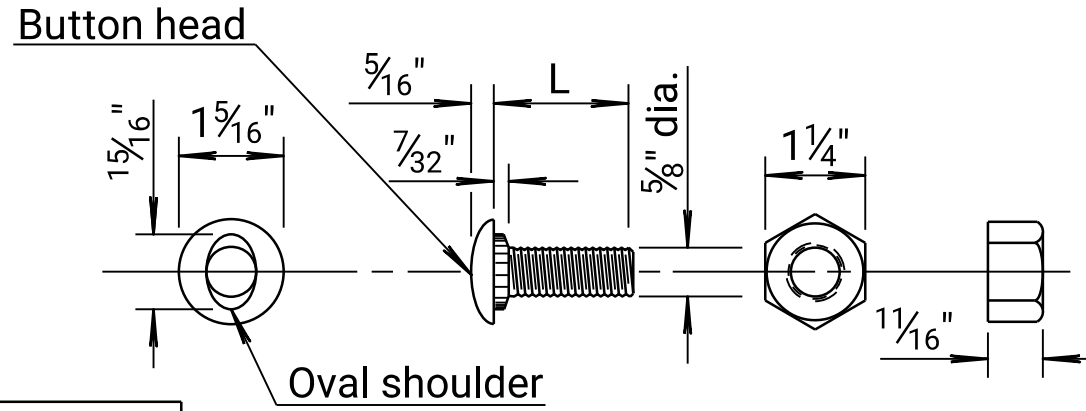
◆ Lap guardrail splices, including terminal connector, in the direction of traffic. Where traffic is temporarily carried in the opposite direction of final configuration, lap rail splices in the direction of permanent traffic.



STEEL POSTS

GENERAL NOTES (Steel Posts)

Use grade of steel for steel posts that meets the requirements of the standard specifications. Hot dip galvanize the posts after fabrication, see standard specifications. Use only one post/blockout type within guardrail run, this excludes the guardrail end terminals. For wood/polymer blockout requiements see standard specifications. Approved polymer blockouts may be substituted for wood blockouts. Only one type of blockout is permitted on each guardrail installation. This excludes the guardrail end terminals. Set guardrail posts by digging or by driving. Use post caps to protect the post from crushing during driving operations. Contractor must notify Engineer at the earliest time when a non-removable manmade object (footing, pipe, etc.) is encountered and prevents installation of a full length post. Contractor must obtain Engineer approval prior to cutting post shorter than 6'-6" except as allowed on Standard Drawing RD617. All dimensions are nominal and are subject to manufacturing tolerances. Excavation including rock, shale, and other materials for erection of Guardrail is subsidiary to various bid items for which payment is made. Where guardrail posts are installed in pavement, form openings in the pavement for the guardrail posts.



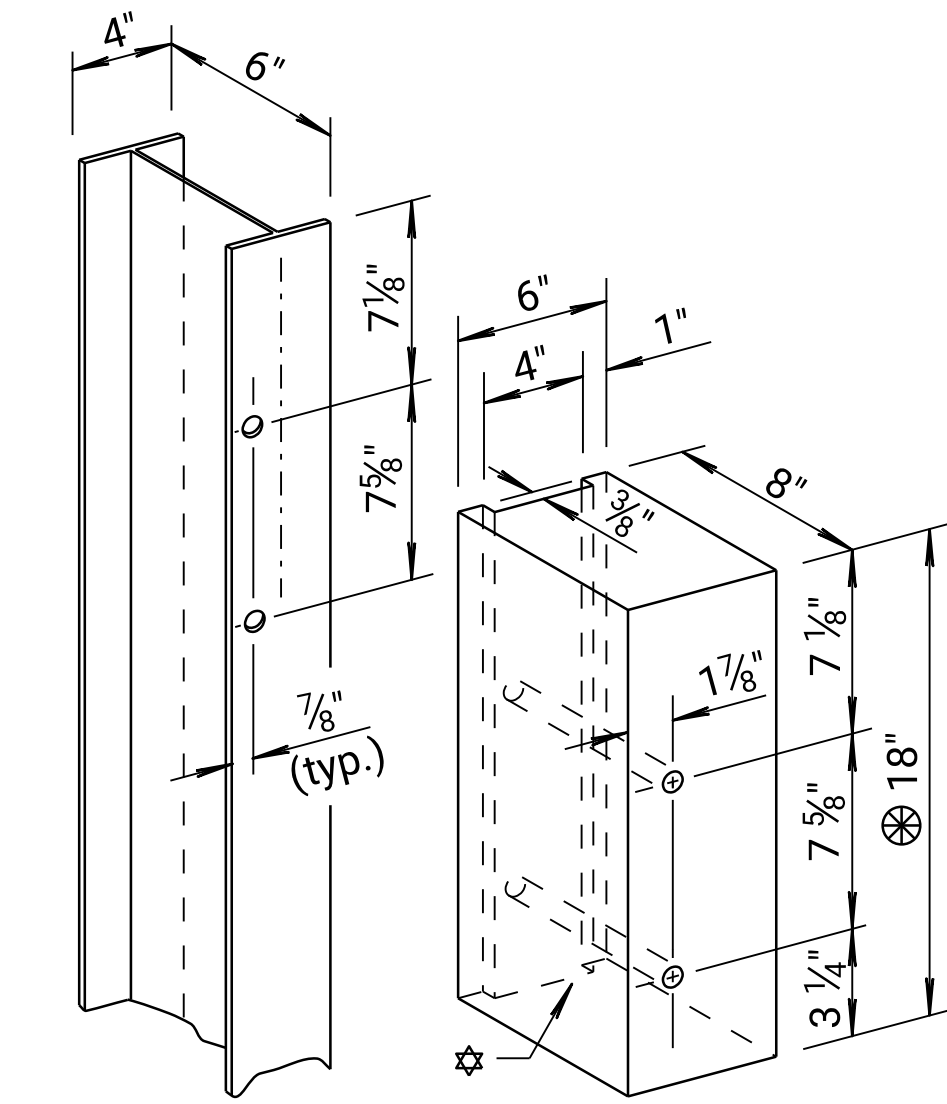
Galvanize all bolts, nuts, and washers in accordance with the KDOT's Standard Specifications.

13	09-05-18	Added Det., Post In Pavement	A.L.R.	T.T.R.
12	12-14-10	Revised notes, 28" w-be	S.W.K.	J.O.B.
11	06-30-04	Remove steel blockout and notes	S.W.K.	J.O.B.
NO.	DATE	REVISIONS	BY	APPD
KANSAS DEPARTMENT OF TRANSPORTATION				
GUARDRAIL POST DETAILS				
RD611				
FHWA APPROVAL		09-25-18	APPD.	Scott W. King
DESIGNED	DETAILED	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.	

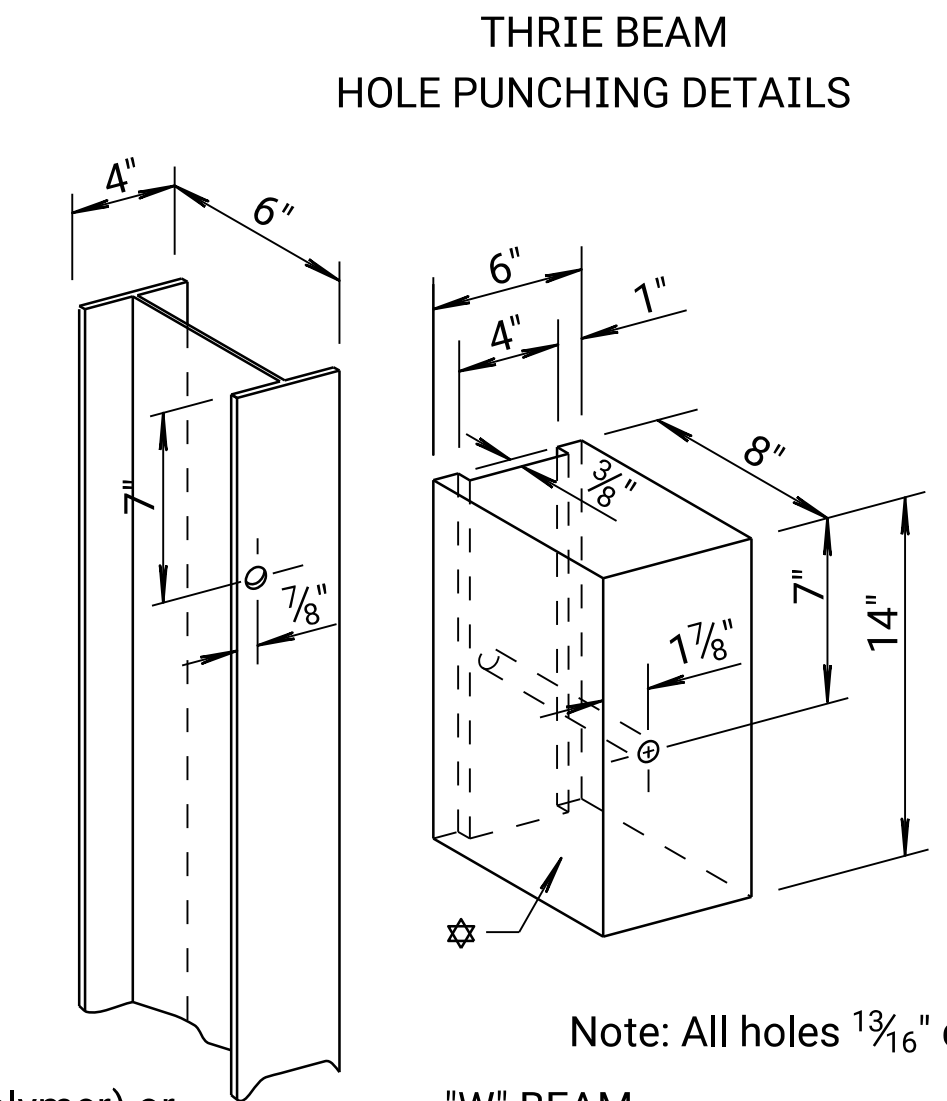
KDOT Graphics Certified 08-01-2022

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	10	84

⊗ See Standard Drawing RD613 for Thrie-Beam Transition Section Details.



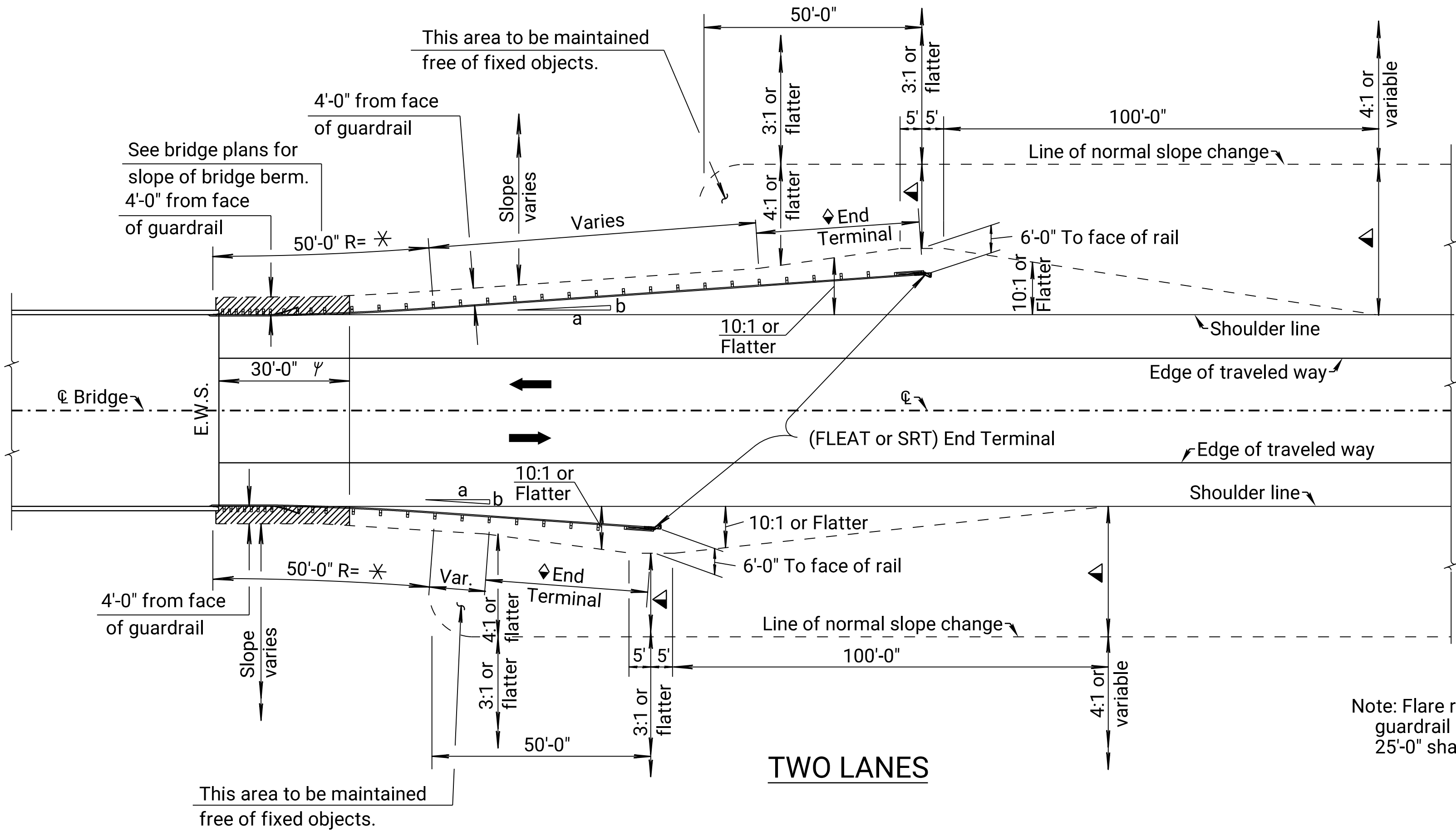
Note: All holes 1 3/16" dia.



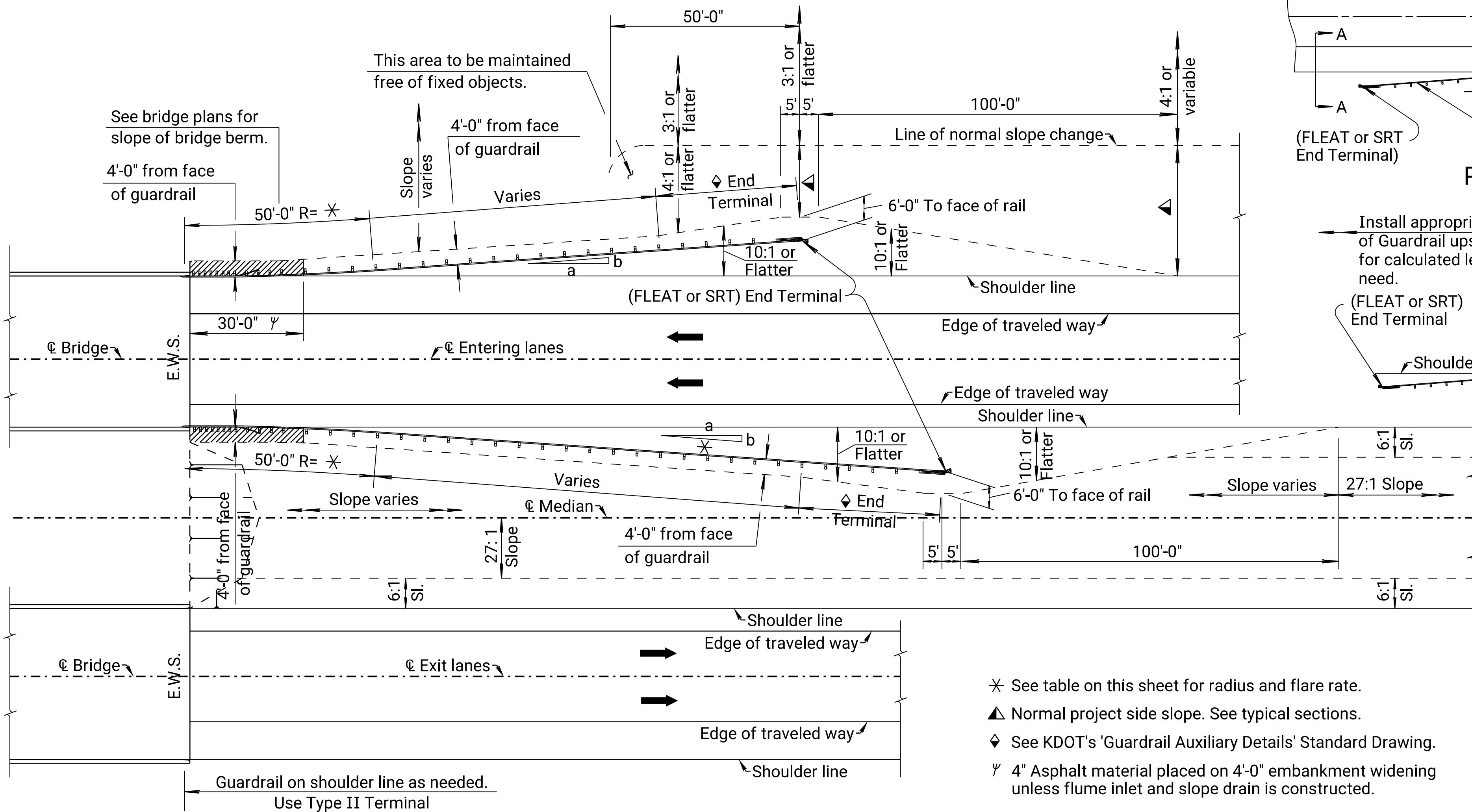
Note: All holes 1 3/16" dia.

☆ Non-Metallic (Polymer) or Treated Wood Block

Notes to Designer: Guardrail length of need shall be determined in accordance with the AASHTO Roadside Design Guide using $L_1 = 25'$ for flare rate of a:b and $L_1 = 12.5'$ for flare rate of 2a:b for a typical installation as shown on this sheet. This sheet shall be used when the flared guardrail design for typical layout shown (FLEAT or SRT) is selected. Material for asphalt widening shall be included in the plan quantities.



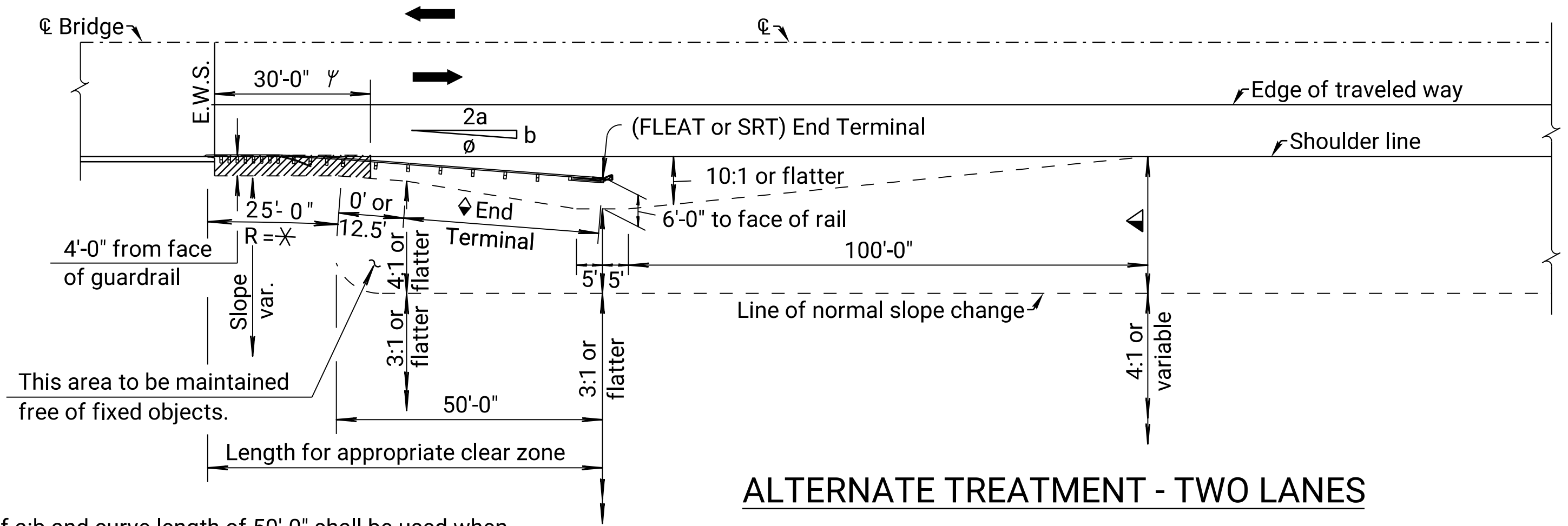
TWO LANES



FOUR LANES - DIVIDED

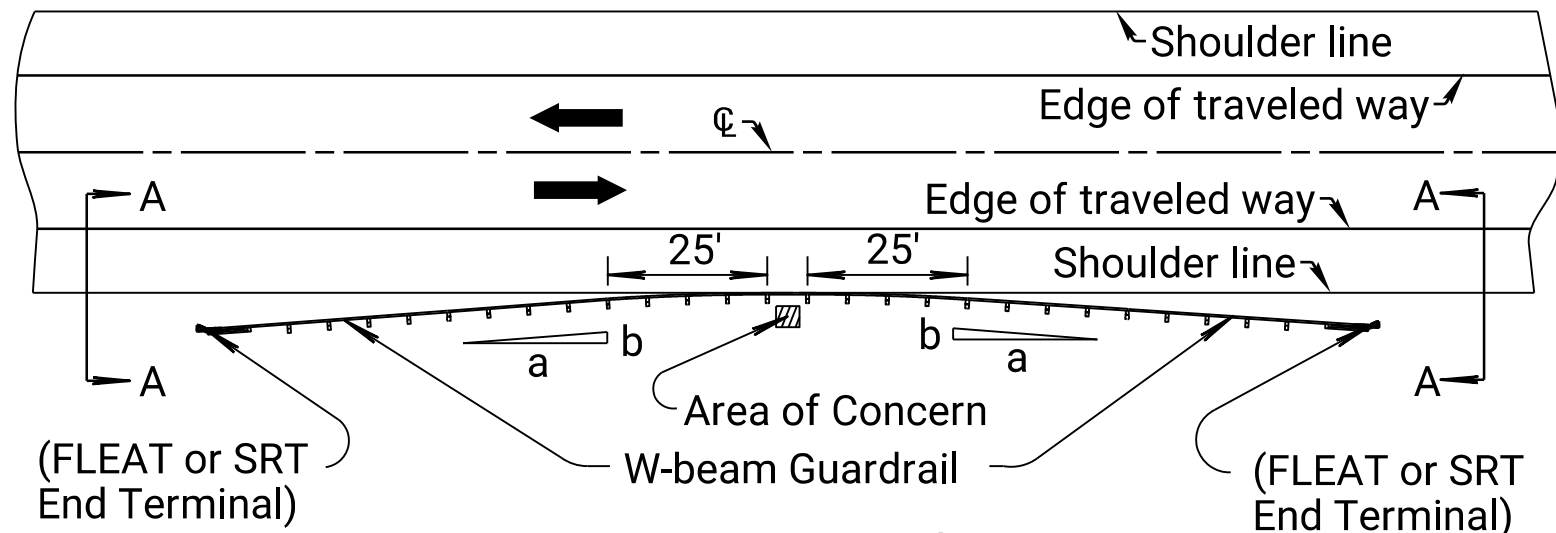
- ✱ See table on this sheet for radius and flare rate.
- ▲ Normal project side slope. See typical sections.
- ◆ See KDOT's 'Guardrail Auxiliary Details' Standard Drawing.
- ℳ 4" Asphalt material placed on 4'-0" embankment widening unless flume inlet and slope drain is constructed.

DESIGN PARAMETERS				
Design Speed (mph)	Flare Rate (a:b)	Radius (R)	Flare Rate (2a:b)	Radius (R)
70	15:1	375.55'	30:1	375.14'
60	14:1	350.59'	26:1	325.16'
55	12:1	300.69'	24:1	300.17'
50	11:1	275.76'	21:1	262.70'
45	10:1	250.83'	18:1	225.23'
40	8:1	201.04'	16:1	200.26'

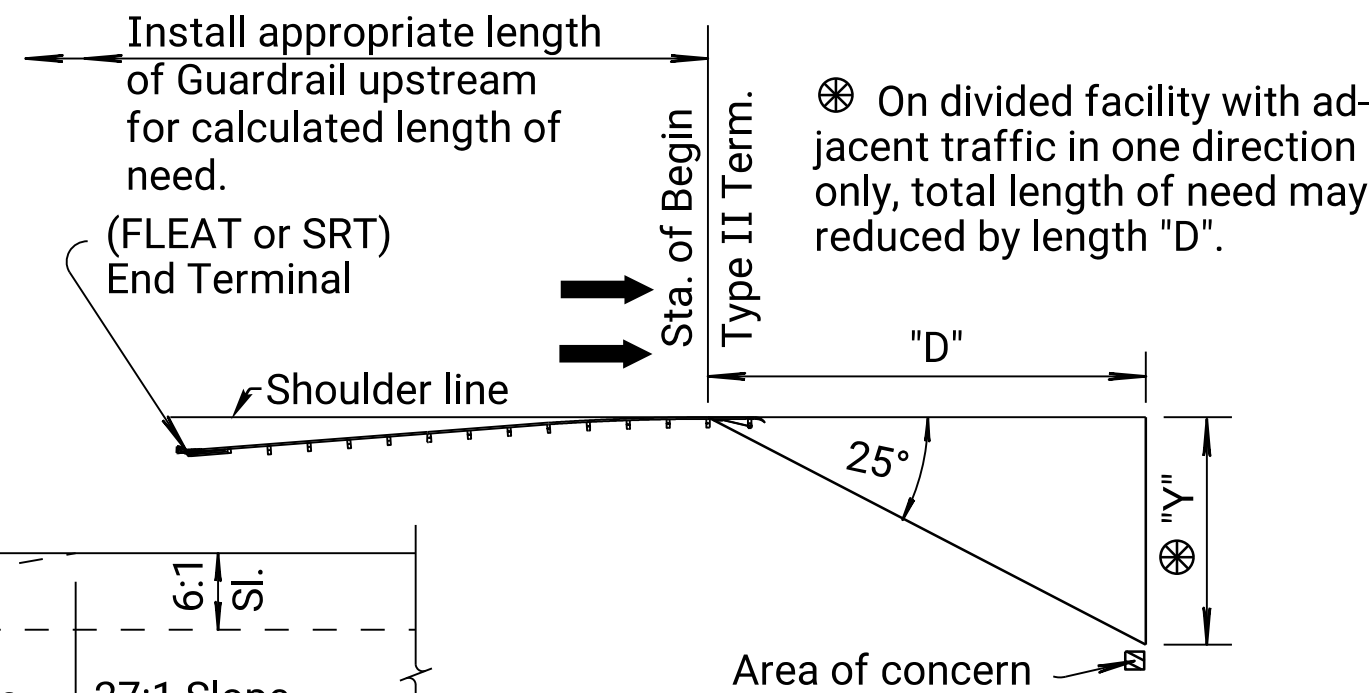


ALTERNATE TREATMENT - TWO LANES

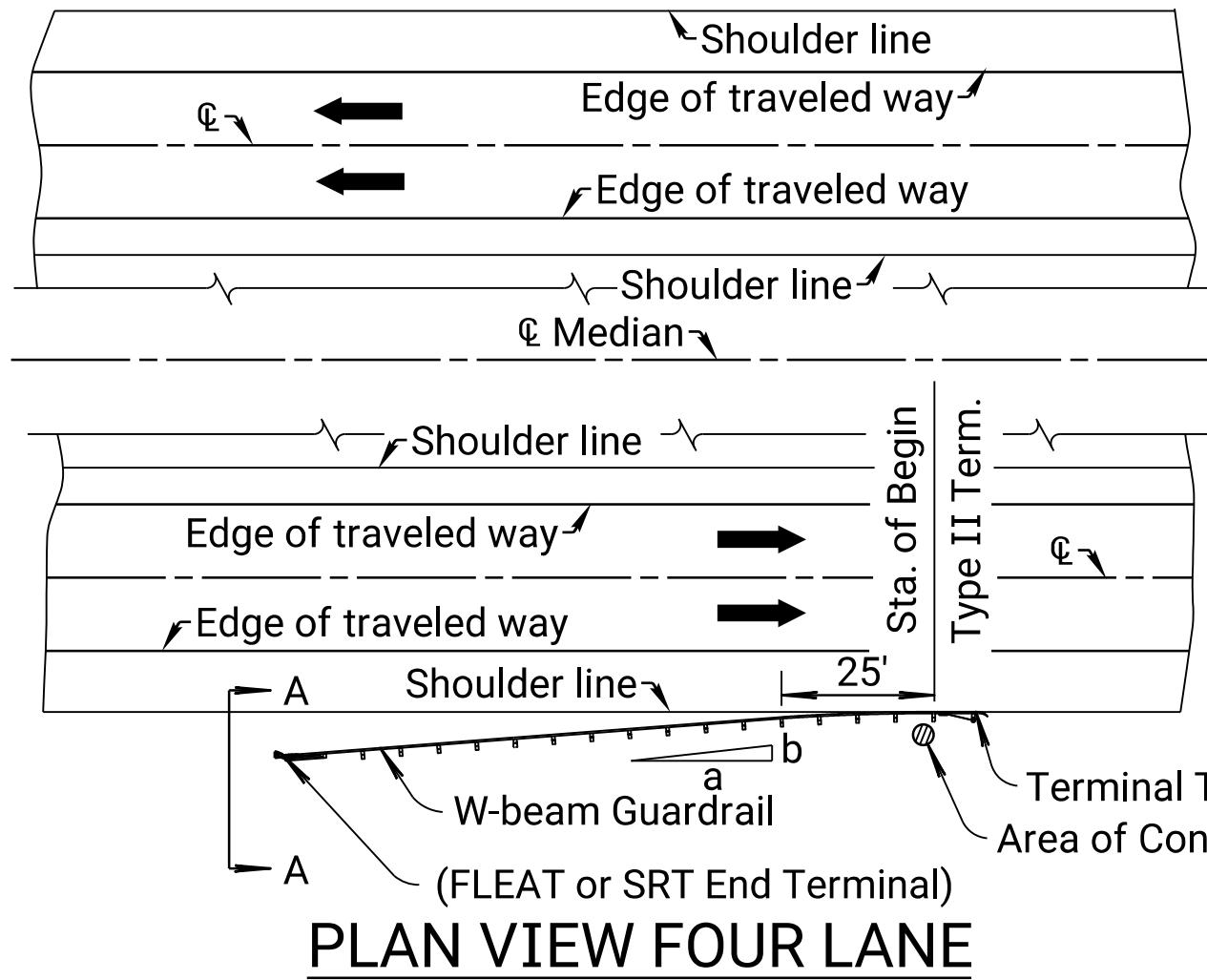
Flare Rate = 2a:b
(GUARDRAIL LENGTHS OF 62.5' AND 75')



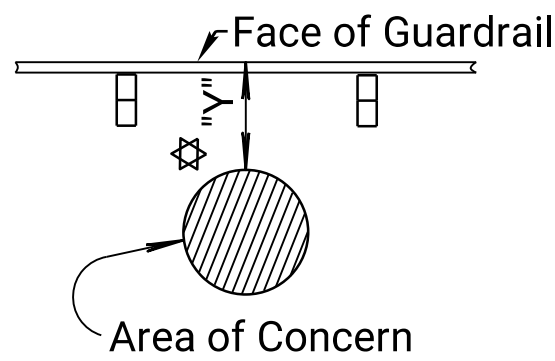
PLAN VIEW TWO LANE



DETAILS OF GUARDRAIL PROTECTION AT ROADSIDE OBSTACLE



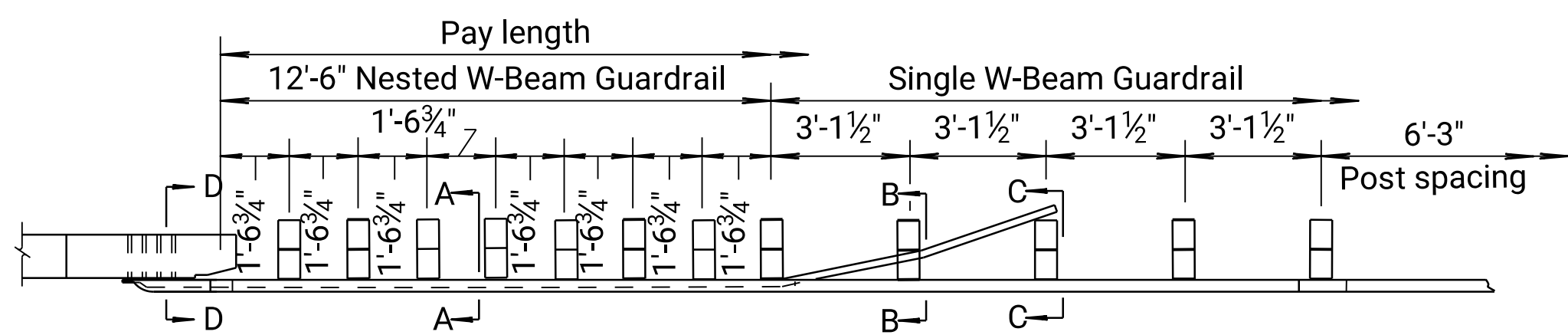
PLAN VIEW FOUR LANE



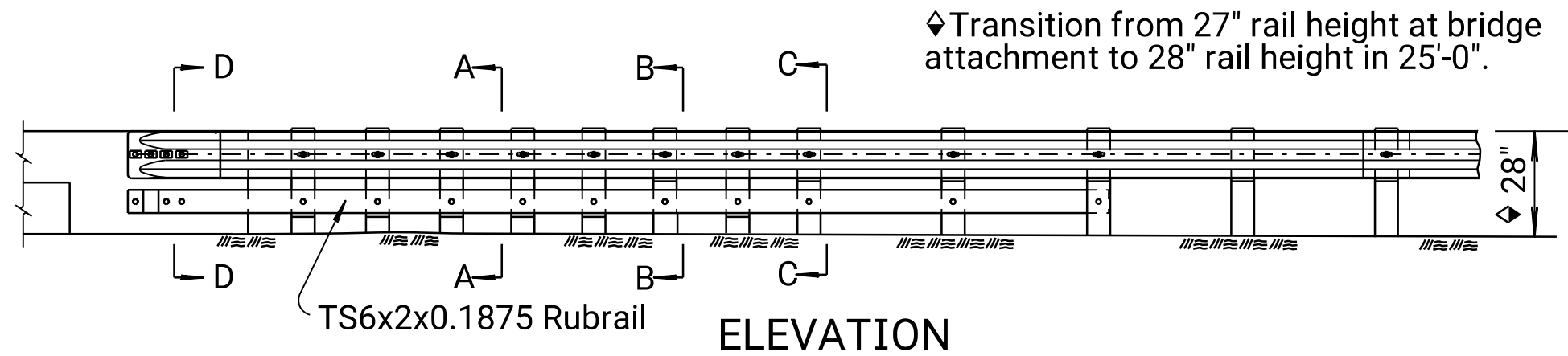
ENLARGEMENT - AREA OF CONCERN

NO.	DATE	REVISIONS	BY	APPD
08	06-05-18	Removed Flare-beyond-the-Flare	A.L.R.	T.T.R.
07	05-15-17	Removed X-LITE	A.L.R.	S.W.K.
06	07-02-09	Added roadside obstacle details	S.W.K.	J.O.B.
KANSAS DEPARTMENT OF TRANSPORTATION				
W-BEAM WITH RUBRAIL BRIDGE APPROACH TRANSITION TYPICAL ALIGNMENTS (FLARED)				
RD615A				
FHWA APPROVAL 06-19-18 APPD. Scott W. King				
DESIGNED	DETAILS	QUANTITIES	TRACED	
DESIGN CK.	DETAIL CK.	QUAN. CK.	TRACE CK.	

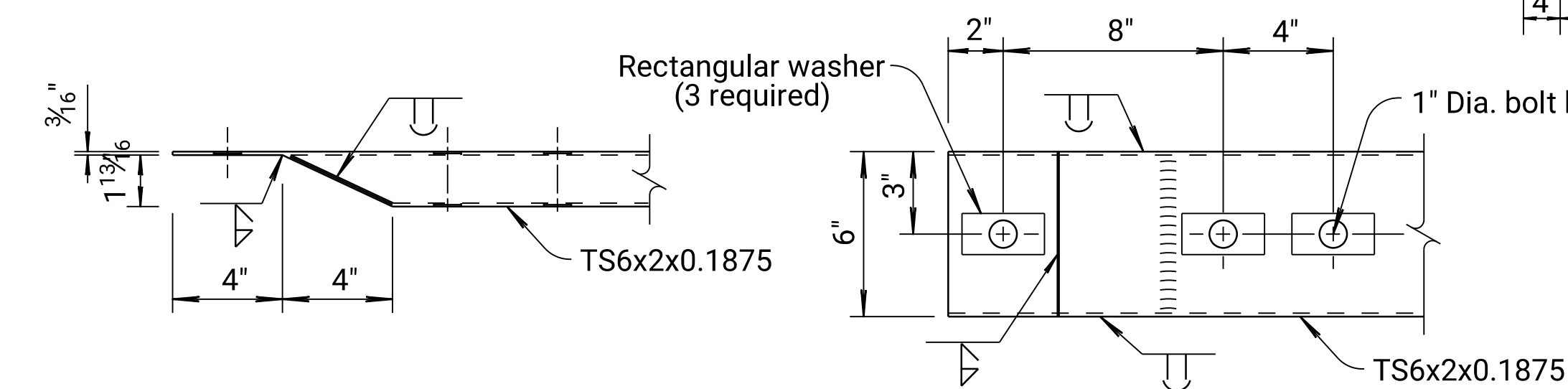
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	12	84



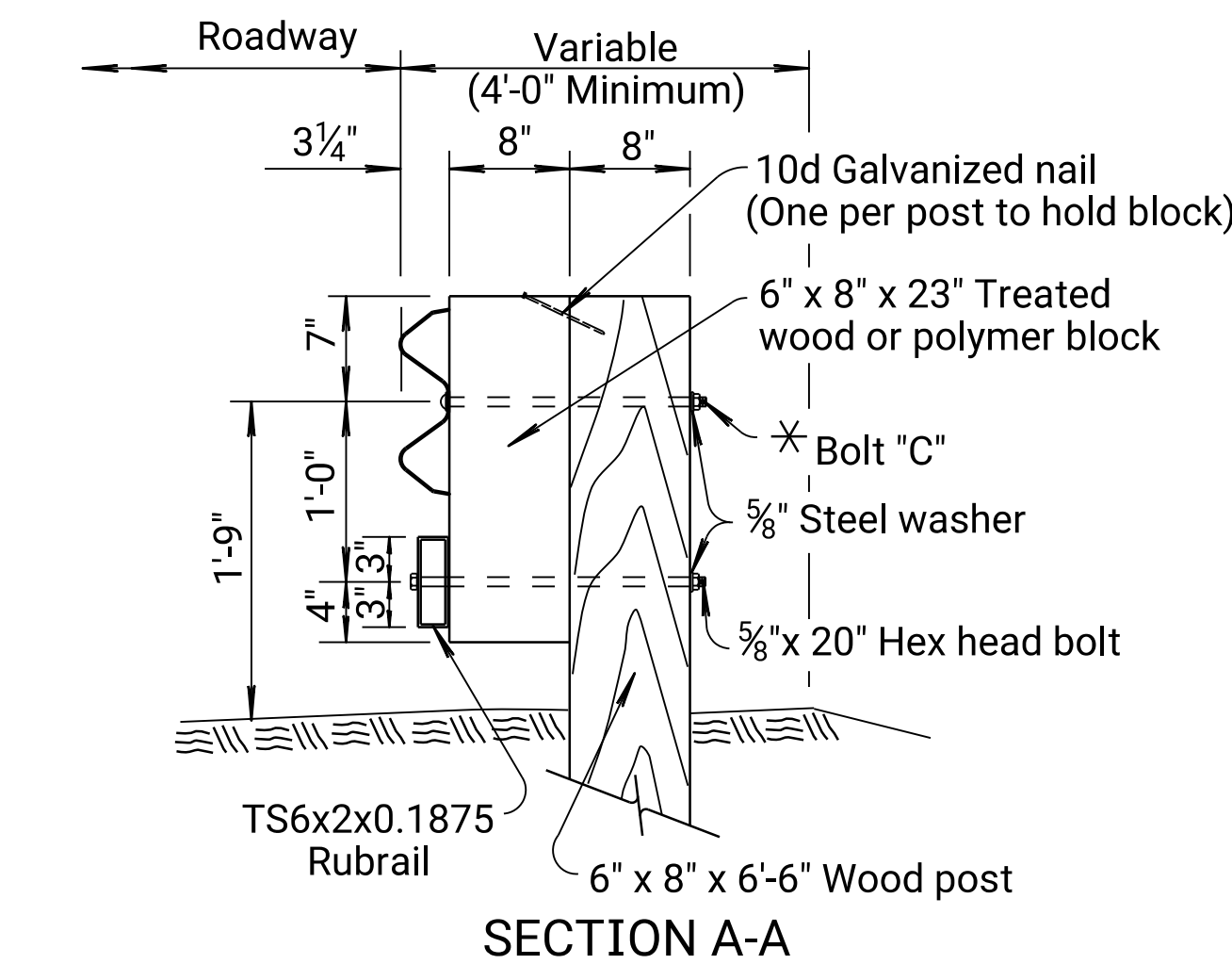
PLAN



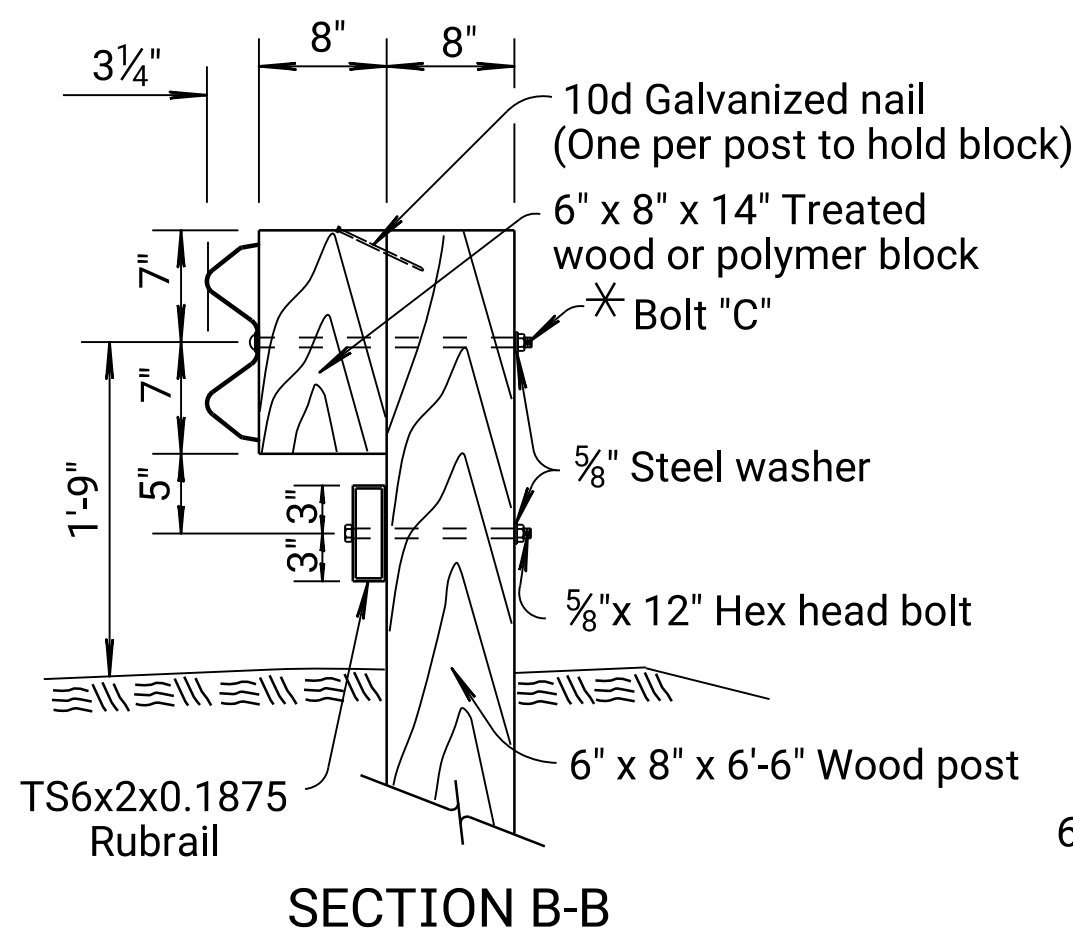
ELEVATION



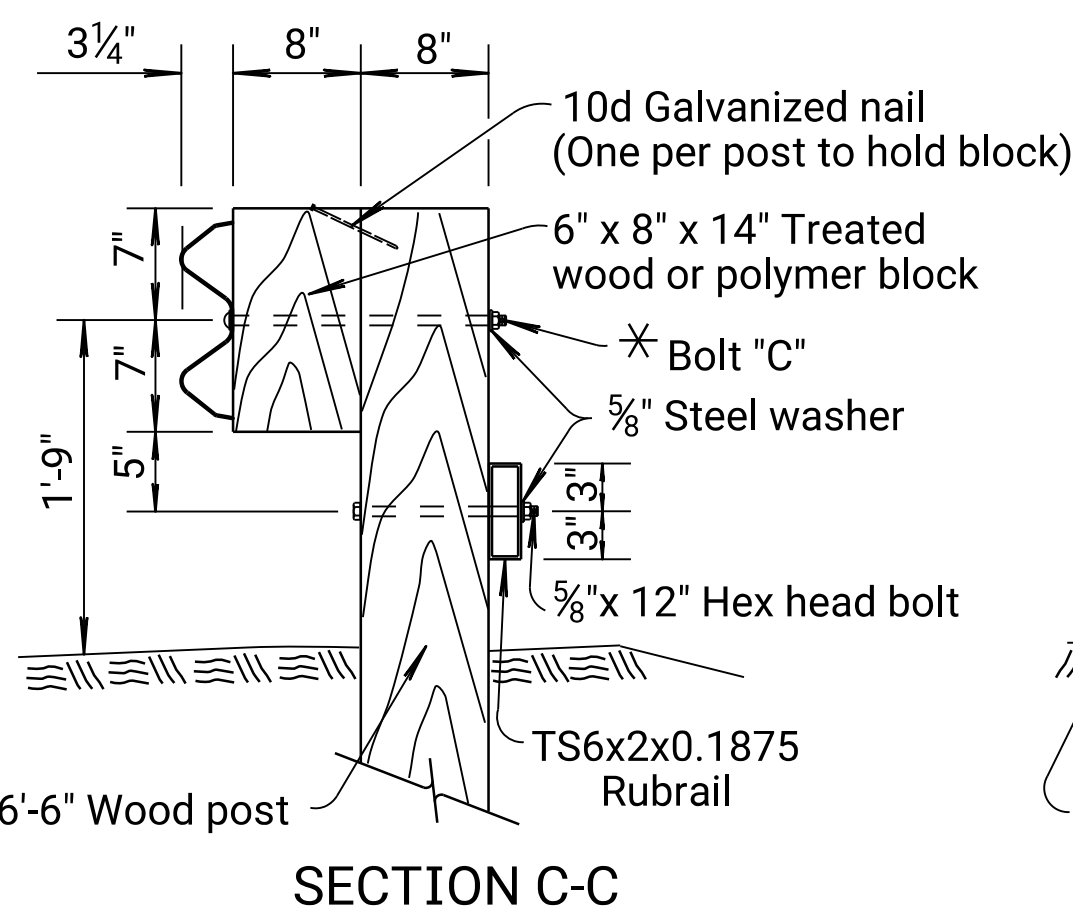
TYPICAL END RUB RAIL DETAILS



SECTION A-A



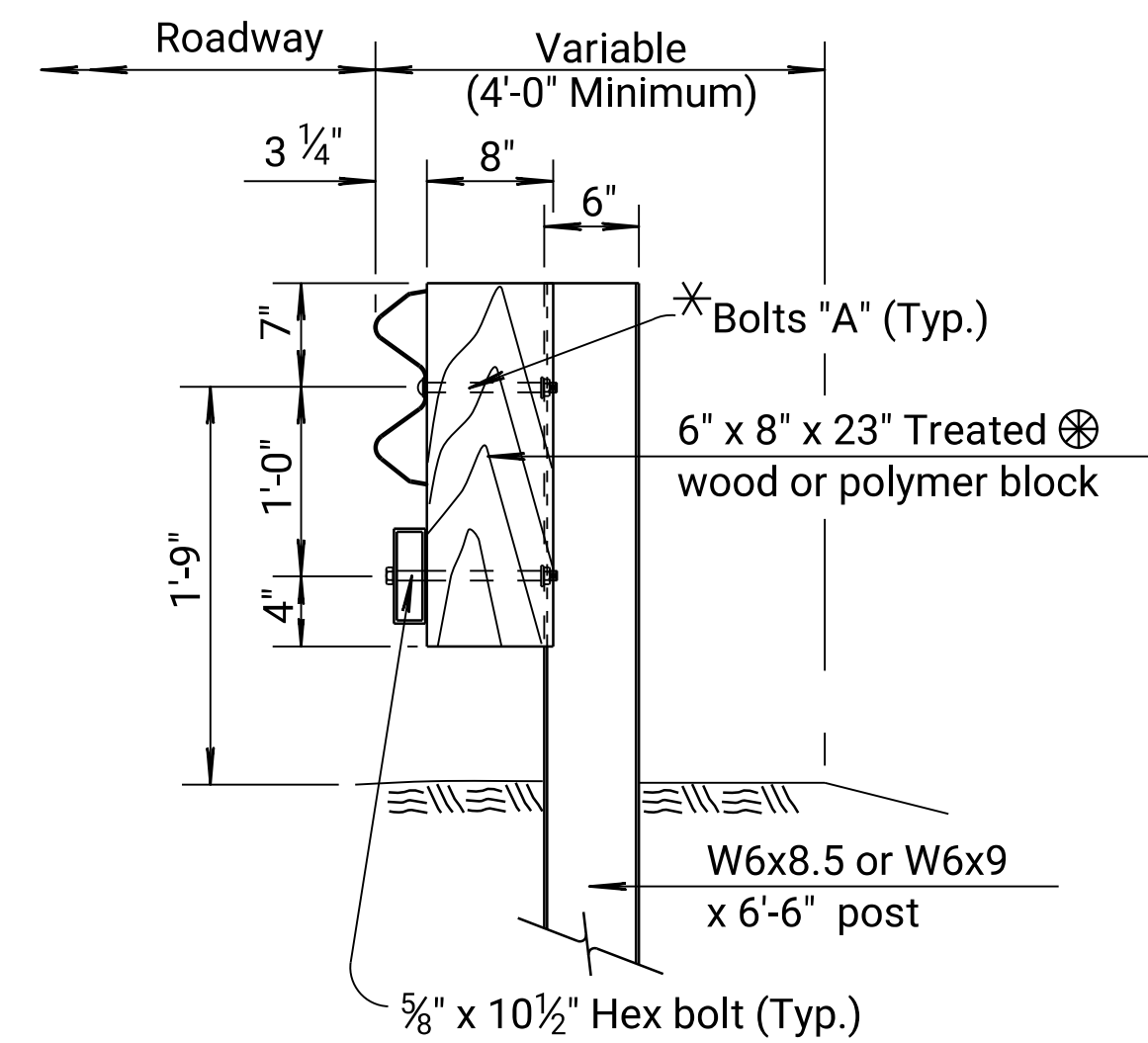
SECTION B-B



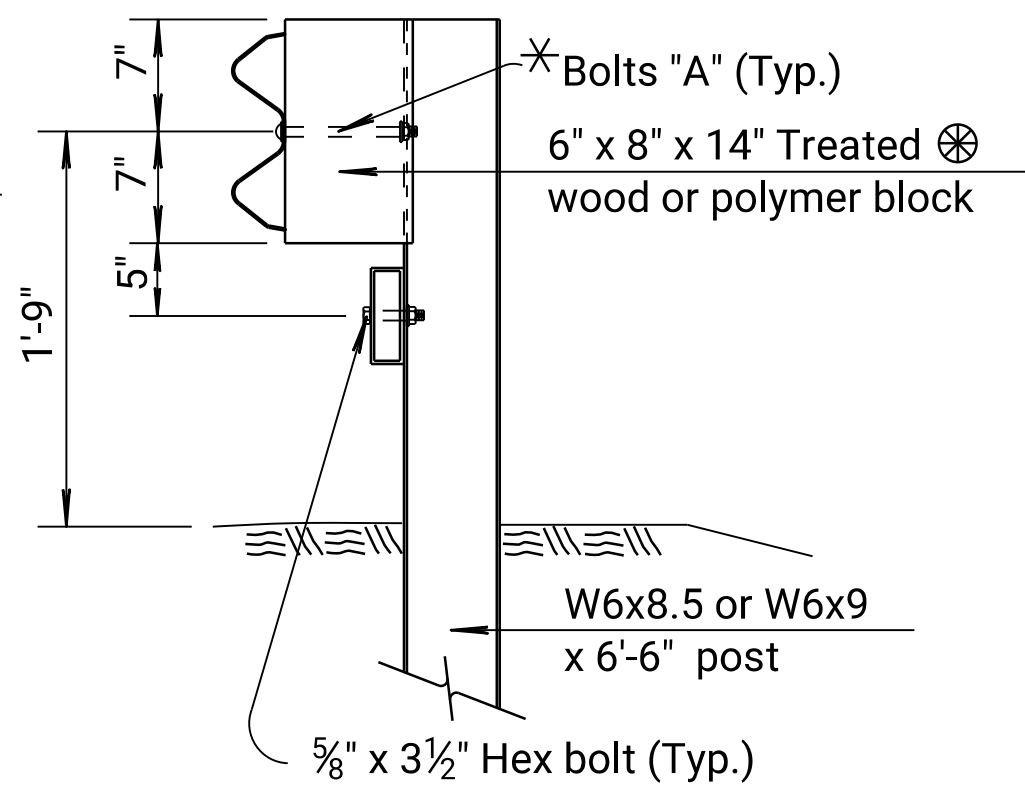
SECTION C-C

WOOD POSTS

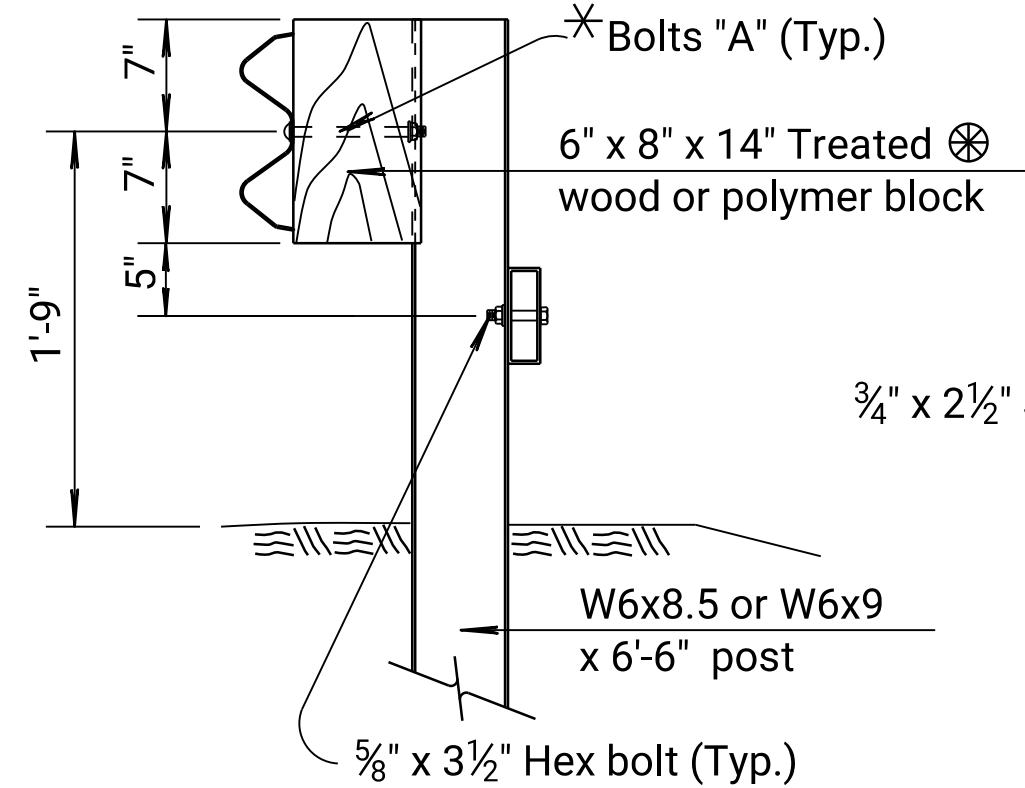
* See Standard Drawing RD611 for details of Bolts A, & C.



SECTION A-A



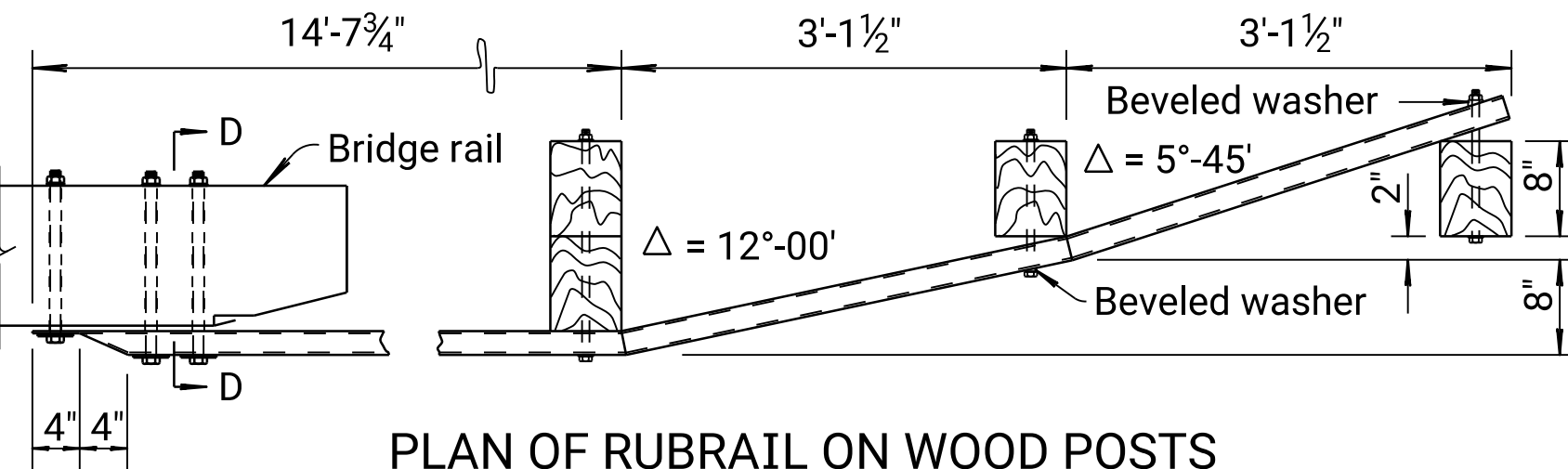
SECTION B-B



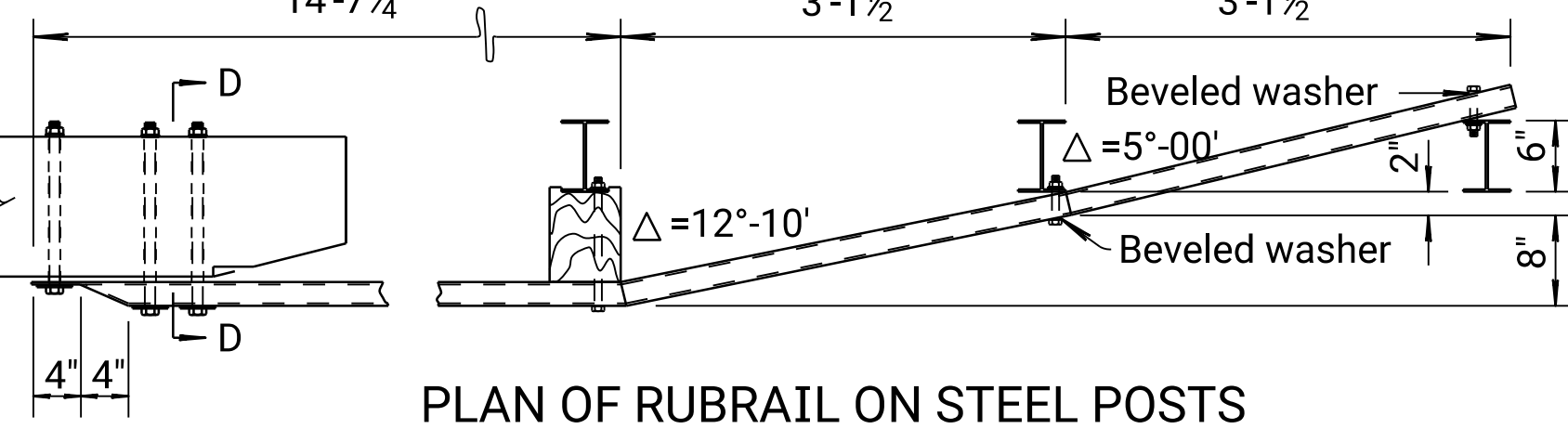
SECTION C-C

STEEL POSTS

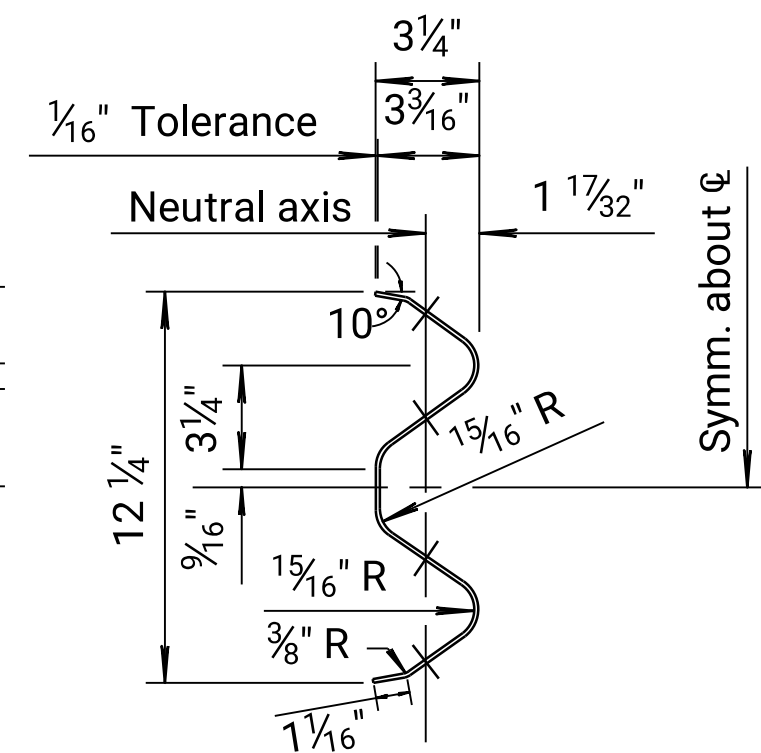
⊗ Blocks used with steel posts shall be grooved to fit over the flange of the post and may be Wood or Polymer.



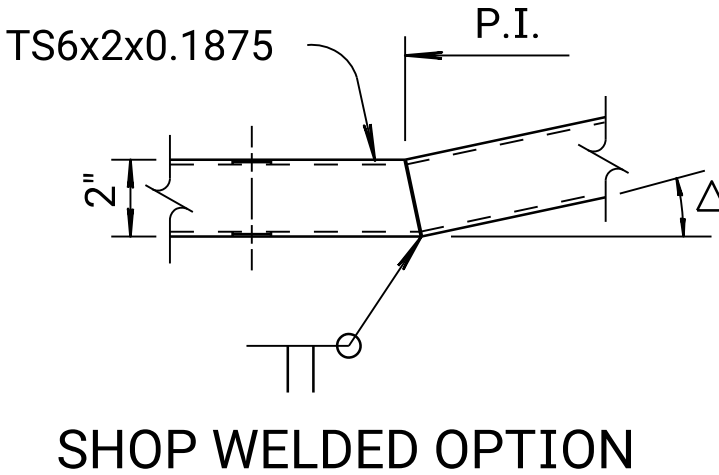
PLAN OF RUBRAIL ON WOOD POSTS



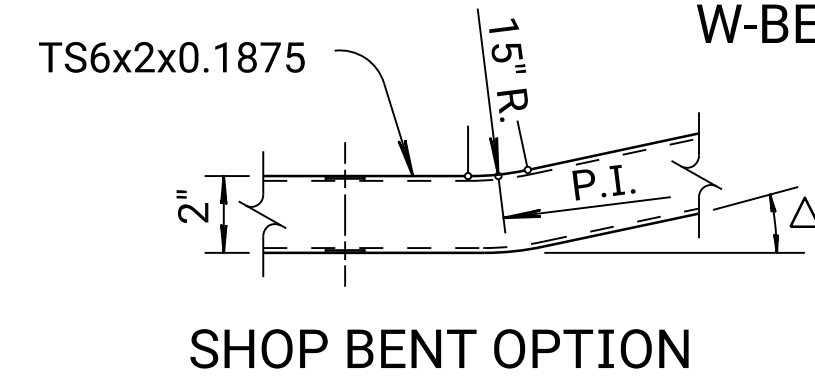
PLAN OF RUBRAIL ON STEEL POSTS



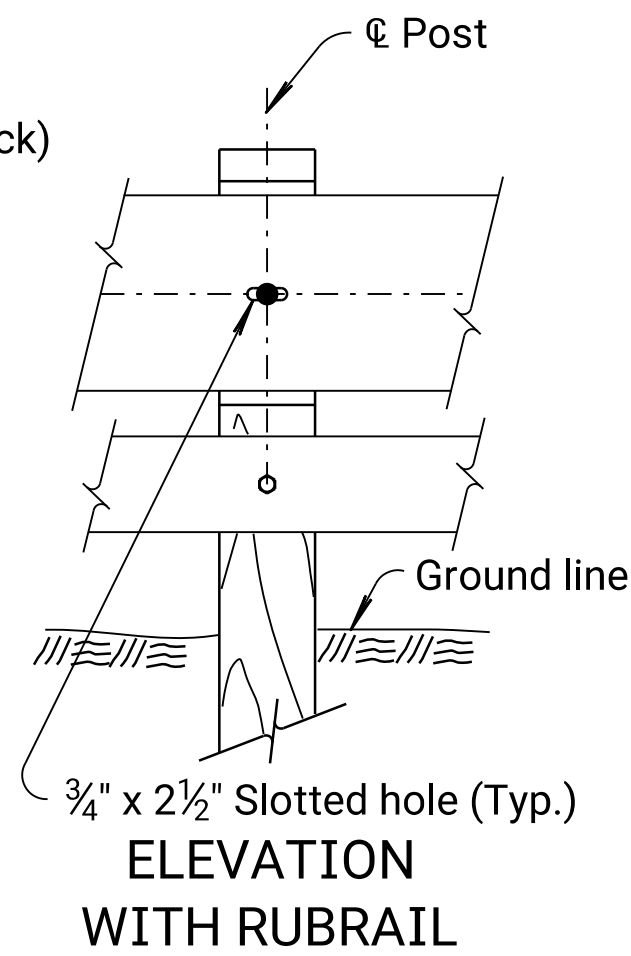
SECTION THRU TYPICAL W-BEAM RAIL ELEMENT



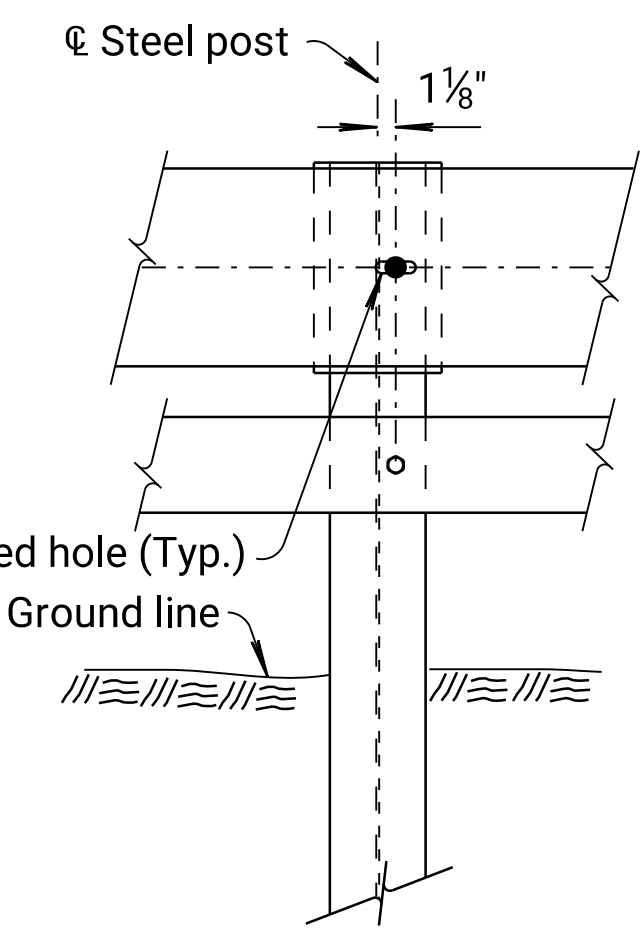
SHOP WELDED OPTION



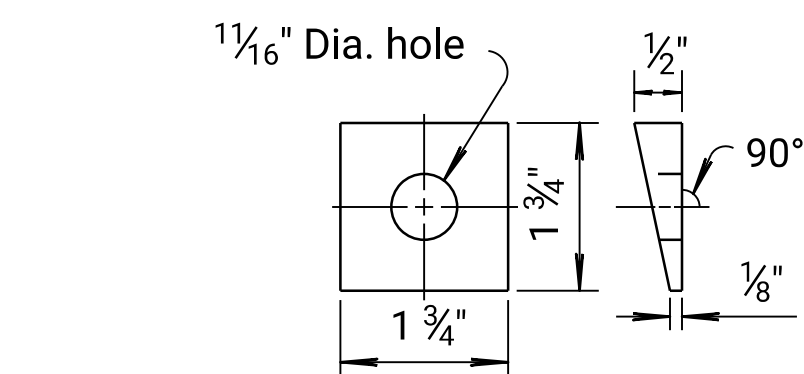
SHOP BENT OPTION



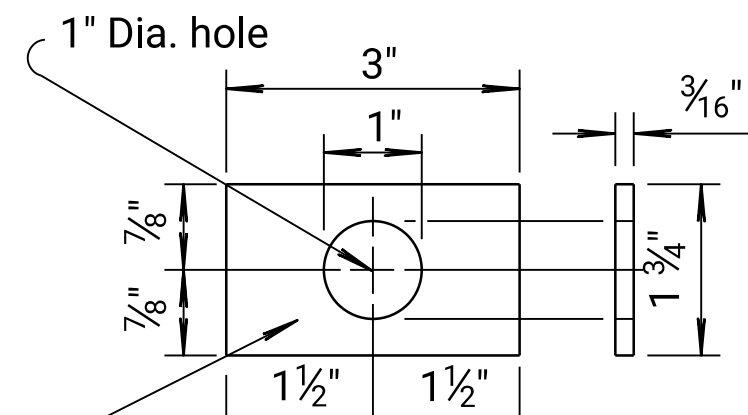
ELEVATION WITH RUBRAIL



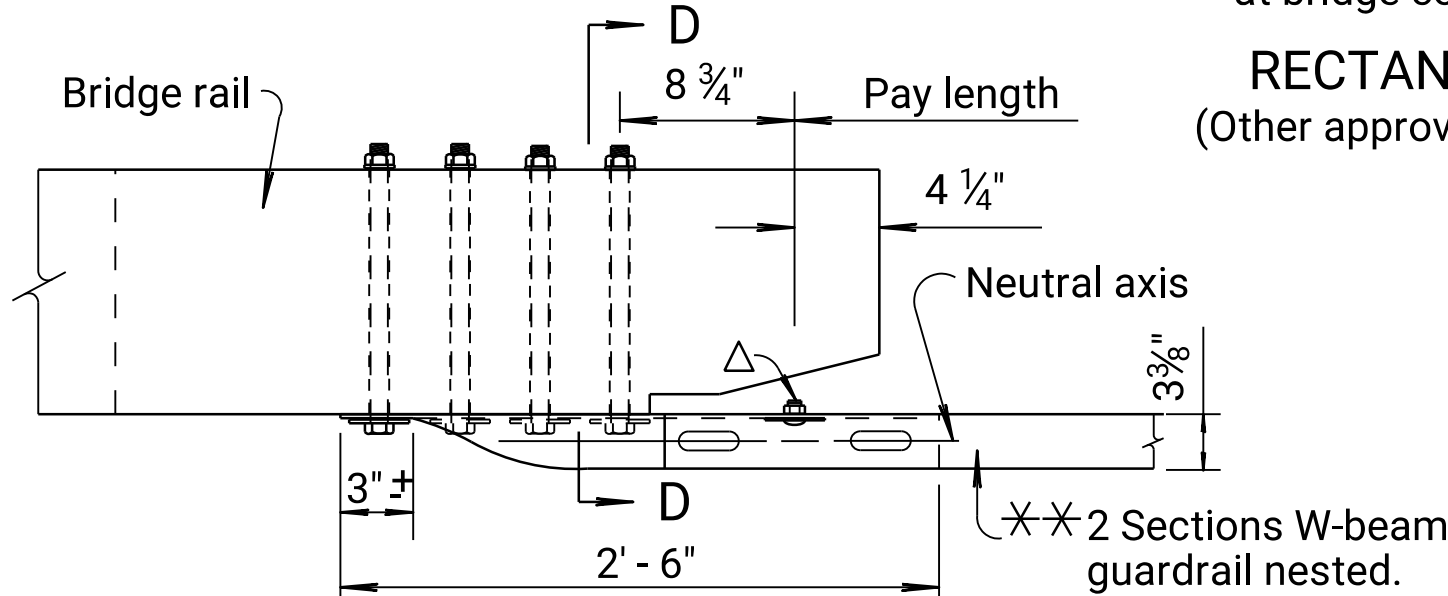
ELEVATION WITH RUBRAIL



BEVELED WASHER

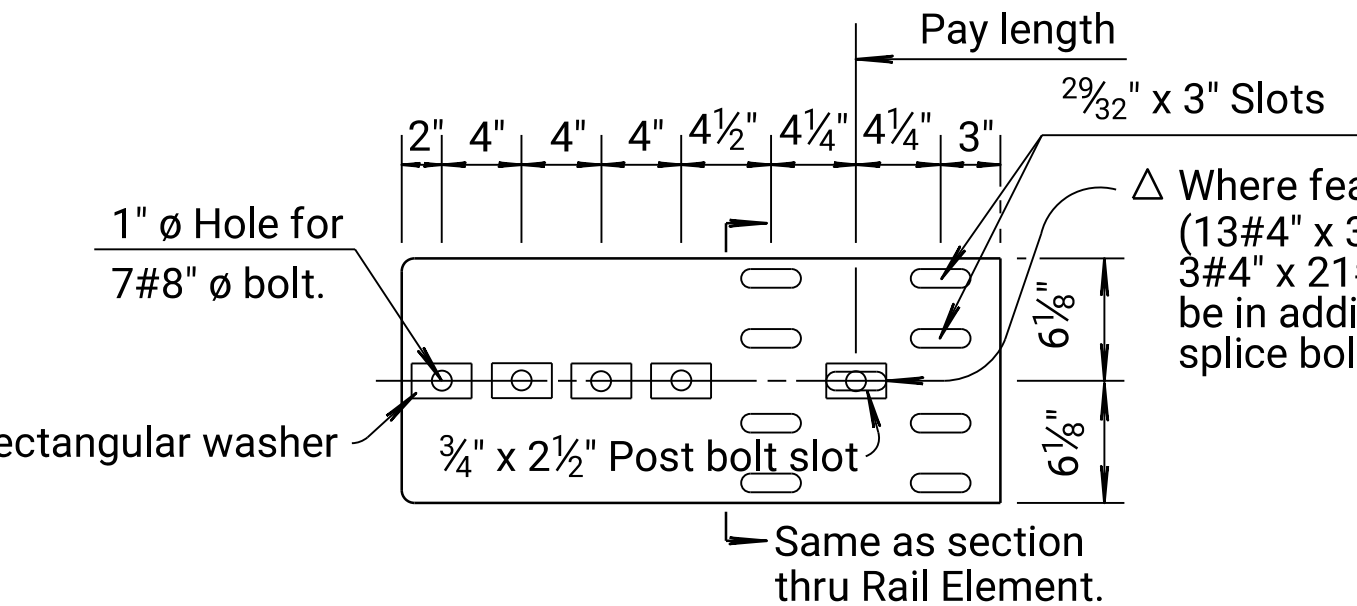


RECTANGULAR WASHER
(Other approved washer may be used.)

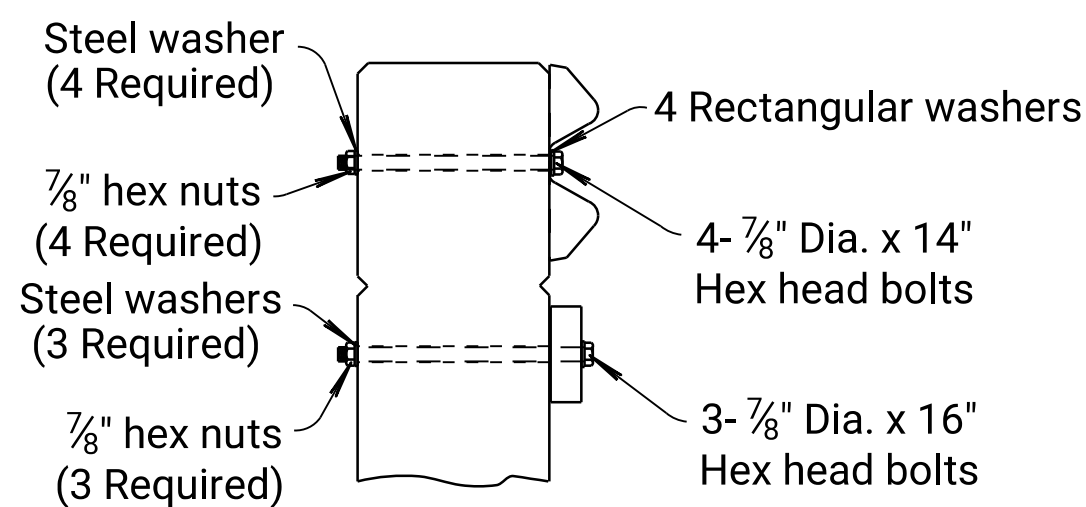


PLAN SPECIAL END SHOE

⌘⌘ One section of the two shall be considered as subsidiary to the bid item "Steel Plate Guardrail".



ELEVATION SPECIAL END SHOE



SECTION D-D

NO.	DATE	REVISIONS	BY	APP'D
14	12-14-10	Revised notes 28" rail height	S.W.K.	J.O.B.
13	04-02-08	Removed Galvanized callout	S.W.K.	J.O.B.
12	02-06-07	Corrected spelling error	S.W.K.	J.O.B.
KANSAS DEPARTMENT OF TRANSPORTATION				
W-BEAM WITH RUBRAIL BRIDGE APPROACH TRANSITION DETAILS				
RD616				
FHWA APPROVAL				
DESIGNED	01-11-11	APP'D	James O. Brewer	
DETAIL CK.		QUANTITIES	TRACED	
DESIGN CK.		QUAN. CK.	TRACE CK.	

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	13	84

SUMMARY OF QUANTITIES																				
Location	Excavation Class I	Concrete		Reinforcing Steel		Structural Steel		Prestressed Concrete Beams (K4+3)	Welded Stud Shear Connectors	Bearing (TFE/Elastomeric)	Bearing (Steel Reinforced Elastomeric)	Expansion Device (Strip Seal Assembly)	Drilled Shafts (78") (Cased)	Core Hole (Investigative)	Sonic Test (Drilled Shaft) (Each)(Set)	Cast Steel Pile Points	Piles (Steel) (HP12X53)	Slope Protection (Riprap Stone) (1/4 Ton)	Bridge Backwall Protection System	Abutment Strip Drain
		(Grade 4.0) (AE)	(Grade 4.0) (AE)(SA)	(Grade 60)	(Grade 60) Epoxy Coated	M270 (Grade 50W) T3	A709 (Grade 50W)													
	Cu. Yds.	Cu. Yds.	Cu. Yds.	Lbs.	Lbs.	Lbs.	Lbs.	Lin. Ft.	Each	Each	Each	Lin. Ft.	Lin. Ft.	Lin. Ft.	Each	Each	Lin. Ft.	Cu. Yds.	Sq. Yds.	Sq. Yds.
Abutment No. 1	94	18.0		2,865												7	308	1,750	47	45
Pier No. 1		34.55		6,730									111	74						
Pier No. 2		34.55		6,730									114	74						
Pier No. 3		35.35		6,880									114	74						
Pier No. 4		70.6		12,670									69	46						
Pier No. 5		69.6		12,670									75	50						
Pier No. 6		35.35		6,880									108	72						
Abutment No. 2	94	18.0		2,865												7	287	1,500	47	45
Total Substructure	188	316.0		58,290									591	390	1	14	595	3,250	94	90
Total Superstructure			1,012.9		261,600	200,547	136,188	2,607	2,460	5	5	76								
Grand Total	188	316.0	1,012.9	58,290	261,600	200,547	136,188	2,607	2,460	5	5	76	591	390	1	14	* 595	3,250	94	90

Note: Only steel piles HP12X53 shall be used on this structure. * Includes: 7 @ 44'; 7 @ 41'

GENERAL BRIDGE NOTES

EMBANKMENT: COMPLETE THE EMBANKMENTS AT THE ABUTMENTS AS SHOWN ON THE BRIDGE EXCAVATION SHEET PRIOR TO DRIVING THE ABUTMENT PILING OR COMMENCING WITH THE ABUTMENT FOOTING EXCAVATION.

BRIDGE EXCAVATION: ELEVATION 900.00 SHALL DESIGNATE THE EXCAVATION BOUNDARY PLANE OF CLASS I AND CLASS II EXCAVATION; CLASS I ABOVE THE PLANE AND CLASS II BELOW. SEE THE BRIDGE EXCAVATION SHEET FOR THE LIMITS OF PAY EXCAVATION.

DRILLED SHAFTS: SEE NOTES ON "DRILLED SHAFT DETAILS".

CORE HOLE (INVESTIGATIVE): SEE KDOT SPECIFICATIONS.

SONIC TESTING: EQUIP ALL DRILLED SHAFTS WITH PIPING TO ALLOW SONIC TESTING TO BE DONE. INSTALL PIPES AT LOCATIONS SHOWN ON THE PLANS. THE ENGINEER HAS THE OPTION TO REQUIRE SONIC, NON-DESTRUCTIVE, INTEGRITY TESTING AT LOCATIONS HE DESIGNATES (E.G. WET POURS). SONIC TESTING SHALL BE PAID FOR AT THE UNIT PRICE SET FOR "SONIC TEST" (DRILLED SHAFT) (SET PRICE). IF THE SONIC TESTING INDICATES DEFECTIVE CONCRETE IN THE SHAFT, THE ENGINEER WILL MEASURE THE FIRST SONIC TEST FOR PAYMENT, AND THE CONTRACTOR IS RESPONSIBLE FOR SUBSEQUENT SONIC TESTING OF THAT SHAFT. REPORT TEST RESULTS DIRECTLY TO THE ENGINEER. NO WORK WILL BE DONE ABOVE THE TOP OF DRILLED SHAFT WITHOUT THE APPROVAL OF THE ENGINEER.

PIER BACKFILL: THE BACKFILL AT PIERS SHALL BE PLACED IN SUCH A MANNER AS TO PREVENT MOVEMENT OF THE COLUMNS.

PILING: DRIVE ALL PILING TO PENETRATE OR BEAR UPON THE SHALE OR LIMESTONE FORMATION. CAST STEEL PILE POINTS SHALL BE USED ON ALL PILES. 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	63 TONS
ABUTMENT NO. 2	66 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 LOAD OCCURS SIGNIFICANTLY ABOVE THE DESIGN PILE TIP ELEVATION, THE ENGINEER MAY REQUEST THAT THE PILE DRIVING ANALYZER (PDA) EQUIPMENT BE USED.

PILING SPLICE LOCATION: INTEGRAL PILE SPLICE LOCATIONS AND WELD TESTING CRITERIA FOR BOTH ABUTMENTS WILL FOLLOW THE "STANDARD PILE DETAILS" SHEET (BR110).

COLUMN CONSTRUCTION: CURE THE DRILLED SHAFT FOOTING AS REQUIRED BY THE KDOT SPECIFICATIONS BEFORE BEGINNING THE COLUMN CONSTRUCTION (PLACING RESTEEL OR FORMWORK). DO NOT PLACE CAST IN PLACE SHEAR BOLTS, COIL INSERTS OR OTHER DEVICES USED AS FALSEWORK SUPPORT IN THE COLUMN WITHOUT THE APPROVAL OF THE ENGINEER. DO NOT REMOVE COLUMN FORMWORK WITHOUT THE APPROVAL OF THE ENGINEER. CURING SHALL CONTINUE AFTER THE FORMWORK IS REMOVED AS REQUIRED BY THE KDOT SPECIFICATIONS.

SOUNDINGS: THE SOUNDINGS SHOWN ON THESE PLANS ARE TAKEN FROM NOTES OBTAINED IN THE FIELD, AND REPRESENT THE BEST INFORMATION AVAILABLE TO NEOSHO COUNTY.

PIER BEAM CONSTRUCTION: CURE THE COLUMNS AS REQUIRED BY THE KDOT SPECIFICATIONS BEFORE BEGINNING THE PIER BEAM CONSTRUCTION (PLACING RESTEEL OR FORMWORK). DO NOT DRILL AND GROUT BOLTS OR OTHER DEVICES INTO THE COLUMNS USED FOR FALSEWORK SUPPORT UNLESS SHOWN ON THE PLANS. CURE THE COLUMNS AS REQUIRED BY THE KDOT SPECIFICATIONS BEFORE PLACING PIER BEAM CONCRETE. DO NOT REMOVE FALSEWORK USED TO SUPPORT THE PIER BEAM UNTIL THE PIER BEAM CONCRETE HAS CURED AS REQUIRED BY THE KDOT SPECIFICATIONS. DO NOT SET GIRDERS OR BEAMS ON THE PIER BEAM UNTIL AFTER THE FALSEWORK IS REMOVED AND THE PIER BEAM CONCRETE HAS 0.75f'c STRENGTH AS TESTED.

CONCRETE: SUPERSTRUCTURE CONCRETE SHALL BE BID AS CONCRETE (GRADE 4.0)(AE)(SA). SUBSTRUCTURE CONCRETE SHALL BE BID AS CONCRETE (GRADE 4.0)(AE). IF DESIRED, THE CONTRACTOR MAY USE CONCRETE (GRADE 4.0) IN THE DRILLED SHAFTS AND IN THE ABUTMENTS BELOW THE CONSTRUCTION JOINT. BEVEL ALL EXPOSED EDGES WITH A 3/4" TRIANGULAR MOULDING, EXCEPT AS OTHERWISE NOTED ON THE PLANS. USE DOUBLE 3/4" BEVELS AT CERTAIN CONSTRUCTION JOINTS AS NOTED ON THE PLANS.

REINFORCING STEEL: ALL DIMENSIONS RELATIVE TO PLACEMENT OF REIN- FORCING STEEL ARE TO THE CENTERLINE OF BARS UNLESS OTHERWISE NOTED. BAR BENDING DIMENSIONS SHALL BE AS SHOWN AND NOTED IN THE BENDING DIAGRAMS. 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 (GRADE 60)".

EPOXY COATED REINFORCING: ALL REINFORCING BARS DESIGNATED "EPOXY COATED" SHALL BE COATED WITH EPOXY AS SET FORTH IN THE KDOT STANDARD SPECIFICATIONS. ALL BAR SUPPORTS SHALL BE COATED.

CONSTRUCTION JOINTS: CONSTRUCTION JOINTS SHOWN ARE OPTIONAL WITH THE CONTRACTOR BUT IF USED, SHALL BE MADE ONLY AT THE LOCATIONS SHOWN OR AS APPROVED BY THE ENGINEER.

FALSEWORK INSPECTION: THIS PROJECT HAS FALSEWORK PLAN REQUIREMENTS WHICH ARE CONSIDERED "CATEGORY 2" BY KDOT SPECIFICATIONS. IF FALSEWORK DEFICIENCIES OR VARIATIONS FROM THE APPROVED AND SEALED PLANS ARE FOUND, THE FALSEWORK DESIGN ENGINEER OF RECORD WILL PROVIDE WRITTEN APPROVAL OF THE CHANGES. IF FOR THE CONVENIENCE OF THE CONTRACTOR THE FALSEWORK BECOMES "CATEGORY 1" BY THE USE OF NON-TYPICAL SUPPORTS; THEN THE INSPECTION AND REVIEW REQUIREMENT OF "CATEGORY 1" WILL BE FULLY ENFORCED, BUT AT NO COST TO THE STATE. "CATEGORY 2" FALSEWORK INSPECTION IS NOT PAID FOR DIRECTLY, BUT IS SUBSIDIARY TO OTHER BID ITEMS.

FALSEWORK PLANS: A LICENSED PROFESSIONAL ENGINEER SHALL DESIGN THE FALSEWORK DETAILS. DETAILS SHALL BEAR THE SEAL OF A LICENSED PROFESSIONAL ENGINEER. SEE THE BRIDGE DESIGN MANUAL, SECTION 5.1 "REVIEW AND APPROVAL OF FALSEWORK PLANS", FOR A LISTING OF ITEMS TO BE INCLUDED ON THE FALSEWORK PLAN. SUBMIT AN ELECTRONIC SET OF DETAILS IN COMPLIANCE WITH KDOT SPECIFICATIONS TO THE ENGINEER FOR REVIEW AND DISTRIBUTION.

ERECTION ELEVATION CHECKS: AFTER THE ABUTMENT AND PIER CONCRETE HAS CURED AND BEFORE SETTING ANY STRUCTURAL STEEL, PRESENT VERIFICATION TO THE ENGINEER THAT THE ELEVATIONS AT THE BEARINGS MATCH THE PLAN ELEVATIONS (±.02'). PRESENT VERIFICATION TO THE ENGINEER THAT THE ELEVATIONS AT ALL FIELD SPLICE LOCATIONS MATCH THE PLAN ELEVATIONS (±.04'). BEFORE ANY CONNECTION IS FULLY TIGHTENED. (FOR STEEL GIRDERS THAT ARE BLOCKED ON THE GROUND, FULLY TIGHTEN THE BOLTED CONNECTIONS PRIOR TO ERECTION.)

DECK FORMS: STEEL OR PRESTRESSED CONCRETE STAY-IN-PLACE FORMS WILL NOT BE ALLOWED.

BACKFILL COMPACTION: BACKFILL COMPACTION IS REQUIRED AT THE ABUTMENTS.

BRIDGE BACKWALL PROTECTION SYSTEM: SEE THE GENERAL NOTES ON THE "ABUTMENT STRIP DRAIN" SHEET.

ABUTMENT STRIP DRAIN: SEE THE GENERAL NOTE ON THE "ABUTMENT STRIP DRAIN" SHEET.

Note: See "STRUCTURAL STEEL NOTES AND QUANTITIES" sheet for unit stresses and notes pertaining to structural steel.

CONSTRUCTION LOADS: ONLY FOOT TRAFFIC IS PERMITTED ON THE SUBDECK, ONE-COURSE DECK OR ANY CONCRETE OVERLAY DURING THE SEVEN DAY CURING PERIOD. KEEP ANY EXPOSED DECK WET DURING THE 7-DAY CURING PERIOD. SEE KDOT SPECIFICATIONS SECTION 710 TABLE 710-2.

QUANTITIES: ITEMS NOT LISTED SEPARATELY IN THE SUMMARY OF QUANTITIES ARE SUBSIDIARY TO OTHER ITEMS IN THE PROPOSAL.

DIMENSIONS: ALL DIMENSIONS SHOWN ON THE DESIGN PLANS ARE HORIZONTAL DIMENSIONS UNLESS OTHERWISE NOTED. MAKE NECESSARY ALLOWANCES FOR ROADWAY GRADE AND CROSS SLOPE.

CONTRACTOR CONSTRUCTION STAKING: CONSTRUCTION STAKING FOR CLEAR SPAN BRIDGES REQUIRES TWO INDEPENDENT SURVEYS. SEE KDOT SPECIFICATIONS.

SLOPE PROTECTION: PLACE SLOPE PROTECTION (RIPRAP STONE) TO THE LIMITS AND THICKNESSES SHOWN ON THE PLANS OR AS DIRECTED BY THE LOCAL PUBLIC AUTHORITY'S ENGINEER.

PLACE A 10 FOOT WIDE MAT OF GEOTEXTILE UNDER THE SLOPE ROCK/RUBBLE EMBANKMENT ON THE BERM SLOPES AND CENTERED ON THE DRIP LINES OF THE SLAB.

DEMOLITION PLANS: THIS IS A CATEGORY A DEMOLITION. SUBMIT DETAILED DEMOLITION PLANS TO THE ENGINEER FOR REVIEW AND DISTRIBUTION PER KDOT SPECIFICATIONS. NO DEMOLITION WORK WILL BEGIN WITHOUT APPROVED DEMOLITION PLANS. A LICENSED PROFESSIONAL ENGINEER IS NOT REQUIRED. THIS WORK IS NOT BID SEPARATELY, BUT IS SUBSIDIARY TO THE BID ITEM "REMOVAL OF THE EXISTING STRUCTURE".

REMOVAL OF EXISTING STRUCTURE: REMOVAL OF EXISTING STRUCTURE IS INCLUDED IN THE BID ITEM "REMOVAL OF EXISTING STRUCTURES", LUMP SUM, ON THE PROJECT SUMMARY OF QUANTITIES SHEET.

INDEX TO BRIDGE DRAWINGS	
Sheet No.	Drawing Title
13	Bridge Notes & Quantities
14	Contour Map
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17-18	Abutment Details
19	Abutment Strip Drain
20	Drilled Shaft Details
21-25	Pier Details
26	Structural Steel Notes & Quantities
27	Framing Plan (Span 5)
28	Girder Details (Span 5)
29	Bolted Splice Details
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50	Prestressed Beam Camber Details
51	Bill of Reinforcing Steel, Miscellaneous Details

LRFR RATING FACTORS			
Design Load	Rating Level	Inventory	Operating
HL-93 Loading		1.06	1.38
NRL		X	1.58
2020 Manual for Bridge Evaluation			

LFD RATING FACTORS			
Truck	Rating Level	Inventory	Operating
HS-20	(36T)	1.47	2.37
Type HET	(110T)		1.00
2002 LFD Rating, 17th Edition AASHTO			

KANSAS DEPARTMENT OF TRANSPORTATION					
BRIDGE GENERAL NOTES & QUANTITIES					
BRIDGE OVER NEOSHO RIVER					
STA. 33+27			DESIGNED	GEP	SCALE
NEOSHO COUNTY			DETAILED	JPF	DATE
			QUANTITIES	SHEET	OF

DATE	
BY	
REFERENCE NOTED	
REFERENCE CHECKED	

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Drawn by
Plotted:
SCALE

Ref. P.O.T. @ Sta. 15+31.04, 0.0' Rt.
Set 5/8" Rebar @ P.O.T.
1. In $\angle$ N-S Asph. Rd. (Elk. Rd.)
2. To Entr. to West 82.0' S.
3. Spk. & Wshr. Side Fc. Cor. Post 96.0' SSW
4. Spk. & Wshr. E. Face 20" Elm. 51.0' SW

S 1/4 Cor. Sec. 4-27-18
Fnd. 1/2" Rebar @ S 1/4 Cor.
N 352,705.85 E 20,395,828.30
1. To $\angle$ E-W Grav. Rd. 3.0' S.
2. To $\angle$ Grav. Rd. to N. 6.0' E.
3. To W. Edge Conc. R.C.B. 35.44' E.
4. Mag & Shiner S. Face Pow. Pole 37.58' ENE
5. Mag Nail S. Face Pow. Pole 56.74' NE
6. Spk. & Wshr. W. Face 20" Tree 24.35' S.

NE Cor. Sec. 4-27-18
Fnd. 1/2" Rebar @ NE Cor.
N 358,022.64 E 20,398,542.77
1. Spk. & Wshr. in NE Face Tree 6.80' NNW
2. Spk. & Shiner in E. Face 30" Tree 7.90' S.
3. Spk. & Shiner in N. Face 30" Tree 9.05' E.
4. Spk. & Wshr. in Top Fc. Cor. Post 15.5' N.
5. Spk. & Wshr. in Top Fc. Post 26.15' NW
6. Spk. & Wshr. in W. Fc. 40" Tree 16.76' SW

Ref. P.C. @ Sta. 19+19.98
Set 5/8" Rebar @ P.C.
N 355,839.38 E 20,395,855.893
1. In $\angle$ N-S Asph. Rd.
2. Spk. & Wshr. E. Face 60" Tree 42.6' SW
3. Spk. & Wshr. W. Face 20" Tree 35.2' SE
4. Top $\angle$ Tel. Ped. 95.8' NE

N 1/4 Cor. Sec. 4-27-18
Fnd. 1/2" Rebar @ N 1/4 Cor.
N 358,039.06 E 20,395,887.85
1. To W. Edge Crop Line 8.0' E.
2. Spk. & Wshr. S. Face 50" Tree 23.44' W.
3. Spk. & Wshr. S. Face 30" Tree 29.85' NW
4. Spk. & Wshr. E. Face 60" Tree 18.03' SW
5. Spk. & Wshr. E. Face 20" Tree 48.85' S.

Ref. P.T. @ Sta. 26+12.34
Set 5/8" Rebar @ P.T.
N 356,516.97 E 20,395,978.469
1. In $\angle$ N-S Asph. Rd.
2. To Spk. & Wshr. N. Face 20" Tree 33.30' E.
3. To Spk. & Wshr. S. Face 20" Tree 53.5' NE
4. R.R. Spk. in W. Face 50" Tree (B.M. #1) 49.64' SE

Ref. P.O.T. @ Sta. 40+14.57
Set 5/8" Rebar @ P.O.T.
N 357,829.21 E 20,396,472.71
1. In $\angle$ N-S Asph. Rd.
2. To $\angle$ Entr. to E. 40.0' N.
3. Spk. & Wshr. N. Face 20" Tree 41.60' E.
4. "T" Post driven flush w/ Surf. (B.M. #14) 57.65' NNE

Ref. P.O.T. @ Sta. 47+09.57
Set 5/8" Rebar @ P.O.T.
N 358,479.60 E 20,396,717.67
1. In $\angle$ N-S Asph. Rd.
2. R.R. Spk. in E. Face 40" Tree 42.59' E.
3. Spk. & Wshr. S. Face 20" Tree 58.80' NE
4. Spk. & Wshr. N. Face 10" Tree 38.5' SE

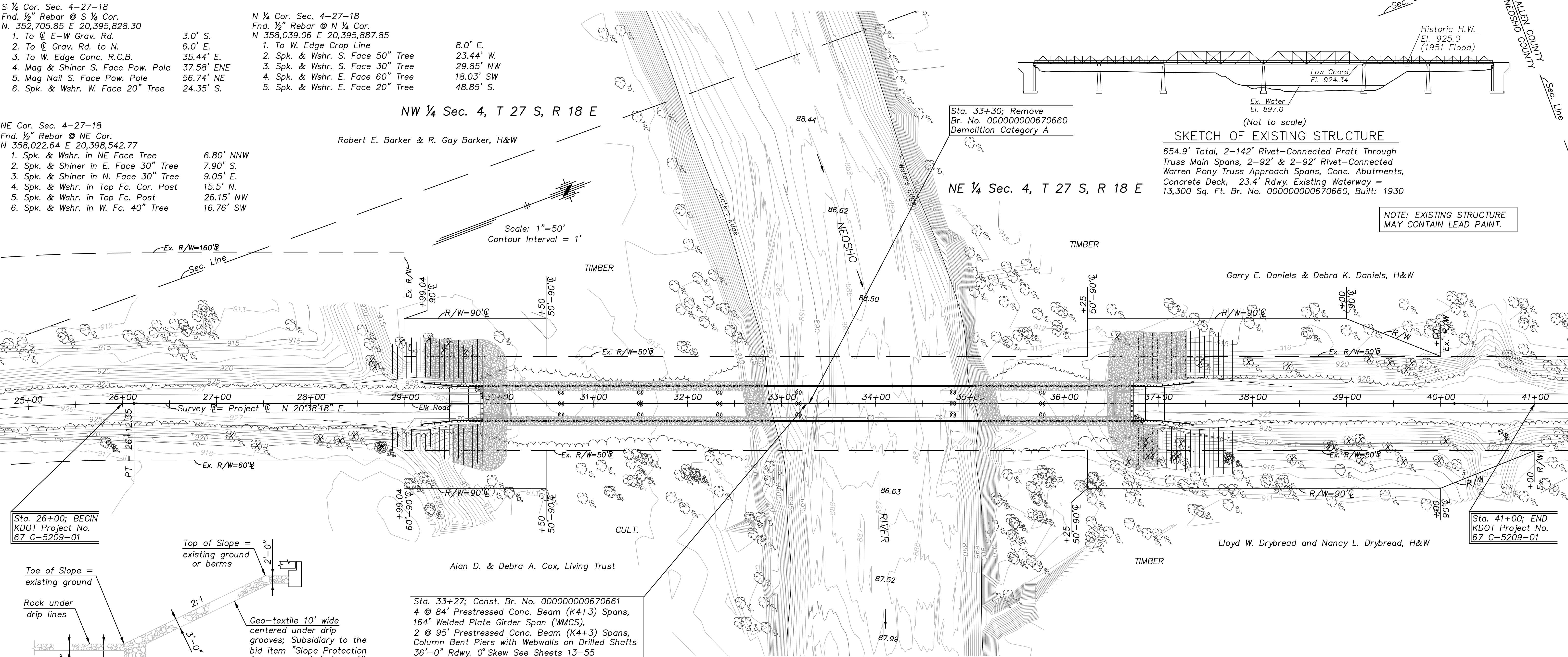
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	14	84

N 1/4 Sec. 4-27-18
Sec. Line
Allen County
Sec. Line
Historic H.W.
El. 925.0
(1951 Flood)
Low Chord
El. 924.34
Ex. Water
El. 897.0
(Not to scale)

SKETCH OF EXISTING STRUCTURE

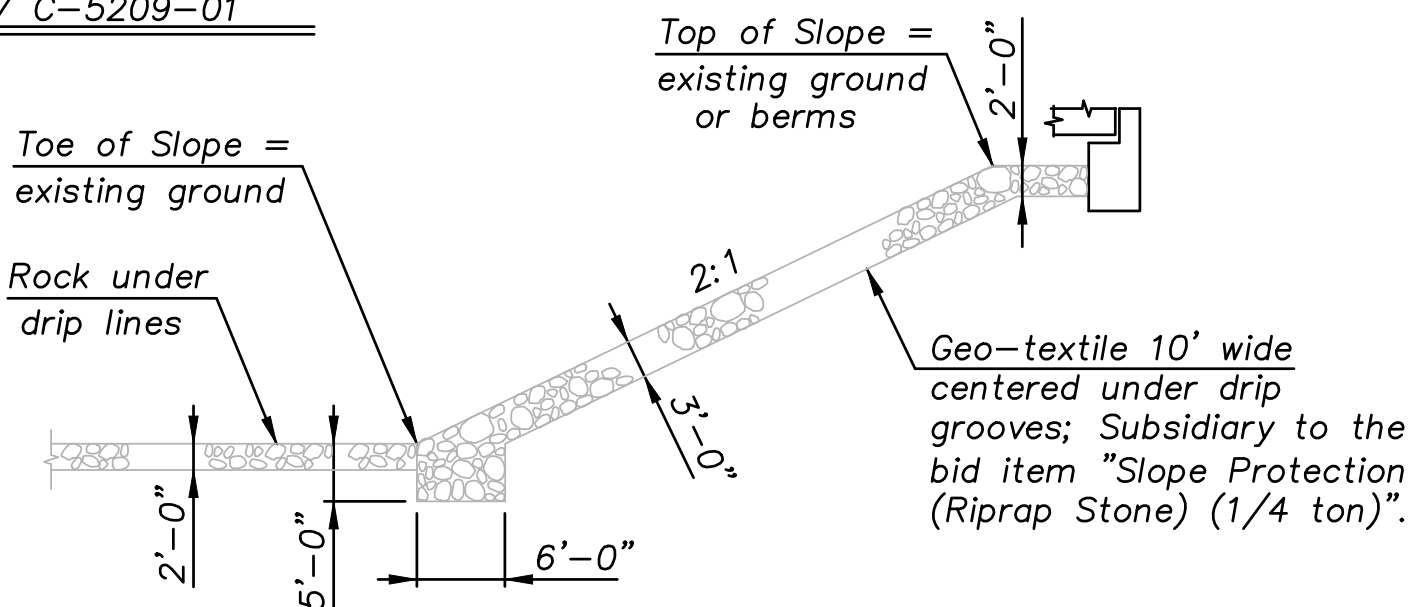
654.9' Total, 2-142' Rivet-Connected Pratt Through Truss Main Spans, 2-92' & 2-92' Rivet-Connected Warren Pony Truss Approach Spans, Conc. Abutments, Concrete Deck, 23.4' Rdwy. Existing Waterway = 13,300 Sq. Ft. Br. No. 00000000670660, Built: 1930

NOTE: EXISTING STRUCTURE MAY CONTAIN LEAD PAINT.



Sta. 26+00; BEGIN
KDOT Project No.
67 C-5209-01

Sta. 41+00; END
KDOT Project No.
67 C-5209-01



TYPICAL SECTION CHANNEL IMPROVEMENT

(SHOWING SLOPE PROTECTION)

Note: The Contractor shall construct Slope Protection (Riprap Stone)(1/4 Ton) on the Channel slopes as shown.
Abutment No. 1 = 1,750 C.Y.
Abutment No. 2 = 1,500 C.Y.
Total = 3,250 C.Y.

Sta. 33+27; Const. Br. No. 00000000670661
4 @ 84' Prestressed Conc. Beam (K4+3) Spans, 164' Welded Plate Girder Span (WMCS),
2 @ 95' Prestressed Conc. Beam (K4+3) Spans, Column Bent Piers with Webwalls on Drilled Shafts
36'-0" Rdwy. 0° Skew See Sheets 13-55

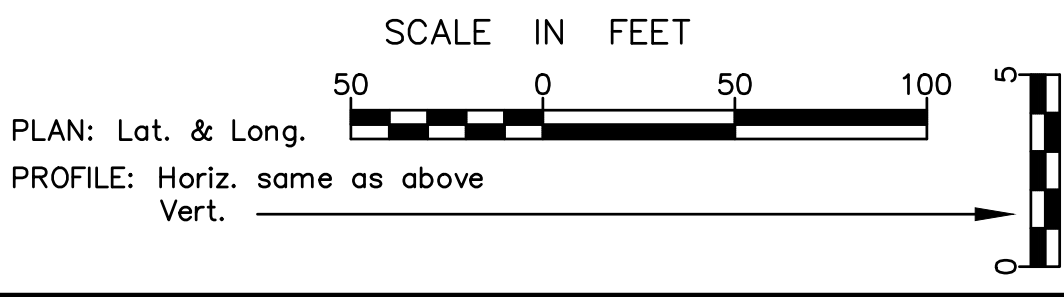
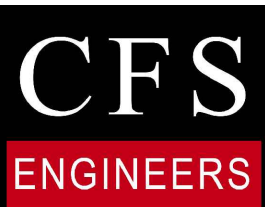
Note: The Contractor shall construct concrete bridge approach pavement Sta. 29+47.17 to Sta. 29+80.5 and Sta. 36+73.5 to Sta. 37+06.83
See Sh. 5-7
Total = 264.0 S.Y.

Also construct bridge approach slab footing
See Sh. 5-7
Total = 21.3 C.Y.

NE 1/4 Sec. 4, T 27 S, R 18 E

Note: The Contractor shall remove the existing structure (Br. No. 00000000670660)(2-91', 2-142', 2-91' Steel Truss Spans, w/ Conc. Abutments and piers. 24' Rdwy. w/ Conc deck and shall excavate the channel improvements in the vicinity of the new structure.

The existing structure shall become the property of the Contractor and shall be disposed of at a site selected by the Contractor and in a manner approved by the Engineer.



B.M. #10- Top $\angle$ 4"x4" Conc. KDOT R/W Mkr., 50.4' Rt. @ Sta. 20+44.8 Elev. 915.43	B.M. #12- "a" Cut Top SW Cor. S. End Retwall, 15.4' Lt. @ Sta. 29+76.7 Elev. 928.33	B.M. #14- T-Post Flush with Surf., 30.0' Rt., @ Sta. 40+63.7 Elev. 927.17
B.M. #11- R.R. Spk. in 50" Tree, 41.4' Rt. @ Sta. 25+84.7 Elev. 919.12	B.M. #13- Brass Disk Top $\angle$ NE Retwall Br., 14.1' Lt. @ Sta. 36+77.4 Elev. 928.31	B.M. #15- R.R. Spk. in Backside 50" Tree, 37.5' Rt. @ Sta. 47+29.8 Elev. 922.04

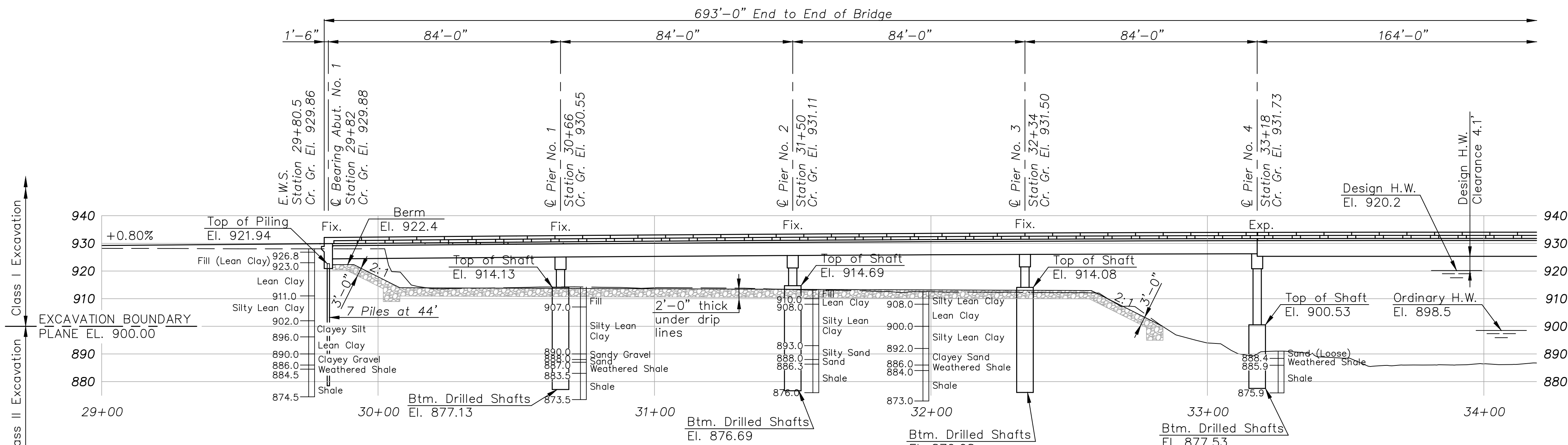
KANSAS DEPARTMENT OF TRANSPORTATION

CONTOUR MAP
BRIDGE OVER NEOSHO RIVER

Sta. 33+27

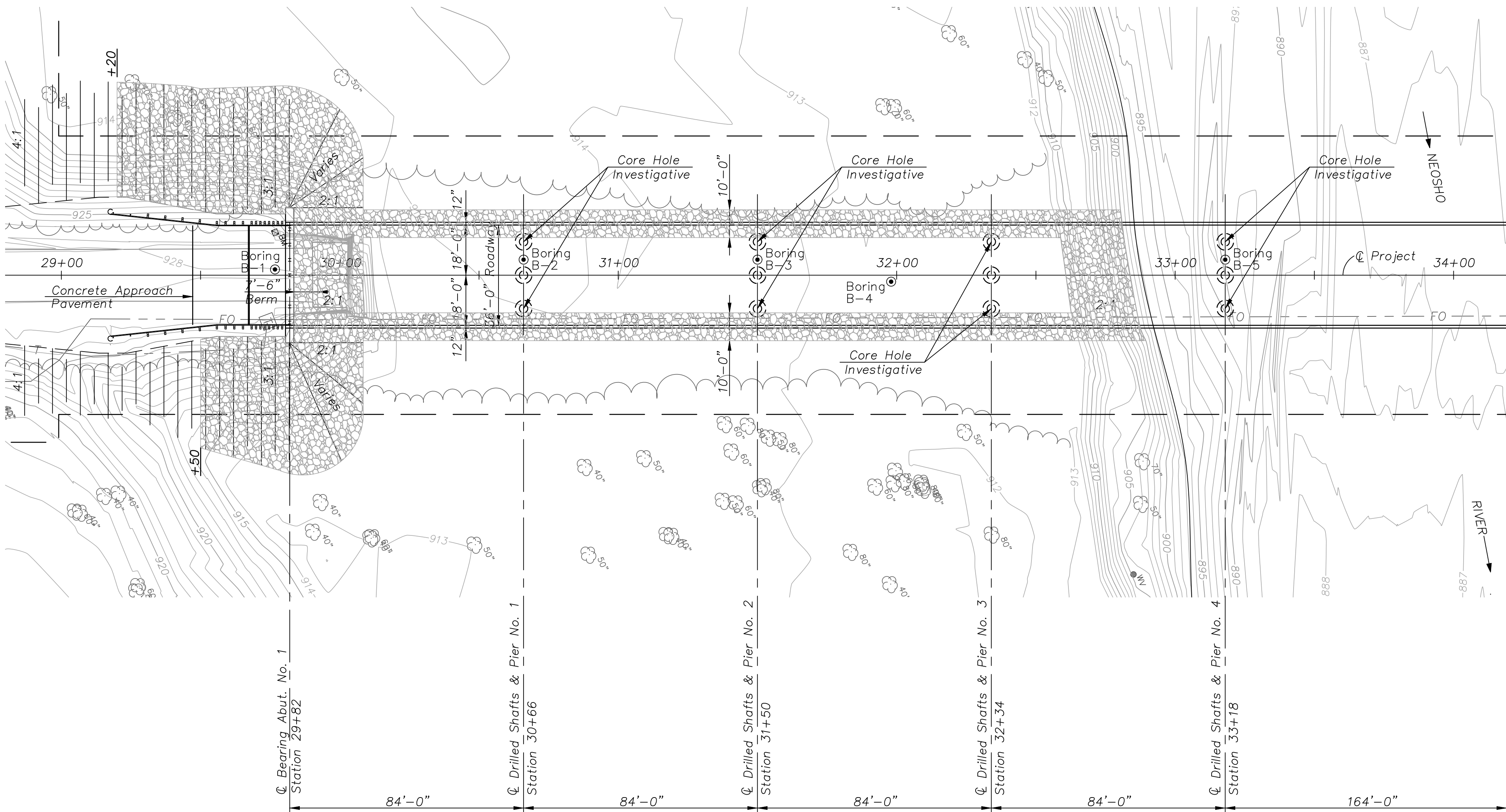
NEOSHO COUNTY

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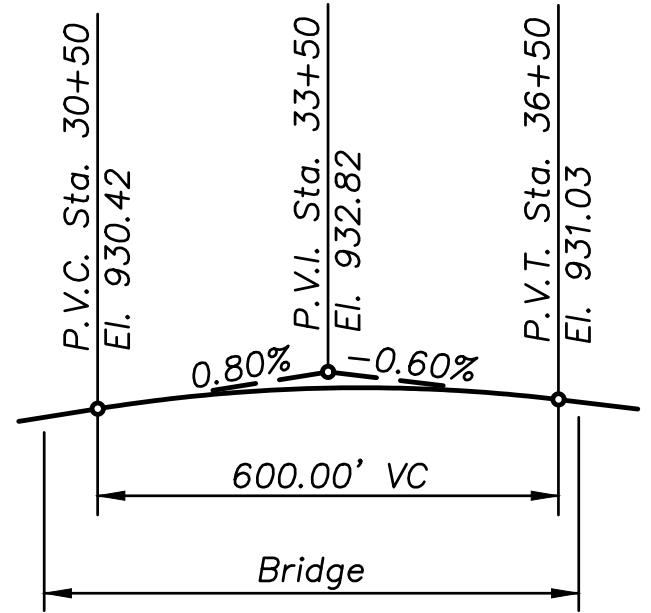
ELEVATION

4 @ 84' Prestressed Concrete Beam (K4+3) Spans
164' Welded Plate Girder Span
2 @ 95' Prestressed Concrete Beam (K4+3) Spans
Column Bent Piers with Webwalls on Drilled Shafts
36'-0" Roadway, 0° skew



PLAN

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	15	84



VERTICAL CURVE DATA

Scale: 1"=25'
Contour Interval = 1'

DRAINAGE DATA

Drainage Area	4,150	Sq. Mi.
Design Frequency	100	Yr.
Design Discharge (Q ₁₀₀)	144,000	cfs
Design High Water Elevation	920.2	Ft.
Change in Design Backwater	0.0	Ft.
Design Backwater Elevation	921.5	Ft.
Velocity at (Q ₁₀₀)	11.2	fps
Overtopping Elevation (Sta. 11+67)	919.7	Ft.
Overtopping Discharge	132,000	cfs
Overtopping Frequency	75	Yr.
Discharge at Q ₁₀₀	144,000	cfs
Change in Backwater at Q ₁₀₀	0.0	Ft.
Backwater Elevation at Q ₁₀₀	921.5	Ft.
Historic High Water Elevation	925.0	Ft. (1951 Flood)
Ordinary High Water Elevation	898.5	
Total Waterway Provided	12,830	Sq. Ft.
Design Waterway Provided	9,860	Sq. Ft.
Estimated Ordinary High Water Discharge	3,250	cfs

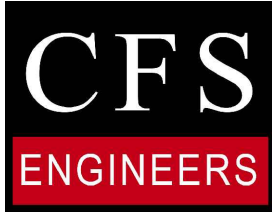
KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION LAYOUT

BRIDGE OVER NEOSHO RIVER

STA. 33+27

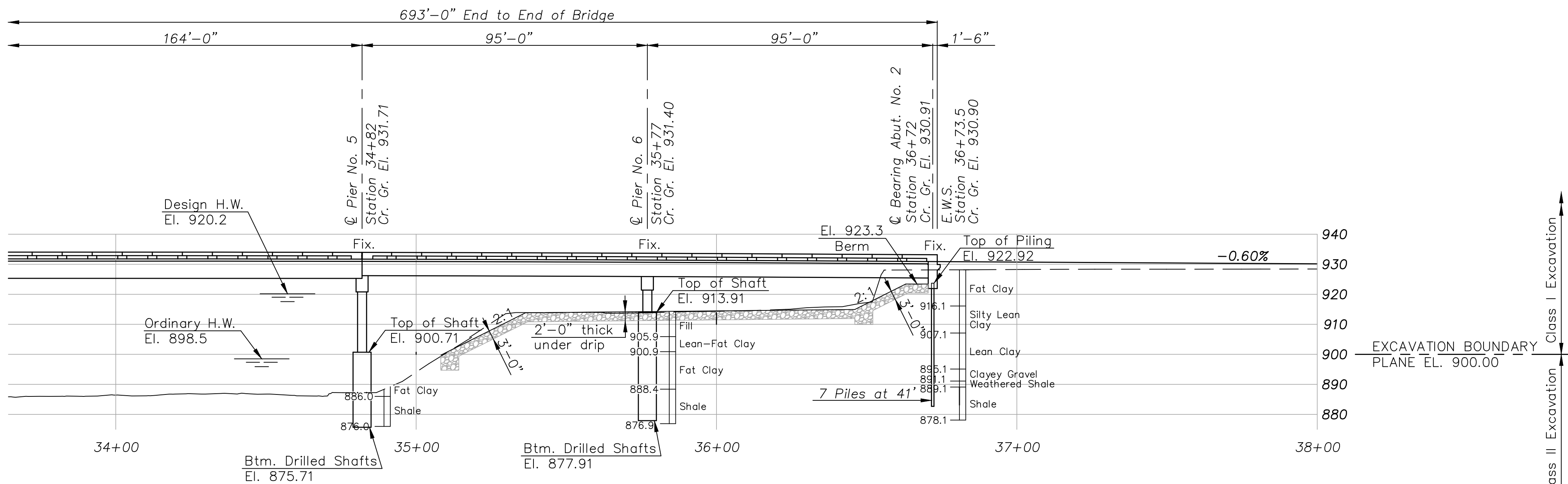
NEOSHO COUNTY



DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

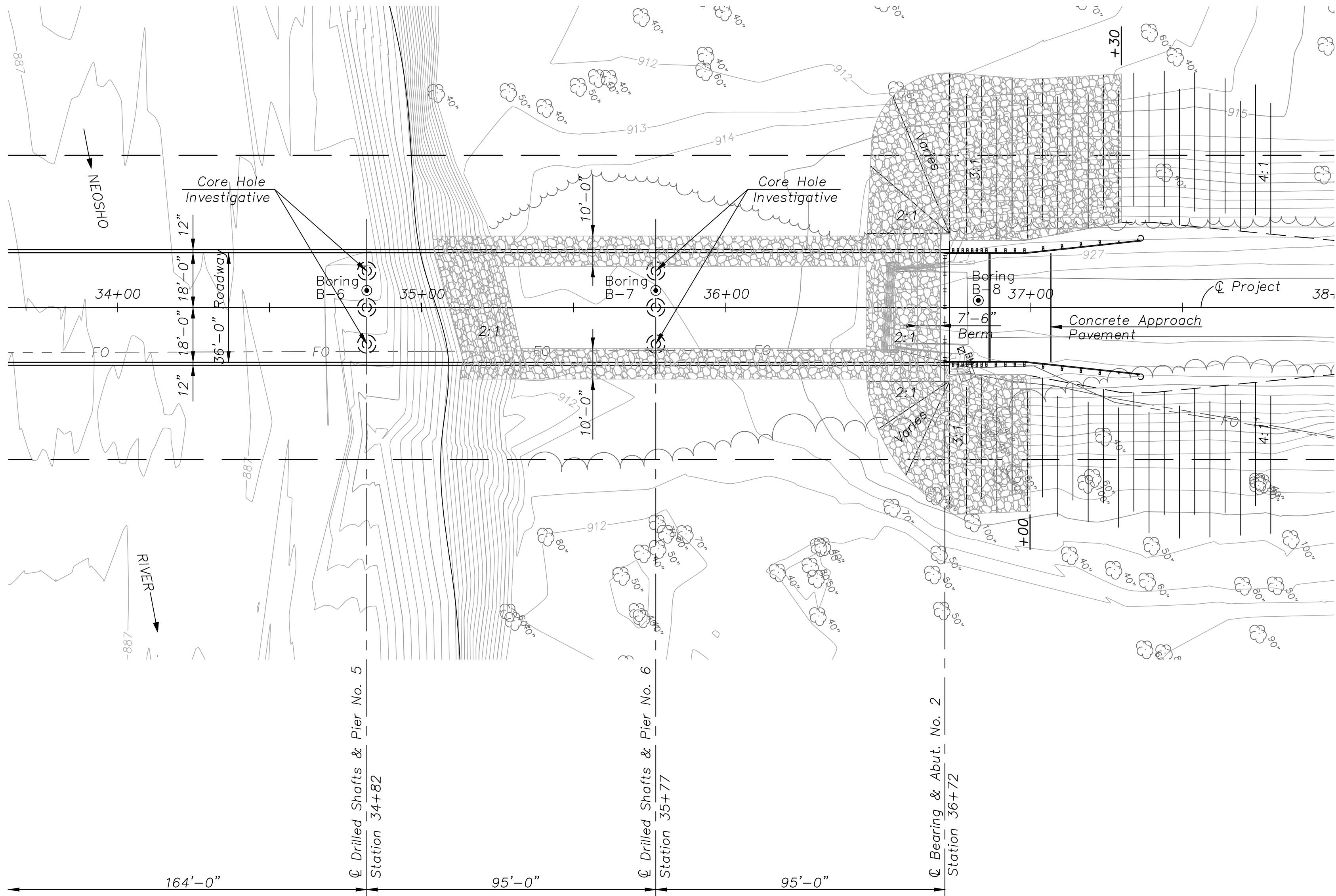
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	16	84



ELEVATION

- 4 @ 84' Prestressed Concrete Beam (K4+3) Spans
- 164' Welded Plate Girder Span
- 2 @ 95' Prestressed Concrete Beam (K4+3) Spans
- Column Bent Piers with Webwalls on Drilled Shafts
- 36'-0" Roadway, 0° skew



PLAN

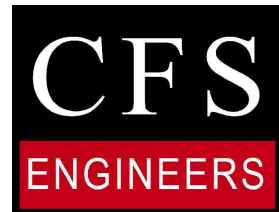
KANSAS DEPARTMENT OF TRANSPORTATION

CONSTRUCTION LAYOUT

BRIDGE OVER NEOSHO RIVER

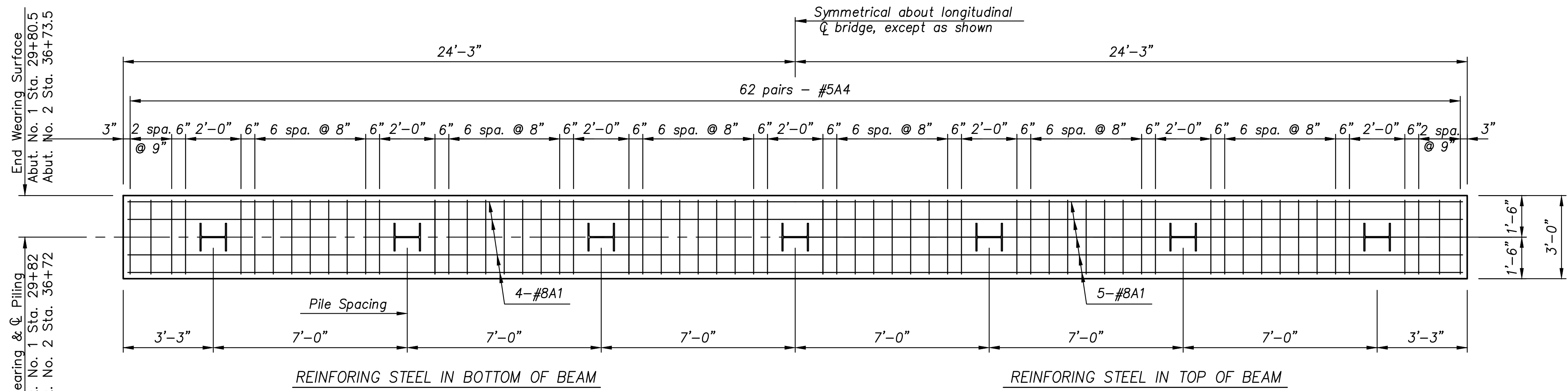
STA. 33+27

NEOSHO COUNTY

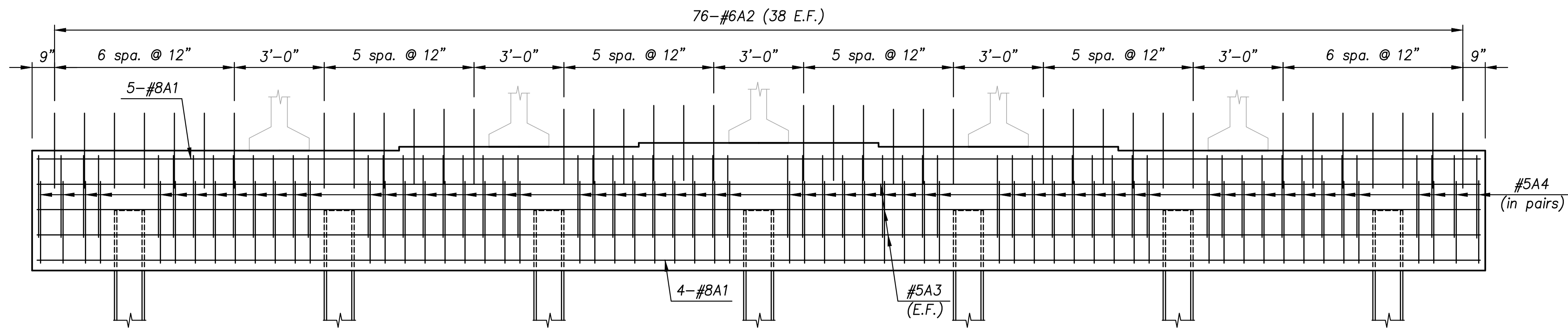


DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

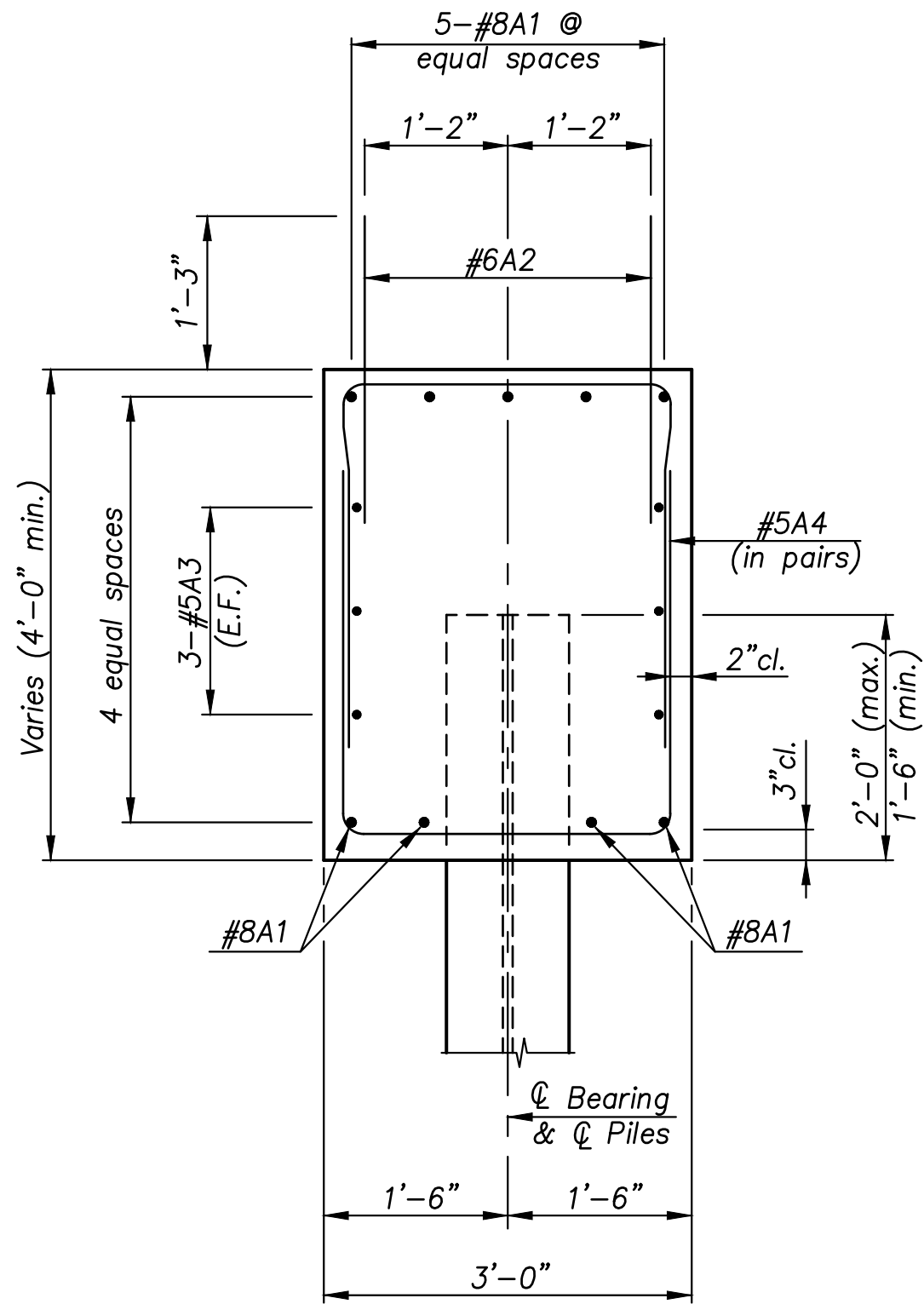
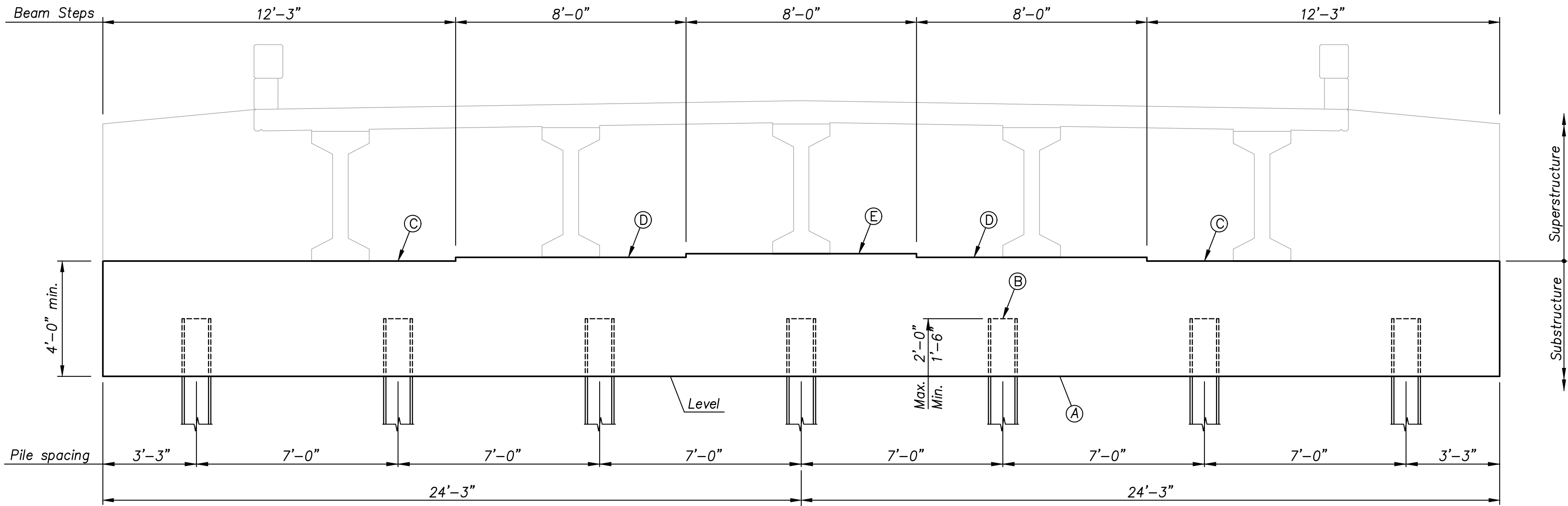
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	17	84



PLAN



ELEVATION REINFORING STEEL



TYPICAL SECTION

TABLE OF ELEVATIONS		
Location	Elevation Abut. No. 1	Elevation Abut. No. 2
A	919.94	920.92
B	921.94	922.92
C	923.94	924.92
D	924.07	925.05
E	924.20	925.18

DESIGN PILE LOAD

Abutment No. 1	Abutment No. 2
45 Tons per pile Service I Loading	48 Tons per pile Service I Loading
63 Tons per pile Strength I Loading	66 Tons per pile Strength I Loading

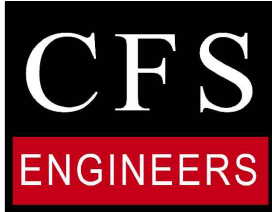
KANSAS DEPARTMENT OF TRANSPORTATION

ABUTMENT BEAM DETAILS

BRIDGE OVER NEOSHO RIVER

STA. 33+27

NEOSHO COUNTY

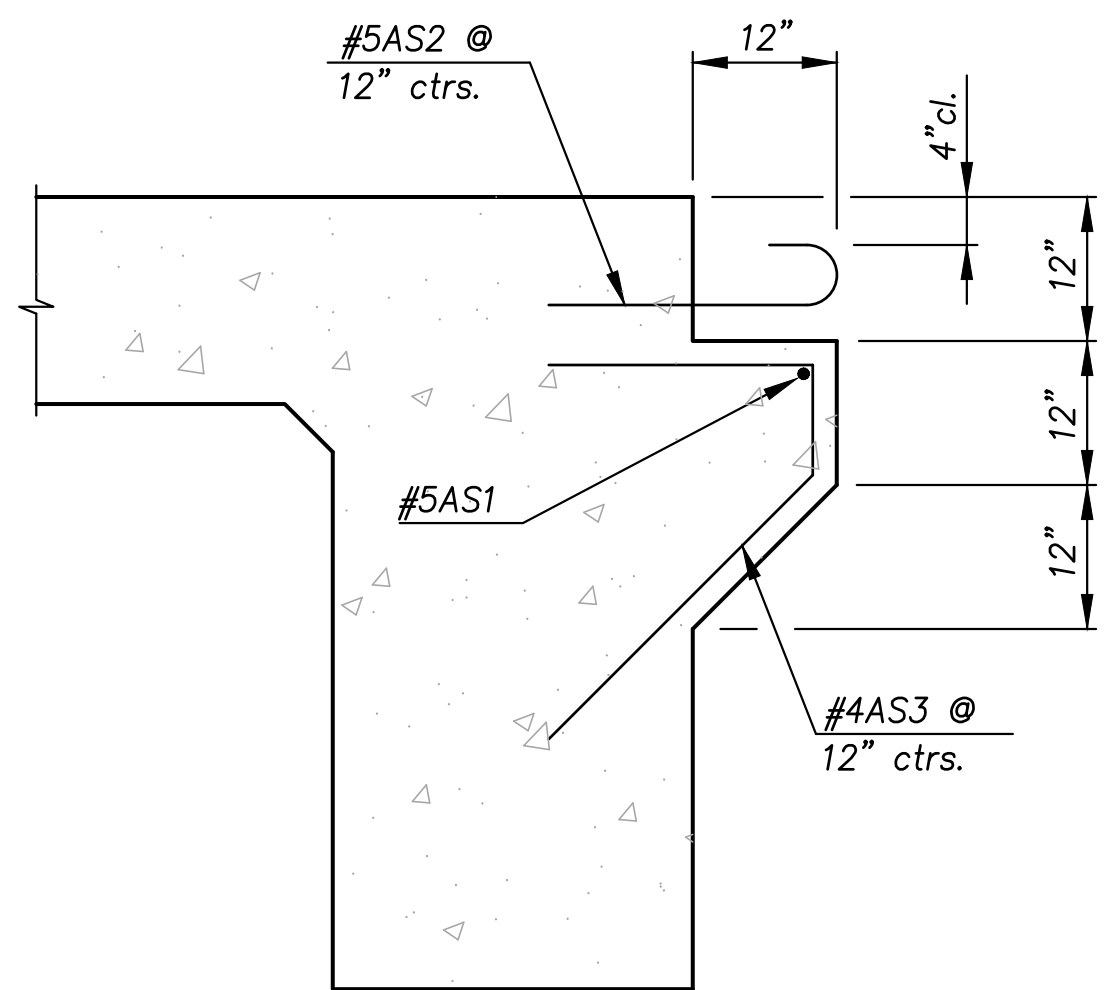
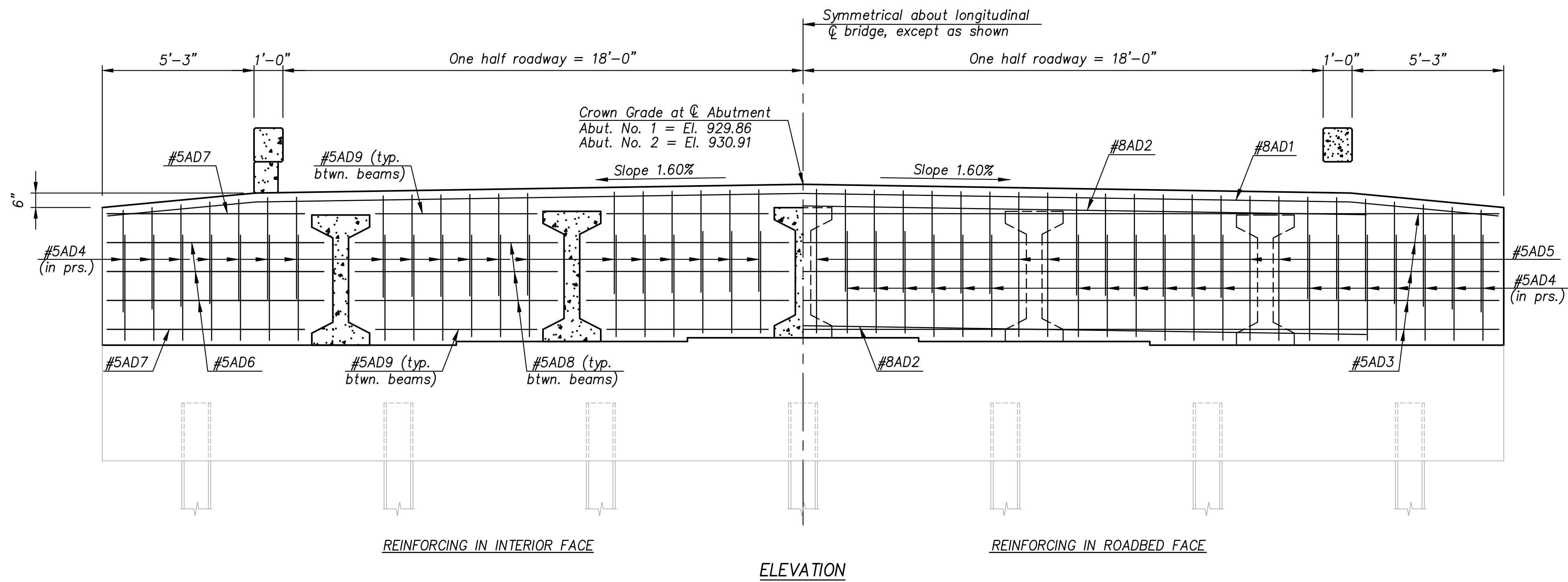
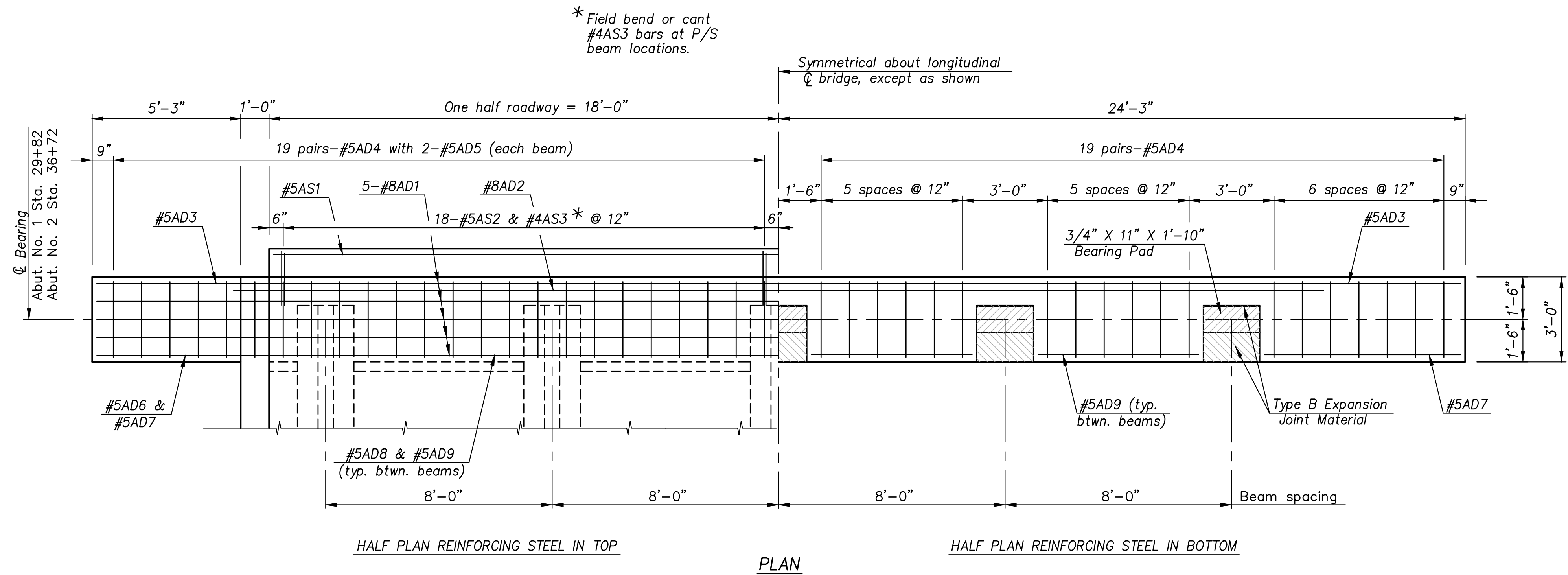


DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

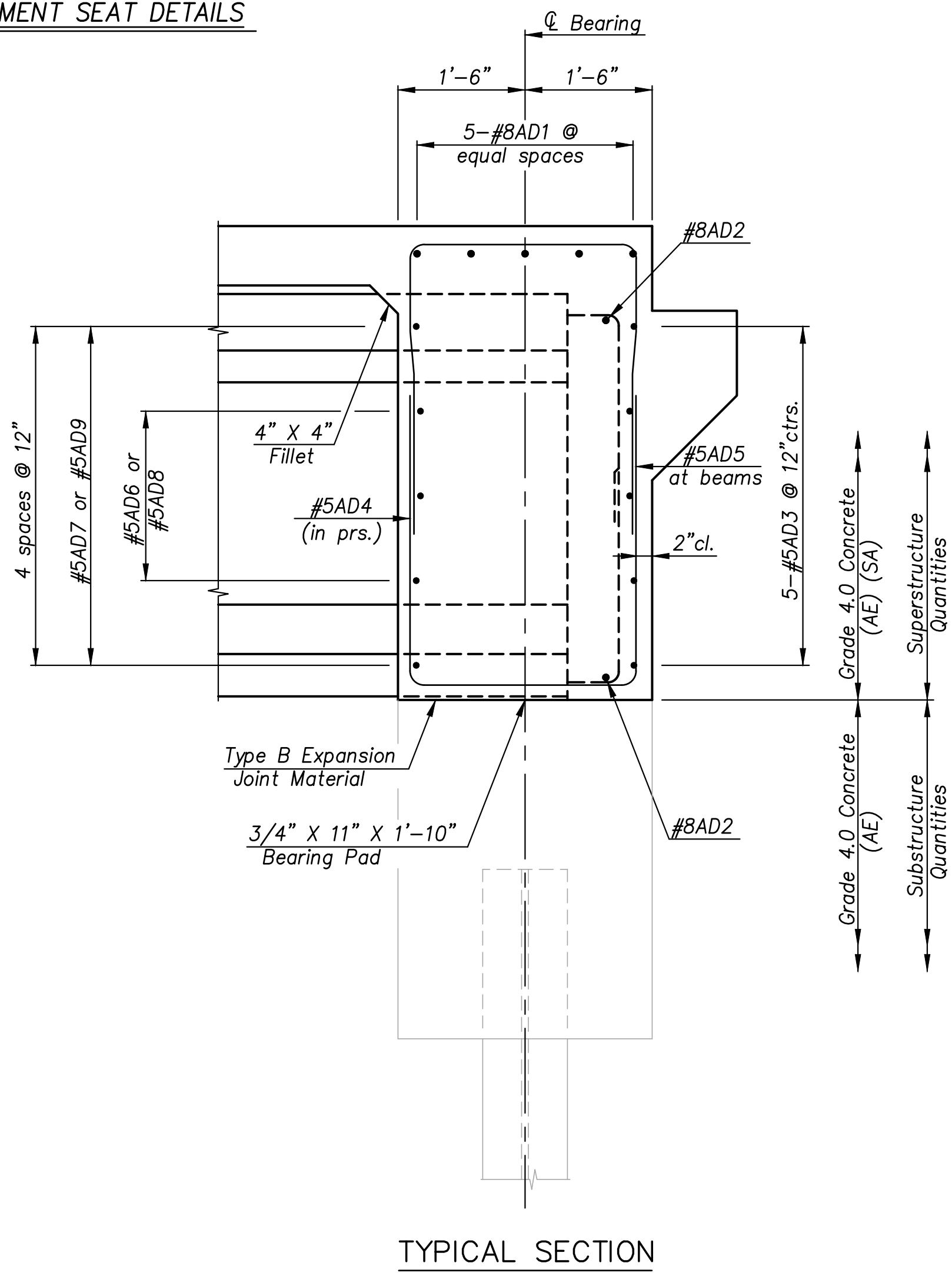
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Note: E.F. indicates each face
N.F. indicates near face
F.F. indicates far face

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	18	84



PAVEMENT SEAT DETAILS



KANSAS DEPARTMENT OF TRANSPORTATION			
ABUTMENT DIAPHRAGM DETAILS			
BRIDGE OVER NEOSHO RIVER			
DESIGNED	GEP	SCALE	
DETAILED	JPF	DATE	
QUANTITIES		SHEET	OF

STA. 33+27

NEOSHO COUNTY

CFS
ENGINEERS

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	19	84

GENERAL NOTES

ABUTMENT STRIP DRAIN: *The Bridge Contractor shall excavate to the limits shown on the Bridge Excavation sheet, grade the bottom of the backfill area, place the strip drain, and place the perforated pipe, the outlet pipe, the CMP, and the backfill. Guide post and coarse aggregate are subsidiary to this bid item. Guide post and coarse aggregate are not required if the CMP empties onto riprap.*

BRIDGE BACKWALL PROTECTION SYSTEM: Apply a Bridge Backwall Protective System to the approach side of the abutments and the wings in accordance with KDOT Specifications and the manufacturer's recommendations. Cover the abutments and wings to the limits shown on the details. Prior to backfilling, repair any damage done to the system at no charge to the state.

Place perforated pipe next to the strip drain. Use non-perforated pipe outside the limits of the strip drain. Enclose the perforated pipe with the extension of the filter fabric.

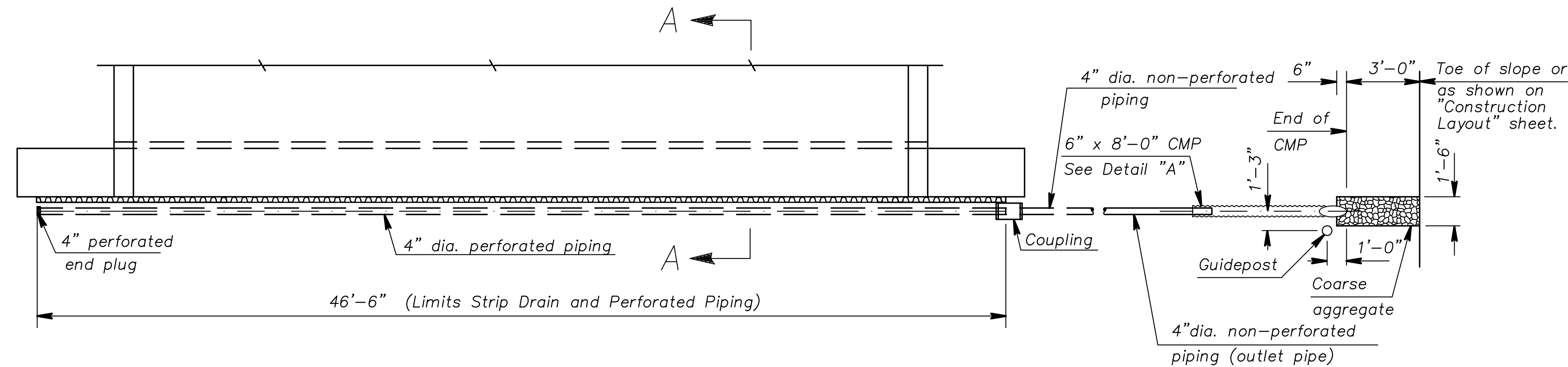
Compact the abutment backfill. See the KDOT Specifications.

Perforated pipe and non-perforated outlet pipe shall be corrugated polyethylene tubing conforming to the KDOT Specifications.

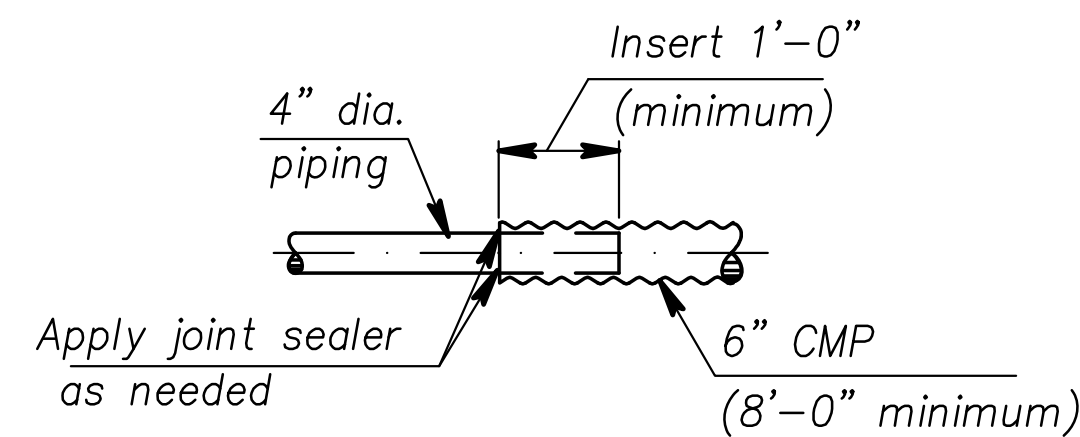
Fit the CMP end section with 1/4" galvanized mesh screen to prevent the entrance of rodents. Seal the joint between the outlet pipe and the end section with a joint sealer. Place coarse aggregate at the outlet end as shown.

Grade the bottom surface of the excavated area to drain. Backfill this area with a cohesive type soil. The soil should be a silty clay or clay under the Kansas Classification System with a minimum plasticity index of 13. Compact the material to Type B standards.

Place the outlet pipe on the downstream side of structures over streams and as shown or noted on other crossings (See the "Construction Layout" sheet).

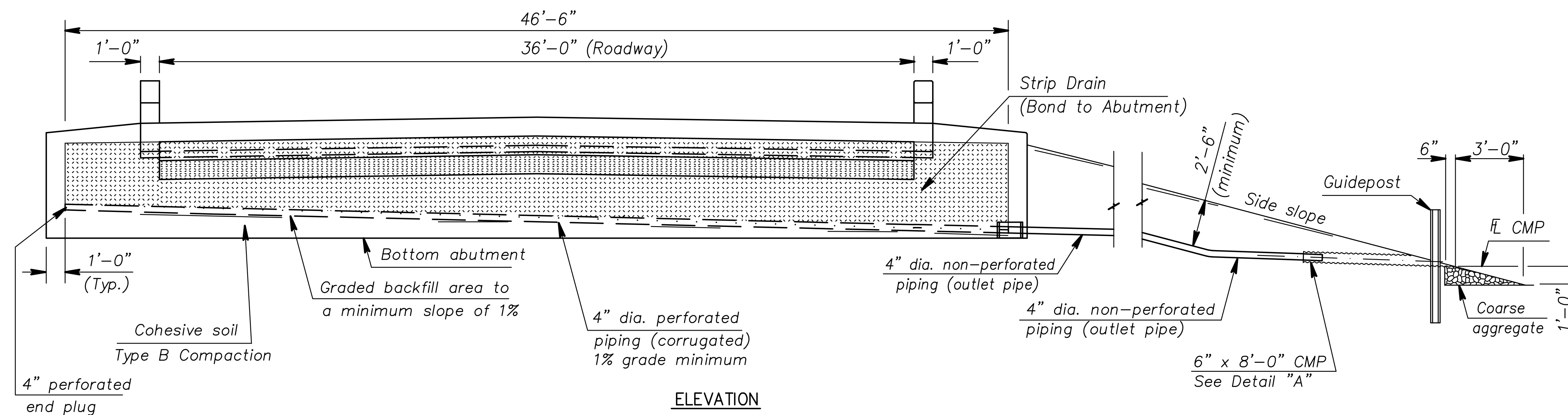


PLAN



DETAIL "A"

Note: The 1'-0" lap and joint sealer may be replaced by a reducing coupler at the junction of the CMP and the 4" round tubing.

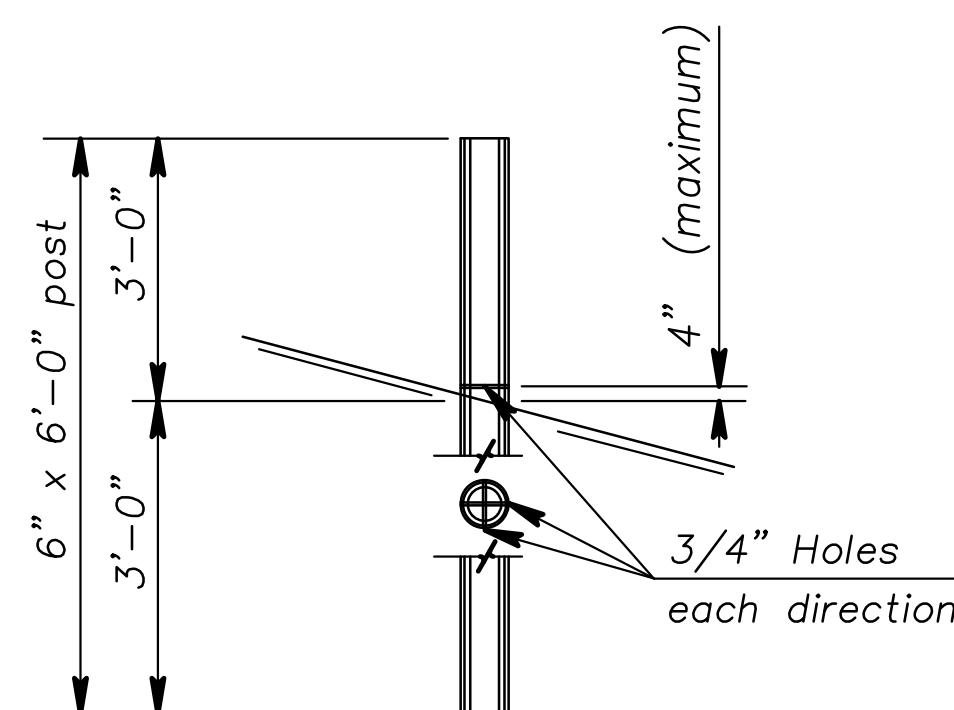
ELEVATION

GUIDE POST

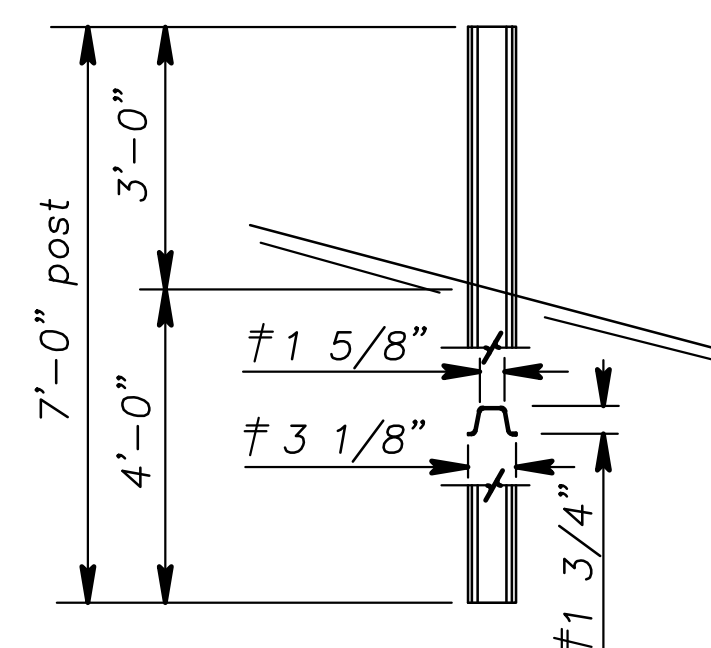
Notes:

Wood Guide Posts: Apply a preservative treatment conforming to the KDOT Specifications to the posts. Use only one type of preservative treatment on a project. Apply two coats of aluminum paint to the top 18" of the posts. Apply one coat of International Orange paint to the top 12" of the posts. State forces will apply reflectorized material.

Metal Guide Posts: Posts shall conform to the KDOT Specifications. Posts shall have a galvanized or baked enamel coating. Apply one coat of International Orange paint to the top 12" of the posts.



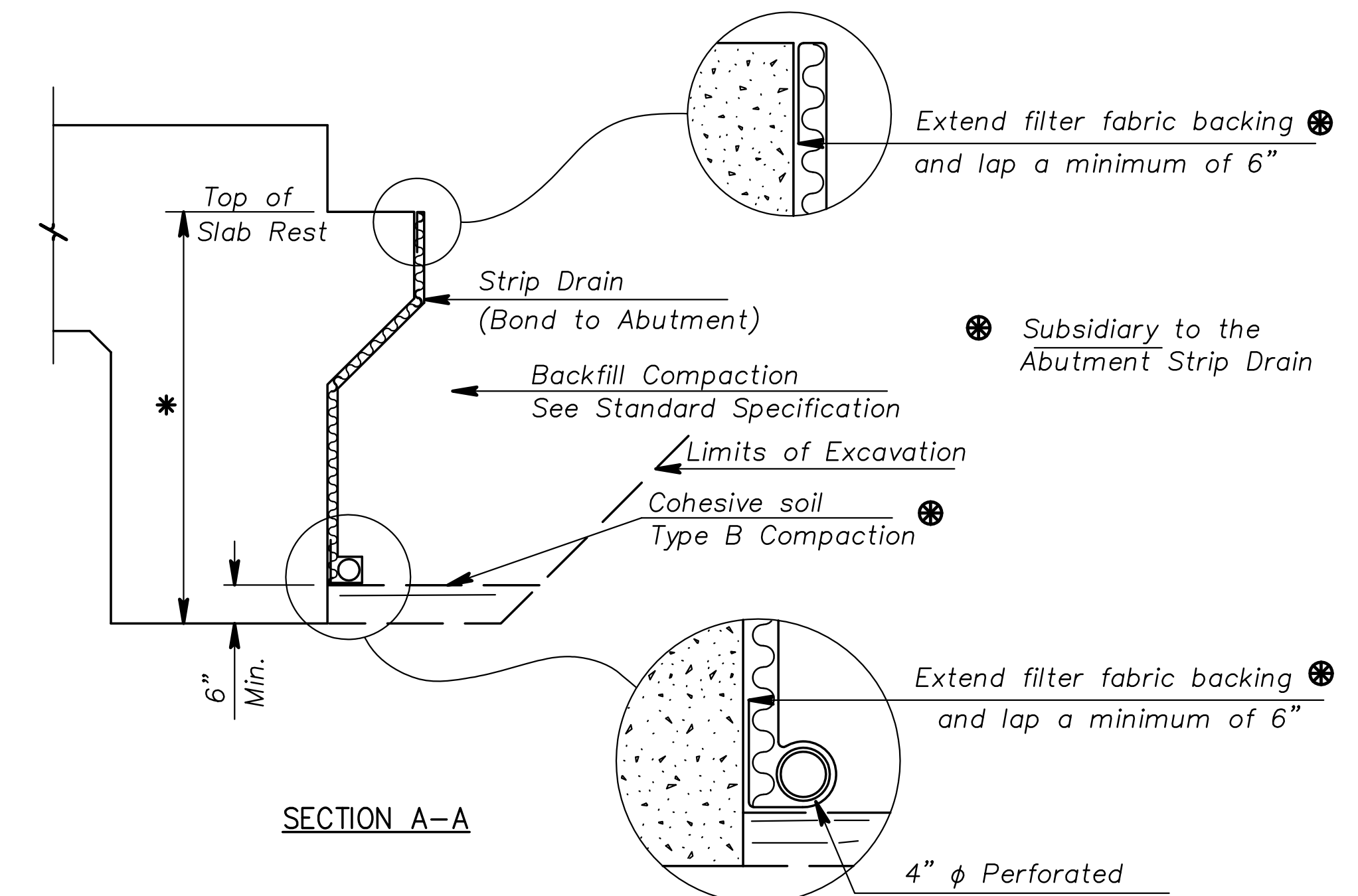
Wood Guide Post Option
(6" dia. x 6'-0")



Metal Guide Post Option
7'-0" at 3.0 lbs/ft.
flanged channel

‡ Nominal dimension.

Note: Place the CMP flowline 1'-0" above ditch flowline, toe of sideslope, or as shown on the Construction Layout.



SECTION A-A

* Limits of Bridge Backwall Protection System (by Bridge Contractor)

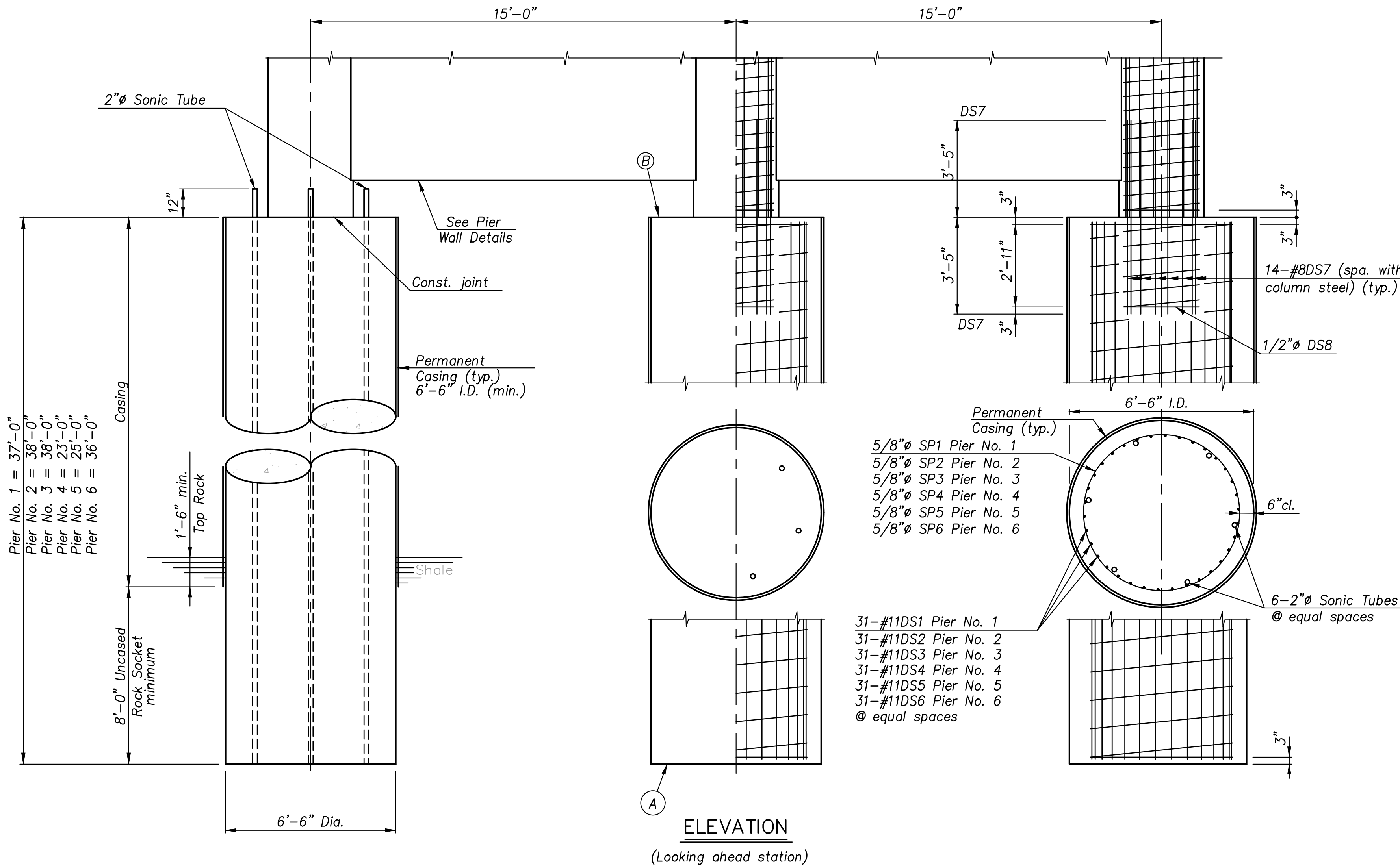
SUMMARY OF QUANTITIES (Both Abutments)	
Abutment Strip Drain	90 Sq. Yds.
Bridge Backwall Protection System	94 Sq. Yds.
Items subsidiary to Strip Drain	
4" ϕ Perforated Pipe	93 Lin. Ft.
4" ϕ Outlet Pipe	80 Lin. Ft.
6" ϕ CMP	16 Lin. Ft.
Guide Post	

3				
2				
1				
NO.	DATE	REVISIONS	BY	APP'D
KANSAS DEPARTMENT OF TRANSPORTATION ABUTMENT STRIP DRAIN				
SHEET NO.	OF	DATE	APP'D	
DESIGNED		DETAILED	QUANTITIES	CADD
DESIGN CK.		DETAIL CK.	QUAN. CK.	CADD CK.

CADconform Certify This File

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
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Note: Elevations A & B are shown in the "Table of Elevations and Dimensions" on the Pier Details.

DESIGN DRILLED SHAFT PRESSURE
ALLOWABLE END BEARING: 15.0 TONS PER SQ. FT.
ALLOWABLE SKIN FRICTION: 1.0 TONS PER SQ. FT.
ALLOWABLE SHALE REACTION: 497.7 TONS
DESIGN (STRENGTH LOAD 1): PIER NO. 1 = 328.2 TONS
PIER NO. 2 = 301.6 TONS
PIER NO. 3 = 311.0 TONS
PIER NO. 4 = 264.4 TONS
PIER NO. 5 = 292.3 TONS
PIER NO. 6 = 328.2 TONS

NOTES

Construct the drilled shafts using the cased method. A permanent casing is required. All excavation, concrete, reinforcing steel, pipes for sonic testing, casings, labor and incidentals necessary to complete the shaft as shown on the details and as directed by KDOT Specifications shall be included in the bid item "Drilled Shafts (72") (Cased)". Use Grade 4.0 Concrete in the drilled shaft. In no case shall the bottom of the drilled shaft be placed higher than the elevation shown unless otherwise directed by the Engineer.

Drill an Investigative core hole at the locations shown on the plans. See KDOT Specifications.

If the location of the top of the shaft is such that the casing cannot be overtopped to remove concrete impurities, provide extra casing length to over-pour the concrete in the shaft and chip back to the plan elevation of the top of the shaft.

The Construction and inspection of the drilled shafts shall as a minimum include:

Full flight auger, the auger will not have extenders, sidebars or otherwise attachments which will enlarge the hole diameter, an auger of full diameter will be used. The only exception to the above is when the Engineer bells (enlarges) the bottom of the rock socket. This can be created by use of an undream attachment.

A clean-out bucket or muck bucket will be of full size and not less than 95% of the diameter shown on the plans.

Sound the bottom of the finished shaft prior to placing the reinforcement. This sounding will be done in a methodical grid pattern of approximately 12" in the presence of the Engineer. Full access to all areas of the shaft is the responsibility of the Contractor. Sounding will be done by a weighted line.

Flocculate the finished shaft prior to placement of the reinforcement. Use a commercially available flocculent agent per the manufactures recommendations.

Cross-Hole Sonic testing is required for all shafts. Report test results directly to the Engineer. No work will be done above the top of the drilled shaft without the approval of the Engineer.

It is the Contractors responsibility for the quality of the finished shaft. If any repairs or additional testing is required it will be at no cost to the State.

Drilled Shaft Backfill: Backfill the annular space between the temporary casing and the permanent casing with granular material as defined in the KDOT Specifications.

DRILLED SHAFT QUANTITIES

	(For information only)	
	Reinforcing Steel	Concrete
Pier No. 1	20,587 Lbs.	136.4 Cu. Yds.
Pier No. 2	21,117 Lbs.	140.1 Cu. Yds.
Pier No. 3	21,117 Lbs.	140.1 Cu. Yds.
Pier No. 4	12,911 Lbs.	84.8 Cu. Yds.
Pier No. 5	14,009 Lbs.	92.2 Cu. Yds.
Pier No. 6	20,039 Lbs.	132.7 Cu. Yds.
Total	109,780 Lbs.	726.3 Cu. Yds.

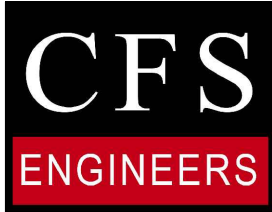
KANSAS DEPARTMENT OF TRANSPORTATION

DRILLED SHAFT DETAILS

BRIDGE OVER NEOSHO RIVER

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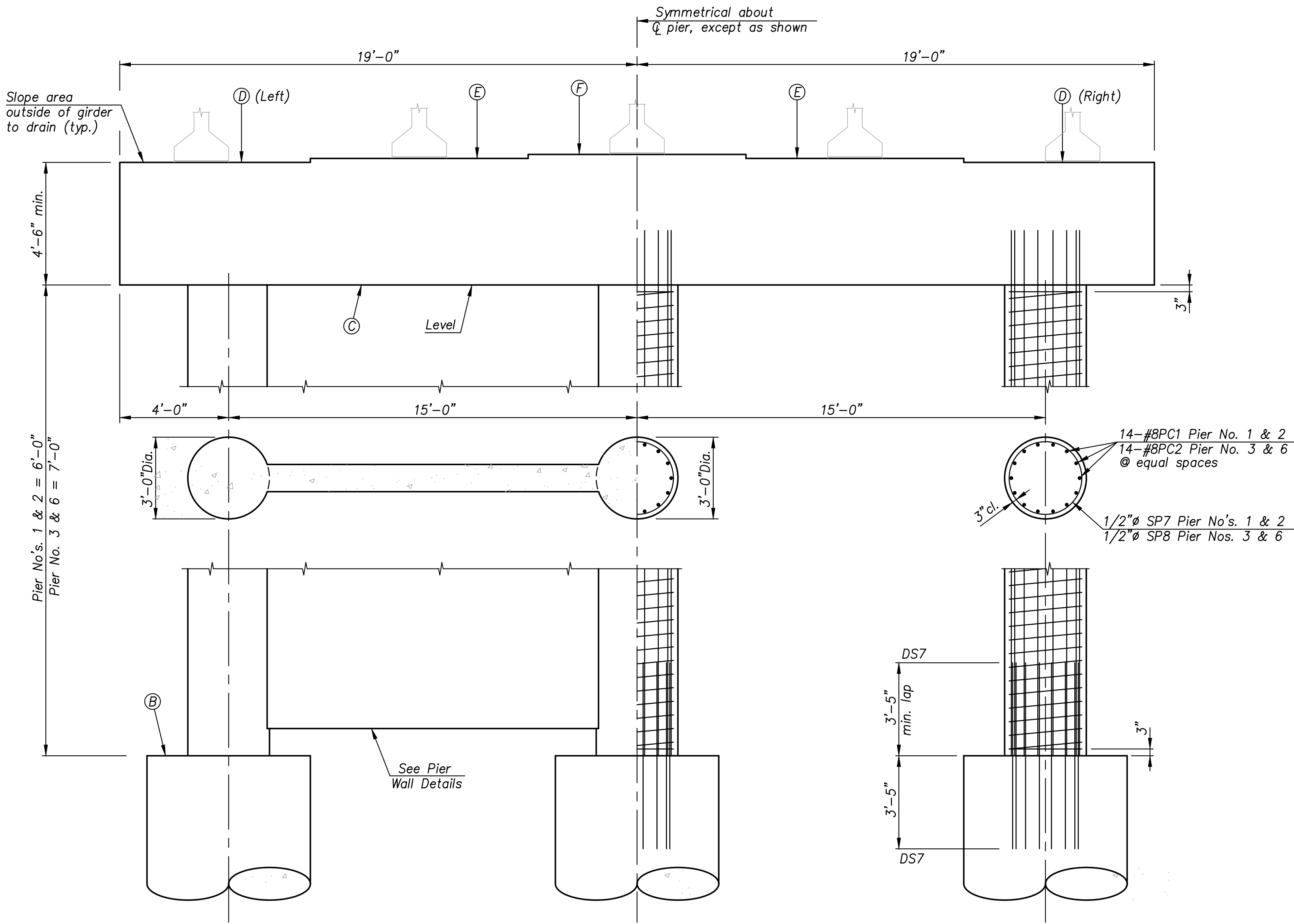
NEOSHO COUNTY



DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

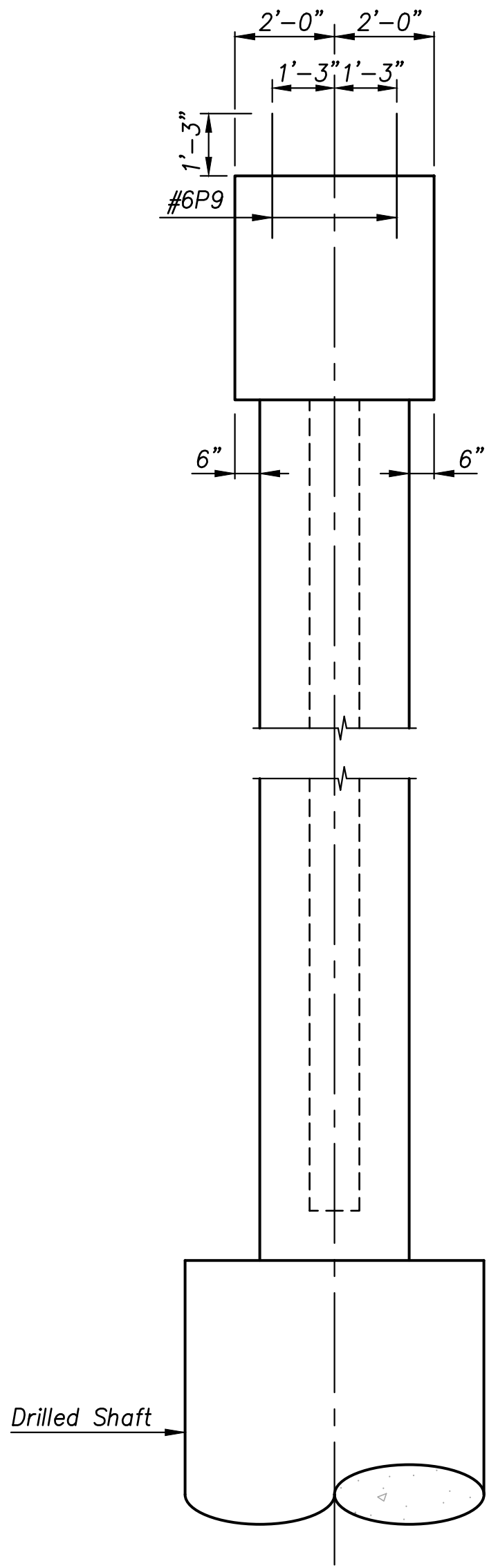
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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	21	84



ELEVATION
(Looking ahead station)

TABLE OF ELEVATIONS AND DIMENSIONS								
Pier No.	Station	Elevation A	Elevation B	Elevation C	Elevation D	Elevation E	Elevation F	Column Length
1	30+66	877.13	914.13	920.13	924.63	924.76	924.89	6'-0"
2	31+50	876.69	914.69	920.69	925.19	925.32	925.45	6'-0"
3	32+34	876.08	914.08	921.08	925.58	925.71	925.84	7'-0"
6	35+77	877.91	913.91	920.91	925.41	925.54	925.67	7'-0"



END ELEVATION

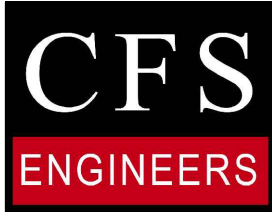
KANSAS DEPARTMENT OF TRANSPORTATION

PIER DETAILS
(PIERS 1,2,3 & 6)

BRIDGE OVER NEOSHO RIVER

STA. 33+27

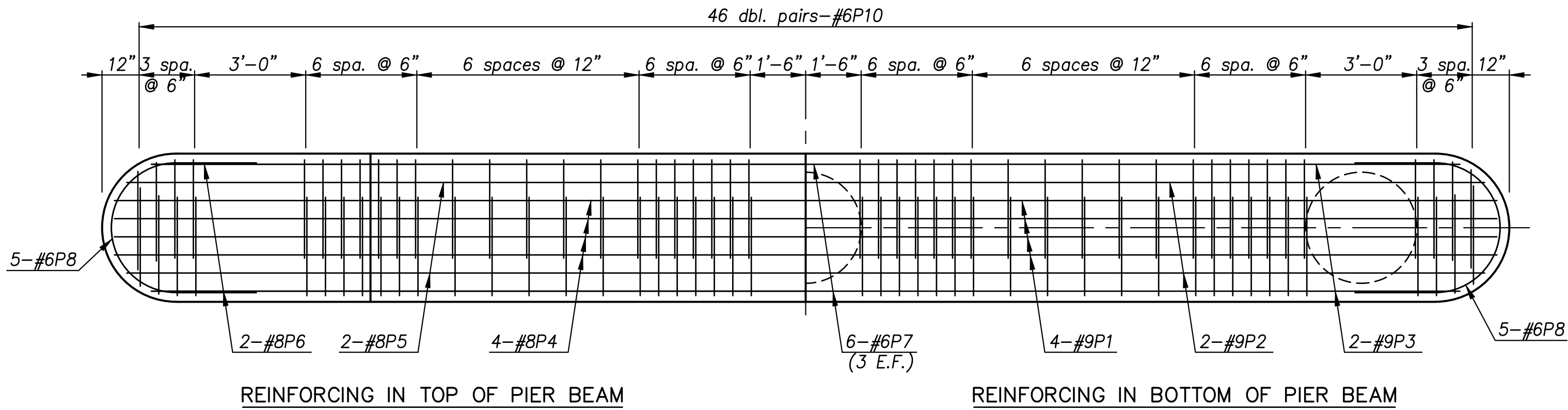
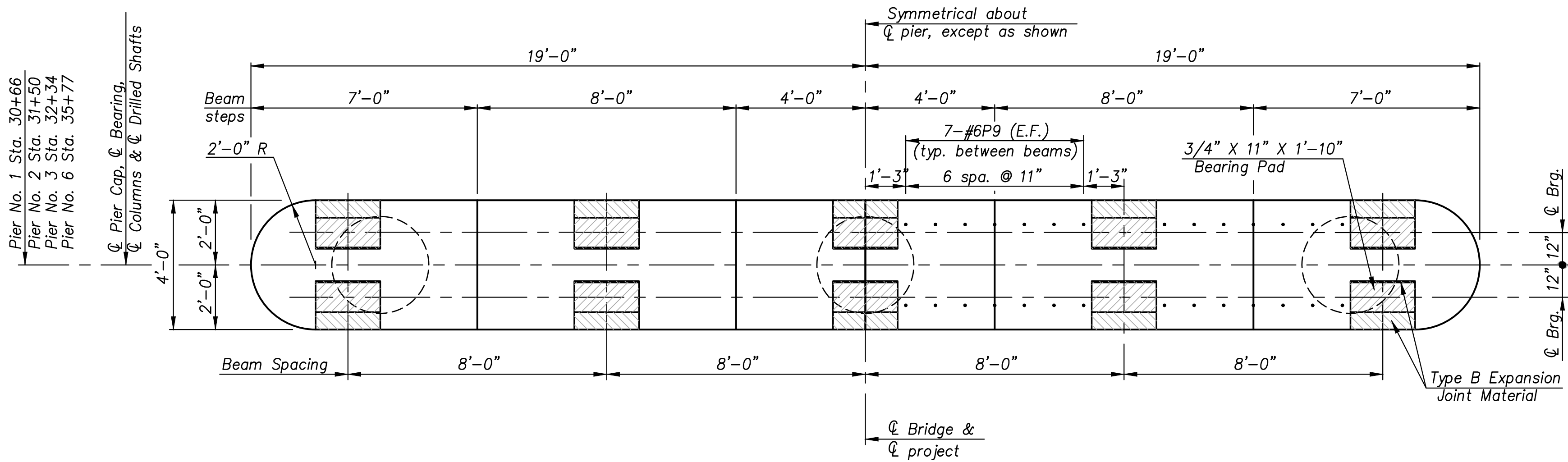
NEOSHO COUNTY



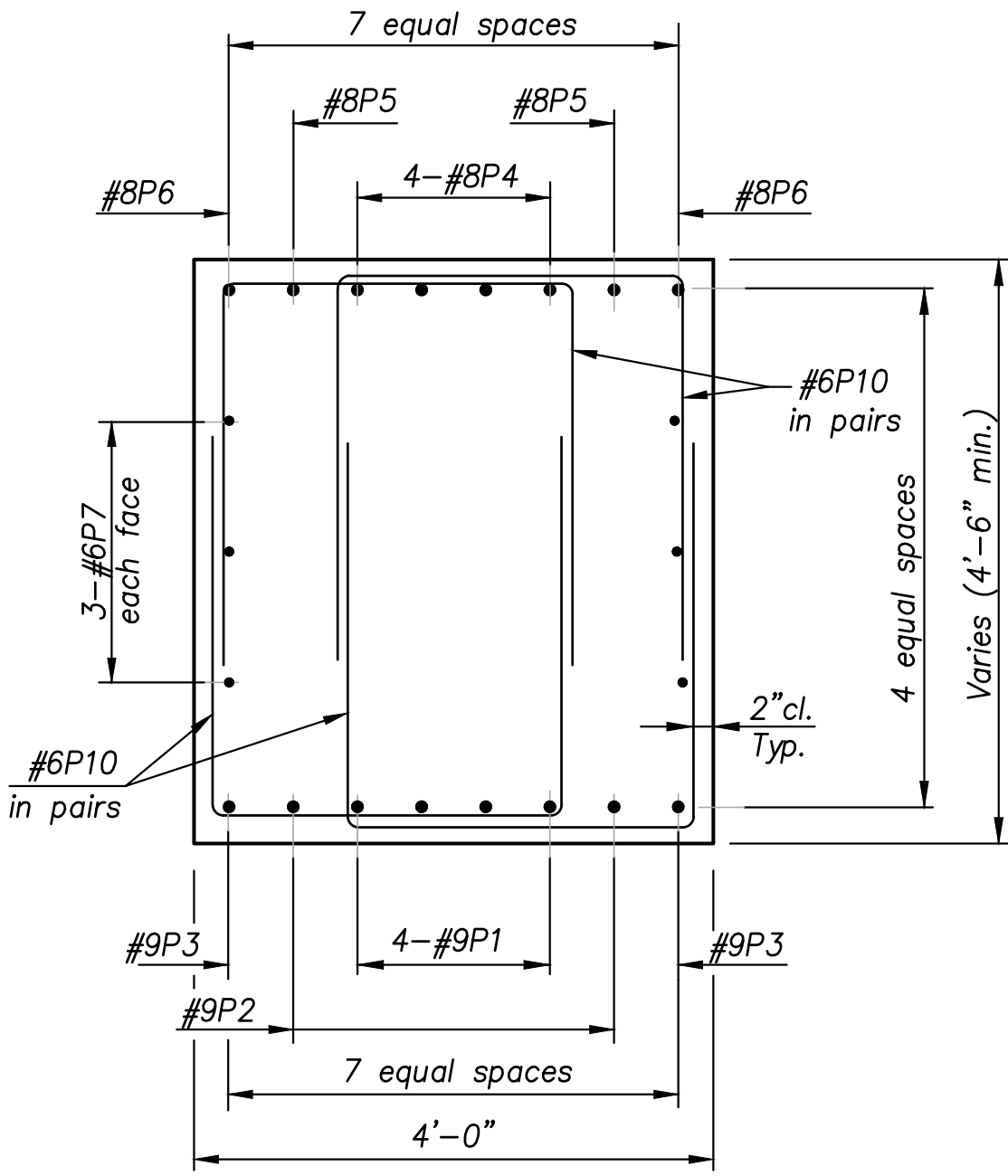
DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	22	84

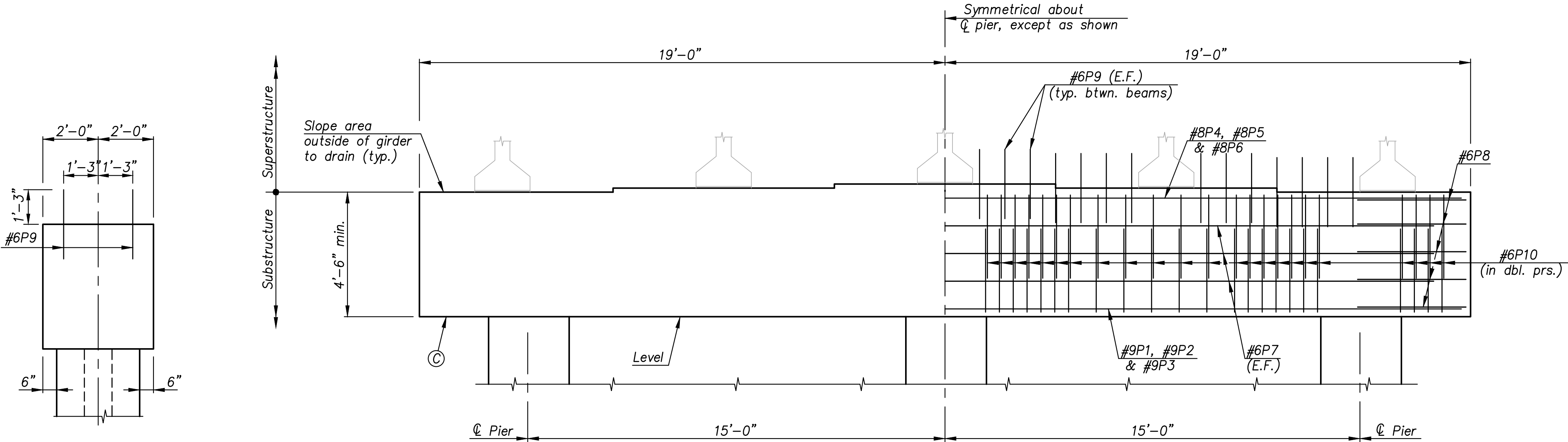
Note: E.F. Indicates each face
N.F. Indicates near face
F.F. Indicates far face



PLAN

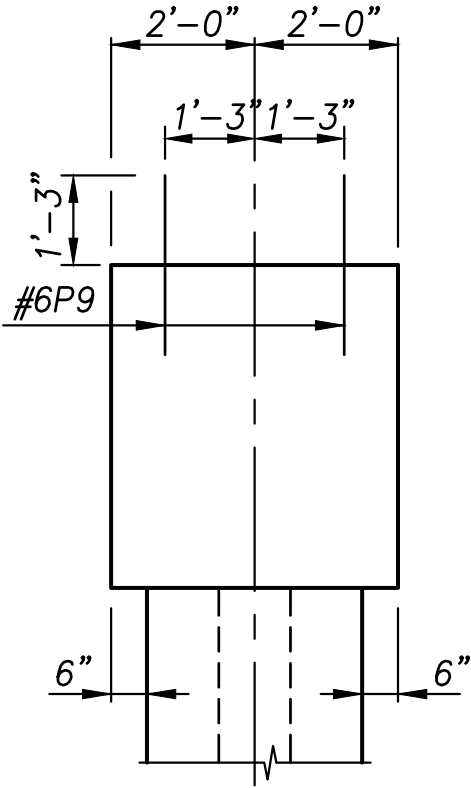


TYPICAL SECTION



ELEVATION

(Looking ahead station)



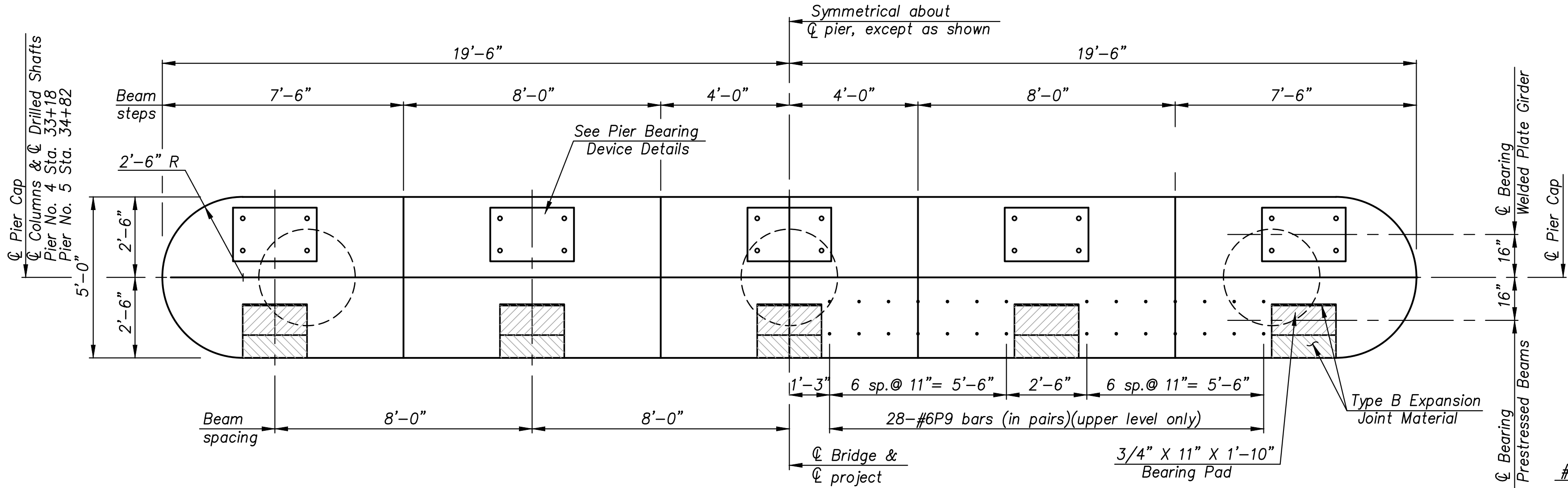
END ELEVATION

Note: Elevations shown in the
"Table of Elevations and Dimensions".
on previous sheet

KANSAS DEPARTMENT OF TRANSPORTATION		CFS ENGINEERS	
PIER DETAILS (PIERS 1,2,3 & 6)		DESIGNED	GEP
BRIDGE OVER NEOSHO RIVER		SCALE	
STA. 33+27		DATE	
NEOSHO COUNTY		SHEET	OF

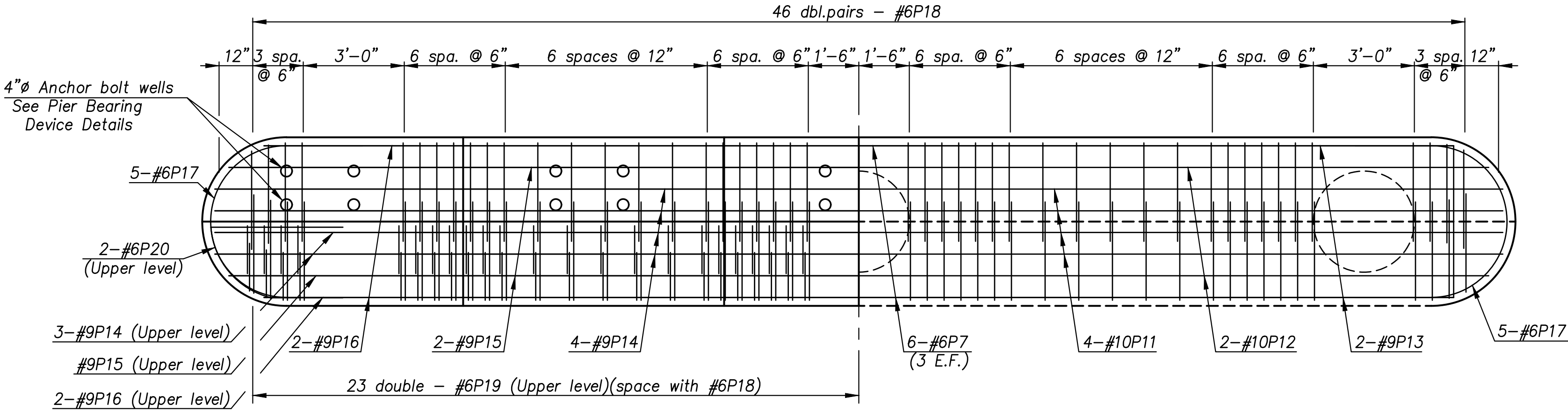
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	24	84

Note: E.F. Indicates each face
N.F. Indicates near face
F.F. Indicates far face



PLAN CAP LAYOUT

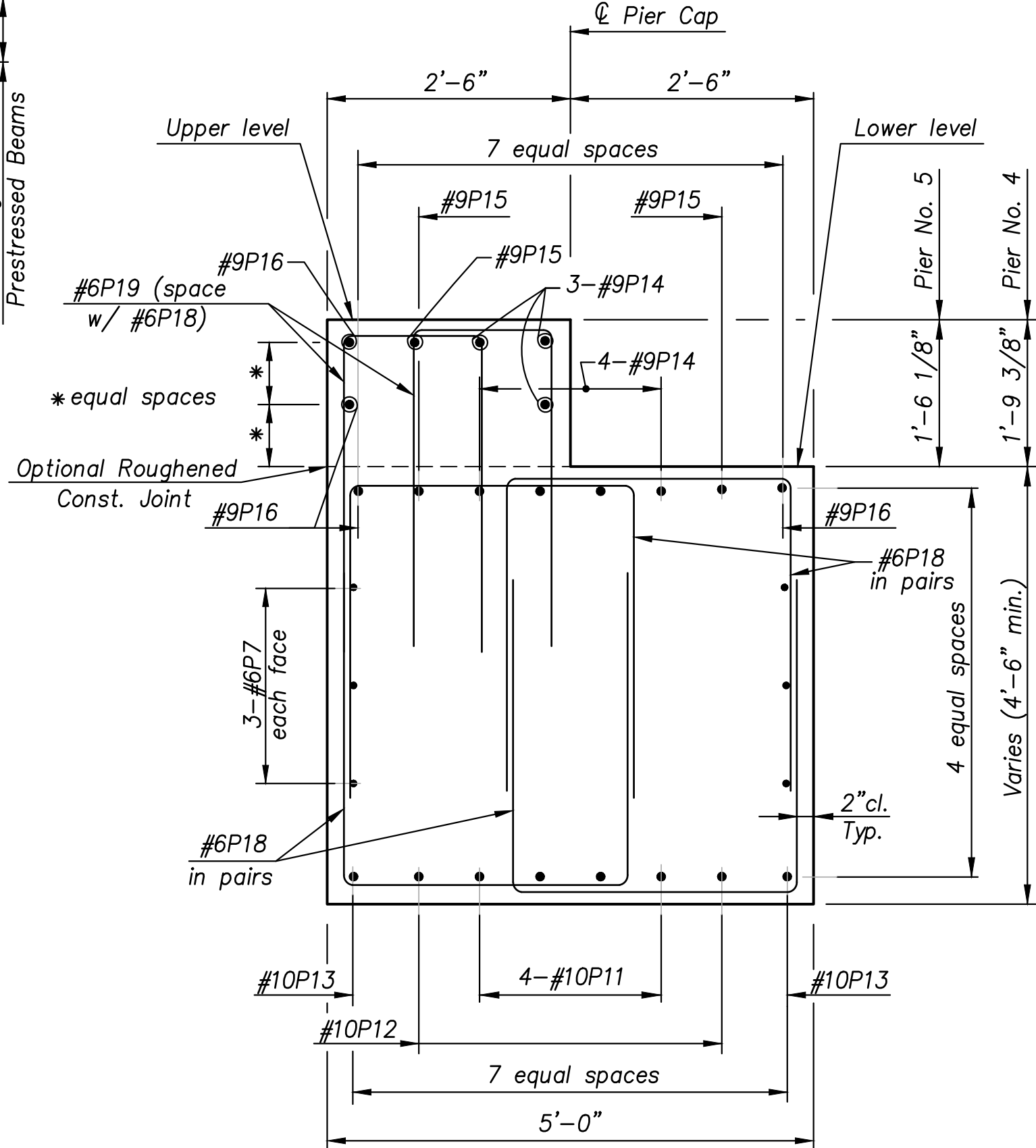
Note: Reinforcing may be adjusted slightly to miss anchor bolt wells.



REINFORCING IN TOP OF PIER BEAM

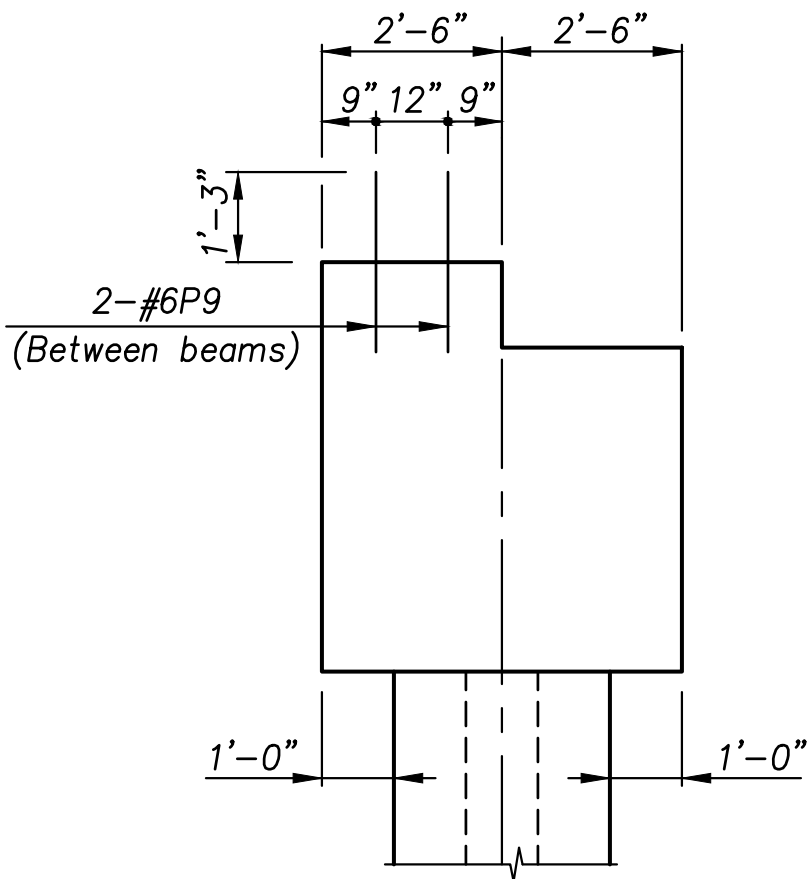
REINFORCING IN BOTTOM OF PIER BEAM

PLAN

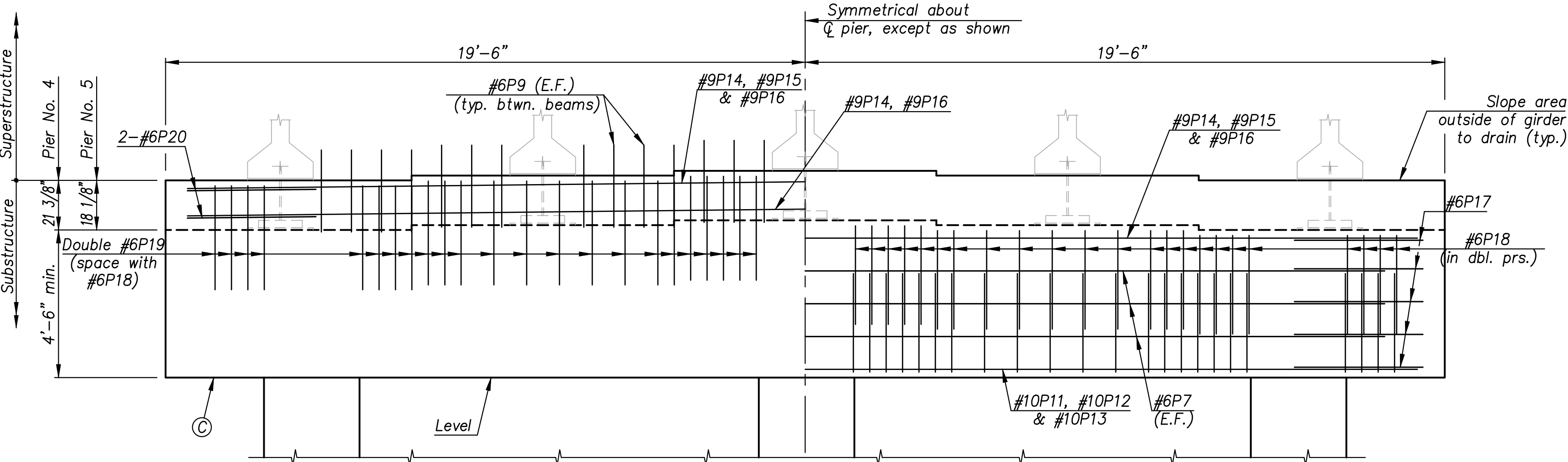


TYPICAL SECTION

Note: Elevations shown in the "Table of Elevations and Dimensions". Previous Sheet



END ELEVATION



ELEVATION

(Looking ahead station) Pier No. 4
(Looking back station) Pier No. 5

KANSAS DEPARTMENT OF TRANSPORTATION

PIER DETAILS
PIER 4 & 5
BRIDGE OVER NEOSHO RIVER

STA. 33+27

NEOSHO COUNTY

CFS

ENGINEERS

DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

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STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	26	84

STRUCTURAL STEEL QUANTITIES (LBS)		
MEMBER	M270 (GRADE 50W) T3	A709 (GRADE 50W)
GIRDER FLANGE PLATES	191,860	
BEARING STIFFENER PLATES	2,171	
FLANGE SPLICE PLATES	6,356	
FLANGE SPLICE FILLER PLATES	160	
GIRDER WEB PLATES		115,889
WEB SPLICE PLATES		1,275
INTERMEDIATE CROSS FRAME STIFFENERS		4,164
PIER CROSS FRAMES		6,437
INTERMEDIATE CROSS FRAMES		8,423
TOTAL	200,547	136,188

UNIT STRESSES

DESIGN SPECIFICATIONS: AASHTO BRIDGE DESIGN SPECIFICATIONS, LATEST EDITION AND LATEST INTERIM SPECIFICATIONS. LOAD RESISTANCE FACTOR DESIGN.

CONSTRUCTION SPECIFICATIONS: KANSAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR STATE ROAD AND BRIDGE CONSTRUCTION. LATEST EDITION AND SPECIAL PROVISIONS.

DESIGN LOADING:
LIVE LOAD -- HL-93
DEAD LOAD --- INCLUDES AN ALLOWANCE OF 25 LBS. PER SQ. FT. FOR A FUTURE WEARING SURFACE.

UNIT STRESSES: STRUCTURAL STEEL M270 (GRADE 50W) T3 fy = 50 ksi

STRUCTURAL STEEL A709 (GRADE 50W) fy = 50 ksi

STRUCTURAL STEEL NOTES

STRUCTURAL STEEL: GIRDER FLANGE PLATES, FLANGE SPLICE PLATES AND BEARING STIFFENER PLATES SHALL MEET AASHTO M270 (GRADE 50W) T3 REQUIREMENTS EXCEPT AS NOTED. ALL OTHER STRUCTURAL STEEL SHALL MEET AASHTO A709 (GRADE 50W) REQUIREMENTS, EXCEPT AS NOTED OTHERWISE. SHOP AND FIELD SPLICES SHALL BE MADE ONLY WHERE SHOWN ON THE CONTRACT PLANS AS A 'SPLICE' OR AS AN 'OPTIONAL SPLICE'. ELIMINATION OF ANY 'SPLICE' MAY BE REQUESTED.

WELDING: MATERIAL AND CONSTRUCTION SHALL CONFORM TO KDOT SPECIFICATIONS. ON THE SHOP DRAWINGS, SHOW A CODE OR SYMBOL AT THE TAIL OF THE WELD SYMBOL, WHICH REFERS TO AN APPROVED PRE-QUALIFIED WELD PROCEDURE.

WELDED STUD SHEAR CONNECTORS: WELD SHEAR STUD CONNECTORS WITH AUTOMATICALLY TIMED STUD WELDING EQUIPMENT CONNECTED TO A SUITABLE POWER SOURCE. ALL STUD WELDING SHALL CONFORM TO KDOT SPECIFICATIONS.

FABRICATION OF FIELD SPLICES: PREPARE JOINTS FOR FIELD SPLICES IN ACCORDANCE WITH KDOT SPECIFICATIONS. USE TYPE "B" SHOP LAYDOWN.

FABRICATION OF WELDED SPLICES: SEE FIGURE 3.2.3-5 "FLANGE AND WEB WELDED SPLICE CONFIGURATIONS" OF THE BRIDGE DESIGN MANUAL. ALL FLANGE SPLICES SHALL BE FULL PENETRATION WELDS.

RADIOGRAPHIC INSPECTION OF GIRDERS: RADIOGRAPH ALL BUTT WELDS IN THE FLANGES AND ALL BUT THE MIDDLE ONE-THIRD OF THE WEB BUTT WELDS IN EACH SPAN.

BOLTS: ALL BOLTS, NUTS AND HARDENED FLAT WASHERS SHALL CONFORM TO THE HEAVY HEX STRUCTURAL REQUIREMENTS OF ASTM A325, TYPE 3, AND KDOT SPECIFICATIONS UNLESS OTHERWISE NOTED. DIRECT TENSION INDICATORS (DTIs) ARE TO COMPLY WITH THE REQUIREMENTS OF THE LATEST EDITION OF ASTM F959. NO ALLOWANCE WILL BE MADE FOR HIGH STRENGTH BOLTS USED FOR PERMANENT OR TEMPORARY CONNECTIONS. THIS WORK IS SUBSIDIARY TO THE BID ITEM, "STRUCTURAL STEEL". THE NUMBER OF BOLTS IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR.

BOLTED CONNECTIONS: GIRDER CONNECTIONS: USE 7/8"Ø HEAVY HEX STRUCTURAL BOLTS FOR THE MAIN MEMBER CONNECTIONS. USE 15/16"Ø BOLT HOLES. DO NOT REAM DURING FIELD ERECTION. ACCURATELY ALIGN ALL CONNECTIONS BY DRIVING 15/16"Ø DRIFT PINS IN ALL CORNERS AND IN 1/4 OF THE REMAINING HOLES IN EACH PLATE. SEE KDOT SPECIFICATIONS.

SECONDARY MEMBER CONNECTIONS: USE 3/4"Ø HEAVY HEX STRUCTURAL BOLTS FOR THE SECONDARY MEMBER CONNECTIONS. USE 13/16"Ø BOLT HOLES OVERSIZED AND/OR SLOTTED HOLES, AS SPECIFIED IN THE KDOT SPECIFICATIONS, MAY BE USED IN ONLY ONE OF THE TWO MEMBERS CONNECTED AND MUST BE SHOWN IN THE APPROVED SHOP DRAWINGS. OVERSIZED AND/OR SLOTTED HOLES MAY REQUIRE ADDITIONAL STANDARD HARDENED WASHERS OR PLATE WASHERS. REPORT TO THE ENGINEER PRIOR TO ANY REQUIRED FIELD REAMING THAT WILL REMOVE MORE THAN 1/4" OF MATERIAL FROM ONE PLY OF THE CONNECTED PARTS.

USE DIRECT TENSION INDICATORS (DTIs) ON ALL HIGH STRENGTH BOLTS. PLACE THE DTI UNDER THE BOLT HEAD AND TURN THE NUT TO TIGHTEN. THIS METHOD IS PREFERRED WHENEVER POSSIBLE. FACE THE PROTRUSIONS ON THE DTI TO THE UNDERSIDE OF THE BOLT HEAD. PLACE A HARDENEDFLAT WASHER UNDER THE NUT. SEE KDOT SPECIFICATIONS.

FILLETS: CAMBER THE STEEL GIRDERS FOR THE TOTAL DEAD LOAD DEFLECTION AND THE VERTICAL CURVATURE, IF NECESSARY. THE ORDINATES SHOWN FOR CONCRETE DEAD LOAD DEFLECTION REPRESENT THE AMOUNT OF CAMBER THAT SHOULD BE IN THE GIRDERS AFTER THEY ARE ERECTED AND BOLTED BUT PRIOR TO PLACING THE FLOOR FORMS. AFTER THE STRUCTURAL STEEL IS COMPLETELY ERECTED AND THE FALSEWORK BENTS ARE REMOVED, MEASURE THE CAMBER IN THE FIELD BY TAKING A PROFILE OF EACH GIRDER. CORRECT ANY VARIATION BETWEEN THE ACTUAL CAMBER AND THE CONCRETE DEAD LOAD DEFLECTION SHOWN IN THE PLANS BY VARYING THE DEPTH OF THE CONCRETE FILLETS OVER THE GIRDERS SO THAT THE FINISHED FLOOR IS CONSTRUCTED TO THE THEORETICAL GRADE. THE MINIMUM DEPTH OF THE SLAB OVER THE GIRDER SHALL BE 9".

THE THEORETICAL AMOUNT OF CONCRETE REQUIRED FOR THE FILLETS IS 5.1 C.Y. THIS AMOUNT OF CONCRETE IS INCLUDED IN THE SUMMARY OF QUANTITIES. ANY ADDITIONAL CONCRETE REQUIRED TO CONSTRUCT THE FILLETS WILL BE SUBSIDIARY.

ERECTION PLANS: THIS IS A CATEGORY B STRUCTURE. SUBMIT DETAILED ERECTION PLANS TO THE ENGINEER AT LEAST 4 WEEKS BEFORE BEGINNING THE ERECTION PROCESS. PORTIONS OF THE SUBMITTED DETAILS SHALL BEAR THE SEAL OF A LICENSED PROFESSIONAL ENGINEER. IDENTIFY, ON THE ERECTION PLANS, THE ERECTION SUPERVISOR REQUIRED BY KDOT SPECIFICATIONS. NO STRUCTURAL ERECTION WORK WILL BEGIN WITHOUT APPROVED ERECTION PLANS.

ERECTION: BRING EACH LINE OF GIRDERS TO THE CORRECT LINE, GRADE (OR RELATIVE GRADE) AND CAMBER, AND SECURE IN PLACE PRIOR TO CONNECTION OF THE GIRDER FIELD SPLICES. PROVIDE FALSEWORK BENTS AS NECESSARY TO MAINTAIN THE CORRECT LINE AND ELEVATION. LEAVE THE FALSEWORK BENTS IN PLACE UNTIL ALL GIRDER SPLICE CONNECTIONS ARE COMPLETED. SUBMIT INFORMATION WHICH CLEARLY SHOWS THE PROPOSED LAYOUT AND USE OF FALSEWORK BENTS. THE ENGINEER SHALL APPROVE SUCH INFORMATION PRIOR TO ERECTION OF STRUCTURAL STEEL. UNLESS NOTED OTHERWISE, ERECT AND FULLY CONNECT ALL STRUCTURAL STEEL IN THE UNIT INCLUDING CROSS FRAMES, DIAPHRAGMS AND EXPANSION DEVICES PRIOR TO CONSTRUCTION OF THE BACKWALL AND WINGWALL ABOVE THE CONSTRUCTION JOINT.

SHOP DETAILS: REFERENCE BLOCKING DIAGRAMS ON THE SHOP DETAILS TO A LEVEL LINE RUNNING THE ENTIRE LENGTH OF THE GIRDER.

TEMPERATURE: THE DESIGN TEMPERATURE FOR ALL DIMENSIONS IS 60°F.

DIMENSIONS: ALL DIMENSIONS SHOWN ON THE DESIGN PLANS ARE HORIZONTAL DIMENSIONS UNLESS OTHERWISE NOTED. MAKE NECESSARY ALLOWANCES FOR ROADWAY GRADE AND CROSS SLOPE.

PAINTING: BLAST CLEAN ALL SURFACES OF ALL WEATHERING STEEL, INCLUDING ALL CONTACT SURFACES OF BOLTED CONNECTIONS, TO MEET SSPC-SP6 SPECIFICATIONS (LATEST REVISION). BLAST CLEAN TO MEET SSPC-SP10 SPECIFICATIONS AND PRIME COAT THE PORTION OF THE GIRDERS IN CONTACT WITH CONCRETE, INCLUDING THE PIER DIAPHRAGMS, THE TOP FLANGES, INCLUDING THE SHEAR STUDS, AND THE TOP FLANGE SPLICE PLATES. PAINT THE AREAS OF THE GIRDERS NEAR THE EXPANSION JOINTS AND THE EXTERIOR SURFACES OF THE EXTERIOR GIRDERS IN ACCORDANCE WITH KDOT SPECIFICATIONS. THIS WORK SHALL BE SUBSIDIARY TO THE BID ITEM "STRUCTURAL STEEL". COLOR TO MATCH AS CLOSE AS POSSIBLE TO THE NATURAL COLOR OF WEATHERING STEEL.

TOP FLANGES: (STUDS APPLIED IN THE SHOP) APPLY A 3 MIL PRIMER COAT OF AN APPROVED INORGANIC ZINC PRIMER TO THE TOPS OF THE TOP FLANGES AND TO THE STUDS.

(STUDS APPLIED IN THE FIELD) SHOP WORK - BLAST CLEAN THE TOPS OF THE TOP FLANGES TO SSPC-SP10 SPECIFICATIONS (LATEST REVISION).

FIELD WORK - BLAST CLEAN THE TOPS OF THE TOP FLANGES TO SSPC-SP6 SPECIFICATIONS (LATEST REVISION) BEFORE THE STUDS ARE APPLIED. AFTER THE STUDS ARE APPLIED, BLAST CLEAN THE TOPS OF THE TOP FLANGES AND THE STUDS TO SSPC-SP6 SPECIFICATIONS AND PAINT WITH AN APPROVED ORGANIC ZINC PRIMER TO A MINIMUM DRY FILM THICKNESS

TOUCH-UP: PREPARE AND PAINT ALL BOLTS, NUTS, STUDS, AND OTHER SMALL AREAS OF DAMAGED PAINT (1 SQ. YD. OR LESS), REQUIRING TOUCH-UP, WITH AN APPROVED ORGANIC ZINC PRIMER.

KANSAS DEPARTMENT OF TRANSPORTATION

STRUCTURAL STEEL NOTES

BRIDGE OVER NEOSHO RIVER

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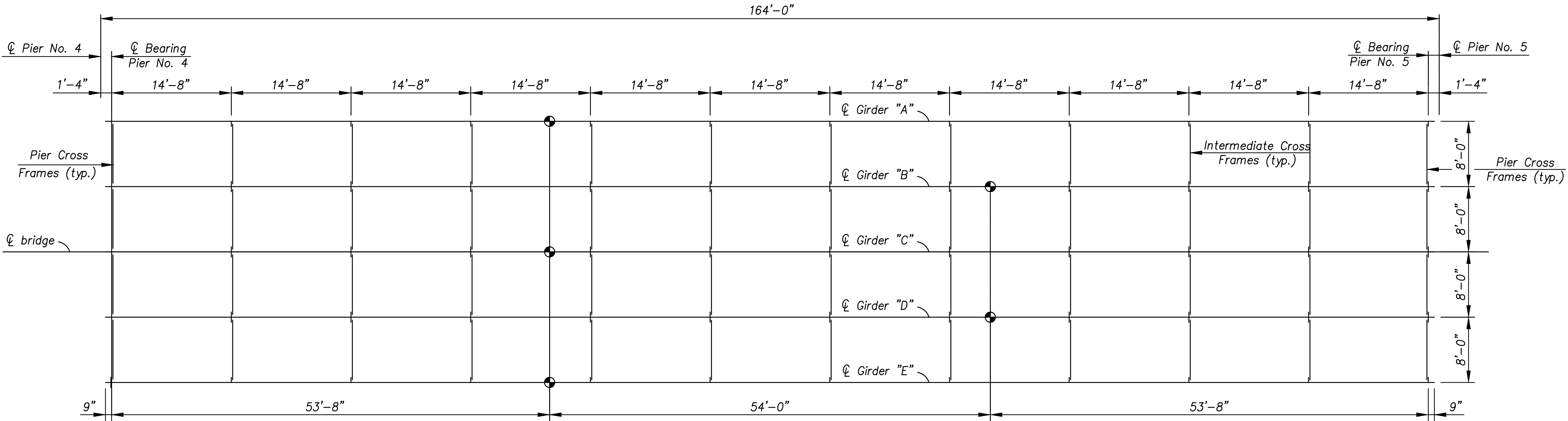
NEOSHO COUNTY

CFS

ENGINEERS

DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	27	84



PLAN VIEW

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KANSAS DEPARTMENT OF TRANSPORTATION

FRAMING PLAN
(SPAN 5)

BRIDGE OVER NEOSHO RIVER

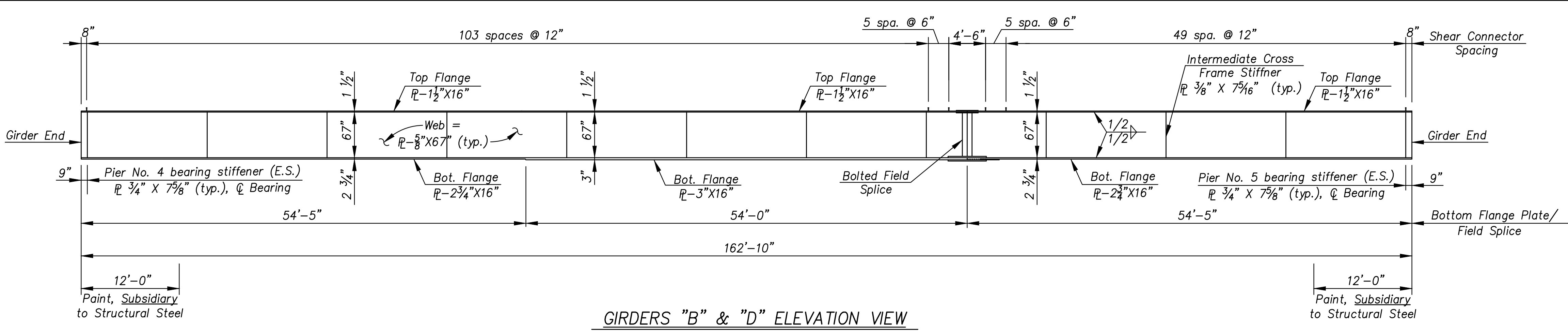
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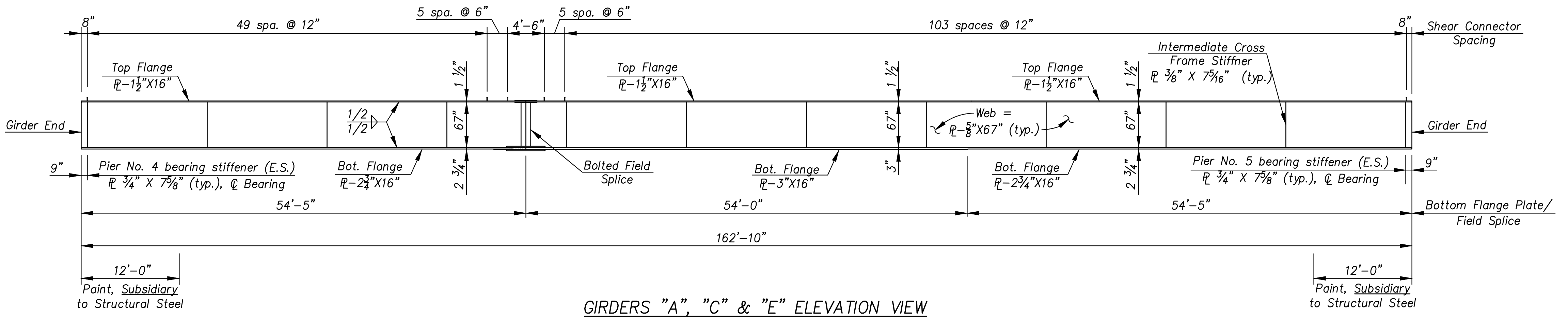
CFS
ENGINEERS

DESIGNED	GEP	SCALE
DETAILED	JPf	DATE
QUANTITIES	SHEET	OF

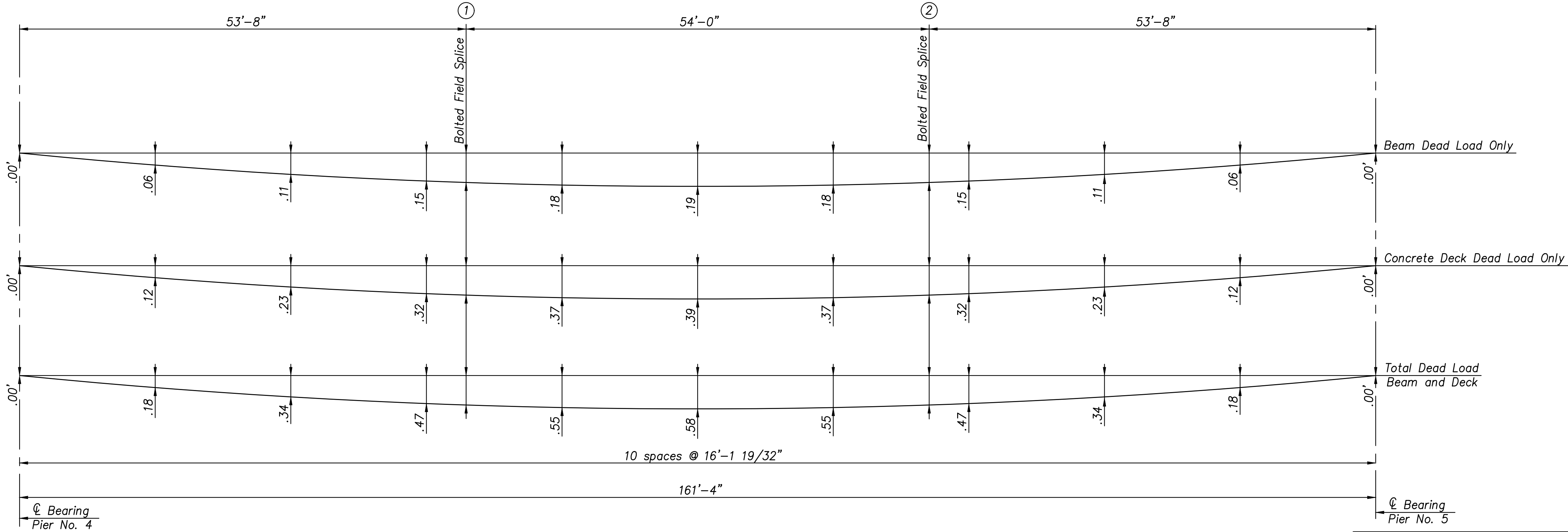
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	28	84



GIRDERS "B" & "D" ELEVATION VIEW



GIRDERS "A", "C" & "E" ELEVATION VIEW



DEAD LOAD DEFLECTIONS
(in feet)

KANSAS DEPARTMENT OF TRANSPORTATION

GIRDER DETAILS
(SPAN 5)
BRIDGE OVER NEOSHO RIVER

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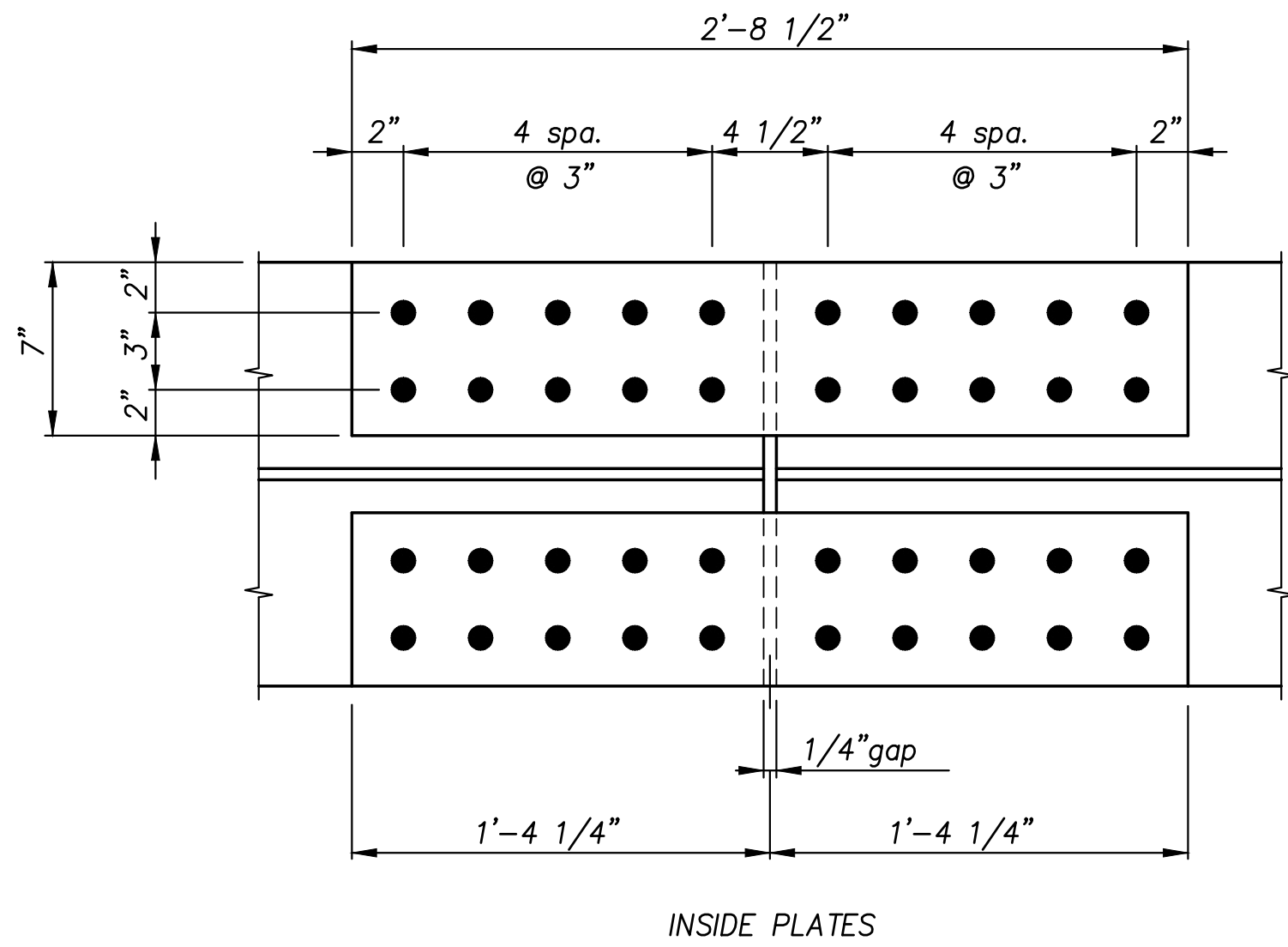
NEOSHO COUNTY

CFS
ENGINEERS

DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

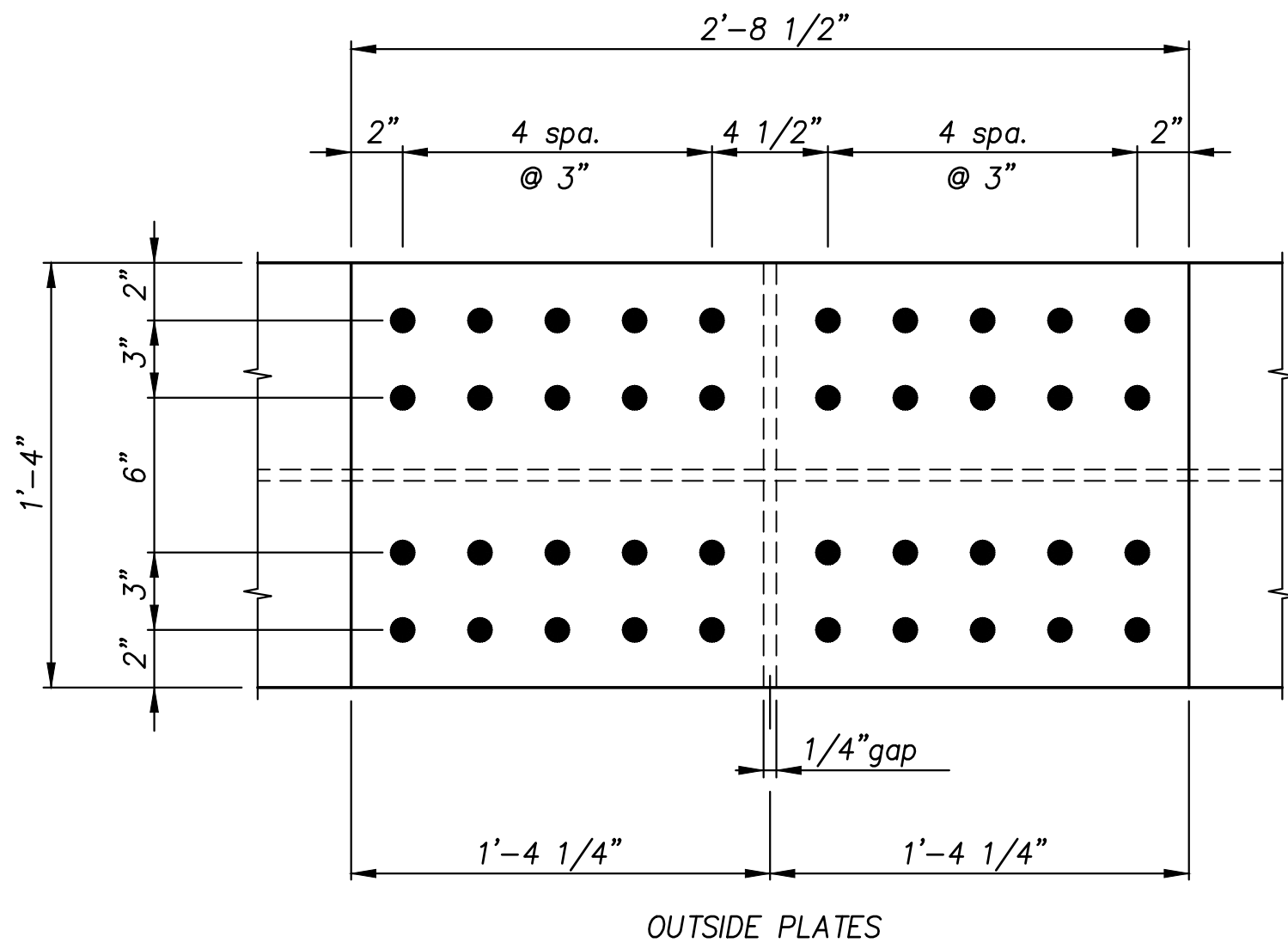
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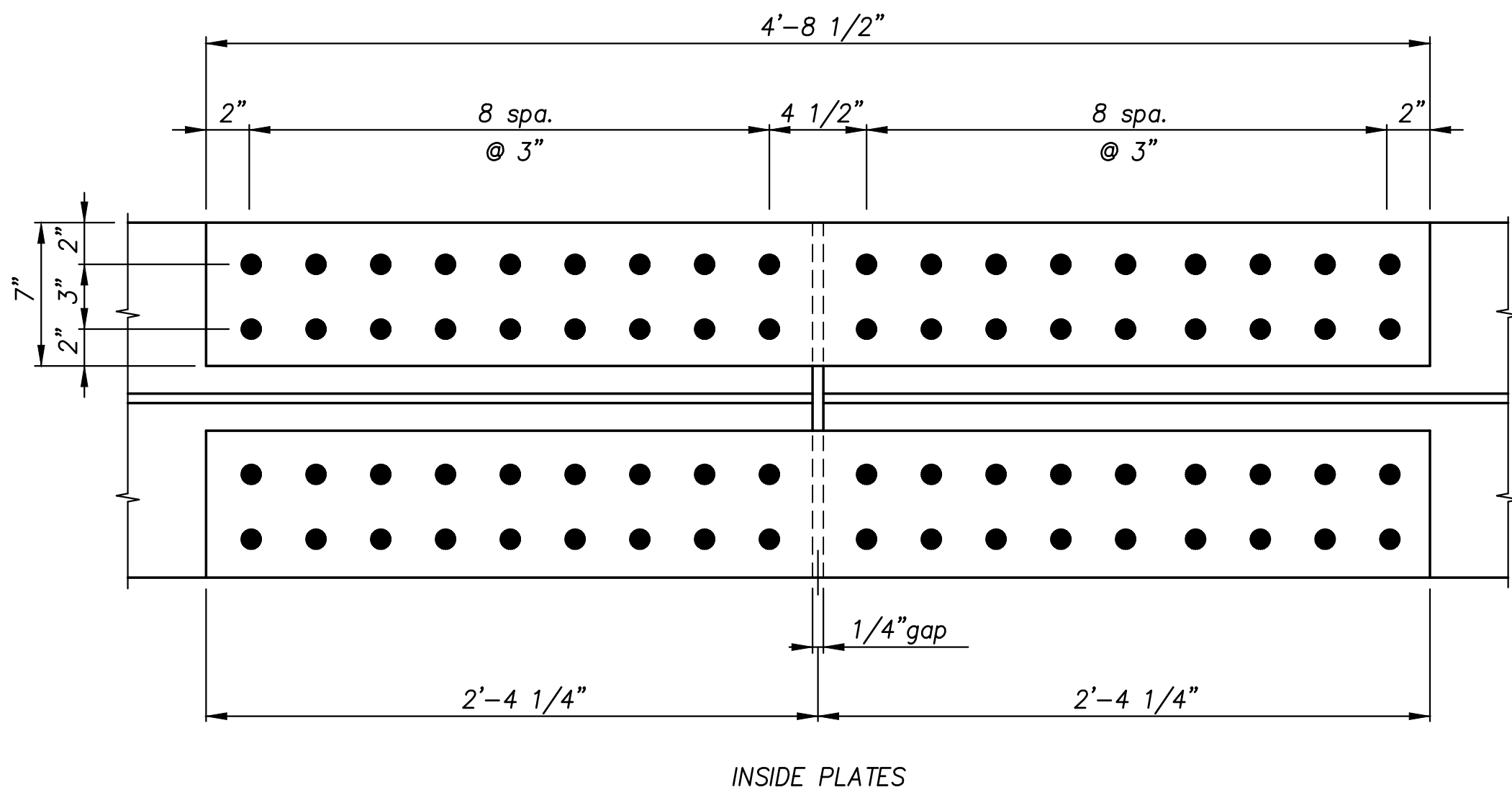


PLAN OF TOP FLANGE SPLICES

(Showing bolt layout)



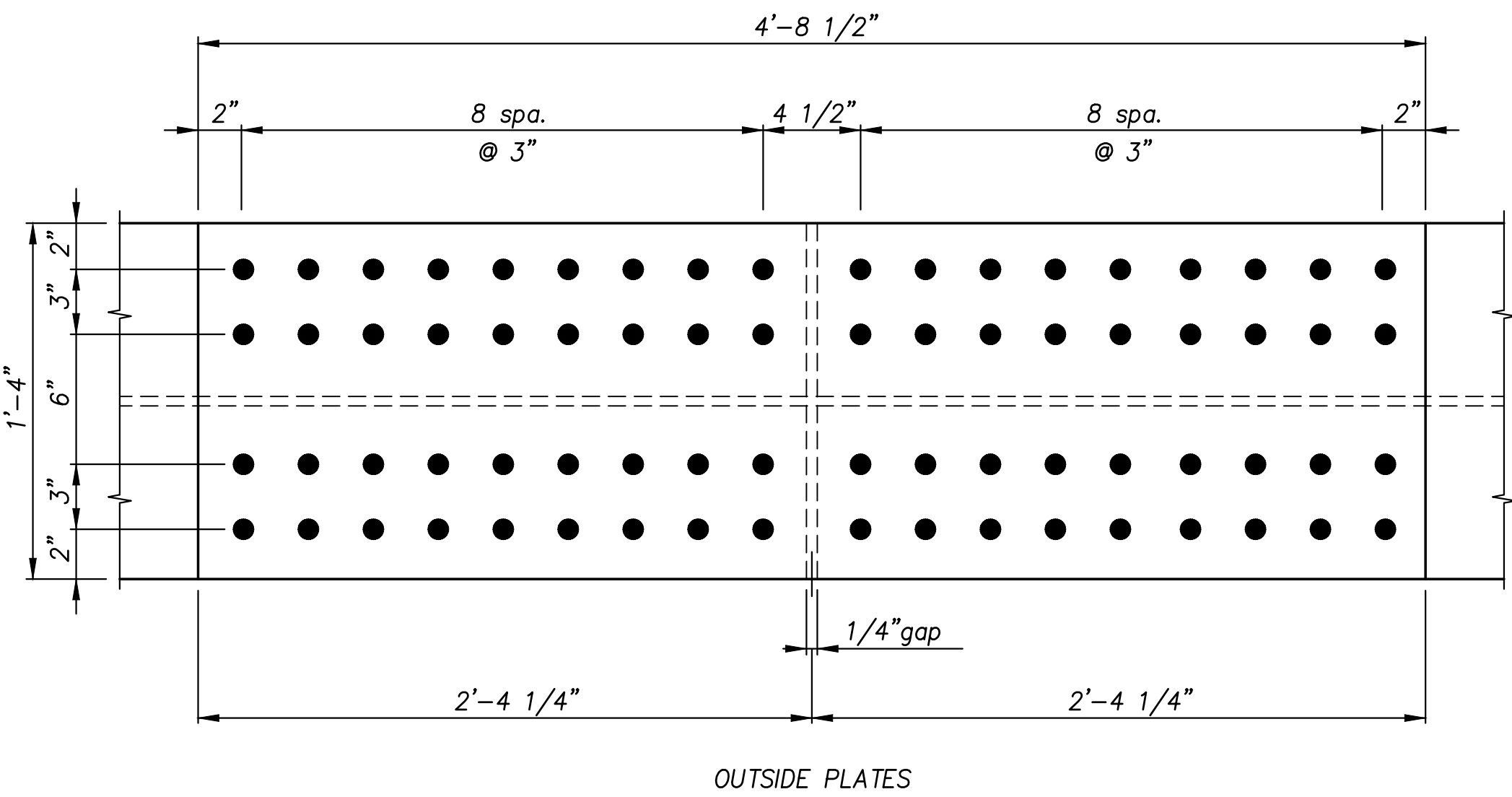
OUTSIDE PLATES



INSIDE PLATES

PLAN OF BOTTOM FLANGE SPLICES

(Showing bolt layout)



OUTSIDE PLATES

NOTES

FASTENERS SHALL BE 7/8" HIGH STRENGTH BOLTS, ASTM A325 TYPE 3. HOLES SHALL BE 15/16" DIA.

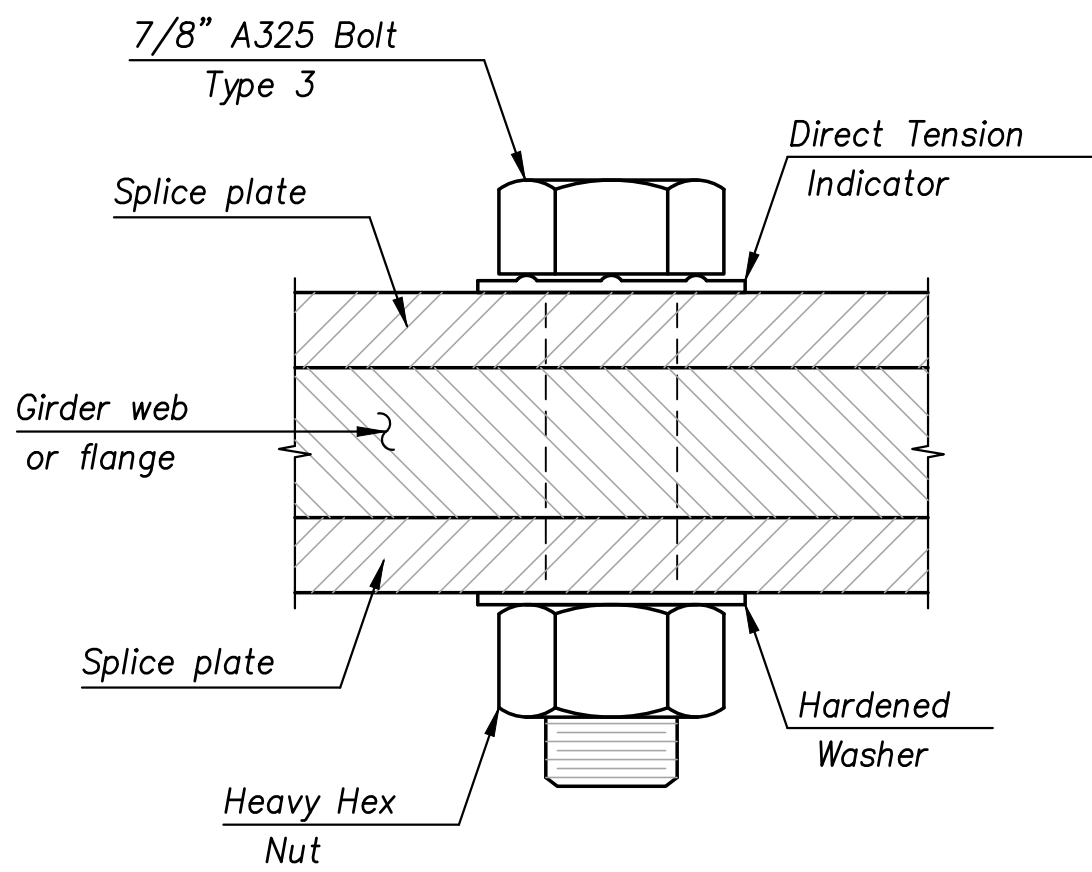
ALL FLANGE SPLICE PLATES SHALL BE M270 (GR. 50W) T3 STEEL.

ALL WEB SPLICE PLATES SHALL BE A709 (GR. 50W) STEEL.

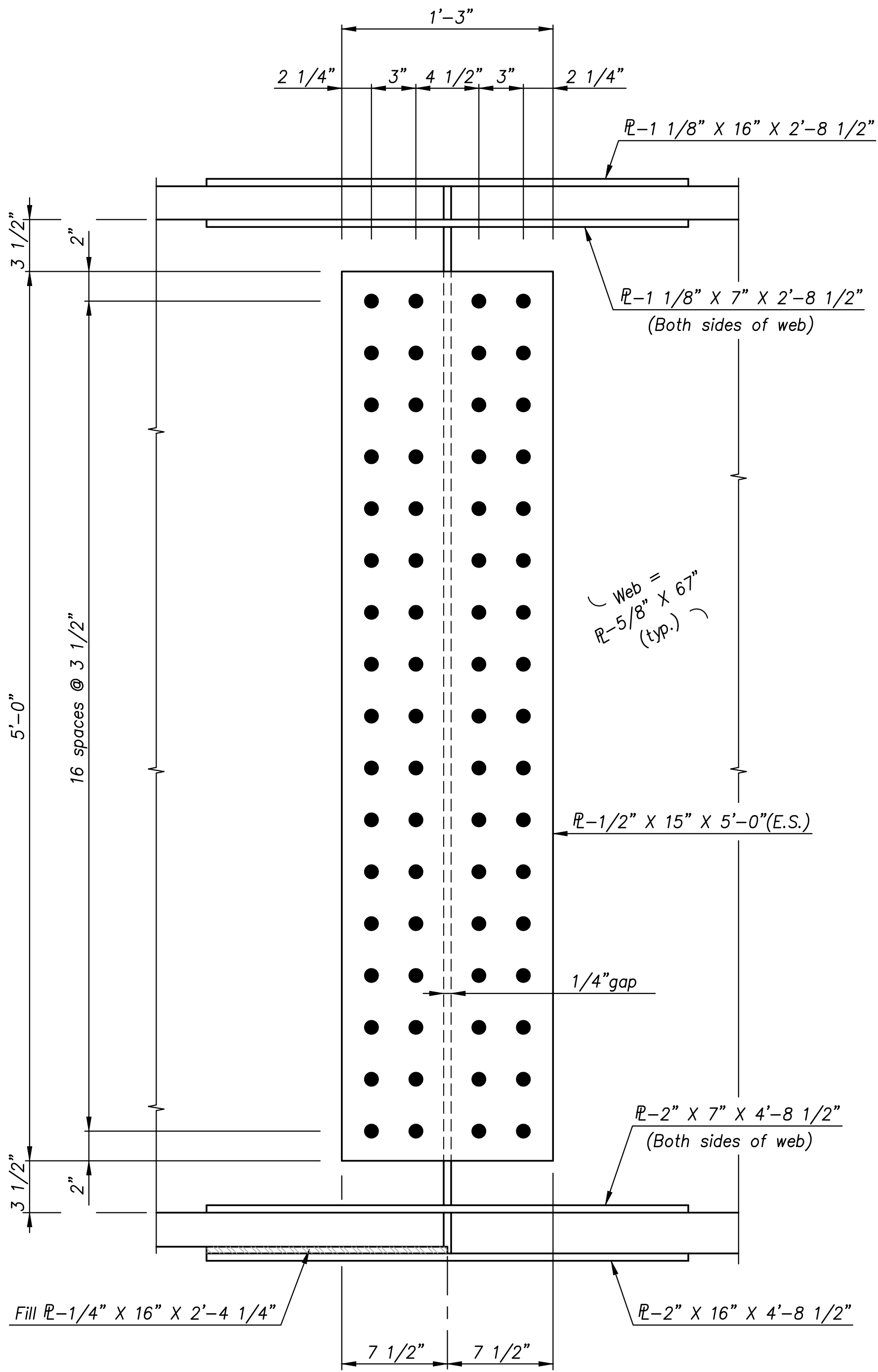
ALL FILL PLATES SHALL BE M270 (GR. 50W) T3 STEEL.

SUMMARY OF QUANTITIES (Per Splice)		
NO. OF BOLTS	M270 (GRADE 50W) T3	A709 (GRADE 50W)
180	1,303 Lbs.	255 Lbs.

Note: E.S. Indicates each surface
N.S. Indicates near surface
F.S. Indicates far surface



BOLT DETAIL



ELEVATION OF BOLTED SPLICE

KANSAS DEPARTMENT OF TRANSPORTATION

BOLTED SPLICE
DETAILS

BRIDGE OVER NEOSHO RIVER

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NEOSHO COUNTY

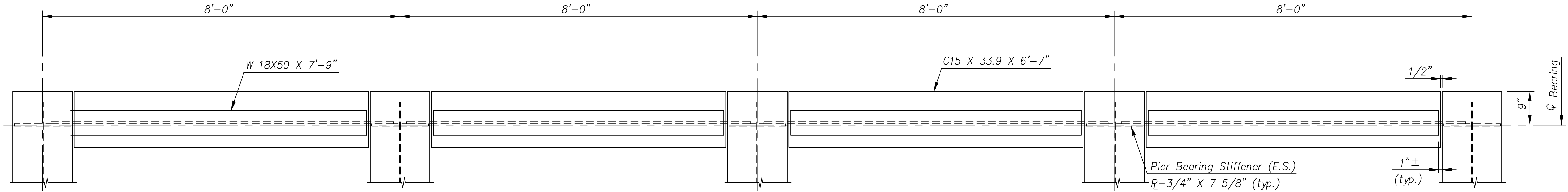
CFS
ENGINEERS

DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

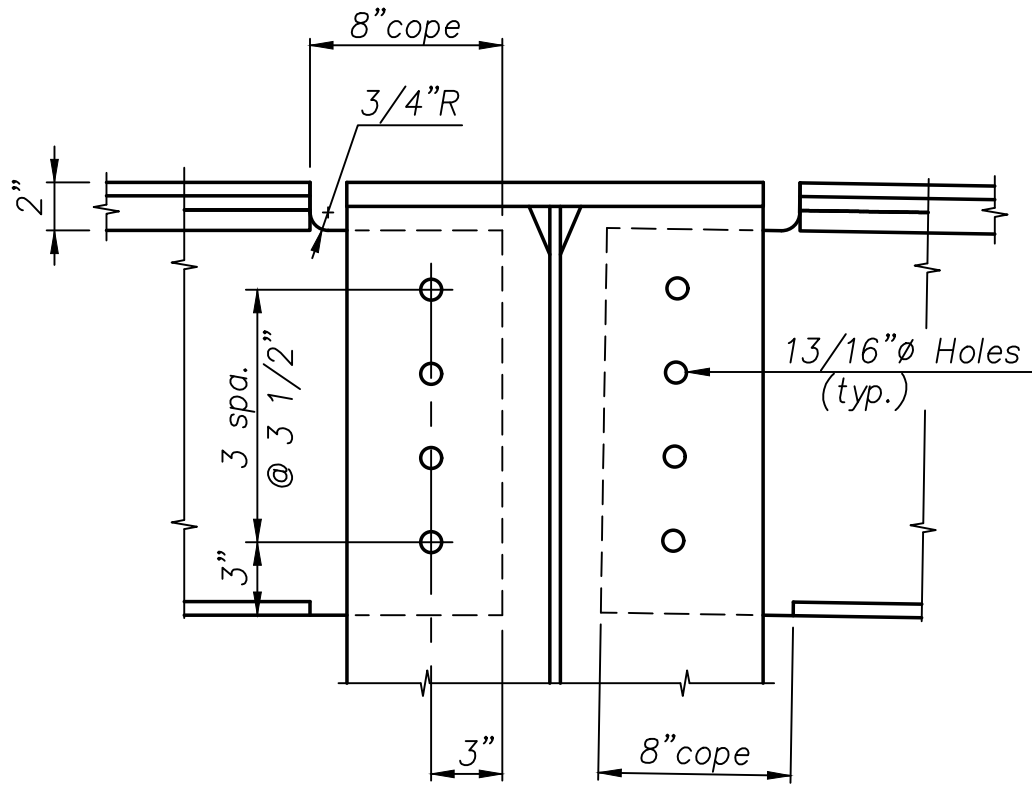
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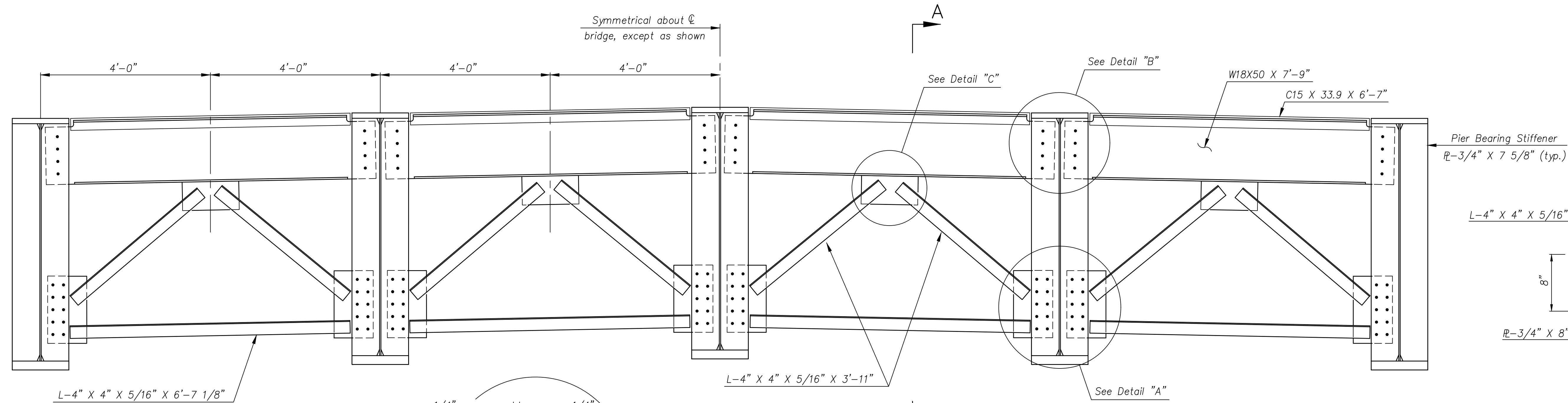
STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	67 C-5209-01	2024	30	84



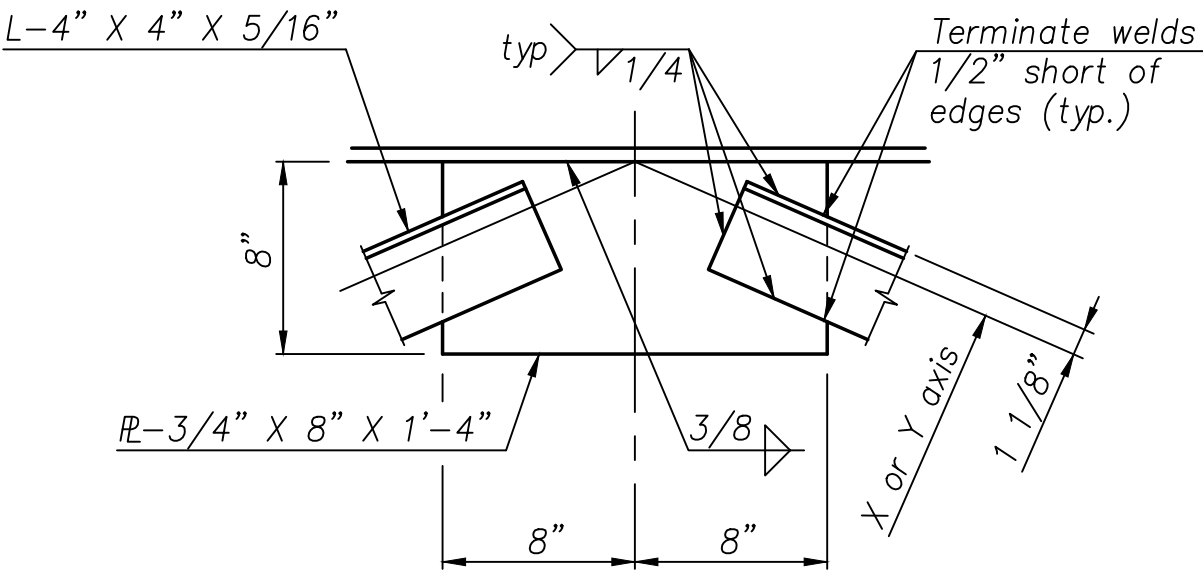
PLAN



DETAIL "B"



ELEVATION



DETAIL "C"

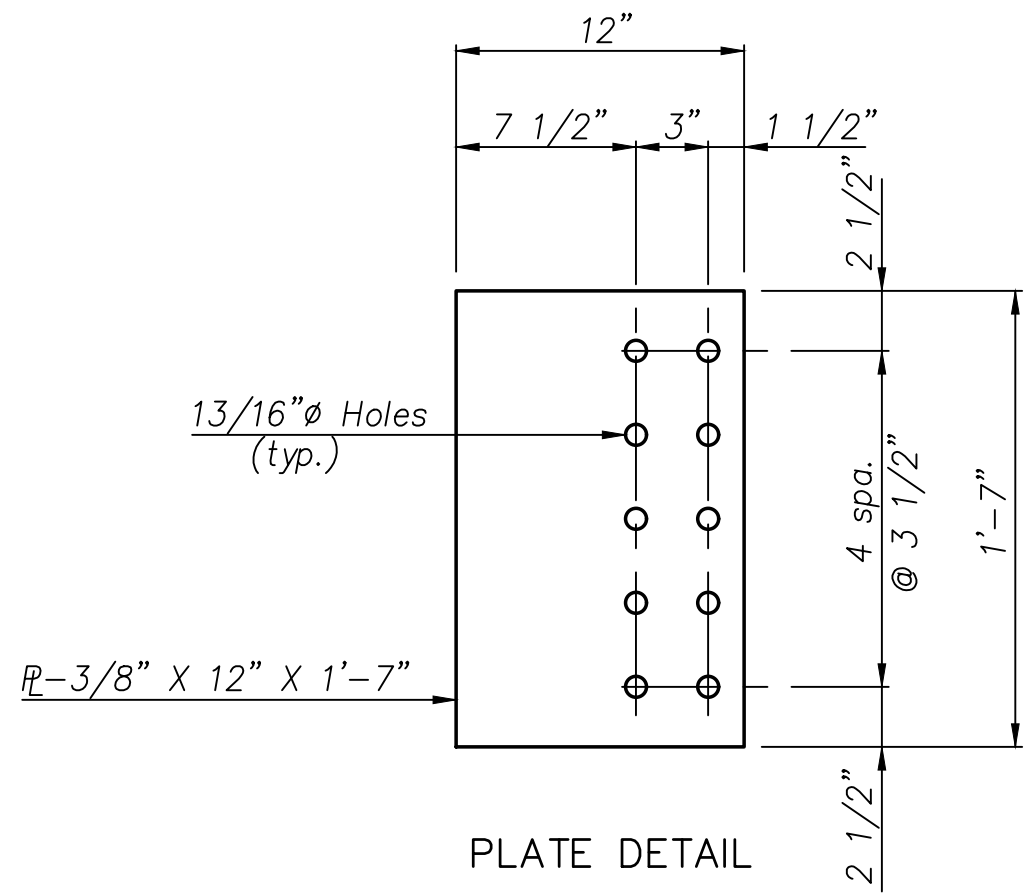


PLATE DETAIL

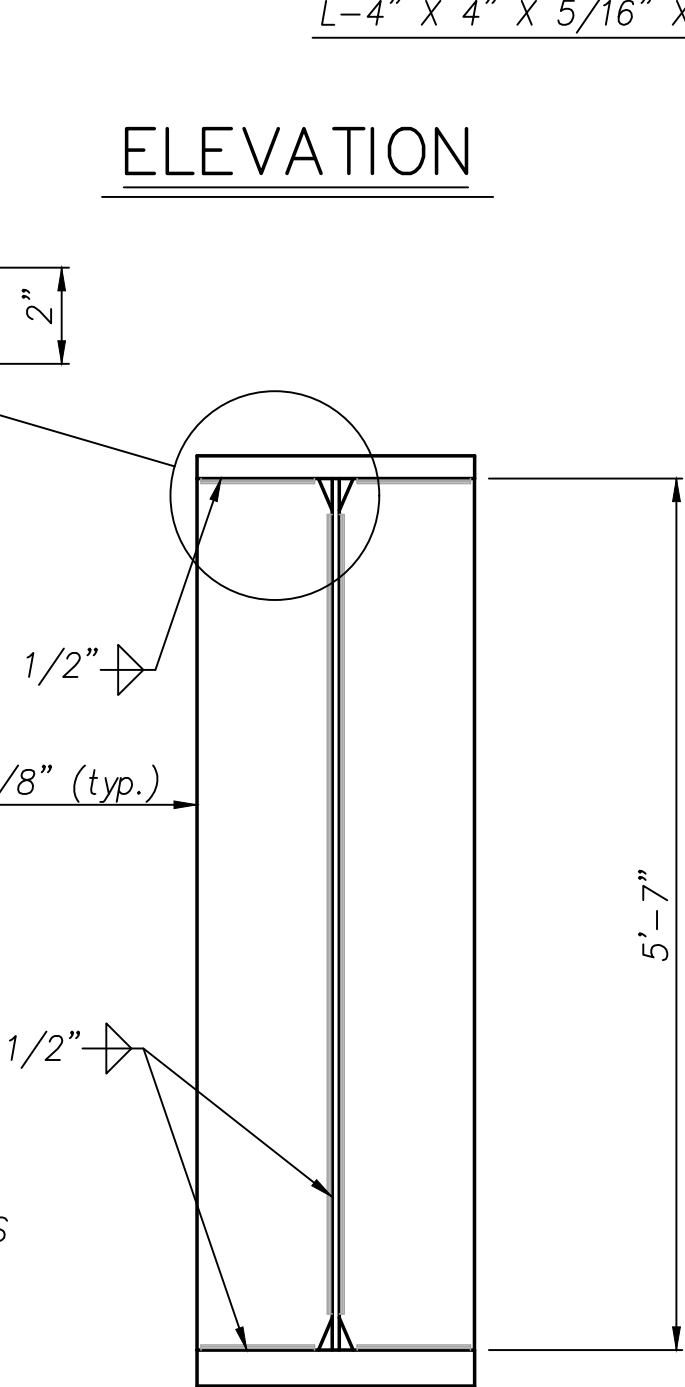
NOTES

ALL STRUCTURAL STEEL FOR CROSS FRAMES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A709 (GRADE 50W), UNLESS OTHERWISE NOTED.

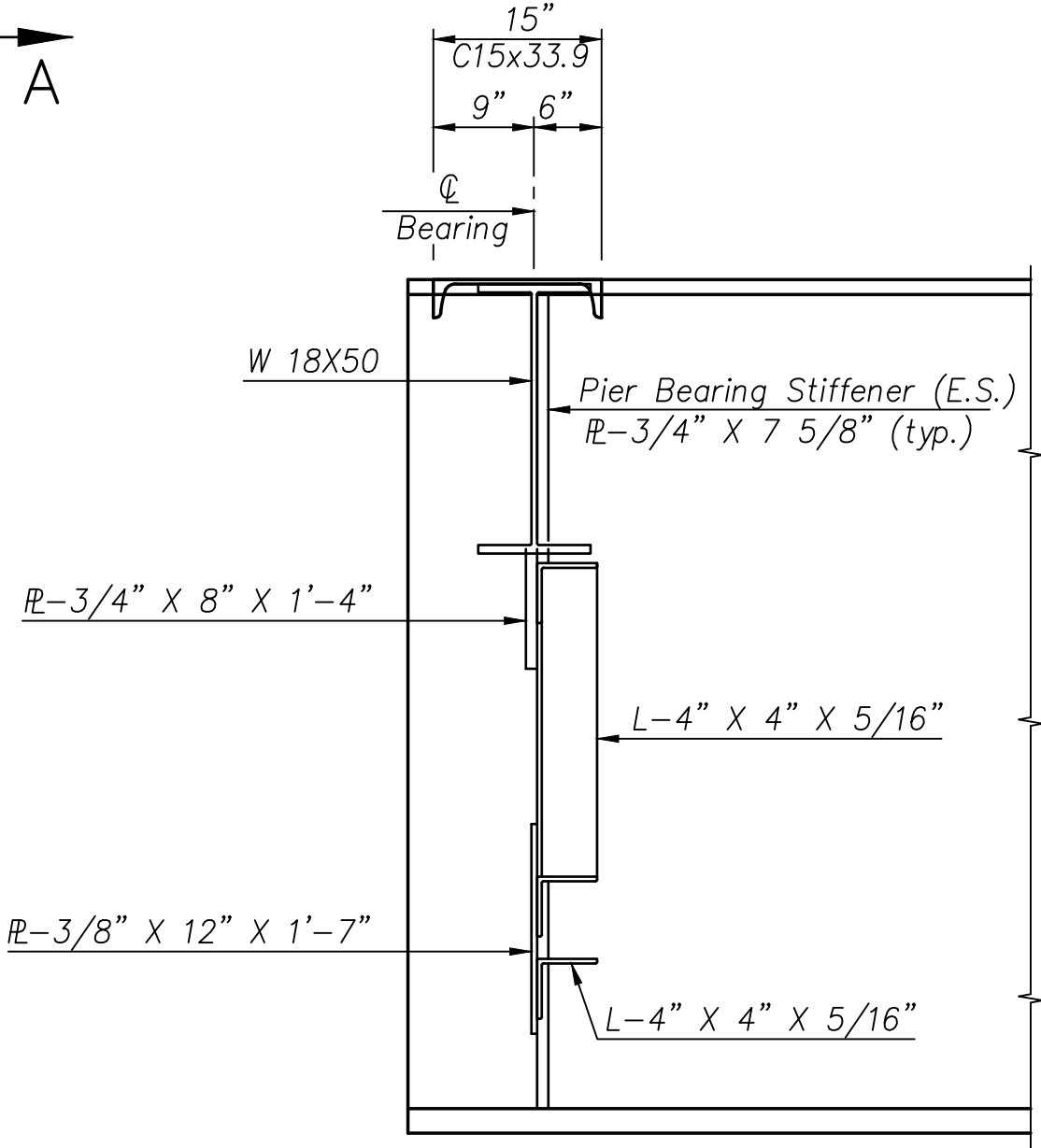
BEARING STIFFENER PLATES SHALL CONFORM TO THE REQUIREMENTS OF M270 (GRADE 50W) T3.

ALL BOLTS SHALL BE 3/4"Ø HIGH STRENGTH, ASTM A325 TYPE 3, UNLESS OTHERWISE NOTED.

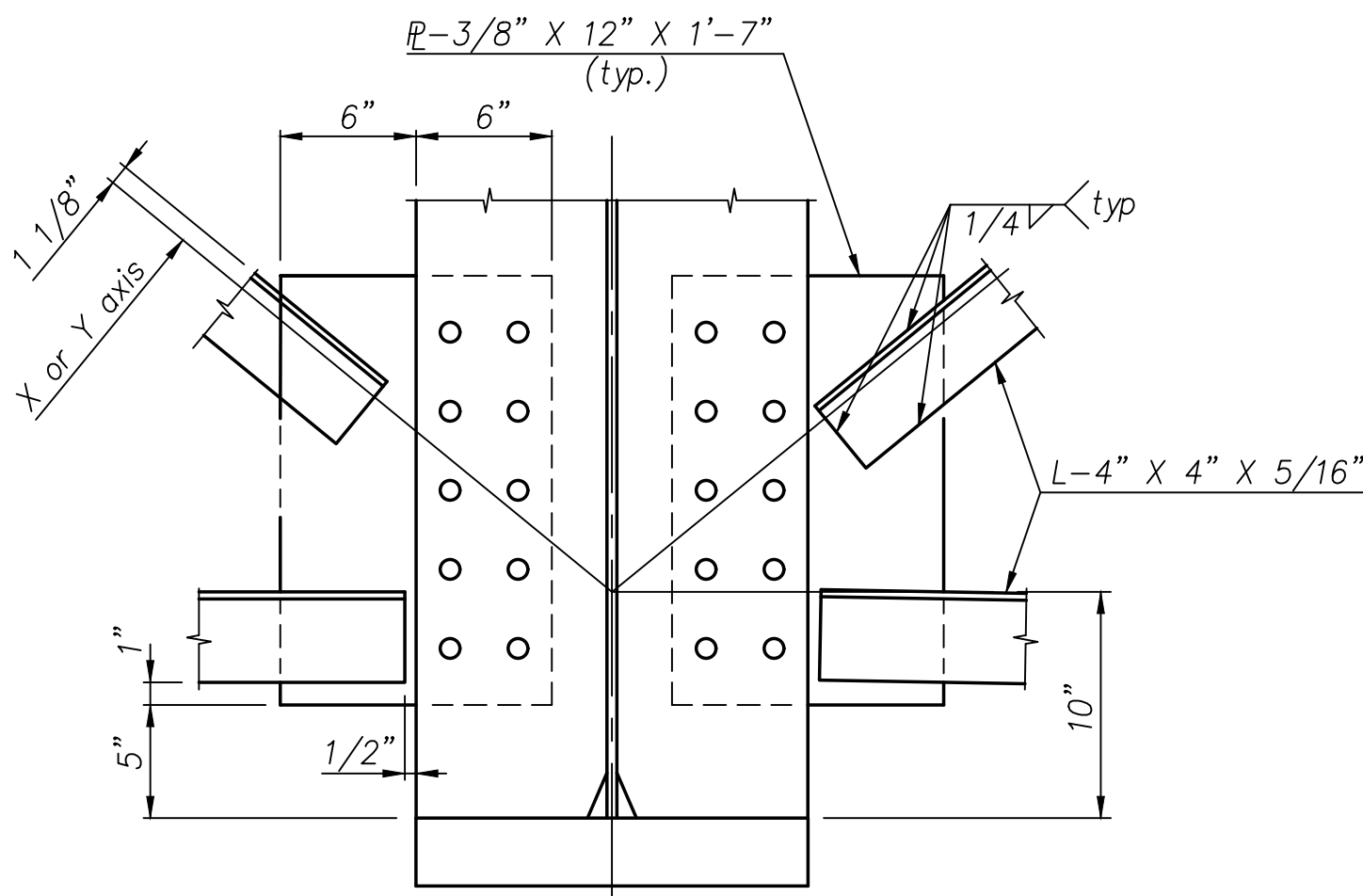
WELDING MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE KDOT SPECIFICATIONS AND THE AASHTO/AWS D1.5-95 BRIDGE WELDING CODE. WELD SIZES SHALL BE SHOWN ON THE SHOP DRAWINGS.



STIFFENER DETAIL



SECTION A-A



DETAIL "A"

Note: Paint Pier Cross Frames. Subsidiary to other items.

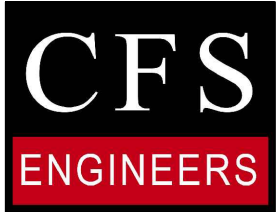
KANSAS DEPARTMENT OF TRANSPORTATION

PIER CROSS FRAMES

BRIDGE OVER NEOSHO RIVER

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NEOSHO COUNTY



DESIGNED	GEP	SCALE
DETAILED	JPF	DATE
QUANTITIES	SHEET	OF

